

State of Vermont

Environmental Radiation Surveillance Report



2002 Summary



**Vermont Department of Health
Office of Radiological Health**

ENVIRONMENTAL RADIATION SURVEILLANCE SUMMARY FOR 2002

ALL SAMPLES FOR THE YEAR 2002 ARE WITHIN THE EXPECTED HISTORICAL RANGE

Sample Media	Historical Range*		2002
Air Filter (pCi/m ³)	Gross Alpha	< LLD to 0.0071	0.0007 to 0.0053
	Gross Beta	< LLD to 0.0251	0.0010 to 0.0220
Biota (pCi/kg)	Plant	Cs-137	< LLD
		K-40	2,000 to 13,000
		Be-7	< LLD to 1,500
	Fungi	Cs-137	50 to 9,000
		K-40	1,000 to 12,000
		Be-7	< LLD
		Cs-134	< LLD to 45*
	Fern	Cs-137	< LLD to 540
		K-40	4,000 to 11,000
		Be-7	100 to 4,000
	Honey	Cs-137	< LLD to 200
		K-40	300 to 2,000
		Be-7	< LLD
Fish (pCi/kg)	Cs-137		< LLD to 100
	K-40		1,000 to 5,000
Iodine Cartridges (pCi/m ³)	I-131		< LLD
Milk (pCi/L)	I-131		< LLD
	K-40		1,200 to 2,000

Sample Media	Historical Range*		2002
Sediment (pCi/kg)	Cs-137	< LLD to 500	< LLD to 62
	K-40	6,000 to 22,000	9,330 to 10,600
	Be-7	< LLD to 5,000	< LLD
Soil (pCi/kg)	Cs-137	< LLD to 500	134
	K-40	7,000 to 20,000	16,200
	Be-7	< LLD to 600	537
Special Study Sediments (pCi/kg)	Be-7	< LLD to 3,000	< LLD to 1,730
	Co-60	< LLD to 2,500	< LLD
	K-40	6,000 to 26,000	12,100 to 19,900
	Cs-137	< LLD to 500	< LLD to 209
TLD (mR/quarter)	Gross Gamma	10 to 45	17.0 to 32.5
Tritium in Water (nCi/L)	H-3	< LLD	< LLD
Water (pCi/L)	Alpha	< LLD to 15	< LLD to 7.4
	Beta	< LLD to 15	< LLD to 5.2

LLD = Lower Limit of Detection

NS = No Sample

* Due to Chernobyl event.

AIR SAMPLES 2002

All Air Samples for the Year 2002 are within the expected historical range.

The historical range for alpha is from less than the detection limit to 0.0071 pCi/m³. The samples for 2002 range from 0.0007 to 0.0053 pCi/m³.

The historical range for beta is from less than the detection limit to 0.0251 pCi/m³. The samples for 2002 range from 0.0010 to 0.0220 pCi/m³.

Air samples are taken at various fixed locations using a line powered piston type compressor operating at a rate of 1 cubic foot per minute nominal. The sample is collected on a fiberglass 2" diameter filter. Collection time is continuous with a nominal sampling period of four weeks. The air filters are analyzed for gross alpha and gross beta using an alpha/beta proportional counter. Results are reported in picoCuries per cubic meter of air with 2 sigma (standard deviation) value.

(picoCuries/Cubic Meter)

Sample Period	Windham County Court		Brattleboro State Police	
	Alpha	Beta	Alpha	Beta
1/3 - 2/7/02	0.0037 + 0.0008	0.0197 + 0.0020	0.0035 + 0.0007	0.0154 + 0.0016
2/7 - 3/7/02	0.0033 + 0.0009	0.0170 ± 0.0021	0.0028 + 0.0008	0.0148 + 0.0017
3/7 - 4/18/02	0.0046 + 0.0007	0.0163 + 0.0014	0.0037 + 0.0005	0.0126 ± 0.0011
4/18 - 5/20/02	0.0027 + 0.0009	0.0120 + 0.0014	0.0022 + 0.0007	0.0104 + 0.0012
5/20 - 6/19/02	0.0021 + 0.0009	0.0101 + 0.0014	0.0023 + 0.0008	0.0085 + 0.0012
6/19 - 7/17/02	0.0014 + 0.0008	0.0035 + 0.0010	0.0041 + 0.0010	0.0157 + 0.0015
7/17 - 8/20/02	0.0046 + 0.0014	0.0220 ± 0.0031	0.0030 + 0.0006	0.0177 + 0.0015
8/20 - 9/17/02	0.0041 + 0.0009	0.0172 + 0.0019	0.0030 + 0.0007	0.0146 + 0.0016
9/17 - 10/15/02	0.0036 + 0.0011	0.0220 + 0.0020	0.0029 + 0.0009	0.0171 + 0.0016
10/15 - 11/19/02	0.0032 + 0.0009	0.0136 + 0.0014	0.0027 + 0.0007	0.0120 + 0.0012
11/19 - 12/10/02	0.0037 + 0.0013	0.0157 + 0.0020	0.0019 + 0.0009	0.0148 + 0.0017
12/10 - 1/7/03	0.0026 + 0.0010	0.0133 + 0.0016	0.0024 + 0.0008	0.0109 + 0.0012

AIR SAMPLES 2002
(picoCuries/Cubic Meter)

Sample Period	Guilford Town Garage		Henry Transportation, Vernon	
	Alpha	Beta	Alpha	Beta
1/3 - 2/7/02	0.0048 ± 0.0008	0.0193 ± 0.0019	0.0036 ± 0.0007	0.0169 ± 0.0016
2/7 - 3/7/02	0.0050 ± 0.0010	0.0193 ± 0.0021	0.0033 ± 0.0008	0.0145 ± 0.0017
3/7 - 4/18/02	0.0046 ± 0.0006	0.0154 ± 0.0013	0.0042 ± 0.0006	0.0137 ± 0.0011
4/18 - 5/20/02	0.0029 ± 0.0009	0.0119 ± 0.0013	0.0022 ± 0.0007	0.0115 ± 0.0012
5/20 - 6/19/02	< 0.0009	0.0135 ± 0.0008	0.0018 ± 0.0008	0.0091 ± 0.0012
6/19 - 7/17/02	0.0044 ± 0.0011	0.0167 ± 0.0017	< 0.0007	< 0.0010
7/17 - 8/20/02	0.0039 ± 0.0007	0.0185 ± 0.0016	0.0033 ± 0.0006	0.0166 ± 0.0015
8/20 - 9/17/02	0.0022 ± 0.0006	0.0139 ± 0.0016	0.0022 ± 0.0006	0.0142 ± 0.0015
9/17 - 10/15/02	0.0023 ± 0.0009	0.0163 ± 0.0017	0.0030 ± 0.0009	0.0159 ± 0.0015
10/15 - 11/19/02	0.0038 ± 0.0009	0.0149 ± 0.0014	0.0028 ± 0.0007	0.0128 ± 0.0012
11/19 - 12/10/02	0.0022 ± 0.0010	0.0170 ± 0.0020	0.0024 ± 0.0009	0.0136 ± 0.0016
12/10 - 1/7/03	0.0038 ± 0.0010	0.0181 ± 0.0017	0.0018 ± 0.0007	0.0119 ± 0.0012

AIR SAMPLES 2002
(picoCuries/Cubic Meter)

Sample Period	Power Line River Crossing		Renaud Brothers (Puffers)	
	Alpha	Beta	Alpha	Beta
1/3 - 2/7/02	0.0053 ± 0.0008	0.0185 ± 0.0017	0.0037 ± 0.0007	0.0164 ± 0.0016
2/7 - 3/7/02	0.0038 ± 0.0009	0.0163 ± 0.0019	0.0034 ± 0.0008	0.0148 ± 0.0018
3/7 - 4/18/02	0.0046 ± 0.0006	0.0154 ± 0.0013	0.0041 ± 0.0006	0.0152 ± 0.0013
4/18 - 5/20/02	0.0019 ± 0.0007	0.0110 ± 0.0013	0.0027 ± 0.0008	0.0102 ± 0.0012
5/20 - 6/19/02	0.0025 ± 0.0009	0.0089 ± 0.0013	0.0016 ± 0.0008	0.0082 ± 0.0012
6/19 - 7/17/02	0.0048 ± 0.0011	0.0155 ± 0.0016	0.0037 ± 0.0010	0.0158 ± 0.0016
7/17 - 8/20/02	0.0036 ± 0.0007	0.0183 ± 0.0016	0.0031 ± 0.0006	0.0150 ± 0.0014
8/20 - 9/17/02	0.0036 ± 0.0008	0.0160 ± 0.0017	0.0032 ± 0.0007	0.0145 ± 0.0016
9/17 - 10/15/02	0.0026 ± 0.0009	0.0187 ± 0.0017	0.0027 ± 0.0009	0.0161 ± 0.0016
10/15 - 11/19/02	0.0031 ± 0.0008	0.0130 ± 0.0013	0.0028 ± 0.0007	0.0134 ± 0.0013
11/19 - 12/10/02	0.0031 ± 0.0011	0.0165 ± 0.0018	0.0022 ± 0.0010	0.0145 ± 0.0017
12/10 - 1/7/03	0.0031 ± 0.0009	0.0143 ± 0.0014	0.0031 ± 0.0009	0.0132 ± 0.0014

AIR SAMPLES 2002
(picoCuries/Cubic Meter)

Sample Period	Wilmington State Highway Garage	
	Alpha	Beta
1/3 - 2/7/02	0.0034 ± 0.0007	0.0169 ± 0.0016
2/7 - 3/7/02	0.0034 ± 0.0008	0.0139 ± 0.0012
3/7 - 4/18/02	0.0039 ± 0.0005	0.0127 ± 0.0008
4/18 - 5/20/02	0.0020 ± 0.0007	0.0092 ± 0.0011
5/20 - 6/19/02	0.0016 ± 0.0007	0.0077 ± 0.0011
6/19 - 7/17/02	0.0036 ± 0.0010	0.0129 ± 0.0015
7/17 - 8/20/02	0.0034 ± 0.0006	0.0167 ± 0.0015
8/20 - 9/17/02	0.0025 ± 0.0006	0.0126 ± 0.0014
9/17 - 10/15/02	0.0024 ± 0.0008	0.0137 ± 0.0014
10/15 - 11/19/02	0.0023 ± 0.0006	0.0119 ± 0.0011
11/19 - 12/10/02	0.0025 ± 0.0010	0.0131 ± 0.0016
12/10 - 1/7/03	0.0024 ± 0.0008	0.0119 ± 0.0012

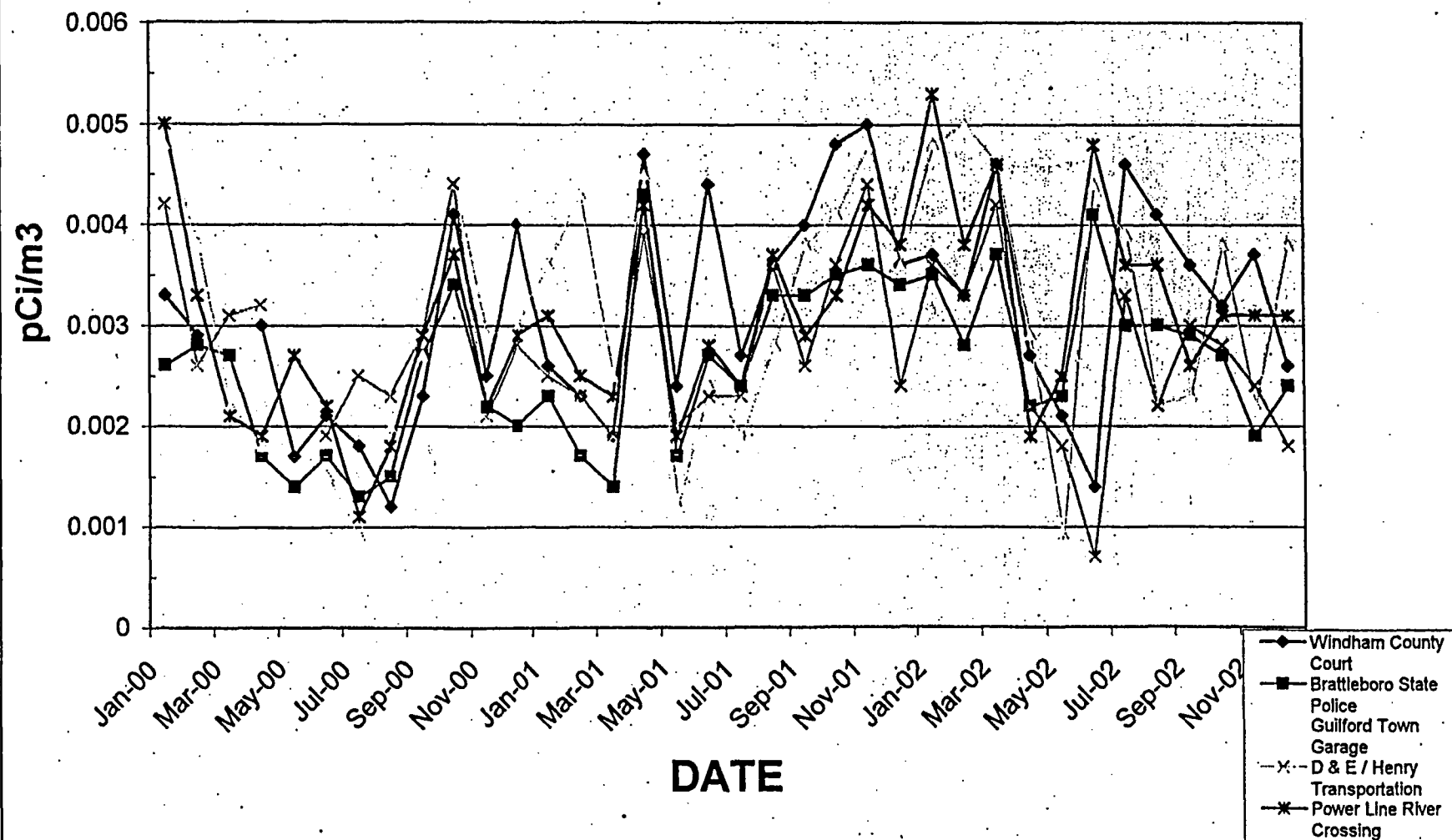
AIR SAMPLES 2002
(picoCuries/Cubic Meter)

Sample Period	Vernon Elementary School		Brattleboro Union High School	
	Alpha	Beta	Alpha	Beta
1/3 - 2/7/02	0.0038 ± 0.0007	0.0186 ± 0.0018	0.0015 + 0.0005	0.0069 + 0.0008
2/7 - 3/7/02	0.0043 ± 0.0009	0.0166 ± 0.0019	0.0042 + 0.0009	0.0163 + 0.0018
3/7 - 4/18/02	0.0042 ± 0.0006	0.0151 ± 0.0013	0.0048 + 0.0006	0.0158 + 0.0013
4/18 - 5/20/02	0.0025 ± 0.0008	0.0110 ± 0.0013	0.0016 + 0.0007	0.0116 + 0.0013
5/20 - 6/19/02	0.0025 ± 0.0009	0.0094 ± 0.0013	0.0020 + 0.0008	0.0099 + 0.0013
6/19 - 7/17/02	0.0049 ± 0.0011	0.0162 ± 0.0016	0.0053 + 0.0012	0.0174 + 0.0017
7/17 - 8/20/02	0.0032 ± 0.0007	0.0172 ± 0.0016	0.0039 + 0.0007	0.0170 ± 0.0015
8/20 - 9/17/02	0.0033 + 0.0007	0.0151 + 0.0017	0.0032 + 0.0007	0.0143 + 0.0017
9/17 - 10/15/02	0.0028 + 0.0009	0.0171 + 0.0017	0.0036 + 0.0010	0.0178 + 0.0017
10/15 - 11/19/02	0.0031 + 0.0008	0.0126 + 0.0012	0.0027 + 0.0007	0.0135 + 0.0013
11/19 - 12/10/02	0.0026 + 0.0010	0.0164 + 0.0018	0.0028 + 0.0010	0.0162 + 0.0018
12/10 - 1/7/03	0.0031 + 0.0010	0.0146 + 0.0010	0.0038 + 0.0010	0.0149 + 0.0014

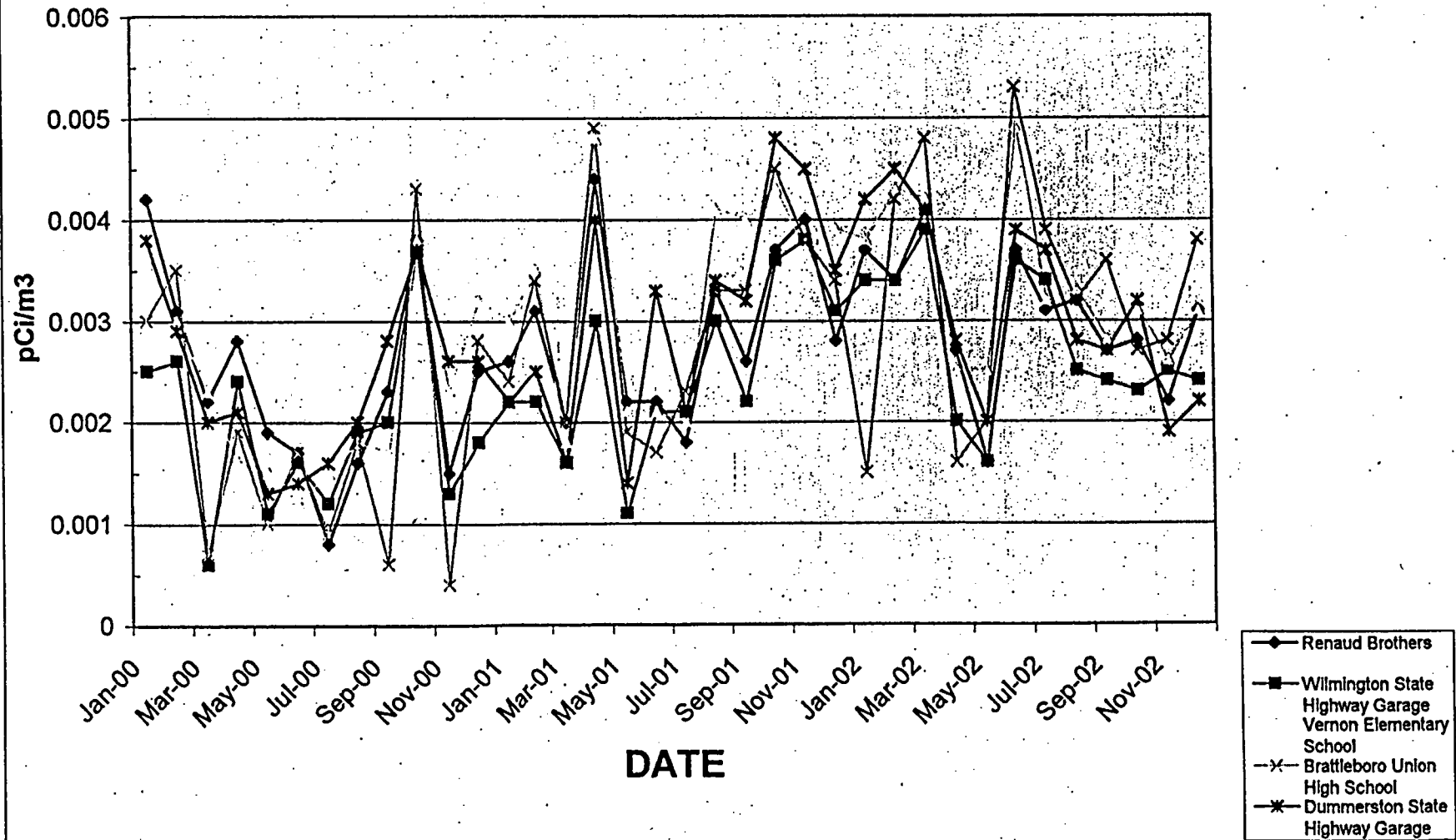
AIR SAMPLES 2002
(picoCuries/Cubic Meter)

Sample Period	Dimmerton State Highway Garage	
	Alpha	Beta
1/3 - 2/7/02	0.0042 + 0.0008	0.0195 + 0.0018
2/7 - 3/7/02	0.0045 + 0.0010	0.0183 + 0.0020
3/7 - 4/18/02	0.0041 + 0.0006	0.0163 + 0.0013
4/18 - 5/20/02	0.0028 + 0.0009	0.0120 + 0.0013
5/20 - 6/19/02	0.0020 + 0.0009	0.0085 + 0.0013
6/19 - 7/17/02	0.0039 + 0.0010	0.0157 + 0.0016
7/17 - 8/20/02	0.0037 ± 0.0007	0.0174 ± 0.0011
8/20 - 9/17/02	0.0028 + 0.0007	0.0163 + 0.0012
9/17 - 10/15/02	0.0027 + 0.0009	0.0184 + 0.0017
10/15 - 11/19/02	0.0032 + 0.0008	0.0126 + 0.0012
11/19 - 12/10/02	0.0019 + 0.0009	0.0141 + 0.0017
12/10 - 1/7/03	0.0022 + 0.0008	0.0123 + 0.0013

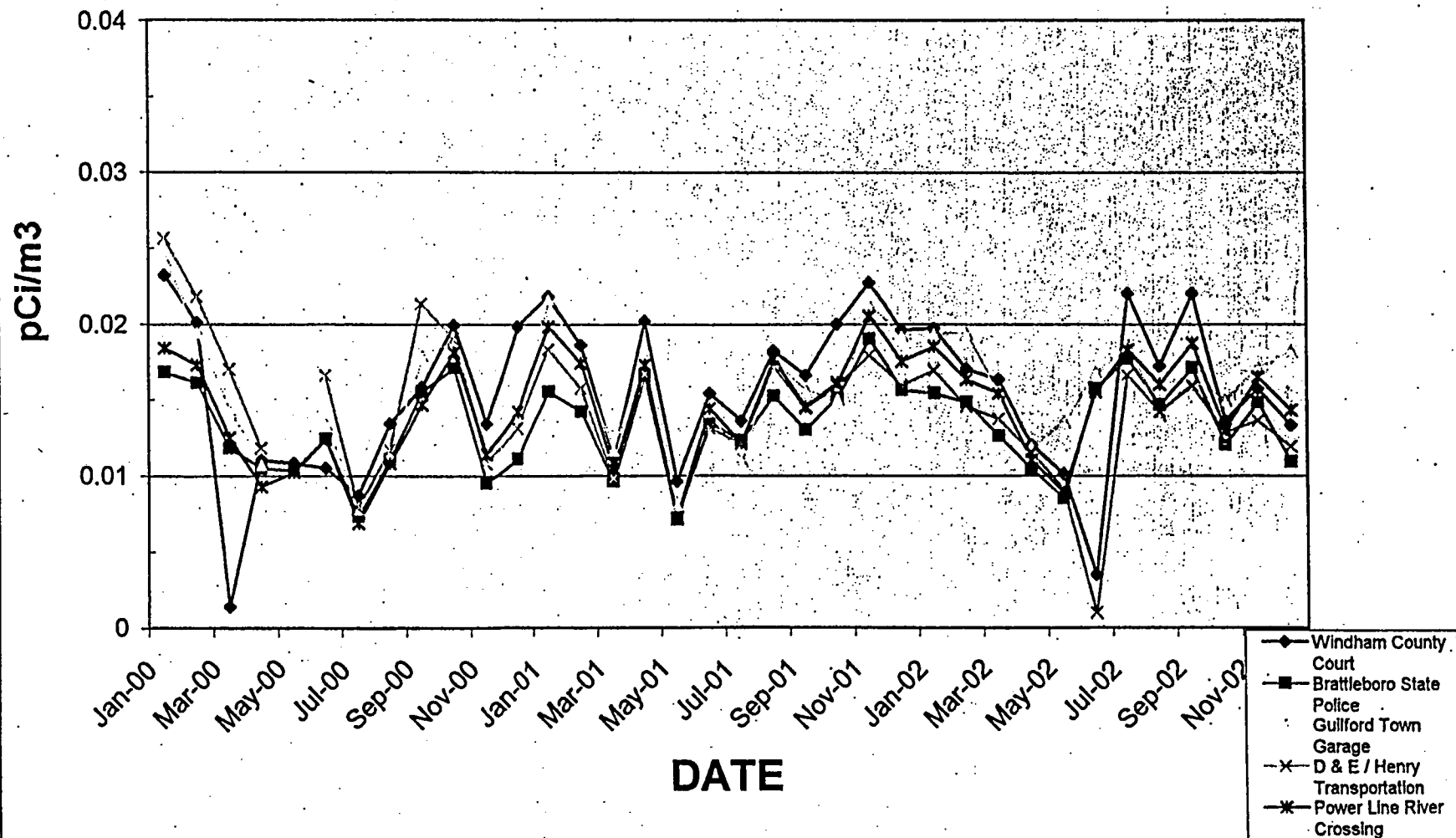
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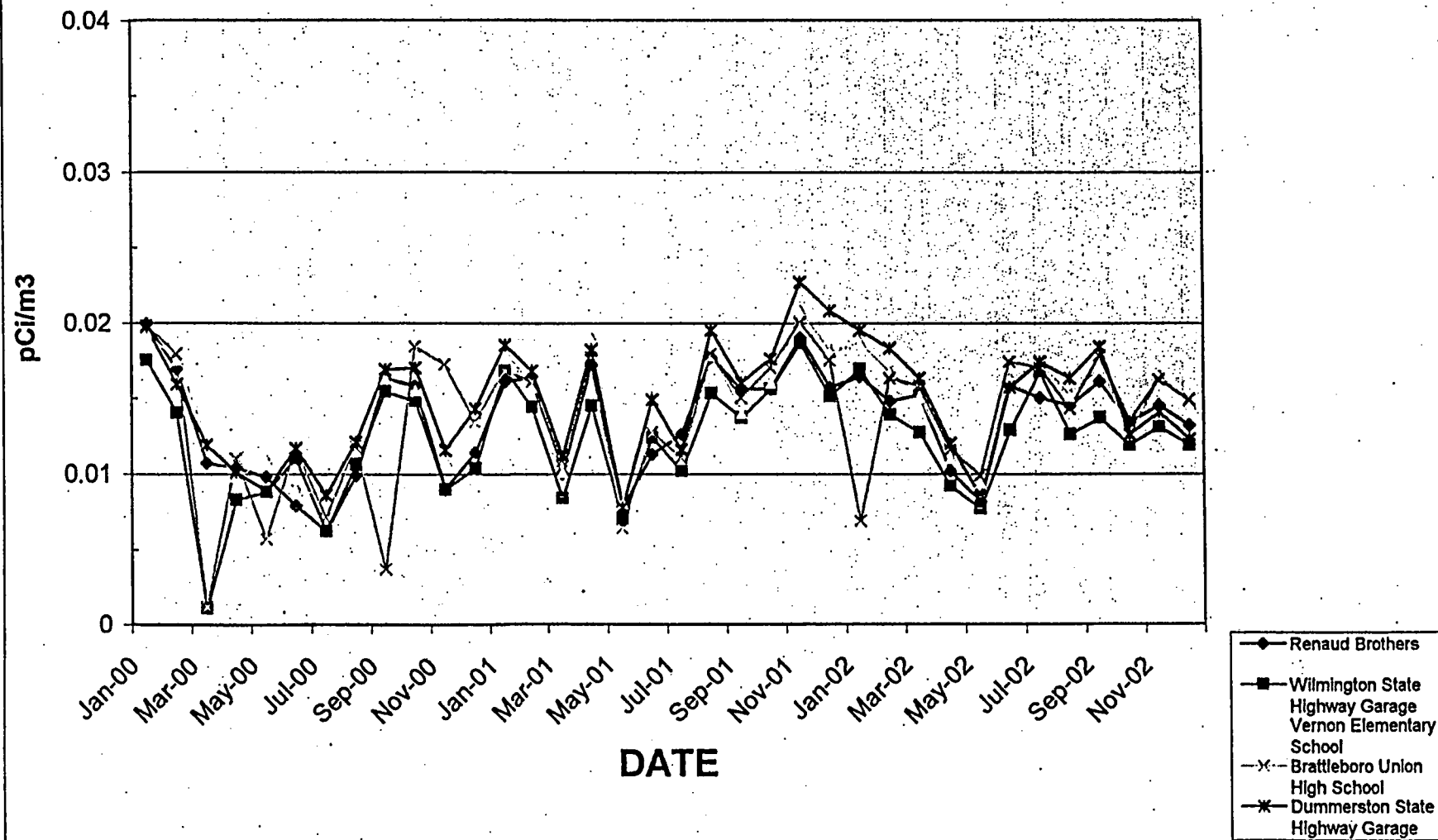
AIR SAMPLES - ALPHA



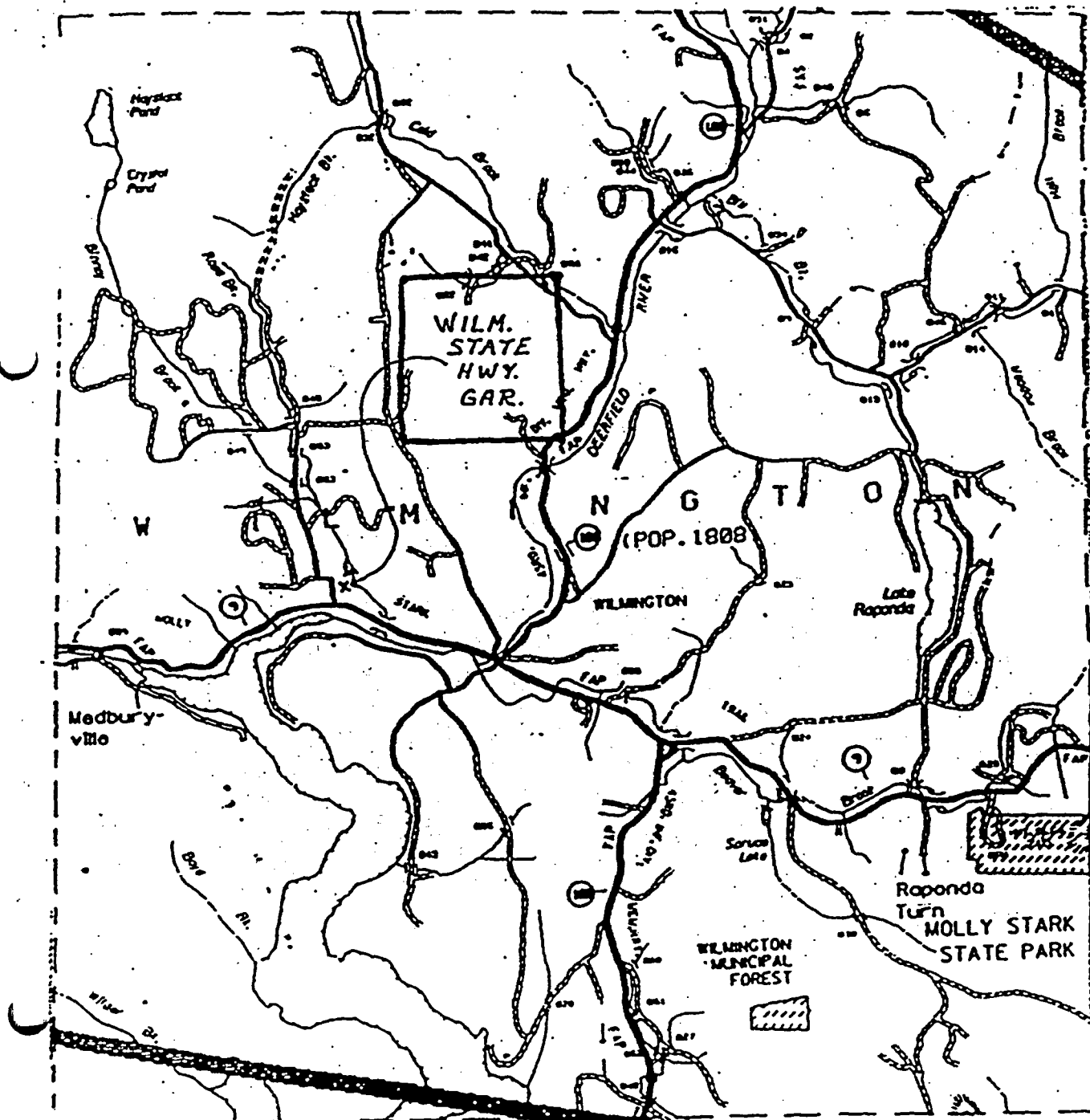
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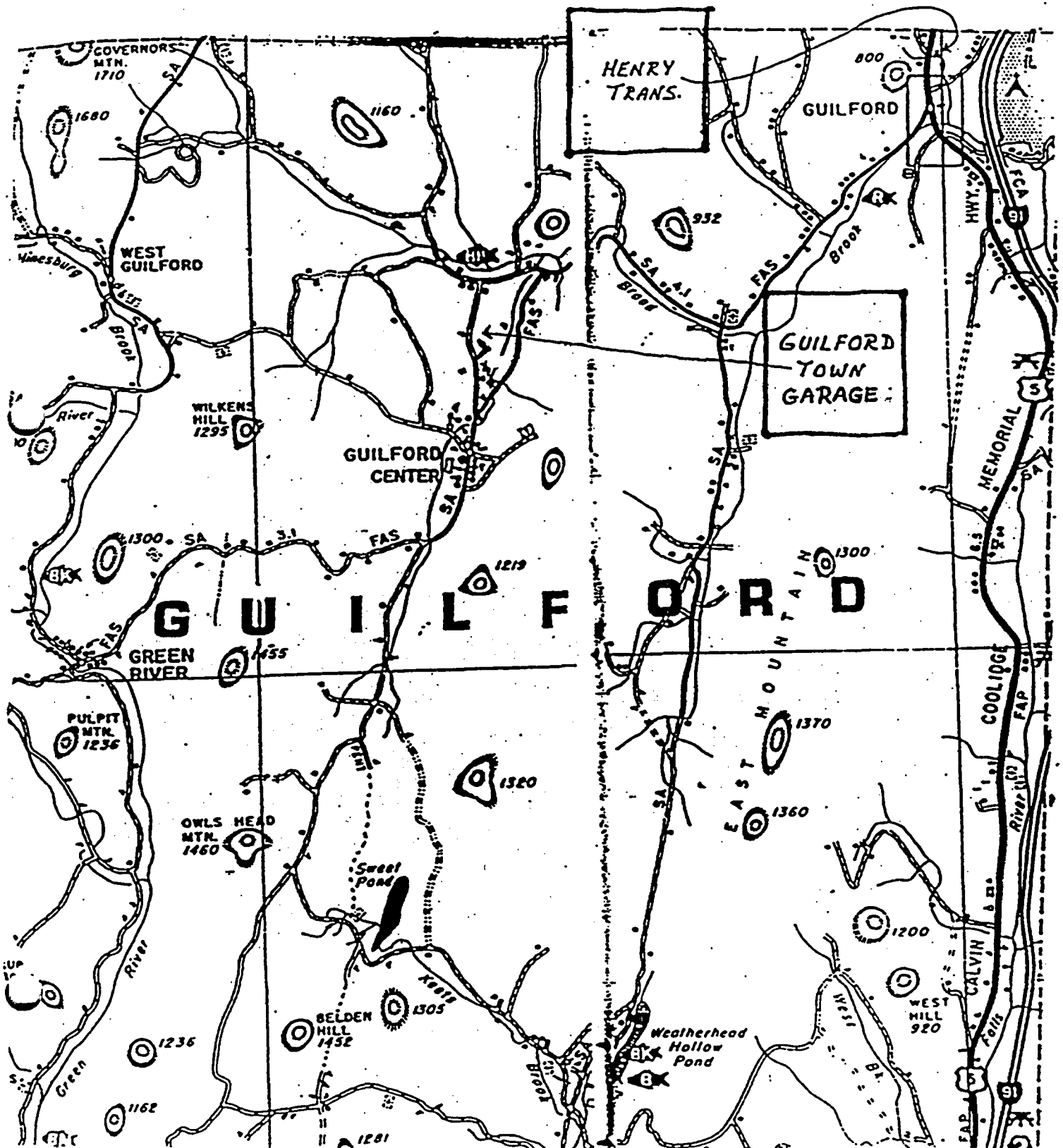
AIR SAMPLES - BETA



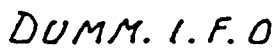
AIR

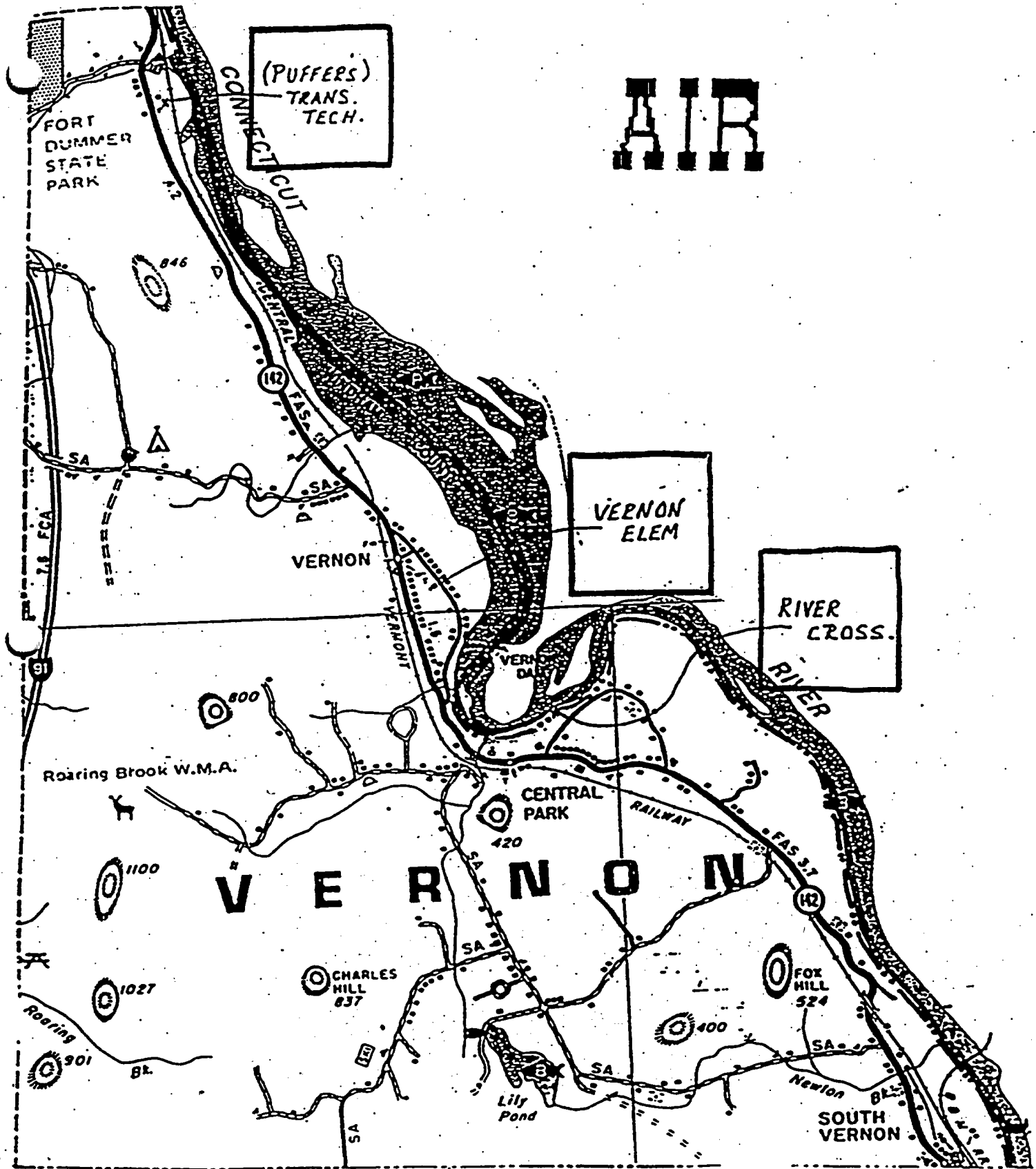


AIR



DUMM. I. F. O



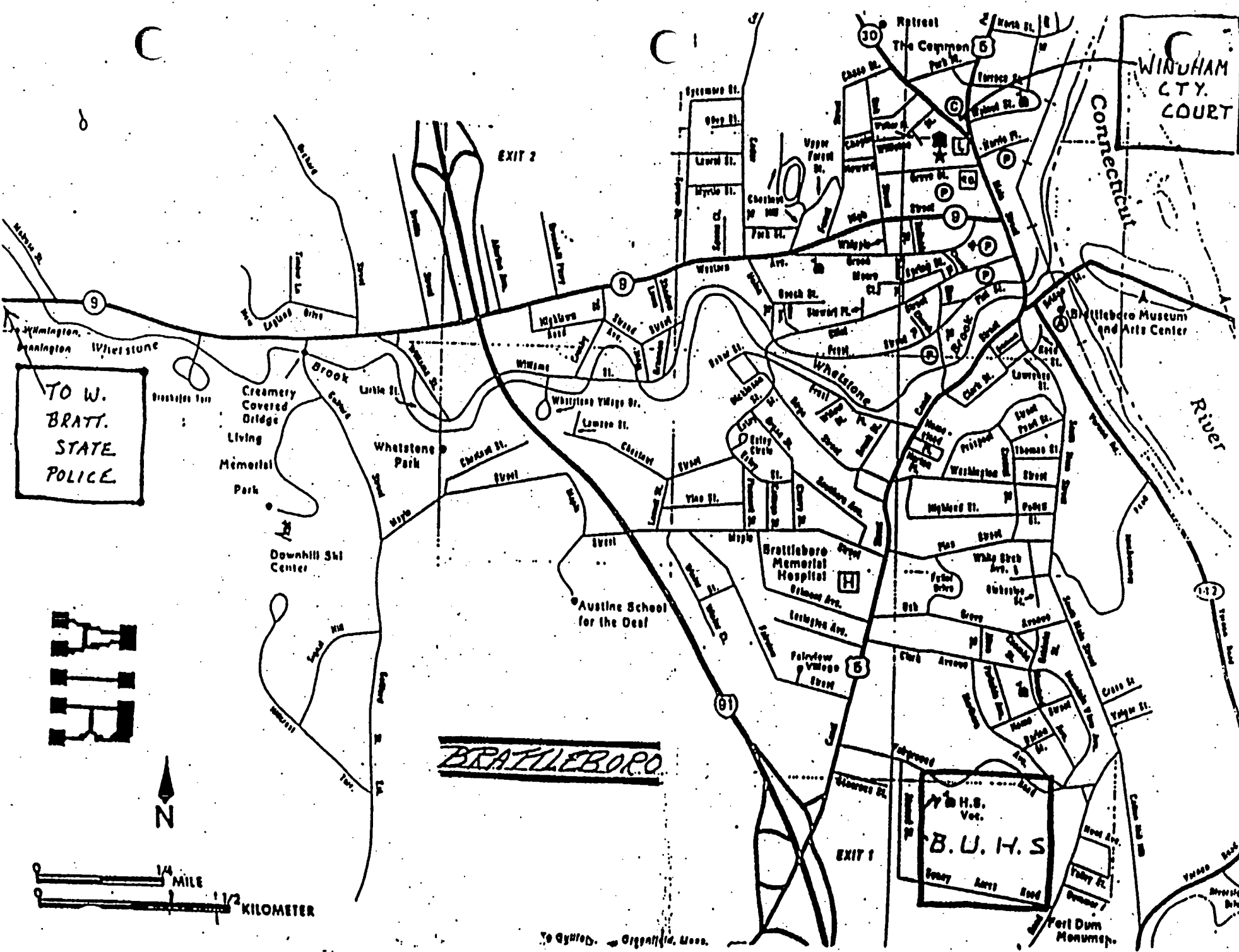


(PUFFERS)
TRANS.
TECH.

AIR

VERNON
ELEM

RIVER
CROSS.
RIVER



WINDHAM
CTY.
COURT

TO W.
BRATT.
STATE
POLICE

BRATTLEBORO

H.S.
Vet.
B.U.H.S.

To Ogdun. - Ogdun, Mass.

BIOTA 2002

All Biota for the Year 2002 are within the expected historical range.

The historical ranges for plant material:

Cesium-137* is less than the detection limit;

Potassium-40** is from 2,000 to 13,000 pCi/kg,

Beryllium-7*** is from less than the detection limit to 1,500 pCi/kg.

The plant sample for 2002 lies within these historical ranges. See table below.

The historical ranges for fungi:

Cesium-137 is 50 to 9,000 pCi/kg,

Potassium-40 is from 1,000 to 12,000 pCi/kg,

Beryllium-7 is less than the detection limit,

Cesium-134**** is from less than the detection limit to 45 pCi/kg.

The fungi sample for 2002 lies within these historical ranges. See table below.

The historical ranges for ferns:

Cesium-137 is from less than the detection limit to 540 pCi/kg,

Potassium-40 is from 4,000 to 11,000 pCi/kg,

Beryllium-7 is from 100 to 4,000 pCi/kg.

There was no fern sample for 2002.

The historical ranges for honey:

Cesium-137 is from less than the detection limit to 200 pCi/kg,

Potassium-40 is from 300 to 2,000 pCi/kg,

Beryllium-7 is less than the detection limit.

Honey is no longer sampled.

Occasional sampling, most often once a year, is done on forage or wild foods as available or needed. Samples are collected (usually in the Northwest quadrant) within a mile or two from the facility. These normally consist of ferns (fiddleheads), edible fungi (*Clavaria* sp., *Boleti* sp., *Russlae* sp., grapes, etc.) and grass. Sample sizes range from 250 to 1,000 grams. The samples are weighed, placed wet in reentrant beakers and analyzed in the Gamma Spectrometer System using a reverse germanium detector. Usual spectra include primordial radionuclides, archival Cesium-137 and occasional cosmogenic Beryllium-7. Reporting units are picoCuries per kilogram with 2 sigma (standard deviation) value.

Vernon - Rte 142 Tate Cemetery (picoCuries/kilogram)

Season	Biota	Cesium-137*	Potassium-40**	Beryllium-7***
Summer	Fungi	3680 + 280	11900 + 1300	ND

Vernon – Northwest Fence of Vt. Yankee
(picoCuries/kilogram)

Season	Biota	Cesium-137 *	Potassium-40 ***	Beryllium-7 ***
Summer	Grass	ND	5490 + 530	645 + 139

Samples were also evaluated for the radionuclides listed below. None were present in excess of the lower limits of detection.

Radionuclide	LLD	Radionuclide	LLD
Cr-51	69	Sb-126	18
Mn-54	15	I-131	27
Co-56	15	Cs-134	58
Co-60	21	Cs-136	18
Zn-65	18	Cs-137	5
Sr-85	86	Ce-139	93
Ru/Rh-103	32	Ce-141	98
Sb-124	18	Ce-144	98

* = Archival atmospheric testing

** = Terrestrial radioactivity

*** = Cosmogenic

**** = Chernobyl event

ND = Below Detection Limits

LLD = Lower Limit of Detection

BIOTA

CONNECTICUT RIVER
TAYE CEMETARY
Y.T. YANKEE NORTH WEST FENCE
VERNON
CENTRAL PARK
RAILWAY
FOX HILL
SOUTH VERNON
Lily Pond
CHARLES HILL
Roaring Brook W.M.A.
FORT DUNSMITH STATE PARK
VERMONT
FAS 3.2
SA
BL
91
12
107
846
800
1100
1027
901
400
524
NEWTON

FISH 2002

All Fish Samples for the Year 2002 are within the expected historical range.

The historical range for Cesium-137* is from less than the detection limit to 100 pCi/kg. The samples for 2002 range are less than the detection limit.

The historical range for Potassium-40** is from 1,000 to 5,000 pCi/kg. The samples for 2002 range from 2,230 to 2,400 pCi/kg.

Two locations (3-4 Vernon Pond and 3-8 Route 9 Highway bridge) provide fish samples in the Spring and Fall of about one kilogram for each sample. Fish are captured via an electroshock method. The fish are frozen whole, weighed, and chopped or blended (entire) for loading into a reentrant beaker. It is subsequently analyzed with a Gamma Spectrometer System using a reverse germanium detector. Radionuclides detected usually include naturally occurring Potassium-40, Thorium and Uranium with daughters, archival Cs-137 due to former open atmospheric nuclear tests, and occasional traces of cosmogenic Beryllium-7. Reporting units are picoCuries per kilogram with 2 sigma (standard deviation) value.

Spring (picoCuries/kilogram)

Site	Cesium-137 Wet Weight	Natural Potassium-40 Wet Weight
3-4	ND	2340 + 620
3-8	ND	2230 + 600

Fall (picoCuries/kilogram)

Site	Cesium-137 Wet Weight	Natural Potassium-40 Wet Weight
3-4	ND	2400 + 630
3-8	ND	2350 + 630

Samples were also evaluated for the radionuclides listed below. None were present in excess of the lower limits of detection (LLD) which are shown in pCi/kg.

Radionuclide	LLD	Radionuclide	LLD
Cr-51	69	Sb-126	18
Mn-54	15	I-131	27
Co-56	15	Cs-134	58
Co-60	21	Cs-136	18
Zn-65	18	Cs-137	5
Sr-85	86	Ce-139	93
Ru/Rh-103	32	Ce-141	98
Sb-124	18	Ce-144	98

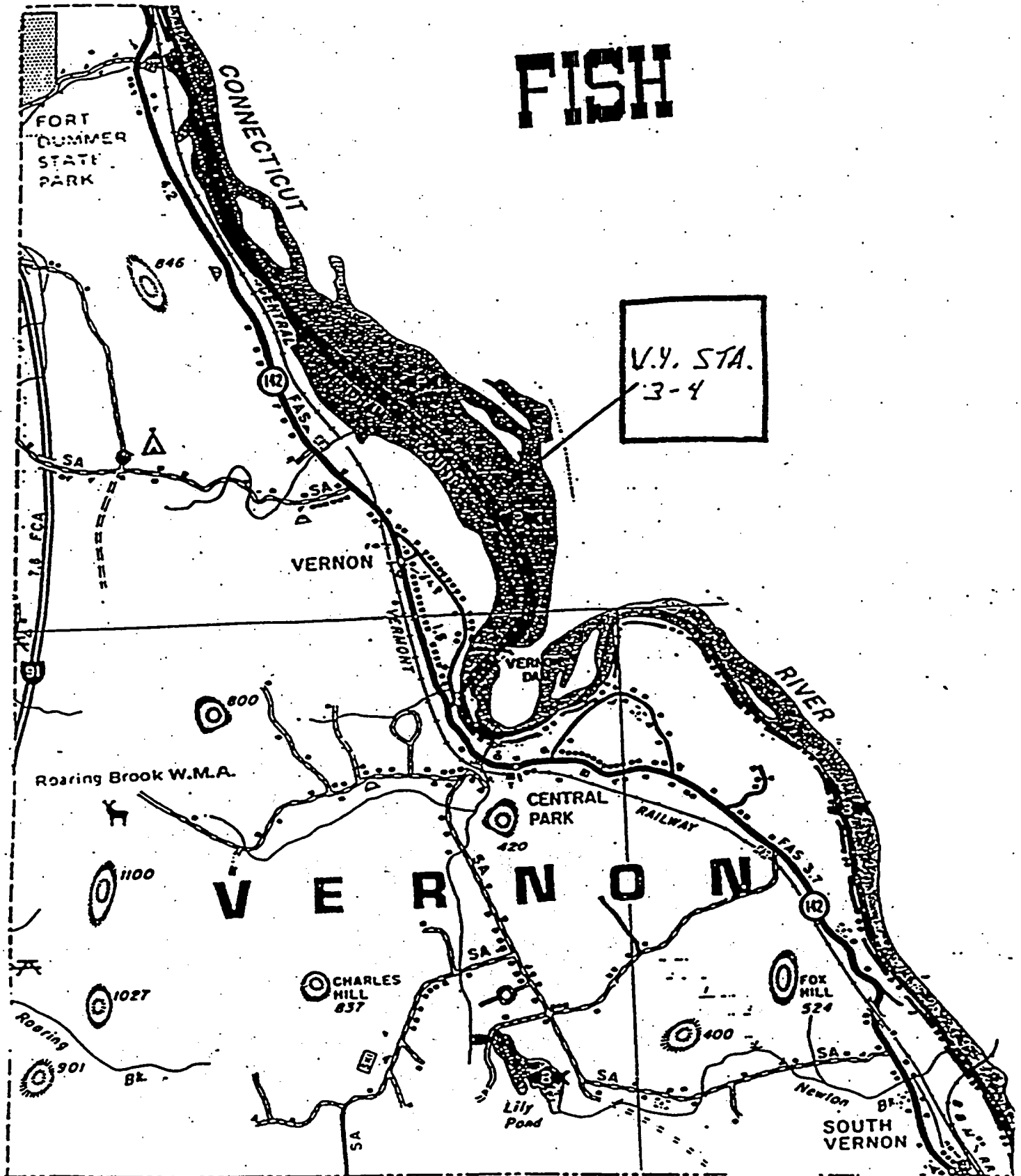
* = Archival atmospheric testing

** = Terrestrial radioactivity

ND = Below Detection Limit

LLD = Lower Limit of Detection

FISH



IODINE CARTRIDGES 2002

All Iodine Cartridges for the Year 2002 are within the expected historical range.

The historical range for iodine-131 in air cartridges is less than the detection limit. The samples for 2002 were less than the detection limit.

Air samples are taken at various fixed locations using a line powered piston type compressor operating at a rate of 1 cubic foot per minute nominal. The sample is collected on a charcoal cartridge loaded with TEDA for iodine collection. The charcoal cartridge follows the filtration of air by a glass fiber filter in the air sampling train at all air sampling stations. Collection time is continuous with a nominal sampling period of four weeks. Response to Chernobyl iodine release was marked, proving the sensitivity to environmental trace levels of iodine of this system. The air cartridges are analyzed for Iodine-131 with the Gamma Spectrometer System using a reverse germanium detector. The nominal lower limit of detection is 2×10^{-5} pCi/l of air.

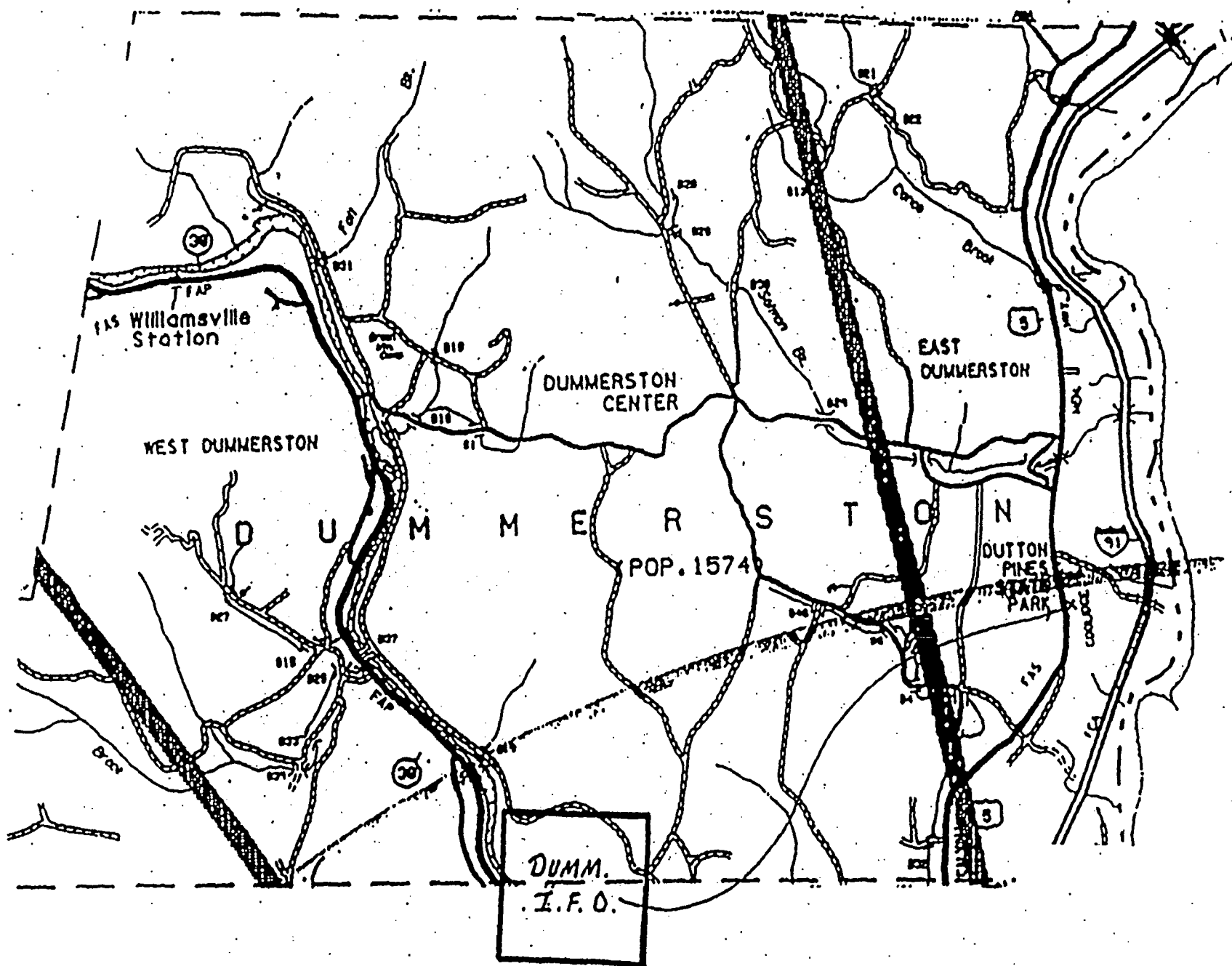
Sample Period	Dummerston Highway Garage	Vernon School	Renaud Bros. Vernon	Brattleboro Union High School
January	X	X	X	X
February	X	X	X	X
March	X	X	X	X
April	X	X	X	X
May	X	X	X	X
June	X	X	X	X
July	X	X	X	X
August	X	X	X	X
September	X	X	X	X
October	X	X	X	X
November	X	X	X	X
December	X	X	X	X

Sample Period	Brattleboro State Police	Windham County Court
January	X	X
February	X	X
March	X	X
April	X	X
May	X	X
June	X	X
July	X	X
August	X	X
September	X	X
October	X	X
November	X	X
December	X	X

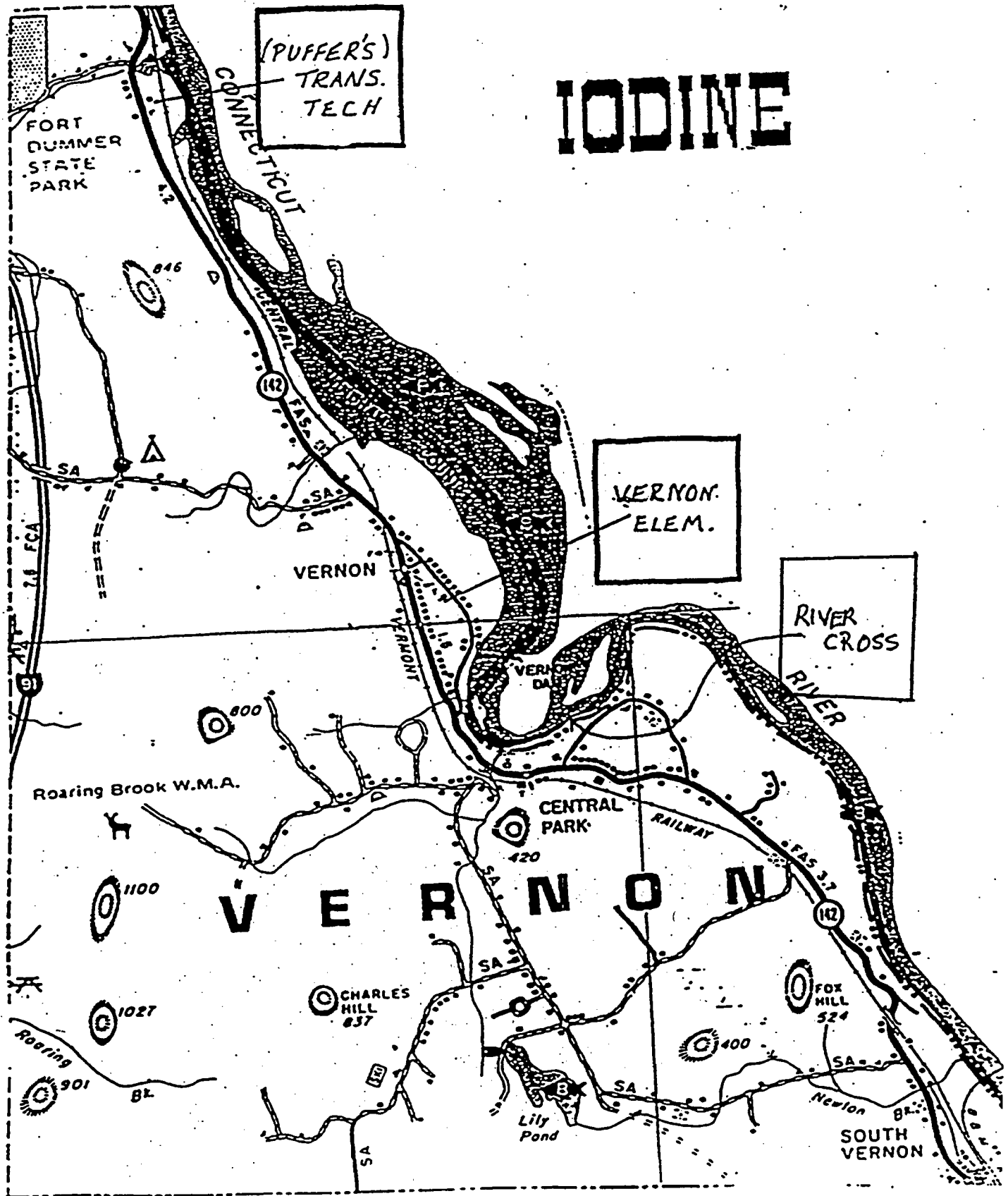
IODINE CARTRIDGES 2002

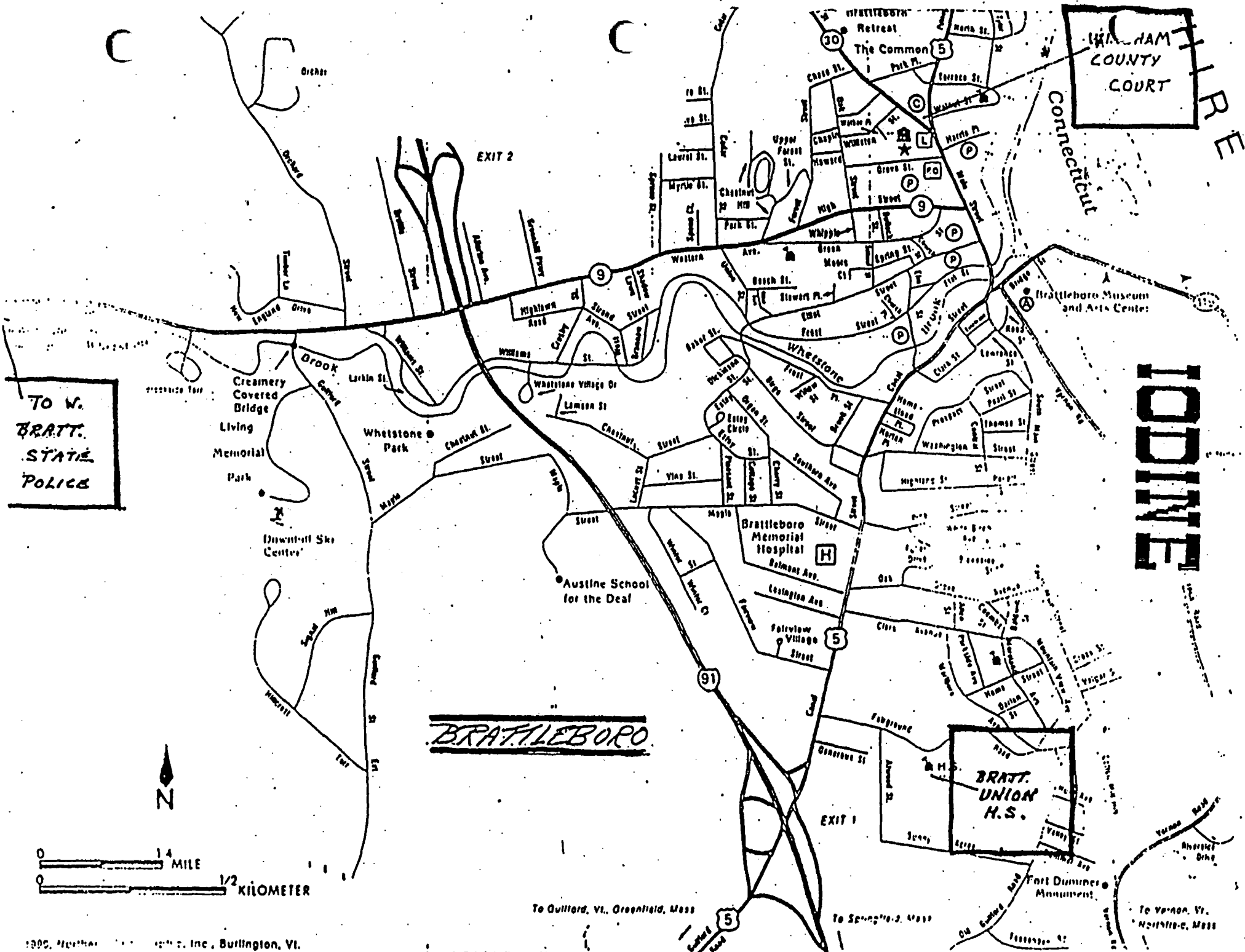
Sample Period	Powerline River Crossing	Guilford Highway Garage	Wilmington State Highway	D & E Henry's
January	X	X	X	X
February	X	X	X	X
March	X	X	X	X
April	X	X	X	X
May	X	X	X	X
June	X	X	X	X
July	X	X	X	X
August	X	X	X	X
September	X	X	X	X
October	X	X	X	X
November	X	X	X	X
December	X	X	X	X

X = No Evidence of Iodine-131



IODINE

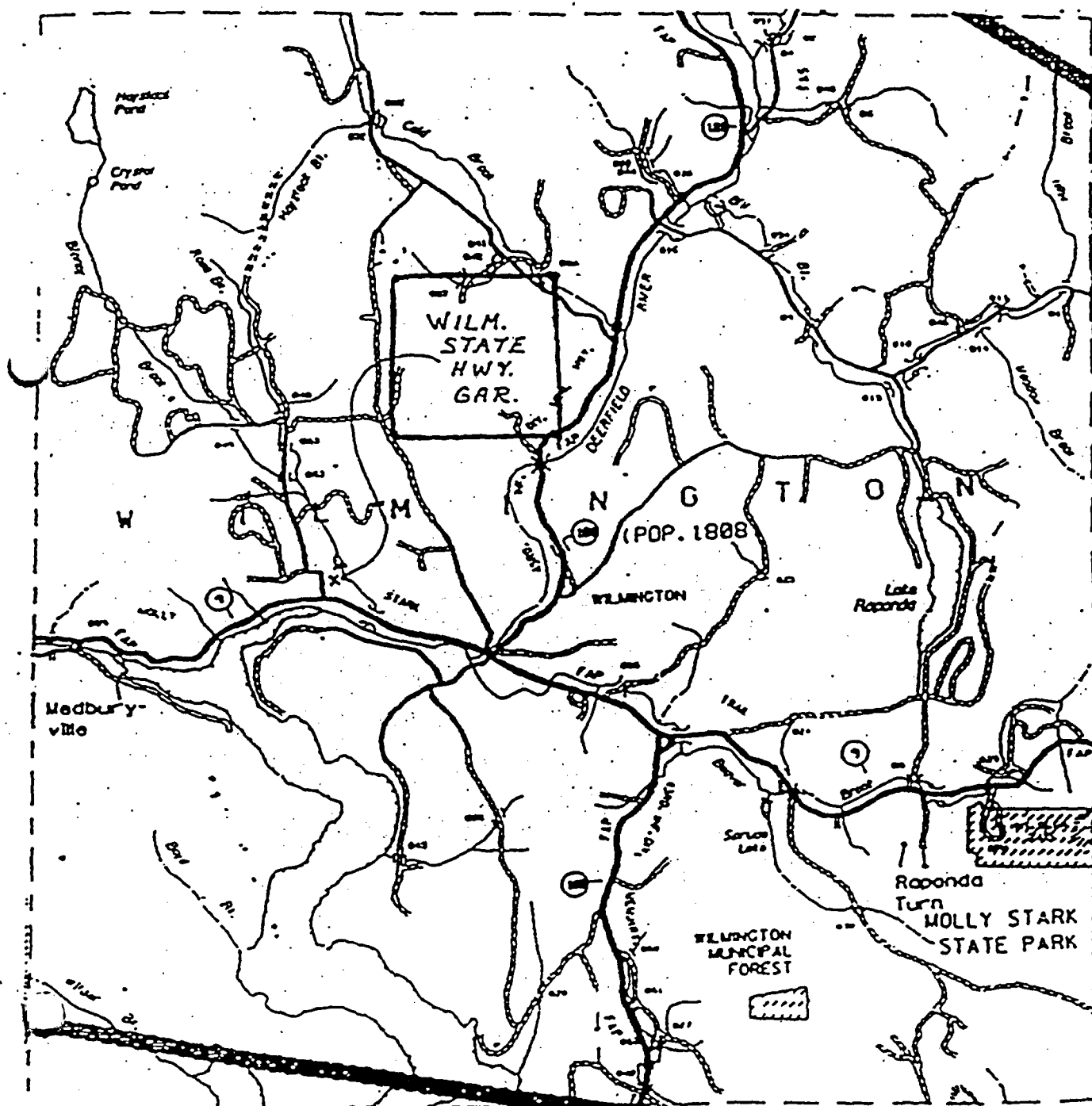




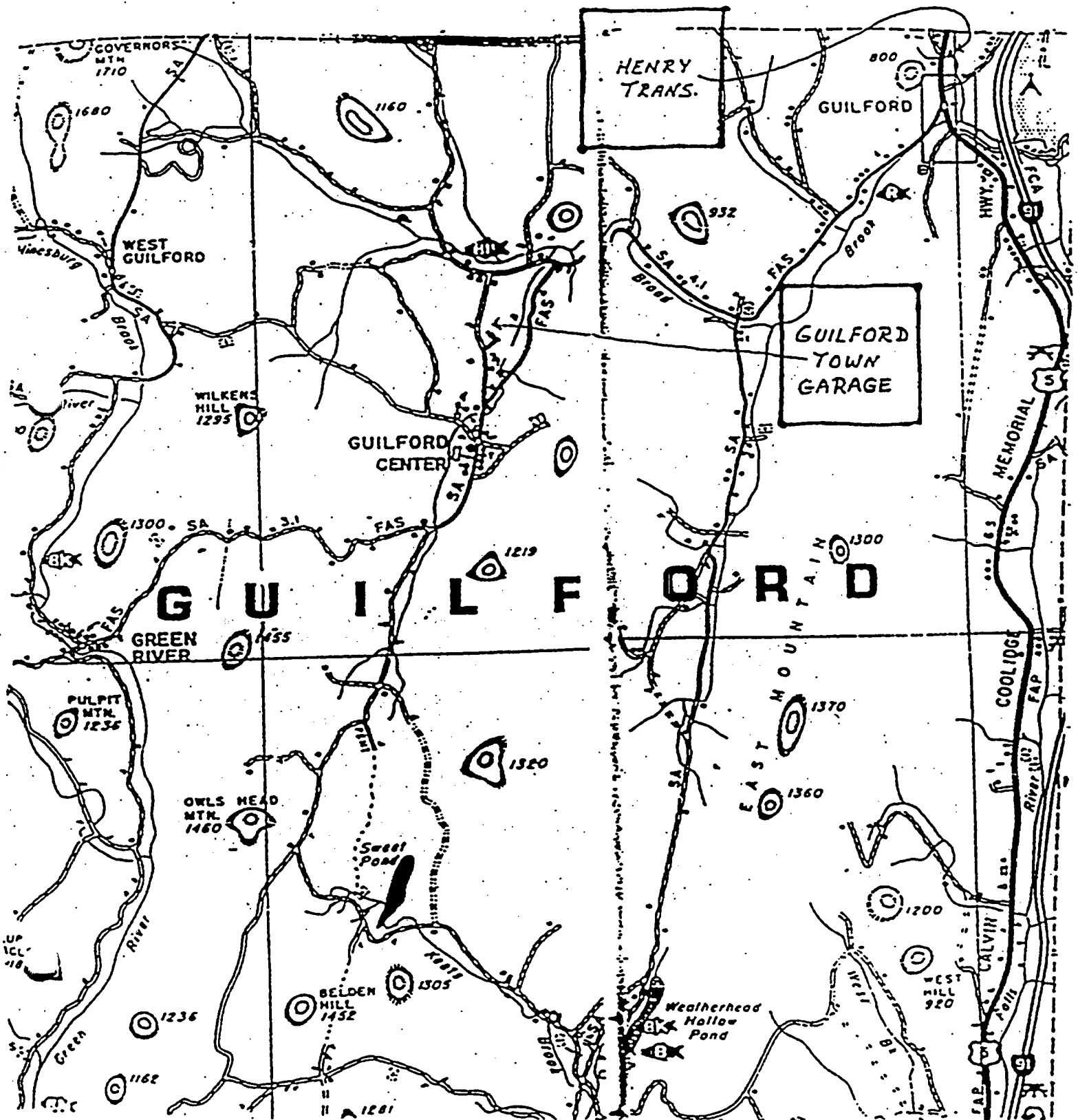
IDIOT

0 1/4 MILE
0 1/2 KILOMETER

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IODINE



MILK 2002

All Milk Samples for the Year 2002 are within the expected historical range.

The historical range for Iodine-131 is less than the detection limit. The samples for 2002 are all less than the detection limit.

The historical range for Potassium-40* is from 1,200 to 2,000 pCi/L. The samples for 2002 range from 1,300 to 1,830 pCi/L.

Milk sampling is performed at a frequency of once per month. The samples are measured, placed into reentrant beakers and analyzed in the Gamma Spectrometer System using a reverse germanium detector. Usual spectra include terrestrial Potassium-40. The nominal detection limit for Iodine-131 is 10 picoCuries/liter. Significant indications of the presence of any other radionuclides are investigated and reported if found. Reporting units are picoCuries per liter with 2 sigma (standard deviation) value.

Blodgett Farm (picoCuries/liter)

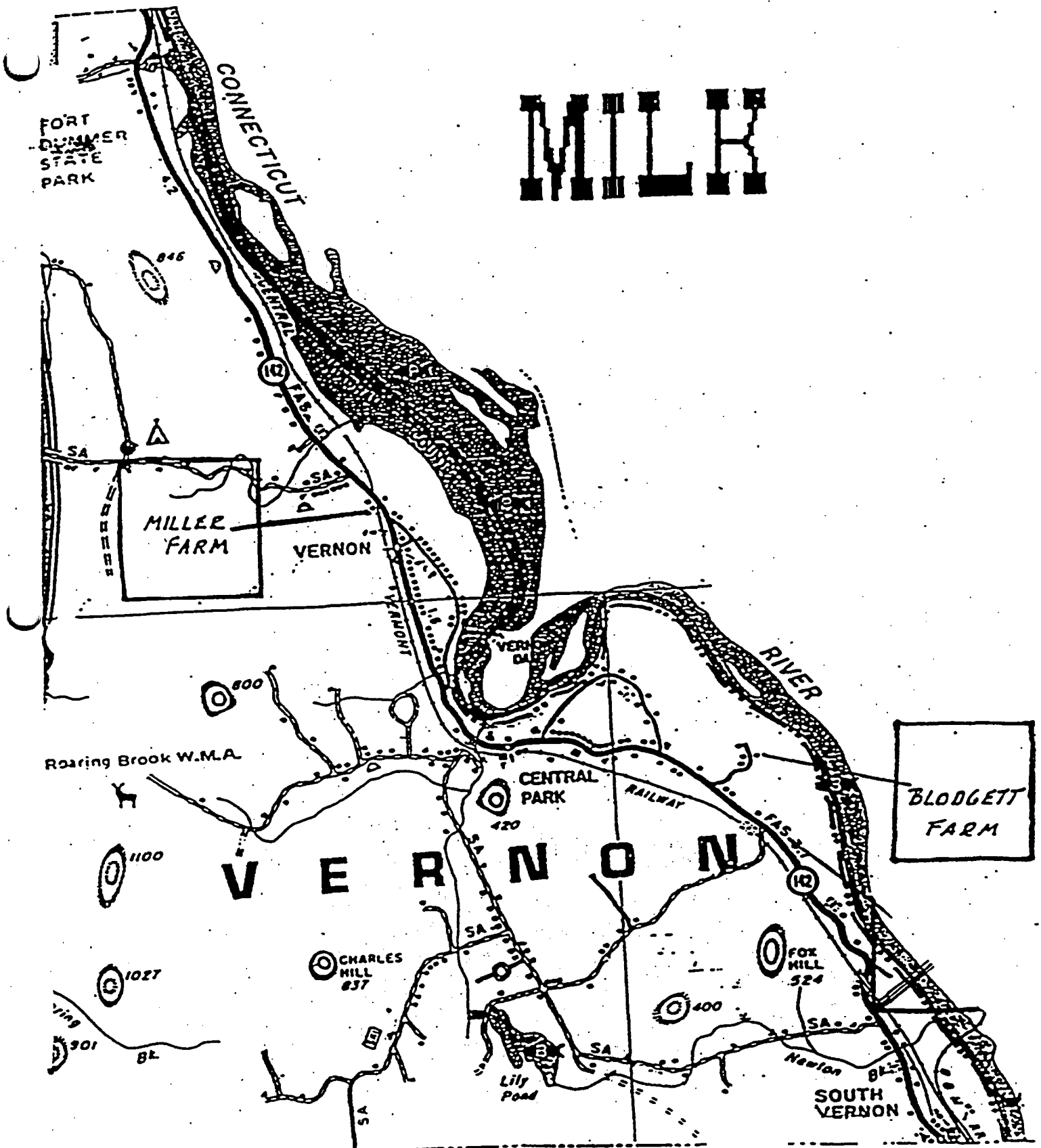
Sample Period	Iodine-131	Potassium-40
January	ND	1410 + 120
February	ND	1530 + 130
March	ND	1830 + 160
April	ND	1430 + 120
May	ND	1450 + 120
June	ND	1510 + 120
July	ND	1470 + 130
August	ND	1560 + 120
September	ND	1580 + 120
October	ND	1520 + 120
November	ND	1570 + 120
December	ND	1470 + 110

Miller Farm
(picoCuries/liter)

Sample Period	Iodine-131	Potassium-40
January	ND	1500 + 120
February	ND	1370 + 120
March	ND	1410 + 120
April	ND	1420 + 120
May	ND	1520 + 130
June	ND	1360 + 120
July	ND	1300 + 120
August	ND	1590 + 120
September	ND	1490 + 110
October	ND	1510 + 110
November	ND	1570 + 120
December	ND	1620 + 120

* = Terrestrial Radioactivity
ND = Below Detection Limit

MILK



SEDIMENT 2002

All Sediment Samples for the Year 2002 are within the expected historical range.

The historical range for Cesium-137* is from less than the detection limit to 500 pCi/kg. The samples for 2002 range from less than the detection limit to 62 pCi/kg.

The historical range for Potassium-40** is from 6,000 to 22,000 pCi/kg. The samples for 2002 range from 9,330 to 10,600 pCi/kg.

The historical range for Beryllium-7*** is from less than the detection limit to 5,000 pCi/kg. The samples for 2002 are less than the detection limit.

Sediment samples are taken biannually in the spring and fall. A sediment sample is taken ranging from approximately 0.75 to 1.25 kilograms from the Connecticut River at three separate locations in the spring and fall of each year. The sample is dried, weighed on a top loaded balance and placed in a 500 milliliter HDPE bottle. The sample is counted on the Gamma Spectrometer System using a reverse germanium detector. A normal spectrum will include primordial radionuclides with daughters, and archival Cesium-137 from former open atmospheric nuclear testing. On occasion short-lived cosmogenic Beryllium-7 can be discerned. Reporting units are picoCuries per kilogram with 2 sigma (standard deviation) value.

SPRING (pCi/kilogram)

Site	Cesium-137	Potassium-40	Beryllium-7
3-3	53 + 17	10200 + 900	ND
3-4	42 + 16	9520 + 860	ND
3-8	30 + 15	10600 + 900	ND

FALL pCi/kilogram

Site	Cesium-137	Potassium-40	Beryllium-7
3-3	ND	9330 + 830	ND
3-4	40 + 17	10300 + 900	ND
3-8	62 + 24	10600 + 900	ND

Samples were also evaluated for the radionuclides listed below. None were present in excess of the lower limits of detectability which are shown in pCi/kg.

Radionuclide	LLD	Radionuclide	LLD
Cr-51	69	Sb-126	18
Mn-54	15	I-131	27
Co-56	15	Cs-134	58
Co-60	21	Cs-136	18
Zn-65	18	Cs-137	5
Sr-85	86	Ce-139	93
Ru/Rh-103	32	Ce-141	98
Sb-124	18	Ce-144	98

* = Archival atmospheric testing

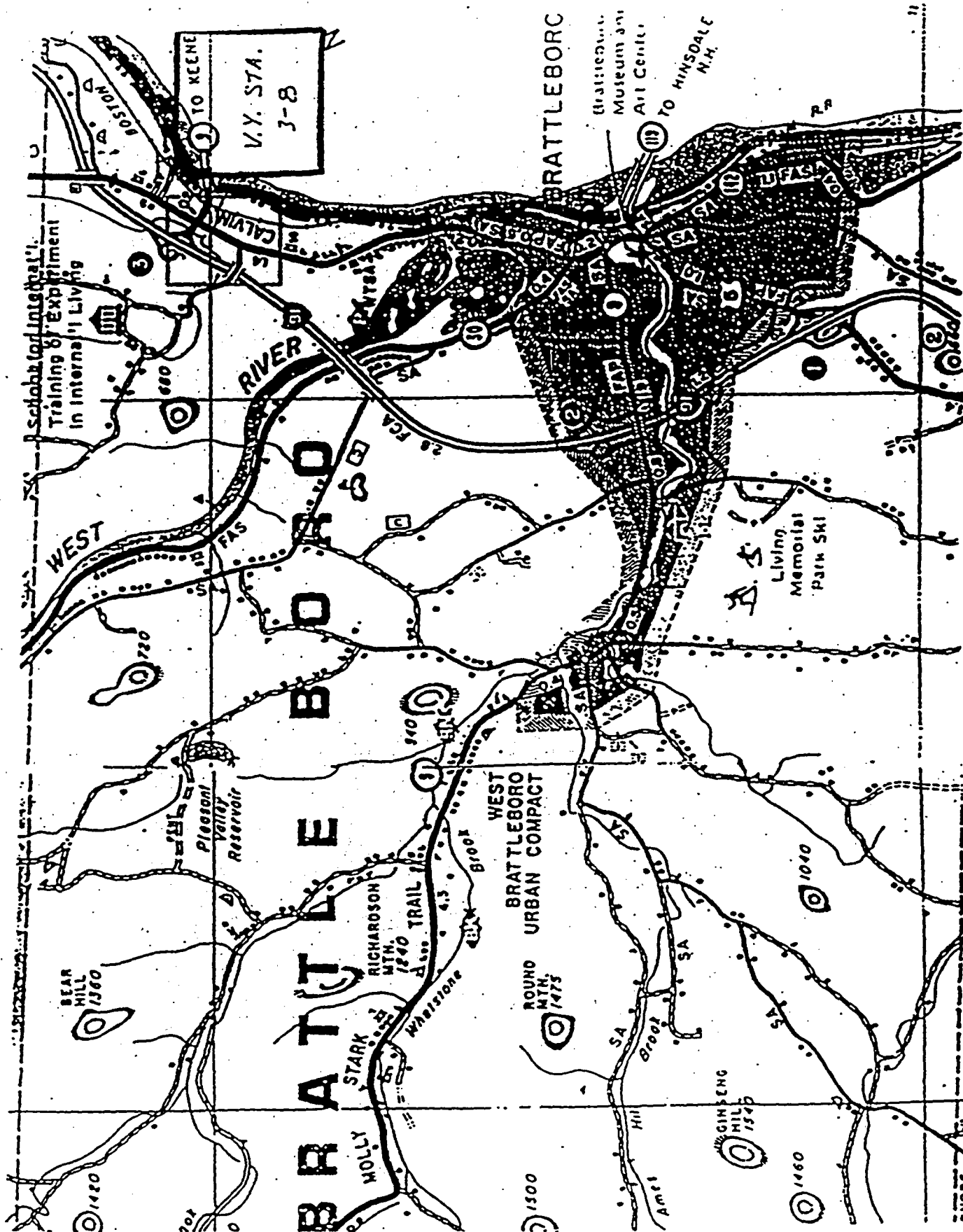
** = Terrestrial radioactivity

*** = Cosmogenic

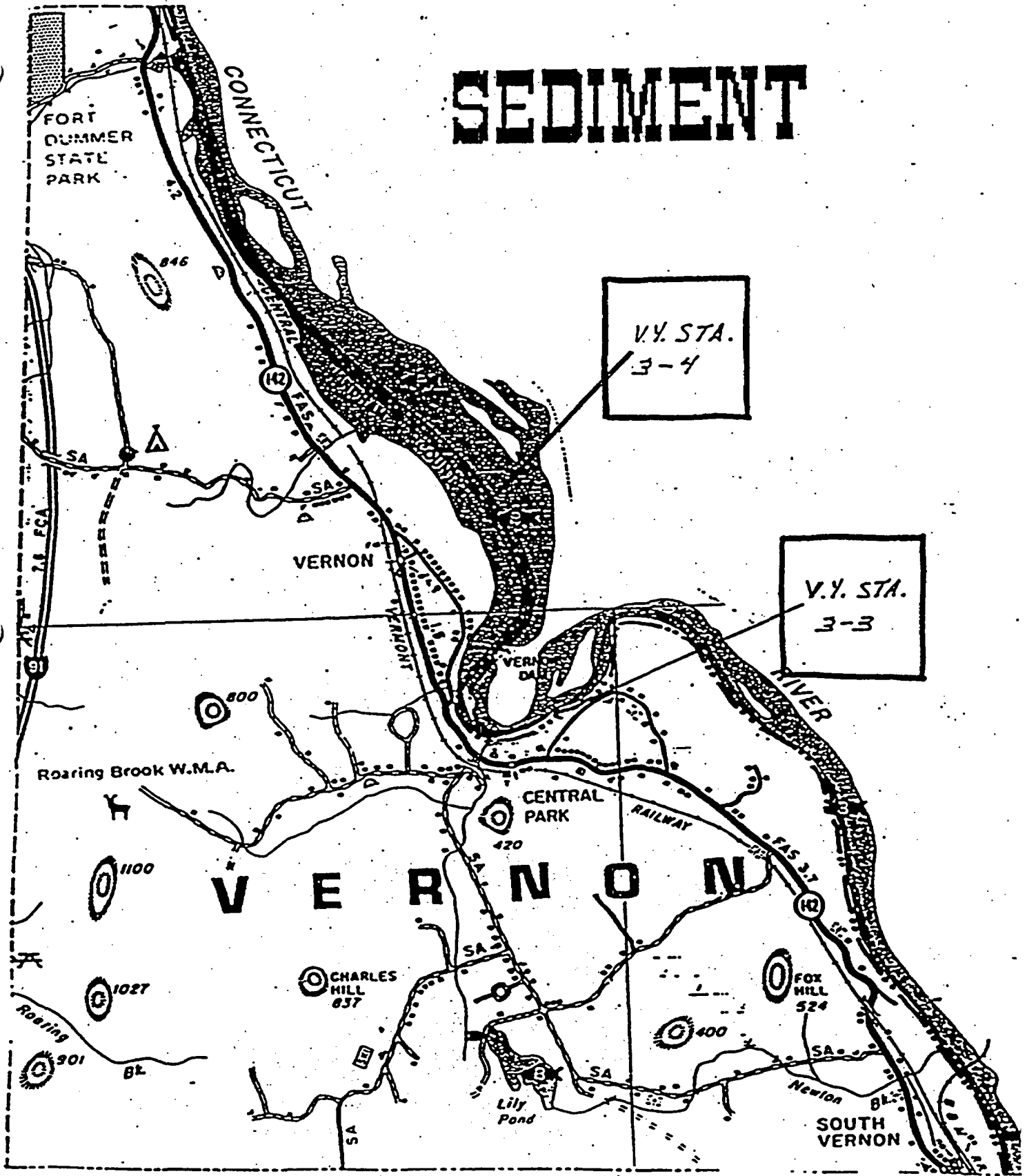
ND = None Detected

LLD = Lower Limit of Detection

SEDIMENT



SEDIMENT



SOIL 2002

All Soil Samples for the Year 2002 are within the expected historical range.

The historical range for Cesium-137* is from less than the detection limit to 500 pCi/kg. The sample for 2002 is 134 pCi/kg.

The historical range for Potassium-40** is from 7,000 to 20,000 pCi/kg. The sample for 2002 is 16,200 pCi/kg.

The historical range for Beryllium-7*** is from less than the detection limit to 600 pCi/kg. The sample for 2002 is 537 pCi/kg.

Occasional sampling, most often once a year, is done on other soils as available or needed. Samples are collected (usually in the Northwest quadrant) within a mile or two from the facility. Sample sizes range from 250 to 1,000 grams. The samples are weighed, dried and placed in 500 ml wide mouth HDPE bottles and analyzed on the Gamma Spectrometer System using a reverse germanium detector. Usual spectra include primordial radionuclides, archival Cesium-137 and occasional cosmogenic Beryllium-7. Reporting units are picoCuries per kilogram with 2 sigma (standard deviation) value.

Northwest Corner Vermont Yankee Fence (picoCuries/kilogram)

Season	Cesium-137*	Potassium-40	Beryllium-7***
Spring 6/19/02	134 + 34	16200 + 1200	537 + 180

Samples were also evaluated for the radionuclides listed below. None were present in excess of the lower limits of detectability which are shown in pCi/kg.

Radionuclide	LLD	Radionuclide	LLD
Cr-51	69	Sb-126	18
Mn-54	15	I-131	27
Co-56	15	Cs-134	58
Co-60	21	Cs-136	18
Zn-65	18	Cs-137	5
Sr-85	86	Ce-139	93
Ru/Rh-103	32	Ce-141	98
Sb-124	18	Ce-144	98

* = Archival atmospheric testing

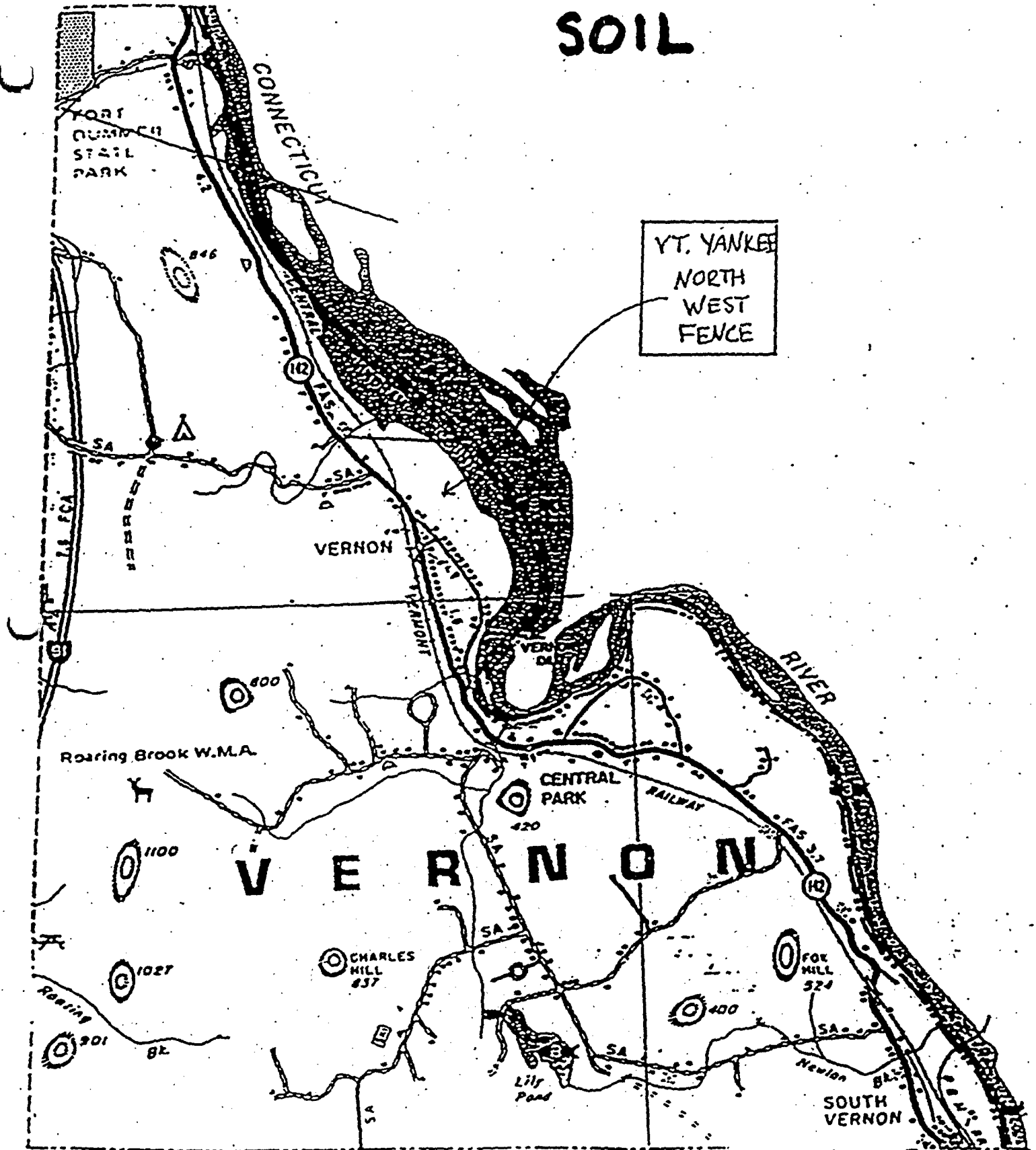
** = Terrestrial radioactivity

*** = Cosmogenic

ND = Below Detection Limits

LLD = Lower Limit of Detection

SOIL



**SPECIAL STUDY - SEDIMENT
VERMONT YANKEE - NORTH STORM DRAIN OUTFALL**

All Special Sediments for the Year 2002 are within the expected historical range.

The historical range for Beryllium-7** is from less than the detection limit to 3,000 pCi/kg. The samples for 2002 range from less than the detection limit to 1,730 pCi/kg.

The historical range for Cobalt-60*** is from less than the detection limit to 2,500 pCi/kg. The samples for 2002 were less than the detection limit.

The historical range for Potassium-40**** is from 6,000 to 26,000 pCi/kg. The samples for 2002 range from 12,100 to 19,900 pCi/kg.

The historical range for Cesium-137***** is from less than the detection limit to 500 pCi/kg. The samples for 2002 ranged from less than the detection limit to 209 pCi/kg.

Special sediment samples are taken biannually in the spring and fall. A sediment sample is taken ranging from approximately 0.75 to 1.25 kilograms from the Connecticut River at up to 40 separate locations in a grid around the discharge structure. The sample is dried, weighed on a top loaded balance and placed in a 500 milliliter HDPE bottle. The sample is counted on the Gamma Spectrometer System using a reverse germanium detector. A normal spectrum will include primordial radionuclides with daughters, and archival Cesium-137 from former open atmospheric nuclear testing. On occasion short-lived cosmogenic Beryllium-7 and Cobalt-60 can be discerned. Reporting units are picoCuries per kilogram with 2 sigma (standard deviation) value.

SPRING 2002
(picoCurie/kilogram)

Grid Location	Beryllium-7	Cobalt-60	Potassium-40	Cesium-137
S-1	ND	ND	19100 + 1600	185 + 43
S-2	ND	ND	16700 + 1400	157 + 32
S-3	ND	ND	15700 + 1300	123 + 35
S-4	*	*	*	*
S-5	*	*	*	*
T-1	ND	ND	15400 + 1300	126 + 32
T-2	ND	ND	18500 + 1600	168 + 37
T-3	ND	ND	18100 + 1500	172 + 37
T-4	ND	ND	16400 + 1400	142 + 37
T-5	*	*	*	*
U-1	ND	ND	11500 + 1000	57 + 29
U-2	ND	ND	14300 + 1300	102 + 40
U-3	ND	ND	17800 + 1500	148 + 34
U-4	ND	ND	18400 + 1500	142 + 32
U-5	ND	ND	14300 + 1200	92 + 28
V-1	*	*	*	*
V-2	ND	ND	16800 + 1400	138 + 33
V-3	ND	ND	16400 + 1400	139 + 27
V-4	ND	ND	15300 + 1300	108 + 33
V-5	ND	ND	13700 + 1200	74 + 25
W-1	*	*	*	*
W-2	*	*	*	*
W-3	ND	ND	16900 + 1400	154 + 34
W-4	ND	ND	15900 + 1400	109 + 33
W-5	ND	ND	15400 + 1300	92 + 29
X-1	*	*	*	*
X-2	*	*	*	*
X-3	*	*	*	*
X-4	ND	ND	16900 + 1400	162 + 37
X-5	ND	ND	14700 + 1300	95 + 26
Y-1	*	*	*	*
Y-2	*	*	*	*
Y-3	*	*	*	*
Y-4	*	*	*	*
Y-5	ND	ND	15800 + 1400	120 + 33
Z-1	*	*	*	*
Z-2	*	*	*	*
Z-3	*	*	*	*
Z-4	*	*	*	*
Z-5	*	*	*	*

**SPECIAL STUDY - SEDIMENT
VERMONT YANKEE - NORTH STORM DRAIN OUTFALL**

**FALL 2002
(picoCurie/kilogram)**

Grid Location	Beryllium-7	Cobalt-60	Potassium-40	Cesium-137
S-1	ND	ND	15900 + 1400	101 + 32
S-2	ND	ND	16800 + 1400	131 + 31
S-3	*	*	*	*
S-4	*	*	*	*
S-5	*	*	*	*
T-1	1730 + 340	ND	11100 + 900	33 + 19
T-2	ND	ND	14500 + 1300	107 + 30
T-3	ND	ND	19500 + 1600	187 + 49
T-4	*	*	*	*
T-5	*	*	*	*
U-1	ND	ND	15600 + 1400	112 + 47
U-2	ND	ND	16500 + 1400	118 + 40
U-3	ND	ND	19900 + 1700	175 + 45
U-4	ND	ND	17600 + 1500	146 + 30
U-5	*	*	*	*
V-1	*	*	*	*
V-2	*	*	*	*
V-3	*	*	*	*
V-4	ND	ND	15500 + 1300	109 + 28
V-5	ND	ND	14000 + 1200	77 + 26
W-1	*	*	*	*
W-2	*	*	*	*
W-3	*	*	*	*
W-4	ND	ND	15600 + 1300	92 + 29
W-5	ND	ND	15400 + 1300	92 + 25
X-1	*	*	*	*
X-2	*	*	*	*
X-3	*	*	*	*
X-4	*	*	*	*
X-5	ND	ND	15000 + 1200	86 + 25
Y-1	*	*	*	*
Y-2	*	*	*	*
Y-3	*	*	*	*
Y-4	*	*	*	*
Y-5	*	*	*	*
Z-1	*	*	*	*
Z-2	*	*	*	*
Z-3	*	*	*	*
Z-4	*	*	*	*
Z-5	*	*	*	*

Samples were also evaluated for the radionuclides listed below. None were present in excess of the lower limits of detectability which are shown in pCi/kg.

Radionuclide	LLD	Radionuclide	LLD
Cr-51	69	Sb-126	18
Mn-54	15	I-131	27
Co-56	15	Cs-134	58
Co-60	21	Cs-136	18
Zn-65	18	Cs-137	5
Sr-85	86	Ce-139	93
Ru/Rh-103	32	Ce-141	98
Sb-124	18	Ce-144	98

* = Location not included for sampling

** = Cosmogenic

*** = Hot particles from Vermont Yankee Nuclear Power Plant

**** = Terrestrial radioactivity

***** = Archival atmospheric testing

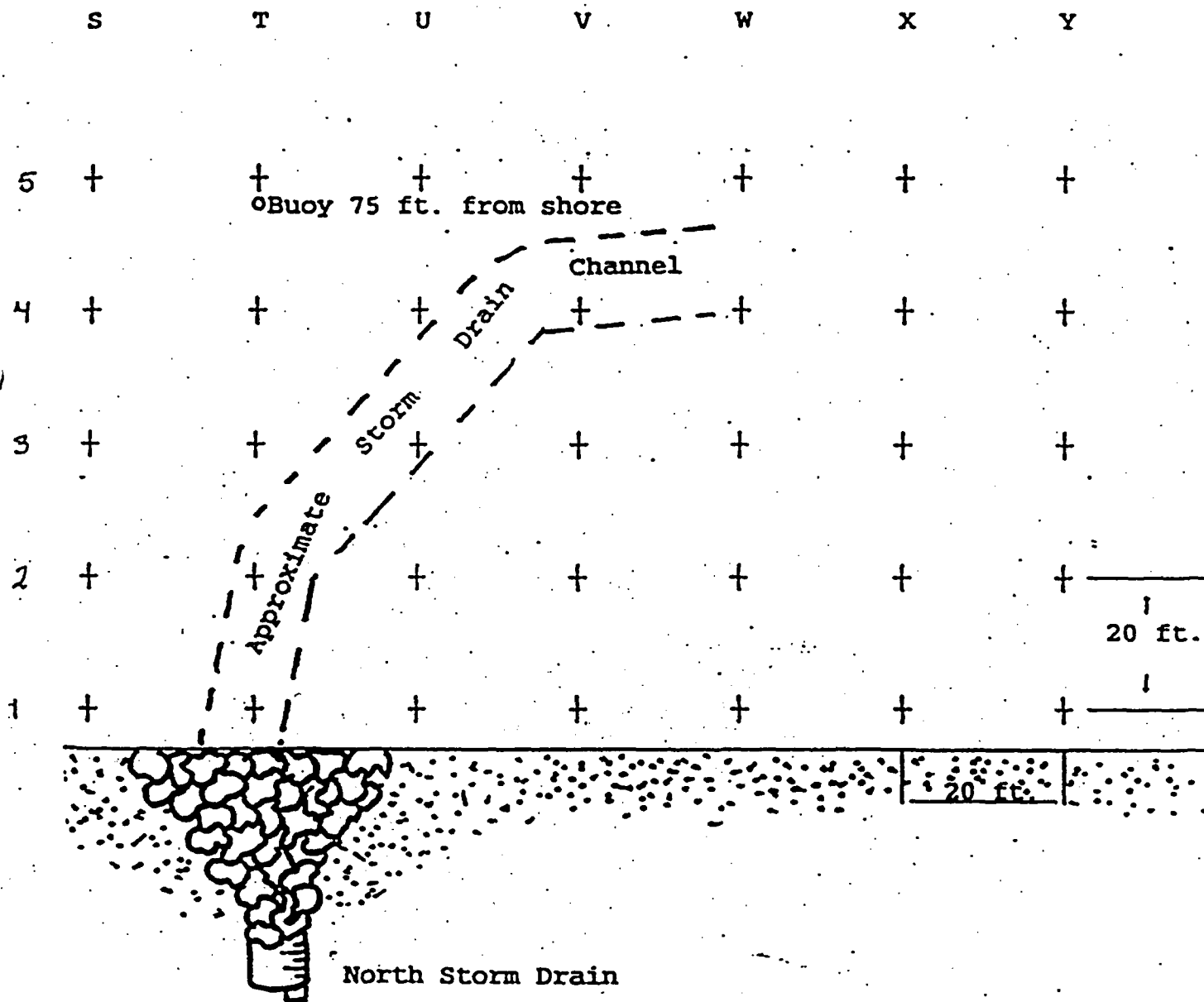
ND = None Detected

LLD = Lower Limit of Detection

APPENDIX A

RADIOLOGICAL SAMPLING PROGRAM OF BOTTOM SEDIMENT NORTH STORM DRAIN

← NORTH



THERMOLUMINESCENT DOSIMETRY (TLD) DATA 2002

All TLDs for the Year 2002 are within the expected historical range.

The historical range for TLDs ranges from 10 to 45 mR/quarter. The samples for 2002 range from 17.0 to 32.5 mR/quarter.

Thermoluminescent detectors are provided to the State of Vermont by Proxtonics, Inc. and are deployed for a quarterly sampling interval. This method samples direct gamma radiation in the environment. Detectors utilize crystals which store energy from gamma and x-rays until analyzed for their cumulative energy exposure experience. Vermont has forty selected locations where direct radiation levels are measured for. Some of these sites are located where other types of samples are taken (e.g. air, milk, water, etc.). Levels of direct radiation from the natural environment are routinely detected at each site. Reporting units are milliRoentgens/quarter with 2 sigma (standard deviation) value.

EXPOSURE RATES (milliRoentgens/quarter)

Location	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Miller Farm, Vernon	25.6 + 0.8	24.0 + 6.8	17.0 + 0.7	20.0 + 2.2
Elementary School Exterior, Vernon *	22.8 + 0.6	26.3 + 2.4	21.4 + 1.0	25.9 + 2.1
Elementary School Interior, Vernon	32.5 + 2.8	28.4 + 2.3	25.9 + 1.4	25.3 + 2.0
VY North Fence, Vernon	32.2 + 1.0	25.7 + 2.4	27.1 + 2.9	21.6 + 3.4
VY Parking Lot Fence, Vernon	32.3 + 3.1	29.6 + 2.4	27.0 + 2.8	23.4 + 2.6
Dummerston State Highway Garage (IFO)	26.0 + 2.7	21.6 + 2.3	17.0 + 1.5	23.8 + 3.8
VY Southwest Fence, Vernon	26.2 + 3.6	26.2 + 1.8	21.1 + 1.5	21.2 + 1.6
Renaud Bros. (Puffers), Vernon*	27.7 + 0.6	26.7 + 1.8	21.7 + 1.4	21.1 + 2.6
Tyler Hill & Franklin Road, Vernon	25.8 + 0.8	25.9 + 0.5	21.9 + 2.8	22.3 + 2.2
Power Line River Crossing, Vernon *	26.7 + 0.6	21.0 + 3.8	20.5 + 0.9	22.9 + 2.3
Blodgett Farm, Vernon	25.8 + 1.6	22.1 + 2.9	20.2 + 2.3	26.3 + 1.9
Brattleboro U.H.S., Brattleboro	23.6 + 0.8	23.2 + 6.4	20.4 + 1.0	26.0 + 3.7
Henry Transportation, Guilford *	29.5 + 0.5	22.4 + 1.8	19.8 + 0.6	20.5 + 1.6
Guilford Town Highway Garage, Guilford *	29.2 + 2.6	22.0 + 2.9	23.4 + 1.3	21.8 + 3.5
Evans Farm, Guilford	23.2 + 2.4	24.7 + 1.0	18.6 + 0.1	20.0 + 0.5
Putney Town Clerk, Putney	25.0 + 1.6	21.9 + 2.6	19.6 + 3.1	19.6 + 2.2

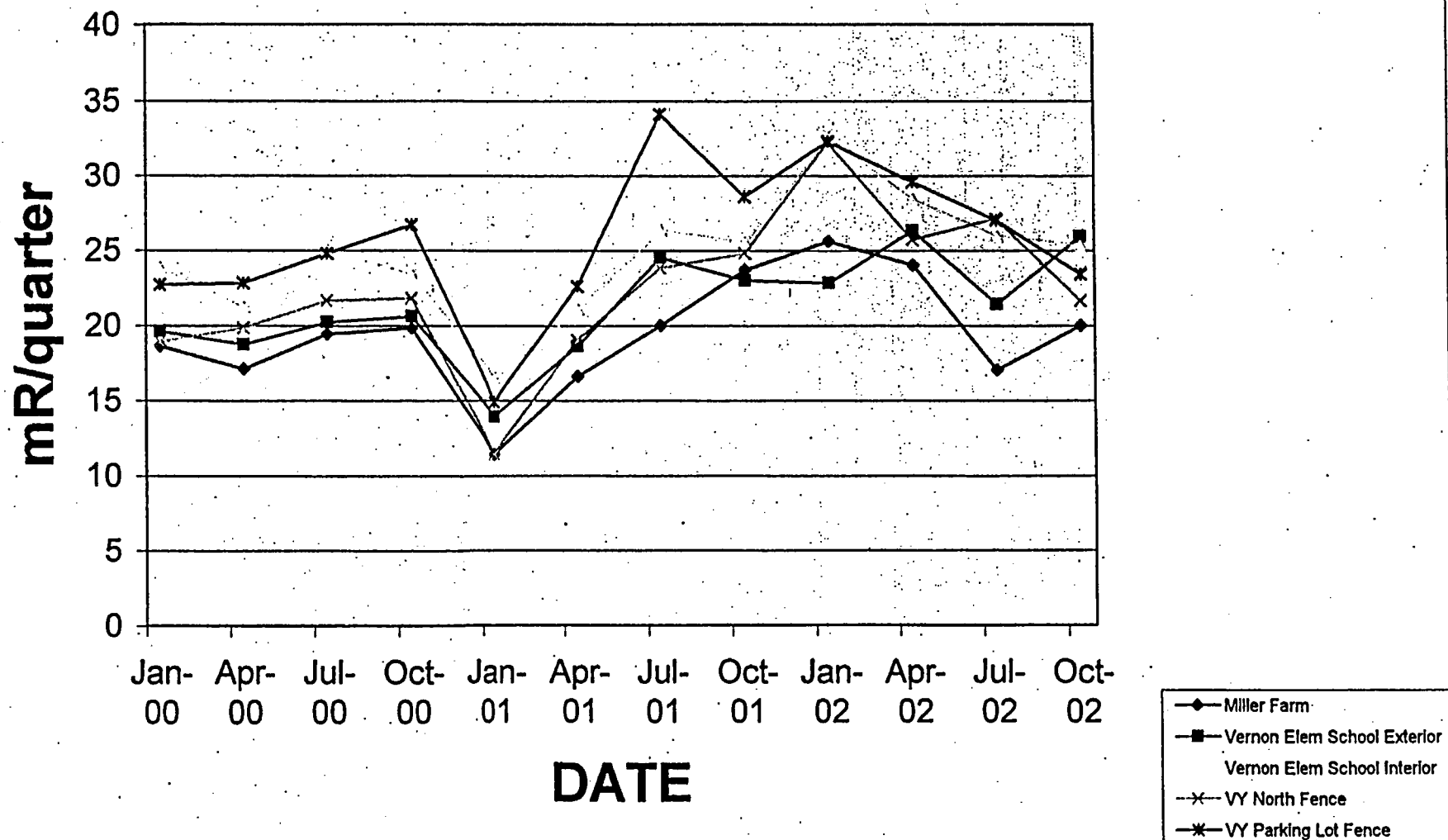
EXPOSURE RATES
(milliRoentgens/quarter)

Location	1 st Qtr.	2 nd Qtr.	3 rd Qtr.	4 th Qtr.
State Highway Garage, Wilmington *	28.6 + 7.0	31.9 + 3.4	23.6 + 3.3	22.8 + 1.2
State Police, West Brattleboro *	25.0 + 0.5	22.8 + 0.1	18.8 + 2.3	22.1 + 2.4
Windham County Courthouse, Brattleboro	25.2 + 1.8	23.6 + 1.6	17.2 + 1.8	20.2 + 0.8
VDORH-A	21.5 + 1.0	22.4 + 4.3	18.3 + 1.6	18.7 + 1.1
Smead Lumber, Vernon	22.1 + 1.6	24.8 + 2.7	20.8 + 2.5	21.0 + 2.4
Pond Rd. & Rte. 142 N, Vernon	24.4 + 2.4	25.4 + 0.9	20.3 + 0.3	23.3 + 4.0
Engle Dr., West Rd., Vernon	23.5 + 1.0	22.1 + 3.4	23.4 + 2.7	20.7 + 2.0
Fairman Rd., Vernon	26.4 + 2.6	26.1 + 0.0	17.8 + 2.0	20.8 + 1.8
Pond Rd. & Houghton Hill Rd., Vernon	25.7 + 0.1	24.8 + 1.5	20.6 + 0.3	18.5 + 0.7
Rte. 5, Wolosko, Guilford (10)	24.6 + 0.1	25.3 + 0.1	22.3 + 0.2	25.4 + 2.1
Rte. 5, Andrews Cemetery, Guilford (40)	26.9 + 3.0	26.8 + 2.9	21.5 + 2.9	24.1 + 1.5
Rte. 5 & Tkaczyk Farm Rd., Guilford (11)	25.3 + 2.7	25.6 + 0.2	20.5 + 1.1	20.8 + 1.4
Tyler Hill Rd., Vernon	26.6 + 6.6	27.4 + 3.5	22.1 + 0.6	23.9 + 3.1
Rte. 142 N of Transmission Line, Vernon	27.4 + 2.4	25.4 + 0.3	18.9 + 0.3	23.1 + 2.2
Rte. 5 to Guilford Ctr. Rd., Guilford (14)	25.7 + 1.8	24.7 + 2.3	19.6 + 0.2	20.4 + 1.1
Guilford Ctr Rd. & Tater Rd., Guilford	27.1 + 3.8	24.3 + 1.1	19.8 + 1.1	20.6 + 2.0
Weatherhead Hollow & Stony Hill Rds, Gfd	22.8 + 1.7	21.0 + 0.9	19.1 + 0.8	19.3 + 1.1
Huckle Hill Rd. N of VT/MA Border, Vernon	29.3 + 3.1	29.6 + 5.4	24.7 + 0.9	24.8 + 3.8
Rte. 5, Dummerston School, Dummerston	28.7 + 5.0	24.1 + 2.4	**	22.5 + 1.8
Pond Rd., Vernon Rec. Area, Vernon	22.4 + 1.1	23.4 + 2.9	19.2 + 0.4	19.4 + 0.1
Rte. 142, Vernon Fire Dept., Vernon	27.4 + 0.2	27.3 + 5.2	20.2 + 2.6	21.2 + 0.8
Rte. 142 S & Pond Rd., Vernon	25.8 + 2.4	26.1 + 2.5	21.0 + 2.6	23.9 + 0.6
Rte. 142 & Newton Rd., Vernon	26.1 + 1.4	20.9 + 0.6	20.4 + 1.6	20.8 + 1.3
Rte. 142 & Depot St., VT/MA Line, Vernon	27.6 + 2.9	20.8 + 1.5	22.9 + 2.7	24.0 + 1.1
Gov. Hunt Rd. at Vernon Elem. School	29.2 + 0.2	24.0 + 2.9	23.6 + 1.9	20.3 + 2.6

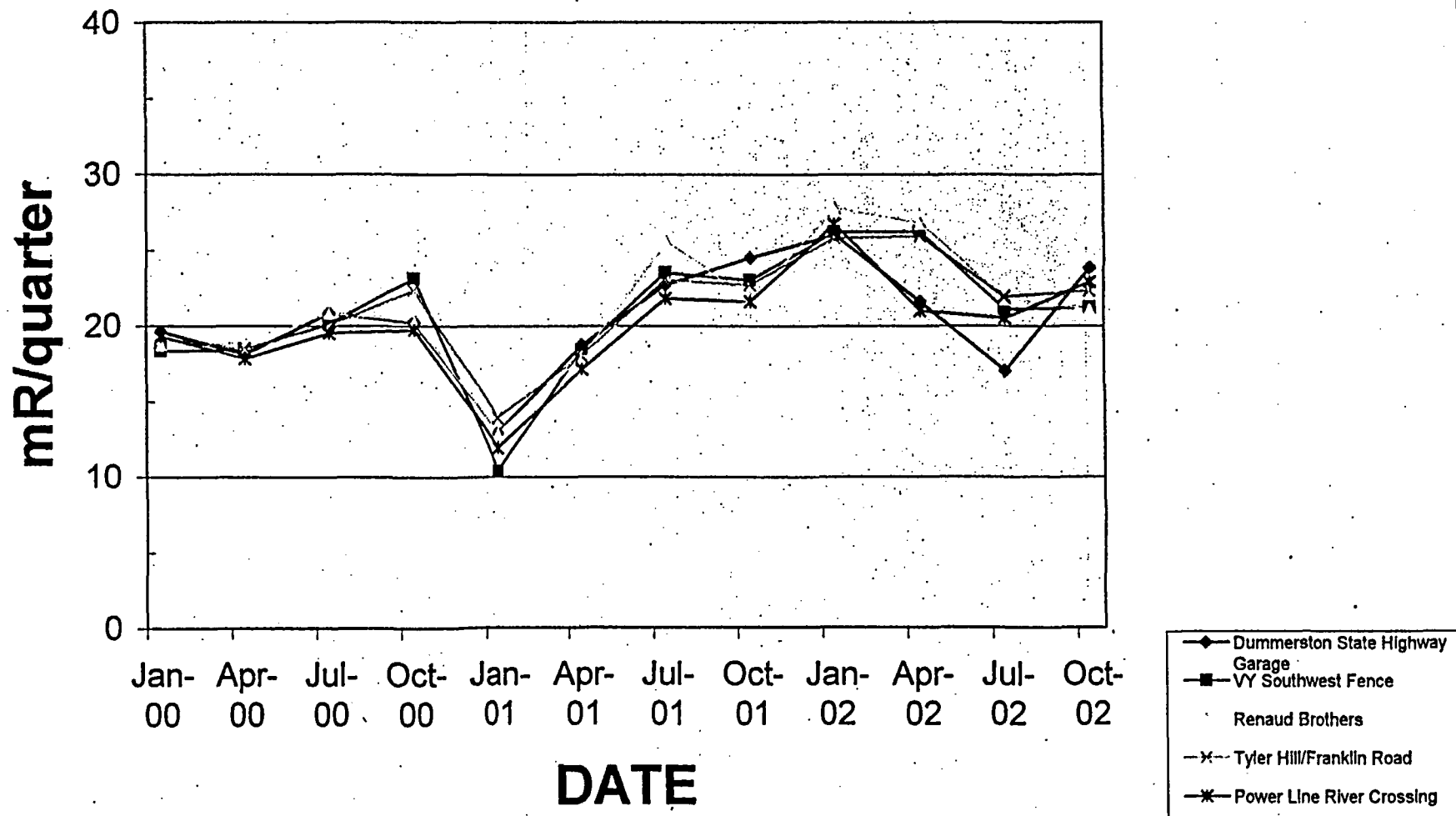
* = Collocated with Air Sampling Station

** = Dummerston School TLD was not found.

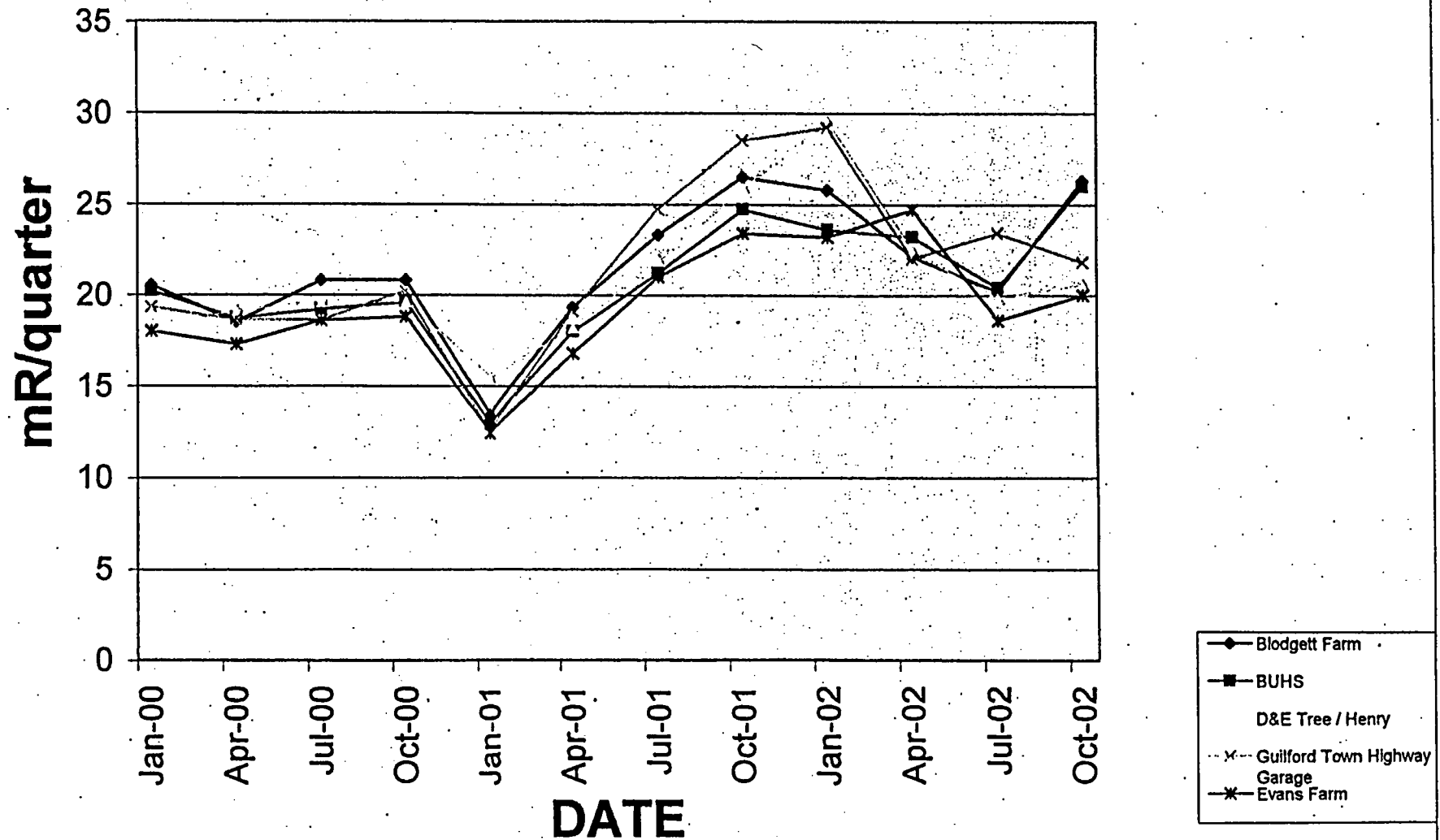
THERMOLUMINESCENT DOSIMETRY



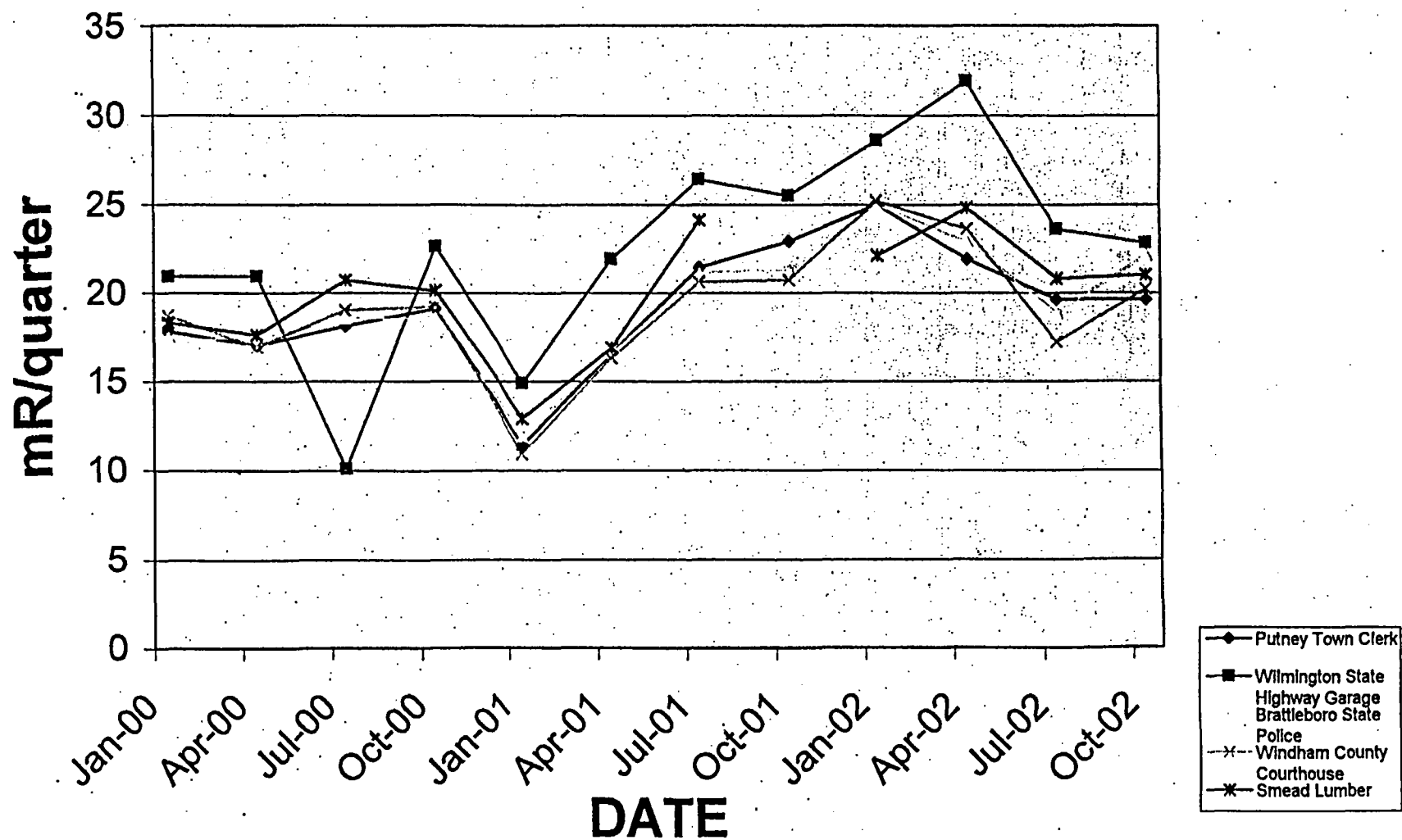
THERMOLUMINESCENT DOSIMETRY



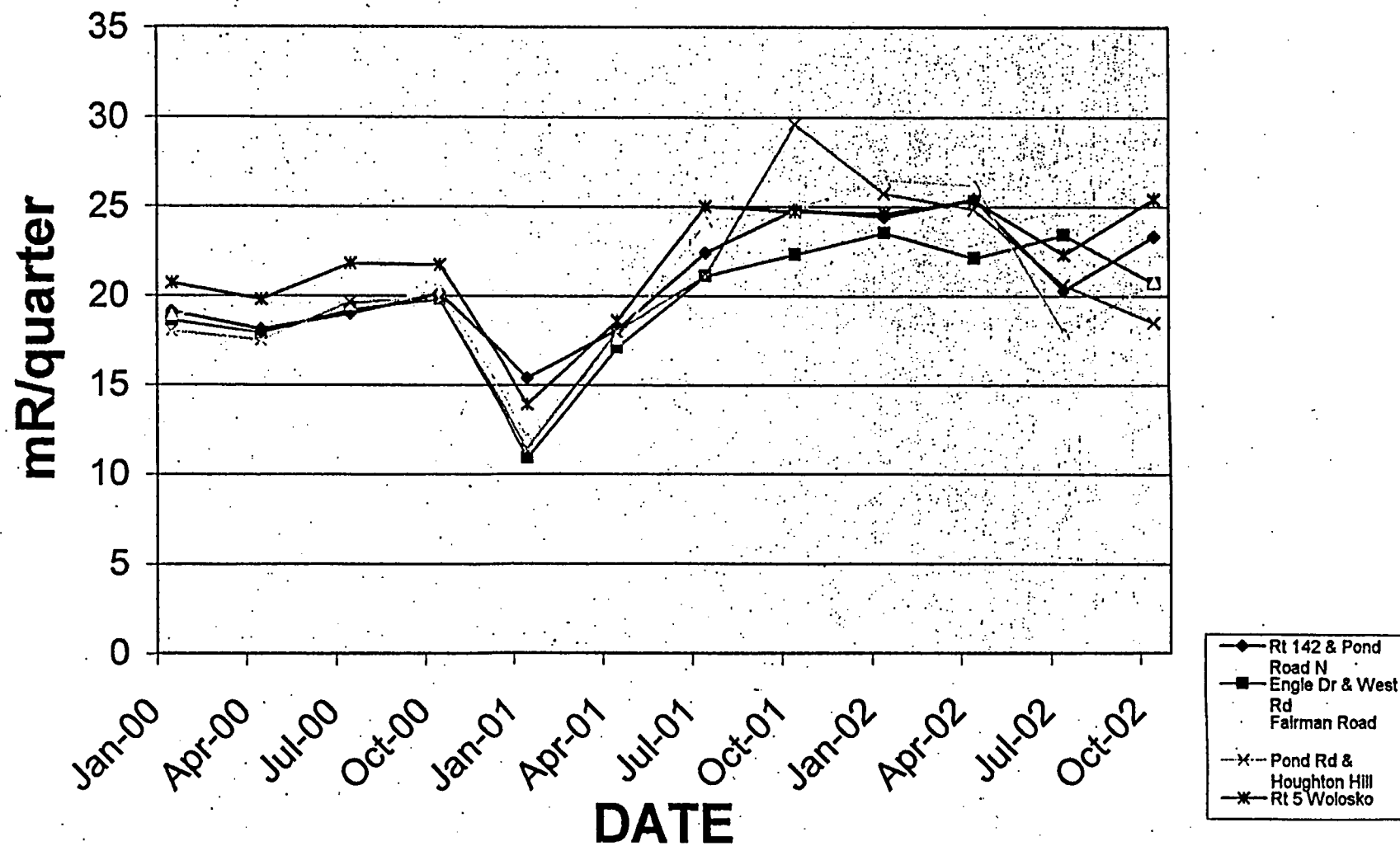
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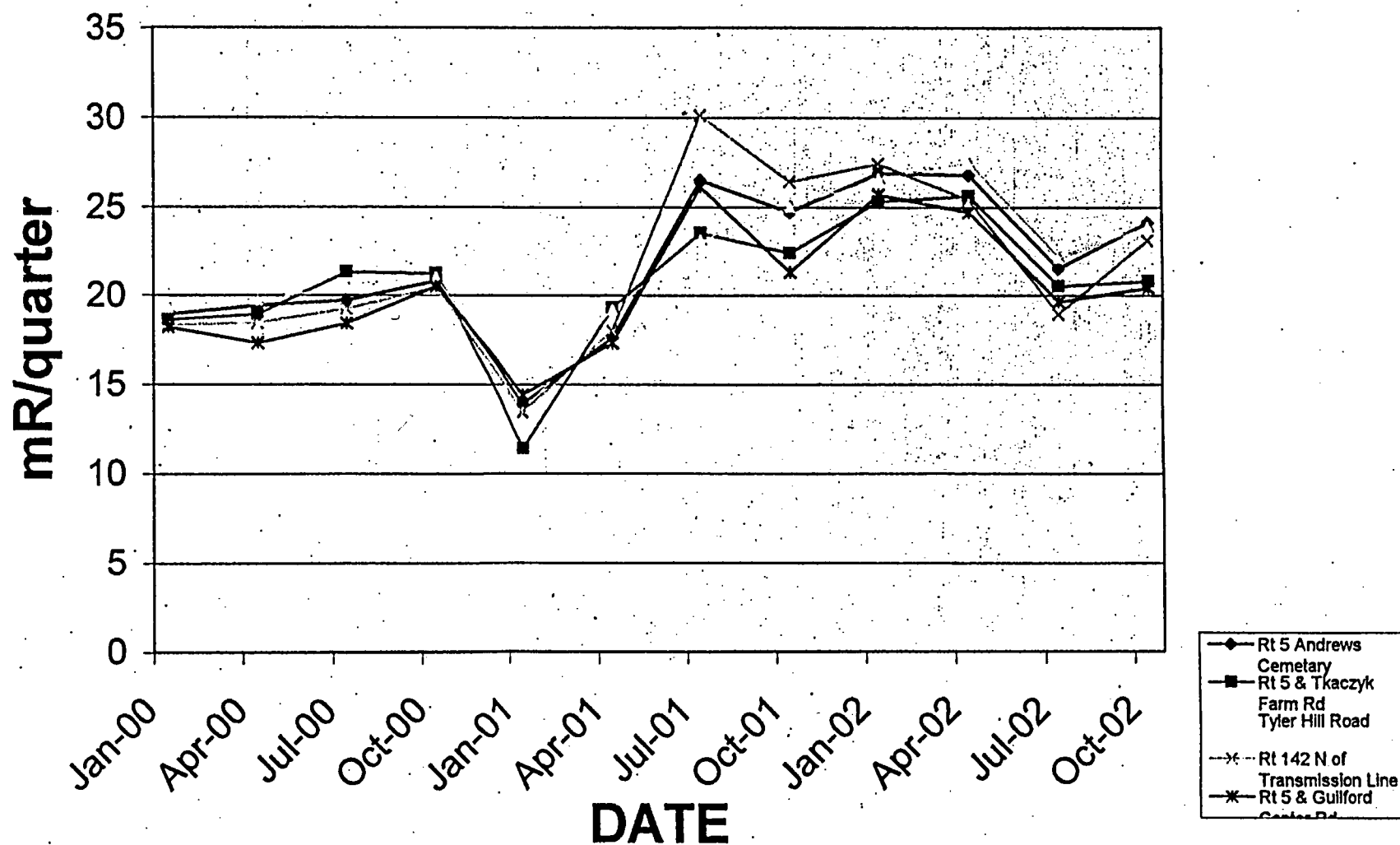
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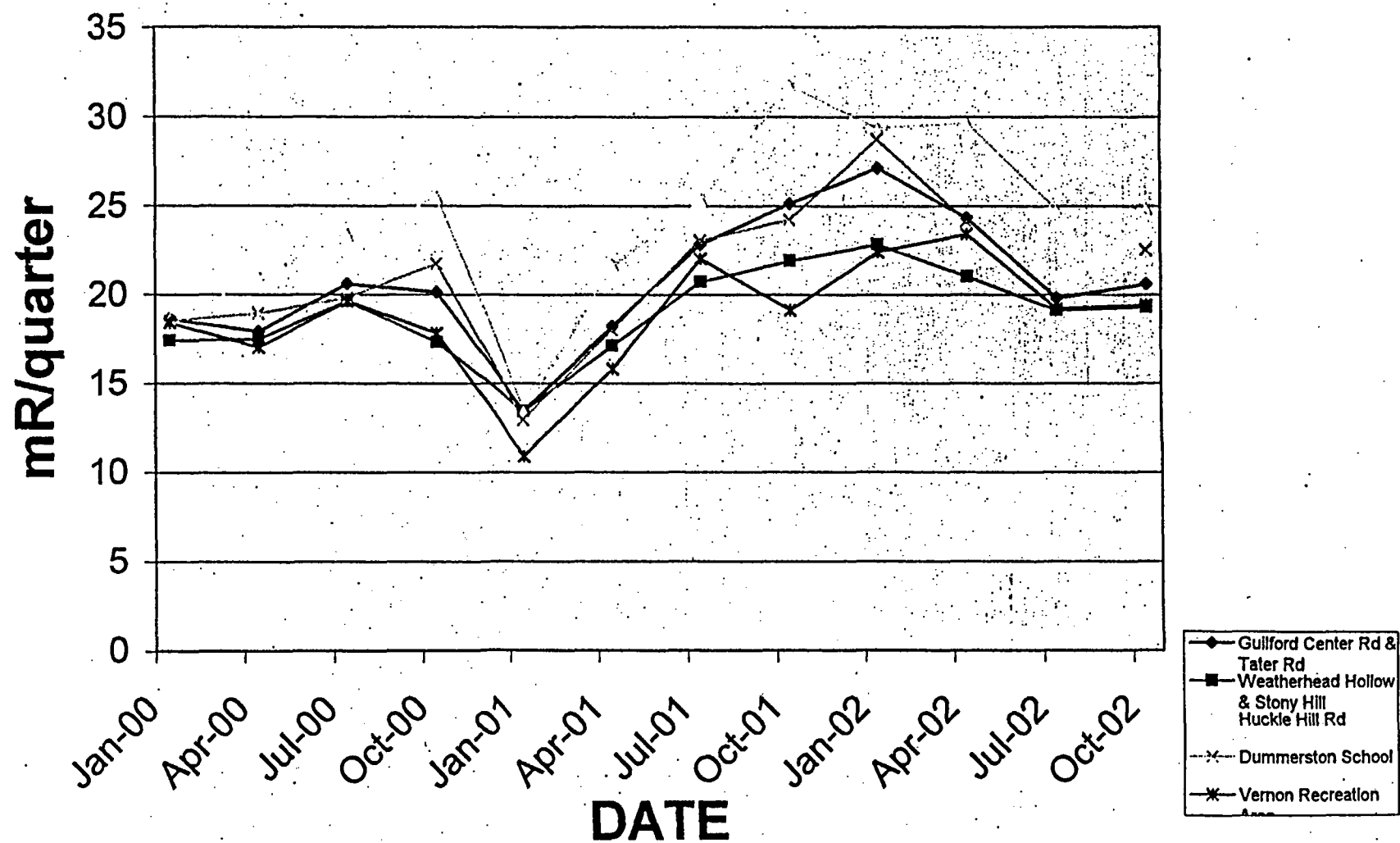
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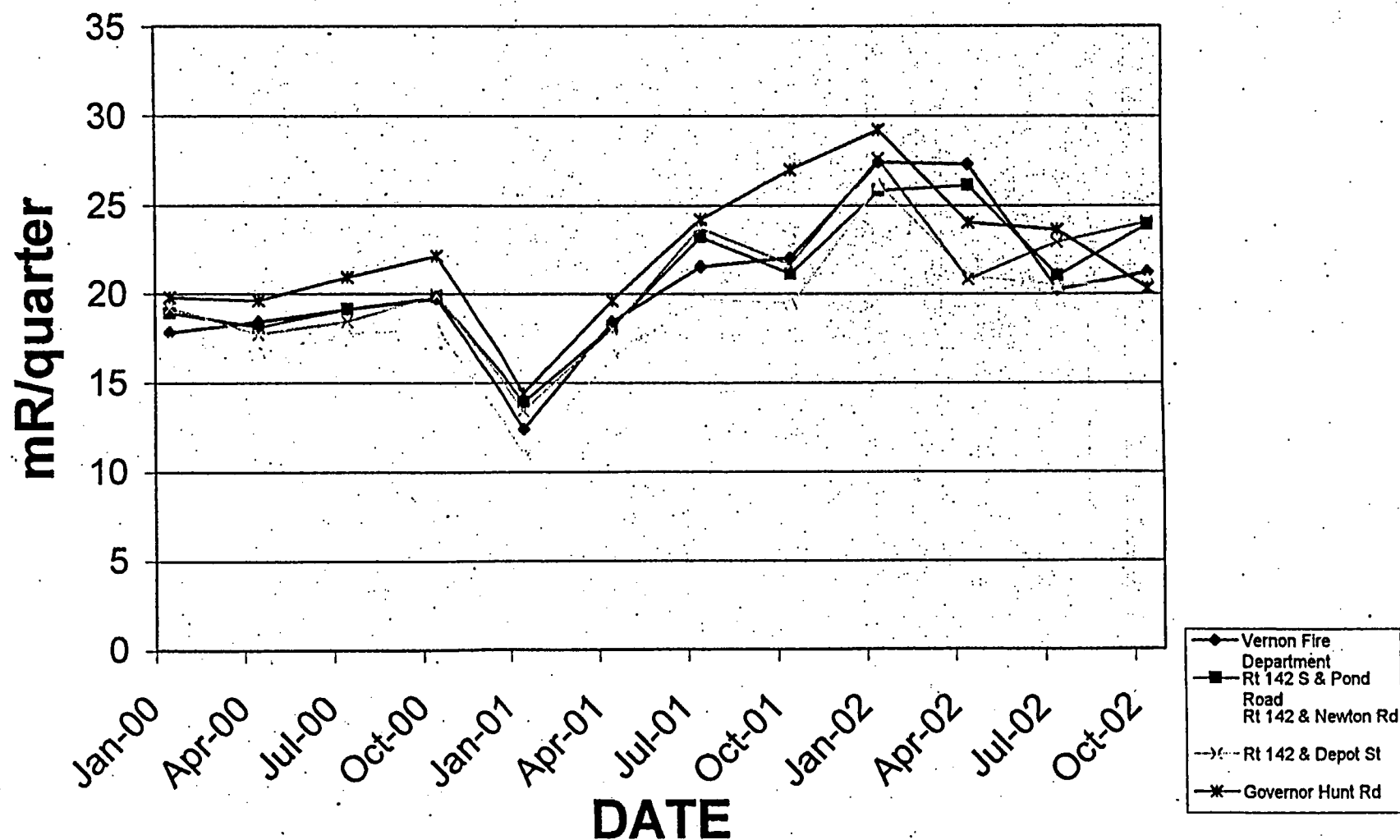
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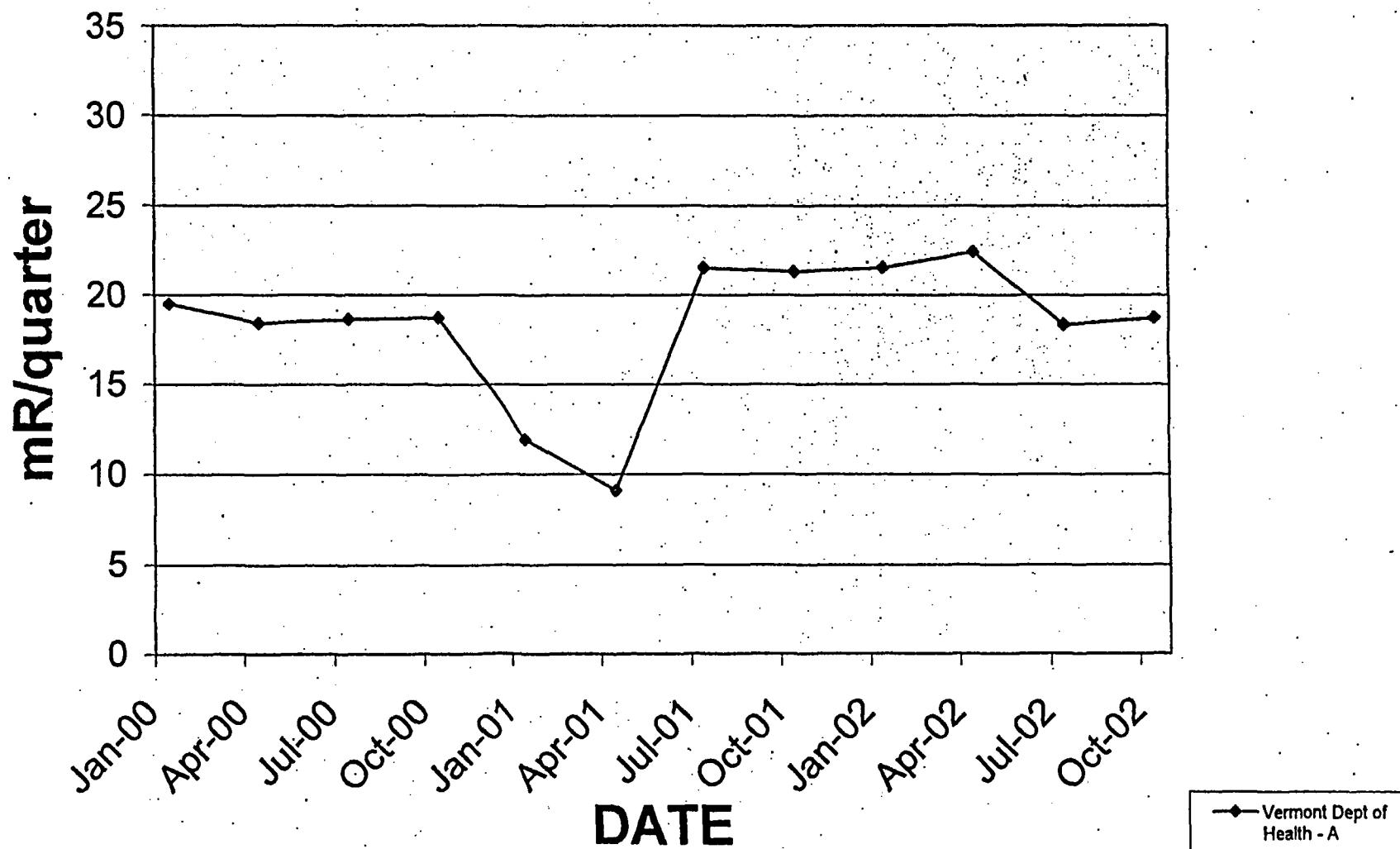
THERMOLUMINESCENT DOSIMETRY



THERMOLUMINESCENT DOSIMETRY



THERMOLUMINESCENT DOSIMETRY



The map shows the city of Burlington, Vermont, with a grid of streets and various landmarks. The Vermont River is on the left, flowing into Lake Champlain. The city grid includes streets such as Main St, Church St, and South Main St. Key landmarks include the University of Vermont, the Medical Center, and the Burlington College. A large rectangular area in the center is labeled "VOORH BURLINGTON". The map is bordered by a grid with letters A through J and numbers 4 through 6.

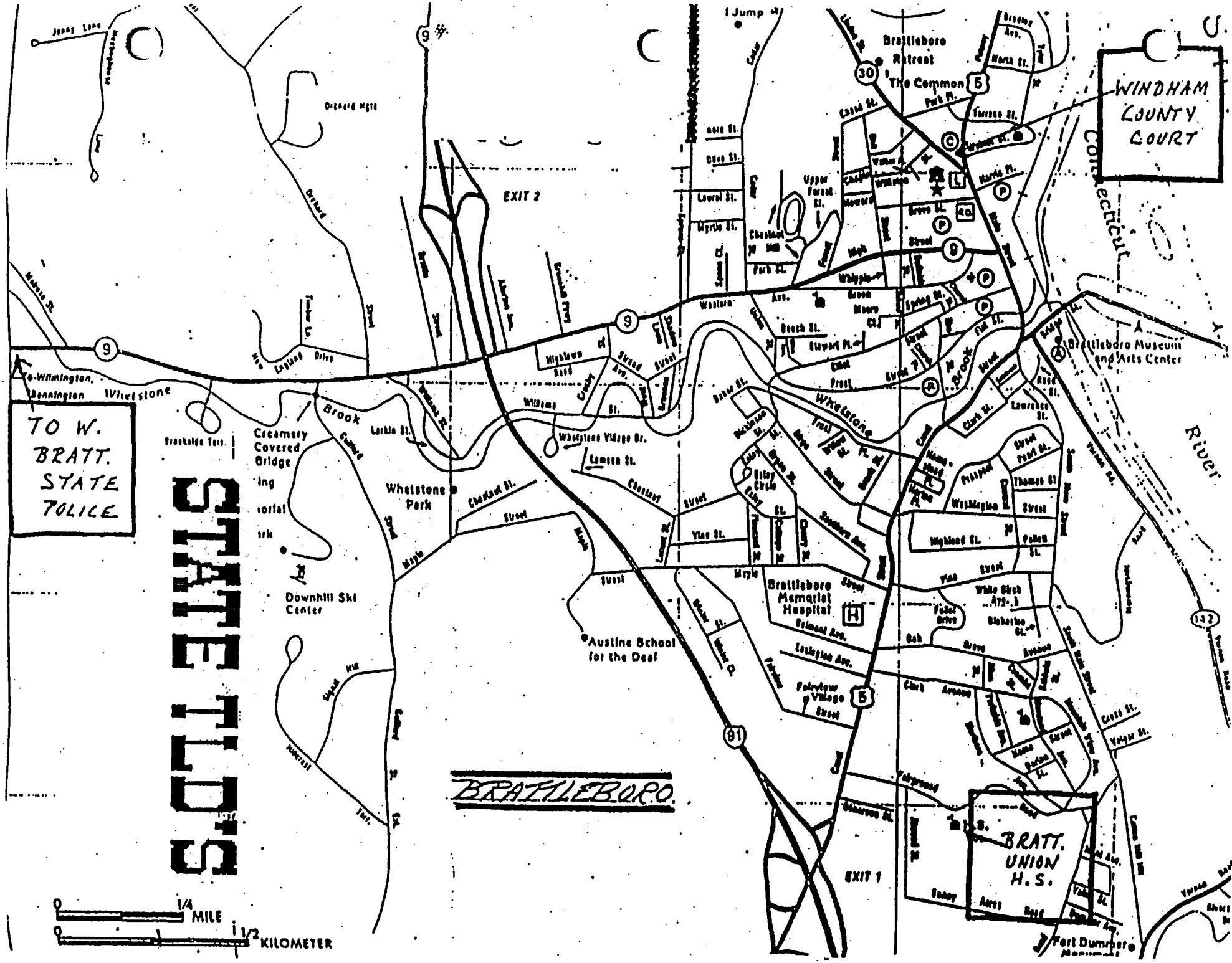
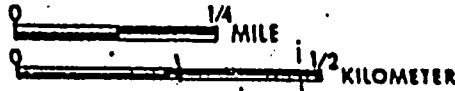
STATE TLD'S

TO W.
BRATT.
STATE
POLICE

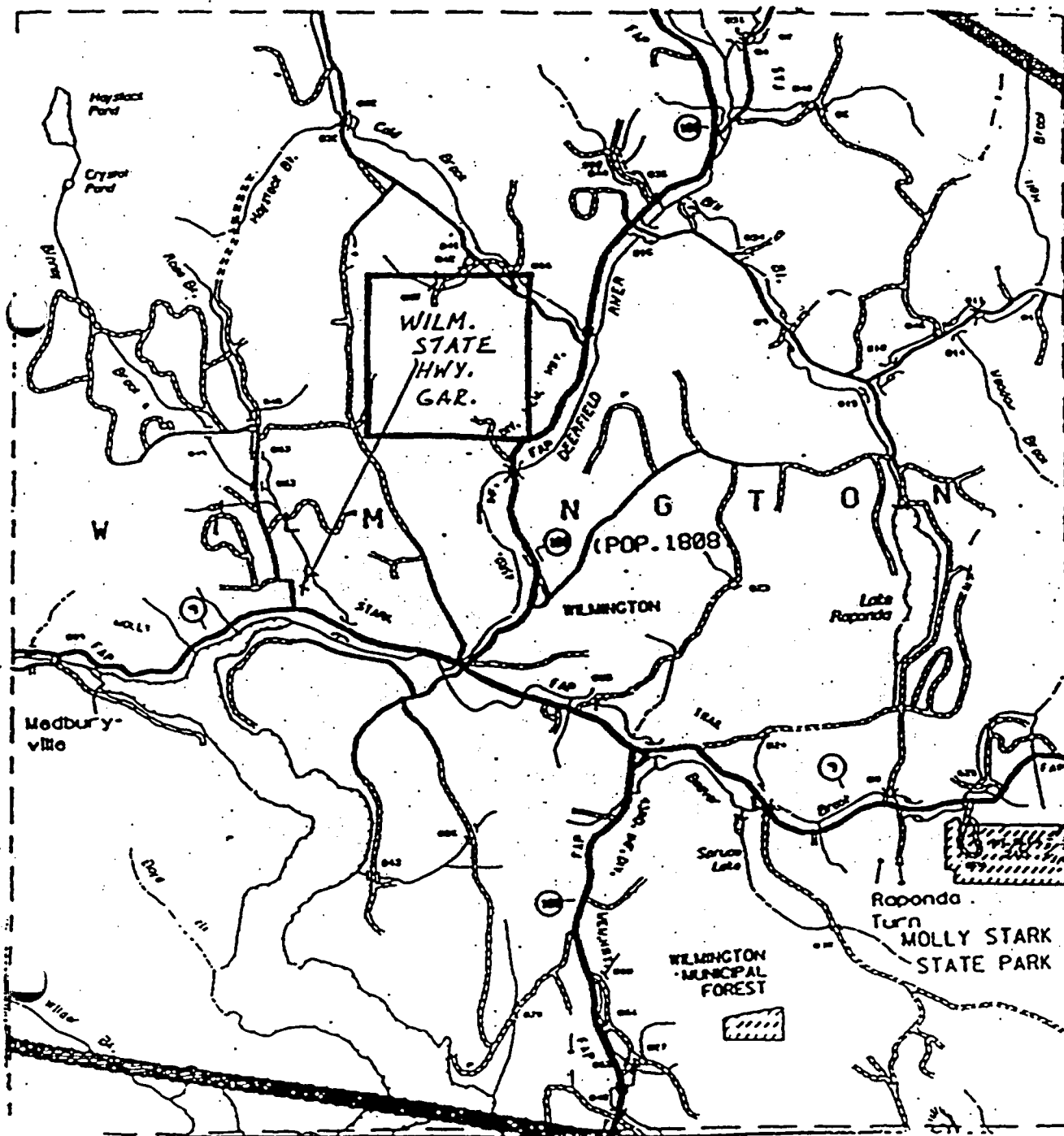
BRATTLEBORO

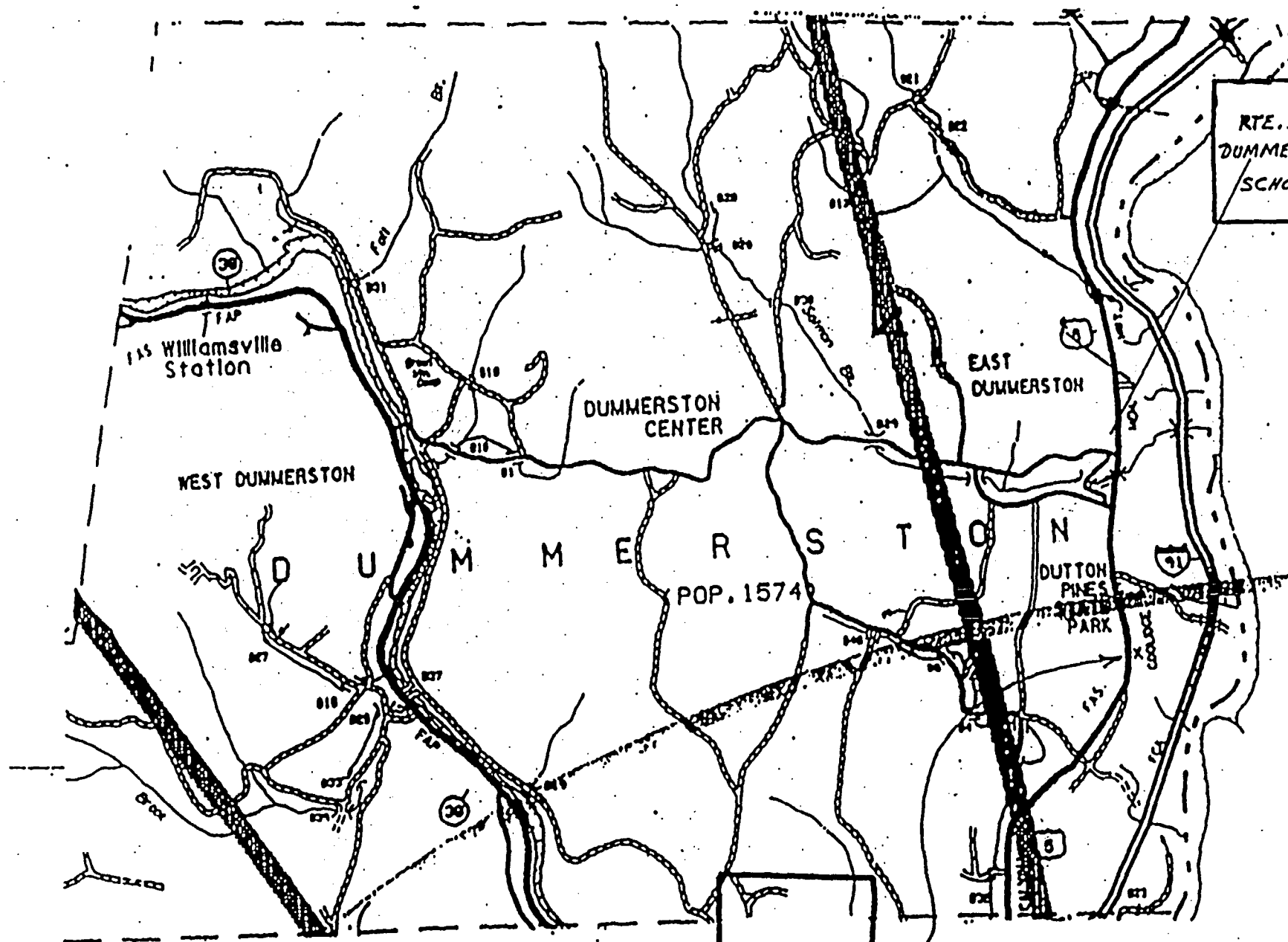
WINDHAM
COUNTY
COURT

BRATT.
UNION
H.S.



STATE TLD'S





RTE. 5
DUMMERSTON
SCHOOL

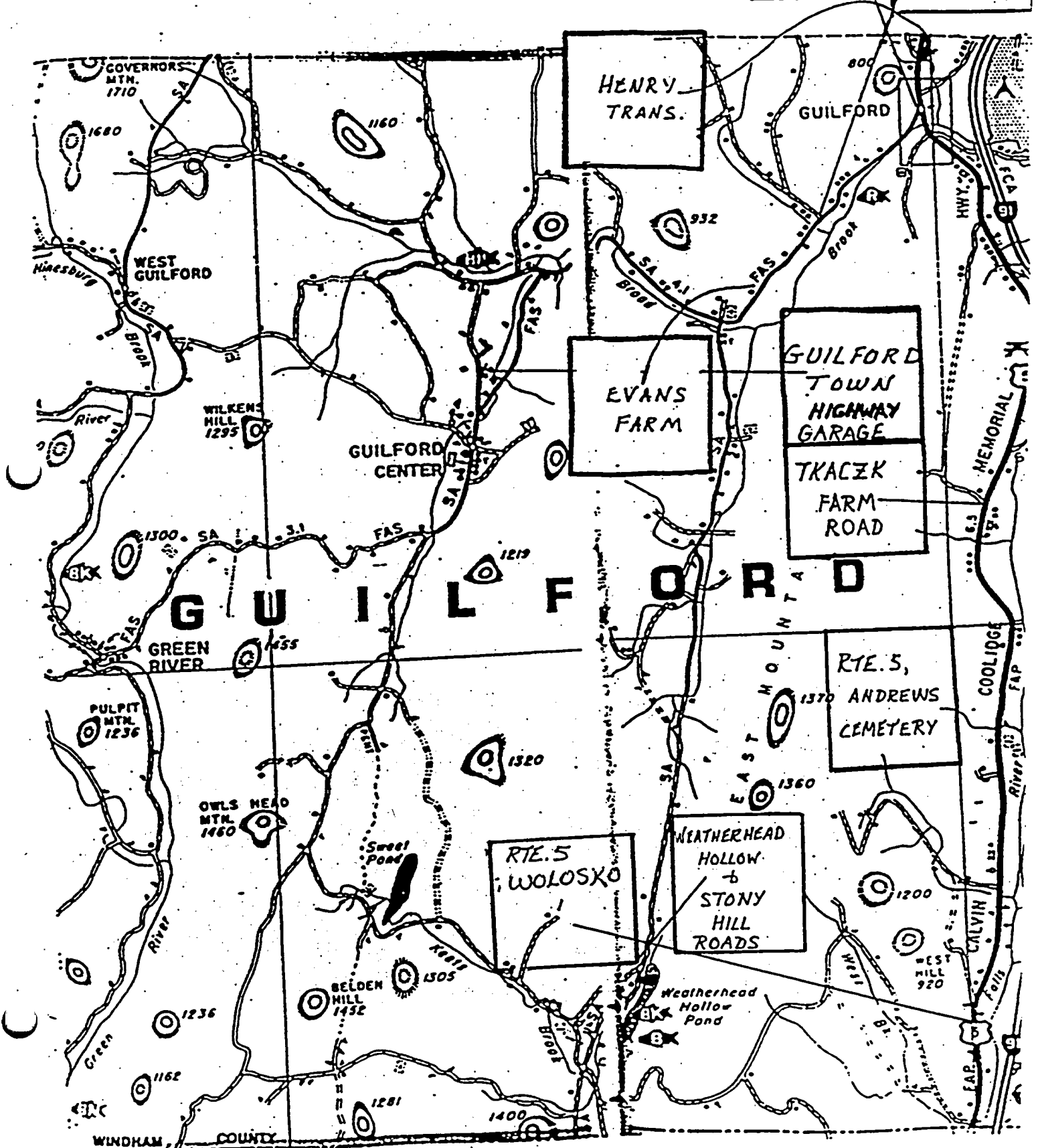
STATE TLD'S

DUMM. LEO
STATE
HIGHWAY
GARAGE

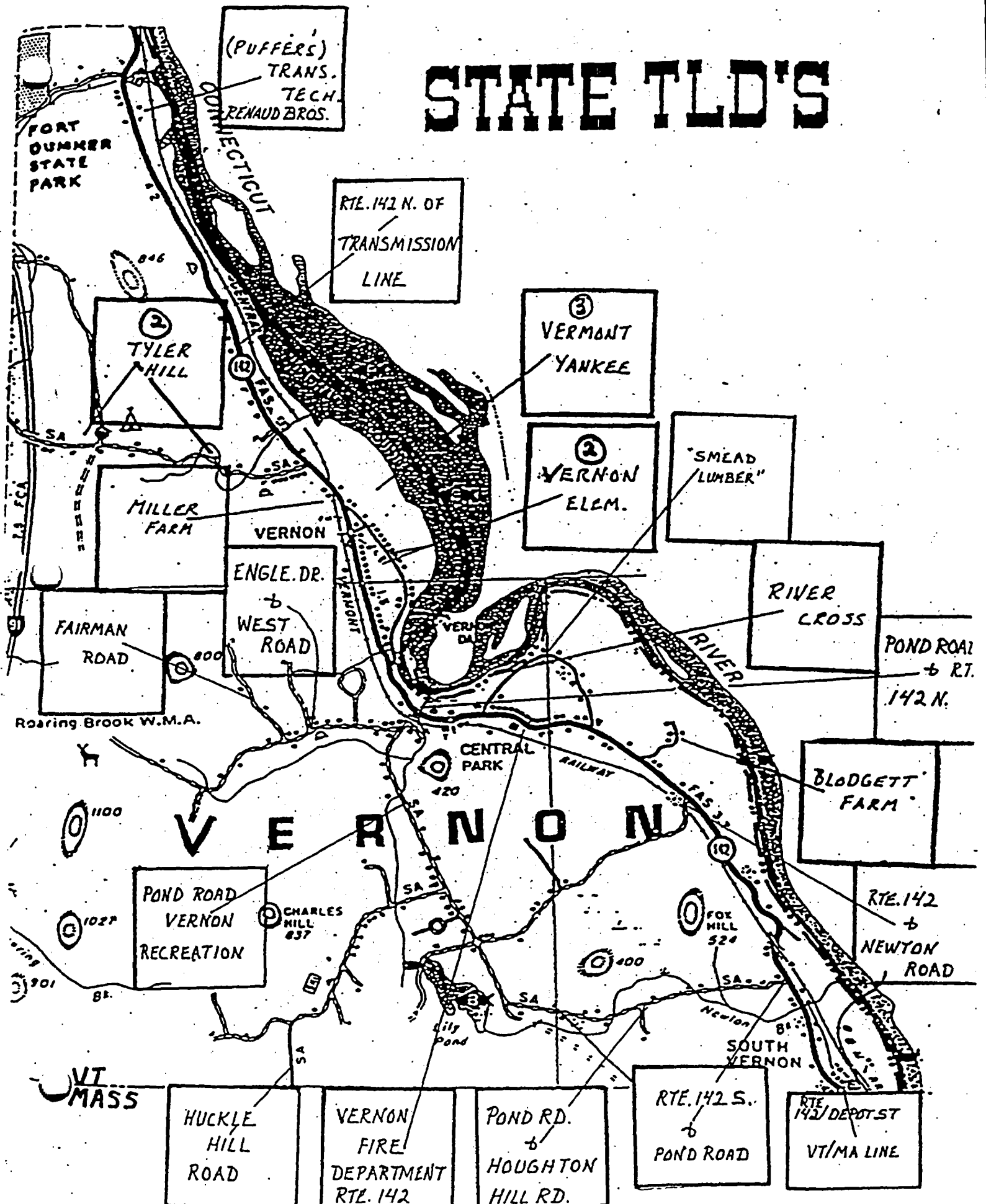
STATE TLD'S

RTE. 5 &
GUILFORD
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TATER
ROAD



STATE TLD'S



TRITIUM IN WATER 2002
VERMONT YANKEE (CONNECTICUT RIVER)

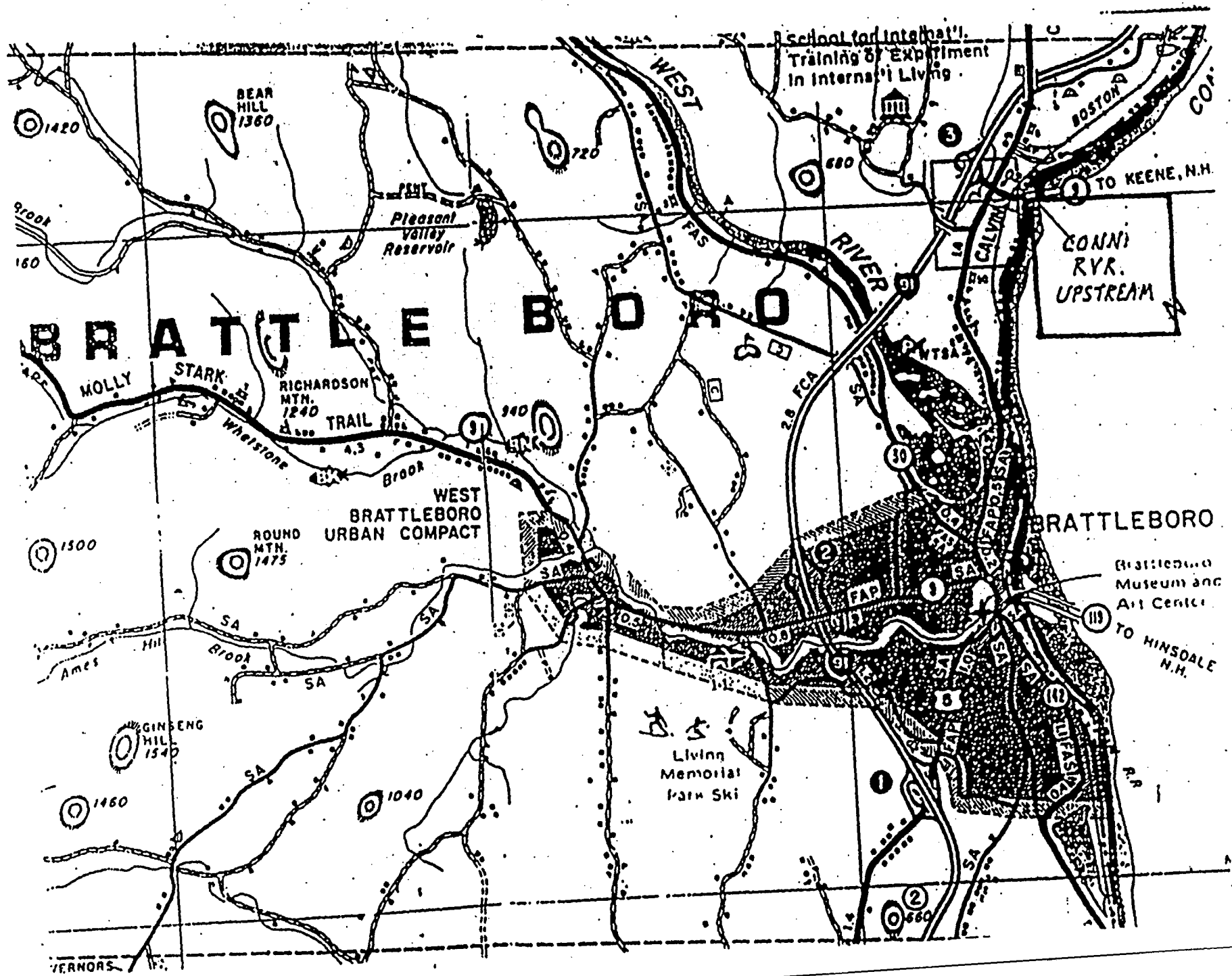
All Tritium in Water Samples for the Year 2002 are within the expected historical range.

The historical range for tritium in water is less than the detection limit. The samples for 2002 are less than the detection limit.

As part of the water sampling effort, an aliquot of the monthly grab samples is analyzed for Hydrogen-3. Two locations are reported monthly for Hydrogen-3 content from the Connecticut River (upstream and downstream of the power station). The samples are analyzed by liquid scintillation counting. The detection limit for tritium is 0.5 nCi/l. Reporting units are nanoCuries/liter with 2 sigma (standard deviation) value.

WATER
(nanoCuries/liter)

Month	Downstream (3-4)	Upstream (3-8)
January	< 0.5	< 0.5
February	< 0.5	< 0.5
March	< 0.5	< 0.5
April	< 0.5	< 0.5
May	< 0.5	< 0.5
June	< 0.5	< 0.5
July	< 0.5	< 0.5
August	< 0.5	< 0.5
September	< 0.5	< 0.5
October	< 0.5	< 0.5
November	< 0.5	< 0.5
December	< 0.5	< 0.5



TRITUM

TRITIUM

VERNON

CONNECTICUT RIVER

FORT DUMMER STATE PARK

VERNON

CENTRAL PARK

CHARLES HILL 837

FOX HILL 524

SOUTH VERNON

CONN. RVR. DOWNSTREAM N.E. P.W.R. DAM

VERMONT

NEW YORK

RAILWAY

Lily Pond

Roaring Brook W.M.A.

Roaring

SA

BL

420

400

1027

901

846

800

1100

12

31

32

33

34

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41

42

43

44

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CONN.
RVR.
DOWNSTREAM
N.E. PWR. DAM

WATER SAMPLES 2002

All Water Samples for the Year 2002 are within the expected historical range.

The historical range for alpha is from less than the detection limit to 15 pCi/l. The samples for 2002 range from less than the detection limit to 7.4 pCi/l.

The historical range for beta is from less than the detection limit to 15 pCi/l. The samples for 2002 range from less than the detection limit to 5.2 pCi/l.

Water samples are collected monthly from 8 sites. One gallon of water is placed in a reentrant beaker and analyzed on the Gamma spectrometer system using a reverse germanium detector. Usual spectra include primordial radionuclides. Reporting units are picoCuries per liter with 2 sigma (standard deviation) value.

WATER (picoCuries/Liter)

Month	Test	Vernon School Well	NE Power Dam	VY Discharge	Brattleboro Town
January	Alpha	4.7 ± 1.0	< 2.6	< 2.6	< 2.1
	Beta	< 3.6	< 3.6	< 3.6	< 1.8
	Gamma	*	ND	ND	ND
February	Alpha	6.4 ± 1.0	< 2.8	< 2.8	< 1.6
	Beta	< 3.6	< 3.6	< 3.6	< 1.8
	Gamma	*	ND	ND	ND
March	Alpha	5.9 ± 1.0	< 2.3	< 2.2	< 1.9
	Beta	4.3 ± 2.2	< 3.5	< 3.5	< 2.3
	Gamma	*	ND	ND	ND
April	Alpha	6.6 ± 1.0	< 1.7	1.9 ± 1.1	< 1.7
	Beta	< 3.0	< 2.2	2.6 ± 1.4	< 2.2
	Gamma	ND	ND	ND	ND
May	Alpha	5.8 ± 1.2	< 1.9	< 1.8	< 2.0
	Beta	3.4 ± 1.9	< 2.2	< 2.2	< 2.2
	Gamma	ND	ND	ND	ND
June	Alpha	7.4 ± 1.3	< 2.0	< 2.0	< 2.4
	Beta	5.0 ± 1.9	< 1.9	< 1.9	< 2.9
	Gamma	ND	ND	ND	ND
July	Alpha	5.4 ± 1.2	< 2.5	< 2.8	< 2.6
	Beta	< 3.0	3.3 ± 1.8	< 2.8	< 2.8
	Gamma	ND	ND	ND	ND
August	Alpha	4.1 ± 1.0	< 2.6	< 2.6	< 2.8
	Beta	2.9 ± 1.8	< 2.9	< 2.9	< 2.9
	Gamma	ND	ND	ND	ND

Month	Test	Vernon School Well	NE Power Dam	VY Discharge	Brattleboro Town
September	Alpha	7.4 ± 1.2	< 2.8	< 2.8	< 1.6
	Beta	3.5 ± 1.8	< 2.8	< 2.8	2.0 ± 0.9
	Gamma	*	ND	ND	ND
October	Alpha	6.9 ± 1.3	< 3.3	< 3.0	< 1.6
	Beta	< 3.3	< 3.3	< 3.3	< 1.6
	Gamma	*	ND	ND	ND
November	Alpha	6.9 ± 1.2	< 2.7	< 2.6	< 1.5
	Beta	< 3.0	< 3.0	< 3.0	< 1.5
	Gamma	*	ND	ND	ND
December	Alpha	5.7 ± 1.2	< 2.8	< 2.8	< 1.6
	Beta	< 3.0	< 3.1	< 3.1	< 1.6
	Gamma	*	ND	ND	ND

WATER
(picoCuries/Liter)

Month	Test	Powerline River Crossing (3-3)	Island Park	Conn. River Upstream (3-8)	Conn. River Downstream (3-4)
January	Alpha	< 2.6	< 2.6	< 2.7	< 2.6
	Beta	< 3.3	< 3.6	< 3.3	< 3.3
	Gamma	ND	ND	ND	ND
February	Alpha	< 2.7	< 2.8	< 1.1	< 2.5
	Beta	< 3.3	5.2 ± 2.3	1.2 ± 0.7	< 3.3
	Gamma	ND	ND	ND	ND
March	Alpha	2.8 ± 1.2	< 2.2	< 1.8	< 1.7
	Beta	< 2.6	< 3.5	< 2.6	< 2.6
	Gamma	ND	ND	ND	ND
April	Alpha	< 1.7	< 1.6	2.0 ± 1.2	2.4 ± 1.2
	Beta	2.2 ± 1.4	< 2.2	3.3 ± 1.5	2.5 ± 1.4
	Gamma	ND	ND	ND	ND
May	Alpha	< 1.5	< 1.9	< 1.5	< 1.5
	Beta	< 2.2	< 2.2	< 2.2	< 2.2
	Gamma	ND	ND	ND	ND
June	Alpha	< 2.4	< 2.0	< 2.3	< 2.4
	Beta	< 2.9	< 2.9	< 2.9	< 2.9
	Gamma	ND	ND	ND	ND

Month	Test	Powerline River Crossing (3-3)	Island Park	Conn. River Upstream (3-8)	Conn. River Downstream (3-4)
July	Alpha	< 2.7	< 2.6	< 2.7	< 2.6
	Beta	< 2.8	< 2.8	3.2 + 1.8	< 2.8
	Gamma	ND	ND	ND	ND
August	Alpha	< 2.6	< 2.6	< 2.6	< 2.7
	Beta	< 2.9	< 2.9	< 2.9	< 2.9
	Gamma	ND	ND	ND	ND
September	Alpha	< 2.8	< 2.9	< 2.8	< 2.9
	Beta	< 2.9	< 2.8	< 2.9	< 2.9
	Gamma	ND	ND	ND	ND
October	Alpha	< 2.7	< 3.0	< 2.6	< 2.7
	Beta	< 2.8	< 3.3	< 2.8	< 2.8
	Gamma	ND	ND	ND	ND
November	Alpha	< 2.8	< 2.6	< 2.7	< 2.7
	Beta	< 3.0	< 3.0	< 3.0	< 3.0
	Gamma	ND	ND	ND	ND
December	Alpha	< 2.9	No	< 2.9	< 2.8
	Beta	< 3.1	Sample	< 3.1	< 3.1
	Gamma	ND	**	ND	ND

* = Naturally Occurring Radionuclides

** = River was frozen at this location on both 12/10/2002 and on 12/13/2002.

ND = Below Detection Limits

WATER

CONNECTICUT RIVER

FORT DUMMER STATE PARK

VERNON

VERNON DAM

VERNON ELEMENTARY WELL

VERMONT YANKEE

NEW ENG. POWER DAM

RIVER CROSS.

FOX HILL 524

CHARLES HILL 837

Lily Pond

Roaring Brook W.M.A.

CENTRAL PARK

RAILWAY

FAS 3.7

FAS 3.1

SOUTH VERNON

VERNON

VERMONT
YANKEE

VY STA.
3-4

VERNON
ELEM.

WELL

NEW ENG.
— POWER
DAM

RIVER
CROSS

Roaring Brook W.M.A.

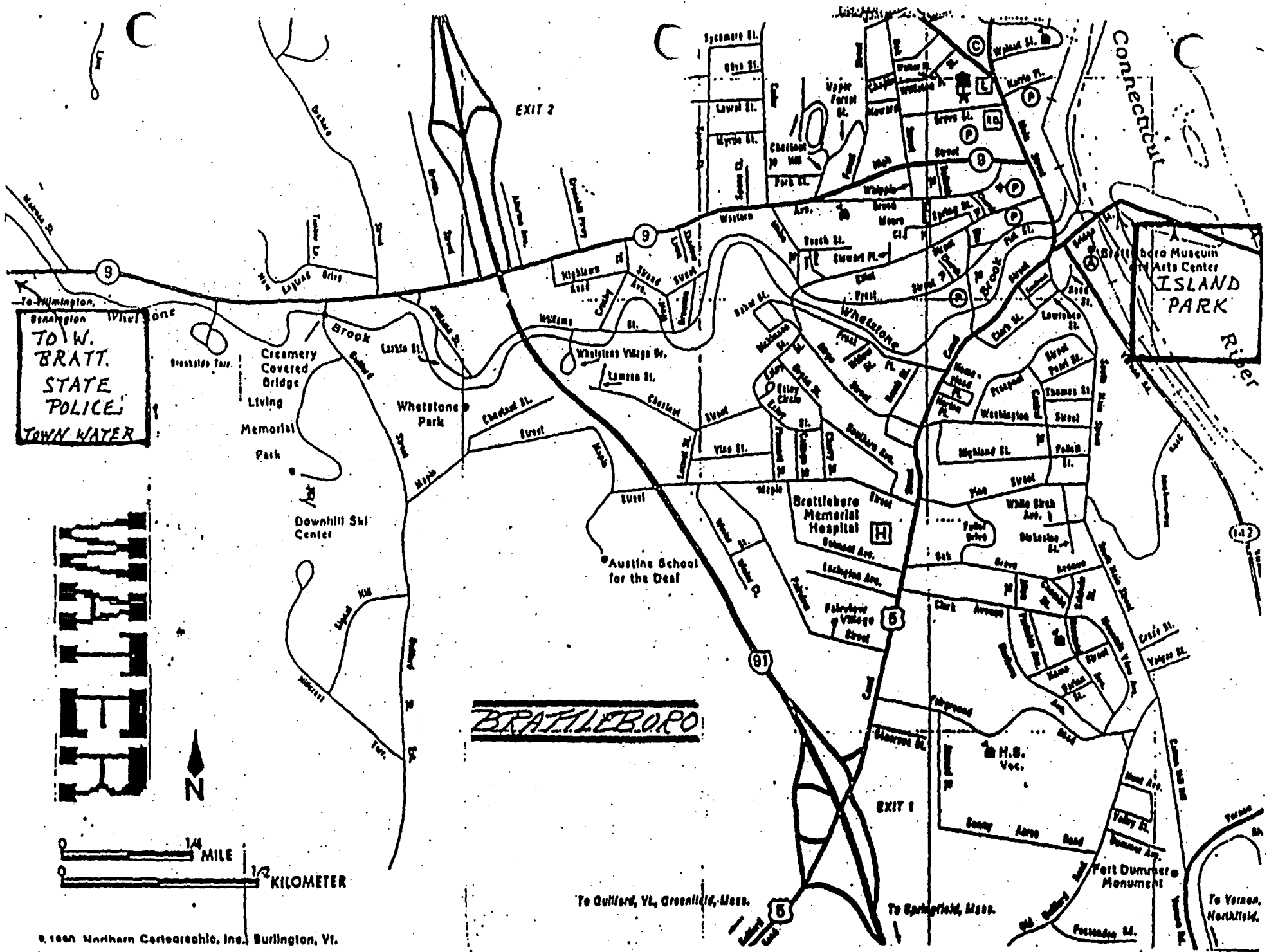
**CENTRAL
PARK**

V E R N O N

**CHARLES
HILL
837**

FOX
HILL
524

**SOUTH
VERNON**



To W. BRATT. STATE POLICE TOWN WATER

Brattleboro Museum & Arts Center ISLAND PARK

BRATTLEBORO

1/4 MILE 1/2 KILOMETER

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