1431

1963

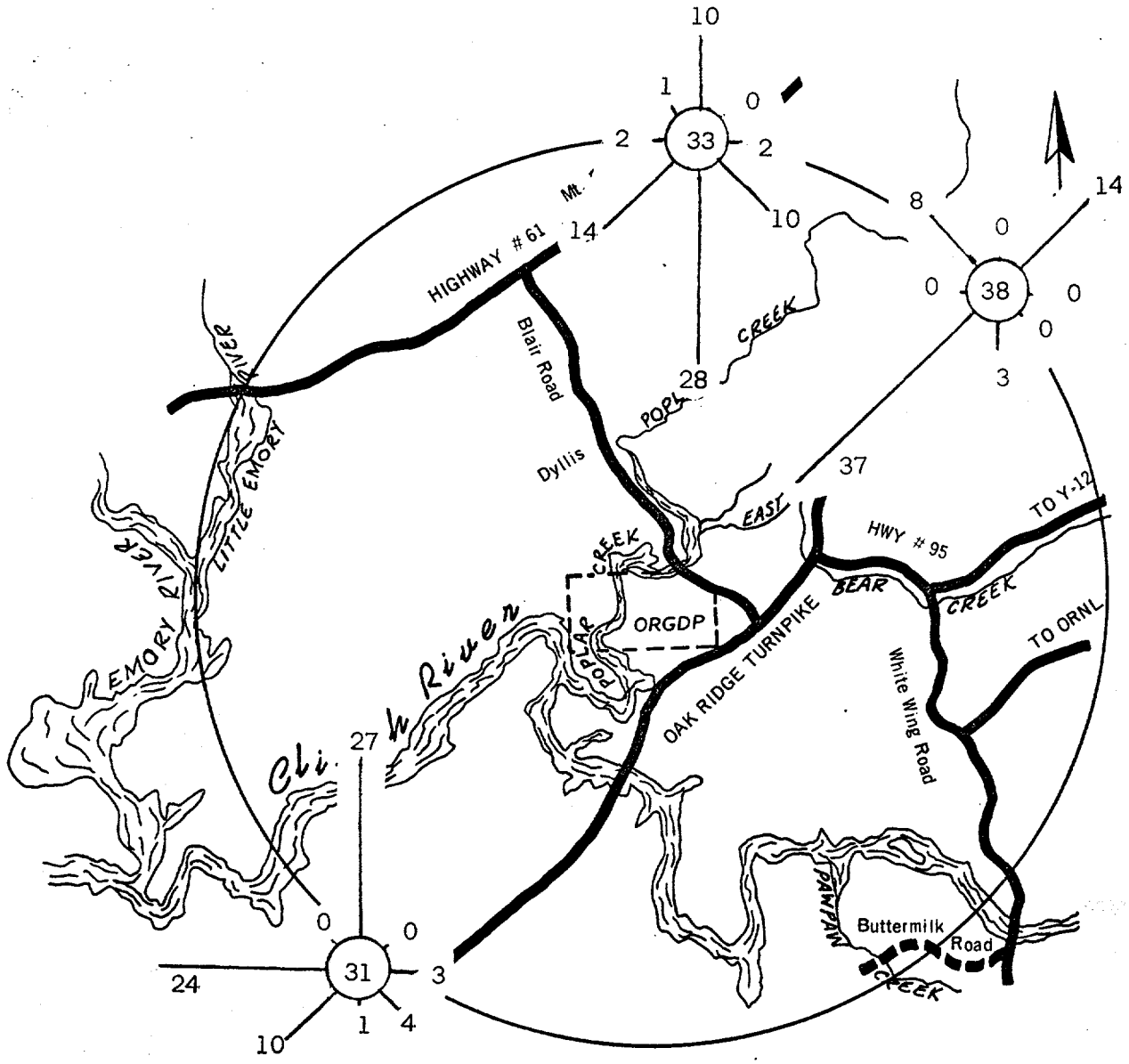
ORGDP ENVIRONMENTAL SAMPLING.
WATER - MUD - SOIL - VEGETATION
AIR OFF-PLANT

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

4/18/95
Date

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400



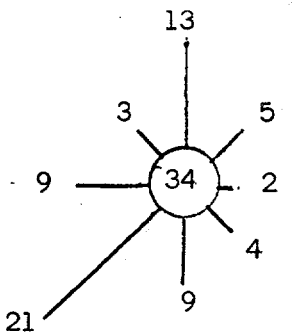
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR

WINTER 1965

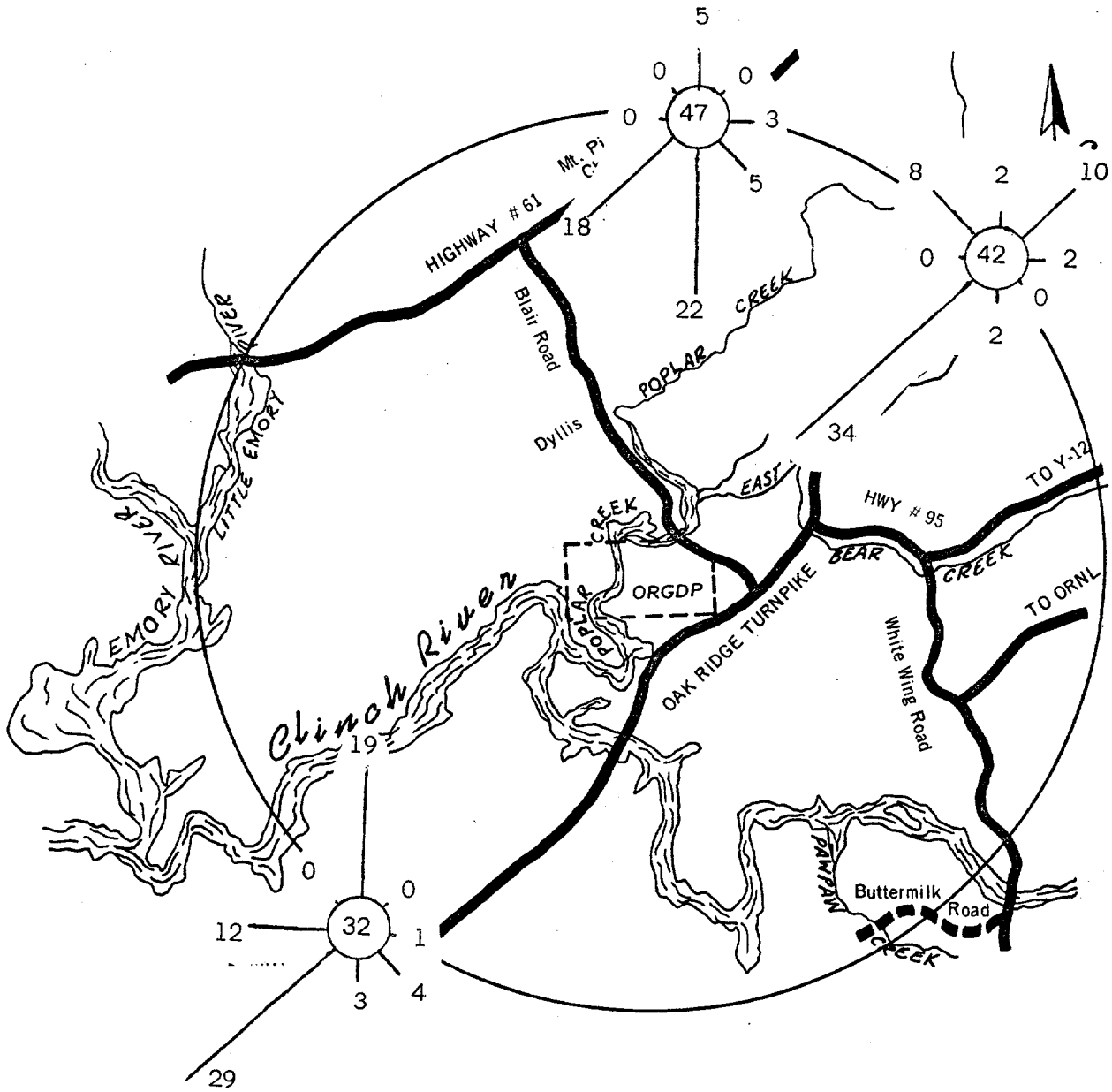
▼Sampling Location - Five Miles from Plant

Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.001	0.5
Lawnville	0.002	1.0
Credit Union	0.001	0.7
All Stations	0.001	0.7
MPC_a	0.040	20.0

FIGURE I



All Stations



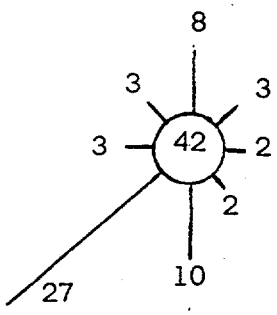
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR

▼Sampling Location - Five Miles from Plant

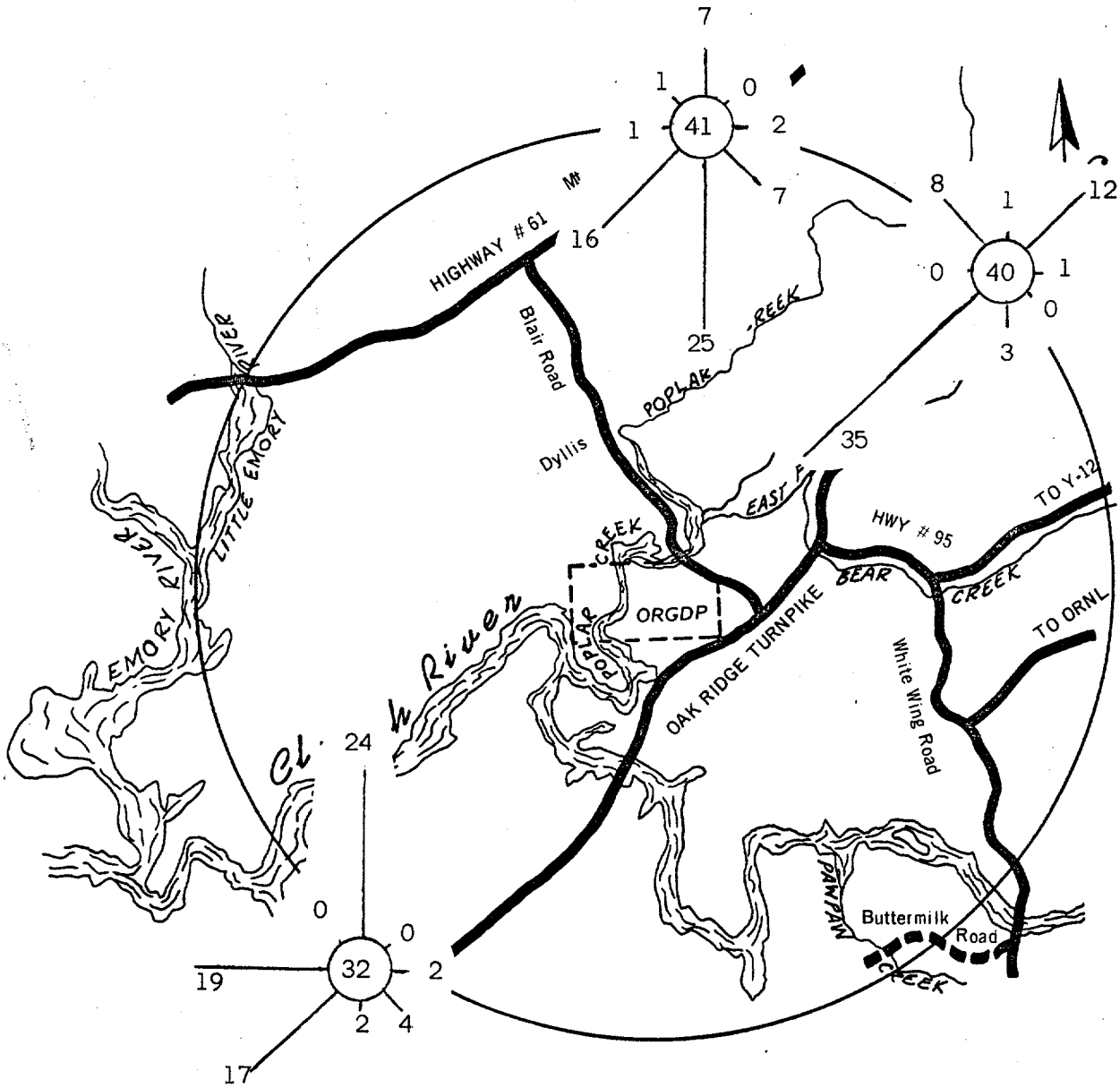
SPRING 1965

Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.001	0.7
Lawnville	0.001	0.7
Credit Union	0.002	1.0
All Stations	0,002	0.8
MPC_a	0.040	20.0

FIGURE I



All Stations



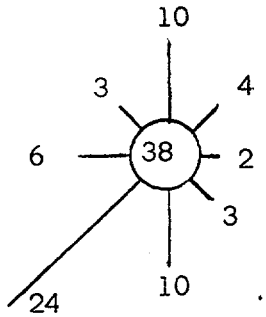
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP

AIR

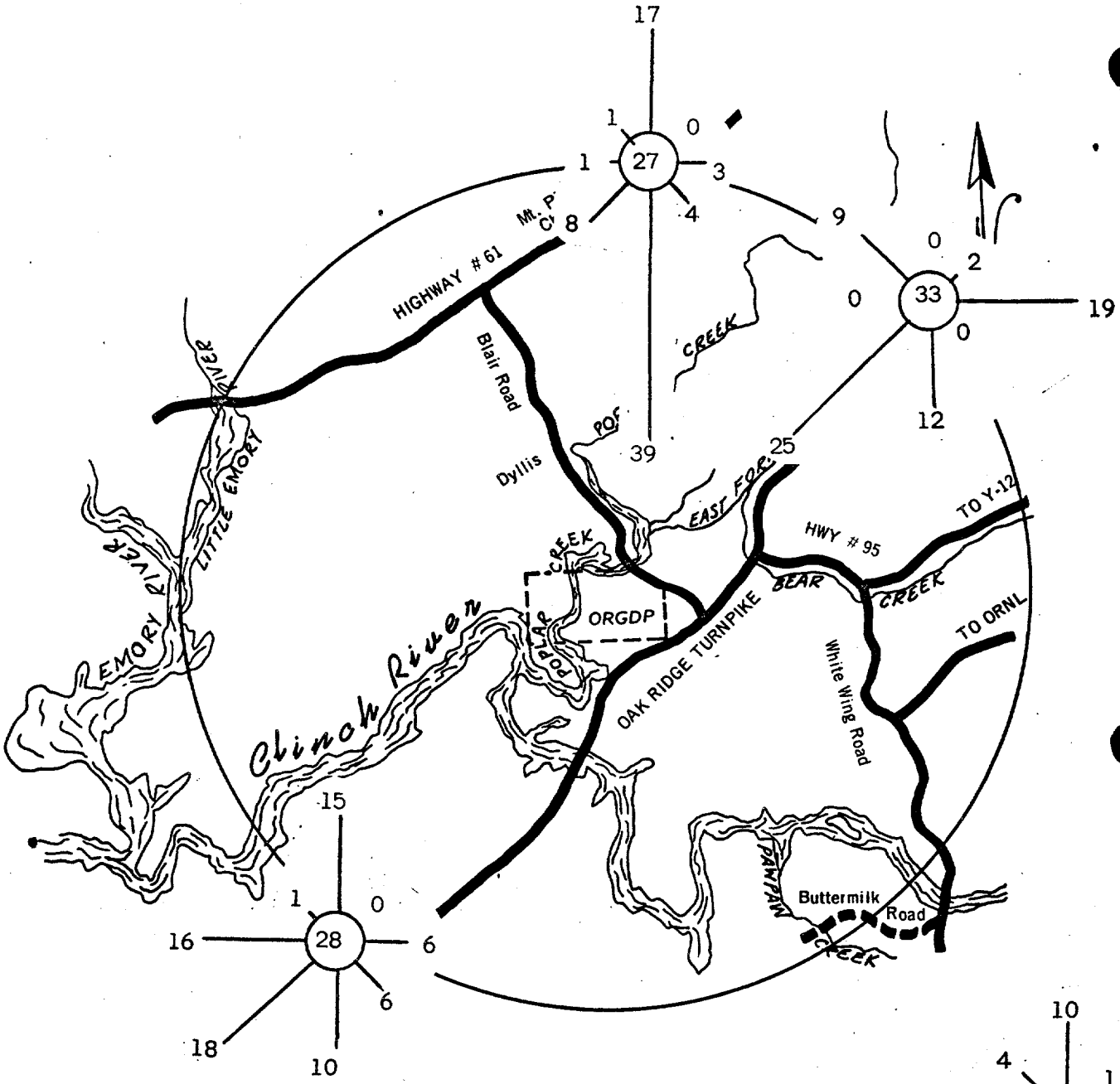
JANUARY - JUNE 1965 ▼Sampling Location - Five Miles from Plant

Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.001	0.6
Lawnville	0.002	0.9
Credit Union	0.002	0.9
All Stations	0.001	0.8
MPC_a	0.040	20.0

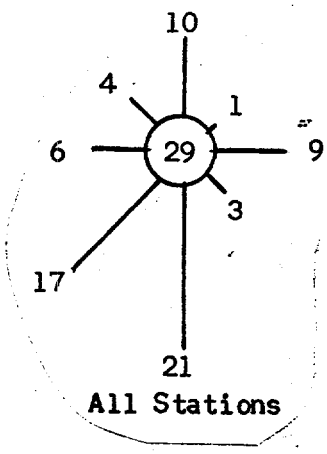
FIGURE I



All Stations



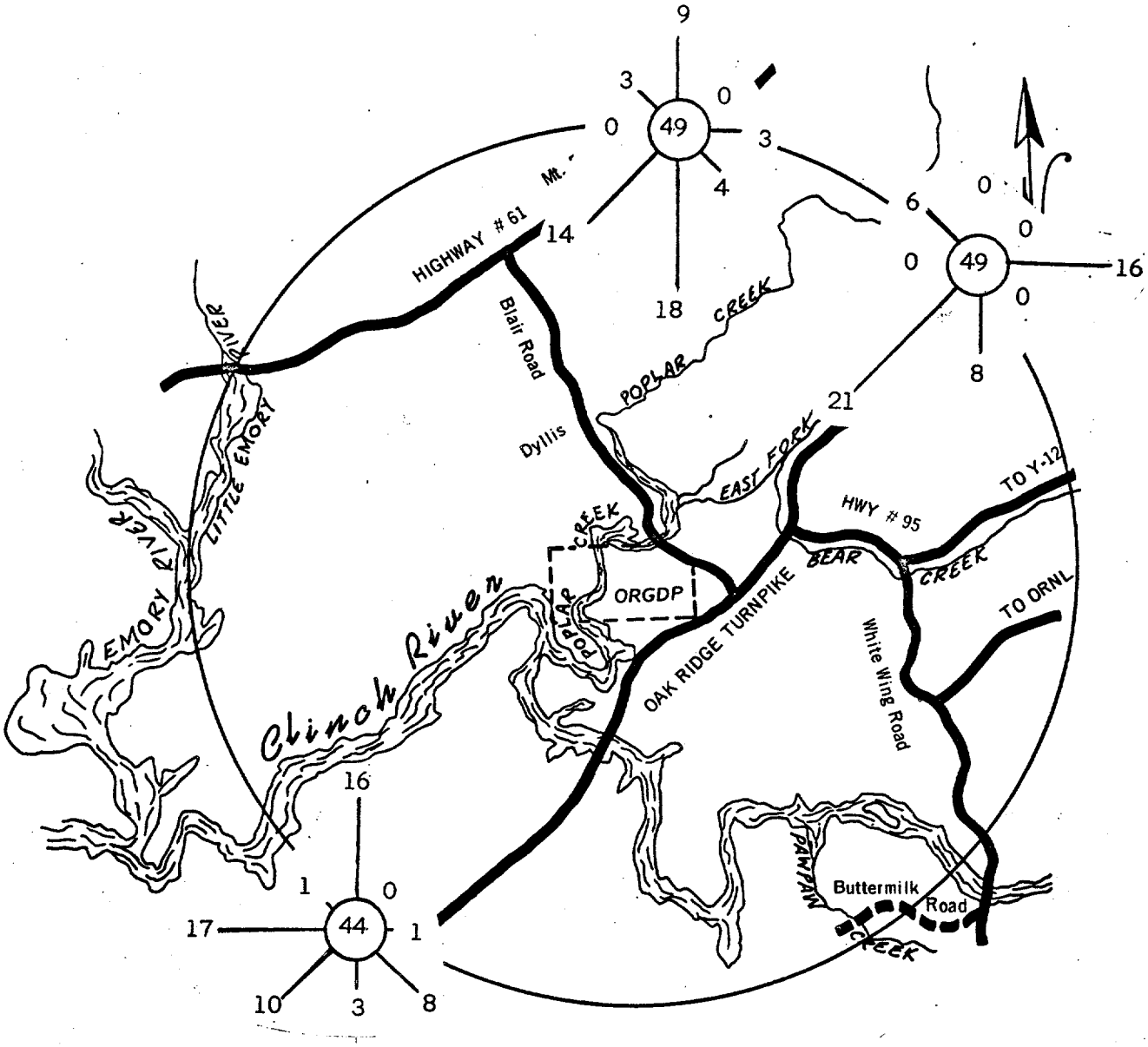
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



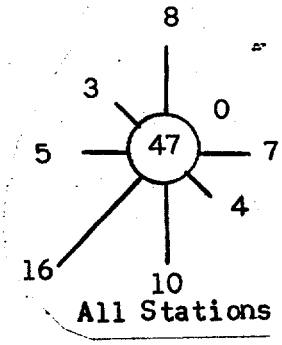
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.008	4.0
Lawnville	0.007	3.5
Credit Union	0.008	4.0
All Stations	0.008	4.0
MPC_a	0.040	20.0

FIGURE I

SPRING -- 1964



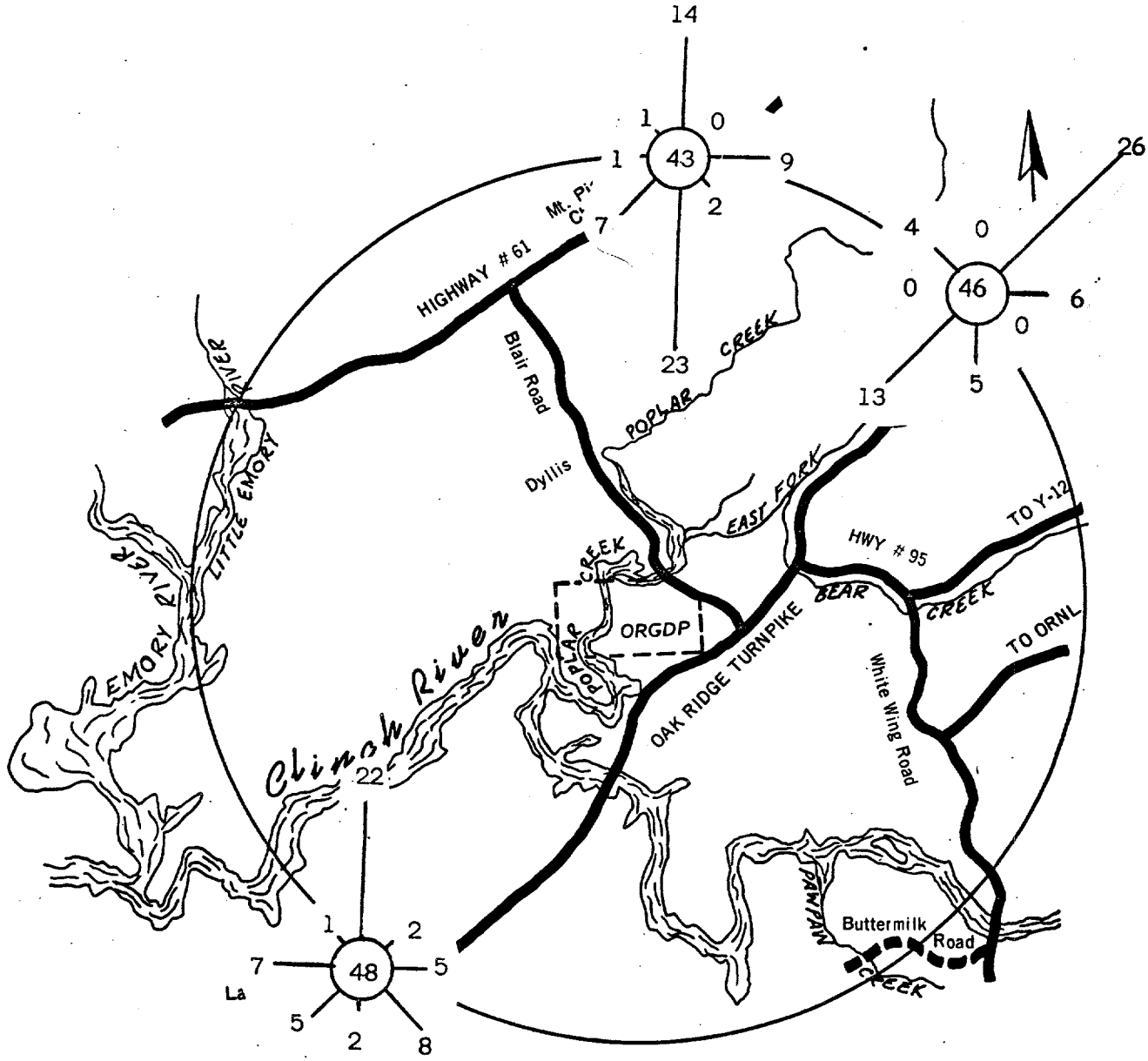
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



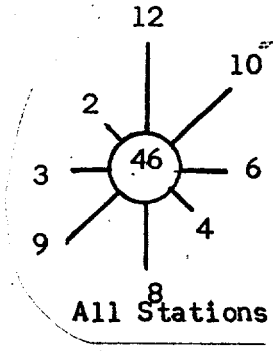
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.003	1.5
Lawnville	0.005	2.5
Credit Union	0.003	1.5
All Stations	0.004	2.0
MPC_a	0.040	20.0

FIGURE I

SUMMER -- 1964



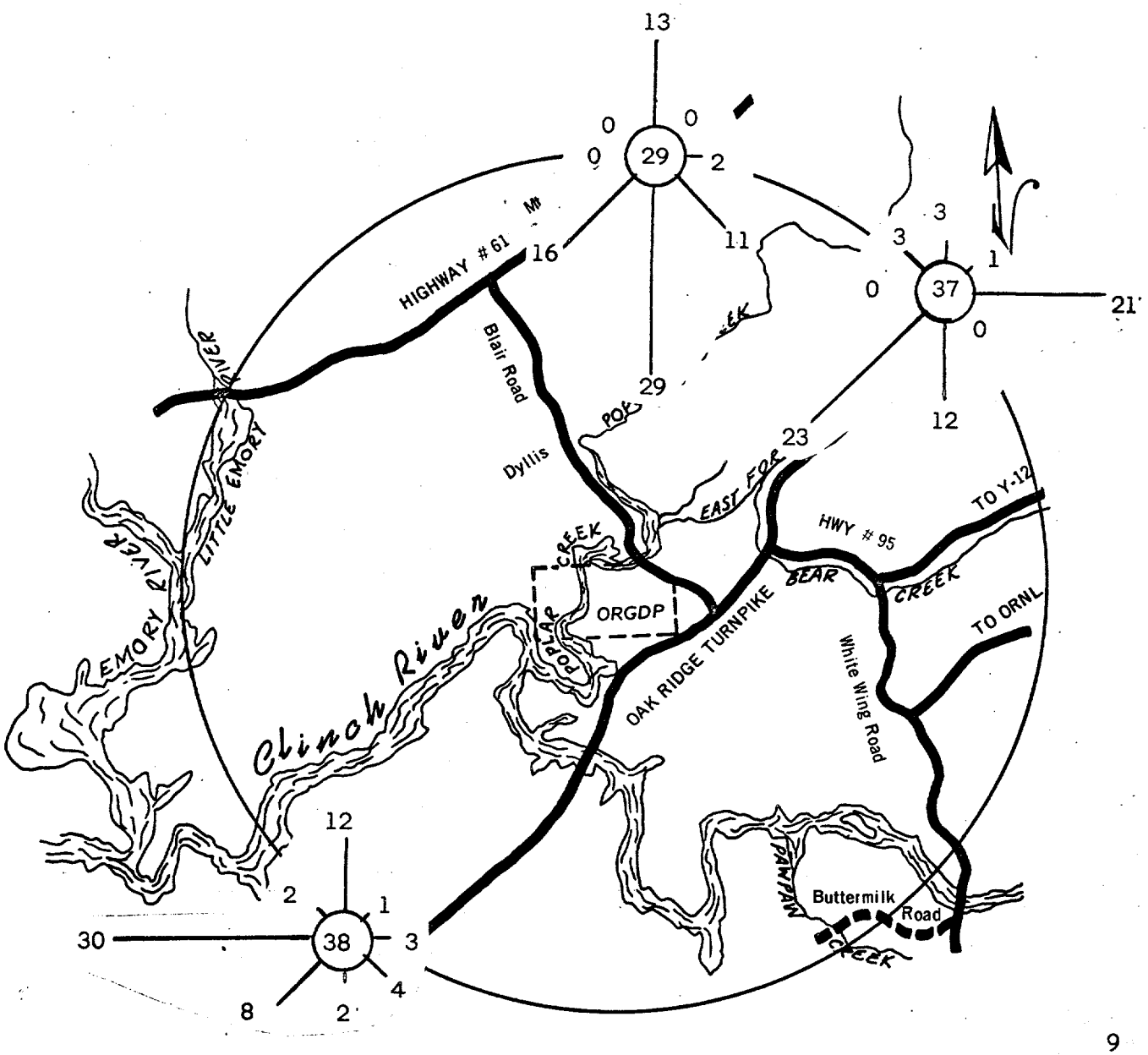
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



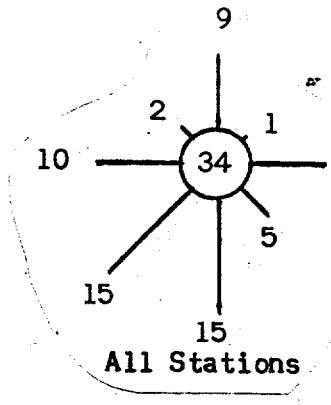
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.001	0.5
Lawnville	0.003	1.5
Credit Union	0.003	1.5
All Stations	0.002	1.0
MPC_a	0.040	20.0

FIGURE I

FALL -- 1964



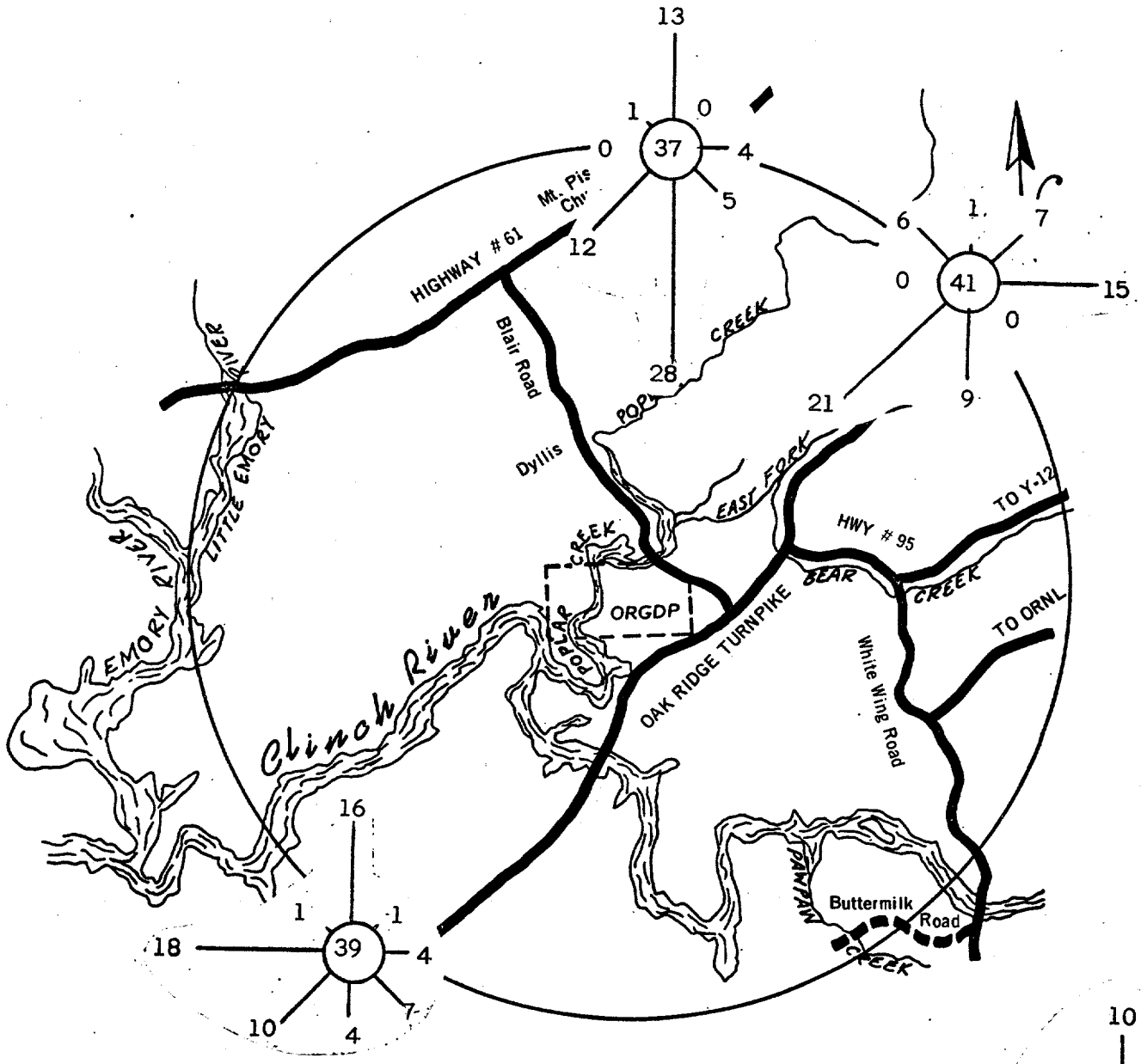
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant

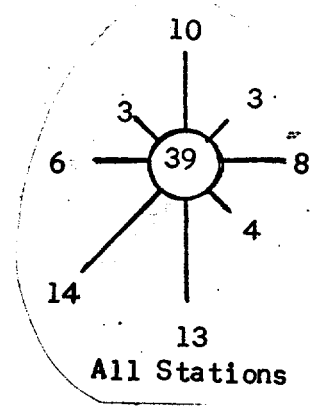


Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Lawnville	0.008	4.0
Credit Union	0.008	4.0
All Stations	0.007	3.5
MPC_a	0.040	20.0

FIGURE I

WINTER -- 1964



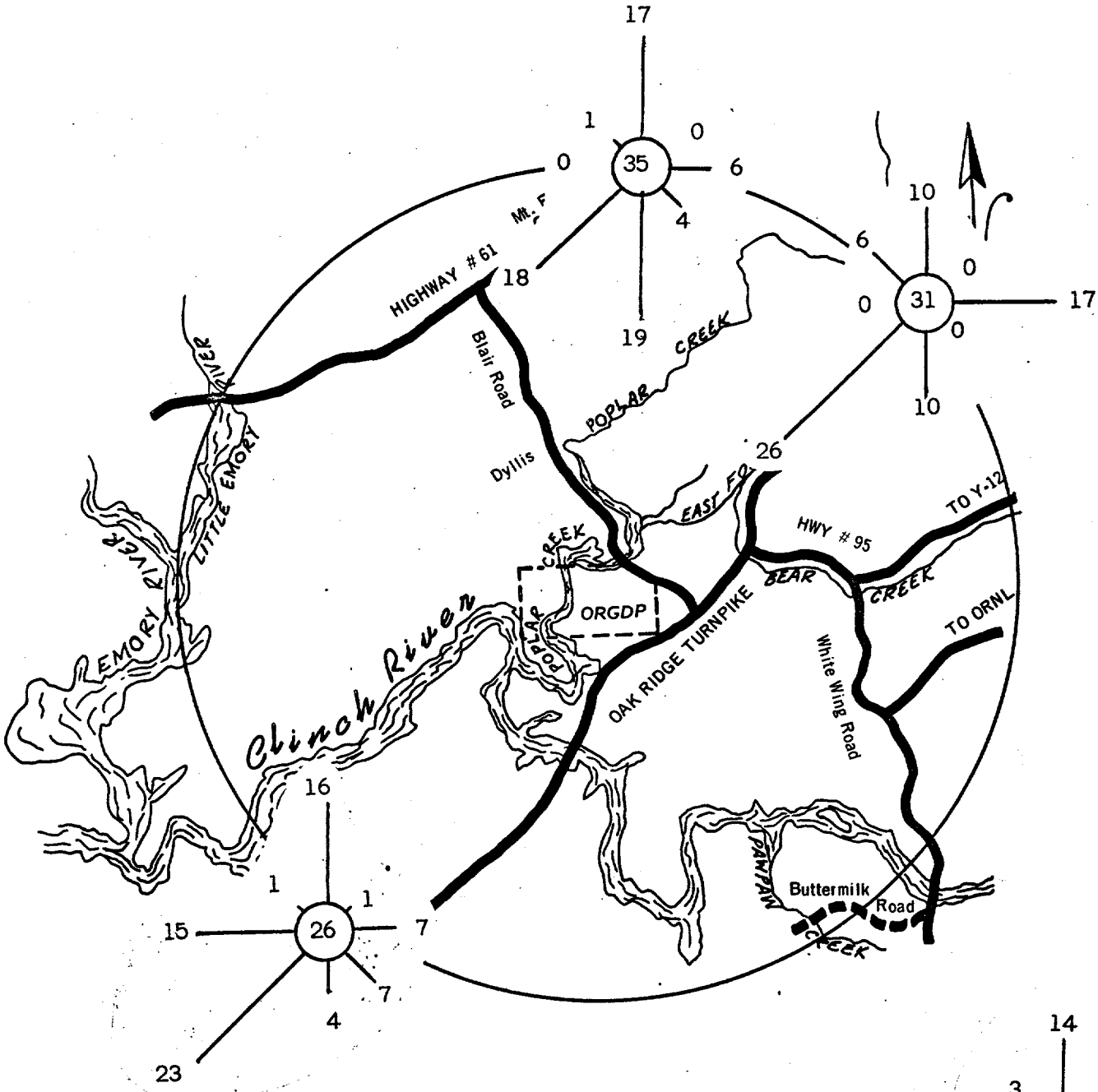


SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant

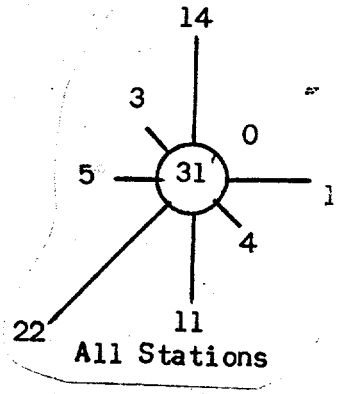
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Lawnville	0.006	3.0
Credit Union	0.006	3.0
All Stations	0.006	3.0
MPC_a	0.040	20.0

FIGURE I

CY -- 1964



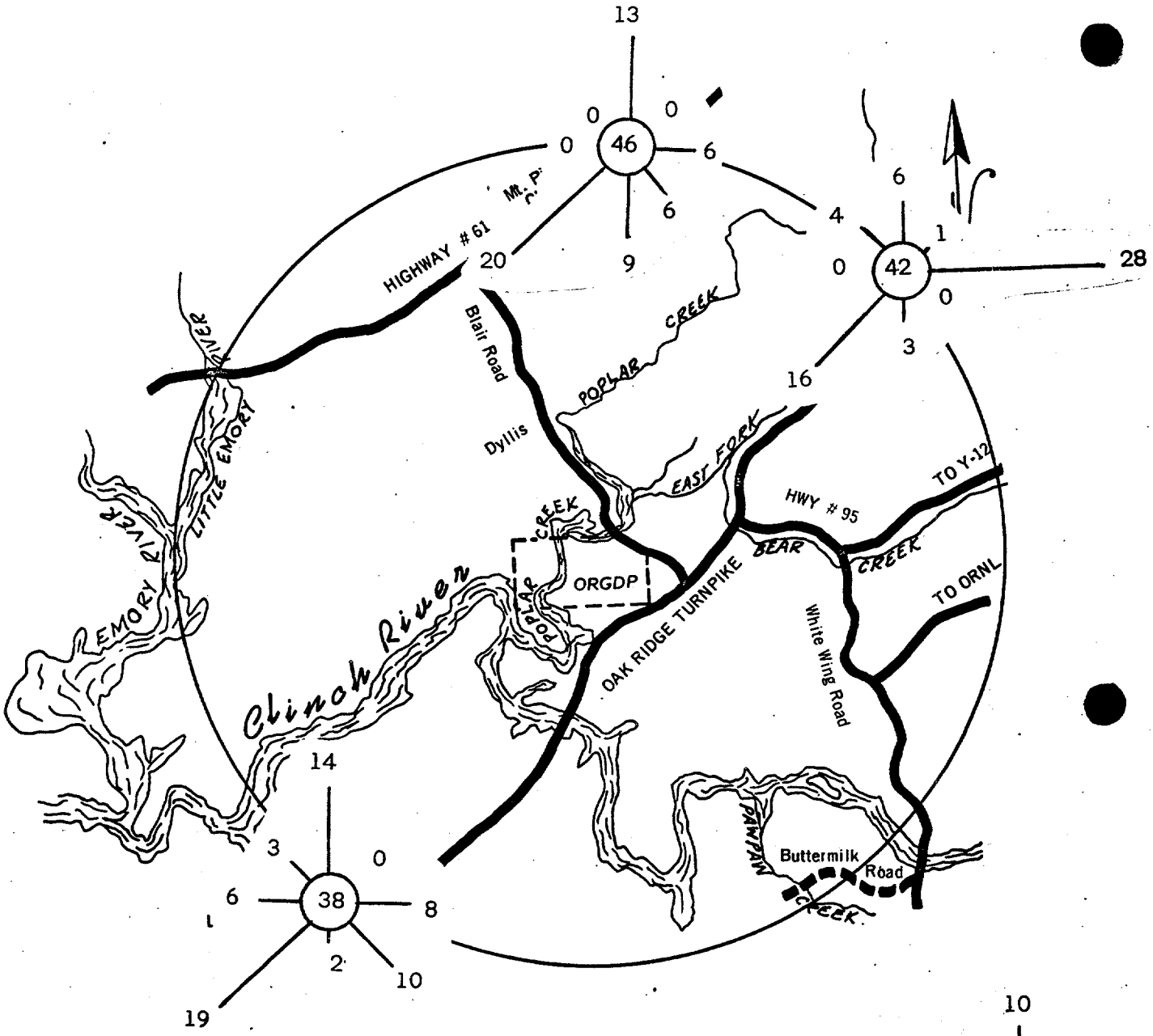
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



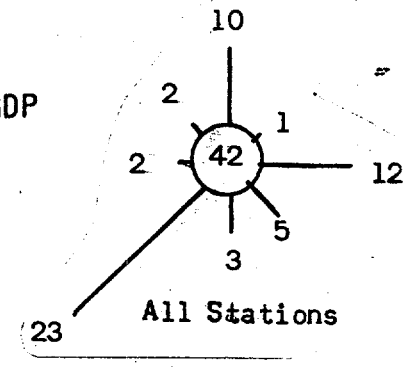
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.003	1.5
Lawnville	0.006	3.0
Credit Union	0.003	1.5
All Stations	0.004	2.0
MPC_a	0.040	20.0

FIGURE I

SPRING -- 1963



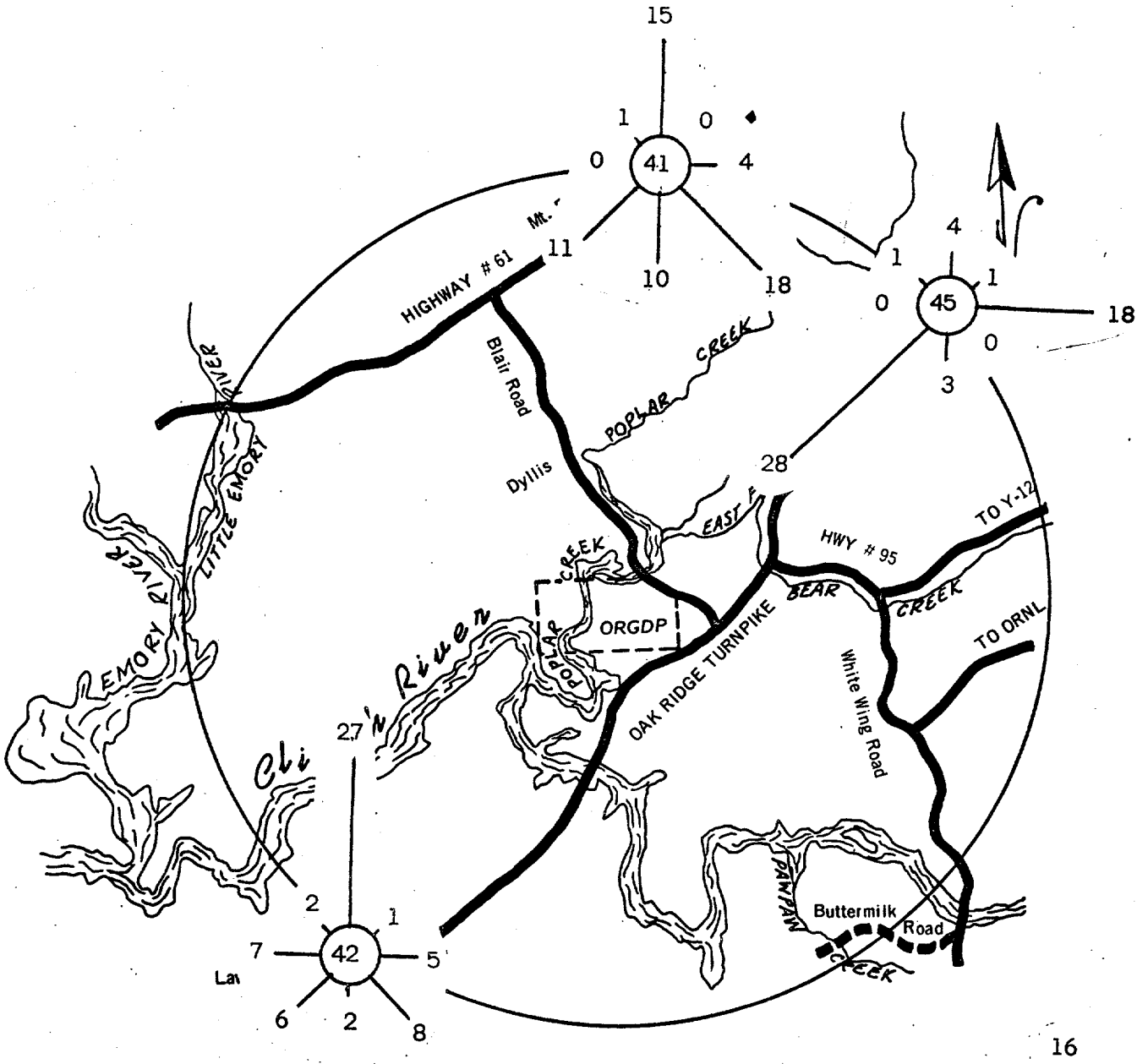
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



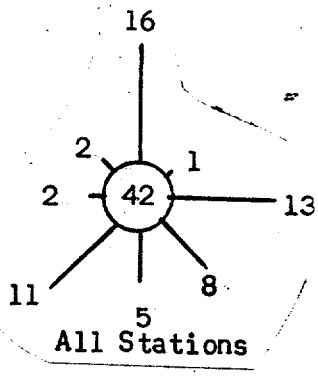
Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.004	2.0
Lawnville	0.005	2.5
Credit Union	0.010	5.0
All Stations	0.006	3.0
MPC_a	0.040	20.0

FIGURE 1

SUMMER -- 1963



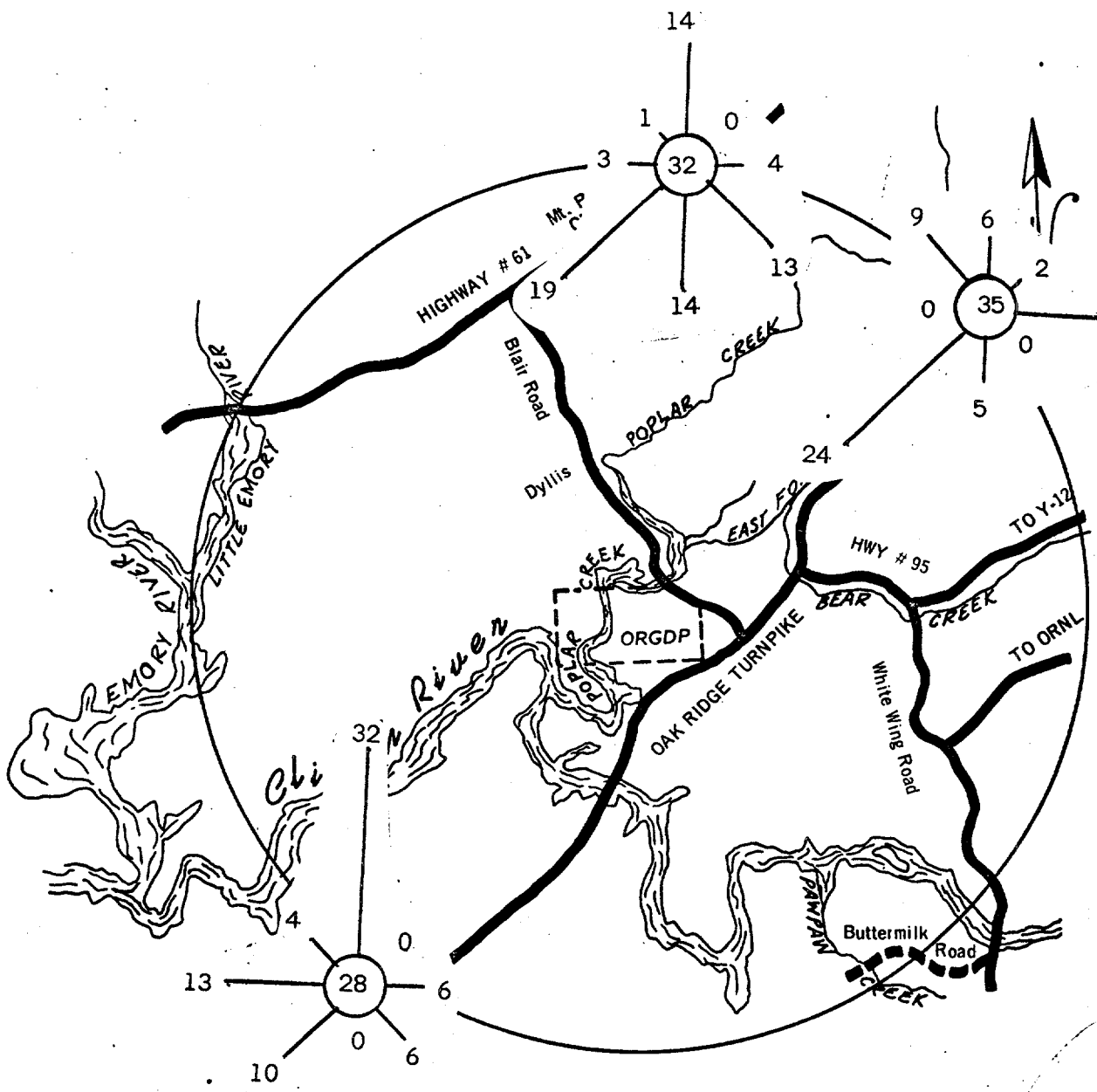
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant

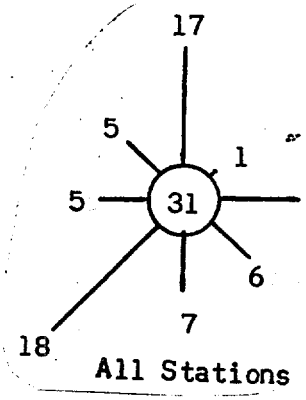


Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.009	4.5
Lawnville	0.014	7.0
Credit Union	0.016	8.0
All Stations	0.013	6.5
MPC_a	0.040	20.0

FIGURE I

FALL -- 1963



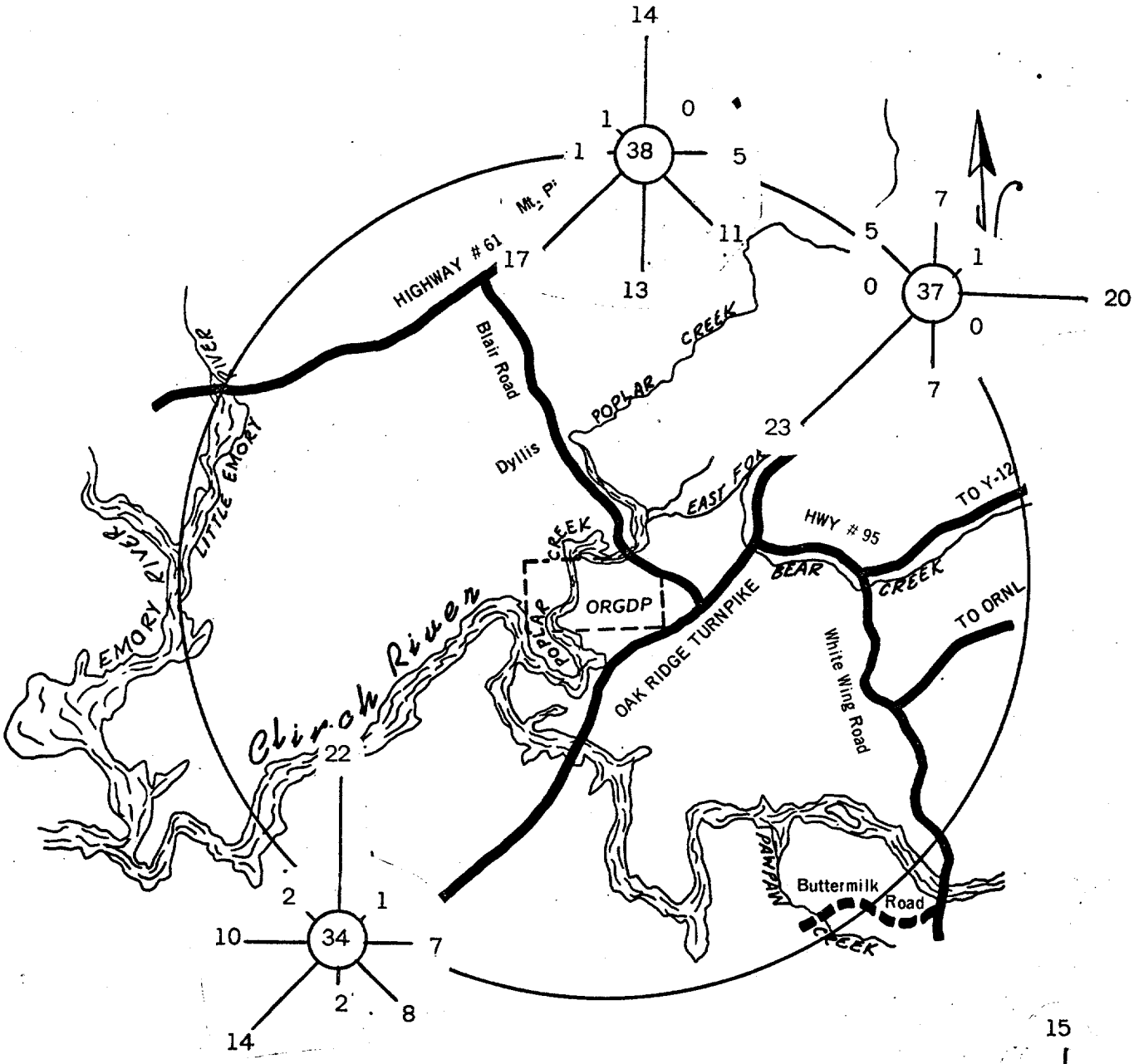


SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant

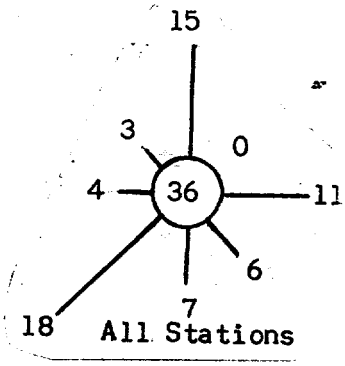
FIGURE I

WINTER -- 1963

Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Lawnville	0.006	3.0
Credit Union	0.004	2.0
All Stations	0.005	2.5
MPC_a	0.040	20.0



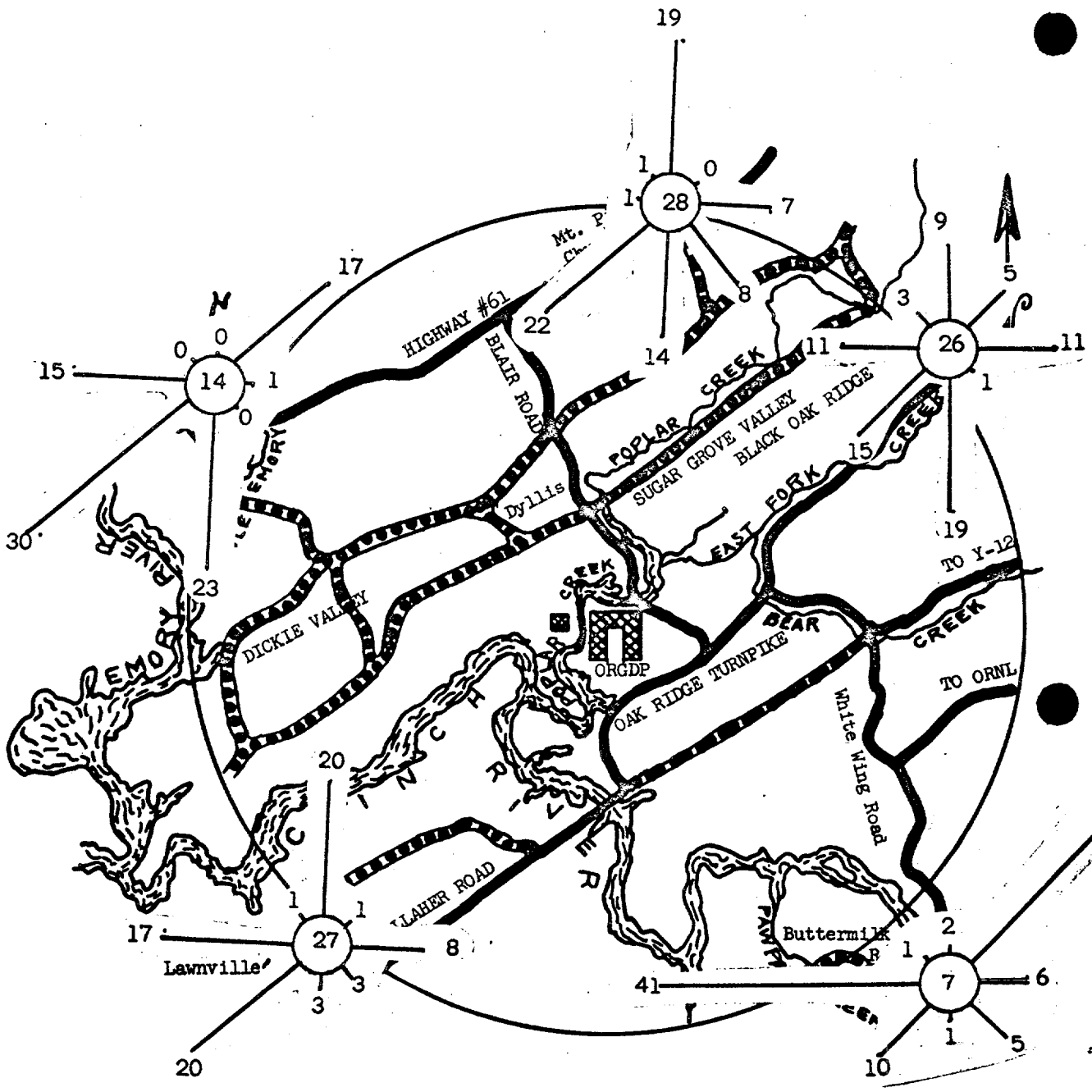
SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP
AIR
▼Sampling Location - Five Miles from Plant



Location	Average Alpha Activity c/m/ft^3	uc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Lawnville	0.009	4.5
Credit Union	0.009	4.5
All Stations	0.008	4.0
MPC_a	0.040	20.0

FIGURE I

CY -- 1963



SAMPLING POINTS OF OUTSIDE ENVIRONS -- ORGDP

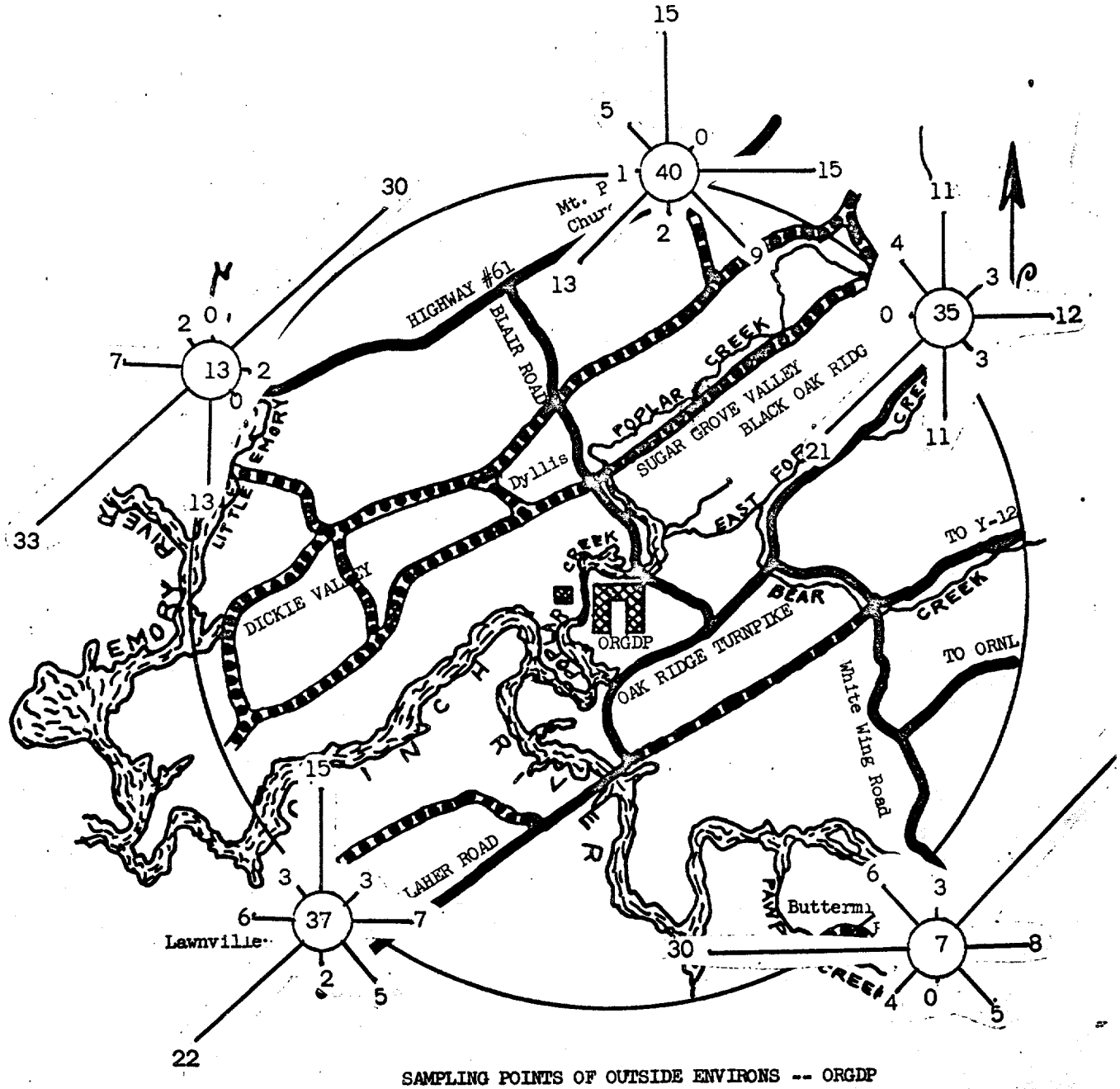
AIR

▼ Sampling Location - Five Miles from Plant

FIGURE 1

SPRING-1962

Location	Average Alpha Activity c/m/ft³	Average Alpha Activity $\mu c/cc \times 10^{-15}$
Mt. Pisgah	0.003	1.5
Melton Hill	0.002	1.0
Lawnville	0.002	1.0
Leisz S. Sta.	0.002	1.0
Credit Union	0.002	1.0
All Stations	0.002	1.0
MPC_a (General Population)	0.013	6.7



SAMPLING POINTS OF OUTSIDE ENVIRONS -- ORGDP

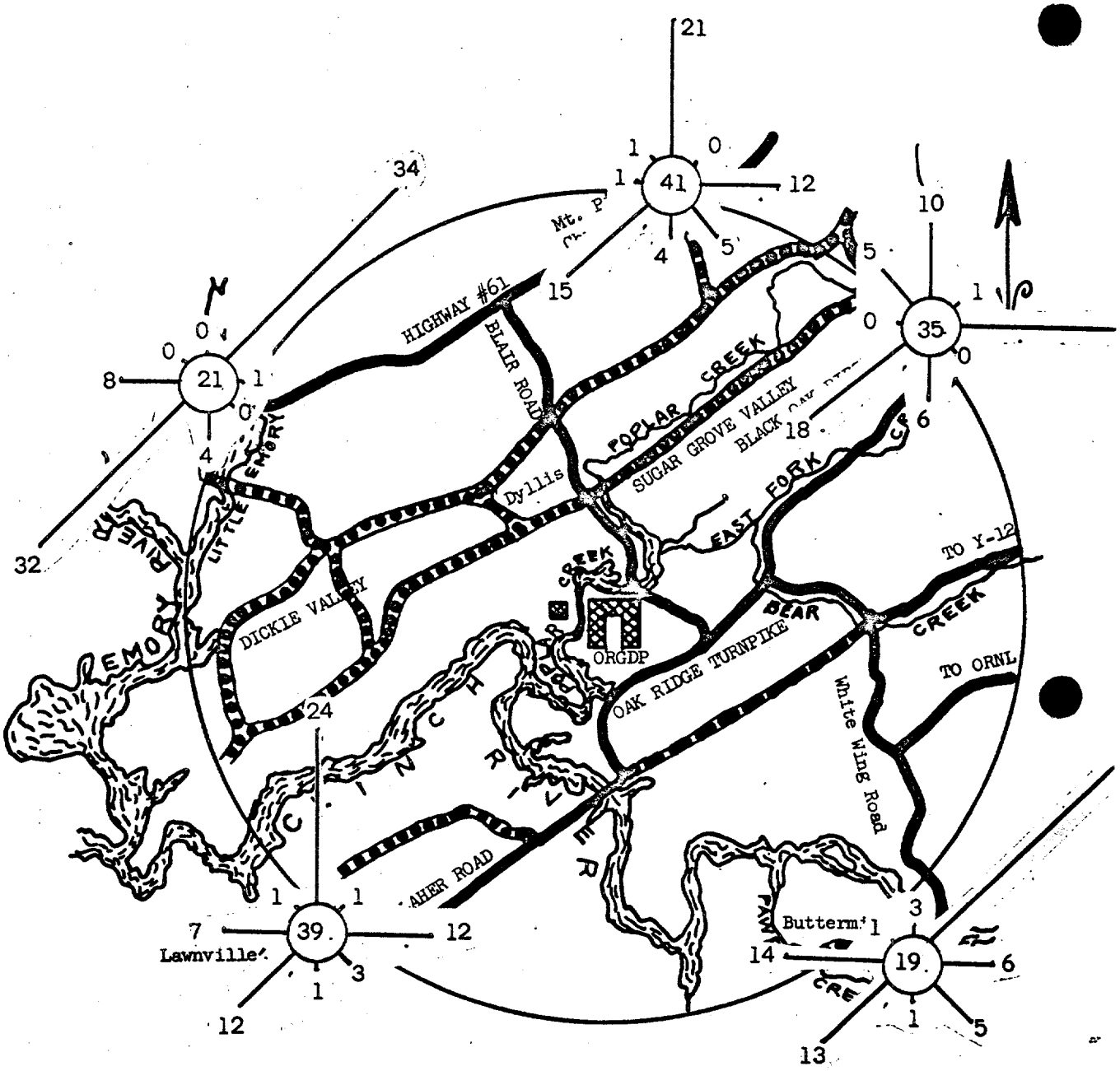
AIR

▼ Sampling Location - Five Miles from Plant

FIGURE 1

SUMMER - 1962

Location	Average Alpha Activity c/m/ft³	Average Alpha Activity μc/cc x 10^{-13}
Mt. Pisgah	0.007	3.5
Melton Hill	0.005	2.5
Lawnville	0.007	3.5
Leist Sta.	0.004	2.0
Credit Union	0.010	5.0
All Stations	0.007	3.4
MPC_a (General Population)	0.013	6.7



SAMPLING POINTS OF OUTSIDE ENVIRONS -- ORGDP

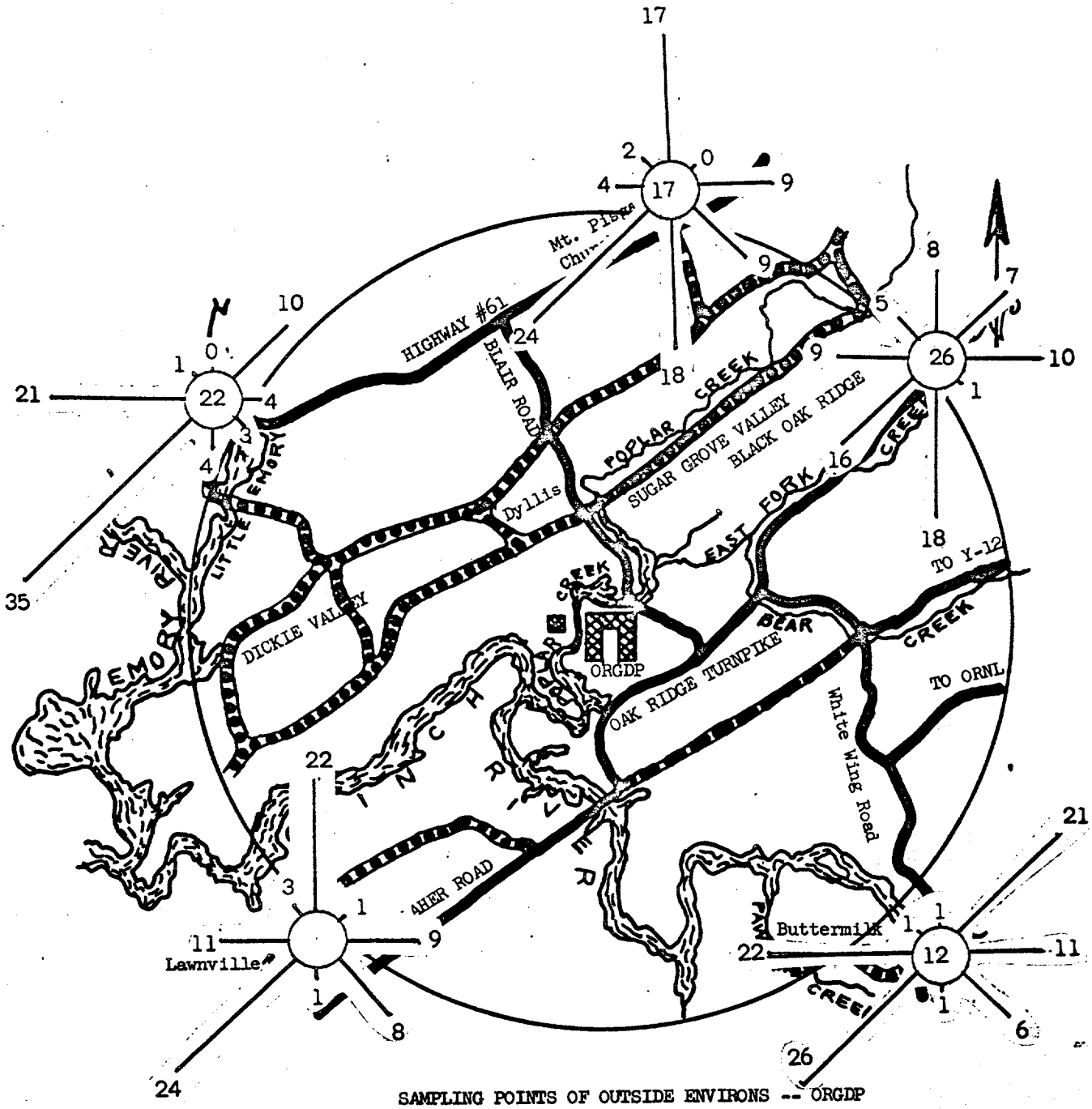
AIR

▼ Sampling Location - Five Miles from Plant

FIGURE 1

FALL - 1962

Location	Average Alpha Activity c/m/ft3	µc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Melton Hill	0.006	3.0
Lawnville	0.005	2.5
Leisz Sta.	0.008	4.0
redit Union	0.006	3.0
All Stations	0.006	3.0
MPC_a (General Population)	0.013	6.7



SAMPLING POINTS OF OUTSIDE ENVIRONS -- ORGDP

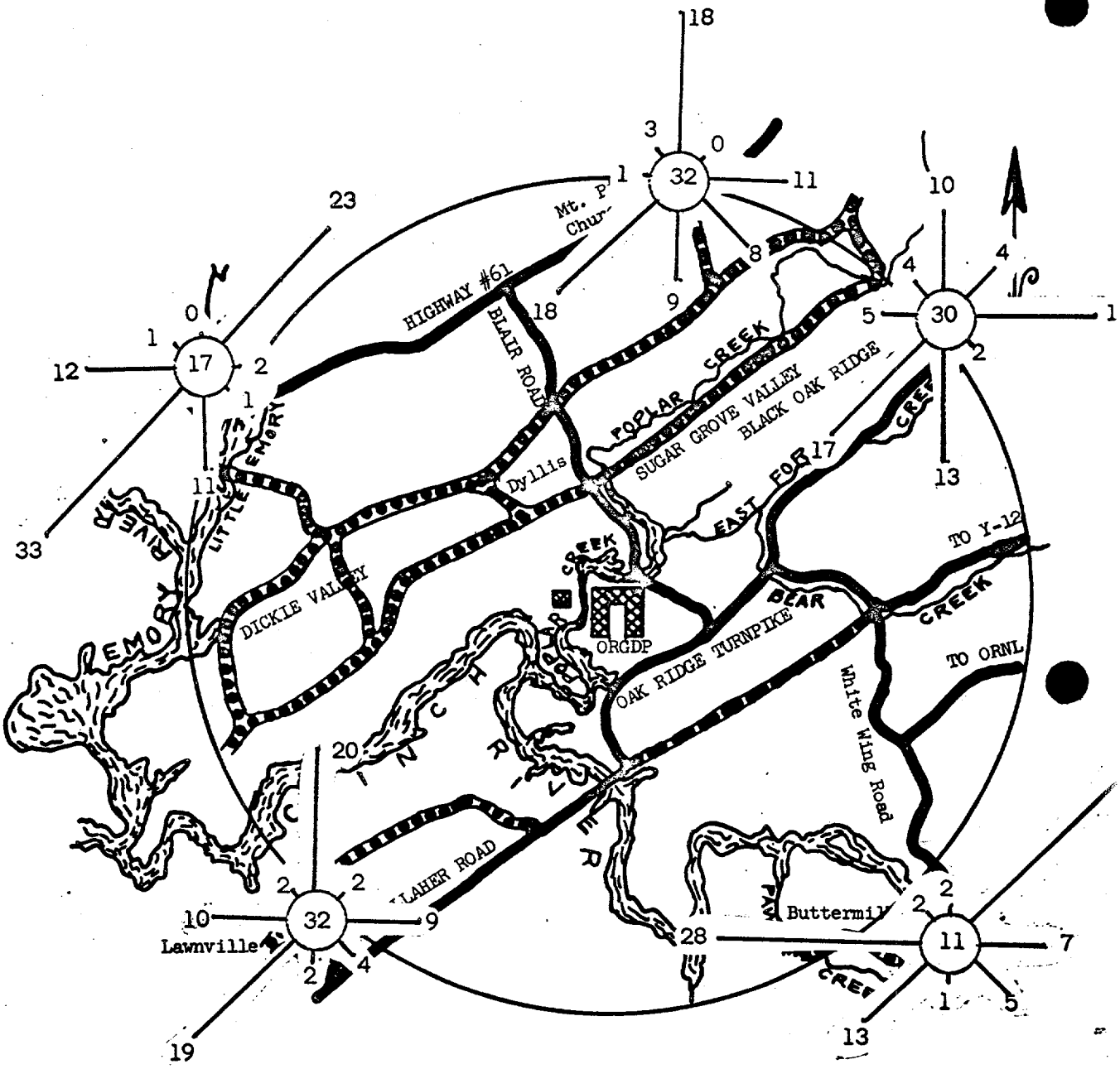
AIR

▼ Sampling Location - Five Miles from Plant

FIGURE 1

WINTER-1962

Location	Average Alpha Activity c/m/ft3	µc/cc x 10^{-15}
Mt. Pisgah	0.005	2.5
Melton Hill	0.003	1.5
Lawnville	0.004	2.0
Leisz Sta.	0.004	2.0
Credit Union	0.002	1.0
All Stations	0.004	2.0
MPC_a (General Population)	0.013	6.7



SAMPLING POINTS OF OUTSIDE ENVIRONS -- ORGDP

AIR

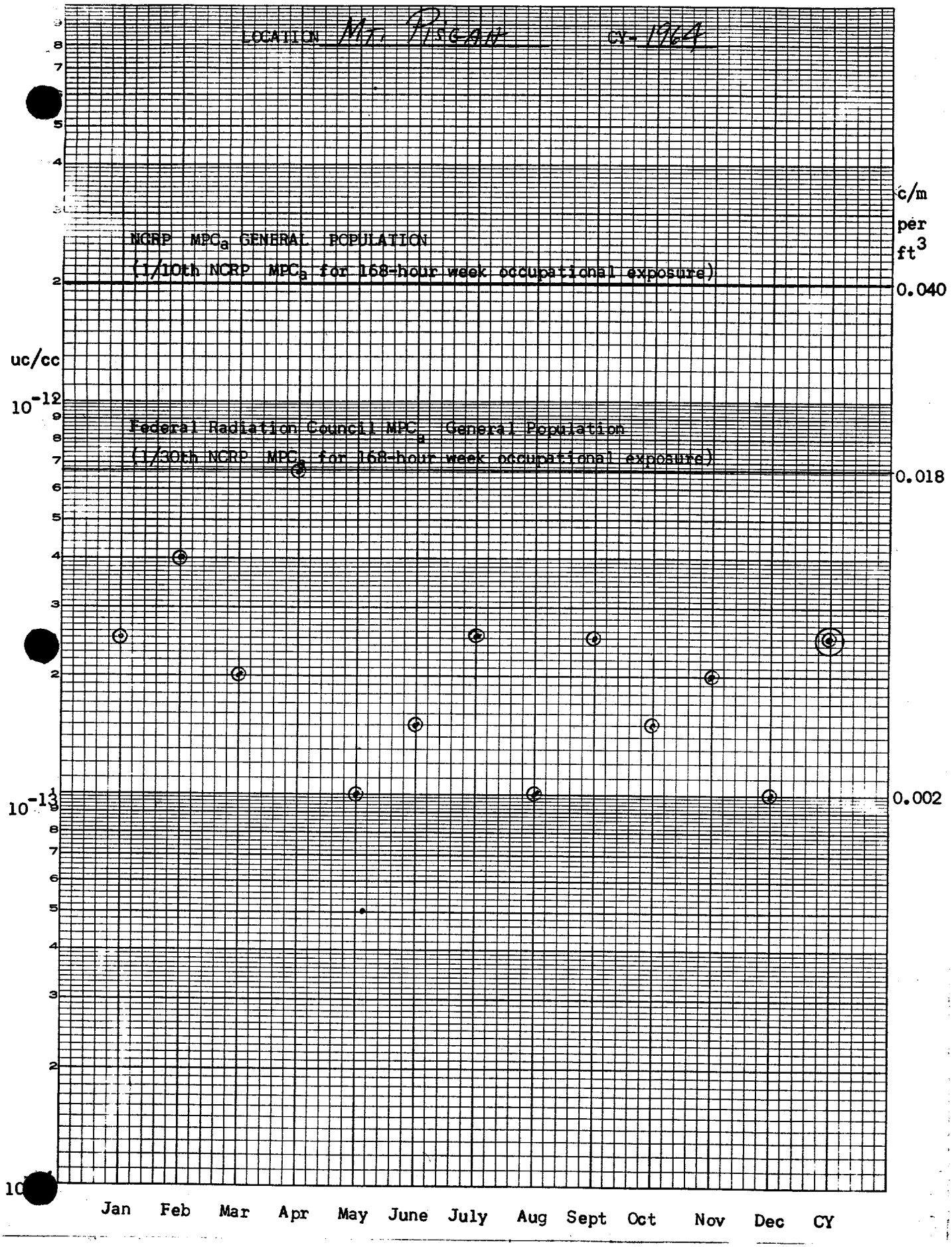
▼ Sampling Location - Five Miles from Plant

FIGURE 1

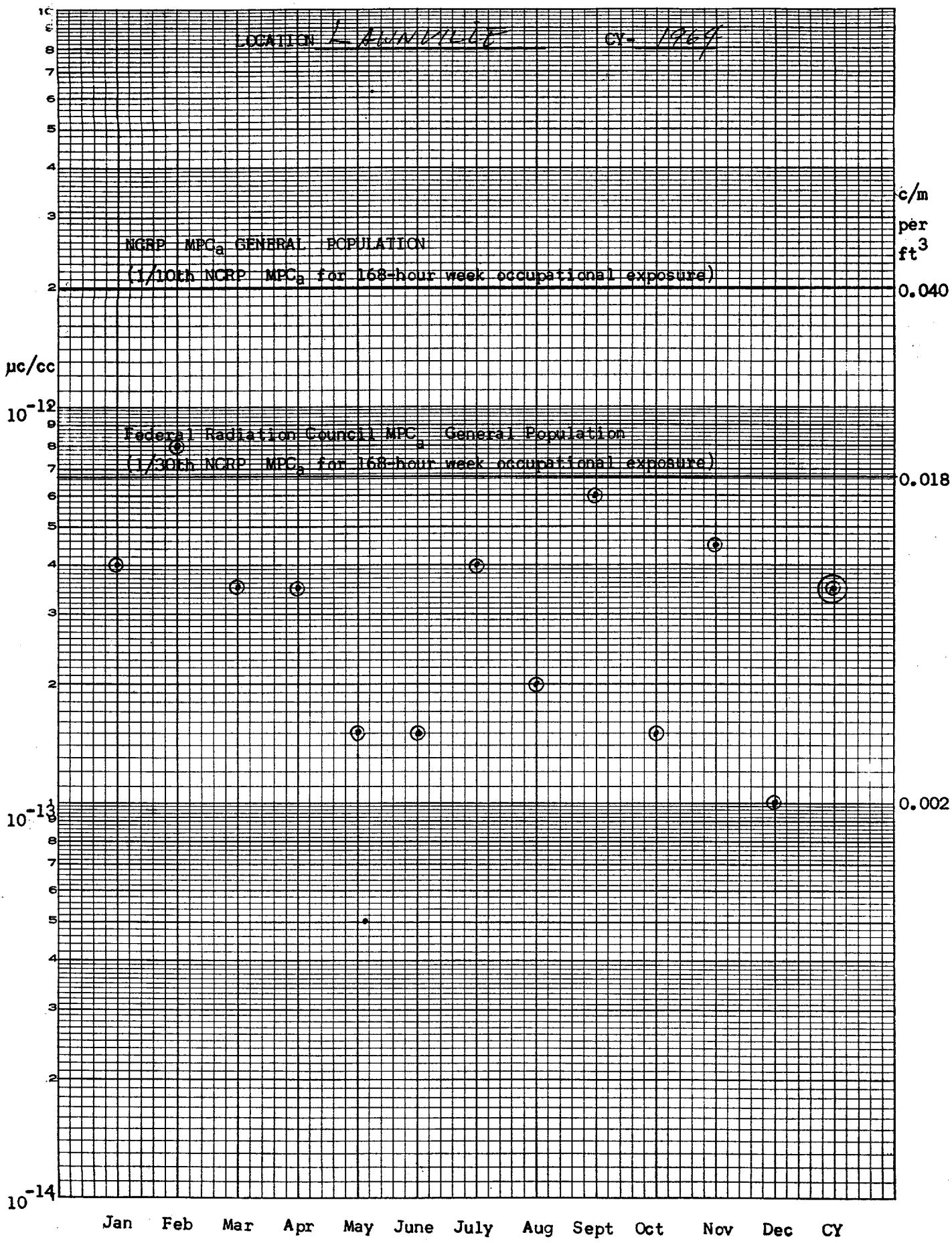
CY-1962

Location	Average Alpha Activity c/m/ft³	Average Alpha Activity μc/cc x 10^{-13}
Mt. Pisgah	0.005	2.5
Melton Hill	0.004	2.0
Lawnville	0.005	2.0
Resiz Sta.	0.005	2.5
Credit Union	0.005	2.5
All Stations	0.005	2.5
MPC_a (General Population)	0.013	6.7

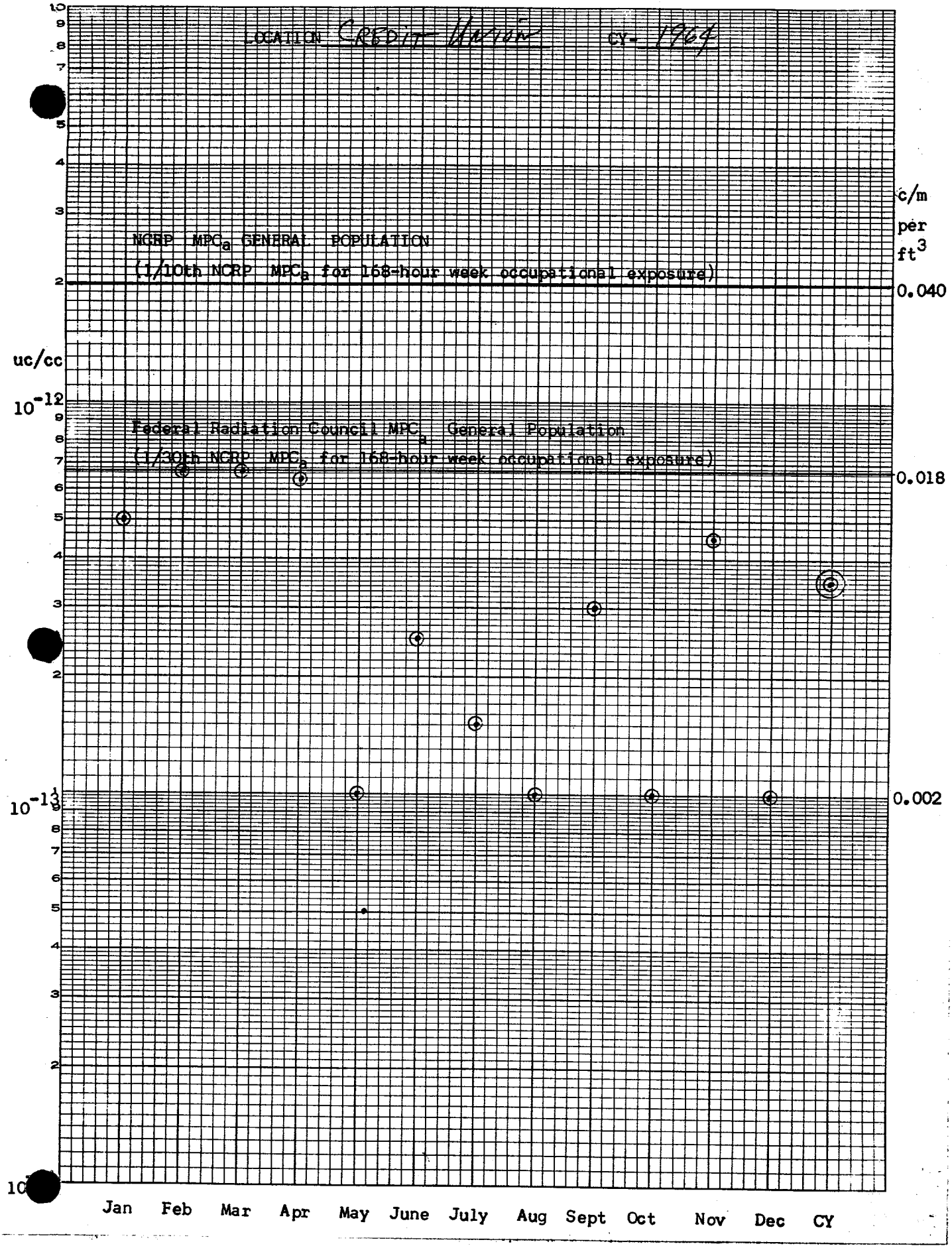
ORGDP ENVIRONMENTAL SAMPLING (AIR) --- LONG-LIVED ALPHA EMITTERS



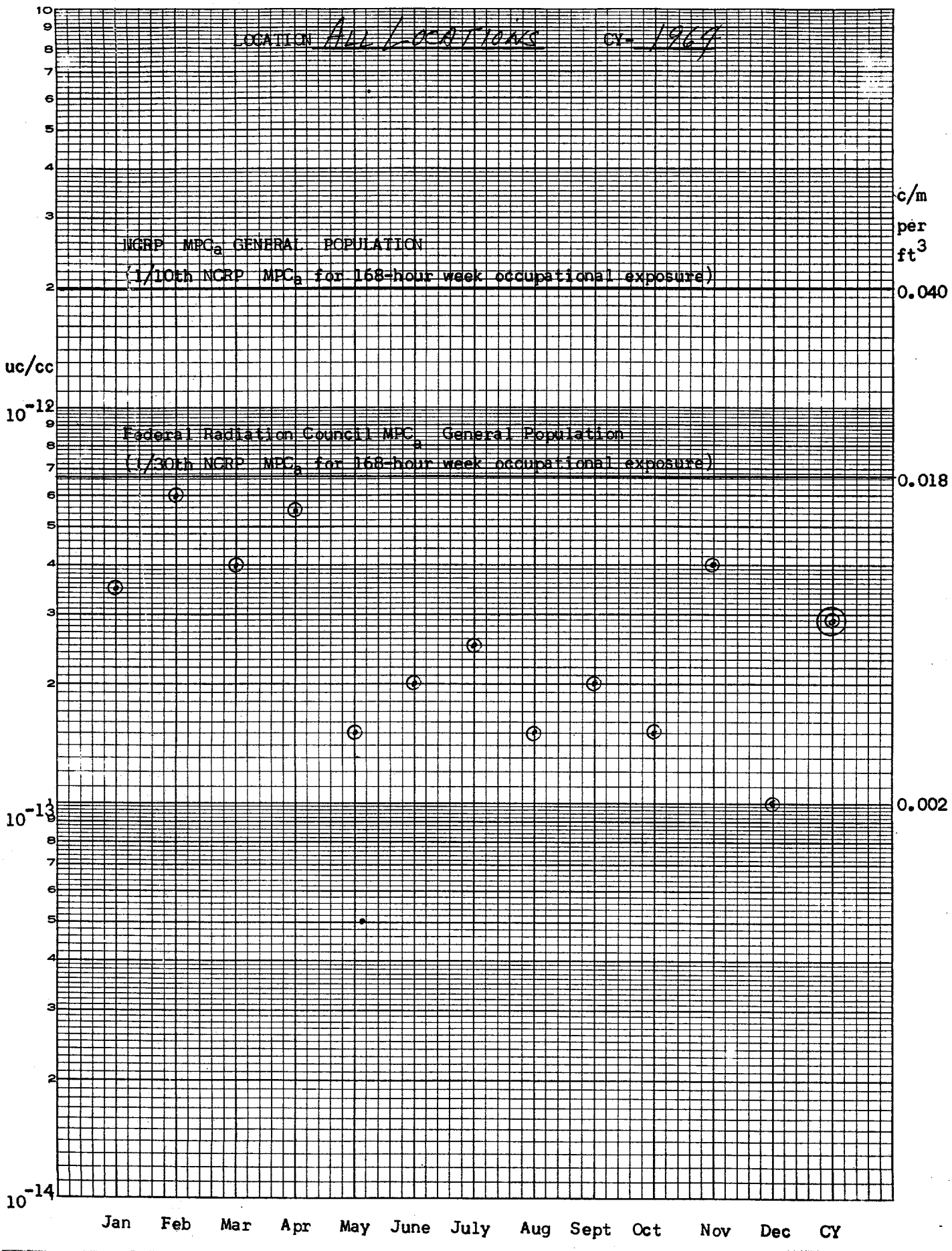
ORGDP ENVIRONMENTAL SAMPLING (AIR) --- LONG-LIVED ALPHA EMITTERS

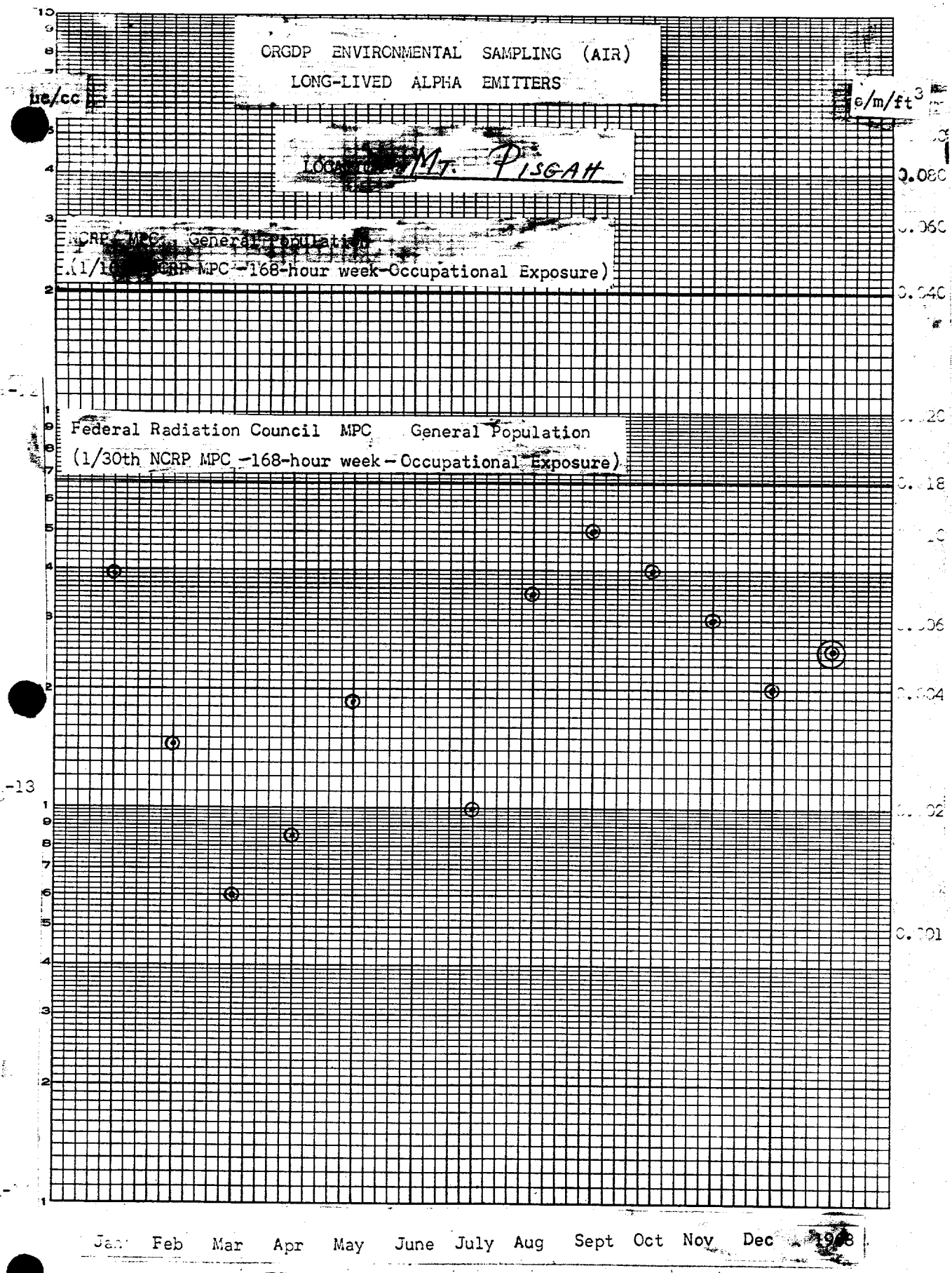


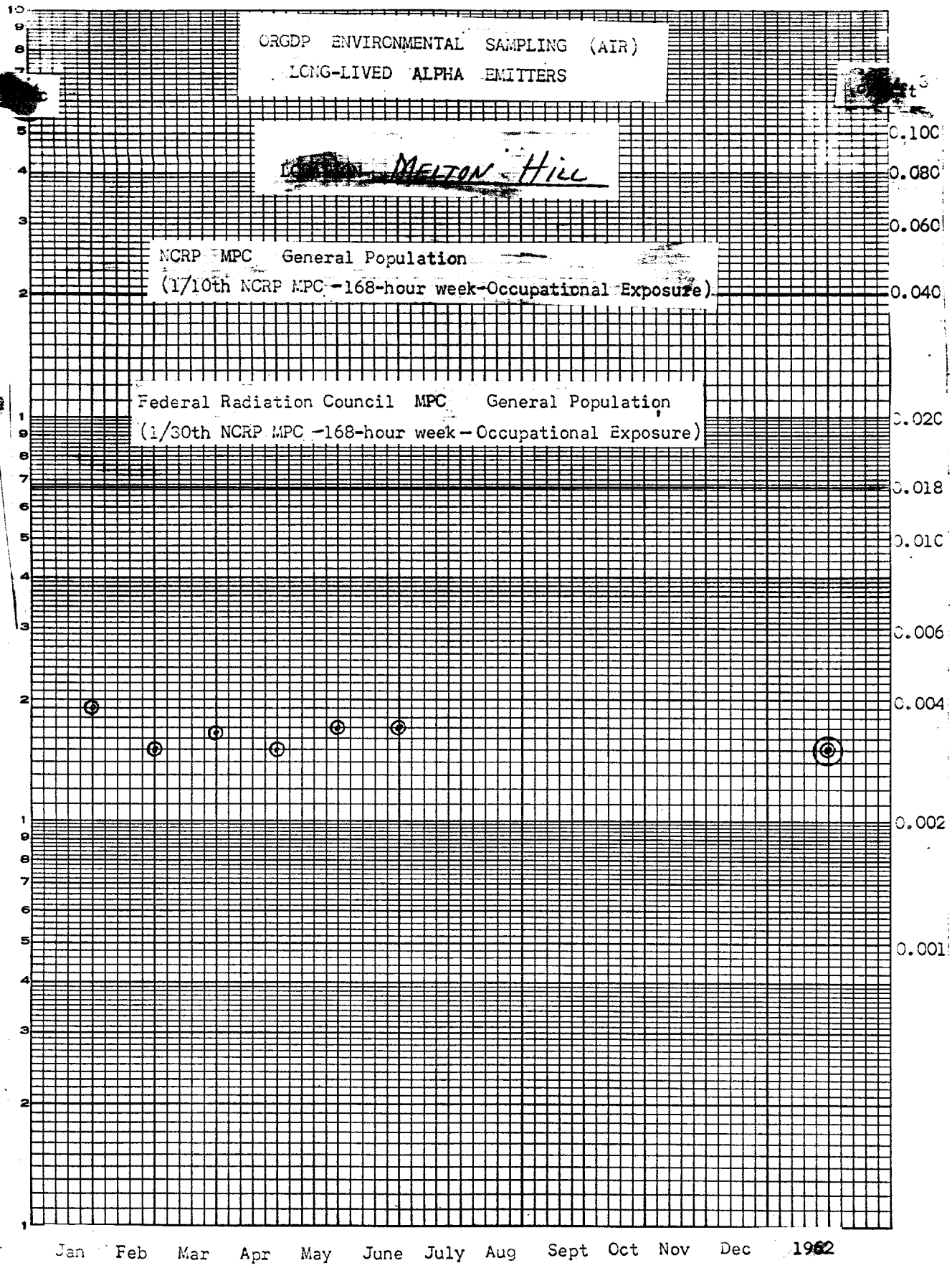
ORGDP ENVIRONMENTAL SAMPLING (AIR) --- LONG-LIVED ALPHA EMITTERS

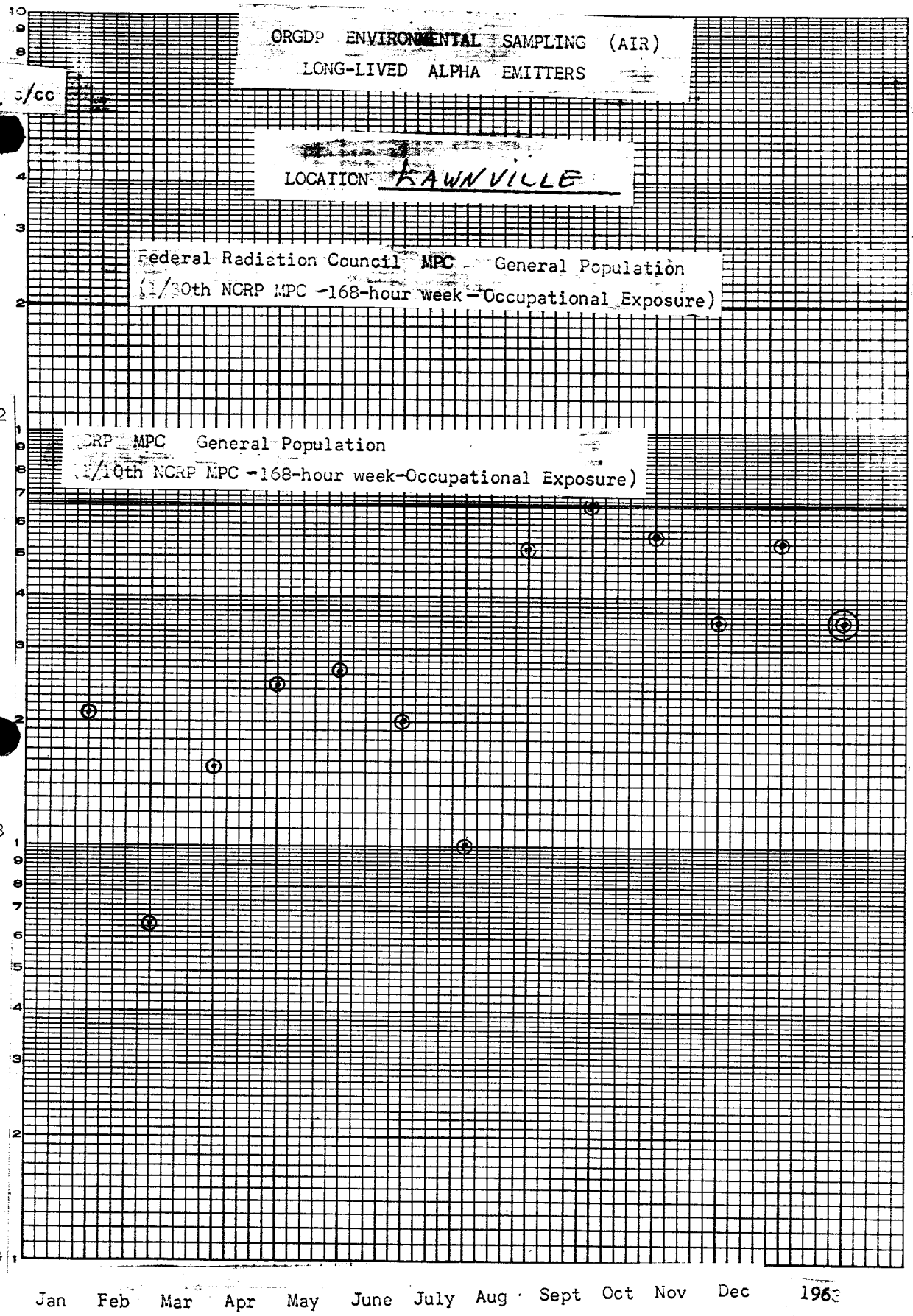


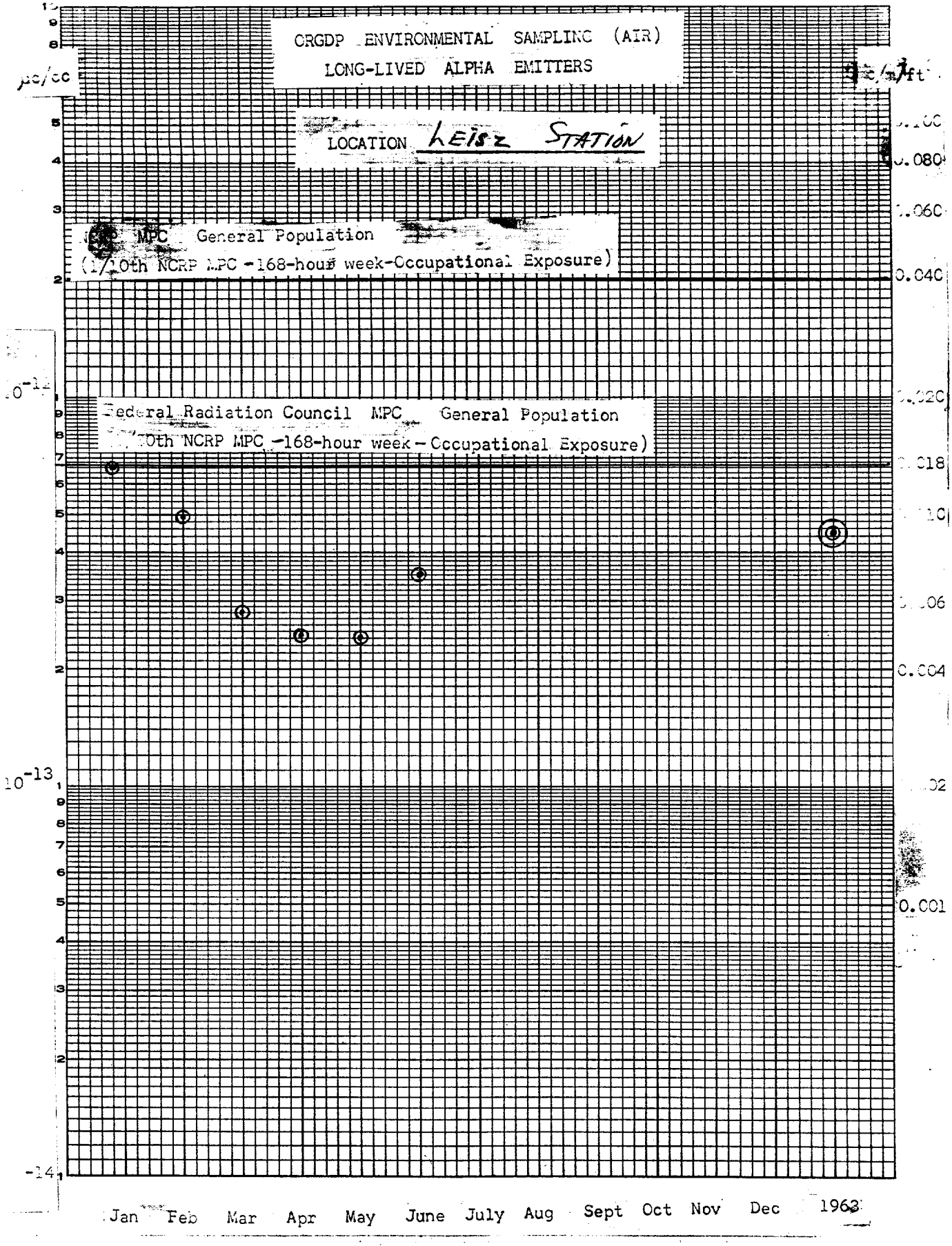
CRGDP ENVIRONMENTAL SAMPLING (AIR) --- LONG-LIVED ALPHA EMITTERS

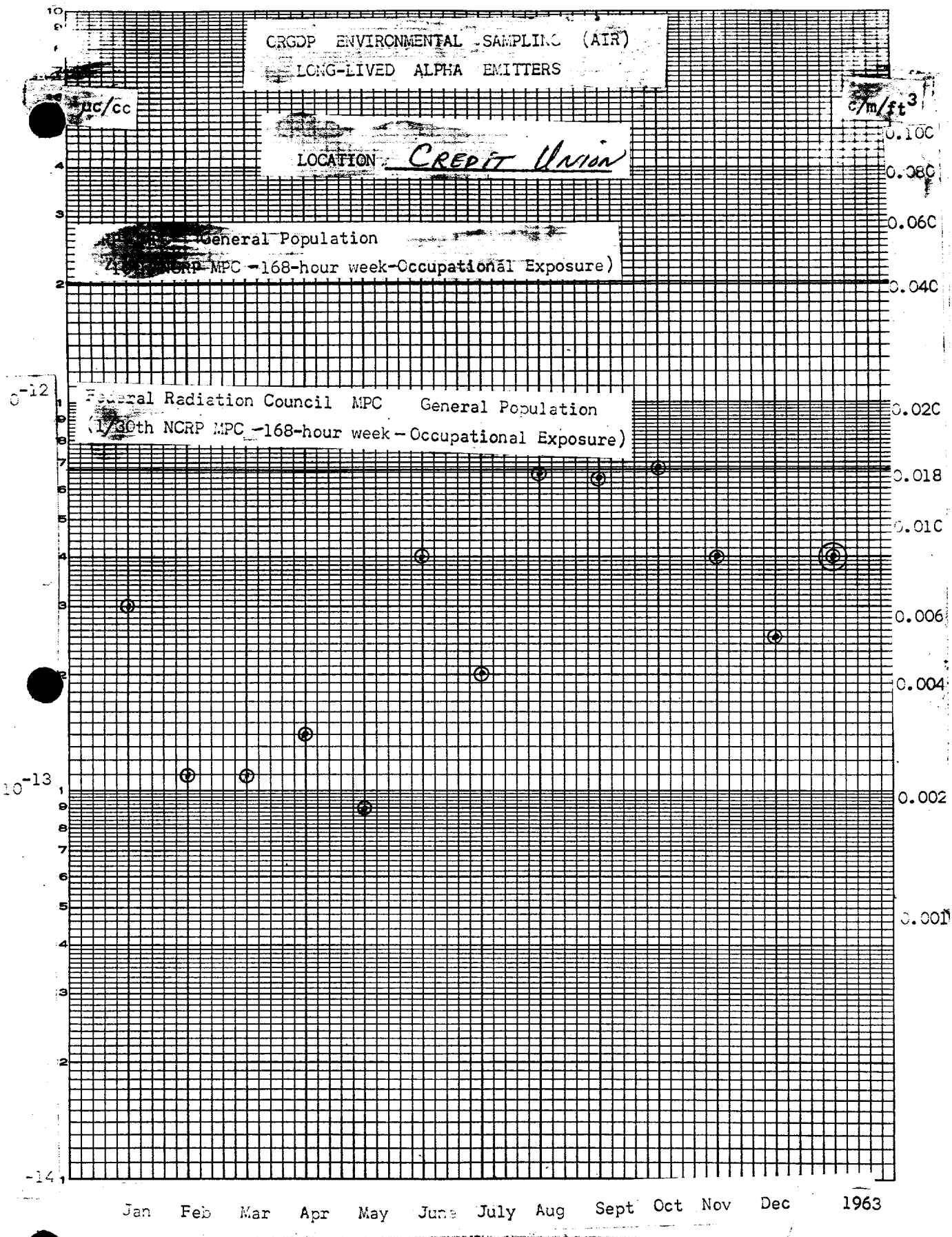


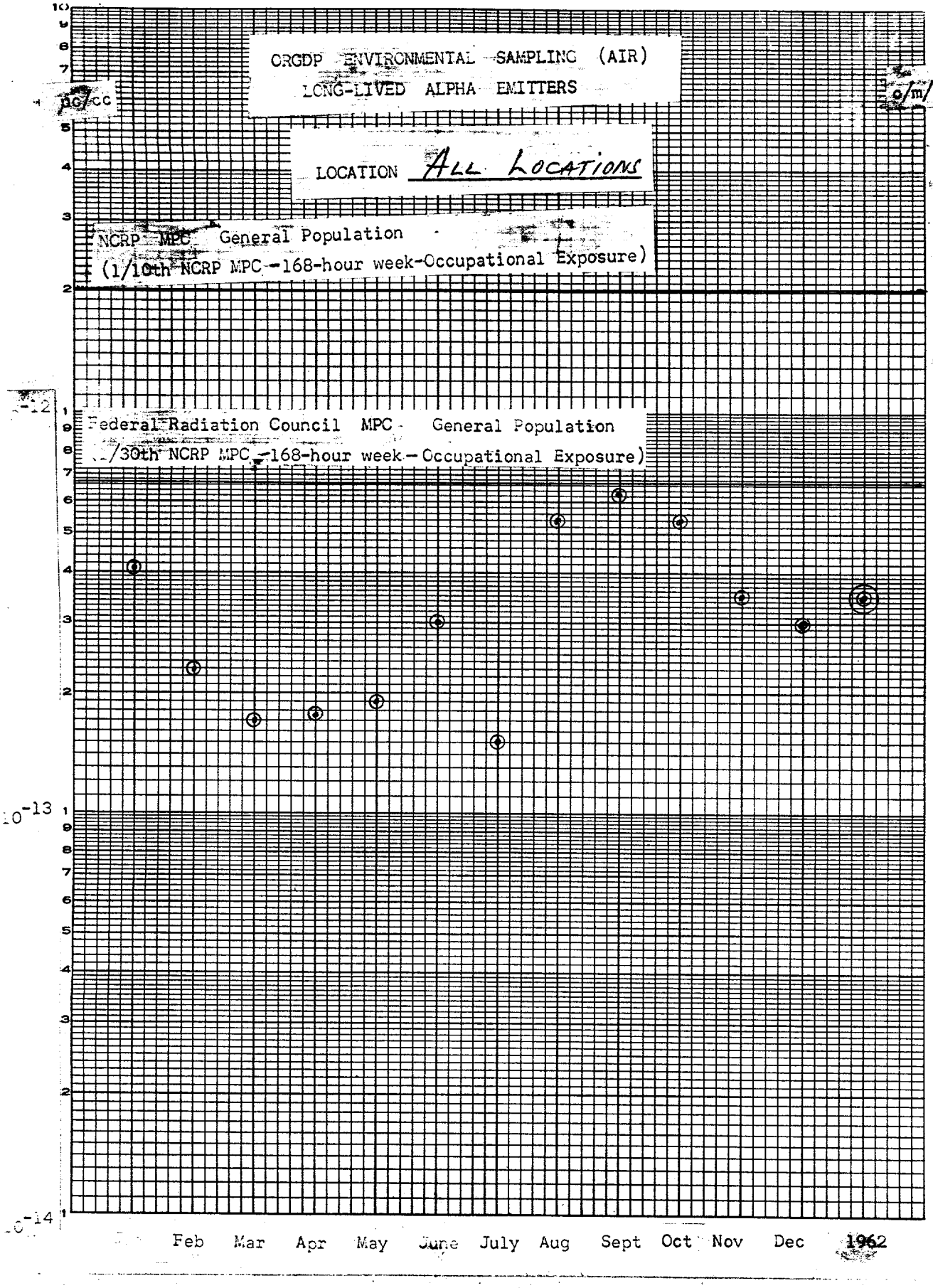

ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
μc/cc
c/m/ft3
LOCATION Mt. Pisgah
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
0.080
0.060
0.040
0.020
0.018
0.006
0.004
0.002
0.001
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec 1968


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
Melton Hill
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
0.100
0.080
0.060
0.040
0.020
0.018
0.010
0.006
0.004
0.002
0.001
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
1962


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
c/cc
LOCATION KAWNVILLE
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week-Occupational Exposure)
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
10-12
10-13
10-14
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
1963


CRGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION LEISZ STATION
μc/cc
μc/ml
MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
0.080
0.060
0.040
0.020
0.018
0.004
0.001
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
1963


CRGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
μc/cc
c/m/ft3
LOCATION: CREDIT UNION
General Population
NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
10-12
10-13
-14
0.100
0.080
0.060
0.040
0.020
0.018
0.010
0.006
0.004
0.002
0.001
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
1963


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
pc/cc
c/m/ft3
LOCATION ALL LOCATIONS
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
/30th NCRP MPC -168-hour week-Occupational Exposure)
10-12
10-13
10-14
Feb
Mar
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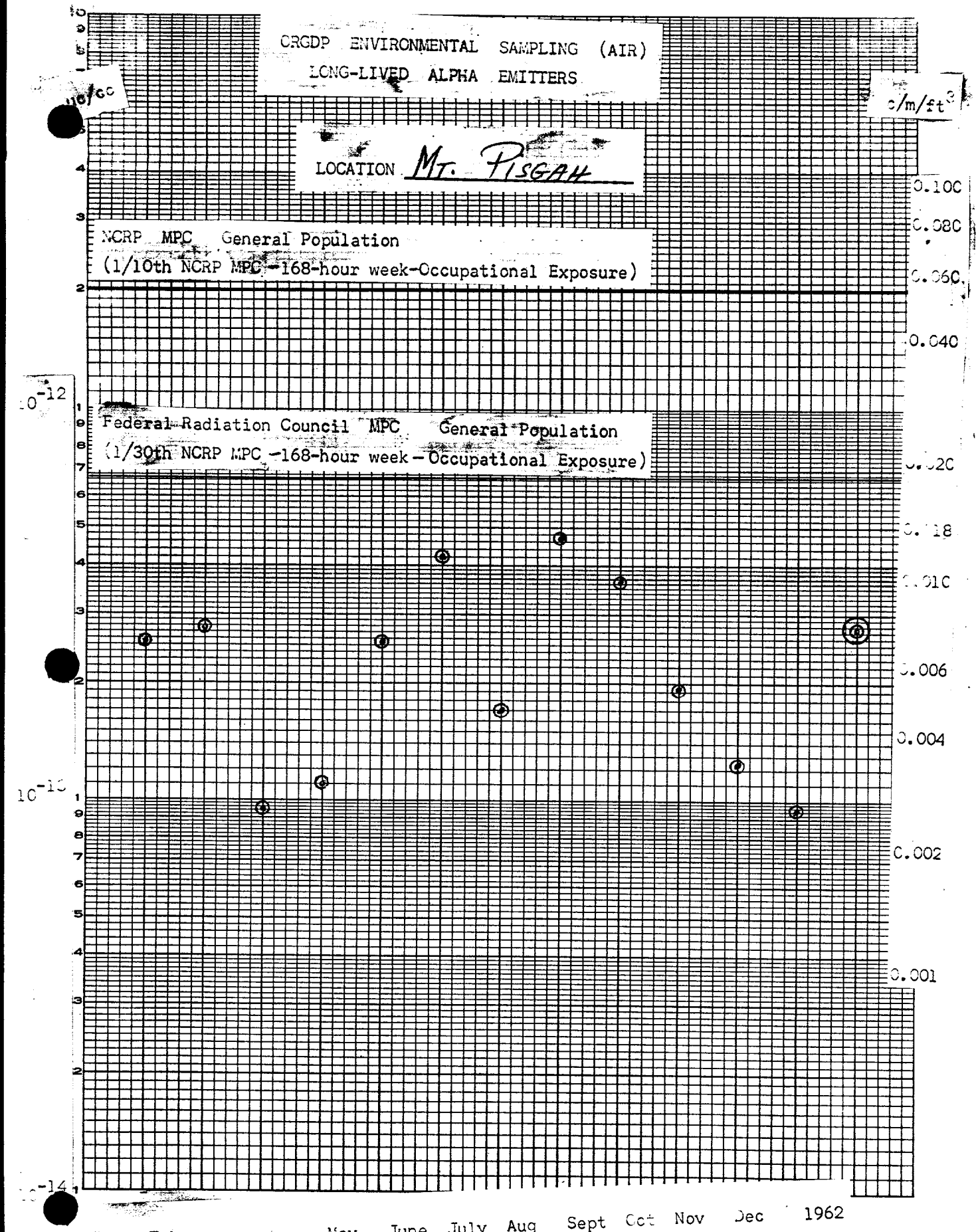
1962


CRGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION MT. PISGAH
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
c/m/ft3
0.100
0.080
0.060
0.040
0.020
0.018
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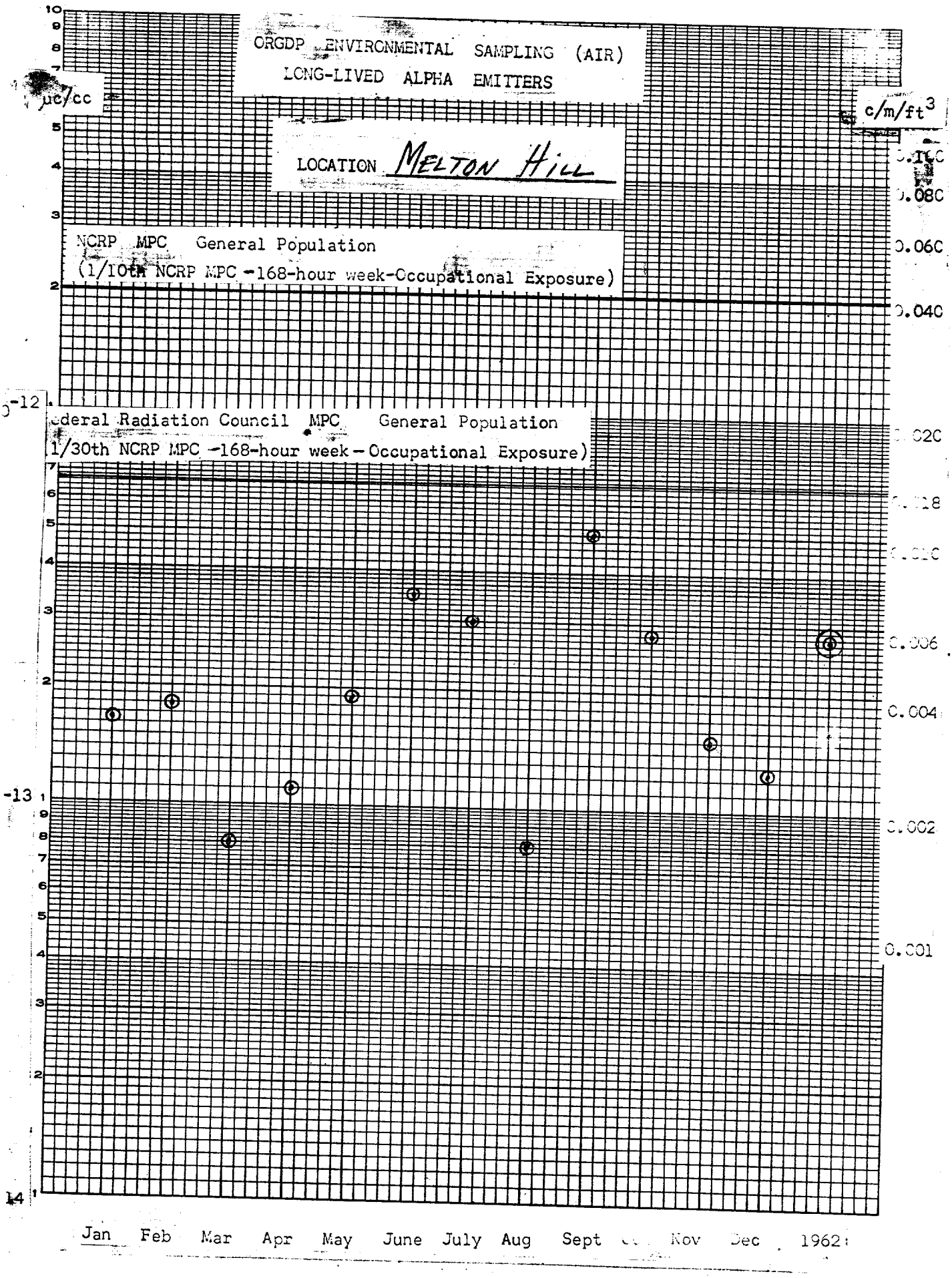
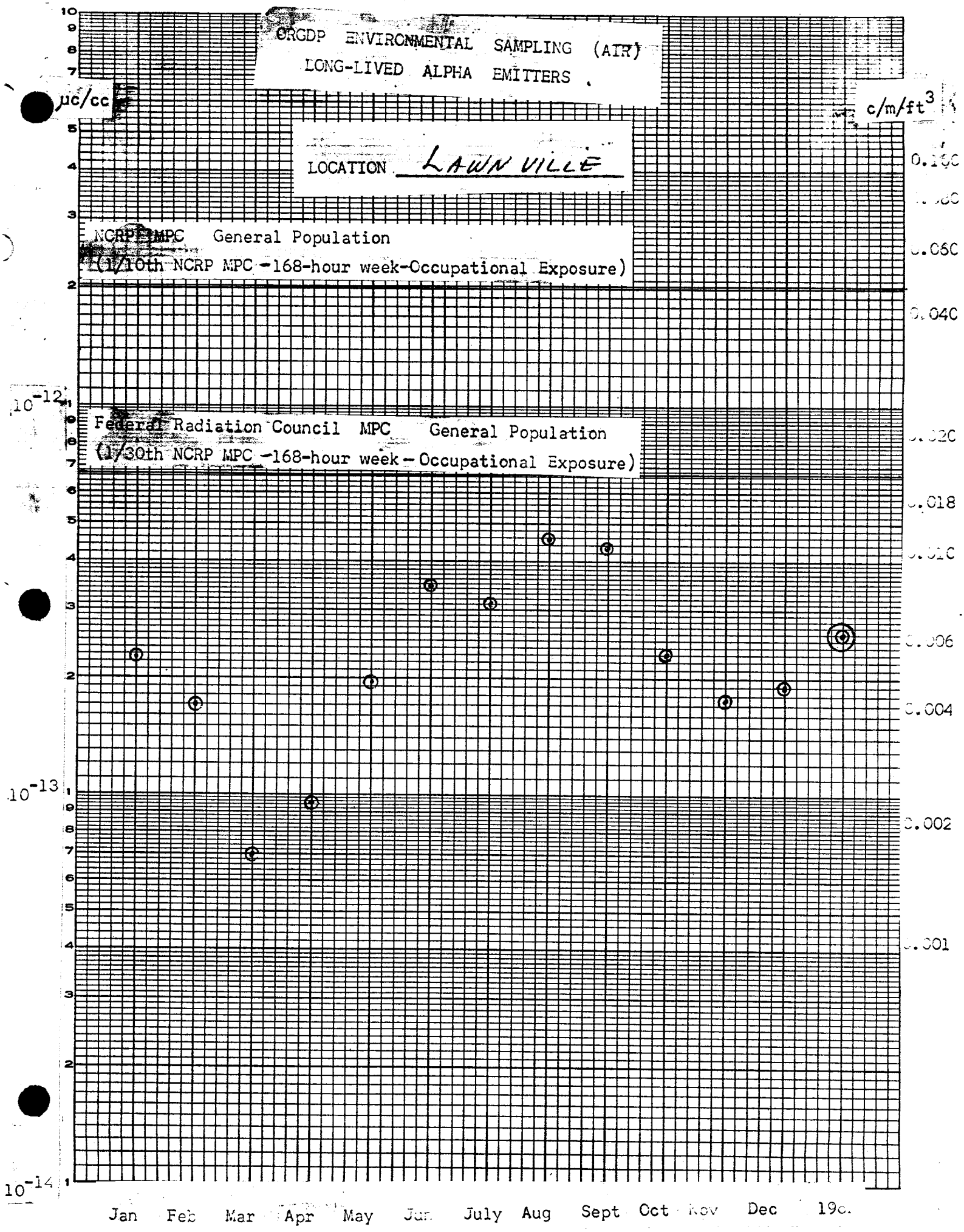
1962


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
μc/cc
c/m/ft3
LOCATION MELTON HILL
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
0.060
0.040
0.006
0.004
0.002
0.001
Jan Feb Mar Apr May June July Aug Sept Nov Dec 1962


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION LAWNVILLE
μc/cc
c/m/ft3
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
10-12
10-13
10-14
0.060
0.040
0.018
0.006
0.004
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0.001
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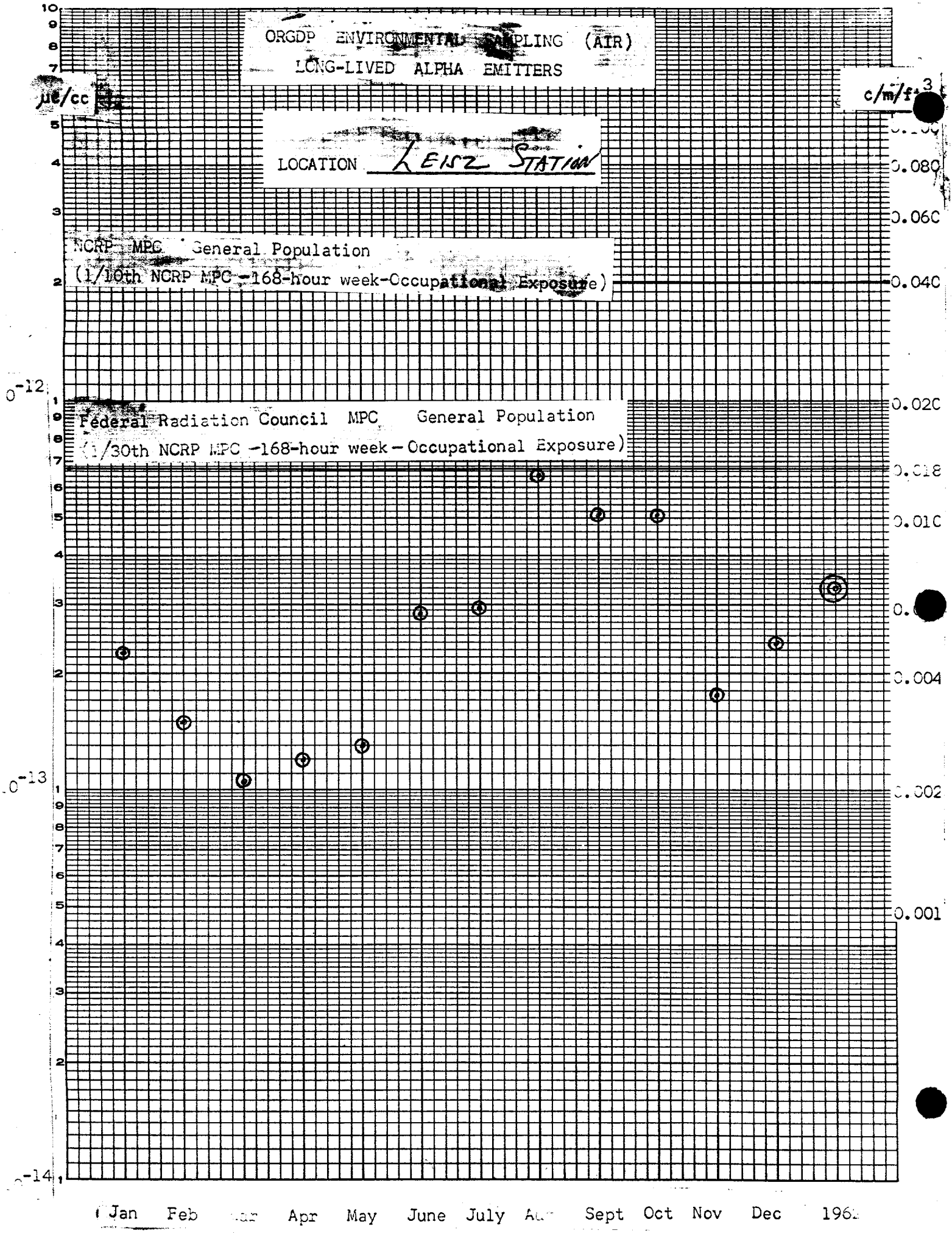
Dec
19


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION KEISZ STATION
μc/cc
c/m/ft3
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
0.080
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0.001
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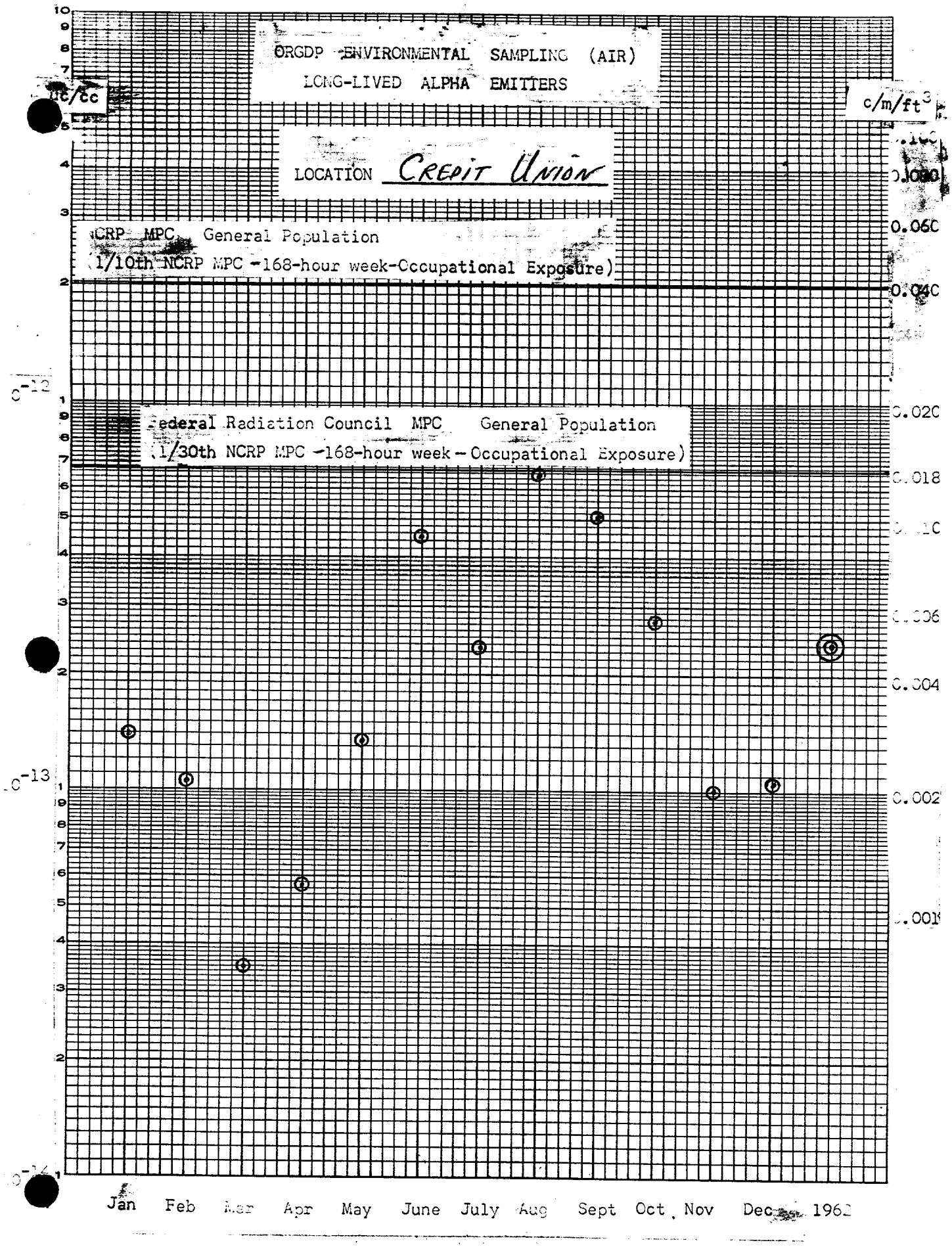
ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION Credit Union
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week - Occupational Exposure)
c/m/ft3
0.060
0.040
0.020
0.018
0.006
0.004
0.002
Jan
Feb
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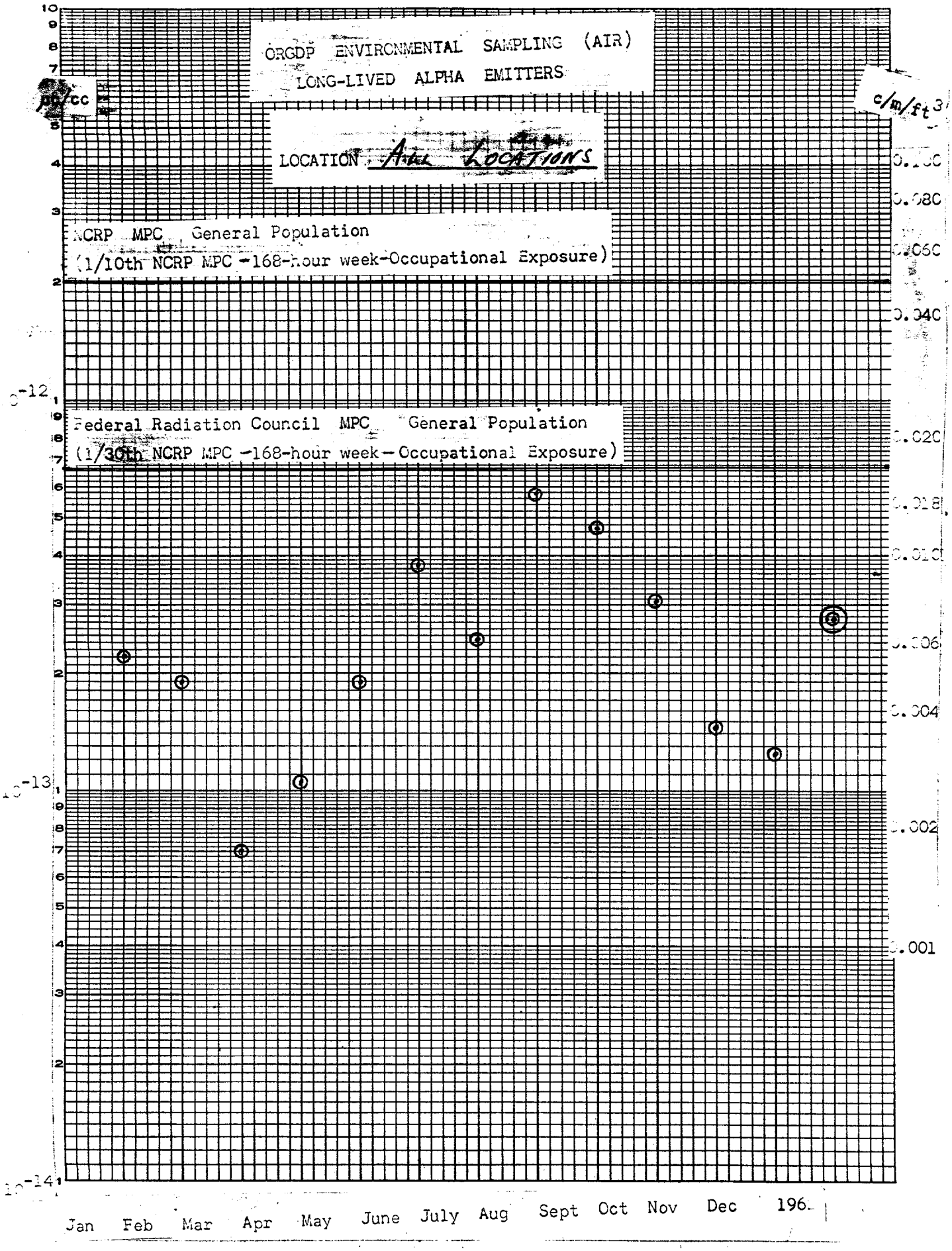
July
Sept
Oct
Nov
Dec
1962


ORGDP ENVIRONMENTAL SAMPLING (AIR)
LONG-LIVED ALPHA EMITTERS
LOCATION ALL LOCATIONS
NCRP MPC General Population
(1/10th NCRP MPC -168-hour week-Occupational Exposure)
Federal Radiation Council MPC General Population
(1/30th NCRP MPC -168-hour week-Occupational Exposure)
c/m/ft3
0.100
0.080
0.060
0.040
0.020
0.018
0.016
0.006
0.004
0.002
0.001
Jan
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June
July
Aug
Sept
Oct
Nov
Dec
196

MEMORANDUM

To: Files

Subject: Environmental Sampling -- Air

In order to evaluate the airborne concentrations of long-lived alpha emitters, uranium being of primary concern, random samples from the continuous air monitors located on five mile radii from the ORGDP have been recounted following decay periods in excess of 72 hours. These recounted values eliminate the contributions of alpha activity from radon, thoron, and the short-lived fission products from weapons test fallout.

Data accumulated during the second six months of calendar year 1964 are tabulated below.

Period	# Samples	% Long-Lived
July	27	5.8
August	27	3.6
September	47	4.5
October	24	3.4
November	43	1.1
December	36	5.6
Six Months	204	4.0 ± 4.5% @ 95% confidence

These data will be used in preparing the ORGDP portion of the semi-annual report to AEC for news release on environmental surveys.

N. B. Schultz

nbs

12/31/64

MEMORANDUM

To: Files

Subject: Environmental Sampling -- Air

In order to evaluate the airborne concentrations of long-lived alpha emitters, uranium being of primary concern, random samples from the continuous air monitors located on five mile radii from the ORGDP have been recounted following decay periods in excess of 72 hours. These recounted values eliminate the contributions of alpha activity from radon, thoron, and the short-lived fission products from weapons test fallout.

Data accumulated during the first six months of calendar year 1964 are tabulated below.

Period	# Samples	% Long-Lived
January	23	16.2
February	27	16.0
March	36	14.3
April	32	10.6
May	25	3.6
June	25	3.3
Six Months	168	10.7±15% @ 95%

These data will be used in preparing the ORGDP portion of the semi-annual report to AEC for news release on environmental surveys.

N. B. Schultz

N. B. Schultz

nbs

7/1/64

MEMORANDUM

To: Files

Subject: Environmental Sampling -- Air

In order to evaluate the airborne concentrations of long-lived alpha emitters, uranium being of primary concern, random samples from the continuous air monitors located on five mile radii from the ORGDP have been recounted following decay periods in excess of 72 hours. These recounted values eliminate the contributions of alpha activity from radon, thoron, and the short-lived fission products from weapons test fallout.

Data accumulated during the second six months of calendar year 1963 are tabulated below.

Period	# Samples	% Long-Lived
July	22	2.2
August	22	8.8
September	50	8.6
October	114	5.1
November	13	8.5
December	32	12.4
Six Months	253	5.8 - 9.0% @ 95%

These data will be used in preparing the ORGDP portion of the semi-annual report to AEC for news release on environmental surveys.

Neil B. Schultz
N. B. Schultz

nbs

1/2/64

MEMORANDUM

To: Files

Subject: Environmental Sampling -- Air

In order to evaluate the airborne concentrations of long-lived alpha emitters, uranium being of primary concern, random samples from the continuous air monitors located on five mile radii from the ORGDP have been recounted following decay periods in excess of 72 hours. These recounted values eliminate the contributions of alpha activity from radon, thoron, and the short-lived fission products from weapons test fallout.

Data accumulated during the first six months of calendar year 1963 are tabulated below.

Period	# Samples	% Long-lived
January	45	13.7
February	63	7.0
March	64	5.0
April	33	3.2
May	34	4.2
June	110	4.5
Six Months	349	5.2 - 9.9 @ 95%

These data will be used in preparing the ORGDP portion of the semi-annual report to AEC for news release on environmental surveys.

Neil B. Schultz
N. B. Schultz

nbs

7/9/63

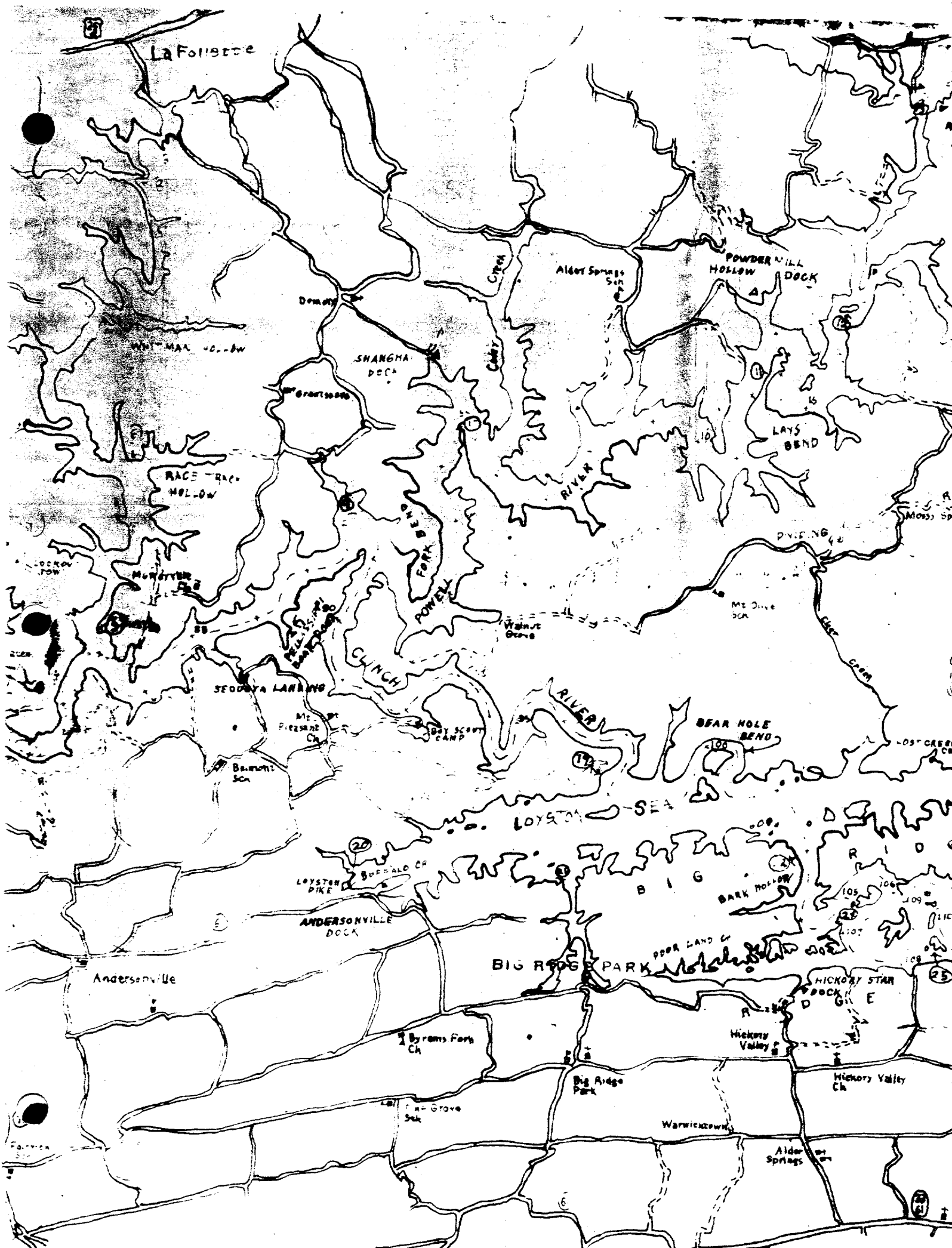
Memorandum

To: Files (Env. Sampling: Air)

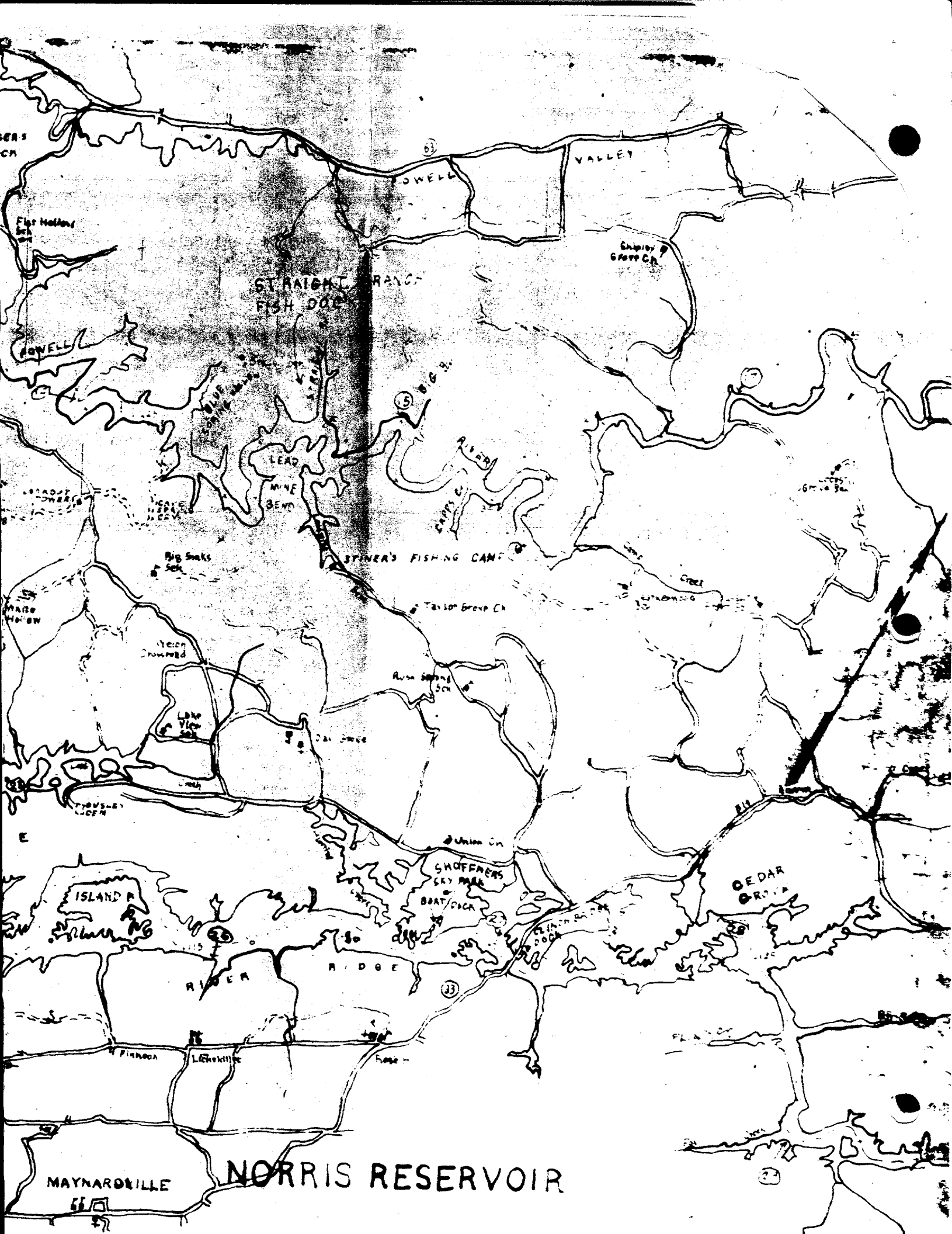
Subject: Continuous Air Monitor Operating Costs

		$/month/cam
I. Surveyors	≈ 2 man-days/month/5 samplers 0.4 man-days/month/1 sampler 0.4 x $32 = $25/month/sampler	$25.00
II. Maintenance	$\bar{x}$, FY-1963	10.44
III. Depreciation	Operating Unit	60.40
IV. Depreciation	Spare Parts	7.00
V. Electricity	$\bar{x}$ FY-1963	8.00
VI. Rental	$\bar{x}$ FY-1963	3.00
VII. Records Keeping	≈ 2 hr./month/5 locations 0.4 x $5 = $2.00	2.00
VIII Supplies	Collecting Paper — $3.30 Wind Chart $1.00 Tape — $4.00	5.00
	TOTAL	$120.84

nbs
6/6/63



La Follette
Demory
SHANGHAI DOCK
Grantsboro
Alder Springs Sch
POWDER MILL HOLLOW DOCK
LAYS BEND
RIVER
FORK BEND
POWELL
CLINCH
RIVER
Walnut Grove
Mt Olive Sch
SEQUOYA LANDING
Mt Pleasant Ch
Boy Scout Camp
BEAR HOLE BEND
Belmont Sch
LOYSTON SEA
LOYSTON PIKE
BUFFALO CR
ANDERSONVILLE DOCK
BIG RIDGE PARK
BARK HOLLOW
POOR LAND CR
HICKORY STAR DOCK
Andersonville
Byrams Fork Ch
Hickory Valley
Hickory Valley Ch
Big Ridge Park
Warwickstown
Alder Springs



POWELL
VALLEY
Flat Hollow Sch
Shipley Grove Ch
STRAIGHT RANCH FISH DOCK
POWELL
LEAD MINE BEND
RIVER
STINER'S FISHING CAMP
Big Snake Sch
Taylor Grove Ch
Lake View Sch
Union Ch
SHOFFNERS SKY PARK
BOAT DOCK
ISLAND R
RIDGE
RIVER
CEDAR
Pinhook
MAYNARDVILLE
NORRIS RESERVOIR

the plant for the quarter continues to represent only 0.03% of the maximum permissible concentration for the discharge of natural uranium; the level in the Clinch River which reflect the effects of all of the Oak Ridge Pl[illegible] were much less than this figure.

External gamma radiation levels measured with a Geiger-Muller [illegible] distance of three feet above ground at 22 locations surrounding the [illegible] averaged 0.020 mr/hour. This level does not differ significantly from [illegible] average background levels measured throughout the United States by the USPHS Radiation Surveillance Network.

Industrial Relations Division
Oak Ridge Gaseous Diffusion Plant.

[illegible]:AFB:la

[illegible]

News Release Date:

ENVIRONMENTAL SAMPLING
OAK RIDGE GASEOUS DIFFUSION PLANT

Period April - June, 1960

Location of Point	Type of Analysis Made	No. of Samples	Concentration (μc/g x [illegible]) Plant Experience	Max. Permissible (MPC)
Stream Bottom (Mud)				
Poplar Creek	Uranium Concentration			
Upstream			6,440	None spec[illegible]
Downstream	"		630	
Clinch River				
Downstream	"		1,120	
Poplar Creek	Total Beta Activity			
[illegible]			12,190	None [illegible]
[illegible]			21,740	
[illegible]				
[illegible]			[illegible]	

[illegible]

News Release

Date:

ENVIRONMENTAL SAMPLING
OAK RIDGE GASEOUS DIFFUSION PLANT

Period April - June [illegible]

Location of Point	[illegible]	No. of Samples	Concentration ($\mu c/cc \times 10^{-8}$) Plant Experience Low	High	Av.	Max. Permissible (MPC)	Av. Pl. Exp./MPC
Local Stream (Water)							
Poplar Creek	Uranium Concentration						
Upstream		13	2.4	13.0	5.7	2000	0.29%
Downstream		13	0.4	1.3	0.6	2000	0.03%
Clinch River							
Upstream		13	0.07	1.2	0.2	2000	0.01%
Downstream		13	0.07	0.8	0.3	2000	0.015%
Poplar Creek	Uranium Beta Activity						
Upstream		13	2.7	21.2	7.1	2000	0.36%
Downstream		13	5.4	171.5	39.9	2000	2.00%
Clinch River							
Upstream		13	[illegible]	265.5	70.2	249*	28.2%
[illegible]						[illegible]	21.2%

GRASSES/AIR	RATIO		PINE NEEDLES/AIR	RATIO	
9.2/4.5	2.0	3 mi	—		
0.9/9.0	0.1	171/370 = .46	0.9/9.0	0.1	2 mi
2.7/3.0	0.9		0.9/3.0	0.3	[illegible]
0.9/0.0	0.0		0.9/0.0	0.0	[illegible]
0.9/3.0	0.09		0.9/1.0	0.09	
0.9/1.5	0.6		0.9/1.5	0.6	
0.9/9.0	0.1		0.9/9.0	0.1	
0.9/0.0	0.0		0.9/0.0	0.0	
0.9/5.0	0.18	5 mi	0.9/5.0	0.[illegible]	[illegible]
3.6/3.5	1.03		2.7/3.5	0.[illegible]	
0.9/6.5	0.14	36/23 = 1.56	1.8/6.5	0.[illegible]	[illegible]
0.9/4.0	0.22		0.9/4.0	0.[illegible]	[illegible]
[illegible]	0.0		9.0/0.0	0.[illegible]	
0.9/0.0	0.0		11.7/0.0	0.[illegible]	
0.9/0.0	0.0		0.9/0.0	[illegible]	
[illegible]	[illegible]		2.7/[illegible]	[illegible]	
0.9/0.[illegible]	0.0		7.2/0.0	0.[illegible]	
[illegible]			[illegible]	0.[illegible]	

Gas Release Date

ENVIRONMENTAL MONITORING
OAK RIDGE GASEOUS DIFFUSION PLANT

Period April - June, 1960

Continuous Air Monitoring Filter Data
Units of 10^{-10} μc/cc

Distance From Center of Plant	Directional Concentration of Radioactivity					
	SW	SE	E	NE	NW	AV.
1-2 mMile Radius	20.2	27.6	19.4	24.7	19.7	23.8

GRASSES / PINE NEEDLES

		RATIO	
20	0.9 / 0.9	1	2 mi
21	2.7 / 0.9	3.0	8.1/6.3 = 1.28
22	0.9 / 0.9	1	
23	0.9 / 0.9	1	
24	0.9 / 0.9	1	
25	0.9 / 0.9	1	
26	0.9 / 0.9	1	
10	0.9 / 0.9	1	5 mi
11	3.6 / 2.7	1.3	34.9/30.6 = 1.21
12	0.9 / 1.8	0.5	
13	0.9 / 0.9	1	
14	2.7 / 9.0	0.3	
15	0.9 / 11.7	0.07	
16	0.9 / 0.9	1	
17	25.2 / 2.7	9.3	
18	0.9 / 7.2	0.12	

~~47~~

45/44 = 1.02

Environmental Sampling
Oak Ridge Gaseous Diffusion Plant

Period - Apr - June 1960

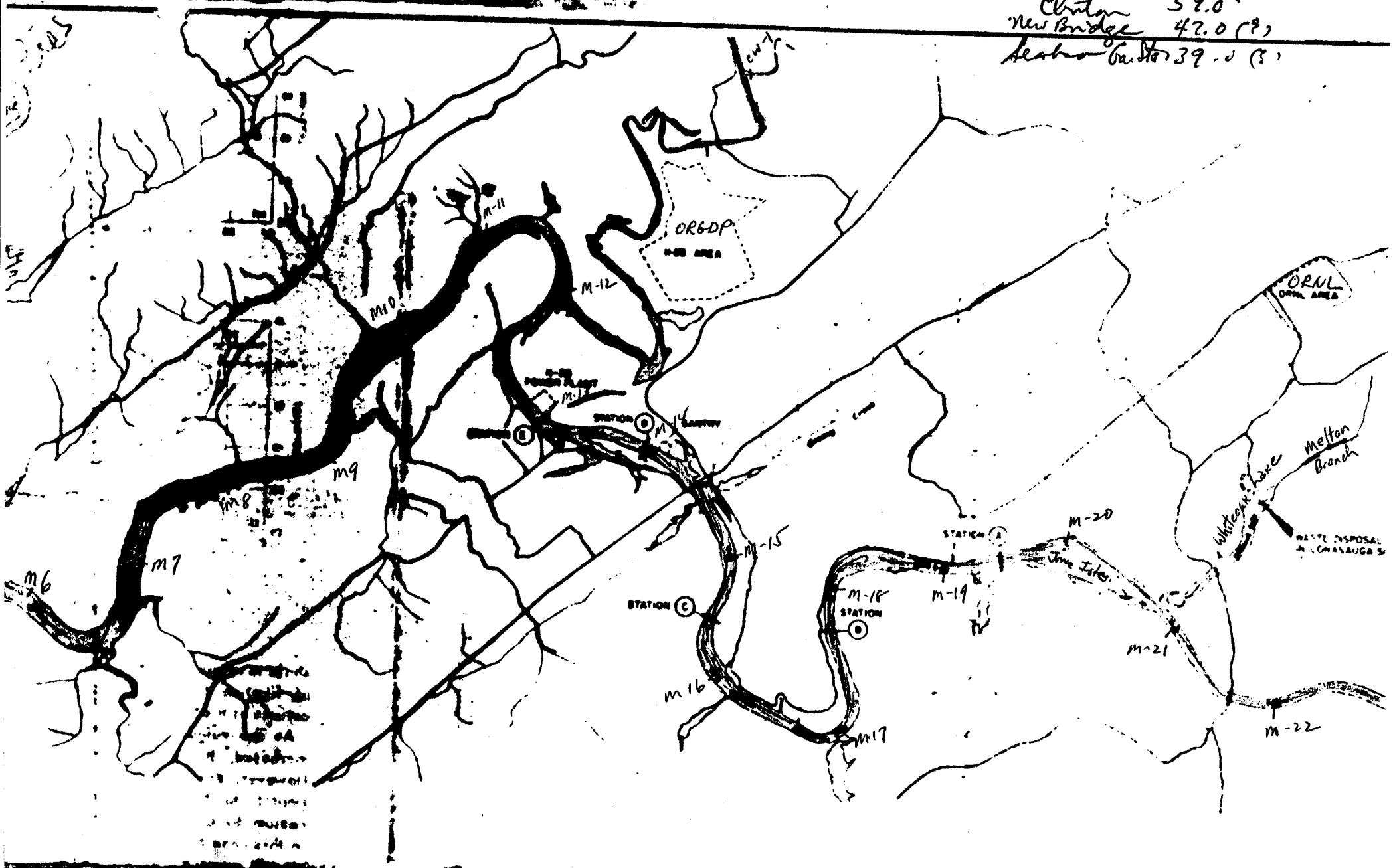
Air Monitoring Filter Data

Dist. from Plant	Typing Analysis Shape	No. Samples	Conc. (μc/cc X10^-13) Direct. from Plant N	E	S	W	A	Max Permit (MPC)	Av. Conc.
2 mi radius	Gr. Conc.	16	4.5	3.8	6.0	4.5	4.7	20	23.5
5 mi radius	"	16	2.0	3.3	3.0	0.0	2.1	20	10.5

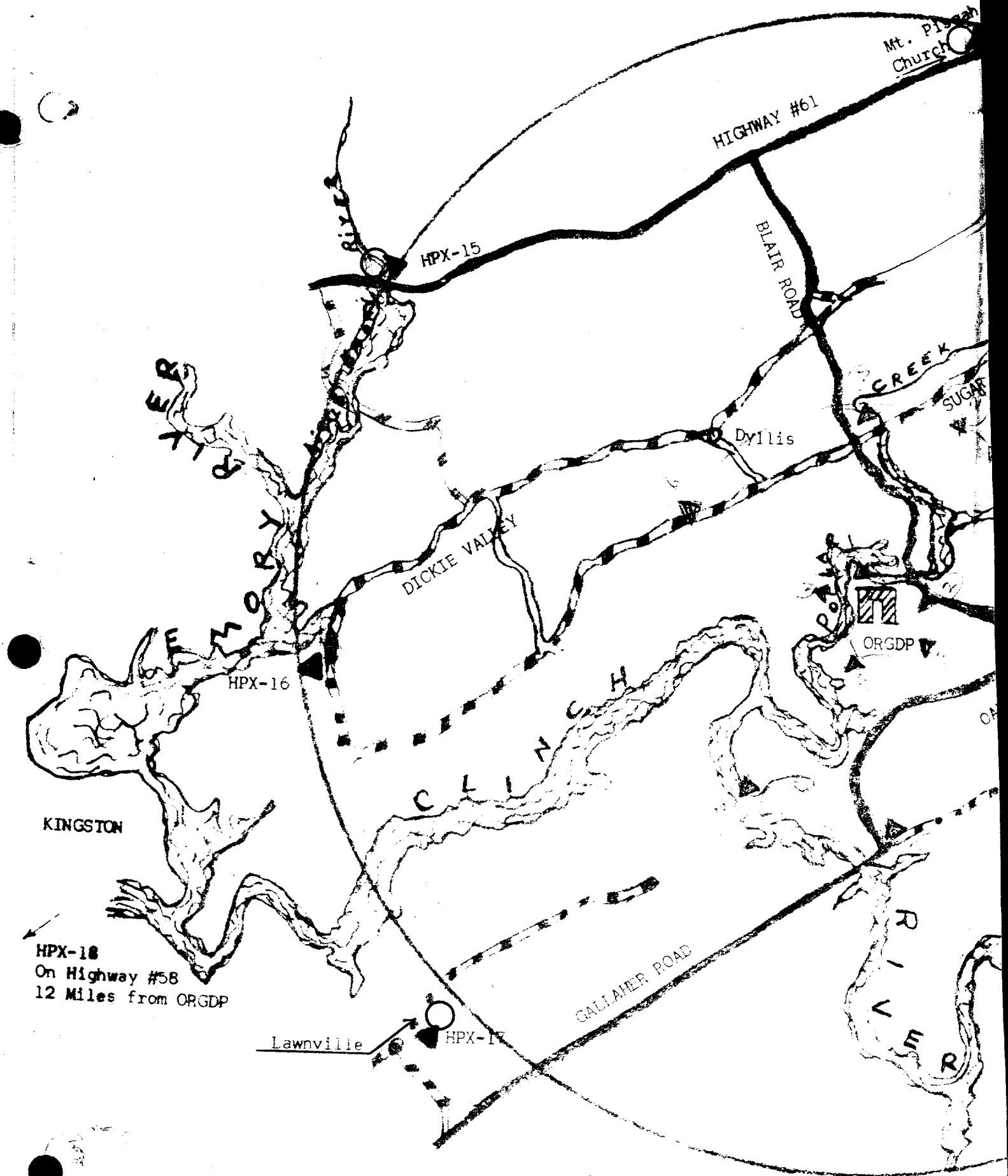
Normal Sampling freq. Random Sampling; 10 mi and 8 hr. samples.

Radioactive Veg. Units of 10^-7 Conc. (Sr Activity)								
2 mi	Gr. Conc.	15	<0.9	1.2	3.6	<0.9	1.7	None Specified
5 mi	"	16	3.6	2.8	14.0	<0.9	4.2	

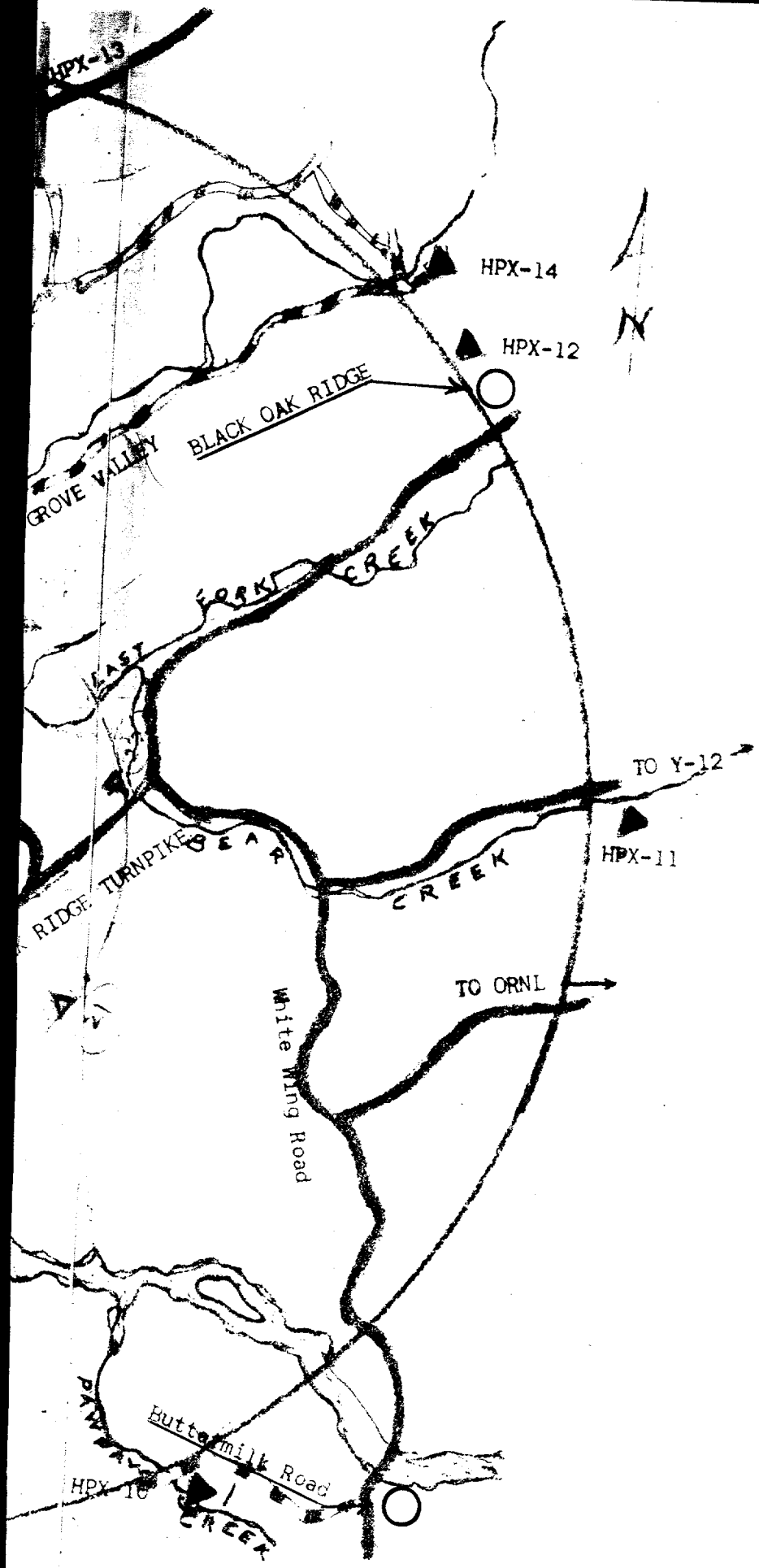
Norris Dam 79.8
Clinton 59.0
New Bridge 47.0 (?)
Seabron Can Sta 39.0 (?)



Norris Dam CRM 79.8
Clinton 59.0
Seabron Can Sta. 39.0



SAMPLING POINTS OF OUTSIDE ENVIRONS OF ORGDP
5 MILES FROM PLANT LIMITS


HPX-13
HPX-14
HPX-12
N
BLACK OAK RIDGE
GROVE VALLEY
EAST FORK CREEK
TO Y-12
HPX-11
BEAR CREEK
RIDGE TURNPIKE
TO ORNL
White Wing Road
Buttermilk Road
HPX-10
CREEK

ORGDP

Year RECORD { HIGH / LOW

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD)(SOIL)(VEGETATION~~)

(P~~INENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS Uranium (63×10^{-7}) ppm	Uranium µc/cc	Alpha d/m/100 cc	Alpha µc/cc	Beta d/m/100 cc	Beta µc/cc	(1.5)	
Mt. Pisgah Church	RECORD	–	0.028 0.000	–	0.09 0.00	–	0.23 0.04	0.8 0.0	7.8 6.5
Buttermilk Road	"	–	0.021 0.000	–	0.09 0.00	–	0.32 0.00	0.8 0.0	7.9 7.2
Lawnville	"	–	0.007 0.000	–	0.00 0.00	–	0.45 0.00	~~0.1~~ 1.6 0.1	7.9 7.5
Little Emory at Highway 61	"	–	0.021 0.000	–	0.09 0.00	–	0.40 0.00	0.1 1 0.1	7.6 7.2
K-25 Credit Union	"	–	~~0.012~~ 0.021 0.000	–	0.09 0.00	–	0.18 0.00	0.6 0.0	8.1 7.2
Mt. Pisgah Church									
Buttermilk Road									
Lawnville									
Little Emory at Highway 61									
K-25 Credit Union									

Portsmouth 1956 above plT 7×10^{-7} 7×10^{-7} high 0.1 0.2

ORGDP

Year RECORD { HIGH / LOW

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS Uranium ppm	Uranium µc/g	Alpha d/m/gram	Alpha µc/g	Beta c/m/gram	Beta µc/g	[illegible]	[illegible]
Mt. Pisgah Church	RECORD	—	9.1 4.2	—	~~89.1~~ 17.1	—	324 72	—	—
Buttermilk Road	"	—	44.1 5.6	—	88.6 24.3	—	954 0	—	—
Lawnville	"	—	11.9 ~~9.8~~ 4.9	—	88.2 15.3	—	657 77	—	—
Little Emory at Highway 61	"	—	11.2 5.0	—	93.6 20.6	—	576 95	—	—
K-25 Credit Union	"	—	26.6 ~~77~~ 49	—	78.3 24.3	—	878 342	—	—
Mt. Pisgah Church									
Buttermilk Road									
Lawnville									
Little Emory at Highway 61									
K-25 Credit Union									

Hwy 58 (12 mi) background

4.9

ORGDP

Year RECORD {HIGH / LOW

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(~~SOIL~~)(VEGETATION) Grasses
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		[illegible]	[illegible]
		ppm	μc/g x 10⁻⁷	d/m/gram	μc/g x 10⁻⁷	d/m/gram	μc/g x 10⁻⁷	ppm	[illegible]
Mt. Pisgah Church	RECORD	—	7.6 / 0.7	—	~~48.6~~ / 0.9	—	3,443 / 117	4.7 / 3.1	—
Buttermilk Road	"	—	14.7 / 0.0	—	36.0 / 0.0	—	2,975 / 63	13.8 / 8.4	—
Lawnville	"	—	28.0 / 1.4	—	25.2 / 0.9	—	3,222 / 40	23.9 / 13.1	—
Little Emory at Highway 61	"	—	10.5 / 0.0	—	101.7 / 0.0	—	3,807 / 31	51.8 / 2.7	—
K-25 Credit Union	"	—	28.0 / 2.8	—	56.7 / 0.0	—	2,246 / 104	4.6 / 3.2	—
Mt. Pisgah Church									
Buttermilk Road									
Lawnville									
Little Emory at Highway 61									
K-25 Credit Union									

Hwy 58

ORGDP

Year RECORD { HIGH / LOW

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	$\mu c/cc \times 10^{-7}$	d/m/~~100~~ cc	$\mu c/cc \times 10^{-7}$	d/m/~~100~~ cc	$\mu c/cc \times 10^{-7}$	ppm	
Mt. Pisgah Church	RECORD	—	98.0 0.0	—	5.4 0.0	—	2,313 54	4.7 2.3	—
Buttermilk Road	"	—	56.0 0.7	—	7.2 0.0	—	2,088 27	4.5 3.0	—
Lawnville	"	—	98.0 2.8	—	62.0 1.8	—	1,337 23	6.9 1.6	—
Little Emory at Highway 61	"	—	16.1 0.7	—	11.7 0.9	—	1,854 31	9.1 6.9	—
K-25 Credit Union	"	—	56.0 1.4	—	14.4 0.9	—	1,454 54	5.5 4.6	—
Mt. Pisgah Church									
Buttermilk Road									
Lawnville									
Little Emory at Highway 61									
K-25 Credit Union									

Hwy 58 2.8

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

(WATER) ([redacted])

([redacted])

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	μc/cc x 10^{-7}	d/m/100 cc	μc/cc x 10^{-7}	d/m/100 cc	μc/cc x 10^{-7}	ppm	
Mt. Pisgah	3/27/63	—	< 0.007	—	< 0.1	—	0.36	0.8	7.3
Buttermilk Rd.	"	—	"	—	"	—	0.27	0.8	7.0
Lawnville	"	—	"	—	"	—	< 0.045	1.6	7.2
Highway 61	"	—	"	—	"	—	0.18	0.4	7.4
K-25 Credit Union	"	—	0.021	—	"	—	0.23	0.4	7.3
Mt. Pisgah	6/18/63	—	< 0.007	—	< 0.1	—	0.05	0.0	6.6
Buttermilk Rd.	"	—	"	—	"	—	0.27	0.0	6.6
Lawnville	"	—	"	—	"	—	0.14	0.2	6.8
Highway 61	"	—	"	—	"	—	0.63	0.0	4.9
Credit Union	"	—	"	—	"	—	0.18	0.3	6.1

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

(WATER) ([redacted])

([redacted])

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	μc/cc X 10⁻⁷	d/m/100 cc	μc/cc X 10⁻⁷	d/m/100 cc	μc/cc X 10⁻⁷	ppm	
Mt. Pisgah	8/8/63	—	<0.007	—	0.00	—	0.06	0.3	5.8
Buttermilk Rd.	"	—	0.021	—	"	—	0.15	0.0	6.3
Lawrville	"	—	<0.007	—	"	—	0.23	0.3	6.7
Highway 61	"	—	"	—	"	—	0.28	0.3	7.0
K-25 Credit Union	"	—	"	—	"	—	0.02	0.1	6.9
Mt. Pisgah	Oct	—	<0.007 / <0.007	—	<0.0 / <0.0	—	.47 / 0.16	1.1 / 0.4	19.7 / 6.6
Buttermilk Rd	—	—	0.021 / 0.007	—	<0.0 / <0.0	—	.69 / 0.23	0.8 / 0.3	19.9 / 6.7
Lawrville	—	—	<0.007 / <0.007	—	<0.0 / <0.0	—	.37 / 0.12	2.1 / 0.7	20.7 / 6.9
Highway 61	—	—	<0.007 / <0.007	—	<0.0 / <0.0	—	1.09 / 0.36	0.7 / 0.2	19.3 / 6.4
Credit Union	Total 3 X	—	0.021 / 0.007	—	<0.0 / <0.0	—	.43 / 0.14	0.8 / 0.3	20.3 / 6.7
5 Locations		15	0.042 / [illegible]	—	<0.0 / [illegible]	—	3.05 / [illegible]	5.5 / [illegible]	99.9 / [illegible]

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD~~)(~~SOIL~~)(~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	μc/ccx10^{-7}	d/m/100 cc	μc/ccx10^{-7}	d/m/100 cc	μc/ccx10^{-7}	ppm	
Mt. Pisgah Church	4-10-62	—	0.000	—	(<1.0x10^{-8}) 0.00	—	0.23	0.0	6.6
Buttermilk Road	"	—	<0.007	—	0.00	—	0.32	0.0	7.4
Lawrville	"	—	<0.007	—	0.00	—	0.45	0.1	7.5
Little Emory at Hw 61	"	—	0.021	—	0.00	—	0.36	0.1	7.2
K-25 Credit Union	"	—	<0.007	—	0.00	—	0.18	0.6	7.2
Mt. Pisgah Church	9-14-62	—	<0.007	—	0.000	—	0.32	0.0	6.5
Buttermilk Road	"	—	0.014	—	0.000	—	0.09	0.0	7.3
Lawrville	"	—	<0.007	—	0.000	—	0.14	0.0	7.5
Little Emory at Hw 61	"	—	0.028	—	0.000	—	0.36	0.3	7.6
K-25 Credit Union	"	—	0.028	—	0.18	—	0.50	0.1	7.5

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD)(SOIL)(VEGETATION)~~

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		[illegible]	
		ppb	μc/cc x10⁻⁷ (5)	d/m/100 cc	μc/cc x10⁻⁷	d/m/100 cc	μc/cc x10⁻⁷	ppm	[illegible]
Mt. Pisgah Church	CY-1962	—	0.000 / 0.000	—	0.000 / 0.000	—	0.55 / 0.28	0.0 / 0.0	13.1 / 6.6
Buttermilk Road	"	—	0.014 / 0.007	—	0.000 / 0.000	—	0.41 / 0.21	0.0 / 0.0	14.7 / 7.4
Lawnville	"	—	0.000 / 0.000	—	0.000 / 0.000	—	0.59 / 0.30	0.1 / 0.05	15.0 / 7.5
Little Emory at Hw 61	"	—	0.049 / 0.025	—	0.000 / 0.000	—	0.72 / 0.36	0.4 / 0.2	14.8 / 7.4
K-25 Credit Union	Total / average	—	0.028 / 0.014	—	0.018 / 0.009	—	0.68 / 0.34	0.1 / 0.05	14.7 / 7.4
5 locations ~~Mt Pisgah Church~~	Total / average	—	0.091 / 0.009	—	0.018 / 0.002	—	2.95 / 0.30	0.6 / 0.06	72.3 / 7.2
~~Buttermilk Road~~									
~~Lawnville~~									
~~Little Emory at Hw 61~~									
K-25 Credit Union									

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

(WATER) ~~(MUD) (SOIL) (VEGETATION)~~

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	μc/ccx10⁻⁷	d/m/100 cc	μc/ccx10⁻⁷	d/m/100 cc	μc/ccx10⁻⁷	ppm	
Mt. Pisgah Church	2-13-61	4	0.028	0	0.00	5	0.23	—	—
Buttermilk Road	"	3	0.021	0.1	0.01	0	0.00	—	—
Lawnville	"	0	0.000	0	0.00	3	0.14	—	—
Little Emory at Hwy 61	"	4	0.028	0.1	0.01	0	0.00	—	—
K-25 Credit Union	"	0	0.000	0.1	0.01	4	0.18	—	—
Mt. Pisgah Church	11-28-61	—	0.014	—	0.10	—	0.41	—	6.5
Buttermilk Road	"	—	0.000	—	0.00	—	0.00	—	7.2
Lawnville	"	—	0.007	—	0.00	—	0.09	—	7.5
Little Emory at Hwy 61	"	—	0.007	—	0.00	—	0.27	—	7.6
K-25 Credit Union	"	—	0.007	—	0.00	—	0.05	—	8.1

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD~~)(~~SOIL~~)(~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	µc/cc	d/m/100 cc	µc/cc	d/m/100 cc	µc/cc	ppm	
Mt Pisgah Church	C4-1961	—	0.042 / 0.021 (2)	—	0.10 / 0.05 (2)	—	0.64 / 0.32 (2)	—	6.5 / 6.5 (1)
Buttermilk Road	"	—	0.021 / 0.010	—	0.01 / 0.01	—	0.00 / 0.00	—	7.2 / 7.2
Lawnville	"	—	0.007 / 0.004	—	0.00 / 0.00	—	0.23 / 0.12	—	7.5 / 7.5
Little Emory at Hw 61	"	—	0.035 / 0.018	—	0.01 / 0.01	—	0.27 / 0.14	—	7.6 / 7.6
K-25 Credit Union	Total / Average	—	0.007 / 0.004	—	0.01 / 0.01	—	0.23 / 0.12	—	8.1 / 8.1
5 locations ~~Mt Pisgah Church~~	Total / Average	—	0.112 / 0.011 (10)	—	0.13 / 0.01 (10)	—	0.370 / 0.037 (10)	—	36.9 / 7.4 (5)
~~Buttermilk Road~~									
~~Lawnville~~									
~~Little Emory at Hw 61~~									
~~K-25 Credit Union~~									

ORGDP

Year 1960

ENVIRONMENTAL SAMPLING

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	Uranium ppb	Uranium μc/cc x10⁻⁷	Alpha g/m/100 cc	Alpha μc/cc x10⁻⁷	Beta g/m/100 cc	Beta μc/cc x10⁻⁷	[illegible]	[illegible]
Mt. Pisgah Church	4-13-60	1	0.007	2	0.09	3	0.13	—	—
Buttermilk Road	"	1	0.007	2	0.09	3	0.13	—	—
Lawnville	"	1	0.007	0	0.00	0	0.00	—	—
Little Emory at Hwy 61	"	3	0.021	2	0.09	9	0.40	—	—
K-25 Credit Union	"	0	0.000	0	0.00	1	0.04	—	—
Mt. Pisgah Church	7-29-60	0	0.000	0	0.00	0	0.00	—	—
Buttermilk Road	"	0	0.000	0	0.00	0	0.00	—	—
Lawnville	"	0	0.000	0	0.00	0	0.00	—	—
Little Emory at Hwy 61	"	0	0.000	2	0.09	0	0.00	—	—
K-25 Credit Union	"	2	0.012	0	0.00	0	0.00	—	—

GROUP

Year 1960

ENVIRONMENTAL SAMPLING

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta			pH
		ppb	μc/cc x10⁻⁷	d/m/100 cc	μc/cc x10⁻⁷	d/m/100 cc	μc/cc x10⁻⁷	ppm	
Mt Pisgah Church	11-8-60	0.4	0.003	0	0.00	1	0.04	–	7.8
Buttermilk Road	"	1.7	0.012	2	0.09	0	0.00	–	7.9
Lawrville	"	1.3	0.007	0	0.00	2	0.09	–	7.9
Little Grey at Hwy 61	"	0	0.000	2	0.09	6	0.27	–	7.6
K-25 Credit Union	"	0.4	0.003	2	0.09	1	0.04	–	7.8
Mt. Pisgah Church	CY-1960	–	0.010 (3) / 0.003	–	0.09 (3) / 0.03	–	0.17 (3) / 0.06	–	7.8 (1) / 7.8
Buttermilk Road	"	–	0.019 / 0.006	–	0.18 / 0.06	–	0.13 / 0.04	–	7.9 / 7.9
Lawrville	"	–	0.014 / 0.005	–	0.00 / 0.00	–	0.09 / 0.03	–	7.9 / 7.9
Little Grey at Hwy 61	"	–	0.021 / 0.007	–	0.27 / 0.09	–	0.67 / 0.22	–	7.6 / 7.6
K-25 Credit Union	TOTAL / Average	–	0.015 / 0.005	–	0.09 / 0.03	–	0.08 / 0.03	–	7.8 / 7.8
5 locations	Total / Ave		0.079 (15) / 0.005		0.63 (15) / 0.04		0.140 (11) / 0.09		39.0 (5) / 7.8

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

[redacted] (SOIL) [redacted]

SAMPLE LOCATION 5 Miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	μc/g X 10⁻⁷	d/m/gram	μc/g X 10⁻⁷	d/m/gram	μc/g X 10⁻⁷	ppm	
Mt. Pisgah	3/27/63	1		10		53			
Buttermilk Rd.	"	2		28		62			
Lawrenville	"	2		28		82			
Highway 61	"	2		10		217			
Credit Union	"	2.0		8		84			
Mt. Pisgah	6/18/63	0.5		37		27			
Buttermilk Rd.	"	1.6		31		173			
Lawrenville	"	1.0		11		85			
Highway 61	"	1.0		9		104			
Credit Union	"	1.4		23		75			

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

~~(WATER)~~ ~~(MUD)~~ (SOIL) ~~(VEGETATION)~~

~~(PINENEEDLES)~~

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
5 Miles		ppm	µc/gc $\times 10^{-7}$	d/m/gcm	µc/gc $\times 10^{-7}$	d/m/gcm	µc/gc $\times 10^{-7}$	ppm	
Mt. Pisgah	8/8/63	0.8		4.2		53			
Buttermilk Rd.	"	1.3		5.4		199			
Lawnville	"	1.2		4.9		106			
Highway 61	"	0.8		4.2		123			
Credit Union	"	1.0		4.5		67			
Mt. Pisgah	CY (3)	2.3 / 0.8		51.2 / 17.1		133 / 44			
Buttermilk Rd.	"	3.9 / 1.3		44.4 / 14.8		434 / 145			
Lawnville	"	4.2 / 1.4		43.9 / 14.6		273 / 91			
Highway 61	"	3.8 / 1.3		23.2 / 7.7		444 / 148			
Credit Union	"	4.4 / 1.5		35.5 / 11.8		226 / 75			
(15) Total / $\bar{X}$		18.6 / 1.2		198.2 / 13.2		1510 / 101			

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	$\mu c/gm \times 10^{-7}$	d/m/~~200~~cc	$\mu c/gm \times 10^{-7}$	d/m/~~200~~cc	$\mu c/gm \times 10^{-7}$	ppm	
Mt. Pisgah Church	4-10-62	1.0	7.0	8.0	36.0	72	324	—	—
Buttermilk Road	"	0.8	5.6	5.4	24.3	212	954	—	—
Lawnville	"	1.0	7.0	3.4	15.3	146	657	—	—
Little Emory @ Hwy 61	"	0.9	6.3	5.0	22.5	128	576	—	—
K-25 Credit Union	"	0.7	4.9	11.4	51.3	123	554	—	—
Mt. Pisgah Church	9-14-62	1.1	7.7	6.2	27.9	59	266	—	—
Buttermilk Road	"	1.7	11.9	9.2	41.4	139	626	—	—
Lawnville	"	1.7	11.9	15.0	67.5	81	365	—	—
Little Emory @ Hwy 61	"	0.8	5.6	8.6	38.7	117	527	—	—
K-25 Credit Union	"	1.1	7.7	7.8	35.1	76	342	—	—

ORDER

1962

ENVIRONMENTAL SAMPLING

SAMPLE LOCATION	DATE	Gross Alpha		Alpha		Beta			
5 miles		ppm	µc/gram ×10⁻⁷	d/m/gram	µc/gram ×10⁻⁷	d/m/gram	µc/gram ×10⁻⁷		
Mt. Pisgah Church	CY-1962		14.7 / 7.4 (2)		63.9 / 42 (2)		590 / 295 (2)	—	—
Buttermilk Road	"		17.5 / 8.8		65.7 / 33		1580 / 790	—	—
Lawnville	"		18.9 / 9.5		82.8 / 41		1022 / 511	—	—
Little Emory @ Hwy 61	"		11.9 / 6.0		61.2 / 31		1103 / 552	—	—
K-25 Credit Union	Total / average		12.6 / 6.3		86.4 / 43		896 / 448	—	—
5 Locations ~~Mt. Pisgah Church~~	Total / ave	—	75.6 / 7.6 (10)	—	360.0 / 36.0 (10)	—	5191 / 519 (10)	—	—
Buttermilk Road									
Lawnville									
Little Emory @ Hwy 61									
K-25 Credit Union									

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)~~(SOIL)(~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS Uranium ppm	Uranium $\mu c/gram \times 10^{-7}$	Alpha d/m/gram	Alpha $\mu c/gram \times 10^{-7}$	Beta d/m/gram	Beta $\mu c/gram \times 10^{-7}$	Fluorides ppm	[illegible]
Mt. Pisgah Church	2-13-61	1.2	8.4	4.0	18.0	16	72	—	—
Buttermilk Road	"	1.9	13.3	6.8	30.6	0	0	—	—
Lawnville	"	1.4	9.8	5.2	23.4	17	77	—	—
Little Emory — Hw. #61	"	1.1	7.7	4.6	20.6	21	95	—	—
K-25 Credit Union	"	1.6	11.2	5.4	24.3	76	342	—	—
Mt. Pisgah Church	11-28-61	1.0	7.0	3.8	17.1	64	288	—	—
Buttermilk Road	"	1.8	12.6	5.6	25.2	174	783	—	—
Lawnville	"	1.4	9.8	5.0	22.5	63	284	—	—
Little Emory @ Hw 61	"	1.6	11.2	4.6	20.7	90	405	—	—
K-25 Credit Union	"	2.9	20.3	6.0	27.0	195	878	—	—

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	
5 miles		ppm	µc/gram ×10⁻⁷	d/m/~~100 cc~~	µc/gram ×10⁻⁷	d/m/~~100 cc~~	µc/gram ×10⁻⁷	ppm	pH
Mt Pisgah Church	CY-1961	—	15.4 (2) / 7.7	—	35.1 (2) / 17.6	—	360 (2) / 180	—	—
Butterworth Road	"	—	25.9 / 13.0	—	55.8 / 27.9	—	783 / 392	—	—
Lawnville	"	—	19.6 / 9.8	—	45.9 / 23.0	—	361 / 181	—	—
Little Emory — Hw #61	"	—	18.9 / 9.5	—	41.3 / 20.7	—	500 / 250	—	—
K-25 Credit Union	Total average	—	31.5 / 15.8	—	51.3 / 25.7	—	1220 / 610	—	—
5 Locations ~~Mt Pisgah Church~~	Total average	—	111.3 (10) / 11.1	—	229.4 (10) / 22.9	—	3224 (10) / 322.4	—	—
~~Butterworth Road~~									
~~Lawnville~~									
~~Little Emory @ Hw 61~~									
~~K-25 Credit Union~~									

ORGDP

1960

ENVIRONMENTAL SAMPLES

(~~WATER~~)(~~MUD~~)(SOIL)(~~[illegible]~~)

SAMPLE LOCATION 5 miles	DATE	Uranium ppm	Uranium pc/gram ×10⁻⁷	Alpha dpm/gram	Alpha pc/gram ×10⁻⁷	Beta dpm/gram	Beta pc/gram ×10⁻⁷	[illegible]	[illegible]
Mt. Pisgah Church	4-13-60	1.3	9.1	13.8	62.1	49	220.	—	—
Buttermilk Road	"	6.3	44.4	19.4	88.6	133	598.	—	—
Lawrville	"	1.0	7.0	8.6	38.7 ~~104~~	104 ~~38.7~~	468.	—	—
Little Emory @ Hw 61	"	1.3	9.1	7.8	35.1	31.0	139.	—	—
K-25 Credit Union	"	3.8	26.6	5.6	25.2	146.0	657.	—	—
Mt. Pisgah Church	7-29-60	0.7	4.9	9.9	89.1	31.0	139.5	—	—
Buttermilk Road	"	1.0	7.0	9.6	43.2	99.0	445.	—	—
Lawrville	"	0.7	4.9	19.6	88.2	90.0	405.	—	—
Little Emory @ Hw 61	"	0.9	6.3	20.8	93.6	38.0	171.	—	—
K-25 Credit Union	"	3.2	22.4	17.4	78.3	97.0	436.5	—	—

ORGDP

1960

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluoride	pH
		ppM	µc/gram ×10⁻⁷	d/m/gram	µc/gram ×10⁻⁷	d/m/gram	µc/gram ×10⁻⁷	ppm	
Mt Pisgah Church	11-8-60	0.6	4.2	6.2	27.4	52	234	—	—
Buttermilk Road	"	1.4	9.8	10.4	46.8	98	441	—	—
Lawnville	"	0.9	6.3	3.6	32.4	74	333	—	—
Little Emory @ Hw 61	"	0.9	6.3	2.4	21.6	57	256	—	—
K-25 Credit Union	"	1.1	7.7	6.9	62.1	93	418	—	—
Mt. Pisgah Church	C4-1960	X	18.2 (3) 6.1	X	178.6 (3) 59.5	X	395.5 (3) 132.0	—	—
Buttermilk Road	"	X	60.9 20.3	X	178.6 59.5	X	1484.0 495.0	—	—
Lawnville	"	X	18.2 6.1	X	159.3 53.1	X	1206 402.0	—	—
Little Emory @ Hw 61	"	X	21.7 7.2	X	150.3 50.1	X	566 188.7	—	—
K-25 Credit Union	Total average	X	56.7 18.9	X	165.6 55.2	X	1512 504.0	—	—
5 Locations	Total ave.		175.7 (15) 11.7		832.4 (15) 55.5		5763.5 (15) 344.2		

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

~~([illegible])~~ (VEGETATION) Grasses

~~([illegible])~~

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	µc/gm x 10^{-7}	d/m/gm ~~cc~~	µc/gm x 10^{-7}	d/m/gm ~~cc~~	µc/gm x 10^{-7}	ppm	
Mt. Pisgah	3/27/63	0.6		1.6		446		23	4.2
Buttermilk Rd.	"	0.2		0.6		233		22	1.4
Lawnville	"	0.2		1.6		221		19	1.4
Highway 61	"	0.7		2.6		328		28	4.9
Credit Union	"	0.2		1.6		271		30	1.4
Mt. Pisgah	6/18/63	0.0		1.4		617		24	0.0
Buttermilk Rd.	"	0.0		2.2		416		22	0.0
Lawnville	"	0.1		2.6		644		24	0.7
Highway 61	"	0.0		3.4		550		20	0.0
Credit Union	"	0.0		1.0		600		15	0.0

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(~~SOIL~~)(VEGETATION)

(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb/M	µc/gc X10⁻⁷	d/m/~~gm~~ cc	µc/gc X10⁻⁷	d/m/~~gm~~ cc	µc/gc X10⁻⁷	ppm	
Mt. Pisgah	8/8/63	0.0		1.0		161		7	
Buttermilk Rd.	"	0.1		0.3		223		36	
Lawnville	"	0.2		1.0		284		44	
Highway 61	"	0.1		0.8		181		0	
Credit Union	"	0.0		1.0		135		15	
Mt. Pisgah	CY	0.6 / 0.2		4.0 / 1.3		1224 / 408		54 / 18	
Buttermilk Rd.	"	0.3 / 0.1		3.1 / 1.0		872 / 291		80 / 27	
Lawnville	"	0.5 / 0.2		5.2 / 1.7		1149 / 383		87 / 29	
Highway 61	"	0.8 / 0.3		6.8 / 2.3		1059 / 353		48 / 16	
Credit Union	"	0.2 / 0.1		3.6 / 1.2		1006 / 335		60 / 20	
(15)	Total / $\bar{x}$	2.4 / 0.2		22.7 / 1.5		5310 / 354		329 / 22	

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
Grass

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	μc/gc 10^{-7}	d/m/~~200 cc~~	μc/gc 10^{-7}	d/m/~~100 cc~~	μc/gc 10^{-7}	ppm	
Mt. Pisgah Church	4-10-62	~~0.001~~	~~0.0070~~ 0.7	0.4	1.8	632	2844	3.1	—
Buttermilk Road	"	~~0.002~~	~~0.0140~~ 1.4	1.0	4.5	661	2975	13.8	—
Lawnville	"	~~0.004~~	~~0.0280~~ 2.8	5.0	22.5	716	3222	23.9	—
Little Emory at Hubbell	"	~~0.001~~	~~0.0070~~ 0.7	0.4	1.8	554	2493	5.8	—
K-25 Credit Union	"	~~0.004~~	~~0.0282~~ 2.8	0.2	0.9	323	1454	6.5(V) 4.6(D)	—
Mt. Pisgah Church	9-14-62	1.1	7.7	2.0	9.0	135	608	28.6	—
Buttermilk Road	"	0.5	3.5	0.8	3.6	120	540	42.9	—
Lawnville	"	1.7	11.9	8.6	38.7	99	446	59.5	—
Little Emory at Hubbell	"	0.4	2.8	0.8	3.6	76	342	12.3	—
K-25 Credit Union	"	1.0	7.0	2.2	9.9	97	437	14.6	—

ORGDP

YEAR 1962

ENVIRONMENTAL SAMPLING

~~(WATER)(AIR)(SOIL)~~ (VEGETATION)

Grasses

SAMPLE LOCATION	DATE	Uranium		Alpha		Beta			
5 miles		PPM	μc/g 10^{-7} / dry gram		μc/g 10^{-7} / dry gram		μc/g 10^{-7}	②	
Mt Pisgah Church	CY-1962	—	8.4 / 4.2	—	10.8 / 5.4	—	3452 / 1726	31.7 / 15.9	—
Butthmille Road	"	—	4.9 / 2.5	—	8.1 / 4.2	—	3515 / 1758	56.7 / 28.4	—
Lawnville	"	—	14.7 / 7.4	—	51.2 / 25.6	—	3,668 / 1834	83.4 / 41.7	—
Little Emory at Hwy 61	"	—	3.5 / 1.9	—	5.4 / 2.7	—	2835 / 1418	18.1 / 9.1	—
K-25 Credit Union	"	—	9.8 / 4.9	—	10.8 / 5.4	—	1891 / 946	19.2 / 9.6	—
5 Locations ~~Mt Pisgah Church~~	"	—	41.3 / 4.1	—	86.3 / 8.6	—	15,361 / 1536	209.1 / 20.9	—
~~Butthmille Road~~									
~~Lawnville~~									
~~Little Emory at Hwy 61~~									
~~K-25 Credit Union~~									

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
Grass

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS Uranium ppm	Uranium µc/g x10⁻⁷	Alpha d/m/gram	Alpha µc/g x10⁻⁷	Beta d/m/gram	Beta µc/g x10⁻⁷	Fluoride ppm	
Mt. Pisgah Church	2-13-61	0.9	6.3	3.6	16.2	56	252	—	—
Buttermilk Road	"	2.1	14.7	8.0	36.0	24	108	—	—
Lawrville	"	0.5	3.5	4.4	19.8	28	126	—	—
Little Emory at Hwy 61	"	1.2	8.4	3.8	17.1	19	86	—	—
K-25 Credit Union	"	1.8	12.6	12.6	56.7	35	158	—	—
Mt. Pisgah Church	11-28-61	0.1	0.7	0.6	2.7	765	3443	4.7	—
Buttermilk Road	"	0.3	2.1	0.8	3.6	509	2291	8.4	—
Lawrville	"	0.7	4.9	1.6	7.2	352	1584	13.1	—
Little Emory at Hwy 61	"	0.0	0.0	1.0	4.5	846	3807	2.7	—
K-25 Credit Union	"	0.5	3.5	1.0	4.5	499	2246	3.2	—

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
Grasses

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
5 miles		ppm	µc/gc x10⁻⁷	d/m/~~100 cc~~	µc/gc x10⁻⁷	d/m/~~100 cc~~	µc/gc x10⁻⁷	ppm	
Mt Pisgah Church	CY-1961	—	7.0 (2) / 3.5	—	18.9 (2) / 9.5	—	3695 (2) / 1848	—	
Buttermilk Road	"	—	16.8 / 8.4	—	39.6 / 19.8	—	2399 / 1200	—	
Lawnville	"	—	8.4 / 4.2	—	27.0 / 13.5	—	1710 / 855	—	
Little Emory at Hw 61	"	—	8.4 / 4.2	—	21.6 / 10.8	—	3893 / 1947	—	
K-25 Credit Union	Total Average	—	16.1 / 8.1	—	61.2 / 30.6	—	2404 / 1202	—	
5 Locations ~~Mt Pisgah Church~~	Total Ave.		56.7 (10) / 5.7		168.3 (10) / 16.8		14,101 (10) / 1410		
~~Buttermilk Road~~									
~~Lawnville~~									
~~Little Emory at Hw 61~~									
~~K-25 Credit Union~~									

ORGDP

Year 1960

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
Grasses

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppM	μc/g ×10⁻⁷	d/m/gram	μc/g ×10⁻⁷	d/m/gram	μc/g ×10⁻⁷	ppm	
Mt. Pisgah Church	4-13-60	0.6	4.2	0.2	0.9	26	117	—	—
Buttermilk Road	"	0.0	0.0	0.0	0.0	17	77	—	—
Lawnville	"	1.3	9.1	5.6	25.2	21	95	—	—
Little Emory at Hw 61	"	0.6	0.0	0.0	0.0	20	90	—	—
K-25 Credit Union	"	0.4	2.8	0.0	0.0	40	180	—	—
Mt Pisgah Church	7-29-60	0.8	5.6	10.8	48.6	46	207	—	—
Buttermilk Road	"	0.2	1.4	4.8	21.6	25	113	—	—
Lawnville	"	0.2	1.4	0.9	8.1	18	81	—	—
Little Emory at Hw 61	"	1.5	10.5	18.3	101.7	64	288	—	—
K-25 Credit Union	"	0.8	5.6	10.0	45.0	23	104	—	—

ORGDP

Year 1960

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(~~SOIL~~)(VEGETATION)

Grasses

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	µc/g x10⁻⁷	d/m/~~100 cc~~	µc/g x10⁻⁷	d/m/~~100 cc~~	µc/g x10⁻⁷	ppm	
Mt Pisgah Church	11-8-60	0.3	2.1	0.2	0.9	56	252	—	—
Buttermilk Road	"	0.1	0.7	0.2	0.9	14	63	—	—
Lawrville	"	1.9	13.3	0.2	0.9	9	40	—	—
Little Emory at Hw 61	"	0.2	1.4	1.4	6.3	7	31	—	—
K-25 Credit Union	"	0.5	3.5	1.6	7.2	43	193	—	—
Mt Pisgah Church	CY-1960	—	11.9 (3) / 4.0	—	50.4 (3) / 16.8	—	576 (3) / 192	—	—
Buttermilk Road	"	—	2.1 / 0.7	—	22.5 / 7.5	—	253 / 84	—	—
Lawrville	"	—	23.8 / 7.9	—	34.2 / 11.4	—	216 / 72	—	—
Little Emory at Hw 61	"	—	11.9 / 4.0	—	108.0 / 36.0	—	409 / 137	—	—
K-25 Credit Union	Total average	—	11.9 / 4.0	—	52.2 / 17.4	—	477 / 159	—	—
5 Locations	Total Ave.		61.6 (15) / 4.1		267.3 (15) / 17.8		1931 (15) / 128.7		

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

[redacted]

(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	µc/gx10⁻⁷	d/m/~~100 cc~~	µc/gx10⁻⁷	d/m/~~100 cc~~	µc/gx10⁻⁷	ppm	
Mt. Pisgah	3/27/63	0.0		0.4		231		18	
Buttermilk Rd.	"	0.0		0.8		323		22	
Lawnville	"	0.0		0.6		336		23	
Highway 61	"	1.0		1.8		306		10	
Credit Union	"	0.6		1.2		731		17	
Mt. Pisgah	6/18/63	0.0		0.4		362		14	
Buttermilk Rd.	"	0.0		0.6		278		11	
Lawnville	"	0.0		0.2		388		12	
Highway 61	"	0.0		0.2		393		11	
Credit Union	"	0.2		0.2		509		7	

ORGDP

Year 1963

ENVIRONMENTAL SAMPLING

~~([illegible])([illegible])([illegible])([illegible])~~

(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppm	µc/gm x 10⁻⁷	d/m/100 cc	µc/gm x 10⁻⁷	d/m/100 cc	µc/gm x 10⁻⁷	ppm	
Mt. Pisgah	8/8/63	0.0		1.0		77		3	
Buttermilk Rd.	"	0.0		0.9		117		7	
Lawnville	"	0.1		1.3		207		7	
Highway 61	"	0.1		1.9		80		11	
Credit Union	"	0.1		1.2		110		2	
Mt. Pisgah	CY	0.0 / 0.0		1.8 / 0.6		670 / 223		35 / 12	
Buttermilk Rd.	"	0.0 / 0.0		2.3 / 0.8		718 / 239		40 / 13	
Lawnville	"	0.1 / 0.03		2.1 / 0.7		931 / 310		42 / 14	
Highway 61	"	1.1 / 0.4		3.9 / 1.3		779 / 260		32 / 11	
Credit Union	"	0.9 / 0.3		2.6 / 0.9		1350 / 450		26 / 9	
(15)	Total / $\bar{x}$	2.1 / 0.1		12.7 / 0.8		4448 / 300		175 / 12	

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

~~SAMPLE~~ LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		~~ppm~~	~~μc/gx10⁻⁷~~	~~d/m/100 cc~~	~~μc/gx10⁻⁷~~	~~d/m/100 cc~~	~~μc/gx10⁻⁷~~		
Mt. Pisgah Church	4-10-62	Lab error ~~0.003~~	2.1 ~~0.021~~	0.2	0.9	514	2313	4.7	—
Buttermilk Road	"	~~0.008~~	5.6 ~~0.056~~	0.4	1.8	464	2088	4.5	—
Lawnville	"	~~0.014~~	9.8 ~~0.098~~	0.6	2.7	297	1337	6.9	—
Little Emory at Highway 61	"	~~0.002~~	1.4 ~~0.014~~	0.2	0.9	412	1854	6.9	—
K-25 Credit Union	"	~~0.008~~	5.6 ~~0.056~~	0.2	0.9	323	1454	4.6	—
Mt. Pisgah Church	9-14-62	0.2	1.4	0.6	2.7	100	450	5.0	—
Buttermilk Road	"	0.3	2.1	1.0	4.5	89	400	8.4	—
Lawnville	"	0.3	2.1	0.6	2.7	152	684	10.0	—
Little Emory at Highway 61	"	0.3	2.1	0.6	2.7	33	149	12.9	—
K-25 Credit Union	"	0.4	2.8	1.0	4.5	104	468	8.3	—

ORGDP

Year 1962

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~

(PINENEEDLES)

SAMPLE LOCATION	DATE	Uranium		Alpha		Beta		
		gm	g	gm	g	gm	g	
Mt. Pisgah Church	CY-1962	—	3.5 / 1.8	—	3.6 / 1.8	—	2763 / 1382	9.7 / 4.8	—
Buttermilk Road	"	—	7.7 / 3.9	—	6.3 / 3.2	—	2488 / 1244	12.8 / 6.6	—
Lawnville	"	—	11.9 / 6.0	—	5.4 / 2.7	—	2021 / 1011	16.9 / 8.5	—
Little Emory at Highway 61	"	—	3.5 / 1.8	—	3.6 / 1.8	—	2003 / 1002	19.8 / 9.9	—
K-25 Credit Union	"	—	8.4 / 4.2	—	5.4 / 2.7	—	1922 / 961	12.9 / 6.5	—
5 Locations Mt. Pisgah Church	"	—	350 (10) / 3.5	—	24.3 / 2.4	—	11,197 / 1120	72.2 / 7.2	
~~Buttermilk Road~~									
~~Lawnville~~									
~~Little Emory at Highway 61~~									
~~K-25 Credit Union~~									

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS Uranium ppm	Uranium pc/g	Alpha d/m/gram	Alpha pc/g	Beta d/m/gram	Beta pc/g	[illegible]	[illegible]
Mt. Pisgah Church	2-13-61	0.3	2.1	0.8	3.6	18	81	—	—
Buttermilk Road	"	0.2	1.4	1.6	7.2	19	86	—	—
Lawnville	"	0.5	3.5	2.8	12.6	16	72	—	—
Little Emory at Highway 61	"	0.2	1.4	1.0	4.5	16	72	—	—
K-25 Credit Union	"	0.7	4.9	1.6	7.2	13	59	—	—
Mt. Pisgah Church	11-28-61	0.0	0.0	0.2	0.9	342	1539	2.3	—
Buttermilk Road	"	0.4	2.8	0.0	0.0	195	878	3.0	—
Lawnville	"	0.4	2.8	0.4	1.8	191	860	1.6	—
Little Emory at Highway 61	"	0.1	0.7	0.8	3.6	343	1544	9.1	—
K-25 Credit Union	"	0.4	2.8	0.8	3.6	190	855	5.5	—

ORGDP

Year 1961

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		[illegible]	
		ppm	μc/g×10⁻⁷	d/m/gram	μc/g×10⁻⁷	d/m/gram	μc/g×10⁻⁷	ppm	ph
Mt. Pisgah Church	CY-1961	—	2.1 / 1.0 (2)	—	4.8 / 2.3 (2)	—	1620 / 810 (2)	2.3 / 2.3 (1)	—
Buttermilk Road	"	—	4.2 / 2.1	—	7.2 / 3.6	—	964 / 482	3.0 / 3.0	—
Lawnville	"	—	6.3 / 3.2	—	14.4 / 7.2	—	932 / 466	1.6 / 1.6	—
Little Emory at Highway 61	"	—	2.1 / 1.0	—	8.1 / 4.0	—	1616 / 808	9.1 / 9.1	—
K-25 Credit Union	"	—	7.7 / 3.9	—	10.8 / 5.4	—	914 / 457	5.5 / 5.5	—
5 Locations ~~Mt. Pisgah Church~~	"	—	22.4 / 2.2 (10)	—	45.0 / 4.5 (10)	—	6046 / 604.6 (10)	21.5 / 4.3 (5)	—
~~Buttermilk Road~~									
~~Lawnville~~									
~~Little Emory at Highway 61~~									
~~K-25 Credit Union~~									

ORGDP

Year 1960

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(AIR FILTER)~~

(PINENEEDLES)

[illegible]	DATE	[illegible]		[illegible]					
		[illegible]							
		m	g	gram	g	gram	g		
Mt. Pisgah Church	4-13-60	0.5	3.5	0.0	0.0	12	54	—	—
Buttermilk Road	"	0.6	4.2	0.2	0.9	6	27	—	—
Lawnville	"	0.7	4.9	0.6	2.7	5	23	—	—
Little Emory at Highway 61	"	2.3	16.1	2.6	11.7	8	36	—	—
K-25 Credit Union	"	1.2	8.4	0.4	1.8	12	54	—	—
Mt. Pisgah Church	7-29-60	0.2	1.4	1.2	5.4	104	468	—	—
Buttermilk Road	"	0.1	0.7	0.2	0.9	59	266	—	—
Lawnville	"	Lab	Lost	—	—	—		—	—
Little Emory at Highway 61	"	0.1	0.7	0.2	0.9	40	180	—	—
K-25 Credit Union	"	0.8	5.6	3.0	13.9	57	257	—	—

ORGDP

Year 1960

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~

(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta			
		ppm	µc/g	d/m/gram	µc/g	d/m/gram	µc/g		
Mt. Pisgah Church	11-8-60	0.2	1.4	0.8	3.6	18	81	—	—
Buttermilk Road	"	0.3	2.1	0.8	3.6	14	63	—	—
Lawnville	"	0.4	2.8	13.8	62.1	12	54	—	—
Little Emory at Highway 61	"	0.2	1.4	1.4	6.3	7	31	—	—
K-25 Credit Union	"	0.2	1.4	3.2	14.4	20	90	—	—
Mt. Pisgah Church	CY-1960	—	6.3 (3) / 2.1	—	9.0 (3) / 3.0	—	603 (2) / 201	—	—
Buttermilk Road	"	—	7.0 / 2.3	—	5.4 / 1.8	—	356 / 119	—	—
Lawnville	"	—	7.7 (2) / 3.9	—	64.8 (2) / 32.3	—	77 (2) / 39	—	—
Little Emory at Highway 61	"	—	18.2 / 6.1	—	18.9 / 6.3	—	247 (3) / 82	—	—
K-25 Credit Union	"	—	15.4 / 5.1	—	30.1 / 10.0	—	401 / 137	—	—
5 locations	"	—	54.6 (13) / 3.9	—	128.2 (14) / 9.2	—	1684 (14) / 120	—	—

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE ^{3}	ALPHA ACTIVITY c/min/ft^3	ALPHA ACTIVITY µc/cc*	Beta c/min/ft^3
S	HPX-10A1	5 mi. S.E. of Plant Butler Creek Rd.	4-13-60	4-7 mi/hr from NW	10	140	0.021		0.007
	10A2	"	4-13-60	"	10	120	0.0		0.025
E	HPX-11-A1	5 mi. East of Plant Bear Crk. Road	4-13-60	13-18 mi/hr from N.W.	10	140	0.0		0.0
	-11A2	"	4-13-60	"	10	150	0.013		0.0
E	HPX-12A1	5 mi. N.E. of Plant Atop Black Oak Ridge	4-13-60	3-7 mi/hr from N.W.	6	78	0.026		0.0
	12A2	"	4-13-60	"	6	90	0.0		0.0
N	HPX-13A1	5 mi. N. of Plant Mt. Pleasant Church	4-13-60	13-18 mi/hr from S.W.	10	130	0.015		0.0
	13A2	"	4-13-60	"	10	120	0.0		0.180
E	HPX-14A1	5 mi. N.E. of Plant Bridge on Poplar Ck.	4-13-60	13-18 mi/hr from N.E.	10	120	0.0		0.075
	14A2	"	4-13-60	"	10	150	0.0		0.0
W	HPX-15A1	5 mi. N.W. of Plant Little Emory Bridge - Highway 6	4-13-60	15-25 mi/hr. from S.E.	9	108	0.0		0.0
	15A2	"	4-13-60	"	9	135	0.0		0.037
W	HPX-16A1	5 mi. West of Plant Dockin Valley off Emory Rd.	4-13-60	13-18 mi/hr from South east	10	120	0.0		0.042
	16A2	"	4-13-60	"	10	140	0.0		0.0
S	HPX-17A1	5 mi. S.W. of Plant near Lockwell	4-14-60	13-18 mi/hr from Northwest	10	130	0.0		0.0
	17A2	"	4-14-60	"	10	130	0.015		0.10
	HPX-18A1	[illegible] of Highway 458	4-14-60	12-18 mi/hr from North west	10	120	0.0		0.208

* 0.001 d/min/ft^3 = 5×10^{-13} µc/cc.

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY µc/cc*	Beta c/min/ft³
	HPX-18-A	1/2 mile from Plant Highway #58	4-14-60	13-18 mi/hr. from N.W.	10	140	0.0		0.0
W	HPX-19 A	2 mi S.W. of Plant at Powelhouse	5-24-60	5-15 mi/hr from S.W.	10	170	0.029		0.143
S	HPX-20 A	2 mi S. of Plant at Ballaler Bridge, Bra	"	"	10	170	0.018		0.200
S	HPX-21 A	2 mi S.E. of Plant Bear Cr. Rd near Wheat Rd. intersection	"	"	10	170	0.006		0.171
E	HPX-22 A	2 mi E. of Plant near White Wing Intersection	"	"	10	170	0.00		0.182
E	HPX-23 A	2 mi N.E. of Plant East Fork Valley	"	"	10	160	0.019		0.331
	23 B	"	"	"	10	190	0.021		0.010
E	HPX-24 A	2 mi N.E. of Plant Area Black Oak Ridge	"	13-18 mi/hr from N.W.	10	160	0.006		0.019
	24 B	"	"	"	10	190	0.000		0.210
N	HPX-25 A	2 mi. N. of Plant Sugar Grove Valley on Bear Rd	"	5-15 mi/hr from S.W.	10	180	0.017		0.156
	25 B	"	"	"	10	200	0.020		0.330
W	HPX-26 A	2 mi N.W. of Plant Sugar Grove Valley	"	"	10	180	0.000		0.333
	26 B	"	"	"	10	170	0.000		0.347
W	HPX-19 B	2 mi S.W. of Plant at Powelhouse	4-21-60 to 4-22-60	—	1045	742	0.001		0.001
	19 C	"	4-22-60 to "	—	385	273	0.004		0.073
	19 D	"	4-22-60 to 4-23-60	—	1410	1001	0.001		0.002

* 1 c/min/ft³ = 1.8 x 10⁻⁶ µc/cc

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	11-14-69		0.00		0.09		0.11	0.10	7.0
Buttermilk Road			0.00		0.10		0.06	0.10	8.4
Lawnville			0.00		0.05		0.06	0.20	8.4
Little Emory at Highway 61			0.00		0.08		0.00	0.80	7.8
K-25 Credit Union			0.00		0.04		0.05	0.20	8.4
Mt. Pisgah Church	5-21-68		0.00		0.00		0.11	0.40	8.7
Buttermilk Road	5-20-68		0.00		0.00		0.15	0.20	8.0
Lawnville	5-20-68		0.00		0.00		0.00	0.20	8.1
Little Emory at Highway 61	5-21-68		0.00		0.00		0.02	0.20	7.2
K-25 Credit Union	5-21-68		0.00		0.20		0.03	0.40	7.9

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	µc/cc×10^{-7}	d/m/100 cc	µc/cc×10^{-7}	d/m/100 cc	µc/cc×10^{-7}		
Mt. Pisgah Church	(74W) 10-14-66		0.00		0.05		0.18	0.2	4.4
Buttermilk Road	(75W) 10-14-66		0.00		0.11		0.10	0.5	4.9
Lawnville	(76W) 10-14-66		0.00		0.13		0.18	0.2	4.8
Little Emory at Highway 61	(77W) 10-14-66		0.00		0.02		0.16	0.1	5.0
K-25 Credit Union	(78W) 10-14-66		0.00		0.02		0.19	0.2	5.0
Mt. Pisgah Church	3-23-67		0.00		0.12		0.00	0.20	7.0
Buttermilk Road	3-23-67		0.00		0.10		0.15	0.20 ~~0.02~~	7.3
Lawnville	3-23-67		0.00		0.04		0.00	0.20	7.4
Little Emory at Highway 61	3-23-67		0.00		0.01		0.13	0.90	7.0
K-25 Credit Union	3-23-67		0.00		0.00		0.00	0.50	7.3

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD~~)(~~SOIL~~)(VE~~GETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	11-4-65		0.00		0.06		0.04	0.4	6.2
Buttermilk Road	"		0.00		0.05		0.00	0.5	7.1
Lawnville	"		0.00		0.07		0.00	0.5	7.3
Little Emory at Highway 61	"		0.00		0.03		0.00	1.6	7.2
K-25 Credit Union	"		0.00		0.00		0.20	0.3	7.7
Mt. Pisgah Church	6-1-66		0.00		0.05		0.14	0.1	6.4
Buttermilk Road	"		0.00		0.04		0.24	0.2	7.6
Lawnville	"		0.00		0.05		0.00	0.2	7.5
Little Emory at Highway 61	"		0.06		0.14		0.20	0.2	6.7
K-25 Credit Union	"		0.00		0.07		0.16	0.1	7.5

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD~~) (~~SOIL~~) (~~[illegible]~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ~~ppb~~	ALPHA ~~d/m/100 ml~~ μc/cc x 10⁻⁷	BETA ~~d/m/100 ml~~ μc/cc x 10⁻⁷	FLUORIDES ppm	pH	
HP6W	MT. Pisgah	9-9-64	0.00	0.10	1.31	0.2	6.7	
HP 7W	Buttermilk Rd.	↓	0.00	0.00	0.08	0.3	7.8	
HP 8W	Lawnville		0.00	0.00	0.03	0.3	7.8	
HP 9W	Hwy #61		0.00	0.00	0.18	0.2	7.5	
HP10W	Black Oak Ridge		0.00	0.00	0.13	0.3	7.8	
HP 1W	MT. Pisgah	3-4-65	0.00	0.03	0.09	1.0	5.3	
HP 2W	Buttermilk Rd.	↓	0.00	0.01	0.00	0.8	6.4	
HP 3W	Lawnville		0.00	0.10	0.08	0.4	6.4	
HP 4W	Hwy #61		0.00	0.07	0.06	0.3	6.1	
HP 5W	Black Oak Ridge		0.00	0.02	0.00	0.0	7.1	

NOTE: 1 ppm U^n/cc = 7×10^{-7} μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER~~) (~~MUD~~) (SOIL) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	~~FLUORIDES~~	~~pH~~	
			ppm	d/m/~~100ml~~	d/m/~~100ml~~	Uranium ~~ppm~~	α	β
HPX-185	12 mi Southwest of Plant. Farmland off Highway #58.	4-14-60	0.7	2.2	13	4.9	19.8	32.8

NOTE: 1 ppm U^n/cc = $.7 \times 10^{-7}$ uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ ~~(MUD)~~ (SOIL) ~~(VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS			uc/gm X10⁻⁷		
			URANIUM	ALPHA	BETA	~~FLUORIDES~~	~~pH~~	
			ppM	d/m/gm	d/m/gm	~~ppm~~	α	β
HPX-10S	5 mi SE of Plant Buttermilk Rd. off White Wing Rd.	4-13-60	6.3	7.7	133	44.1	38.6	59.8
HPX-11S	5 mi east of Plant Bear Creek Rd.	4-13-60	1.2	3.1	59	8.4	27.9	26.5
HPX-12S-2	5 mi northeast of Plant Atop Black Oak Ridge. (18" 2" of soil)	4-13-60	1.9	5.8	122	13.3	52.2	54.9
HPX-12S-4	5 mi NE of Plant Atop Black Oak Ridge. (4" of soil)	4-13-60	0.9	3.4	51	6.3	30.6	22.9
HPX-13S	5 mi north of Plant Highway #61 at Mt. Pisgah Church	4-13-60	1.3	6.9	49	9.1	62.1	22.0
HPX-14S	5 mi N.E. of Plant Auger Brake Valley at Poplar Crk. Bridge.	4-13-60	3.8	2.8	146	26.6	25.2	65.7
HPX-15S	5 mi N.W. of Plant At Bridge of Little Emory on Highway #61.	4-13-60	1.3	3.9	31	9.1	35.1	13.9
HPX-16S	5 mi west of Plant Dickie Valley at Emory River.	4-13-60	2.2	4.4	117	15.4	39.6	52.6
HPX-17-S2	5 mi Southwest of Plant 1½ mi east of Lenoville	4-14-60	1.0	7.3	104	7.0	38.7	46.8
17S-4	"	4-14-60	0.9	2.3	57	6.3	20.7	25.65

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/gm = 4.5×10^{-7} uc/gm

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ (MUD) ~~(SOIL) (VEGETATION)~~

Study of Variance in Radioactivity Levels at a given Sampling Point

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ppm	pH	
East Bank at Poplar Creek	North Bank 30' W of bridge	4-19-60	54	84	215			
	South Bank 30' W of bridge	"	68	91	194			
	South Bank 30' E of bridge	"	75	98	286			
Poplar Creek at Blair Road	North Bank 200' E of RR Bridge	4-19-60	16	32	47			
	North Bank 30' W of Hiway Bridge		21	33	123			
	South Bank 30' E of Hiway Bridge		20	31	86			
470W	Mod, K-1131 Drain	5-16-61	14.5	14	212	210		
471W	Mod, K-1410 Drain	5-16-61	6,540	51,260	9,006,000	314,000		
472W	Mod K-1410 Discharge at Poplar Creek	5-16-61	540	1,119	272,700	83,600		

NOTE: 1 ppm U^n/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ (MUD) ~~(SOIL) (VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ppm	pH	
(Rocky)	K-1131 Drain to Poplar Creek	4-20-60						
(Sandy)	K-1410 Drain to Poplar Creek	4-20-60						

NOTE: 1 ppm U^{n}/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

([redacted]) (MUD) [redacted]

East Fork Creek

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	FLUORIDES	pH	
			ppb	d/m/100ml	d/m/~~100ml~~ gm	ppm		
	Bridge at Bear Creek Road	7/54	20	212	4,038			
	Bridge on Gamble Valley Road	"	40	2	139,529			
	Near tennis courts at West Village	"	40	844	66,656			
	Near West End Service Station	"	30	108	6,999			
	West of Sewage Disposal Plant near Golf Course	"	40	342	29,208			
	East Fork at Reding Academy	"	35	348	33,509			
	East Fork at Turnpike Bridge	"	30	62	2,106			
	East Fork at Quarry Road Bridge	"	20	26	1,745			
	East Fork at Poplar Creek	"	3	42	273			
	Bear Creek at White Wing and Turnpike "Y"	"	1.5	11	436			

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

ENVIRONMENTAL SAMPLING -- ORCDP

~~([illegible])~~ (MUD) ~~([illegible])~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	FLUORIDES	pH	
			ppm	d/m/~~gram~~	d/m/~~gram~~	ppm		
ORNL	Ft. Loudon	1954			110	(4.5×10^{-5} uc/gram)		
HPX-18M	Farm Pond off Highway #58, 12 mi from Plant	Apr. 14, 1960	0.9	2.5	56			

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

ENVIRONMENTAL SAMPLING -- ORGAP

[redacted] (MUD) [redacted]

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	FLUORIDES	pH	
			ppm	d/m/100ml	d/m/[illegible]	ppm		
	CW-17 Scarboro Gauging Sta.	9-5-58	7×10^{-7} μc/cc 1	1.35×10^{-6} 3	2.7×10^{-5} μc/g 59	—	—	
	CRM - 39.0 "	7-29-59	1.4×10^{-6} μc/cc 2 [illegible]	3.02×10^{-6} 6.7	4.3×10^{-5} μc/g 95	—	—	
	"	4-29-60	7×10^{-7} μc/cc 1	1.26×10^{-6} 2.8	1.44×10^{-5} 32			
	"	5-18-62	0.4	8.0	99			
	"	5-20-63	2 ug/g	5.6 c/m/g	52 c/m/g			
	CW-18 River Rd. & Emory Valley	9-5-58	14×10^{-7} μc/cc 2	1.80×10^{-6} μc/cc 4	2.07×10^{-5} μc/g 47			
	C.R.M. 49.6	7-29-59	7×10^{-7} μc/cc 1 [illegible]	7.94×10^{5} 176.4	2.[illegible] μc/g 65			
	"	4-29-60	4.9×10^{-7} μc/cc 0.7	4.95×10^{-6} μc/cc 11.0	1.3×10^{-5} μc/cc 29			
	"	5-18-62	0.7	5.4	109			
	"	5-20-63	2 ug/g	3.9 c/m/g	103 c/m/g			

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

Normal U in Potable Water

Permissible (National Bureau of Standards)	7×10^{-5}	microcurie/ml
Local Environs Permissible (1/10th)	7×10^{-6}	"
Uranium contribution of recovered HF used to fluoridate water supply	7×10^{-13}	"
1957 Ft. Loudon Background (maximum)*	5×10^{-14}	"
1957 Ft. Loudon Background (minimum)*	5×10^{-15}	"

* H. H. Abbee, X-10 Health Physics indicated that daily samples are composited for quarterly samples, with 4 values reported each year.

NBS:nbs

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(WATER)(~~MUD~~)(~~SOIL~~)(~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	6.18.69		0.00		0.14		0.00	0.30	7.8
Buttermilk Road	6.18.69		0.00		0.02		0.00	0.10	8.0
Lawnville	6.18.69		0.00		0.06		0.00	0.10	8.5
Little Emory at Highway 61	6.18.69		0.00		0.00		0.00	0.10	8.0
K-25 Credit Union	6.20.69		0.00		0.15		0.00	0.00	5.4
Mt. Pisgah Church	12.15.69		0.00		0.11		0.10	0.40	6.7
Buttermilk Road	12.9.69		0.00		0.00		0.07	0.20	7.3
Lawnville	12.9.69		0.00		0.17		0.00	0.10	7.7
Little Emory at Highway 61	[illegible]		[illegible]		0.22		0.00	0.30	7.2
K-25 Credit Union	[illegible]		0.00		0.18		0.00	0.10	7.3

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*	$\times 10^{-13}$ Avg μc/cc
W	HX-27A	Lower Bowen at River 2 Mile	7-27-60		10	12	0.008	4.0	2.0
	B	"	"		10	13	.006	0.0	
S	28A	Gallatin Bridge 2 Mile	"		10	14	.007	3.5	3.5
	B	"	"		10	14	.007	3.5	
S	29A	Bear Cr. Rd. 2 Mile	"		10	15	.000	0.0	0.0
	B	"	"		10	12	.000	0.0	
E	30A	White Wing Inter. 2 Mi	"		10	15	.000	0.0	2.0
	B	"	"		10	13	.008	4.0	
E	31A	East Fork Valley 2 Mi.	"		10	13	.008	4.0	2.0
	B	"	"		10	12	.000	0.0	
E	32A	Atop Black Oak Ridge 2 Mi.	"		10	13	.008	4.0	2.0
	B	"	"		10	13	.000	0.0	
N	33A	Sugar Grove at Poplar 2 Mi	"		10	12	.000	0.0	2.0
	B	"	"		10	12	.008	4.0	
W	34A	Sugar Grove along Blair - 2 Mile	"		10	14	.007	3.5	1.6
	B	"	"		10	14	.000	0.0	
	[illegible]	[illegible]	[illegible]		10	13	.015 ~~[illegible]~~	7.5	

* 0.01 c/min/ft³ = 5 × 10^{-13} μc/cc.

ENVIRONMENTAL AIR STUDY

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*
UPK-35B	Buttermilk Rd 5 mi.	7-28-60		10	10	.020	10.0
36A	Bear Cr. near Y-12 5 mi.	"		10	15	.007	3.5
36B	"	"		10	11	.000	0.0
37A	Atop Black Oak Ridge 5 Mile	"		10	10	.020	10.0
37B	"	"		10	14	.000	0.0
38A	Poplar Cr. Bridge at Sugar Grove 5 mi.	"		10	14	.000	0.0
B	"	"		10	10	.000	0.0
39A	Mt. Lizgal Church Hy #61, 5 Mi.	"		10	14	.000	0.0
B	"	"		10	14	.007	3.5
40A	Little Emory Bridge Hy #61, 5 Mi.	"		10	14	.007	3.5
B	"	"		10	12	.000	0.0
41A	Dickie Valley at Emory Riv. 5 mi.	"		10	14	.007	3.5
B	"	"		10	14	.019	9.5
42A	Lawrenville - 5 Mi.	7-29-60		10	15	.007	3.5
B	"	"		10	14	.000	0.0
43A	Off Hy. #58 1½ mi.	7-29-60		10	13	.008	4.0
B	"	"		10	16	.006	3.0

* 0.01 c/min/ft³ = 5 x 10⁻¹³ μc/cc

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION (min)	AIR FLOW RATE (ft³/min)	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc* X 10⁻¹³
E	44-A	5 mi - Sugar Grove Valley at Poplar Cr. Br.	11-8-60		10	12	0.22	110
	-B	"	"		10	10	0.27	135
N	45-A	5 mi - Mt. Pisgah Church. Hwy #61	"		10	11	0.57	285
	-B	"	"		10	11	0.09	45
W	46-A	5 mi - Bridge at Little Emory Ri. Hwy #61	"		10	12	0.60	3[illegible]
	-B	"	"		10	10	0.16	80
W	47-A	5 mi - Dickie Valley at Emory River	"		10	11	0.32	160
	-B	"	"		10	10	0.27	135
Background	48-A	12 mi - Hwy. #58 S.W. of Kingston	"		10	13	0.05	25
	-B	"	"		10	11	0.31	155
S	49-A	5 mi - Lawnville S.W. of Plant	"		10	10	0.10	50
	-B	"	"		10	10	0.14	70
S	50-A	5 mi - Buttermilk Rd. near White Wing Bridge	"		10	10	0.09	45
	-B	"	"		10	10	0.06	30
E	51-A	[illegible] - Bear Cr. Rd. near Y-12	"		10	12	0.13	65
	-B	"	"		10	11	0.14	70
E	52-A	[illegible] Oak [illegible] near Credit Union	11-[illegible]-60		10	12	0.12	60

* [illegible] c/min/ft³ = [illegible] x 10⁻¹³ μc/cc

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*
E	52-B	5 mi. Atop Black Oak Ridge	11-14-60		10	10	0.24	120
E	53-A	2 mi. Atop Black Oak Ridge	"		10	13	1.35 ~~0.96~~	675
	-B	"	"		10	11	1.15 ~~0.82~~	575
E	54-A	2 mi. East Fork Valley	"		10	10	0.33	165
	-B	"	"		10	12	0.14	70
E	55-A	2 mi. White Oak Intersection	"		10	10	0.21	105
	-B	"	"		10	10	0.56	280
W	56-A	2 mi. Powerhouse at Clinch River	"		10	10	0.15	75
	-B	"	"		10	12	0.05	25
S	57-A	2 mi. at Gallaher Bridge	"		10	11	0.06	30
	-B	"	"		10	12	0.03	15
S	58-A	2 mi. Bear Cr. near Wheat Rd. Intersection	"		10	11	0.11	55
	-B	"	"		10	11	0.07	35
N	59-A	Blair Rd. at Poplar Cr. 2 mi.	"		10	12	0.57	285
	-B	"	"		10	8	0.51	255
W	60-A	2 mi. Bear Grove Valley Bldg. Plant	"		10	10	0.45	225
	-B				10	9	0.27	135

* 0.01 c/min/ft³ = 5 x 10⁻¹³ μc/cc.

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc* (X 10⁻¹³)
W 0	61-A	Powerhouse - 2 mi	11/29/60	from N.W.	15	21	0	0
2	-B	" "	"	"	15	11	0.012	6.0
S 0	62-A	Louisville 5 mi.	"	"	15	11	0	0.0
1	-B	" "	"	"	15	23	0.003	1.5
E 0	63-A	Bear Cr Rd at Yoke Intersection - 2 mi			15	23	0	0.0
2	B	"	"	"	15	11		6.0
S 2	64-A	Buttermilk Rd - 5 mi	"	"	15	11	0.012	6.0
0	B	"	"	"	15	23		0.0
E 5.9	65-A	Atop Black Oak Ridge - 5 mi	"	"	15	11	0.023	11.5
0	-B	"	"	"	15	22		0.0
E 3.4	66-A	Atop Black Oak Ridge 2 miles	"	"	15	11	0.020	10.0
0	-B	"	"	"	15	23		0.0
N 0	67-A	Poplar Cr. & Blair Rd. 2 mi.	11/30/60	"	15	23		0.0
1	B	"	"	"	15	11	0.006	3.0
N 7.9	68-A	Mt. Lisgah Church 5 mi.	"	"	15	11	0.017	8.5
0	B	"	"	"	15	23	0	0.0

* 0.01 c/min/ft³ = 5 x 10⁻¹³ μc/cc

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc* X10-13
E	HPX-69A	5 mi Sugar Grove Valley at Poplar Cr. Bridge	12/9/60	From N.E. & Variable	10	13	0.023	11.5
	B	"	"		10	11	0.009	4.5
	C	"	"		10	14	000	0.0
	D	"	"		10	16	000	0.0
N	HPX-70A	5 mi Mt. Regal Church at Route #61	12/9/60	N.E.	10	17		0.0
	B	"	"		10	11	0.009	4.5
	C	"	"		10	18	0.017	8.5
	D	"	"		10	12	0.050	25.0
W	HPX-71A	5 mi Little Emory River Bridge	12/9/60	NE	10	15	0.007	3.5
	B	"	"		10	12	0.008	4.0
	C	"	"		10	18	0.000	0.0
	D	"	"		10	11	0.027	13.5
W	HPX-72A	5 mi Dickie Valley at Emory River	12/9/60	NE	10	13	0.000	0.0
	B	"	"		10	17	000	0.0
	C	"	"		10	17	000	0.0
	D	"	"		10	13	000	0.0

ENVIRONMENTAL AIR STUDY

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc* X 10⁻¹³
W HPX-73A	2 mi Sugar Grove Valley N.W. of Blair Rd	12/9/60	NE	10	12	0.00	0.0
B	"	"		10	17	0.00	0.0
C	"	"		10	19	0.00	0.0
D	"	"		10	14	0.00	0.0
N HPX-74A	2 mi Blair Rd at Poplar Creek	12/9/60	NE	10	10	0.00	0.0
B	"	"		10	19	0.00	0.0
C	"	"		10	12	0.008	4.0
D	"	"		10	18	0.00	0.0
HPX-75A	1½ mi Hwy #58 S.W. of Kingston	12/9/60	NE	10	16	0.00	0.0
B	"	"		10	14	0.02	10.0
C	"	"		10	15	0.00	0.0
D	"	"		10	16	0.006	3.0
S HPX-76A	3 mi Lawsville	12/9/60	NE	10	12	0.008	4.0
B	"	"		10	12	0.00	0.0
C	"	"		10	17	0.006	3.0
D	"	"		10	13	0.00	0.0

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft^3	ALPHA ACTIVITY μc/cc*
S	HPX-77A	5 mi Buttermilk Rd	12/13/60	NE	10	10	0.010	5.0
	B	"	"		10	16	0.00	0.0
	C	"	"		10	17	0.00	0.0
	D	"	"		10	11	0.00	0.0
E	HPX-78A	5 mile Bear Cr. Rd near Y-12	12/13/60	NE	10	16	0.006	3.0
	B	"	"		10	9	0.010	5.0
	C	"	"		10	16	0.00	0.0
	D	"	"		10	8	0.00	0.0
E	HPX-79A	2 mile White Wing Intersect	12/13/60	NE	10	17	0.006	3.0
	B	"	"		10	10	0.00	0.0
	C	"	"		10	17	0.00	0.0
	D	"	"		10	11	0.00	0.0
E	HPX-80A	5 Miles Atop Black Oak Ridge	12/13/60	NE	10	9	0.00	0.0
	B	"	"		10	19	0.00	0.0
	C	"	"		10	17	0.00	0.0
	D				10	11	0.00	0.0

X10-13

* [illegible] c/min/[illegible] x 10-13 μc/cc.

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*
E	HPX-81A	2 mile Atop Black Oak Ridge	12/13/60	NE	10	17	0.00	0.0
	B	"	"	"	10	9	0.00	0.0
	C	"	"	"	10	17	0.00	0.0
	D	"	"	"	10	9	0.00	0.0
	E	"	"	"	10	17	0.00	0.0
	F	"	"	"	10	9	0.00	0.0
E	HPX-82A	2 mile East Fork Valley	12/13/60	NE	10	10	0.00	0.0
	B	"	"	"	10	18	0.00	0.0
	C	"	"	"	10	20	0.00	0.0
	D	"	"	"	10	10	0.00	0.0
W	HPX-83A	2 miles Downstream at Clinch River	12/16/60	NE	10	19	0.00	0.0
	B	"	"		10	12	0.00	0.0
	C	"	"		10	21	0.00	0.0
	D	"	"		10	12	0.00	0.0
S	HPX-84A	2 miles Grassy Bridge	12/16/60	NE	10	21	0.005	2.5
	B			"	10	12	0.017	8.5
					10	22	0.000	0.0
	D			"	10	12	0.000	0.0

$\times 10^{-13}$

ENVIRONMENTAL AIR STUDY

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY µc/cc*
S HPX-85A	2 miles Bear Creek Rd	12/16/60	NE	10	21	0.000	0.00
B	"	"		10	13	0.008	4.0
C	"	"		10	17	0.000	0.00
D	"	"		10	13	0.000	0.00
1st Quarter 1961 South HPX-86A	5 mi Butterwick Rd.	2/13/61	NW	10	15	0.004	2.0
B	"	"	"	10	13	0.002	1.0
East HPX-87A	5 mi Bear Cr. Rd near Y-12	"	South	10	10	0.000	0.0
87B	"	"	"	10	15	0.000	0.0
HPX-88A	5 mi Atop Black Oak Ridge	"	N.W.	10	11	0.004	2.0
East 88B	"	"	"	10	12	0.004	2.0
HPX-89A	5 mi Poplar Cr. Bridge at Logan Drive	"	SW	10	10	0.004	2.0
East 89B	"	"	"	10	11	0.004	2.0
HPX-90A	5 mi Mt. Pisgah Church	"	SW	10	12	0.000	0.0
North 90B	"	"	"	10	14	0.000	0.0
HPX-91A	5 mi Hwy #61 Bridge at Little Emory	"	SW	10	15	0.000	0.0
West 91B	"	"		10	17	0.001	0.5

$\times 10^{-13}$

$\times 10^{-13}$

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*
West	HPX-92A	5-mi Dickie Valley at Emory Riv	2-13-61	S.W	10	13	0.004	2.0
	92B	"	"	"	10	13	0.001	0.5
W	HPX 93A	2-mi Sugar Grove Valley - S.W of Blair Rd.	2-13-61	SW	10	14	0.000	0.0
	93B	"	"	"	10	16	0.000	0.0
N	HPX-94A	2-mi Poplar Creek at Blair Rd	"	SW	10	13	0.001	0.5
	94B	"	"	"	10	14	0.000	0.0
South	HPX-95A	5-mi Lowaville	2-14-61	N.W.	10	15	0.003	1.5
	95B	"	"	"	10	16	0.002	1.0
	HPX 96A	12-mi Hwy #58 S.W. of Kingston	"	S.W	10	18	0.003	1.5
	96B	"	"	"	10	12	0.001	0.5
S	HPX-97A	2-mi Near Gallaher Bridge	"	East	10	17	0.002	1.0
	97B	"	"	"	10	17	0.004	2.0
S	HPX 98A	2-mi Bear Cr. Rd. near Wheat Rd Intersection	"	South	10	8	0.001	0.5
	98B	"	"	"	10	8	0.000	0.0
E	HPX 99A	2-mi White Wing Intersect	"	"	10	15	0.000	0.0
	99B			"	10	15	0.000	0.0

X10⁻¹³

* [illegible] 10⁻¹³ μc/cc

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*
E	HPX-100A	2 mi East Fork Valley	2-14-61	from South	10	15	0.001	0.5
	100B	"	"	" "	10	15	0.001	0.5
E	HPX-101A	2 mi Atop Black Oak Ridge	"	Southeast	10	12	0.000	0.0
	101B	"	"	"	10	16	0.001	0.5
W	HPX-102A	2 mi Powerhouse at Chick Ri.	"	Northwest	10	10	0.001	0.5
	102B	"	"	"	10	13	0.001	0.5
2nd Quarter 1961 South	HPX-103A	5 mi Lawsville	5-17-61	from Northeast	10	12	0.000	0.0
	103B	"	"	"	10	17	0.000	0.0
	104A	5 mi Buttermilk Rd	"	"	10	17	0.004	2.0
West	104B	"	"	"	10	13	0.002	1.0
	105A	5 mi Bear Creek Rd.	"	Northwest	10	15	0.002	1.0
East	105B	"	"	"	10	13	0.004	2.0
	106A	5 mi Atop Black Oak Ridge	"	from Northeast	10	15	0.007	3.5
East	106B	"	"	"	10	12	0.004	2.0
	107A	5 mi Poplar Creek Bridge	"	from West	10	12	0.002	1.0
West	107B	"	"	"	10	16	0.003	1.5

$\times 10^{-13}$

* [illegible] 10^{-13} μc/cc.

ENVIRONMENTAL AIR STUDY

	SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY μc/cc*	
north	HPX-108A	5 mi. Mt. Pisgah Church	5-17-61	From Northeast	10	13	0.002	1.0 X 10⁻¹³	
	108B	"	"	"	10	15	0.000	0.0	
west	109A	5 mi. Little Emory River Bridge	"	"	10	13	0.003	1.5	
	109B	"	"	"	10	15	0.002	1.0	
west	110A	5 mi. Dickie Valley	"	"	10	12	0.003	1.5	
	110B	"	"	"	10	15	0.003	1.5	
S	HPX-111-A	5 mile LAWNVILLE	9-5-61	clear & sunny Wind - NE/5	10	17	0.002	1.0 x 10⁻¹³	Br mpl at 1 meter
	" -B	"	"	"	"	15	0.000	0.0	0.02
3rd Qtr. CY-1961 S	HPX-112-A	5 mile BUTTERMILK ROAD	"	SE/5	"	17	0.000	0.0	
	" -B	"	"	"	"	15	0.001	0.5 x 10⁻¹³	0.07
E	HPX-113-A	5 mile CREDIT UNION	"	NE/8	"	17	0.000	0.0	
	" -B		"	"	"	15	0.002	1.0 x 10⁻¹³	0.01
N	HPX-114-A	5 mile Mt. PISGAH CHURCH	"	NE/5	"	17	0.001	0.5 x 10⁻¹³	
	" -B		"	"	"	15	0.002	1.0 x 10⁻¹³	0.02
W	HPX-115-A	5 mile LITTLE EMORY RIVER Bdg.	"	SE/8	"	17	0.000	0.0	
	" -B	"		"	"	15	0.001	0.5 x 10⁻¹³	0.02

ENVIRONMENTAL AIR STUDY

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft^3	ALPHA ACTIVITY µc/cc*	Continuous [illegible]
HPX116A	Mt Pisgah Church	12-4-61 3:30 to 4:00		30	6.0			0.46
HPX116B	Mt Pisgah Church	12-4-61 3:00 to 3:30		30	6.0			0.52
HPX117A	Melton Hill	12-4-61 3:30 to 4:00		30	6.0			0.79
HPX117B	Melton Hill	12-4-61 3:00 to 3:30		30	6.0			0.79
HPX118A	Credit Union	12-4-61 3:30 to 4:00		30	6.0			[illegible]
HPX118B	Credit Union	12-4-61 3:00 to 3:30		30	6.0			[illegible]
HPX119A	Leisz Service Station	12-4-61 3:30 to 4:00		30	6.0			out of Filter Paper
HPX119B	Leisz Service Station	12-4-61 3:00 to 3:30		30	6.0			
HPX120A	Lawnville	12-4-61 3:30 to 4:00		30	6.0			0.55
HPX120B	Lawnville	3:00 to 3:30		30	6.0			0.54
HP-30A	Mt Pisgah	11-15-67	—	Short term	5 to 10 min air sample	0.23		
HP31A	Butternick Rd	11-15-67		" "	" "	0.27		
HP32A	Lawnville	11-15-67		" "	" "	0.16		
HP33A	Highway 61	11-15-67		" "	" "	0.11		
HP-34A	Credit Union	11-15-67		" "	" "	0.00		
HP-35A	[illegible]	5-20-68		" "	" "	0.06	Recounted one week later	
HP-36A	[illegible] Rd	5-20-68		" "	" "	0.00		

* 0.01 c/min/ft^3 = [illegible] x 10^{-13} µc/cc.

ENVIRONMENTAL AIR STUDY

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	AIR FLOW RATE	ALPHA ACTIVITY c/min/ft³	ALPHA ACTIVITY µc/cc*
HP-37A	Highway 61	5-21-68		5 to 10 minute Short-Term Air Sample		0.00	
HP-38A	Mt. Pisgah	5-21-68		" "	" "	0.00	
HP-39A	Credit Union	5-21-68		" "	" "	0.00	

* 0.01 c/min/ft³ = 1 x 10⁻¹³ µc/cc.

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) [redacted]

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM^N	ALPHA	BETA	FLUORIDES	pH	Sr^{90}
			ppb	d/m/100ml	d/m/100ml	ppm		$\mu c/cc$
(ORNL)	Ft. Loudon	1957	MAX 5×10^{-14} $\mu c/cc$					
			MIN. 5×10^{-15} $\mu c/cc$					
U.S. Public Health Service	Tenn. River	1st Qt. Cy-1959						4.7×10^{-6}
"	at	2nd Qt. Cy-1959						4.8×10^{-6}
"	Chattanooga	3rd Qt. Cy-1959						3.8×10^{-6}
Portsmouth	SCIOTO RIVER Above Plant	1956	1000 / 7×10^{-7} $\mu c/cc$		25 / 1×10^{-7} $\mu c/cc$			
	Below Plant	1956	1000 / 7×10^{-7} $\mu c/cc$		25 / 1×10^{-7} $\mu c/cc$			

MPC 80 $\mu c/l$

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) [redacted]

Clinch River

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA d/m/100ml	BETA d/m/100ml	FLUORIDES ppm	pH	K ppm
	CW-17 Seaboard Gauging Sta.	9-5-58	1	1	—	0.1	7.4	1.6
	CRM - 39.0	7-29-59	1	0	[illegible] 8 uc/cc 9	0.0	8.2	—
	"	4-29-60	2	0	0	—	8.8	—
	"	5-18-62	uc/cc x 10-7 < 0.007	uc/cc x 10-7 < 0.10	uc/cc x 10-7 0.14	0.1	7.7	
	"	5-20-63	1.4 x 10-9 uc/cc	< 1 x 10-8 uc/cc	4.5 x 10-9 uc/cc	0.0	7.1	
	CW-18 River Rd. & Emory Valley	9-5-58	2	0	—	0.2	7.4	1.2
	CRM - 49.6	7-29-59	2.8 x 10-7 uc/cc 4	0.3	[illegible] 11	0.0	7.6	—
	"	4-29-60	<1	0	4	—	8.7	—
	"	5-18-62	uc/cc x 10-7 < 0.007	uc/cc x 10-7 < 0.10	uc/cc x 10-7 0.32	0.0	7.1	
	"	5-20-63	7.0 x 10-10 uc/cc	< 1.0 x 10-8 uc/cc	3.6 x 10-8 uc/cc	0.0	6.3	

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

Norris Dam @ CRM 79.8 C.R./White Oak Creek @ CRM - 21

Clinton @ CRM 59.0

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) ~~(MUD), (SOIL) (VEGETATION)~~

Clinch River

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ~~ppb~~	ALPHA ~~d/m/100 ml~~	BETA ~~d/m/100 ml~~	FLUORIDES ppm	pH	
	CW-17 Scarboro Gauging Station	10/23/63	2.1×10^{-9}	0.11×10^{-7}	0.15×10^{-7}	0.1	7.6	
	"	2/27/64	$< 7.0 \times 10^{-10}$	0.03×10^{-7}	0.00×10^{-7}	0.1	6.8	
	CRM " 39.0	8/17/64	0.02×10^{-7}	0.00	0.02×10^{-7}	—	8.2	
	"							
	"							
	CW-18 River Road & Emory Valley	10/23/63	(LLD) 7.0×10^{-10}	0.05×10^{-7}	0.08×10^{-7}	0.0	7.4	
	"	2/27/64	$< 7.0 \times 10^{-10}$	0.02×10^{-7}	0.04×10^{-7}	0.2	6.5	
	CRM " 49.6	8/17/64	0.00	0.00	0.05×10^{-7}	—	7.8	
	"							
	"							

NOTE: 1 ppm U^n/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(WATER)([redacted])
([redacted])

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	ppm	
70 W Clinch River AT Emory Valley Road	5-21-65		0.00		0.00		0.05		7.8
71W Clinch River AT Emory Valley Road	5-21-65		0.00		0.00		0.00		7.5

ENVIRONMENTAL SAMPLING -- [redacted]

(WATER) [redacted]

East Fork Creek

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA c/m/100ml	BETA d/m/100ml	FLUORIDES ppm	pH	
	Bridge at Bear Creek Road	7/54	0.5	7.4	49			
	Bridge on Gamble Valley Road	"	8.0	9.0	78			
	Near tennis courts at West Village	"	0.0	10.0	126			
	Near West End Service Station	"	0.5	9.2	145			
	West of Sewage Disposal Plant near Golf Course	"	0.5	8.0	73			
	East Fork at Riding Academy	"	0.0	4.8	91			
	East Fork at Turnpike Bridge	"	0.0	4.2	63			
	East Fork at Quarry Road Bridge	"	0.0	3.8	47			
	East Fork at Poplar Creek	"	0.0	12.0	24			
	Bear Creek at Wheath Wing of Turnpike "Y"	"	0.0	0.8	3			

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

[illegible]

[illegible] ~~[illegible]~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY [illegible]			[illegible]	[illegible]	[illegible]
			URANIUM	[illegible]	[illegible]	~~[illegible]~~	[illegible]	[illegible]
			ppb	[illegible]	[illegible]	ppm		
HPX-10W	5 Mi. S.E. of Plant Buttermilk Rd off White Wing Rd.	4-13-60	1	1	3	7		
HPX-11-W	5 Mi East of Plant on Bear Creek Rd.	4-13-60	39	5	10			
HPX-13W	5 Mi North of Plant on Highway #61 at Mt Pisgah Church	4-13-60	1	1	3			
HPX-14W	5 mi. north east of Plant, Sugar Grove Valley at Poplar Cr. Bridge	4-13-60	0	0	1			
HPX-15W	5 mi north west of plant at Bridge of Little Emory Riv. on Highway #61.	4-13-60	3	1	9			
HPX-16W	5 mi west of Plant in Dickie Valley at Emory River.	4-13-60	0	0	0			
HPX-17W	5 Mi South west of Plant 1/2 mi East of Lawnville	4-14-60	1	0	0			
HPX-18W	12 mi South west of Plant at Farm Pond on Highway 58.	4-14-60	0	1	10			

NOTE: 1 ppm U^n/cc = 7×10^{-7} uc/cc 1 dis/min/cc = [illegible]

Water

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (MUD) (SOIL) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA c/m/100 ml	BETA d/m/100 ml	FLUORIDES µc/cc ppm X 10^{-19}	µc/cc X 10^{-7} pH	[illegible]
HPX-19W	2 mi. SW. of Plant at Power House	5-24-60	1	0	18	7	0.0	[illegible]
HPX-20W	2 mi. S. of Plant near Gallaher Bridge area.	"	0	0	1		0.0	[illegible]
HPX-21W	2 mi. S.E. of Plant on Bear Cr. Rd near Wheat Rd Intersection	"	1	0	1		0.0	[illegible]
HPX-22W	2 mi. E. of Plant near White Wing Intersection	"	9	2	2	3	[illegible]	[illegible]
HPX-23W	2 mi. N.E. of Plant East Fork Valley.	"	1	0	1	7	[illegible]	0.04
HPX-25W	2 mi. N. of Plant Sugar Grove Valley on Blair Rd.	"	<1	0	1	<7	[illegible]	[illegible]
HPX-26W	2 mi. N.W. of Plant Sugar Grove Valley	"	0	0	2	0	[illegible]	[illegible]

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/cc

1 PPb U^n/cc = 7 x 10^{-10} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ppm	pH	
—	East Fork at Poplar Creek	4-29-60	40	5	6	—	7.2	
—	East Fork at Illinois Ave. Bridge (Oak Ridge)	4-29-60	515	30	117	—	8.0	

NOTE: 1 ppm U^n/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) ~~(MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA C/m/100 ml	BETA C/m/100 ml	~~FLUORIDES~~ ~~ppm~~ U (μc/cc x 10⁻⁷ Uranium)	Alpha μc/cc ~~pH~~ α	Beta x10⁻⁷ β
HPX-27W	Powerhouse at River. 2 mi.	7-28-60	1	0	7	7	0	[illegible]
28W	Gallaher Bridge 2 mi.	"	1	0	7	7	0	0.31
29W	Bear Cr. Rd. 2 mi.	"	2	0	0	14	0	0
30W	White wing Inter. 2 mi.	"	25	2	0	175	.18	
33W	Sugar Grove Valley at Poplar Cr. 2 mi	"	0	0	2	0	0	[illegible]
34W	Sugar Grove Rd. S.W. of Blair 2 mi.	"	1.	0	3	7	0	0.13
35W	Buttermilk Rd 5 mi.	7-29-60	0.0	0	0	0	0	
36W	Bear Cr. Rd near Y-12 - 5 mi.	"	66.5	5	0	465	.45	0
38W	Poplar Cr. Bridge at Sugar Grove 5 mile	"	0.1	0	0	0.7	0	0
39W	Mt. Pisgah Church 5 mi.	"	0.0	0	0	0	0	0

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) ~~(MUD) (SOIL) (VEGETATION)~~

μc/cc X 10^-10 Uranium / Alpha Beta μc/cc X 10^-7

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	~~FLUORIDES~~ ~~ppm~~	α ~~pH~~	β
Hlx. 40w	Little Emory Br. on Hy #61 5 mi	7-28-60	0.0	1.	0	0	0.09	0
41w	Dickie Valley at Emory Riv. 5 mi.	7-28-60	0.0	1	0	0	0.09	.0
42w	Lawsville 5 mi.	7-29-60	0	0	0	0	0	0
43w	off Hy. #58 12 mi.	"	0	0	9	0	0	0.40
44w	5 mi Sugar Grove Valley	11-8-60	1.7	0	0	11.9	0	0.0
45w	5 mi Mt. Pisgah Church	"	0.4	0	1	002.8	0	0.04
46w	5 mi Bridge at the Little Emory	"	0	1	6	0.0	0.04	0.27
47w	5 mi Dickie Valley at Emory Riv.	"	0.4	1	1	2.8	0.09	0.04
48w	12 mi Highway #58	"	0.4	1	1	2.8	0.09	0.04
49w	5 mi Lawsville	"	1.3	0	2	6.5.	0.18	0.09

4th Quarter

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD~~) (~~SOIL~~) (VEGETATION)

uc/cc X 10^-10 Uranium

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	~~FLUORIDES~~ Uranium	uc/cc X 10^-7 α	β
HPX-50W	5 mi Butternilk Rd.	11-8-60	1.7	1.0	0	11.9	0.09	0.00
51W	5 mi Bear Cr. Road	"	56.7	5.0	17	392.5	0.45	0.76
54W	2 mi East Fork Valley	11-14-60	2.5	1	0	17.5	0.09	0.00
55W	2 mi White Wing Intersect	"	22.7	2	0	158.9	0.18	0.00
56W	2 mi Powerhouse at Clinch	"	7.6	1	[illegible]	53.2	0.09	30.96
57W	2 mi Gallaher Bridge	"	6.3	1	0	44.1	0.09	0.00
58W	2 mi Bear Cr. near Wheat Intersect.	"	4.6 ~~[illegible]~~	0	0	32.2	0.00	0.00
59W	2 mi Blair Rd at Poplar Cr.	"	2.5	1	2	17.5	0.09	0.01
60W	2 mi Sugar Grove Valley NW of Blair Rd.	"	2.1	1	0	14.7	0.09	[illegible]

Bear creek water

Bear creek water

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/cc

1 ppb U^n/cc = n X 10^{-10} µc/cc 1 d/m/100cc = 0.045 X 10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	~~FLUORIDE~~ Chromium μc/cc X10-10	Alpha μc/cc X10-7	Beta
HPX-61-W	5-mi Buttermilk Rd	2-13-61	3	0.1	0	21.0	0.009 ~~0.0045~~	0.0
62-W (Not Beaverdale)	5-mi Bear Cr. Rd. near Y-12	"	4	0.1	3	28.0	0.009 ~~0.0045~~	0.135
64-W	5-mi Poplar Cr. Bridge Sugar Grove Valley	"	3	0.0	3	21.0	0.00	0.135
65-W	5-mi Mt. Pisgah Church	"	4	0.0	5	28.0	0.00	0.225
66-W	5-mi Bridge at Little Emory on Hwy # 61	"	4	0.1	0	28.0	0.009 ~~0.0045~~	0.00
67-W	5-mi Dickie Valley at Emory River	"	<1	0.1	4	<7.0	0.009 ~~0.0045~~	0.180
68-W	2-mi Sugar Grove Valley S.W. of Blair Rd.	"	1	0.2	10	7.0	0.018 ~~0.009~~	0.450
69-W	2-mi Blair Rd at Poplar Cr.	"	2	0.1	10	14.0	0.009 ~~0.0045~~	0.450
70-W	5-mi Lawnville	2-14-61	<1	0.0	3	<7.0	0.00	0.135
71-W	12 mi S.W. of Kingston on Hwy # 58	"	1	0.1	9	7.0	0.009 ~~0.0045~~	0.405

NOTE: 1 ppm U^{n}/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

1 ppb = 7 x 10^{-10} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD) (SOIL) (VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	~~FLUORIDES~~ Uranium $\mu c/cc \times 10^{-10}$	Alpha $\mu c/cc \times 10^{-7}$	Beta $\mu c/cc \times 10^{-7}$
HX-72W	2 mi Gallaher Bridge	2-14-61	0	0.0	5	0.00	0.00	0.225
73W	2 mi Bear Cr. Rd. near Wheat Rd.	"	3	0.1	4	21.0	0.009 ~~0.0045~~	0.180
74W	2 mi White Wing Interest	"	11	1.4	3	77.0	0.126 ~~0.063~~	0.135
75W	2 mi East Fork Valley	"	3	0.0	5	21.0	0.00	0.225
76W	2 mi ~~[illegible]~~							
77W	2 mi ~~[illegible]~~		$\mu c/cc$				pH	
78W	Mt. Pisgah	11-28-61	1.4×10^{-9}	1.0×10^{-8}	4.1×10^{-8}		6.5	
79W	Buttermilk Rd.	"	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	$<4.5 \times 10^{-9}$		7.2	
80W	Lawnville	"	7.0×10^{-10}	$<1.0 \times 10^{-8}$	9.0×10^{-9}		7.5	
81W	Little Emory (#61)	"	7.0×10^{-10}	$<1.0 \times 10^{-8}$	2.7×10^{-8}		7.6	
82W	Top Black Oak Ridge	"	7.0×10^{-10}	$<1.0 \times 10^{-8}$	4.5×10^{-9}		8.1	

Bear Cr. water

Omit

Omit

NOTE: 1 ppm U/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

~~8.2~~ 15.4

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) ~~(MUD) (SOIL) (VEGETATION)~~

br @ 1m	SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ~~µg/ml~~	ALPHA ~~d/m/100 ml~~	BETA ~~d/m/100 ml~~	FLUORIDES ppm	pH	
	HPX								
0.02	83W	Mt. Pisgah	4/10/62	$< 7.0 \times 10^{-10}$	$< 1.0 \times 10^{-8}$	2.3×10^{-8}	0.0	6.6	
0.02	84W	Buttermilk Road	"	7.0×10^{-10}	$< 1.0 \times 10^{-8}$	3.2×10^{-8}	0.0	7.4	
0.02	85W	Lawrenville	"	7.0×10^{-10}	$< 1.0 \times 10^{-8}$	4.5×10^{-8}	0.1	7.5	
0.02	86W	Hw. 61 @ S. Sta.	"	2.1×10^{-9}	$< 1.0 \times 10^{-8}$	3.6×10^{-8}	0.1	7.2	
0.03	87W	Top Block Oak Ridge	"	7.0×10^{-10}	$< 1.0 \times 10^{-8}$	1.8×10^{-8}	0.0	7.2	
	88W	Mt. Pisgah	9-14-62	$< 7.0 \times 10^{-10}$	$< 1.0 \times 10^{-8}$	3.2×10^{-8}	0.0	6.5	
	89W	Buttermilk Road	"	1.4×10^{-9}	$< 1.0 \times 10^{-8}$	9.0×10^{-9}	0.0	7.3	
	90W	Lawrenville	"	7.0×10^{-10}	$< 1.0 \times 10^{-8}$	1.4×10^{-8}	0.0	7.5	
	91W	Hi. Way 61 @ Station	"	2.8×10^{-9}	$< 1.0 \times 10^{-8}$	3.6×10^{-8}	0.3	7.6	
	92W	Top Block Oak Ridge	"	2.8×10^{-9}	1.8×10^{-8}	5.0×10^{-8}	0.1	7.5	

NOTE: 1 ppm U^{n}/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)

B	SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ~~μc/cc~~	ALPHA ~~d/m/100 ml~~	BETA ~~d/m/100 ml~~	FLUORIDES ppm	pH	
0.03	1W	MT. Pisgah	3-27-63	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	3.6×10^{-8}	0.8	7.3	
0.03	2W	Buttermilk	"	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	2.7×10^{-8}	0.8	7.0	
0.03	3W	Lawnville	"	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	$<4.5 \times 10^{-9}$	1.6	7.2	
0.03	4W	Hwy 61	"	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	1.8×10^{-8}	0.4	7.4	
0.03	5W	Black Oak Ridge	"	2.1×10^{-9}	$<1.0 \times 10^{-8}$	2.3×10^{-8}	0.4	7.3	
	6W	MT. Pisgah	6-18-63	$<7.0 \times 10^{-10}$	$<1.0 \times 10^{-8}$	5.0×10^{-9}	0.0	6.4	
	7W	Buttermilk	"	"	"	2.7×10^{-8}	0.0	6.4	
	8W	Lawnville	"	"	"	1.4×10^{-8}	0.2	6.8	
	9W	Hwy 61	"	"	"	4.3×10^{-8}	0.0	4.9	
	10W	Black Oak Ridge	"	"	"	1.8×10^{-8}	0.3	6.1	

NOTE: 1 ppm U^{238}/cc = 7×10^{-7} μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(WATER) ~~(MUD) (SOIL) (VEGETATION)~~

β+γ 3' from ground	SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM μc/cc	ALPHA ~~d/m/100 ml~~	BETA ~~d/m/100 ml~~	FLUORIDES ppm	pH	
0.04	11-W	Mt. Pisgah	8-8-63	$< 7.0 \times 10^{-10}$	0.00×10^{-7}	0.06×10^{-7}	0.3	5.8	
0.04	12-W	Buttermilk Rd.	8-8-63	2.1×10^{-9}	0.00	0.15×10^{-7}	0.0	6.3	
0.04	13-W	Lawnville	8-8-63	7.0×10^{-10}	0.00	0.23×10^{-7}	0.3	6.7	
0.04	14-W	Hwy #61	8-8-63	7.0×10^{-10}	0.00	0.28×10^{-7}	0.3	7.0	
0.03	15-W	Black Oak Ridge	8-8-63	7.0×10^{-10}	0.00	0.02×10^{-7}	0.1	6.9	
	HPW-1	Mt. Pisgah	4-16-64	0.0×10^{-7}	0.00×10^{-7}	0.04×10^{-7}	0.5	7.0	
	HPW-2	Buttermilk Rd	4-16-64	0.0	0.02×10^{-7}	0.04×10^{-7}	0.5	7.5	
	HPW-3	Lawnville	4-16-64	0.0	0.00	0.30×10^{-7}	0.5	6.2	
	HPW-4	Hwy #61	4-16-64	0.0	0.01×10^{-7}	0.28×10^{-7}	0.5	6.4	
	HPW-5	Black Oak Ridge	4-16-64	0.0	0.04×10^{-7}	0.07×10^{-7}	0.4	7.2	

NOTE: 1 ppm U^n/cc = 7×10^{-7} μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~) (~~MUD~~) (~~SOIL~~) (VEGETATION)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	μc/~~gr~~ $\times 10^{-7}$	~~d/m/100 cc~~	μc/~~gr~~ $\times 10^{-7}$	d/~~m/100 cc~~	μc/~~gr~~ $\times 10^{-7}$		
Mt. Pisgah Church	11-4-65		<0.7		0		114	7.2	
Buttermilk Road	"		0.7		0		128	7.0	
Lawnville	"		<0.7		0		225.	17.3	
Little Emory at Highway 61	"		<0.7		0		12.	16.7	
K-25 Credit Union	"		0.7		0		206.	22.6	
Mt. Pisgah Church	6-1-66		2		2		1035.	6	
Buttermilk Road	"		8		54		596.	5	
Lawnville	"		1		0		723	6	
Little Emory at Highway 61	"		<0.7		31		853	12	
K-25 Credit Union	"		7		17		608	2	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
(PINENEEDLES)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		~~ppb~~	$\mu c/gm \times 10^{-7}$	~~d/m/100 cc~~	$\mu c/gm \times 10^{-7}$	~~d/m/100 cc~~	$\mu c/gm \times 10^{-7}$		
HP-1V Mt. Pisgah	3-5-65		1.4		6		93	11	
HP-2V Buttermilk			1.4		0		85	24	
HP-3V Lawnville			2.8		0		61	23	
HP-4V Hwy #61			1.4		10		140	22	
HP-5V Black Oak Ridge			2.1		10		73	10	
HP-1P			1.4		8		35	21	
HP-2P			1.4		2		21	26	
HP-3P			2.8		7		25	22	
HP-4P			2.1		7		28	25	
HP-5P			2.8		1		33	25	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
(PINENEEDLES)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		~~ppb~~	μc/gm x10⁻⁷	~~d/m/100 cc~~	μc/gm x10⁻⁷	~~d/m/100 cc~~	μc/gm x10⁻⁷	ppm	
HP 6V	9-9-64		3.5		141		506	17	
HP 6P			0.7		79		251	14	
HP 7V			1.4		57		444	11	
HP 7P			0.7		23		175	13	
HP 8V			2.1		53		435	28	
HP 8P			0.7		34		335	10	
HP 9V			2.1		94		216	19	
HP 9P			0.7		40		322	10	
HP 10V			4.9		118		284	7	
HP 10P			3.5		75		412	9	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
(PINENEEDLES)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	μc/~~cc~~ gm x10⁻⁷	~~d/m/100 cc~~	μc/~~cc~~ gm x10⁻⁷	d/m/100 cc	μc/~~cc~~ gm x10⁻⁷	ppm	
√ HPV-1 Mt. Pisgah	4-16-64		2.8		√ 12.6		1205	42	
HPP-1 "			1.4		4.5		738	10	
HPV-2 Buttermilk			4.9		√ 11.3		938	17	
HPP-2 "			2.1		3.6		1104	11	
HPV-3 Lawnville			1.4		√ 9.9		685	41	
HPP-3 "			0.7		4.1		1004	9	
HPV-4 Hwy #61			4.2		√ 9.9		783	51	
HPP-4 "			3.5		4.1		1139	14	
HPV-5 Black Oak Ridge			5.6		√ 7.2		1218	23	
HPP-5 "			2.8		4.1		959	7	

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppm	ALPHA d/m/~~300 ml~~	BETA d/m/~~100 ml~~	FLUORIDES ppm	pH	
11 V	Mt. Pisgah	8-8-43	0.0	1.0	161	7		
11 P	"	"	0.0	1.0	77	3		
12 V	Buttermilk	"	0.1	0.3	223	36		
12 P	"	"	0.0	0.9	117	7		
13 V	Lawrenville	"	0.2	1.0	284	44		
13 P	"	"	0.1	1.3	207	7		
14 V	Hwy #61	"	0.1	0.8	181	0		
14 P	"	"	0.1	1.9	80	11		
15 V	Black Oak Ridge	"	0.0	1.0	135	15		
15 P	"	"	0.1	1.2	110	2		

NOTE: 1 ppm U = [illegible] x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppm	ALPHA d/m/~~100 ml~~	BETA d/m/~~100 ml~~	FLUORIDES ppm	U μc X 10^{-7} ~~pH~~	
7 V	Buttermilk	6-18-63	0.0	2.2	416	22	0.0	
7 P	"	"	0.0	0.6	278	11	0.0	
8 V	Lawnville	"	0.1	2.4	644	24	0.7	
8 P	"	"	0.0	0.2	388	12	0.0	
9 V	Hwy. 61	"	0.0	3.4.	550	20	0.0	
9 P	"	"	0.0	0.2	393	11	0.0	
10 V	Black Oak Ridge	"	0.0	1.0	600	15	0.0	
10 P	"	"	0.2	0.2	509	7	1.4	

NOTE: 1 ppm U/cc = [illegible] x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

[illegible] = d/m/gram 1962 - 4.1 1536

[illegible] = 1.9 ppm $\frac{8183}{20}$ = 409.15 β

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER) (MUD) (SOIL~~) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppb	ALPHA d/m/gm	BETA d/m/gm	FLUORIDES ppm	pH	
2V	Buttermilk	3-27-43	0.2	0.4	233	22	1.4	
2P	"	"	0.0	0.8	323	22	0.0	
3V	Lawrenville	"	0.2	1.6	221	19	1.4	
3P	"	"	0.0	0.4	334	23	0.0	
4V	Hwy. 41	"	0.7	2.4	328	28	4.9	
4P	"	"	1.0	1.8	306	10	7.0	
5V	Black Oak Ridge	"	0.2	1.6	271	30	1.4	
5P	"	"	0.4	1.2	731	17	4.2	
6V	Mt. Pisgah	6-18-43	0.0	1.4	617	24	0.0	
6P	"	"	0.0	0.4	362	14	0.0	

NOTE: 1 ppm U/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ppm	U μc x 10⁻⁷ ~~pH~~	
92 V	Black Oak Ridge	9-14-62	1.0	2.2	97	14.6	7.0	
P	" " "	"	0.4	1.0	104	8.3	2.8	
90V-A	Lawnville (Repeat) By Road	11/14/62	0.3	1.0	284	30.5	2.1	
-B	" " North of Road	"	0.4	5.6	1032	16.7	2.8	
-C	" " South of Road	"	0.3	1.4	775	12.1	2.1	
-D	" " By Road	12/19/62	0.2	0.8	361	26.1	1.4	
-E	" " North of Road	"	0.6	1.4	750	40.7	4.2	
-F	" " South of Road	"	0.5	1.4	598	12.7	3.5	
1 V	MT Pisgah	3-27-63	0.6	1.6	444	23	4.2	
P		"	0.0	0.4	231	18	0.0	

[illegible] x 10⁻⁷ μc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppm	ALPHA ~~d/m/100mg~~	BETA d/m/~~100mg~~	FLUORIDES ppm	α ~~d/m~~ μc	
87V	Black Oak Ridge	4/10/62	~~0.004~~	2.1	773	6.5	~~0.028~~	
87P	"	"	~~0.008~~	0.1	323	4.6	~~0.056~~	
				d/m/gm				
88 V	Mt. Pisgah	9/14/62	1.1	2.0	135	28.6	7.7	
88 P	"	"	0.2 ~~0.5~~	0.6 ~~0.8~~	100 ~~120~~	5.0 ~~42.9~~	1.4	
89 V	Buttermilk	"	0.5	0.8	120	42.9	3.5	
89 P	"	"	0.3	1.0	89	8.4	2.1	
90 V	Lawnville	"	1.7	8.6	99	59.5	11.9	
90 P	"	"	0.3	0.6	152	10.0	2.1	
91 V	Hwy. 61	"	0.4	0.8	76	12.3	2.8	
91 P	"	"	0.3	0.6	33	12.9	2.1	

NOTE: 1 ppm [illegible] $\times 10^{-7}$ μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~[illegible]~~ (VEGETATION)

d/m/gram

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ~~ppm~~	ALPHA d/m/~~100 gm~~	BETA d/m/~~100 gm~~	FLUORIDES ppm	~~pH~~ U (μc x 10⁻⁷)
87 V	3 mi W of Black Oak Ridge	11-22-61	0.5	0.5	499	3.2	3.5
87 P	3 mi W of Black Oak Ridge	11-22-61	0.4	0.4	190	5.5 ~~xx~~	2.8
83 V	Mt. Pisgah	4/10/62	probably ~~0.001~~	0.2	632	3.1	~~0.007~~
83 P	"	"	~~0.003~~	0.1	514	4.7	~~0.021~~
84 V	Buttermilk	"	~~0.002~~	0.5	661	13.8	~~0.014~~
84 P	"	"	~~0.008~~	0.2	464	4.5	~~0.056~~
85 V	Lawrence	"	~~0.004~~	2.5	716	23.9	~~0.028~~
85 P	"	"	~~0.014~~	0.3	297	6.9	~~0.098~~
86 V	Hiway #61	"	~~0.001~~	0.2	554	5.8	~~0.007~~
86 P	"	"	~~0.002~~	0.1	412	6.9	~~0.014~~

Note: 1 ppm U [illegible] x 10⁻⁷ μc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppb	ALPHA d/m/100 ml	BETA d/m/100 ml	~~FLUORIDES~~ μc/gm X10⁻⁷ Uranium	Alpha	Beta
76V	2 mi Atty Black Oak Ridge	2-14-61	0.5	0.9	16	3.5	8.1 ~~4.0~~	72
77V	2 mi Powerhouse	2-14-61	1.7	1.8	20	11.9 *	16.2 ~~[illegible]~~	90
						Fluorides	U(μc×10⁻⁷)	
78V	5 mi Mt Pisgah Church	11-24-61	0.1	0.3	765	4.7	0.7	
78P	5 mi Mt Pisgah Church	11-24-61	<0.1	0.1	342	2.3	<0.7	
79V	5 mi Buttermilk Rd.	11-27-61	0.3	0.4	509	8.4	2.1	
79P	5 mi Buttermilk Rd	11-27-61	0.4	<0.1	195	3.0	2.8	
80V	5 mi Lawnville	11-20-61	0.7	0.8	352	13.1	4.9	
80P	5 mi Lawnville	11-20-61	0.4	0.2	191	1.6	2.8	
81V	5 mi Bridge at Little Emory - Hwy 61	11-24-61	<0.1	0.5	846	2.7	<0.7	
81P	5 mi Bridge at Little Emory - Hwy 61	11-24-61	0.1	0.4	343	9.1	0.7	

4th Qtr. Cy-1961

NOTE: 1 ppm [illegible] 10⁻⁷ μc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ μc/cc

V 470/17 = 27.6 } x 22 → *Previous 9 months

V 2771 = 594.2 } **Oct-Nov-Dec

ENVIRONMENTAL SAMPLING -- ORGDP

([redacted]) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	~~FLUORIDES~~ uc/gm x10^-7		
			ppm	d/m/100 ml	d/m/100 ml	Uranium ppm	Alpha	Beta
4PX-71V	12 mi SW of Kingston on Ruby #58	2-14-61	0.8	1.1	33	5.6	9.9 ~~4.9~~	148.5
72P	2 mi Gallaher Bridge	"	0.3	0.6	13	2.1	5.4 ~~2.7~~	58.5
72V	"	"	1.4	2.2	21	9.8	19.8 ~~9.8~~	94.5
73P	2 mi Bear Cr. Rd at Cohoat Rd Intersect.	"	0.8	1.0	14	5.6	9.0 ~~4.5~~	63
73V	"	"	0.9	3.2	36	6.3	28.8 ~~14.4~~	162
74P	2 mi White Wing Intersect.	"	0.8	1.3	16	5.6	11.7 ~~5.8~~	72
74V	"	"	0.5	2.4	22	3.5	21.6 ~~10.8~~	99
75P	2 mi East Fork Valley	"	1.0	1.3	16	7.0	11.7 ~~5.8~~	72
75V	"	"	0.5	2.2	33	3.5	19.8 ~~9.9~~	148.5
[illegible]	2 mi [illegible] Bridge	"	0.4	0.6	16	2.8	5.4 ~~2.7~~	72

[illegible] 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	~~FLUORIDES~~ μc/gm X 10^{-7}		
			ppm	d/m/~~100 ml~~	d/m/~~100 ml~~	Uranium ppm	Alpha	Beta
HPX-66V	5 mi Bridge at Little Emory - Hwy #61	2-13-61	1.2	1.9	19	8.4	17.1 ~~8.8~~	85.5
HPX-67P	5 mi Dickie Valley at Emory River	2-13-61	0.2	0.6	14	1.4	5.4 ~~2.7~~	63
67V	"	"	0.4	1.9	39	2.8	17.1 ~~8.8~~	175.5
68P	2 mi Sugar Grove - Sw. of Blair Rd	"	0.3	3.2	13	2.1	28.8 ~~14.4~~	58.5
68V	"	"	0.3	0.8	8	2.1	7.2 ~~3.6~~	36
69P	2 mi Poplar Creek at Blair Rd	"	0.2	5.7	27	1.4	51.3 ~~25.6~~	121.5
69V	"	"	0.5	0.7	21	3.5	6.3 ~~3.1~~	9.4
70P	5 mi Lownville	"	0.5	1.4	16	3.5	12.6 ~~6.3~~	72.0
70V	"	"	0.5	2.2	28	3.5	19.8 ~~9.9~~	126
71P	12 mi SW of Kingston Hwy #58	"	0.3	0.6	13	2.1	5.4 ~~2.7~~	58.5

NOTE: 1 ppm [illegible] x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

([redacted]) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA ~~c/m/100 ml~~	BETA ~~c/m/100 ml~~	~~FLUORIDES~~ μc/gm X 10^{-7} U/ppm	Alpha	Beta
HPX-61-V	5 mi Buttermilk Rd	2-13-61	2.1	4.0	24	14.7	36.0 ~~18.0~~	108
62P	5 mi Bear Cr. Rd near Y-12	"	0.9	1.0	18	6.3	9.0 ~~4.5~~	81
62V	"	"	3.7	5.0	39	25.9	45.0 ~~22.5~~	175.5
63P	5 mi Atop Black Oak Ridge	"	0.7	0.8	13	4.9	7.2 ~~3.6~~	58.5
63V	"	"	1.8	6.3	35	12.6	56.7 ~~28.3~~	157.5
64P	5 mi Poplar Creek Bridge at Dugar Grove	"	0.3	1.0	16	2.1	9.0 ~~4.5~~	72
64V	"	"	1.2	2.3	20	8.4	20.7 ~~10.3~~	90
65P	5 mi Mt. Pisgah Church	"	0.3	0.4	18	2.1	3.6 ~~1.8~~	81
65V	"	"	0.9	1.8	56	6.3	16.2 ~~8.1~~	252
66P	5 mi Bridge at Little Emory Riv. Hwy #61	"	0.2	0.5	16	1.4	4.5 ~~2.2~~	72

NOTE: 1 ppm [illegible] x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

no 56P

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm X10⁻⁷ URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/gm	BETA ~~d/m/100 ml~~	FLUORIDES ~~ppm~~ Uranium	~~pH~~ C	B
56-V	2 mi Powerhouse & Clinch	11-14-60	1.6	2.7	40	11.2	24.3	180
57-P	2 mi Gallaher Bridge	"	0.3	1.3	18	2.1	11.7	81
57-V	"	"	0.5	0.4	19	3.5	3.6	85
58-P	2 mi Blair Cr. Rd near Wheat Intersect.	"	0.8	1.1	22	5.6	9.9	99
58-V	"	"	2.6	1.8	122	18.2	16.2	549
59-P	2 mi Blair Rd at Poplar Creek	"	<0.1	0.5	22	<0.7	4.5	99
59-V	"	"	0.8	0.5	53	5.6	4.5	238
60-P	2 mi Sugar Grove Valley N-W of Blair Rd.	"	0.1	—	21	0.7		94
60-V	"	"	0.2	0.4	20	1.4	3.6	90
0.603 HPX-61-P	5 mi Bushwick Rd	2-13-61	0.2	0.8	19	1.4	~~3.6~~ 7.2	85.5

NOTE: 1 ppm [illegible] x 10⁻⁷ μc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER) (MUD) (SOIL)~~) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm X 10⁻⁷ URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/gm	BETA ~~d/m/100 ml~~ c/m/gm	FLUORIDES ~~ppm~~ Uranium	pH α	β
Apx- 51P	5 mi Bear Cr Rd near X-12	11-8-60	1.3	1.5	8	9.1	13.5	36
51V	"	"	2.3	5.2	36	16.1	46.8	162
52P	5 mi Black Oak Ridge	11-14-60	0.2	1.6	20	1.4	14.4	90
52V	"	"	0.5	0.8	43	3.5	7.2	193
53P	2 mi Atop Black Oak Ridge	"	0.2	1.9	30	1.4	17.1	135
53V	"	"	0.2	2.2	28	1.4	19.8	126
54P	2 mi East Fork Valley	"	0.1	2.2	24	0.7	19.8	108
54V	"	"	0.6	1.2	80	4.2	10.8	360
55P	2 mi White Wing Intersect	"	0.6	2.9	17	4.2	17.1	76
55V	"	"	0.6	0.2	33	4.2	1.8	146

NOTE: 1 ppm U/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS uc/gm X10⁻⁷ URANIUM ppm	ALPHA d/m/100 ml c/m/gm	BETA d/m/100 ml	FLUORIDES ppm	pH	B
HPX-46P	5 mi Bridge & Little Emory	11-8-60	0.2	0.7 ~~0.4~~	7	1.4	6.3	31
46V	"	"	0.8	0.8	46	5.6	7.2	207
47P	5 mi Dickie Valley at Emory River	"	0.3	3.9	6	2.1	35.1	27
47V	"	"	0.5	0.3	31	3.5	2.7	139
48P	12 mi Hwy. #58	"	0.3	0.7	6	2.1	6.3	27
48V	"	"	0.3	0.3	31	2.1	2.7	139
49P	5 mi Lawrenville	"	0.4	6.9	12	2.8	62.1	54
49V	"	"	1.9	0.1	9	13.3	0.9	40
50P	5 mi Butterwelk Rd	"	0.3	0.4	14	2.1	3.6	63
50V	"	"	0.1	0.1	14	0.7	0.9	63

NOTE: 1 ppm U/cc = 1 x 10⁻⁷ µc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

[redacted] (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ppm	pH	
38P	Poplar Cr. Bridge in Sugar Grove Valley 5 mi.	7-28-60	0.2	<0.1	26	1.4	<0.9	117
39P	Mt. Pisgah Church 5 mi.	"	0.2	0.6	104	1.4	5.4	468
40P	Little Emory Bridge Hy #61 - 5 mi.	"	0.1	0.1	40	0.7	0.9	180
41P	Dickie Valley at Emory R. 5 mi	"	0.2	2.0	42	1.4	18.0	189
42P	Lawrenville 5 mi.	7-29-60						
43P	Off Hy #58 12 mi.	"	2.6	182.5	45	18.2	843.7	202.5
HPX-44P	5 mi Sugar Grove Valley at Poplar Cr. Bridge	11-8-60	0.1	0.2	22	0.7	1.8	99.0
44V	"	11-8-60	0.6	0.9	41	4.2	8.1	198
45P	5 mi Mt. Pisgah Church	"	0.2	0.4	18	1.4	3.6	81
45V	"	"	0.3	0.1	56	2.1	0.9	252

0.887

Fourth Quarter

Data quest. ?

[illegible] 10^{-7} μc/cc 1 dis/min/gm = 4.5×10^{-7} μc/cc

Pine Needles

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA d/m/100 ml	BETA d/m/100 ml	FLUORIDES ~~ppm~~ μ	μc/cc X 10⁻⁷ ~~pH~~ α	β
HEX. 28P	Gallaher Bridge 2 mi.	7-27-60	0.3	0.2	13	2.1	1.8	58.5
29P	Bear Cr. Rd. 2 mi.	7-27-60	0.3	2.0	5	2.1	18.0	22.5
30P	White Wing Gates 2 mi	"	0.3	1.1	10	2.1	9.9	45.0
31P	East Fork Valley 2 mi.	"	0.4	0.7	23	2.8	6.3	103.5
32P	Atop Black Oak Ridge 2 mi.	"	0.3	0.5	30	2.1	4.5	135.0
33P	Poplar Cr. ~~[illegible]~~ in Sugar Grove Valley 2 mi.	"	7.7	1.5	34	53.9	13.5	153.0
34P	Sugar Grove Rd. S.W. of Blair Rd 2 mi.	"	4.0	1.0	27	28.0	9.0	121.5
35P	Buttermilk Rd. 5 mi.	"	0.1	0.1	59	0.7	0.9	265.5
36P	Bear Cr. Rd. near Y-12 5 mi.	"	1.0	<0.1	48	7.0	<0.9	216.0
37P	Atop Black Oak Ridge 5 mi.	"	0.8	1.5	57	5.6	13.9	256.5

NOTE: 1 ppm [illegible] = 2 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS Uranium µc/cc x 10⁻⁷ URANIUM ppm	ALPHA ~~c/m/100 ml~~ c/m/gm.	BETA ~~d/m/100 ml~~	~~FLUORIDES ppm~~ U	pH	
HFX 37V	Atop Black Oak Ridge 5 mi	7-28-60	0.8	5.0	23	5.6	45	103.5
38V	Poplar Cr. Bridge at Sugar Grove Valley 5 mi.	"	0.3	1.9	18	2.1	17.5	81.0
39V	Mt. Pisgah Church 5 mi.	"	0.8	5.4	46	5.6	48.6	207.0
40V	Little Emory Bridge Hy. #61 5 mi	"	1.5	11.3	64	10.5	101.7	288.0
41V	Dickie Valley at Emory River 5 mi	"	0.1	0.6	25	0.7	5.4	112.5
42V	Lawnville 5 mi.	7-29-60	0.2	0.9	18	1.4	8.1	81.0
43V	Off Hy #58 12 mi.	"	0.4	6.5	59	2.8	58.5	265.5

NOTE: 1 ppm [illegible] x 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/cc

Grasses

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS Uranium μc/cc X10⁻⁷					
			URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/g	BETA d/m/100 ml	~~PESTICIDES~~ ppm U	pH	B
HPX-27V	Pomeroy at Rivers 2 mi.	7-27-60	0.1	0.2	44	0.7	1.8	198.0
28V	Ballard Bridge 2 mi	"	0.3	0.1	27	2.1	0.9	121.5
29V	Bear Cr. Rd. 2 mi.	"	0.6	0.0	52	4.2	0.0	234.0
30V	White Wing Water. 2 mi.	"	0.3	0.0	21	2.1	0.0	94.5
31V	East Fork Valley 2 mi	"	0.6	0.2	6	4.2	1.8	27.0
32V	Atop Black Oak Ridge 2 mi	"	0.6	0.3	57	4.2	2.7	256.5
33V	Sugar Grove Valley at Poplar. 2 mi	"	0.4	<0.1	20	2.8	0.9	90.0
34V	Sugar Grove Rd. S. of Blair. 2 mi	"	1.0	0.4	55	7.0	3.6	247.5
35V	Buttermilk Rd 5 mi.	7-28-60	0.2	2.4	25	1.4	21.6	112.5
36V	Bear Cr. Rd near Y-12 5 mi	"	1.7	8.0	38	11.9	72.0	171.0

NOTE: 1 ppm U/cc = 4.5 x 10^{-7} μc/cc 1 dis/min/gm = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

Direction from center of Plant. Station #	SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/gm	BETA ~~d/m/100 ml~~	FLUORIDES ~~ppm~~	~~pH~~	B
1- ~~[illegible]~~ N	HPX-412V	1 mi from center of Plant. K-1064 Storage Yd.	5-6-60	9.8	5.4	39			
1- N.E.	413V	1 mile from Plant. Blair Rd N. of Plant.	"	3.7	4.6	16			
2- E.	414V	1 mile from center of Plant. Stoner Rd near K-[illegible]	"	3.0	4.2	20			
3- S.E	415V	1 mile from center of Plant. K-101, 253 Gerard Ave	"	7.8	9.0	22			
4- S	416V	1 mile from center of Plant. Contractor Rd.	"	4.0	6.3	26			

NOTE: 1 ppm U/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

Pine Needles

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS $\mu c/gm \times 10^{-7}$					
			URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/gm	BETA ~~d/m/100 ml~~ c/m/gm	FLUORIDES ~~ppm~~ Chloride	~~pH~~	Beta
HPX-20P	2 mi. S. of Plant near Gallaher Bridge	5/24/60	0.6	0.1	3	4.2	0.9	13.5
HPX-21P	2 mi. S.E. of Plant On Bear Cr. Rd near Wheat Rd. Intersection	"	1.6	<0.1	8	11.2	<0.9	36.0
HPX-22P	2 mi. E. of Plant near White Wing Intersection	"	0.8	0.1	10	5.6	0.9	45.0
HPX-23P	2 mi N.E. of Plant East Fork Valley	"	0.8	<0.1	6	5.6	<0.9	27.0
HPX-24P	2 mi. N.E. of Plant Utah Black Oak Ridge	"	0.8	<0.1	10	5.6	<0.9	45.0
HPX-25P	2 mi N. of Plant Sugar Grove Valley on Blair Rd at Poplar Cr.	"	0.5	<0.1	10	3.5	<0.9	45.0
HPX-26P	2 mi N.W. of Plant Sugar Grove Valley	"	0.4	<0.1	6	2.8	<0.9	27.0

NOTE: 1 ppm [illegible] $\times 10^{-7}$ μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

Vegetation

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD) (SOIL)~~ (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm X 10⁻⁷ URANIUM ppm	ALPHA ~~d/m/100 ml~~ c/m/gm	BETA ~~d/m/100 ml~~	FLUORIDES ppm	pH	
HPX-19V	2 mi S.W. of Plant at Power House	5/24/60	0.9	0.9	14	6.3	8.1	63.0
HPX-20V	2 mi S. of Plant near Gallaher Bridge.	"	0.4	<0.1	14	2.8	<0.9	63.0
HPX-21V	2 mi S.E. of Plant on Bear Cr Rd near Wheat Rd. Intersection	"	2.3	0.3	20	16.1	2.7	90.0
HPX-22V	2 mi. E. of Plant near White Wing Intersection.	"	1.5	<0.1	17	10.5	<0.9	76.5
HPX-23V	2 mi. N.E. of Plant East Fork Valley	"	1.6	<0.1	15	11.2	<0.9	67.5
HPX-24V	2 mi. N.E. of Plant Atop Black Oak Ridge	"	1.1	<0.1	15	7.7	<0.9	67.5
HPX-25V	2 mi N. of Plant Sugar Grove Valley on Blair Rd at Poplar Gr.	"	1.2	<0.1	14	8.4	<0.9	63.0
HPX-26V	2 mi. N.W. of Plant Sugar Grove Valley.	"	0.7	<0.1	12	4.9	<0.9	54.0

NOTE: 1 ppm U/[illegible] x 10⁻⁷ μc/cc 1 dis/min/cc = 4.5 x 10⁻⁷ μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER~~) (~~MUD~~) (~~SOIL~~) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS			uc/gm X10^-7		
			URANIUM	ALPHA	BETA	~~FLUORIDES~~	pH	
			ppm	~~d/m/100ml~~ d/m/gm	~~d/m/100ml~~ d/m/gm	Uranium ppm	α	β
HPX-15V	5 mi N.W. of Plant Highway 61 Bridge at Little Emory Riv.	4-13-60	0.0	<0.1	20	0.0	<0.9	90.0
HPX-15P	"	"	2.3	1.3	8	16.1	11.7	36.0
HPX-16V	5 mi. West of Plant Dickie Valley at Emory River	"	0.0	<0.1	33	0.0	<0.9	148.5
HPX-16P	"	"	0.5	0.1	7	3.5	0.9	31.5
HPX-17V	5 mi Southwest of Plant near Lawrenceville	4-14-60	1.3	2.8	2.1	9.1	25.2	94.5
17P	"	4-14-60	0.7	0.3	5	4.9	2.7	22.5
HPX-18V	12 mi Southwest of Plant on Highway 8.	4-14-60	0.9	<0.1	22	6.3	<0.9	99.0
18P	"	4-14-60	0.4	0.8	3	2.8	7.2	13.5

NOTE: 1 ppm U/cc = 7x10^-7 uc/cc 1 dis/min/cc = 4.5x10^-7 uc/cc

V Vegetation (grass)

P Plant

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER) (MUD) (SOIL~~) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS			uc/gm x 10^{-7}		
			URANIUM	ALPHA	BETA	~~FLUORIDES~~	~~pH~~	
			ppm	~~d/m/100ml~~ c/m/gm	~~d/m/100ml~~	Uranium	α	β
HPX-10.V	5 Mi. South east of Plant Buttermilk Rd	4-13-60	0.0	<0.1	17	0.0	<.90	76.5
HPX-10P	"	"	0.6	0.1	6	4.2	.90	27.0
HPX-10V	5 Mi East of Plant Bear Ck Rd.	"	1.7	0.4	22	11.9	3.6	99.0
HPX-11P	"	"	1.3	0.3	11	9.1	2.7	49.5
HPX-12V	5 Mi. N.E. of Plant Atop Black Oak Ridge	"	0.4	<0.1	40	2.8	<.9	180.0
HPX-12P	"	"	1.2	0.2	12	8.4	1.8	54.0
HPX-13V	5 Mi. N. of Plant. Highway 61 at Mt. Pisgah Church.	"	0.6	0.1	26	4.2	0.9	117.0
HPX-13P	"	"	0.5	<0.1	12	3.5	<0.9	54.0
HPX-14V	5 Mi N.E. of Plant Poplar Ck. Bridge Oppos. Black Oak Ridge	"	0.0	0.3	13	0.0	2.7	58.5
HPX-14P	"	"	0.8	1.0	8	5.6	9.0	36.0

NOTE: 1 ppm U^{P}/cc = 7×10^{-7} uc/cc 1 dis/min/cc = 4.5×10^{-7} uc/cc

V - vegetation (grasses)

P - Pine needles

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(AIR)~~(SOIL)(~~VEGETATION~~)
(~~PINEWOODS~~)

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	µc/cc	d/m/100 cc	µc/cc	d/m/100 cc	µc/cc	ppm	
Mt. Pisgah	12-9-69		6		42		278		
Buttermilk Rd	12-9-69		6		67		453		
Lawrenville	12-9-69		4		24		216		
Little Emory at Highway 70	12-15-69		3		43		316		
K-25 Credit Union	12-9-69		6		47		126		

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)~~(SOIL)(~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	11-14-67		14		57		251		
Buttermilk Road	↓		11		49		388		
Lawnville	↓		12		53		320		
Little Emory at Highway 61	↓		8		47		475		
K-25 Credit Union	↓		16		53		162		
Mt. Pisgah Church	5-20-68		7		56		124		
Buttermilk Road	5/20/68		12 ~~[illegible]~~		64		371		
Lawnville	5/20/68		7 ~~[illegible]~~		45		203		
Little Emory at Highway 61	5/21/68		8 ~~[illegible]~~		66		426		
K-25 Credit Union	5/21/68		14		61		177		

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	µc/~~cc~~ gr x10^{-7}	~~d/m/100 cc~~	µc/~~cc~~ gr x10^{-7}	~~d/m/100 cc~~	µc/~~cc~~ gr x10^{-7}		
Mt. Pisgah Church	10-14-66		7		117		184		
Buttermilk Road	10-14-66		7		58		661		
Lawnville	10-14-66		6		67		251		
Little Emory at Highway 61	10-14-66		4		72		535		
K-25 Credit Union	10-14-66		7		342		207		
Mt. Pisgah Church	3-23-67		6		51		124		
Buttermilk Road			6		42		537		
Lawnville			8		54		242		
Little Emory at Highway 61			9		50		472		
K-25 Credit Union			8		45		202		

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~)(~~MUD~~)(SOIL)(~~VEGETATION~~)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	μc/~~gm~~ $\times 10^{-7}$	~~d/m/100 cc~~	μc/~~gm~~ $\times 10^{-7}$	~~d/m/100 cc~~	μc/~~gm~~ $\times 10^{-7}$		
Mt. Pisgah Church	11-4-67		78		57		234		
Buttermilk Road	"		13		20		666		
Lawnville	"		9		13		292		
Little Emory at Highway 61	"		7		27		396		
K-25 Credit Union	"		1		17		243		
Mt. Pisgah Church	6-1-66		6		580		144		
Buttermilk Road	"		5		558		617		
Lawnville	"		4		504		238		
Little Emory at Highway 61	"		5		292		445		
K-25 Credit Union	"		9		621		198		

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)~~ ~~(MUD)~~ (SOIL) ~~(VEGETATION)~~
~~(PINEWEEDLES)~~

SAMPLE LOCATION	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		~~ppb~~	μc/gm x 10⁻⁷	~~d/m/100 cc~~	μc/gm x 10⁻⁷	~~d/m/100 cc~~	μc/gm x 10⁻⁷	ppm	
HP 6S Mt. Pisgah	9-9-64		5.9		19		171		
HP 7S Buttermilk	↓		6.6		28		657		
HP 8S Lawnville			7.1		19		275		
HP 9S Highway #61			5.7		22		657		
HP 10S Black Oak Ridge			8.6		20		212		
HP-1-S	3-5-65		7.0		39		212		
HP-2-S	↓		4.1		47		599		
HP-3-S			5.6		40		329		
HP-4-S			5.4		27		414		
HP-5-S			8.9		45		243		

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ ~~(MUD)~~ (SOIL) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	FLUORIDES		
			ppm	d/m/gm	d/m/gm	ppm	pH	
11-S	MT. Pisgah	8-8-43	0.8	4.2	53	–		
12-S	Buttermilk	"	1.3	5.4	199	–		
13-S	Lawnville	"	1.2	4.9	104	–		
14-S	Hwy #61	"	0.8	4.2	123	–		
15-S	Black Oak Ridge	"	1.0	4.5	67	–		
			$\mu c/gm \times 10^{-7}$					
HPS-1	MT. Pisgah	4-14-64	6.0	29.7	139.5			
HPS-2	Buttermilk	"	10.5	42.3	589.5			
HPS-3	Lawnville	"	9.8	34.9	283.5			
HPS-4	Hwy #61	"	6.2	27.0	288.0			
HPS-5	Black Oak Ridge	"	13.3	36.0	171.0			

NOTE: 1 ppm U^n/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ ~~(MUD)~~ (SOIL) ~~(VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppm	ALPHA ~~c/m/gram~~	BETA ~~c/m/gram~~	FLUORIDES ppm	pH	
~~139~~ 2S	Buttermilk Rd.	3-27-63	1	4	62			
~~140~~ 3S	Lawnville	"	2	14	82			
~~141~~ 4S	Little Emory at Hwy 61	"	2	5	217			
~~142~~ 5S	Black Oak Ridge	"	2	4	84			
6S	Mt. Pisgah	6-18-63	0.5	18.5	27			
7S	Buttermilk		1.6	15.8	173			
8S	Lawnville		1.0	5.4	85			
9S	Hwy 61		1.0	4.4	104			
10S	Black Oak Ridge		1.4	11.5	75			

NOTE: 1 ppm U^n/cc = 7×10^{-7} μc/cc 1 dis/min/cc = 4.5×10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER)~~ ~~(MUD)~~ (SOIL) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM ppm	ALPHA d/m/~~100 ml~~	BETA d/m/~~100 ml~~	FLUORIDES ppm	pH	
84	Buttermilk Road	4-10-62	0.8	2.7 ~~[illegible]~~	212			
85	Lawnville	"	1.0	1.7	146			
86	#61	"	0.9	2.5	128			
87	Black Oak Ridge	"	0.7	5.7	123			
88	Mt. Pisgah	9-14-62	1.1	3.1	59			
89	Buttermilk Rd.	"	1.7	4.6	139			
90	Lawnville	"	1.7	7.5	81			
91	Little Emory at Hwy #61	"	0.8	4.3	117			
92	Black Oak Ridge	"	1.1	3.9	76			
1-5 ~~138~~	Mt. Pisgah	3-27-63	1	5	53			

NOTE: 1 ppm U/cc = 7×10^{-7} µc/cc 1 dis/min/cc = 4.5×10^{-7} µc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

[redacted] (SOIL) [redacted]

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA @/m/100 ml	BETA @/m/100 ml	~~FLUORIDES~~ μc/gm × 10^{-7} Uranium	Alpha	Beta
74-S	2 mi White Wing Intersect.	2-14-61	2.5	46.9	29	17.5	422.1 ~~24.0~~	130.5
75-S	2 mi East Fork Valley	"	1.5	2.3	38	10.5	20.7 ~~10.3~~	171.0
76-S	2 mi Atop Black Oak Ridge	"	2.0	3.3	25	14.0	29.7 ~~14.8~~	112.5
77-S	2 mi Powerhouse at Elrick River	"	2.6	3.8	36	18.2	34.2 ~~17.1~~	162.0
78	Mt. Pisgah	11-28-61	1.0	1.9	64 *	7.0		
79	Buttermilk Rd.	"	1.8	2.8	174	12.6		
80	Lawnville	"	1.4	2.5	63	9.8		
81	Little Emory / #61	"	1.6	2.3	90	11.2		
82	Credit Union Black Oak Ridge	"	2.9	3.0	195 **	20.3		
83	Mt. Pisgah	4-10-62	1.0	4.0	72			

Omit

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

* Ave. $\frac{766}{17}$ = 45.0

** Ave. $\frac{586}{5}$ = 117.2

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER~~) (~~MUD~~) (SOIL) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS					
			URANIUM	ALPHA	BETA	FLUORIDES	μc/cc X 10⁻⁷	
			ppm	d/m/100 ml	d/m/100 ml	μgm/cm	Alpha	Beta
64-S	5 mi Poplar Cr. Bridge - Hwy	2-13-61	1.6	2.7	27	11.2	24.3 ~~12.1~~	121.5
65-S	5 mi W.H. Pisgah Church	"	1.2	2.0	16	8.4	18.0 ~~9.0~~	72.0
66-S	5 mi Bridge on Little Emory Riv. Hwy #61	"	1.1	2.3	21	7.7	20.6 ~~10.3~~	94.5
67-S	5 mi Dickie Valley at Emory Rit.	"	1.5	2.5	86	10.5	22.4 ~~11.2~~	387.0
68-S	2 mi Sugar Grove Valley Stg Blair	"	1.1	2.3	51	7.7	20.6 ~~10.3~~	229.5
69-S	2 mi Blair Rd. at Poplar Creek.		1.2	2.2	109	8.4	19.8 ~~9.9~~	490.5
70-S	5 mi Lavonville	2-14-61	1.4	2.6	17	9.8	23.4 ~~11.7~~	76.5
71-S	12 mi S.W. of Kingston Hwy #58	"	1.0	3.2	56	7.0	28.8 ~~14.4~~	252.0
72-S	2 mi Gallaher Bridge	"	0.9	2.1	32	6.3	18.9 ~~9.4~~	144.0
73-S	2 mi Bear Cr. Rd. near Clinton Intersect.	"	2.7	3.8	147	18.9	34.2 ~~17.1~~	661.5

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD)~~ (SOIL) ~~(VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS URANIUM ppm	ALPHA cm/1 gm	BETA cm/1 gm	~~FLUORIDES~~ ~~ppm~~ U	~~pH~~ α	β
54-S	2 mi East Fork Valley	11-14-60	1.8	3.9	112	11.9	35.1	504
55-S	2 mi White Wing Intersect	"	1.6	4.1	134	[illegible]	36.9	[illegible]
56-S	2 mi. Powerhouse at Clinch	"	2.7	4.7	164	[illegible]	42.5	[illegible]
57-S	2 mi. Gallaher Bridge	"	1.5	3.7	154	[illegible]	33.3	673
58-S	2 mi Bear Creek Road at Wheat Intersect	"	2.0	3.5	150	4.0	31.5	675
59-S	2 mi Blair Road at Poplar Creek	"	0.9	3.5	198	6.3	31.5	[illegible]
60-S	2 mi Sugar Grove S. Way Blair Rd.	"	5.3	27.5	88	37.1	243.0	396
61-S	5 mi Buttermilk Rd	2-13-61	1.9	3.4	0	13.3	30.6 ~~15.3~~	0.0
62-S	5 mi Bear Cr. Rd. near Y-12	"	4.1	20.1	0	28.7	180.9 ~~90.4~~	0.0
63-S	5 mi Atop Black Oak Ridge	"	1.6	2.7	76	11.2	24.3 ~~12.1~~	342

1st Quarter 1961

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

ENVIRONMENTAL SAMPLING -- ORGDP

([redacted]) (SOIL) ([redacted])

4th Quarter

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm X10⁻⁷ URANIUM ppb	ALPHA c/m/100 ml	BETA d/m/100 ml	FLUORIDES Uranium	pH	β
HPX-44-S	5 mi Sugar Grove at Poplar Cr Bridge	11-8-60	3.1	17.1	166	21.7	153.9	747
45-S	5 mi Mt. Pisgah Church	"	0.6	3.1	52	4.2	27.4	234
46-S	5 mi Bridge at Little Emory	"	0.9	2.4	57	6.3	21.6	256
47-S	5 mi Dickie Valley at Emory	"	1.0	2.3	140	7.0	20.7	630
48-S	12 mi Highway #58	"	1.0	2.1	113	7.0	18.9	508
49-S	5 mi Lawnville	"	0.9	3.6	74	6.3	32.4	333
50-S	5 mi Buttermilk Rd.	"	1.4	5.2	98	9.8	46.8	441
51-S	5 mi Bear Cr. Rd near Y-12	"	1.3	3.9	88	9.1	35.1	396
52-S	5 mi Atop Black Oak Ridge	11-14-60	1.1	6.9	93	7.7	62.1	418
53-S	2 mi Atop Black Oak Ridge	"	1.1	3.6	59	7.7	32.4	265

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/gr = 4.5 x 10^{-7} μc/gm

∠ - 50% aprometry

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER~~) (~~MUD~~) (SOIL) (VEGETATION)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS Uranium µc/cc x10⁻⁷ URANIUM ppm	ALPHA d/m/~~100 gal~~	BETA d/m/~~100 gal~~	~~FLUORIDES~~ ~~ppm~~ µc	pH	
HPX-36S	Bear Cr. Rd near Y-12. 5 mi.	7-28-60	1.0	10.2	25	7.0	91.8	112.5
37-2S	Atop Black Oak Ridge. 5 mi.	"	0.8	7.6	46	5.6	59.4	207.[illegible]
37-4S	"	"	0.8	5.5	47	5.6	49.5	211.[illegible]
38S	Poplar Cr. Br. Sugar Grove Valley. 5 mi.	"	3.2	8.1* 40.5	97	22.4 ~~28.0~~	78.3	436.5
39S	Mt. Pisgah Church. 5 mi.	"	0.7	9.9	31	4.9	89.1	139.5
40S	Little Emory Bridge Hy #61 5 mi.	"	0.9	10.4* ~~217.~~3	38	6.3	93.6	171.0
41S	Dickie Valley at Emory Rd. 5 mi.	"	0.9	4.7	83	6.3	42.3	373.5
42S	Laconville 5 mi.	7-29-60	0.7	9.8	90	4.9	88.2	405.0
43S	Off Hy #58 12 mi.	7-29-60	0.8	4.1	86	10.5	36.9	387.0

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/cc

1 d/m/ppm cc = 4.5 x 10^{-7} µc/gm

* corrected 11-3-60 Reason by [illegible]

ENVIRONMENTAL SAMPLING -- ORGDP

~~(WATER) (MUD)~~ (SOIL) ~~(VEGETATION)~~

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS Uranium µc/gm X10⁻⁷ URANIUM ppm	ALPHA d/m/~~100 ml~~ g	BETA d/m/~~100 ml~~ g	~~FLUORIDES~~ ppm	pH	β
HPX-27S	Powerhouse at River 2 mi.	7-27-60	1.6	5.4	81	11.2	48.6	364.5
28S	Gallaher Bridge 2 mi.	"	1.3	5.1	114	9.1	45.9	513
29S	Bear Cr. Rd. 2 mi.	"	1.5	7.9	58	10.5	71.1	261
30S	White Wing Inter. 2 mi.	"	1.5	4.9	50	10.5	44.1	225
31-2S	East Fork Valley 2 mi.	"	1.8	4.4 * ~~4.6~~	50	12.6	39.6	225
31-4S	"	"	1.0	3.4 * ~~30.2~~	28	7.0	30.6	126
32S	Top Black Oak Ridge 2 mi.	"	1.1	3.1 * ~~35.1~~	18	7.7	27.9	81
33S	Sugar Grove Valley at Poplar 2 mi.	"	1.8	4.2	58	12.6	37.8	261
34S	Sugar Grove Rd. SW. of Blair. 2 mi.	"	0.8	6.7	185	5.6	60.3	832
35S	Butterwild Rd 5 mi.	7-28-60	1.0	4.8	99	7.0	43.2	44.5

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} µc/cc 1 dis/min/cc = 4.5 x 10^{-7} µc/gm

* Corrected - 11-3-60 - Remove by lab

Soil

ENVIRONMENTAL SAMPLING -- ORGDP

(~~WATER~~) (~~MUD~~) (SOIL) (~~VEGETATION~~)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	LABORATORY RESULTS μc/gm X 10^{-7}					
			URANIUM	ALPHA	BETA	FLUORIDES		
			ppm	d/m/~~100 ml~~	d/m/~~100 ml~~	Uranium	~~α~~	β
HPX-19S	2 mi. S.W. of Plant at Power House	5-24-60	4.9	9.4	109	34.3	84.6	49.6
HPX-20S	2 mi. S. of Plant near Gallaher Bridge area	"	2.3	4.9	157	16.1	44.1	75.6
HPX-21S	2 mi. S.E. of Plant on Bear Co. Rd. near Wheat Rd. Intersection	"	2.1	4.2	75	14.7	37.8	33.7
HPX-22S	2 mi. E. of Plant near White Wing Intersection	"	1.1	4.7	58	7.7	42.3	26.1
HPX-23S2	2 mi. N.E. of Plant East Fork Valley 2 in depth	"	1.3	2.5	63	9.1	22.5	28.3
HPX-23S4	2 mi. N.E. of Plant East Fork Valley. 4 in additional depth.	"	1.0	2.9	29	7.0	26.1	13.0
HPX-24S	2 mi N.E. of Plant Atop Blackoak Ridge.	"	1.4	2.0	46	9.8	18.0	20.7
HPX-25S	2 mi. N. of Plant Sugar Grove Valley on Blair Rd. at Poplar Cr.	"	0.7	2.2	154	4.9	19.8	69.3
HPX-26S	2 mi N.W. of Plant Sugar Grove Valley	"	1.0	3.1	75	7.0	27.9	33.7

NOTE: 1 ppm U^n/cc = 7 x 10^{-7} μc/cc 1 dis/min/cc = 4.5 x 10^{-7} μc/cc

1 d/m/g = 4.5 x 10^{-7} μc/g

S-Re

ORGDP S[illegible] SAMPLING

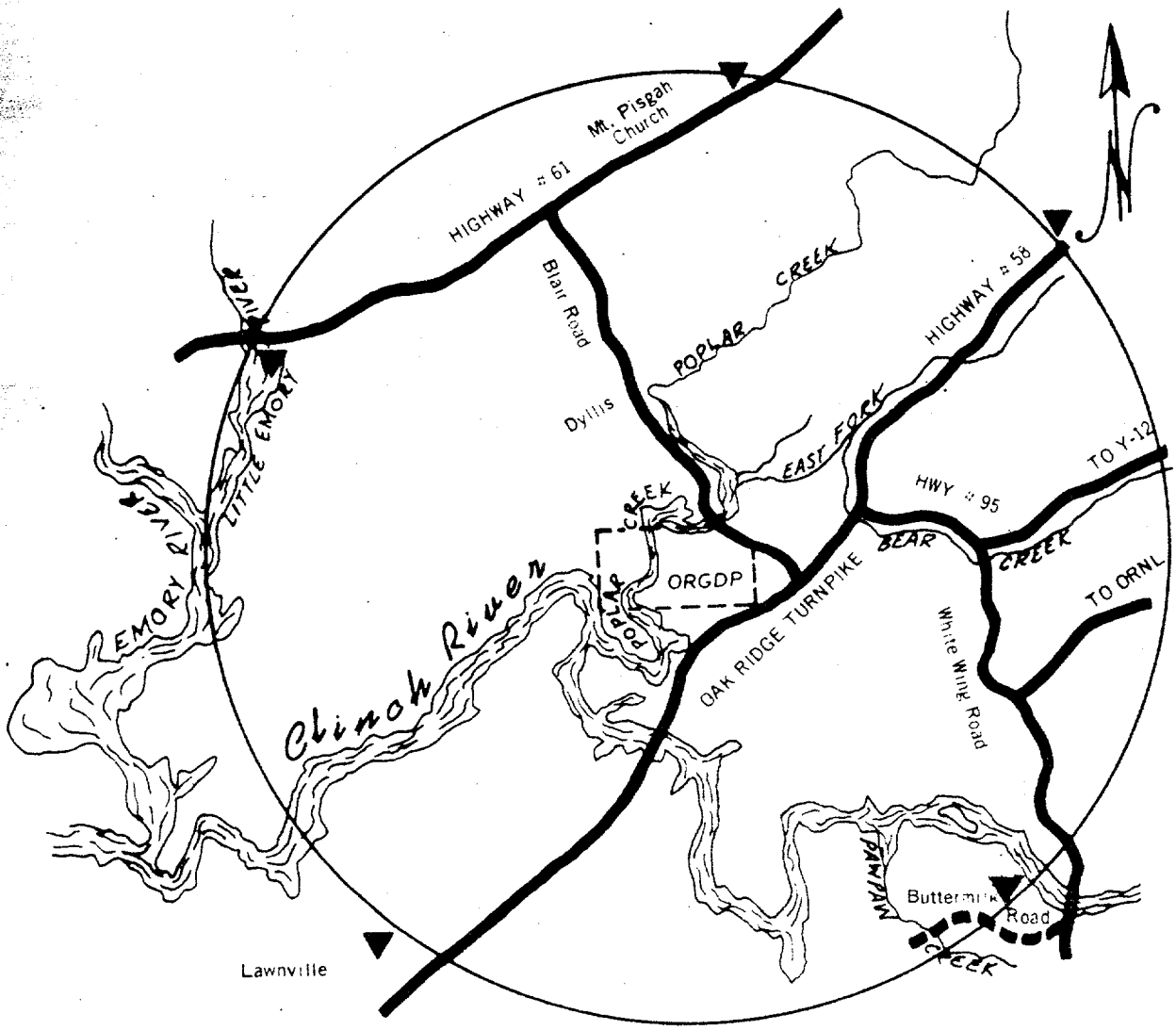
Typical Data 1960-1970

Sample Location	Number Samples	Uranium* Min.	Uranium* Ave.	Uranium* Max.	Alpha* Min.	Alpha* Ave.	Alpha* Max.	Beta* Min.	Beta* Ave.	Beta* Max.
I. 12 miles SW of ORGDP	4	4.9	7.4	10.5	18.9	26.1	36.9	32.8	295.0	508.0
II. 5 miles from ORGDP										
Mt. Pisgah (N)	20	3.5	6.9	14.0	17.0	49.7	166.0	72.0	283.0	650.0
Hwy 61 at Little Emory (NW)	20	3.0	6.8	14.0	20.6	36.2	72.0	94.5	608.7	1940.0
Lawnville (SW)	20	4.0	8.0	14.0	13.0	41.9	126.0	76.5	441.9	1300.0
Buttermilk Road (SE)	20	5.0	10.9	44.1	19.0	49.8	142.0	57.0	412.6	666.0
K-25 Credit Union (NE)	20	1.0	10.6	28.7	17.0	49.8	180.9	126.0	439.4	1740.0
III. 2 miles from ORGDP	34	4.9	12.3	37.1	18.0	42.2	243.0	81.0	388.2	891.0
IV. On-Plant ORGDP	21	11.0	59.2	194.0	28.0	214.5	1260.0	660.0	1277.4	2150.0
V. Concentration by Soil Depth										
Uppermost Inch	1		105,000 (40%)			249,093 (41%)			115,011 (41%)	
Second Inch	1		112,000 (82%)			254,961 (83%)			114,318 (82%)	
Third Inch	1		24,500 (91%)			62,149 (93%)			24,580 (91%)	
Fourth Inch	1		8,400 (94%)			21,665 (96%)			8,775 (94%)	
Fifth Inch	1		15,400 (100%)			21,895 (100%)			15,867 (100%)	

* Units; 10^{-7} µCi/gram

NBS:nh
March 25, 1971

to Wayne Hibbetts, ORO AEC
Safety & Env. Control
cc: W. C. Hentman, ORGDP



SAMPLING POINTS OF OUTSIDE ENVIRONS - ORGDP

▼Sampling Location ... Miles from Plant

FIGURE 1

To file 4-30-71

Air samples taken at
5 mile points

		c/m/ft^3
Lawnville	70 ft^3	0.01
Buttermilk Rd.	70	0.00
K-25 Credit Union	70	0.00
Highway 61	70	0.01
Mt. Pisgah	70	0.00

R. H. Lyon

ANALYSIS REPORT

DIVISION OR LABORATORY	SAMPLE
Laboratory	Water
PARTMENT	SEQUENCE NO.
DATE RECEIVED	REQUEST NO.
May, 1968	06381

RESULTS

See Attached Sheet

The various analyses were performed as follows:

Cd, Cr, Cu, Fe, Mn, Pb and Zn	Atomic Absorption
Ag, Ba	Spectrographic
As, CN, Phenols, Se	APHA Standard Methods
Cl, F, NO_3, SO_4	Conventional wet-chemical methods

REMARKS

SUBMITTED BY	LOCATION
N. B. Schultz	K-1003
RESULTS APPROVED BY	DATE
T. Kwasnoski	7-22-68

UCN-1232
(15 1-60)

WATER ANALYSES
(Results in mg/liter)

DW		HP-40 Poplar Creek Main Branch	HP-41 Poplar Creek East Fork	HP-42 Poplar Creek Main Stream at Powerhouse	HP-43 K-901 Clinch River	HP-44 K-1004B Sanitary Drinking Water
0.05	Arsenic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1.0	Barium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
250	Chloride	2	2	3	3	5
0.01	Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
0.05	Chromium	< 0.005	< 0.005	0.02	0.014	0.010
0.2	Copper	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
0.01	Cyanide	0.003	0.003	0.002	0.002	< 0.0005
1.5	Fluoride	< 0.1	0.3	0.8	1.6	0.2
	Iron } 0.3 ppm	0.1	0.1	< 0.05	< 0.05	< 0.05
0.1	Lead }	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
	Manganese	< 0.01	0.01	< 0.01	< 0.01	< 0.01
50-60	Nitrate	0.12	0.21	0.13	2.7	1.2
0.001	Phenols	0.02	0.01	0.02	0.02	0.02
0.05	Selenium	0.004	0.002	0.003	0.003	0.002
0.05	Silver	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
250	Sulfate	27	26	31	16	24
5.0	Zinc	< 0.02	< 0.02	< 0.02	< 0.02	0.12

* - [illegible] April, May, June — 0.1 ppm

ANALYSIS REPORT

DIVISION OR LABORATORY Technical	SAMPLE Waters
DEPARTMENT Chemical Analysis	SEQUENCE NO. A-7205
DATE RECEIVED March 1969	REQUEST NO. Health Physics

RESULTS

Attached hereto are results on water samples submitted for analyses. The various analyses were performed as follows:

Cd, Cr, Cu, Fe, Mn, Pb and Zn	Atomic Absorption
Ag, Ba	Spectrographic
As, CN, Phenols, Se	APHA Standard Methods
Cl, F, SO_4	Conventional wet-chemical Methods

REMARKS

SUBMITTED BY N. B. Schultz	LOCATION K-1003
RESULTS APPROVED BY P. F. Shorten	DATE May 7, 1969

UCN-1232
(15 1-60)

5/6/70 [illegible] Dick Gilbert

Sequence No. A-7205

WATER SAMPLES
PPM

Sample Number	pH	Phenol.	As	Cl	CN^-	F	Zn	Se	Ag	Ba	Cd	Cr	Cu	Fe	Mn	Pb	SO_4	U Microcuries/cc ~~x~~ 10^{-7}	
		~~LLD~~ .001	<.01	<10 (<1)	.0005 (0.2 too high)	<0.1	<.02	<.001	<.005	<0.5	<.005	<0.005	<.02	<.05	<0.1	<0.02	<10		
		.001 mg/l	0.05	250	0.01	1.5					0.01								
HP 55W	7.3	< 0.001	< 0.01	1.2	< 0.0005	< 0.1	0.005	0.003	0.02	< 0.4	< 0.005	< 0.005	0.005	0.070	0.028	< 0.02	35	0.00	0.000
HP 56W	8.3	< 0.001	< 0.01	6.4	0.0073	0.2	< 0.005	0.006	0.002	< 0.4	< 0.005	0.035	0.006	0.008	< 0.005	< 0.02	25	0.11	0.011
HP 57W	7.5	0.002	< 0.01	5.6	0.0063	0.9	< 0.005	0.007	< 0.002	< 0.4	< 0.005	0.030	0.006	0.012	< 0.005	< 0.02	34	0.08	0.008
HP 58W	7.9	0.002	< 0.01	2.5	0.0007	0.3	0.005	0.010	0.005	< 0.4	< 0.005	0.010	0.005	0.012	< 0.005	< 0.02	15	0.00	0.000
HP 59W	7.2	0.001	< 0.01	4.3	< 0.0005	< 0.1	0.050	0.003	< 0.002	< 0.4	< 0.005	0.005	0.005	0.012	< 0.005	< 0.02	26	0.00	0.000
HP 60W	7.9	< 0.001	< 0.01	180	0.0007	1.5	0.010	0.011	0.01	< 0.4	< 0.005	1.1	0.005	0.020	< 0.005	< 0.02	80	4.0	0.400
HP 61W	8.4	0.003	< 0.01	3.4	< 0.0007	< 0.1	< 0.005	0.004	0.005	< 0.4	< 0.005	0.070	0.008	0.008	< 0.005	< 0.02	33	0.01	0.001
HP 62W	9.0	0.003	< 0.01	3.8	< 0.0005	0.3	0.005	0.009	< 0.002	< 0.4	< 0.005	0.40	0.005	0.005	< 0.005	< 0.02	36	0.18	0.018
HP 63W	4.8	0.002	< 0.01	0.25	< 0.0005	0.0	0.036	< 0.001	< 0.002	< 0.4	< 0.005	< 0.005	0.010	0.050	0.005	< 0.02	< 2	0.00	0.00
HP 64W	5.7	0.003	< 0.01	0.01	< 0.0005	0.0	< 0.005	< 0.001	< 0.002	< 0.4	< 0.005	< 0.005	0.007	0.008	< 0.005	< 0.02	< 2	0.00	0.00

HP 55W	Poplar Creek (Main Branch)
HP 56W	Poplar Creek (East Fork)
HP 57W	Poplar Creek (Powerhouse)
HP 58W	Clinch River (K 901)
HP 59W	Sanitary Water K-1004B
HP 60W	Holding Pond (K-1407B)
HP 61W	Ornamental Pond (K-1007)
HP 62W	Disposal Pond (West of K-33)
HP 63W	Rainwater
HP 64W	Distilled Water

NO_3^- no permissible < 0.1

ANALYSIS REPORT

DIVISION OR LABORATORY	SAMPLE
Technical	Waters
DEPARTMENT	SEQUENCE NO.
Chemical Analysis	A-5395 to 5404
DATE RECEIVED	REQUEST NO.
Oct. 17, 1968	Health Physics

RESULTS

Attached herewith are results on water samples submitted for analyses.

The various analyses were performed as follows:

Cd, Cr, Cu, Fe, Mn, Pb and Zn	Atomic Absorption
Ag, Ba	Spectrographic
As, CN, Phenols, Se	APHA Standard Methods
Cl, F, SO_4	Conventional wet-chemical Methods

REMARKS

SUBMITTED BY	LOCATION
N. B. Schultz	K-1003
RESULTS APPROVED BY P. F. Shorten	DATE
	Jan. 29, 1969

UCN-1232
(15 1-60)

Water Sampling.

Analyses: Cd, Cr, Cu, Fe, Mn, Pb + Zn,
Ag, Ba, As, CN, Phenols, Se,
Cl, F, NO_3, SO_4,

Samples:

	Location HP #	Sample Number	1968 Date
Poplar Creek (Main Branch)	#28	HP 45 W	10/15
Poplar Creek (East Fork)	29	HP 46 W	10/15
Poplar Creek (Powhouse)	—	HP 47 W	10/17
Clinch River (K-901)	32	HP 48 W	10/11
~~Clinch~~ Drinking Water (K-1004B)	—	HP 49 W	10/17
Holding Pond (K-1407B)	24	HP 50 W	10/17
Ornamental Pond (K-1007)	33	HP 51 W	10/17
Disposal Pond (W of K-33)	31	HP 52 W	10/17
Rainwater		HP 53 W	10/18
Distilled Water		HP 54 W	10/16

WATER SAMPLES
PPM

	pH	Phenol.	As	Cl	Cn	F	Zn	Se	Ag	Ba	Cd	Cr	Cu	Fe	Mn	Pb	SO_4
HP45W	7.7	0.003	<0.01	6.3	0.0023	0.5	0.009	0.003	0.004	<0.2	<0.003	0.006	0.005	0.015	0.003	<0.01	23
HP46W	7.6	<0.002	<0.01	8.6	0.0073	0.6	0.006	0.002	0.004	<0.2	<0.003	0.006	0.005	0.012	0.005	<0.01	25
HP47W	7.8	<0.002	<0.01	5.6	0.0030	0.4	0.003	0.003	0.002	<0.2	<0.003	0.028	0.002	0.014	0.004	<0.01	22
HP48W	7.9	<0.002	<0.01	1.4	<0.0005	0.8	0.004	0.004	0.02	<0.2	<0.003	0.005	<0.002	<0.005	<0.003	<0.01	13
HP49W	7.3	<0.002	<0.01	4.2	<0.0005	<0.1	0.15	0.003	0.01	<0.2	<0.003	<0.005	0.003	0.007	<0.003	<0.01	22
HP50W	7.1	<0.002	<0.01	26.6	<0.0005	0.8	0.10	0.003	0.004	<0.2	<0.003	0.88	0.010	0.007	0.012	<0.01	71
HP51W	9.0	<0.002	<0.01	6.0	0.0007	0.3	0.006	0.003	0.001	<0.2	<0.003	0.045	0.002	0.010	0.005	<0.01	35
HP52W	9.2	<0.002	<0.01	8.8	0.0027	0.3	0.007	0.002	0.002	<0.2	<0.003	0.88	<0.002	<0.005	<0.003	<0.01	58
HP53W	4.8	0.002	<0.01	<0.1	<0.0005	0.5	0.015	<0.001	0.001	<0.2	<0.003	<0.005	0.006	0.020	<0.003	0.01	1
HP54W	6.0	<0.002	<0.01	<0.1	<0.0005	<0.1	0.002	<0.001	<0.001	<0.2	<0.003	<0.005	0.003	<0.005	<0.003	<0.01	< 1

HP45W- Poplar Creek (Main Branch)
HP46W- Poplar Creek (East Fork)
HP47W- Poplar Creek (Powerhouse)
HP48W- Clinch River (K-901)
HP49W- Drinking Water (K-1004B)
HP50W- Holding Pond (K-1407B)
HP51W- Ornamental Pond (K-1007)
HP52W- Disposal Pond (W of K-33)
HP53W- Rainwater
HP54W- Distilled Water

Received in lab. on 10-17-68

ANALYSIS REPORT

DIVISION OR LABORATORY	SAMPLE
Laboratory	Waters
DEPARTMENT	SEQUENCE NO.
Research Analysis	
DATE RECEIVED	REQUEST NO.
August, 1967	06381

RESULTS

See Attached Sheet

The various analyses were performed as follows:

Cd, Cr, Cu, Fe, Mn, Pb and Zn	Atomic Absorption
Ag, Ba	Spectrographic
As, CN, Phenols, Se	APHA Standard Methods
Cl, F, NO_3, SO_4	Conventional wet-chemical methods.

#1 - Aug. 1967

REMARKS

#2 - May 22, 1968

SUBMITTED BY	LOCATION
N. B. Schultz	K-1003
RESULTS APPROVED BY	DATE
T. Kwoonoolu	11-30-67

UCN-1232
(15 1-60)

WATER ANALYSES
(Results in mg/liter)

		Poplar Creek Main Branch	Poplar Creek East Fork	Poplar Creek Main Stream at Powerhouse	K-901 Clinch River	K-1004-B Sanitary Drinking Water
0.05 ppm	Arsenic 0.01 mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1.0 mg/l	Barium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
250 ppm	Chloride	5	12	6	5	6
0.01 mg/l	Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
0.05 ppm	Chromium	0.01	0.04	0.04	0.02	0.005
1925 0.2 ppm)	Copper 3.0	< 0.02	< 0.02	< 0.02	< 0.02	0.02
0.01 mg/l	Cyanide (25 ppb)	0.002	0.002	0.001	0.001	< 0.001
1.5 ppm	Fluoride	0.4	0.5	0.5	0.6	0.2
	Iron	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
0.05 ppm	Lead 0.3 ppm	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
0.1 ppm	Manganese	0.02	< 0.01	0.02	0.02	< 0.01
	Nitrate *	5	11	6	5	5
0.001 ppm	Phenols	< 0.001	0.001	0.001	0.001	< 0.001
0.05 ppm	Selenium (0.01)	0.003	0.002	0.002	0.002	0.002
0.[illegible] mg/l	Silver **	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
250 ppm	Sulfate	12	14	14	8	18
1925 5.0 ppm)	Zinc 15.0	< 0.02	< 0.02	< 0.02	< 0.02	0.06

Federal Drinking Water Standards re: Chemical Constituents
(recognized guide to public water supply quality).

— maximum
— suggested

* methemoglobinemia
750-60 ppm

** 0.2 ppm in Denver, Colo.
0.05 " ≈ 50% USA water.

salty taste (100-750 ppm).

REPORT OF WATER ANALYSES

REPORT NO. 662

Distribution: W. E. Muldrew, J. Dykstra, T.Kwasnoski, RC

SAMPLE NUMBER	DATE SAMPLED	ppm Phenol	SAMPLING LOCATION	ppm CrO_3	FLUORIDES ppm.	pH	MICROCURIES / cc. URANIUM*	ALPHA	BETA
37-W	3-23-67	0.1	5mi - Mt Pisgah HP-1-W	0.01	0.2	7.0	0.00	0.12	0.00
38-W	"	0.1	5mi - Buttermilk Rd HP-2-W	0.02	0.2	7.3	0.00	0.10	0.15
39-W	"	0.2	5mi Lawnville HP-3-W	0.08	0.2	7.4	0.00	0.04	0.00
40-W	"	0.1	5mi - 61 Highway - HP-4-W	0.02	0.9	7.0	0.00	0.01	0.13
41-W	"	0.1	5mi - K-25 Credit Union HP-5-W	0.06	0.5	7.3	0.00	0.00	0.00
42-W	"	0.1	Poplar Creek - Main Branch HP-6-W	0.02	5.7	7.1	0.00	0.06	0.00
43-W	"	0.1	Poplar Creek - East Fork HP-7-W	0.10	0.2	7.2	0.13	0.13	0.37
44-W	"	0.2	Poplar Creek - K31 Bridge HP-8-W	0.10	0.0	7.0	0.04	0.13	0.45
45-W	"	0.2	Bramlear Island HP-9-W	0.02	0.0	7.2	0.00	0.04	0.02
46-W	"	0.1	K-901 Pump House HP-10-W	0.04	0.7	7.2	0.00	0.05	0.04
47-W	"	0.1	K1513 Pumping Station HP-11-W	0.02	0.3	7.4	0.00	0.02	0.21
48-W	"	0.2	Haz. Chem. Disposal Pond (Inlet) HP-12-W	13.6	0.5	6.7	0.04	0.11	0.45
49-W	"	0.1	Haz. Chem. Disposal Pond (outlet) HP-13-W	1.2	0.1	7.2	0.00	0.09	0.37
50-W	"	0.1	Pond Discharge - West K1007 HP-14-W	0.2	0.0	7.2	0.00	0.04	0.17
51-W	"	0.1	Pond Discharge K1407 HP-15-W	0.2	1.0	6.9	1.58	9.78	14.38
52-W	"	0.1	K1100 drain at K1407 Pond HP-16-W	1.8	36.0	7.1	0.00	0.05	0.45
53-W	"	< 0.1	Sanitary Water at K1003 HP-17-W	0.01	0.2	7.0	0.00	0.01	0.19

* *Calculated from uranium content assuming natural isotopic abundance.*

WORKS LABORATORY
SPECIAL ANALYTICAL SERVICES DEPARTMENT

UCN-3252

SUPERVISOR T Kwasnoski

DATE RELEASED 6/12/67

REPORT OF WATER ANALYSES

REPORT NO. 668

Distribution:
W. E. Muldrew, J. Dykstra,
T. Kwasnoski, RC

SAMPLE NUMBER	DATE SAMPLED	ppm Phenol	SAMPLING LOCATION	ppm CrO_3	FLUORIDES ppm.	pH	MICROCURIES / cc. x 10^{-7} URANIUM*	ALPHA	BETA
			Poplar Creek - Main Branch						
103-W	6-15-67	0.07	HP-18	0.01	0.1	6.4	0.00	0.002	0.00
			Poplar Creek East Fork						
104-W	"	0.05	HP-19	0.14	0.4	7.0	0.09	0.16	0.01
			Poplar Creek - K-31 Bridge						
105-W	"	0.07	HP-20	0.06	0.6	7.0	0.04	0.15	1.06
			Pond Discharge - West of K1007						
106-W	"	0.04	HP-21	0.24	0.5	7.5	0.04	0.07	0.31
			Pond Discharge - K1407						
107-W	"	0.01	HP-22	0.44	1.7	6.0	2.06	3.16	56.10
			Sanitary Water - K1003						
108-W	"	0.01	HP-23	0.01	0.3	6.8	0.00	0.02	0.00
			Hazardous Chemical Disposal Pond						
115-W	6-26-67		HP-24	0.36		7.8	0.04		
			Hazardous Chemical Disposal Pond						
116-W	6-27-67		HP-25	0.42		8.0	0.01		

* *Calculated from uranium content assuming natural isotopic abundance.*

WORKS LABORA[illegible]
SPECIAL ANALY[illegible]CAL SERVICES DEPARTMENT

SU[illegible]ISOR H. H. Sullivan

DATE RELEASED 7-[illegible]-67

UCN-3252

Soil

1960 → 1970	[Uranium]	[Total Alpha]
	μCi/cc x 10⁻⁷	μCi/cc x 10⁻⁷
Annual averages		
	ppm	c/m/gram
1960	1.	.6
61	2	3
62	1	4
63	1	9
	Microcurie/gram x 10⁻⁷	
64	8	41
65	14	30
66	6	321
67	10	50
68	10	58
69	10	62
70	—	—

Date	Location	U ppm	alpha c/m/gr
11-8-60	Lawnville	0.9	3.6
11-8-60	Buttermilk Rd	1.4	5.2
11-8-60	Highway #61	0.9	2.4
11-8-60	Mt Pisgah	0.6	3.1
11-14-60	Credit Union	1.1	6.9
7-29-60	Lawnville	0.7	9.8
7-28-60	Buttermilk Rd	1.0	4.8
7-28-60	Highway #61	0.9	10.4
7-28-60	Mt Pisgah	0.7	9.9
7-28-60	Credit Union	0.8	7.6
7-28-60	" "	0.8	V.V
4-13-60	Lawnville	1.0	4.3
4-13-60	Buttermilk Rd	1.3	9.7
4-13-60	Highway 61	1.3	3.9
4-13-60	Mt Pisgah	1.3	6.9
4-13-60	Credit Union	0.9	3.4
4-13-60	Lawnville	0.9	2.3
	Average '60	1.	6

17 | 2.15 9.97

Date	Location	Microcurie/gram X10^-7 Y	Alpha
4-16-64	Lawnville	9.8	36.9
4-16-64	Buttermilk Rd	10.5	42.3
4-16-64	Highway #61	6.2	27.0
4-16-64	Mt Pisgah	6.0	29.7
4-16-64	Credit Union	13.3	171.0
9-9-64	Lawnville	7.1	19.
9-9-64	Buttermilk Rd	6.6	28
9-9-64	Highway #61	5.7	22
9-9-64	Mt Pisgah	5.9	19.
9-9-64	Credit Union	8.6	20.
	Average 64	8	41

		Y	Alpha
6-18-63	Lawnville	1.0 ppm	5.4 C/m/gr
6-18-63	Buttermilk Rd	1.6	15.8
6-18-63	Highway #61	1.0	4.4
6-18-63	Mt Pisgah	0.5	18.5
6-18-63	Credit Union	1.4	11.5
3-27-63	Lawnville	2	14
3-27-63	Buttermilk Rd	1.	4
3-27-63	Highway 61	2	5
3-27-63	Mt Pisgah	1	5
3-27-63	Credit Union	2	4
	Average 63	1	9

Date	Location	G ppm	Alpha C/m/gr
9-14-67	Lawnville	1.7	7.5
9-14-67	Buttermilk Rd	1.7	4.6
9-14-67	Highway 61	0.8	4.3
9-14-67	Mt Pleasant	1.1	3.1
9-14-67	Credit Union	1.1	3.9
4-10-67	Lawnville	1.0	1.7
4-10-67	Buttermilk Rd	0.8	2.7
4-10-67	Highway 61	0.9	2.5
4-10-67	Mt Pleasant	1.0	4.0
4-10-67	Credit Union	0.7	5.7
	Average 67	1	4
11-28-61	Lawnville	1.4	2.5
11-28-61	Buttermilk Rd	1.8	2.8
11-28-61	Highway 61	1.6	2.3
11-28-61	Mt Pleasant	1.0	1.9
11-28-61	Credit Union	2.9	3.0
2-14-61	Lawnville	1.4	2.6
2-13-61	Buttermilk Rd	1.9	3.4
2-13-61	Highway 61	1.1	2.3
2-13-61	Mt Pleasant	1.2	2.0
2-13-61	Credit Union	1.6	2.7
	Average 61	2	2

Date -	Location -	Microcurie/gram x 10^{-7} 4	Alpha
6-1-66	Lawnville	4	504
6-1-66	Butterwilk Rd	5	558
6-1-66	Highway 61	5	292
6-1-66	Mt Pisgah	6	580
6-1-66	Credit Union	9	621
10-14-66	Lawnville	6	67
10-14-66	Butterwilk Rd	7	58
10-14-66	Highway 61	4	72
10-14-66	Mt Pisgah	7	117
10-14-66	Credit Union	7	342
	Average 66	6	321
3-V-67	Lawnville	5.6	40
3-V-67	Butterwilk Rd	6.1	47
3-V-67	Highway #61	5.4	27
3-V-67	Mt Pisgah	7.0	39
3-V-67	Credit Union	8.9	45
11-4-67	Lawnville	9	13
11-4-67	Butterwilk Rd	13	20
11-4-67	Highway #61	7	22
11-4-67	Mt. Pisgah	78	52.
11-4-67	Credit Union	1	17
	Average 67 -	14	30

Microcurie/gram X10-7

Date	Location	U	Alpha
6-17-69	Lawnville	7	53
6-17-69	Buttermilk Rd	11	55
6-18-69	Highway #61	9	66
6-18-69	Mt Pisgah	11	55
6-19-69	Credit Union	9	67
	Average 1969	9	62
5-20-68	Lawnville	7	45
5-20-68	Buttermilk Rd	12	64
5-21-68	Highway 61	8	66
5-21-68	Mt Pisgah	7	56
5-21-68	Credit Union	14	61
	Average 1968	10	58
3-23-67	Lawnville	8	54
3-23-67	Buttermilk Rd	6	42
3-23-67	Highway 61	7	50
3-23-67	Mt Pisgah	6	51
3-23-67	Credit Union	8	45
11-14-67	Lawnville	12	53
11-14-67	Buttermilk Rd	11	49
11-14-67	Highway 61	8	47
11-14-67	Mt. Pisgah	14	57
11-14-67	Credit Union	16	53
	Average 1967	10	50

Poplar Creek.

1968 None — 0-

1967 ✓ 1- 0.00 6- 0.19
1- 0.37
1- 0.45
1- 0.07
1- 0.16
1- 0.15

1966 - ~~1- 0.01~~ ~~1- 0.05~~
4- 0.08 7- 0.12
3- 0.15

1965 -

2- 0.00

1964 -

Clinch River

		Samples	μc/cc x 10-7
1968		10	0.08
		9	0.07
		10	0.07
1967		9	0.04
		10	0.00
		7	0.00
		3	0.01
		1	0.06
		1	0.07
1966	3 0.05		
	3 0.04		
	3 0.11		12 0.05
	3 0.00		
1965	0.00		
	0.01		12 0.00
	0.01		
	0.00		
1964			
			12 0.05

1966 Ord Plant - Outside Bldgs -

ENVIRONMENTAL AIR STUDY

> P.A.L. Average Total
Samples c/min/ft³ c/min/ft³

SAMPLE NUMBER	LOCATION	DATE	WIND AND WEATHER CONDITIONS	SAMPLE DURATION	~~AIR FLOW RATE~~	ALPHA ACTIVITY ~~c/min/ft³~~	~~μc/cc*~~
	K1064	Jan-Dec					
	Salvage Yard			8hrs	0/847	0.04	37.60
	K1017-5-20	Jan-Dec					
	Guard Tower			8hrs	0/829	0.06	47.54
	Hwy at	Jan-Dec					
	Fire Water Land			8hrs	0/987	0.03	34.36
	Hwy at	Jan-Dec					
	Radio Tower			8hrs.	0/980	0.03	34.09

* 0.01 c/min/ft^3 = 5 x 10^{-13} μc/cc.

Perimeter Water Analysis

Location	Uranium (μc/cc x10⁻⁷) MAX.	MIN.	AVG.	[illegible]	[illegible]	[illegible]
K-1420 Drain	80.00	0.03	15.19	13.0	0.6	3.4
K-1407-B Holding Pond	304.00	0.04	55.45	23.8	2.4	9.0
Drainage Ditch at Security Fence (From K-1407-B, K-1300, K-1420, + K-1401)	0.92	<0.007	0.45	2.8	0.5	1.3
Pond SW of K-1007	0.06	0.00	0.04	2.3	0.3	1.0
K-1131 Drain	0.25	0.007	0.13	81.0	6.6	43.8
K-1015 Laundry Sump			0.07			2.1
Hazardous Chemicals Disposal Pond			0.00			1.6
K-1410 Drains			0.00			1.7
Pond at K-1001, N. of O.R. Turnpike			<0.007			0.3
Pond at K-1001, S. of O.R. Turnpike			0.020			0.2
Burial Ground, N.W. of K-33			0.007			0.1
K-413 Drain			12.0			6,800.0

9-28-66

1961 thru 1965 Air Analysis - Per[illegible]

Location	Max (c/m/ft³)	Min (c/m/ft³)	Average (c/m/ft³)
K1001 - S.W. of Bldg.	0.33	0.00	0.07
K1004 J	0.16	0.00	0.06
1017-S-3 (Guard Tower)	0.27	0.00	0.08
1017 S-5 (Guard Tower)	0.35	0.00	0.09
1017-S-20 (Guard Tower)	0.47	0.00	0.11
K1037 - East of Bldg.	0.18	0.00	0.05
K1045 Fire Training Bldg.	0.39	0.00	0.07
K1045C	0.55	0.00	0.10
K1064 Salvage Yard	0.67	0.00	0.10
K1066 Cylinder Storage	0.22	0.00	0.07
K1100 - Portal	0.22	0.00	0.07
K-1131 - North East of Bldg.	0.27	0.00	0.07
K1131 - West of Bldg.	0.58	0.00	0.04
K1131 South of Bldg.	0.87	0.00	0.08
K1132 HF Tank Farm	0.14	0.00	0.06
K1420 North West corner	3.16	0.00	0.09
K1420 North Side	0.43	0.00	0.04
K1420 East Side	0.17	0.00	0.04
K1420 West Side	0.52	0.00	0.13
K1421 Incineration Bldg.	4.21	0.00	0.25
K312-2	0.15	0.00	0.06
K33 Portal	0.26	0.00	0.06
K413 - West of Bldg.	0.16	0.00	0.05
Gallaher Bridge	0.32	0.00	0.12
Water Tank Hill	0.14	0.00	0.06
Radio Tower Hill	0.10	0.00	0.05

9-27-66

1961 thru 1965

Air Analysis [illegible]
Stacks and Roof Vents

Location	Max c/m/ft³	Min c/m/ft³	Average c/m/ft³
K-1131	52.00	0.01	4.56
K 1420	654.00	0.00	4.37
K 1421	25.00	0.39	12.70
K 311-1	0.07	0.05	0.06
K 312-2	3.40	0.13	1.14
K-33 Feed Room	0.14	0.06	0.10
K-601	0.12	0.00	0.04
K 631	0.08	0.03	0.05
K 902-2	0.00	0.00	0.00

5-Mile Sampling Locations (1961-1965)

Locations	Water Uranium (μc/cc x10⁻⁷)			Water Fluoride (ppm)			Air Alpha (c/m/m³)		
	Max.	Min.	Avg	Max	Min	Avg	Max*	Min*	Avg*
Mt. Pisgah Church	0.03	0.00	< 0.007	1.0	0.0	0.4	1.35	0.00	0.07
Buttermilk Rd.-Mellow Hill	0.02	0.00	< 0.007	0.8	0.0	0.4	0.89	0.00	0.08
Lawnville	0.01	0.00	< 0.007	1.6	0.0	0.5	2.11	0.00	0.10
Little Emory at Hwy 61 (Leisz Svc. Sta.)	0.03	0.00	0.010	1.6	0.1	0.5	2.15	0.00	0.12
K-25 Credit Union (Black Oak Ridge)	0.03	0.00	0.008	0.4	0.0	0.2	1.39	0.00	0.09

* Includes short half-life alpha activity from nuclear bomb test fallout (93% to 95% of activity).

9-27-66

Memo

To: Files (Environmental Sampling - Air)

Subject: Long-Lived Airborne Alpha Activity

ORGDP On-Plant Outside Bldg.

12/65

	9 hr	772 hr
# Samples —	77	77
Total Activity —	1567	82
Long-Lived Alpha —	—	5.2%

M. B. Schultz

12/20/65

4/15/65

To: files

Subject: Environmental Sampling (Air)
(On Plant)(Outside Bldg.)

Long-term alpha airborne activity differentiated from radon-thoron contribution.

Location : K-1421 Incinerator; ORGDP
Dates : 4/10-11/65
Sample : Continuous Air Monitor

CAM	Recent >72 hr.	CAM	Recent >72hr.	CAM	Recent >72hr.
0.03	0.00	0.10	0.00	0.02	0.01
0.04	0.00	0.14	0.00	0.02	0.00
0.11	0.00	0.14	0.00	0.02	0.00
0.12	0.00	0.12	0.00	0.02	0.00
0.15	0.00	0.11	0.01	0.02	0.01
0.11	0.00	0.05	0.00	0.03	0.00
0.14	0.00	0.06	0.02	0.03	0.01
0.12	0.01	0.02	0.01	172	8

$\frac{8}{172} = 0.047 = 4.7\%$

N.B. Schultz.

5/13/65

To: Files

Subject: Environmental Sampling (Air)
(On Plant) (Outside Bldg.).

Long term alpha air-borne activity differentiated from radon-thoron contribution.

Location: K-1420; {North of "E" area; East of K-1420} ORGDP
Dates: 5/9+10/65
Sampler: Continuous Air Monitor (S+S paper)

CAM	Recent >72hr.	CAM	Recent >72hr.	CAM	Recent >72hr.	CAM	Recent >72hr.
11	1	3	1	18	1	5	0
11	1	3	1	16	1	2	2
9	1	5	1	16	0	3	1
7	0	7	0	28	4	3	2
4	2	14	3	23	3	3	3
2	1	46	33	20	3	6	1
3	1	39	18	16	2	4	3
2	1	23	1	15	2	6	5
2	1	20	2	5	1	83	11
2	1	20	0	5	2	145	32

(40 samples) $\frac{149}{652} = 22.8\%$ long-lived.

bz

11-24-65
Shut down
345

6	0	0	0	1	3
5	0	0	0	1	2
4	0	0	0	1	3
3	0	0	0	1	3
2	0	0	0	1	5
1	0	0	0	1	4
2	0	0	0	0	5

Burial Ground
11-23-65

"On-Plant"

11	0	0	0	0	0
10	0	0	0	0	0
9	0	0	0	0	0
8	0	0	0	0	0
7	0	0	0	0	3
6	0	0	0	0	4
5	0	0	0	0	2
4	0	0	0	0	2
3	0	0	0	0	3
2	0	0	0	0	3
1	0	0	0	0	1
2	0	0	0	0	1
1	0	0	0	0	0
0	0	0	0	0	0
9	0	0	0	0	0
8	0	0	0	0	0
7	0	0	0	0	1
6	0	0	0	0	0
5	0	0	0	1	8

Reset Timer 11-24

"Outside Bldg"

Samples — 26
Σ — 1.27
$\bar{x}$ — 0.05
max. — 0.15

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	6-18-69		0.7		165		71	9	
Buttermilk Road	6-17-69		0.7		260		56	7	
Lawnville	6-17-69		0.7		381		41	7	
Little Emory at Highway 61	6-18-69		0.7		210		98	8	
K-25 Credit Union	6-20-69		1.4		564		108	10	
Mt. Pisgah Church	12-9-69		<.7		0		45	6	
Buttermilk Road	12-9-69		0.7		0		38	6	
Lawnville	12-9-69		<0.7		0		0	7	
Little Emory at Highway 61	12-15-69		<0.7		0		0	5	
K-25 Credit Union	12-9-69		<0.7		0		510	5	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)(VEGETATION)~~
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$	d/m/100 cc	$\mu c/cc \times 10^{-7}$		
Mt. Pisgah Church	11-14-68		<0.7		5		152	14	
Buttermilk Road			0.7		20		101	11	
Lawnville			<0.7		7		144	32	
Little Emory at Highway 61			<0.7		9		119	20	
K-25 Credit Union			<0.7		7		142	6	
Mt. Pisgah Church	5-21-68		0.00		0.00		137	16	
Buttermilk Road	5-20-68		1.9		6.8		121	11	
Lawnville	5-20-68		1.3		11.8		138	29	
Little Emory at Highway 61	5-21-68		1.5		3.5		113	14	
K-25 Credit Union	5-21-68		1.4		0.00		144	11	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~) (~~MUD~~) (~~SOIL~~) (~~VEGETATION~~)
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	% Sulfur
		ppb	μc/gr x10^{-7}	d/m/100 cc	μc/gr x10^{-7}	d/m/100 cc	μc/gr x10^{-7}		
Mt. Pisgah Church	10-14-66		< 0.7		7		0	19	0.26
Buttermilk Road	10-14-66		< 0.7		62		0	9	0.27
Lawnville	10-14-66		< 0.7		6		0	9	0.27
Little Emory at Highway 61	10-14-66		< 0.7		74		40	11	0.37
K-25 Credit Union	10-14-66		< 0.7		31		0	5	0.15
Mt. Pisgah Church	3-23-67		0.3		21		34	19	
Buttermilk Road			< 0.1		0.00		12	11	
Lawnville			< 0.1		0.00		0.00	14	
Little Emory at Highway 61			0.1		0.50		4	12	
K-25 Credit Union			0.1		0.00		8	12	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~)(MUD)(~~SOIL~~)(~~VEGETATION~~)
(PINENEEDLES)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	μc/~~gm~~ $\times 10^{-7}$	d/~~m/100 cc~~	μc/~~gm~~ $\times 10^{-7}$	d/~~m/100 cc~~	μc/~~gm~~ $\times 10^{-7}$		
Mt. Pisgah Church	11-4-65		0.7		0		93	6.9	
Buttermilk Road	"		<0.7		0		57	4.0	
Lawnville	"		<0.7		11		71	6.3	
Little Emory at Highway 61	"		<0.7		0		90	8.5	
K-25 Credit Union	"		<0.7		0		48	8.2	
Mt. Pisgah Church	6-1-66		2.		24		211	19.	
Buttermilk Road	"		0.7		18.		188.	1.	
Lawnville	"		2.		27.		145	8	
Little Emory at Highway 61	"		<0.7		11.		174	3.	
K-25 Credit Union	"		1.		14		270.	0	

1

ORGDP

Year

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
~~(PINEWEEDS)~~

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	µc/cc×10^{-7}	d/m/100 cc	µc/cc×10^{-7}	d/m/100 cc	µc/cc×10^{-7}		
Mt. Pisgah Church	6-18-69		0.7		529		435	16	
Buttermilk Road	6-17-69		0.7		310		250	17	
Lawnville	6-17-69		0.7		354		132	7	
Little Emory at Highway 61	6-18-69		0.7		399		297	16	
K-25 Credit Union	6-20-69		1.4		386		193	9	
Mt. Pisgah Church	12-9-69		0.7		0		188	19	
Buttermilk Road	12-9-69		<0.7		0		0	20	
Lawnville	12-9-69		0.7		0		37	69	
Little Emory at Highway 61	[illegible]		<0.7		0		513	5	
K-25 Credit Union	[illegible]		1.4		20		1240	15	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

~~(WATER)(MUD)(SOIL)~~(VEGETATION)
~~(PINENEEDLES)~~

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides	pH
		ppb	µc/cc×10⁻⁷	d/m/100 cc	µc/cc×10⁻⁷	d/m/100 cc	µc/cc×10⁻⁷	ppm	
Mt. Pisgah Church	11-14-67		0.4		8		317	14	
Buttermilk Road			<0.7		14		383	35	
Lawnville			1.0		22		392	20	
Little Emory at Highway 61			0.70		18		343	30	
K-25 Credit Union			<0.7		25		240	12	
Mt. Pisgah Church	5-21-68		3.5		1.8		440	28	
Buttermilk Road	5-20-68		2.7		30		318	33	
Lawnville	5-20-68		3.4		2.2		252	27	
Little Emory at Highway 61	[illegible]		[illegible]		0.00		257	42	
K-25 Credit Union	[illegible]-68		2.4		43		353	26	

ORGDP

Year _____

ENVIRONMENTAL SAMPLING

(~~WATER~~) (~~MUD~~) (~~SOIL~~) (VEGETATION)
(~~PINENEEDLES~~)

SAMPLE LOCATION 5 miles	DATE	LABORATORY RESULTS							
		Uranium		Alpha		Beta		Fluorides ppm	pH
		ppb	μc/~~cc~~ gr x10^{-7}	d/m/100 cc	μc/~~cc~~ gr x10^{-7}	d/m/100 cc	μc/~~cc~~ gr x10^{-7}		
Mt. Pisgah Church	10-14-66		< 0.7		99		167	21	
Buttermilk Road	10-14-66		< 0.7		130		181	16	
Lawnville	10-14-66		< 0.7		112		103	8	
Little Emory at Highway 61	10-14-66		< 0.7		7		156	15	
K-25 Credit Union	10-14-66		< 0.7		61		32	7	
Mt. Pisgah Church	3-23-67		0.1		0.00		72	28	
Buttermilk Road			0.1		0.00		32	30	
Lawnville			< 0.1		0.00		46	19	
Little Emory at Highway 61			0.1		0.00		102	24	
K-25 Credit Union			0.1		7.8		68	40	

Memo

To: Files — Environmental Sampling (Air)

Subject: Long-Lived airborne alpha activity.

K-1066 Tank Farm

11/29/61	12/6/61
.08	.02
16	1
13	2
14	1
14	1
15	1
11	1
11	1
11	1
12	1
14	1
13	1
13	1
12	1
9	1
186	17

$\frac{17}{186}$ = 9.1 %

long-lived alpha

$\frac{.17}{15}$ = 0.011 α c/m/ft³

M. B. Schultz

12/7/61

Memo

To: Tiba (Environmental Sampling Air)

Subject: Long-lived airborne alpha

samples - 25

Total α T_{0+9} - 203

T_{0+312} - 29

% Long Lived — 14.3 %

ORGDP On-Plant

Fire Water Tanks

N.B. Schmitt

12/13/65

Memo

To: Silva (Environmental Sampling - Air)
Subject: Long-Lived Airborne Alpha Activity

I. off-Plant (Gallaher Bridge - Oct. 1965)

# Samples	34
Total Activity - cpm	6.03
Ave. Activity - cpm	0.177
>72 hr. Total Recount	1.02
>72 hr. Ave. Recount	0.030
% Long-Lived α	17.0 %

II. On-Plant (K-1017S) (Nov 1965)

# Samples	39
Total Activity - cpm	6.06
Ave. Activity - cpm	0.154
>72 hr. Total Recount	0.51
>72 hr. Ave. Recount	0.013
% Long-lived α	8.4 %

11/29/61

N. B. Schmitt

Off Plant Air Activity
5 miles

1965	Samples	Total Act.
June —	62	3.10
May —	282	17.26
April —	266	10.06
Mar. —	278	7.60
Feb. —	250	17.42
Jan. —	269	12.30
	1407	67.74

Start down air monitors in June 1965
- 5 miles from plant Locations
Mt. Pisgah
Lawnville
Credit Union

CONSTANT AIR MONITOR FILTERS
WEEK NO. 30 1965
PERIMETER AREA

-13
10 MICRO-C ALPHA/CC BY STATIONS

A V E R A G E S

	HP-31	HP-32	HP-33	HP-34	HP-35	HP-36	HP-37	HP-38	HP-39	AVG.
MO										
1	.10	.20	.05	.07	.64	.50	.05	.07	.27	.22
2	.07	.10	.08	.06	.11	.23	.05	.05	.06	.09
3	.03	.07	.09	.06	.14	.29	.05	.06	.07	.10
4	.02	.07	.09	.04	.10	.25	.03	.06	.11	.09
5	.05	.04	.30	.03	.26	.37	.04	.03	.15	.14
6	.03	.06	.03	.03	.09	.13	.03	.03	.04	.05
QTR										
1	.07	.12	.07	.07	.31	.35	.05	.06	.14	.14
2	.04	.06	.13	.03	.15	.24	.03	.04	.09	.09
SEMI-ANNUAL										
1	.05	.09	.10	.05	.23	.30	.04	.05	.12	.11
YR TO DATE										
AV	.05	.09	.09	.05	.21	.28	.04	.05	.11	.11

Environmental Sampling (Air)
ORNL (7/1/65)

CONSTANT AIR MONITOR FILTERS
WEEK NO. 30 1965
PERIMETER AREA

-13
10 MICRO-C ALPHA/CC BY STATIONS

WK	HP-31	HP-32	HP-33	HP-34	HP-35	HP-36	HP-37	HP-38	HP-39	AVG.
1	.04	.07	.04	.07	.08	.22	.05	.07	.06	.08
2	.09	.16	.05	.04	.38	.28	.05	.04	.12	.14
3	0	.09	.08	.13	.38	.25	.04	.07	.10	.13
4	.07	.13	.06	.03	.16	.27	.03	.11	.06	.10
5	.28	.52	.04	.10	2.17	1.48	.05	LOST	.99	.70
6	.07	.09	.03	.05	.15	.28	.05	.10	.13	.10
7	.08	.12	.11	.06	.08	.25	.05	.03	.04	.09
8	.04	.06	.09	.07	.13	.15	.03	.04	.04	.07
9	.10	.14	.10	.05	.10	.23	.07	.04	.04	.10
10	.02	.05	.02	.03	.12	.47	.02	.04	.04	.09
11	.01	.07	.11	.10	.09	.15	.07	.07	.11	.09
12	.07	.09	.12	.08	.27	.35	.07	.07	.13	.14
13	.04	.08	.10	.05	.14	.27	.04	.07	.04	.09
14	0	.07	.07	.06	.06	.22	.04	.07	.04	.07
15	.02	.02	.09	.03	.03	.22	.02	.12	.07	.07
16	.03	.08	.13	.05	.03	.28	.01	.04	.11	.08
17	.04	.02	.10	.02	.19	.20	.06	.03	.14	.09
18	.01	.17	.05	.04	.17	.30	.03	.05	.11	.10
19	.05	.09	.96	.03	.34	.24	.08	.04	.11	.21
20	.07	.02	.08	.04	.52	.98	.03	.02	.40	.24
21	.07	.03	.02	.03	.10	.11	.01	.03	.03	.05
22	.01	.03	.13	.01	.09	.14	.03	.02	.05	.06
23	.04	.08	.03	.02	.07	.13	.02	.03	.07	.05
24	.03	.04	.02	.04	.08	.11	.02	.05	.04	.05
25	.01	.05	.08	.08	.11	.18	.07	.04	.04	.07
26	.03	.09	.02	.04	.11	.13	.02	.02	.02	.05
27	.06	.05	0	0	.06	.09	.01	.03	.01	.04
28	.02	.08	.04	.07	.12	.16	.02	.03	.12	.07
29	.07	.05	.08	.03	.03	.10	.05	.05	.04	.06
30	.04	.05	0	.06	.05	.08	.02	.03	0	.04

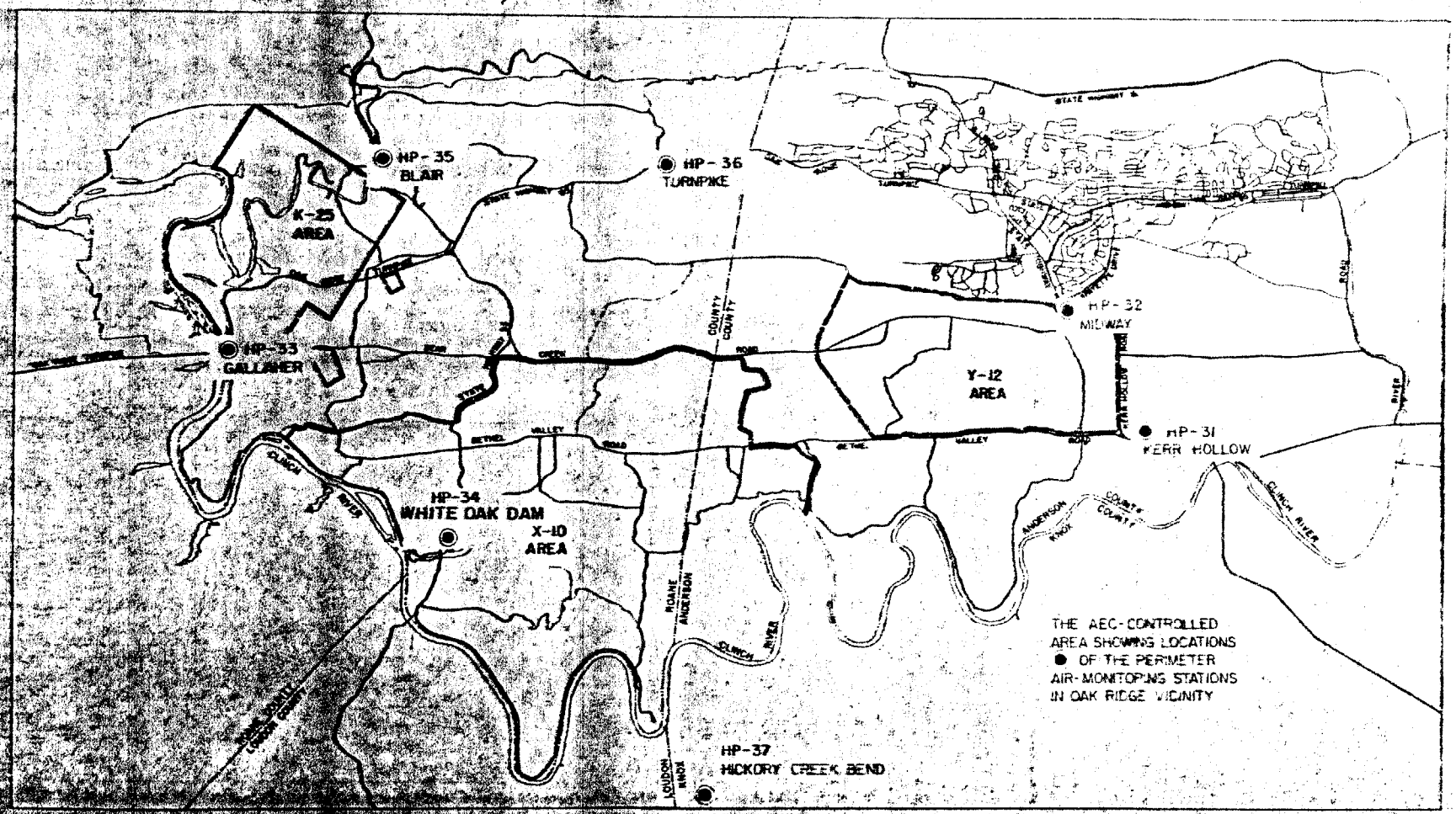
CRP MPCa

168-hr. week occupational 2×10^{-11} μc/cc

Population ($\frac{1}{30}$) 2×10^{-12} μc/cc

" ($\frac{1}{30}$) 7×10^{-13} μc/cc

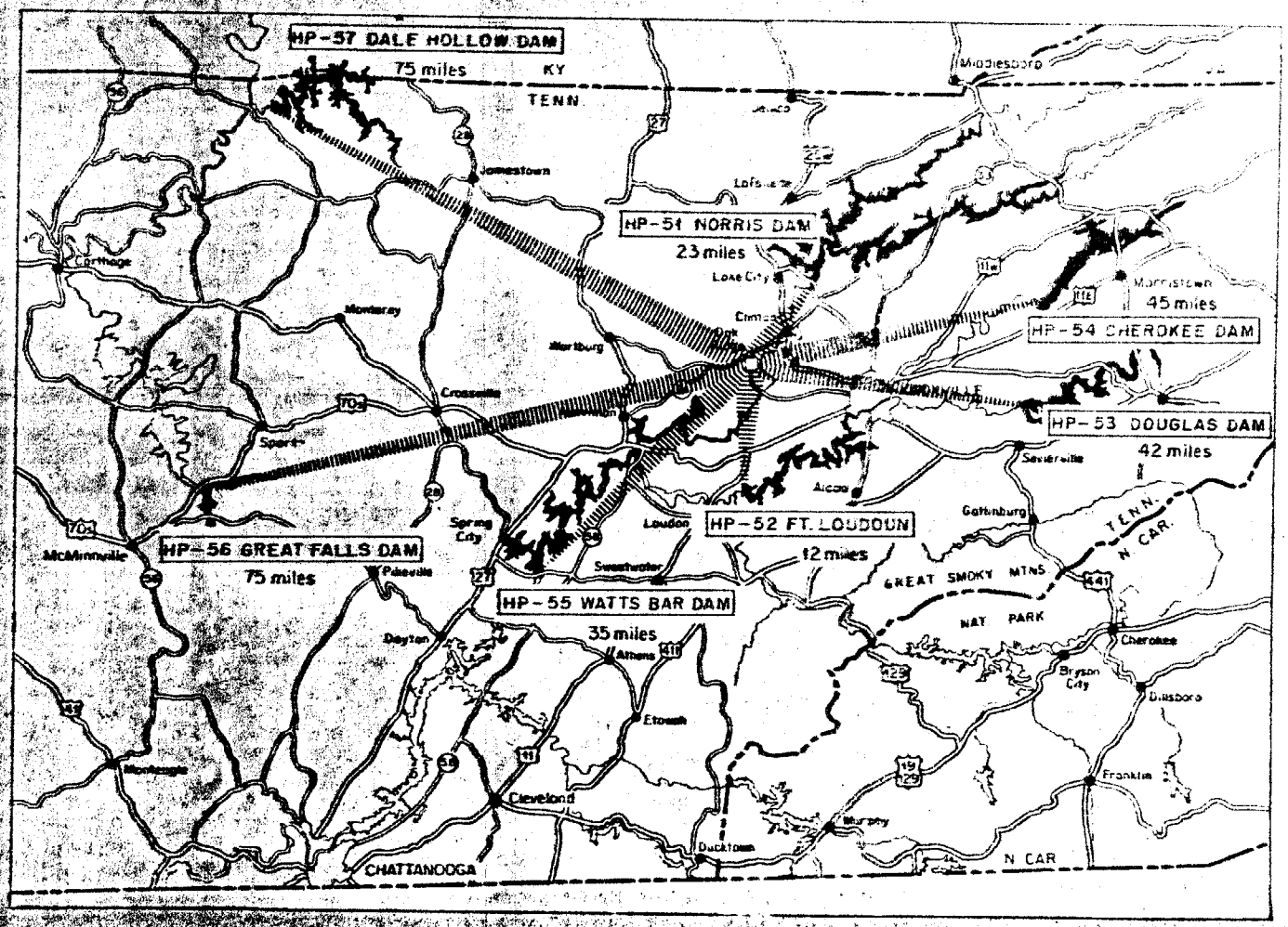
UNCLASSIFIED
ORNL-LR-DWG 77324-R2



[illegible] STATIONS FOR PERIMETER AIR MONITORING SYSTEM

Figure 1

UNCLASSIFIED
ORNL-LR-DWG 35919R2



LOCATION SITES FOR REMOTE AIR MONITORING SYSTEM

Figure 2

UNION CARBIDE

UNION CARBIDE CORPORATION

NUCLEAR DIVISION

P. O. BOX P, OAK RIDGE, TENNESSEE 37830

October 24, 1968

United States Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee 37830

Attention: Mr. C. A. Keller

Gentlemen:

Proposed Fish Hatchery

In response to Mr. R. E. Leeds' inquiry, we have reviewed our data on the effect of the K-25 plant effluents on a fish hatchery proposed for the Clinch River at Mile 12. Although thermal pollution data are limited, temperatures obtained on Poplar Creek in March, 1968, at a plant operating level of 900 Mw, and in August, 1968, at a 470-Mw level, indicated no significant increase in Poplar Creek temperatures. Cooling tower blowdown of less than 700,000 gpd was being discharged through the K-1407 holding pond to Poplar Creek above Blair Bridge at this time. Water samples obtained from Poplar Creek and the Clinch River in August, 1967, and May, 1968, were analyzed for seventeen potential chemical contaminants and found to be at levels well below recommended guide values. Thermal and chemical sample data are attached.

Temperature measurements of Poplar Creek at maximum plant operating levels are not available. However, restoration of power at K-25 to the 2000-Mw level will require a discharge of 4 million gpd blowdown at 95°F. containing 20 ppm chromates. Thermal stratification and Watts Bar Lake fluctuations preclude accurate predictions of the effect of K-25 plant effluents on the Clinch River water at Mile 12. Assuming minimum flow conditions of Poplar Creek, which U.S.G.A. reports as 13.2 million gpd, and a no-flow condition in the Clinch River, the thermal and chemical pollution effect of the K-25 plant may make the location of a fish hatchery near Clinch River Mile 12 undesirable.

In view of the long-range power restoration plans at K-25, we strongly recommend that a fish hatchery not be located near the confluence of Poplar Creek and the Clinch River.

Very truly yours,

R. G. Jordan, Superintendent
Oak Ridge Gaseous Diffusion Plant

RGJ:JD:jc

Attachments

cc: Mr. R. J. Betts
Mr. R. F. Hibbs
Dr. C. E. Larson
Mr. K. W. Sommerfeld

WATER ANALYSES - AUGUST, 1967
(Results in mg/liter)

	Poplar Creek Main Branch	Poplar Creek East Fork	Poplar Creek Main Stream at Powerhouse	K-901 Clinch River	K-1004-B Sanitary Drinking Water
Arsenic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloride	5	12	6	5	6
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	0.01	0.04	0.04	0.02	0.005
Copper	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Cyanide	0.002	0.002	0.001	0.001	< 0.001
Fluoride	0.4	0.5	0.5	0.6	0.2
Iron	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Lead	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Manganese	0.02	< 0.01	0.02	0.02	< 0.01
Nitrate	5	11	6	5	5
Phenols	< 0.001	0.001	0.001	0.001	< 0.001
Selenium	0.003	0.002	0.002	0.002	0.002
Silver	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sulfate	12	14	14	8	18
Zinc	< 0.02	< 0.02	< 0.02	< 0.02	0.06

WATER ANALYSES - MAY 20, 1968
(Results in mg/liter)

	Poplar Creek Main Branch	Poplar Creek East Fork	Poplar Creek Main Stream at Powerhouse	K-901 Clinch River	K-1004-B Sanitary Drinking Water
Arsenic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloride	2	2	3	3	5
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	< 0.005	< 0.005	0.02	0.014	0.010
Copper	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cyanide	0.003	0.003	0.002	0.002	< 0.0005
Fluoride	< 0.1	0.3	0.8	1.6	0.2
Iron	0.1	0.1	< 0.05	< 0.05	< 0.05
Lead	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Manganese	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Nitrate	0.12	0.21	0.13	2.7	1.2
Phenols	0.02	0.01	0.02	0.02	0.02
Selenium	0.004	0.002	0.003	0.003	0.002
Silver	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sulfate	27	26	31	16	24
Zinc	< 0.02	< 0.02	< 0.02	< 0.02	0.12

STREAM TEMPERATURE MEASUREMENTS, MARCH 20 - 27, 1968
WITH 76°F. AMBIENT TEMPERATURE

Sample Location	Temperature °F.
Poplar Creek Main Branch	53
Poplar Creek East Fork	56
Poplar Creek Mouth	56
Clinch River Mile 11.5	58
Clinch River Mile 14.5	55

POPLAR CREEK TEMPERATURE MEASUREMENTS, AUGUST 6, 1968
WITH 90°F. AMBIENT TEMPERATURE

Sample Location	Sample Depth	Temp. °F.	Sample Depth	Temp. °F.
Main Branch	Surface	82	5 Ft.	76
East Fork	Surface	80	6 Ft.	72
Blair Bridge	Surface	80	6 Ft.	76
K-33 Bridge	Surface	78	6 Ft.	78
Powerhouse	Surface	80	3 Ft.	65

Temp. of Ponds & Streams - K-25 Area

Location	Date	Tem
Poplar Creek - Main Branch	6-16-70	70
Poplar Creek - East Fork	6-16-70	72
Poplar Creek - Blair Bridge	6-16-70	72
K1407 Holding Pond etc. at Poplar Creek	6-16-70	72
Ornimental Pond west of K1007	6-15-70	80
Poplar Creek Discharge to Clinch	6-15-70	73
Clinch at K1513	6-15-70	67
Clinch at K901	6-16-70	70
Hazardous Disposal Pond at Clinch	6-15-70	76

Environmental Temp.

6-15-70 86°

6-16-70 84°

Sipe & Higdon

Water Temp. at Sample Points

Location	Depth) - Temp, F°						
	Surface	1'	2'	3'	4'	5'	6'
Poplar Creek - Main Branch	69	69	69	69	69	68	68
Poplar Creek - East Fork	69	69	68	67	66	66	66
Poplar Creek - Power House	72	72	72	72	72	71	—
Clinch River - K-901	69	69	69	69	—	—	—
Holding Pond - K-1407-B	78	78	78	77	80	78	—
Ornomental Pond - K1007	76	76	76	76	—	—	—
Disposal Pond - W.K 33	76	76	76	76	—	—	—

Ambient 71°

5-27-69

Higdon & Lipe

Liquid Effluent Temp.

Sample Origin	Date	Effluent Temp	Ambient Temp	pH
1. K-1037	4-9-68	77	69	6
2. K-1420 so. side	4-9-68	63	69	6
3. K-1420 Plating	3-26-68	93	77	2
4. K-1420 No. side	3-28-68	64	70	6
5. K-1420 Acid Drain	3-26-68	90	77	2
6. K-1301	3-27-68	67	66	6
7. K-1414, K-1400, K-1401 E, K1303	3-27-68	71	66	6
8. K-1401 Cleaning Area	3-27-68	97	68	6
9. K-1413	3-28-68	58	70	6
10. K-1030 & N.E. K-25 Bldg.	3-28-68	63	69	6
11. K-25 W. & Vault Area	3-28-68	68	69	6
12. K-601 Bldg.	3-28-68	90	72	6
13. K-29 Bldg	3-26-68	50	77	6
14. K-27 so. side	3-28-68	72	72	6
15. K-633 Bldg.	this was a steam condensate line			
16. K-1131 so. side	4-9-68	77	69	6
17. K-1231 so. side	4-9-68	56	69	4
18. K-631 Bldg.	3-26-68	50	77	6
19. K-1131 Feed & Tails	sample point is outside fence at Poplar Creek & will be checked when sampled again			
20. K-1410 Bldg.				
21. K-413, 1231, 1131 No.				
22. K-27 so. side & K-731	3-20-68	71	74	—
23. K-1501 steam plant	3-26-68	87	77	10

	Date	Eff. Temp	Ambient Temp	Pb
*24 - K-1407 Holding Pond Eflt.	3-27-68	62	66	6
25 - K-1401 Bldg. West.	3-27-68	62	58	6
26 - K-1401 Basement	3-27-68	66	58	6
27 - K-1004 Labs changed to	~~4~~ 3		6	
28 - Poplar Creek, Main Branch	3-27-68	53	76	6
29 - East Fork	3-27-68	56	76	6
30 - K-892 N2O Treat. Plant	3-27-68	83	76	
31 - Hazardous Chem. Pond	3-20-68	57	76	6
32 - Clinch - Down stream of P.C.	3-20-68	58	76	6
*33 - Administration & Lab Area	3-20-68	55	76	6
34 - Clinch - Down stream of ORNL	3-20-68	55	76	
35 - Poplar Creek - ORGDP Eflt.	3-20-68	56	76	6
36 - K-1004 Labs	4-16-68	68	74	6

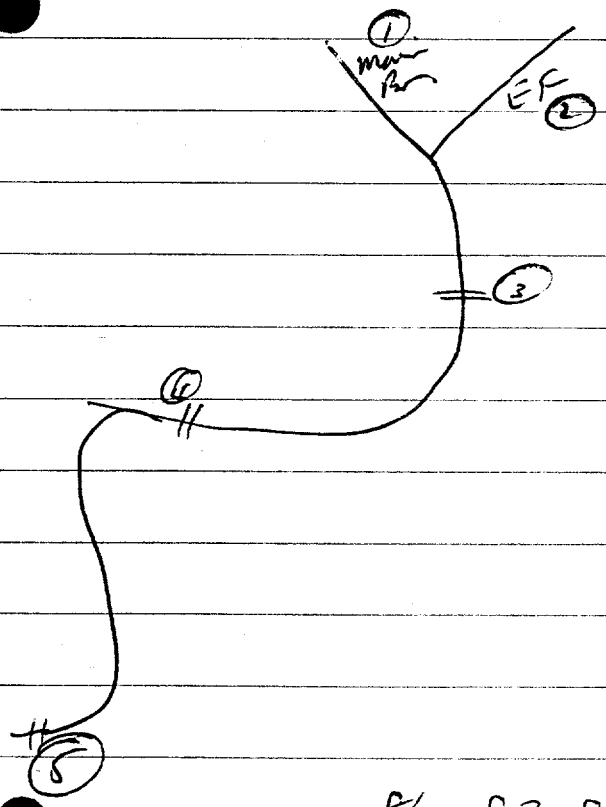
31 checks

L. H. Sipe

8/8/68

Stream Temp.

	Surface		
(5) P.C @ Power House	80°	@ 3'	65°
(2) PC @ E. Fork Bridge	80	@ 6'	72
(1) PC @ Main Branch Bridge	82	@ 5'	76
(3) PC @ Bridge (Near pt. 5)	80	@ 6'	76
(4) PC @ Bridge (K31-K33)	78	@ 6'	68



Sine & Bamo

90° ambient

Dybstra 33306

86, 87, 88 } K-1420 pond overflow
8/7/68

Sample Point Temp. & pH.

Date	Sample #	Sample Temp. F°	Sample pH	Ambient Temp.
4-9-68	1	77	6	69
4-9-68	2	63	6	69
3-26-68	3	93	6	77
3-28-68	4	64	6	70
3-26-68	5	90	2	77
3-27-68	6	67	6	66
3-27-68	7	71	6	66
3-27-68	8	97	6	68
3-28-68	9	58	6	70
3-28-68	10	63	6	69
3-28-68	11	68	6	69
3-28-68	12	90	6	72
3-26-68	13	54	6	77
3-28-68	14	72	6	72
	15			
4-9-68	16	77	6	69
4-9-68	17	56	6	69
3-26-68	18	54	6	77
	19			
	20			
	21			
3-20-68	22	71	—	76

Date	Sample #	Sample Temp. F°	Sample pH	Ambient Temp.
3-26-68	23	87	10	77
3-27-68	24	62	6	66
3-27-68	25	62	6	58
3-27-68	26	66	6	58
	27	Changed to	# 36	
3-27-68	28	53	6	76
3-27-68	29	56	6	76
3-20-68	30	83	—	76
3-20-68	31	57	6	76
3-20-68	32	58	6	76
3-20-68	33	55	6	76
3-20-68	34	55	—	76
3-20-68	35	56	6	76
4-16-68	36	68	6	74

31 checks

L. H. Lyse.

Stream temps. "thermal pollution"

ACS society — (Rutgers) — (useful power 25% - 30% used - rest heat 70% - 75%)

(cooling water, through heat exchanges, to lake)

(clean enough biologically, chemically, & radioactively)

(½ M gallons/minute) (Canal 2 mile long; cooling time still not suff. (410° ± 15° F))

(Carp: double O_2 requirt 58° vs 40° F.)

(Trout eggs; not hatch @ 58° F.

Tenn. River — (< 93° F) (Trout stream = 70° F)

{ melton Hill flow — (2.24 × 10⁹ gal/day)

½ M gallons/minute = (0.5 × 10⁶) × (6 × 10¹) × (2.4 × 10¹) = 7.2 × 10⁸ gal/day }

ORGDP — Recir. water: (210,~~000~~ × 10⁹ gal/day)

250,000 gallons/day wasted & discharged