MOTTOLO FARM
3.6
279141

SDMS DocID 279141

VOLUME II OF VIII
MOTTOLO SITE
REMEDIAL INVESTIGATION REPORT
TABLES AND FIGURES

Submitted to:

United States Environmental Protection Agency
Region I
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Prepared on behalf of:

K. J. Quinn & Company, Inc.
195 Canal Street
Malden, Massachusetts 02148

Prepared by:

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 Industrial Way
Salem, New Hampshire 03079

September 28, 1990
Balsam Project 6185/818

(S4324COV)

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

Section 1

TABLE 1-1

CHRONOLOGY OF MOTTOLO SITE ACTIVITIES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

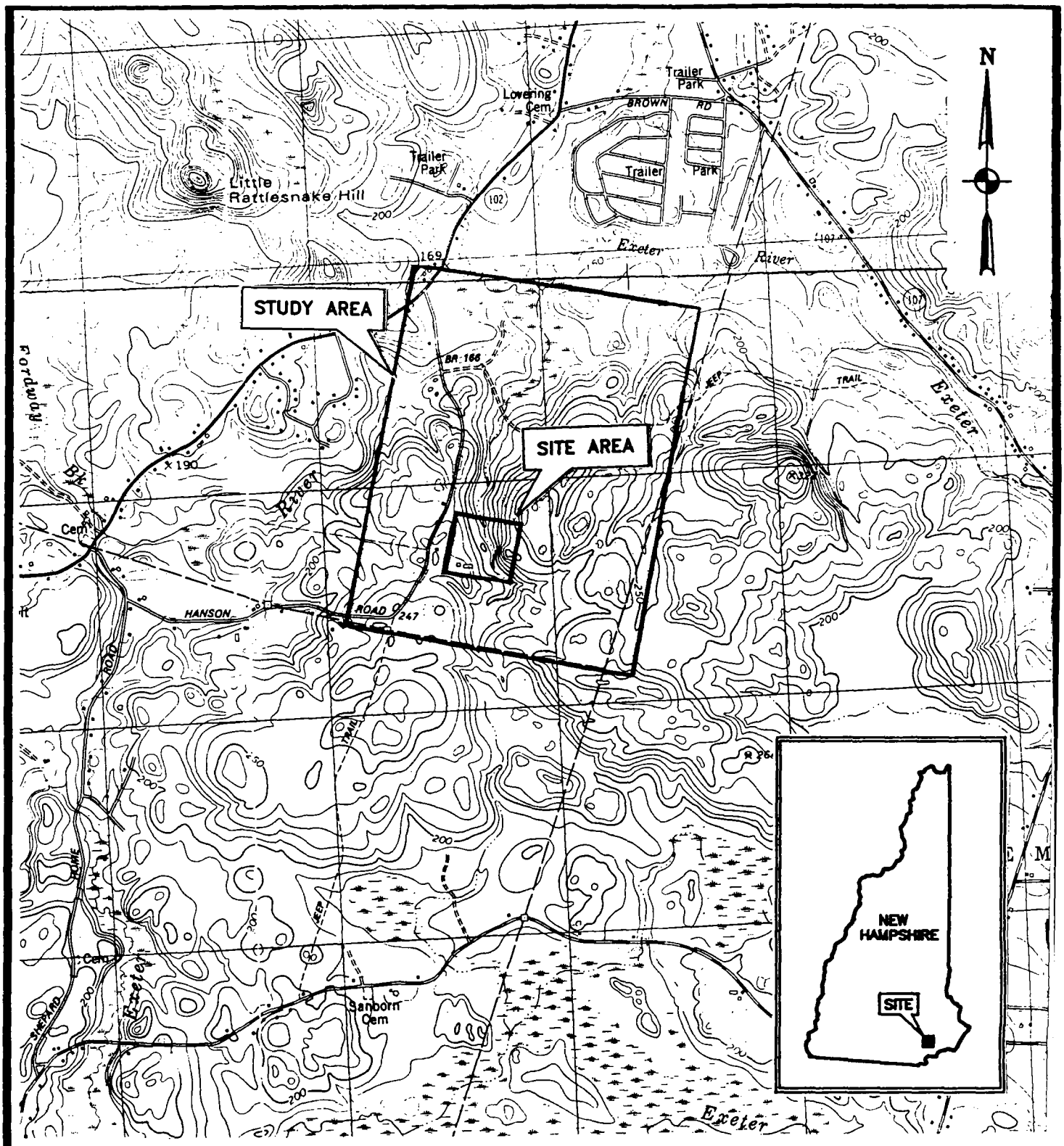
Pre to Late 1960s	Land is undeveloped with the exception of occasional logging.
Late 1960s - 1975	Piggery operated by Richard Mottolo.
1975 - 1979	Piggery operation discontinued and drums and pails containing waste materials are landfilled in an area north of the piggery building.
April 1979	Landfilling operation reported to the New Hampshire Bureau of Solid Waste Management by a local official.
April - Oct. 1979	New Hampshire Water Supply & Pollution Control Commission (WSPCC) performs several emergency response and investigation activities including: o analyzing leachate seep samples, o diverting swale flow from landfill, o constructing a berm at base of landfill, o installing three monitoring wells, and o analyzing monitoring well and residential well ground water samples.
1979 - 1989	The New Hampshire Department of Environmental Services (NHDES, formerly the WSPCC) periodically analyzes ground water samples from residential wells in the vicinity of the Mottolo site.
April 1980	U.S. Environmental Protection Agency (EPA) conducts site reconnaissance at the request of WSPCC. WSPCC retains GHR Engineering (GHR) to conduct an engineering and hydrogeologic investigation of the site.
May - Dec. 1980	GHR and subcontractor Goldberg-Zoino & Associates, Inc. install monitoring wells and analyze ground water and surface water samples.

TABLE 1-1 (cont.)

CHRONOLOGY OF MOTTOLO SITE ACTIVITIES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sept. - Oct. 1980	EPA exhumes and stages on site 1,600 55-gallon drums and 5-gallon pails.
Dec. 1981 - Feb. 1982	160 cubic yards of soil/cleanup debris and staged drums transported off site for disposal.
March 1985 - June 1986	WSPCC conducts a hydrogeologic investigation of the Mottolo site.
April 1985	Mottolo site recommended for inclusion on the National Priorities List (NPL).
May 1987	New Hampshire Department of Public Health Services releases a draft Health Risk Assessment report.
July 1987	Mottolo site placed on the NPL.
December 1987	EPA issues the Mottolo site Negotiation Support Document.
Jan. - April 1988	EPA negotiates with potentially responsible parties (PRP) to conduct a remedial investigation/feasibility study (RI/FS).
May 1988	An Administrative Consent Order between EPA and K.J. Quinn & Co., Inc., a PRP, is signed by the EPA regional administrator.
May - Oct. 88	RI/FS support documentation preparation and preliminary RI field activities performed by Balsam Environmental Consultants, Inc. (Balsam).
October 1988	EPA approves the RI/FS Project Operations Plan prepared by Balsam and RI geophysical, soil boring, and well installation activities commence.
1989	RI/FS activities conducted throughout the year by Balsam including major ground water and surface water sampling programs in April, September, and December.



0 2000 4000 6000

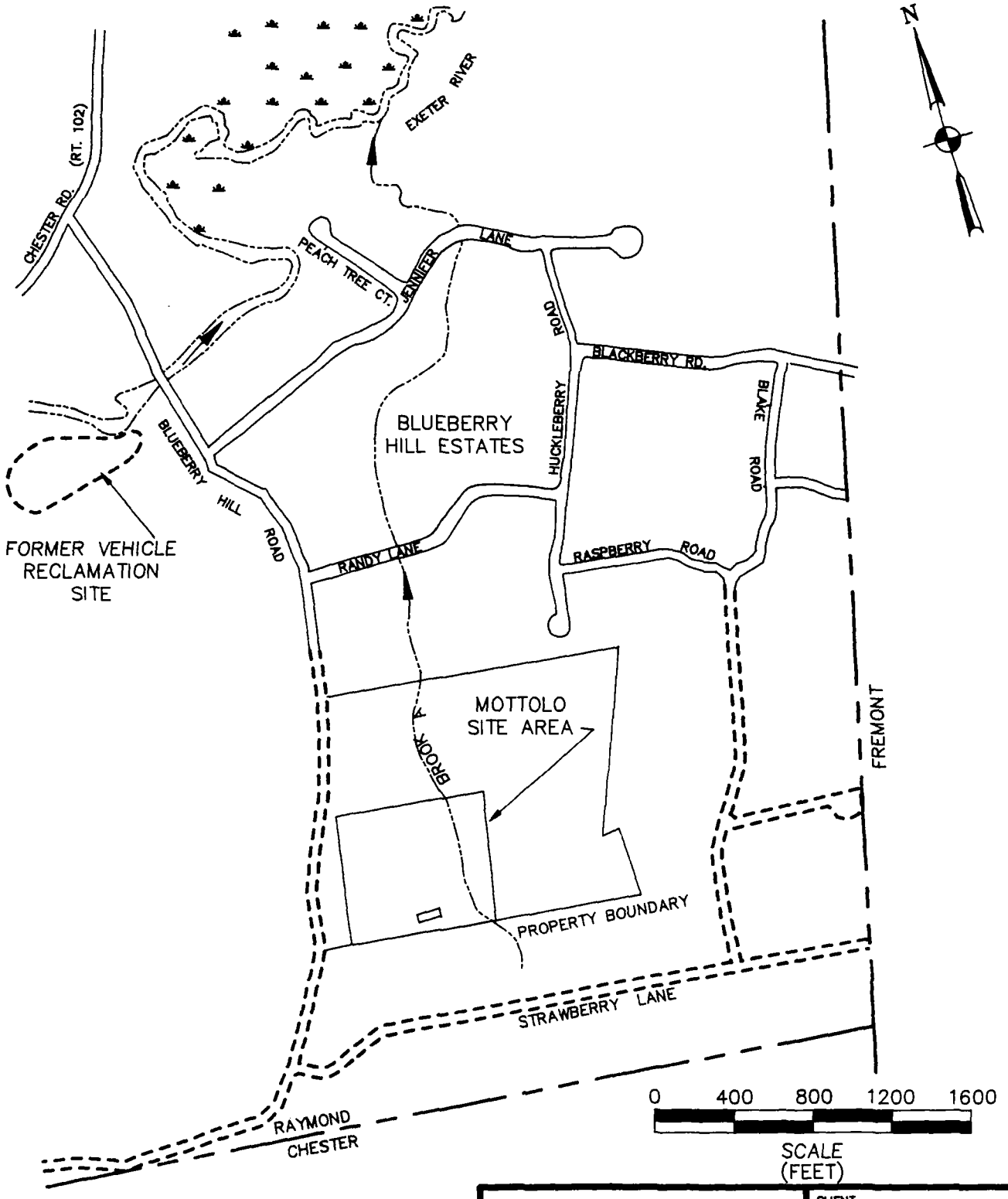
SCALE (FEET)

SOURCE:

USGS, 1981, SANDOWN QUADRANGLE, NEW HAMPSHIRE, US GEOLOGICAL SURVEY 7.5' SERIES (TOPOGRAPHIC), 1981

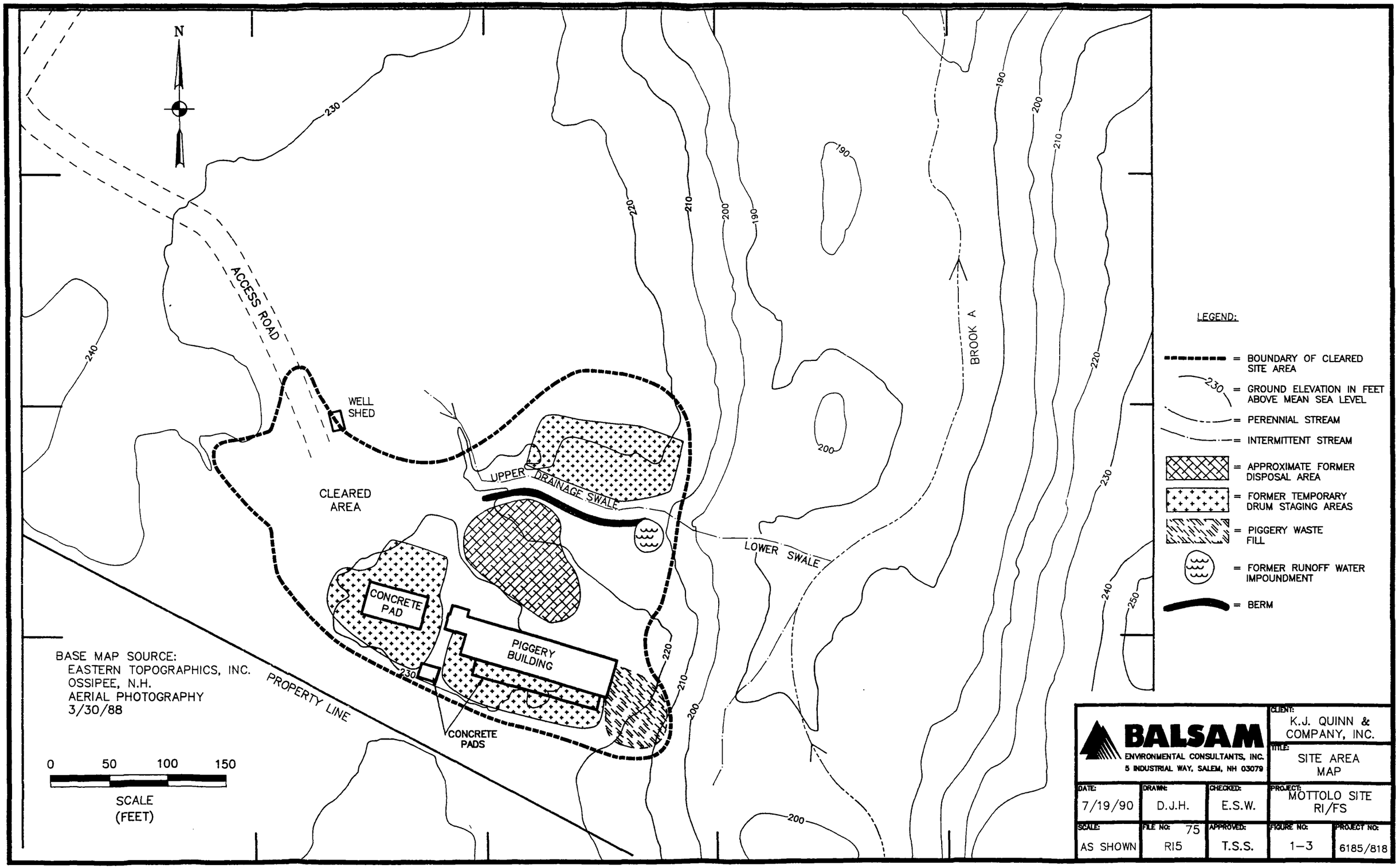
USGS, 1981, MT. PAWTUCKAWAY QUADRANGLE, NEW HAMPSHIRE, US GEOLOGICAL SURVEY 7.5' SERIES (TOPOGRAPHIC), 1981

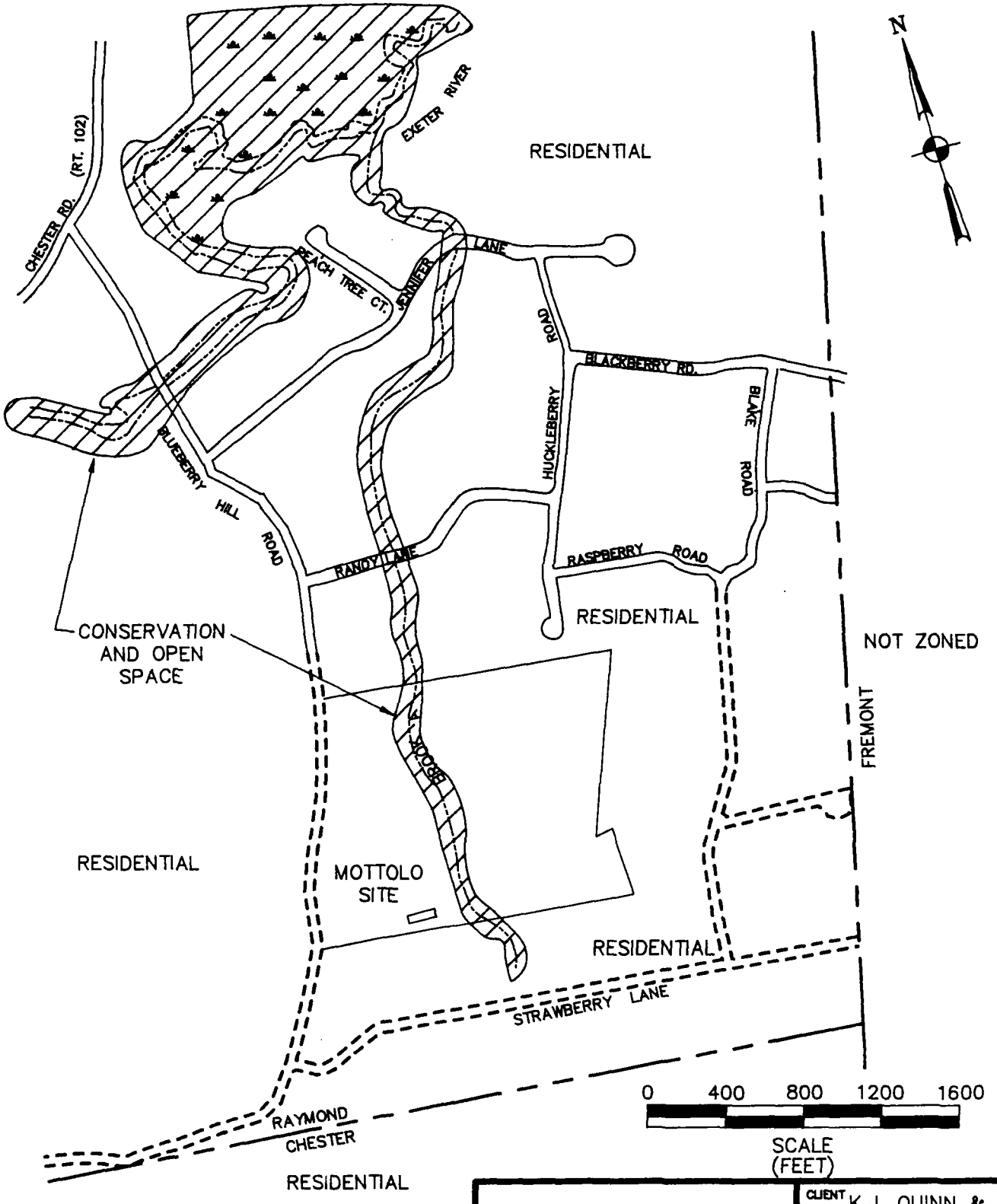
BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE SITE LOCUS PLAN	
DATE 9/13/90	DRAWN BY M.F.J.	CHECKED T.S.S.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI2	APPROVED L.C.S.	FIGURE NO. 1-1	PROJECT NO. 6185/818



SOURCE:
RAYMOND TAX MAPS AND RESIDENTIAL DEVELOPMENT PLANS

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE STUDY AREA MAP	
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI1-1	APPROVED T.S.S.	FIGURE NO. 1-2	PROJECT NO. 6185/818

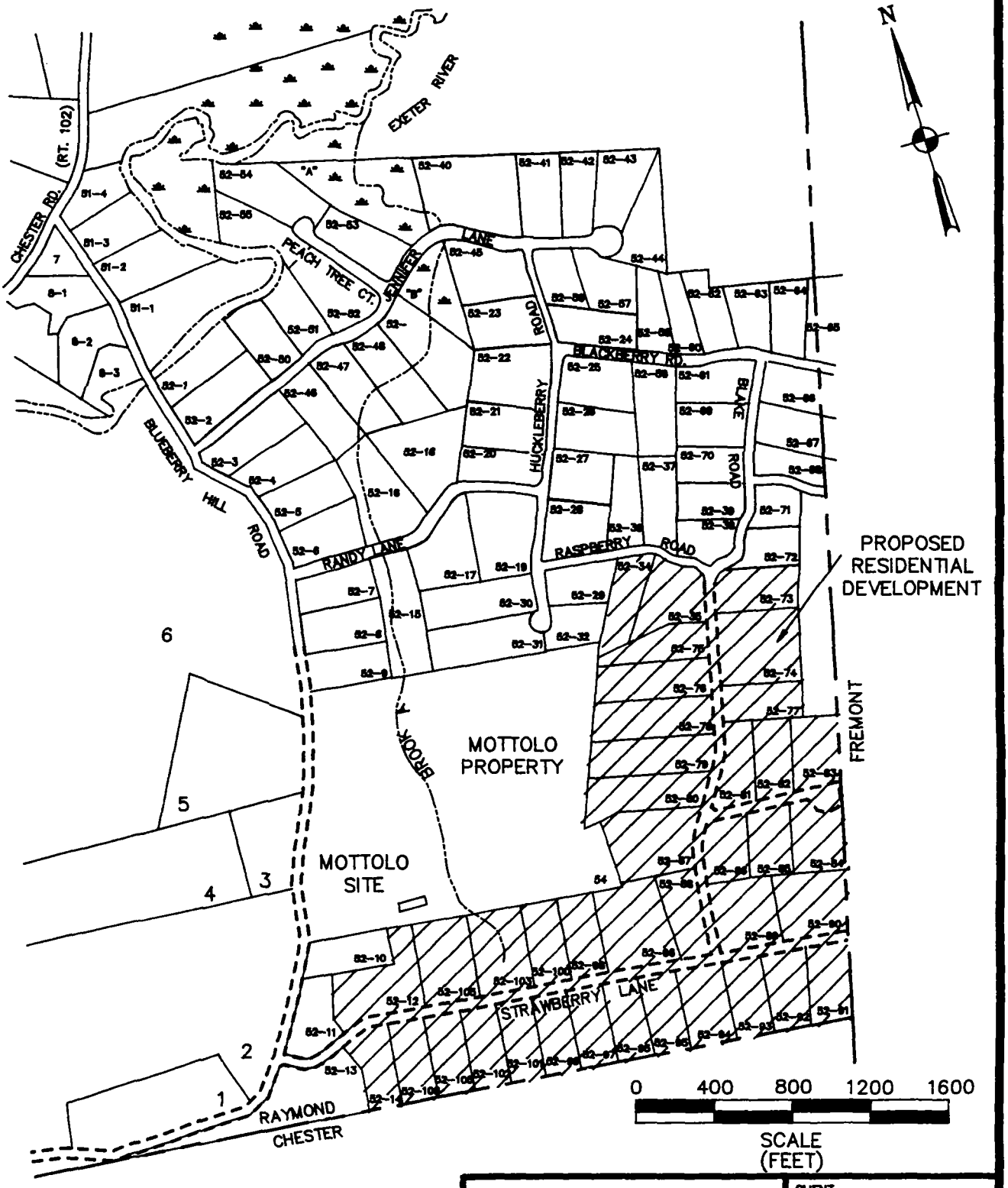

N
ACCESS ROAD
WELL SHED
CLEARED AREA
UPPER DRAINAGE SWALE
LOWER SWALE
CONCRETE PAD
PIGGERY BUILDING
CONCRETE PADS
PROPERTY LINE
BROOK A
230
240
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= BOUNDARY OF CLEARED SITE AREA
= GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= PERENNIAL STREAM
= INTERMITTENT STREAM
= APPROXIMATE FORMER DISPOSAL AREA
= FORMER TEMPORARY DRUM STAGING AREAS
= PIGGERY WASTE FILL
= FORMER RUNOFF WATER IMPOUNDMENT
= BERM
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: SITE AREA MAP
DATE: 7/19/90
DRAWN: D.J.H.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI5
APPROVED: T.S.S.
FIGURE NO: 1-3
PROJECT NO: 6185/818



ZONING INFORMATION SOURCE:
RAYMOND, CHESTER AND FREMONT TOWN OFFICES

SOURCE:
RAYMOND TAX MAPS AND RESIDENTIAL DEVELOPMENT PLANS

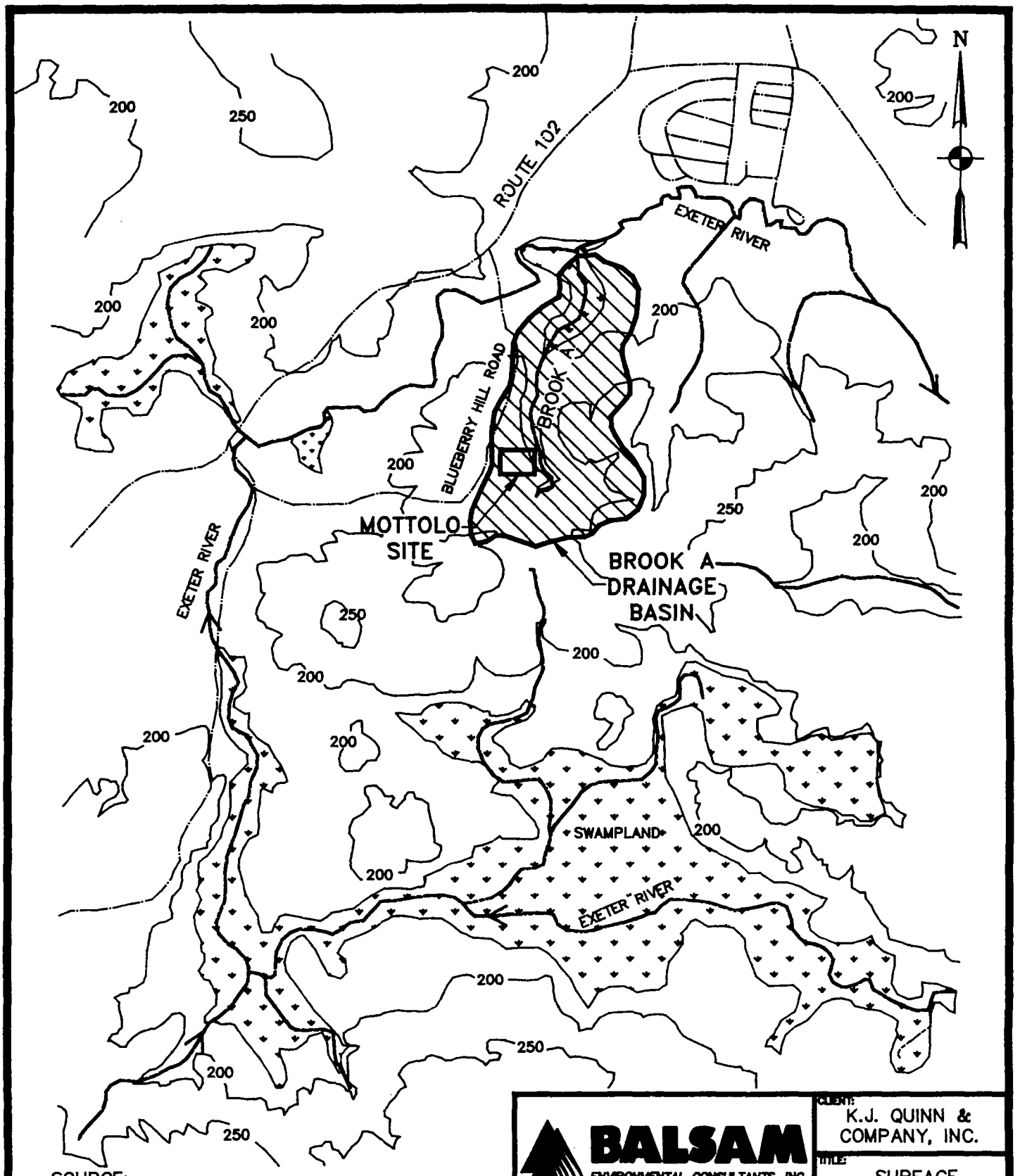
BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE LAND USE MAP	
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI1-4	APPROVED T.S.S.	FIGURE NO. 1-4	PROJECT NO. 6185/818



52-00 LOT NUMBER

SOURCE:
RAYMOND TAX MAPS AND RESIDENTIAL DEVELOPMENT PLANS

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE PROPERTY BOUNDARIES IN THE STUDY AREA	
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI1-5	APPROVED T.S.S.	FIGURE NO. 1-5	PROJECT NO. 6185/818



SOURCE:
USGS MT. PAWTUCKAWAY QUADRANGLE
7.5 MINUTE SERIES TOPOGRAPHIC MAP

0 1000 3000 5000

SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: SURFACE DRAINAGE MAP	
DATE: 7/19/90	DRAWN: D.J.H.	CHECKED: K.R.T.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 2500 RI3	APPROVED: T.S.S.	FIGURE NO: 1-6	PROJECT NO: 6185/818

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

Section 2

TABLE 2-1
SUMMARY OF AERIAL PHOTOGRAPHY REVIEW

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

PHOTO DATE	PHOTO ID/SCALE	SOURCE*	SIGNIFICANT FEATURES
4/23/66	RAY/1:12000	SEWALL	The Mottolo Site is undeveloped at this date. Blueberry Hill Road and a farm about 1000 feet north of site are visible. Other farms are visible about 1700 feet to the south-southwest and approximately 2500 feet to the northeast. The site is mostly cleared of trees. A large area approximately 3000 feet north of site adjacent to the Exeter River is cleared for a junkyard, with a few vehicles visible. Some land clearing or minor excavation is visible about 2500 feet northeast of site.
4/7/73	849/1:9600	SEWALL	At least five structures are visible on a cleared area of the Mottolo Site with access to the site on a road leading from Blueberry Hill Road. The area north of the swale is cleared. Unidentifiable stacked objects are visible on the east end of the piggery building. Land adjacent to the site on the south is partially cleared. The junkyard to the north of the Mottolo property contains numerous vehicles. The farm building about 2500 feet northeast of site appears to be burned and abandoned.
3/20/74	33015/1:20000	ASCS	The Mottolo Site and surrounding area appear unchanged from the previous photo series, but the scale is substantially smaller, reducing detail.
11/5/75	VDZZ/1:24000	USGS	No visible change from the previous photo series except a small structure is now visible on Blueberry Hill Road about 300 feet west-northwest of the site, on the south side of the entrance road. The junkyard appears to have been expanded to the west as indicated by an area cleared of trees.

TABLE 2-1 (CONTINUED)
SUMMARY OF AERIAL PHOTOGRAPHY REVIEW

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

PHOTO DATE	PHOTO ID/SCALE	SOURCE*	SIGNIFICANT FEATURES
7/31/81	33015/1:40000	ASCS	Much of the cleared portions of the Mottolo Site appear devoid of vegetation. The area north of the swale has been expanded to the west. At least nine new dwellings are visible on Blueberry Hill Road to the north. The junkyard appears unchanged.
12/10/85	946-5 /1:7200	LOCKWOOD	Two well-worn paths lead from the piggery building down to the swale. Two groups of large objects, possibly boulders, are visible on both sides of the swale. A smaller area at the east end of the piggery building is clear of vegetation. Unidentifiable objects are visible on the concrete pad. This pad was covered by a roof in the last low-altitude photos of 11/5/75. Numerous new roads, homes, and buildings are north of the site.
3/30/88	Fremont, NH/1:7800	EASTERN TOPO	Similar to the last photo series, but paths to the swale are not visible. The site in general is more vegetated.

* SEWALL = James Sewall Co., Old Town, ME
ASCS = U.S. Department of Agriculture, Soil Conservation Service
USGS = U. S. Geological Survey
LOCKWOOD = Lockwood Support Services, Rochester, NY
EASTERN TOPO = Eastern Topographics, Ossipee, NH

TABLE 2-2
BEDROCK FOLIATION AND JOINT ORIENTATION DATA

MOTTOLO SITE RI/FS
RAYMOND, NH

		Joint Sets				
Outcrop#	Foliation	Joint#1	Joint#2	Joint#3	Joint#4	Joint#5
1	30,40NW	110,60SW	125,80NE	---	---	---
2	100,84NE	---	---	18,83NW	108,82NE	---
3	85,25NW	90,75S	155,90	---	---	---
4	---	---	150,90	---	---	---
5	165,27SW	---	127,50NE	---	---	50,60S
6	---	110,75SW	---	---	---	45,47S
7	---	---	---	10,55NW	90,75N	53,67SE
8	40,80SE	---	130,70NE	---	---	---
9A 9B 9C	20,65SE 30,70SE 130,30NE	---	155,80NE	---	---	40,80SE
10A 10B	25,90 30,85NW	---	---	35,65NW	---	30,84SE
11	---	120,40SW	145,80NE	---	---	30,55SE
AVERAGE		108,63SW	141,77NE	21,68NW	99,79N	41,66SE

NOTES: Measurements are reported as strike (degrees), and dip angle (degrees) and direction.

TABLE 2-3
SOIL GAS SURVEY
SUMMARY OF ANALYSES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

COMPOUND / SAMPLE #	A-2	A-4	A-6	B-6	C-2	C-4	C-6	D-5	E-1	E-4	E-5	E-6	F-1	F-5
ACETONE	0.18*	0.18*	0.23*	0.12	ND	ND	ND	0.41	ND	0.08	0.94	ND	0.20*	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05
1,2-T-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16	3.25	ND	0.28
ETHYLBENZENE	0.19*	ND	ND	ND	0.18*	0.14*	ND	ND	0.16*	0.20*	260	ND	ND	ND
PCE	ND	ND	ND	ND	ND	ND	0.06	ND	ND	ND	ND	ND	ND	ND
THF	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.11	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	1.35	ND	ND	ND	235	2.53	ND	ND
1,1,1-TCA	ND	ND	ND	1.66	ND	ND	ND	ND	ND	ND	1.33	ND	ND	ND
MEK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	ND
MIBK	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.25	0.47	ND	ND
TCE	NA	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
TOTAL (PPM)	0.37	0.18	0.23	1.78	0.18	0.14	1.55	0.41	0.16	0.28	500	14.36	0.20	0.33
# OF UNKNOWN PEAKS			1			1	4	2	3	1	4	5	1	7

COMPOUND / SAMPLE #	F-6	G-4	G-5	G-6	G-12	H-1	I-2	I-4	I-6	X-1	X-2	X-3	X-5	X-6
ACETONE	0.33	0.09	ND	ND	0.72	0.16*	0.08	0.12	0.22*	ND	0.17	ND	0.09	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-T-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.36	0.09*	0.15	ND	ND	ND	0.13*	0.12*	ND	ND	ND	0.05	ND	ND
PCE	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THF	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35	ND	ND	ND	ND
TOLUENE	1.03	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MEK	0.07	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MIBK	ND	ND	0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE	0.23	NA	NA	NA	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND
TOTAL (PPM)	2.18	0.18	0.53	0	0.72	0.16	0.21	0.24	0.22	0.35	0.17	0.05	0.09	0
# OF UNKNOWN PEAKS			4	2	1					3	1	3	1	1

COMPOUND / SAMPLE #	X-7	X-8	X-9	X-10	X-11	X-12	X-13	X-14	X-15	X-16	X-17	X-18	X-19	X-20	X-21
ACETONE	ND	ND	ND	ND	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-T-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THF	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MEK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MIBK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL (PPM)	0	0	0	0.10	0.32	0	0	0	0	0	0	0	0	0	0
# OF UNKNOWN PEAKS	1	1	1	1	1	2	1	2	1	1	1	1	2	1	1

LEGEND:

1,2-T-DCE = 1,2-T-DICHLOROETHYLENE
PCE = TETRACHLOROETHYLENE
THF = TETRAHYDROFURAN
1,1,1-TCA = 1,1,1-TRICHLOROETHANE
MEK = METHYL ETHYL KETONE
MIBK = METHYL ISOBUTYL KETONE
TCE = TRICHLOROETHYLENE
ND = Not Detected
NA = Not Analyzed
* = significant portion of result likley due to syringe contamination.

ALL CONCENTRATIONS IN PARTS PER MILLION (ppm)

TABLE 2-4
SHALLOW GROUND WATER GRAB SAMPLES
SUMMARY OF HEADSPACE ANALYSES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

SAMPLE # / COMPOUNDS	HW-100	HW-101	HW-102	HW-103	HW-104	HW-105	HW-106	HW-107	HW-108	HW-109
ACETONE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	ND	ND	0.20	ND	ND	ND	ND	ND	ND	ND
1,2-T-DCE	ND	ND	0.20	ND	ND	ND	ND	ND	ND	ND
ETHLYBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THF	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	0.35	ND	ND	ND	ND	ND	ND
1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MEK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MIBK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL (PPM)	0	0	0.40	0.35	0	0	0	0	0	0
# OF UNKNOWN PEAKS	0	0	1	1	0	0	0	4	0	1

SAMPLE # / COMPOUNDS	HW-110	HW-111	HW-112	HW-113	HW-114	HW-115	HW-116	HW-117	HW-118	HW-119
ACETONE	ND	ND	ND	ND	ND	ND	ND	0.08	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15
1,2-T-DCE	ND	ND	0.05	ND	ND	0.04	ND	0.05	ND	1.01
ETHLYBENZENE	ND	ND	ND	ND	ND	ND	ND	0.04	ND	ND
PCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09
THF	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10
1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	50.39
M-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MEK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MIBK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18
TCE	ND	ND	ND	0.06	ND	0.15	ND	ND	ND	ND
TOTAL (PPM)	0	0	0.05	0.06	0	0.19	0	0.17	0	51.92
# OF UNKNOWN PEAKS	2	0	2	0	0	3	0	2	3	4

LEGEND:
1,1-DCE = 1,1-DICHLOROETHYLENE
1,2-T-DCE = 1,2-T-DICHLOROETHYLENE
PCE = TETRACHLOROETHYLENE
THF = TETRAHYDROFURAN
1,1,1-TCA = 1,1,1-TRICHLOROETHANE
M-XYLENE = META-XYLENE
O-XYLENE = ORTHO-XYLENE
MEK = METHYL ETHYL KETONE
MIBK = METHYL ISOBUTYL KETONE
TCE = TRICHLOROETHYLENE
ND = Not Detected

ALL CONCENTRATIONS IN PARTS PER MILLION

TABLE 2-5

PHASE I, PHASE II, AND PHASE III SOIL BORING PROGRAM SUMMARY

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Boring Designation	Total Depth (feet)[a]	Approximate Depth To Ground Water (feet)[b]
BE-1	3.1[c]	3.0[d]
BE-2	14.0	7.0
BE-3	12.6	4.3
BE-4	10.3	6.6
BE-5	10.7	N.O.[e]
BE-6	3.7	N.O.
BE-7	6.3	N.O.
BE-8	13.1	11.0
BE-9	11.5	6.0
BE-10	13.3	5.0
BE-11	12.2	N.O.
BE-12	12.5	0.0
BE-13	13.5	2.0
BE-14	15.3	3.0
BE-15	14.0	4.5
BE-16	6.5	3.0
BE-17	4.5	N.O.
BE-18	8.2	2.3
BE-19	8.0	N.O.
BE-20	9.0	N.O.
BE-21	7.5	N.O.
BE-22	11.0	7.5
BE-23	5.5	N.O.
BE-24	7.0	N.O.
BE-25	1.5	N.O.

NOTES:

a. Measurements represent depth below grade at which refusal was encountered.
b. Depth to ground water based on measurements made during boring advancement, referenced to ground surface.
c. Refusal likely at boulder.
d. Assumed to represent perched water conditions.
e. N.O. means ground water not observed during boring advancement.

July 27, 1990
Balsam Project 6185/818:3591c

TABLE 2-6
PHASE I AND PHASE II SOIL BORING PROGRAM
SAMPLING AND ANALYSIS SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

BALSAM SAMPLE NUMBER	DATE COLLECTED	BORING LOCATION	SAMPLE INTERVAL	ANALYZED (Y/N)	ANALYSES CONDUCTED							
MTL-SS-E5-001	11/08/88	BE1	(0.0'-2.0')	N								
MTL-SS-E5-002	11/08/88	BE1	(2.0'-3.1')	N								
MTL-SS-F5-001	11/08/88	BE2	(0.0'-2.0')	N								
MTL-SS-F5-002	11/08/88	BE2	(2.0'-4.0')	N								
MTL-SS-F5-003	11/08/88	BE2	(4.0'-6.0')	N								
MTL-SS-F5-004	11/08/88	BE2	(6.0'-8.0')	N								
MTL-SS-F5-005	11/08/88	BE2	(8.0'-9.3')	N								
MTL-SS-F5-006	11/08/88	BE2	(10.0'-12.0')	Y	V	SV	P/P	INORG	CN		TVS	
MTL-SS-F5-007	11/08/88	BE2	(12.0'-14.0')	N								
MTL-SS-E6.5-001	11/08/88	BE3	(0.0'-2.0')	N								
MTL-SS-E6.5-002	11/08/88	BE3	(2.0'-4.0')	Y	V	SV	P/P	INORG	CN		TVS	
MTL-SS-E6.5-003	11/08/88	BE3	(4.0'-6.0')	N								
MTL-SS-E6.5-004	11/08/88	BE3	(6.0'-8.0')	N								
MTL-SS-E6.5-005	11/08/88	BE3	(8.0'-10.0')	N								
MTL-SS-E6.5-006	11/08/88	BE3	(10.0'-12.0')	N								
MTL-SS-D5-001	11/09/88	BE4	(4.0'-6.0')	Y	V	SV	P/P	INORG	CN		TVS	
MTL-SS-D5-002	11/09/88	BE4	(6.0'-6.7')	N								
MTL-SS-D5-003	11/09/88	BE4	(8.0'-10.0')	N								
MTL-SS-BE5-001	12/27/88	BE5	(0.0'-2.3')	Y								HS*
MTL-SS-BE5-002	12/27/88	BE5	(2.5'-2.9')	Y								HS
MTL-SS-BE5-002A	12/27/88	BE5	(2.5'-5.0')	Y								HS
MTL-SS-BE5-003	12/27/88	BE5	(5.0'-6.8')	Y								HS
MTL-SS-BE5-004	12/27/88	BE5	(6.8'-8.8')	Y	V					PB	TVS	HS
MTL-SS-BE5-005	12/27/88	BE5	(9.3'-10.7')	Y								HS
MTL-SS-BE6-001	12/28/88	BE6	(0.0'-2.0')	Y								HS*
MTL-SS-BE6-002	12/28/88	BE6	(2.3'-3.7')	Y	V					PB	TVS	HS
MTL-SS-BE7-001	12/27/88	BE7	(0.0'-2.3')	Y	V					PB	TVS	HS*
MTL-SS-BE7-002	12/27/88	BE7	(2.3'-3.3')	Y								HS
MTL-SS-BE7-003	12/28/88	BE7	(4.3'-6.0')	Y								HS
MTL-SS-BE7-004	12/28/88	BE7	(6.0'-6.3')	Y								HS
MTL-SS-BE8-001	01/05/89	BE8	(0.0'-2.0')	Y								HS*
MTL-SS-BE8-002	01/05/89	BE8	(2.0'-4.0')	Y								HS
MTL-SS-BE8-003	01/05/89	BE8	(4.0'-6.0')	Y								HS
MTL-SS-BE8-004	01/05/89	BE8	(6.1'-8.1')	Y								HS
MTL-SS-BE8-005	01/05/89	BE8	(8.0'-10.0')	Y								HS
MTL-SS-BE8-006	01/05/89	BE8	(10.0'-12.0')	Y								HS
MTL-SS-BE8-007	01/05/89	BE8	(12.0'-13.1')	Y								HS

LEGEND

V = HSL Volatile Organic Analysis (plus tetrahydrofuran and methyl t-butyl ether)
SV = HSL Semivolatile Organic Analysis
P/P = HSL Pesticide/PCB Analysis
INORG = HSL Inorganic Analysis
CN = Cyanide Analysis
PB = Lead Analysis
TVS = Total Volatile Solids Analysis
HS = Photovac Headspace Screening of one composite sample from sample interval
HS* = Photovac Headspace Screening of one composite sample from sample interval and one sample from 0'- 0.5' interval

TABLE 2-6
PHASE I AND PHASE II SOIL BORING PROGRAM
SAMPLING AND ANALYSIS SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

BALSAM SAMPLE NUMBER	DATE COLLECTED	BORING LOCATION	SAMPLE INTERVAL	ANALYZED (Y/N)	ANALYSES CONDUCTED			
MTL-SS-BE9-001	01/10/89	BE9	(0.0'-2.0')	Y				HS*
MTL-SS-BE9-002	01/10/89	BE9	(2.0'-4.0')	Y	V	PB	TVS	HS
MTL-SS-BE9-003	01/10/89	BE9	(4.0'-6.0')	Y	V	PB	TVS	HS
MTL-SS-BE9-004	01/10/89	BE9	(6.0'-6.6')	Y				HS
MTL-SS-BE9-005	01/10/89	BE9	(7.5'-9.5')	Y				HS
MTL-SS-BE9-006	01/10/89	BE9	(9.5'-10.9')	Y				HS
MTL-SS-BE10-001	01/04/89	BE10	(0.0'-2.0')	Y				HS*
MTL-SS-BE10-002	01/04/89	BE10	(2.0'-4.0')	Y	V	PB	TVS	HS
MTL-SS-BE10-003	01/04/89	BE10	(4.0'-6.0')	Y				HS
MTL-SS-BE10-004	01/04/89	BE10	(6.0'-8.3')	Y	V	PB	TVS	HS
MTL-SS-BE10-005	01/05/89	BE10	(8.3'-10.3')	Y				HS
MTL-SS-BE10-006	01/05/89	BE10	(10.5'-12.5')	Y				HS
MTL-SS-BE10-007	01/05/89	BE10	(13.0'-13.3')	Y				HS
MTL-SS-BE11-001	01/06/89	BE11	(0.0'-2.0')	Y				HS*
MTL-SS-BE11-002A	01/06/89	BE11	(2.0'-4.0')	Y	V	PB	TVS	HS
MTL-SS-BE11-003	01/06/89	BE11	(4.0'-6.0')	Y				HS
MTL-SS-BE11-003A	01/06/89	BE11	(4.0'-6.0')	Y				HS
MTL-SS-BE11-004	01/06/89	BE11	(6.0'-8.0')	Y				HS
MTL-SS-BE11-005	01/06/89	BE11	(8.0'-10.0')	Y				HS
MTL-SS-BE11-006	01/06/89	BE11	(10.0'-12.0')	Y				HS
MTL-SS-BE12-001	12/30/88	BE12	(0.0'-1.9')	Y				HS*
MTL-SS-BE12-002	12/30/88	BE12	(2.0'-4.0')	Y	V	PB	TVS	HS
MTL-SS-BE12-003	12/30/88	BE12	(4.0'-6.0')	Y				HS
MTL-SS-BE12-004	12/30/88	BE12	(6.0'-8.0')	Y				HS
MTL-SS-BE12-005	12/30/88	BE12	(8.5'-10.5')	Y				HS
MTL-SS-BE12-006	12/30/88	BE12	(10.5'-12.3')	Y				HS
MTL-SS-BE13-001	01/04/89	BE13	(0.0'-2.0')	Y				HS*
MTL-SS-BE13-002	01/04/89	BE13	(2.0'-4.0')	Y				HS
MTL-SS-BE13-003	01/04/89	BE13	(4.0'-6.5')	Y	V	PB	TVS	HS
MTL-SS-BE13-004	01/04/89	BE13	(6.5'-7.5')	Y				HS
MTL-SS-BE13-005	01/04/89	BE13	(8.5'-10.5')	Y				HS
MTL-SS-BE13-006	01/04/89	BE13	(10.5'-12.2')	Y				HS
MTL-SS-BE13-007	01/04/89	BE13	(12.3'-13.5')	Y				HS
MTL-SS-BE14-001	01/03/89	BE14	(0.0'-2.0')	Y				HS*
MTL-SS-BE14-002	01/03/89	BE14	(2.0'-4.0')	Y				HS
MTL-SS-BE14-003	01/03/89	BE14	(4.0'-4.7')	Y				HS
MTL-SS-BE14-004	01/03/89	BE14	(5.8'-7.6')	Y	V	PB	TVS	HS
MTL-SS-BE14-005	01/03/89	BE14	(7.8'-9.8')	Y				HS
MTL-SS-BE14-006	01/03/89	BE14	(9.8'-11.8')	Y				HS
MTL-SS-BE14-007	01/03/89	BE14	(12.5'-14.5')	Y				HS

LEGEND

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SV = HSL Semivolatile Organic Analysis
P/P = HSL Pesticide/PCB Analysis
INORG = HSL Inorganic Analysis
CN = Cyanide Analysis
PB = Lead Analysis
TVS = Total Volatile Solids Analysis
HS = Photovac Headspace Screening of one composite sample from sample interval
HS* = Photovac Headspace Screening of one composite sample from sample interval and one sample from 0'- 0.5'interval

TABLE 2-6
PHASE I AND PHASE II SOIL BORING PROGRAM
SAMPLING AND ANALYSIS SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

BALSAM SAMPLE NUMBER	DATE COLLECTED	BORING LOCATION	SAMPLE INTERVAL	ANALYZED (Y/N)	ANALYSES CONDUCTED			
MTL-SS-BE15-001	01/09/89	BE15	(0.0'-2.0')	Y				HS*
MTL-SS-BE15-002	01/09/89	BE15	(2.0'-4.0')	Y	V	PB	TVS	HS
MTL-SS-BE15-003	01/09/89	BE15	(4.0'-4.3')	Y				HS
MTL-SS-BE15-004	01/09/89	BE15	(6.0'-8.0')	Y				HS
MTL-SS-BE15-005	01/09/89	BE15	(8.0'-10.0')	Y				HS
MTL-SS-BE16-001	12/29/88	BE16	(0.0'-2.0')	Y	V	PB	TVS	HS*
MTL-SS-BE16-002	12/29/88	BE16	(2.0'-2.8')	Y				HS
MTL-SS-BE16-003	12/29/88	BE16	(3.1'-5.1')	Y				HS
MTL-SS-BE16-004	12/29/88	BE16	(5.0'-6.3')	Y	V	PB	TVS	HS
MTL-SS-BE17-001	12/29/88	BE17	(0.0'-2.0')	Y				HS*
MTL-SS-BE17-002	12/29/88	BE17	(2.0'-3.3')	Y	V	PB	TVS	HS
MTL-SS-BE18-001	12/29/88	BE18	(0.0'-2.0')	Y				HS*
MTL-SS-BE18-002	12/29/88	BE18	(2.0'-2.7')	Y				HS
MTL-SS-BE18-003	12/29/88	BE18	(4.0'-6.0')	Y				HS
MTL-SS-BE18-004	12/29/88	BE18	(6.0'-6.8')	Y	V	PB	TVS	HS
MTL-SS-BE19-001	12/28/88	BE19	(0.0'-2.0')	Y				HS*
MTL-SS-BE19-002	12/28/88	BE19	(2.0'-4.0')	Y				HS
MTL-SS-BE19-003	12/28/88	BE19	(4.0'-6.5')	Y				HS
MTL-SS-BE19-004	12/28/88	BE19	(6.5'-7.8')	Y				HS
MTL-SS-BE20-001	01/13/89	BE20	(0.0'-2.0')	Y				HS*
MTL-SS-BE20-002	01/13/89	BE20	(2.0'-4.0')	Y				HS
MTL-SS-BE20-003	01/13/89	BE20	(4.0'-5.3')	Y				HS
MTL-SS-BE20-004	01/13/89	BE20	(5.3'-6.6')	Y				HS
TRIP BLANK 1				Y	V			
TRIP BLANK 2				Y	V			
TRIP BLANK 3				Y	V			
FIELD BLANK	01/09/89			Y	V			

LEGEND

V = HSL Volatile Organic Analysis (plus tetrahydrofuran and methyl t-butyl ether)
SV = HSL Semivolatile Organic Analysis
P/P = HSL Pesticide/PCB Analysis
INORG = HSL Inorganic Analysis
CN = Cyanide Analysis
PB = Lead Analysis
TVS = Total Volatile Solids Analysis
HS = Photovac Headspace Screening of one composite sample from sample interval
HS* = Photovac Headspace Screening of one composite sample from sample interval and one sample from 0'- 0.5'interval

TABLE 2-7
PHASE I SOIL ANALYTICAL RESULTS
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NH

Sample Location	BE2	BE3	BE4
Sample Number	SS-F5-006	SS-E6.5-002	SS-D5-001
HSL VOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):			
Methylene Chloride	460	8700	ND
Toluene	ND	1200	28000
Ethylbenzene	ND	3500	22000
Total Xylenes	ND	8200	110000
HSL SEMIVOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):			
2-Methylphenol	ND	ND	440
4-Methylphenol	ND	ND	150J
2, 4-Dimethylphenol	ND	ND	81J
Benzoic Acid	ND	ND	390J
Naphthalene	ND	ND	76J
Butylbenzylphthalate	ND	40J	ND
bis(2-Ethylhexyl)phthalate	70J	1300	1300
HSL PESTICIDE/PCB COMPOUNDS:	ND	ND	ND
HSL INORGANIC COMPOUNDS (Concentrations in ppm):			
Aluminum	8670J	3300J	8990J
Antimony	38J	R	R
Arsenic	11J	1.2J	15J
Barium	37J	11J	28J
Beryllium	0.29	ND	ND
Calcium	887	566	406
Chromium	23J	ND	21J
Cobalt	8.8	ND	6.5
Copper	5.0	ND	5.5
Iron	13400	3970	8720
Lead	8.0	6.8	181
Magnesium	3960J	739J	3160J
Manganese	141J	51J	99J
Mercury	ND	ND	0.50J
Nickel	18	ND	ND
Potassium	2580J	429J	1380J
Silver	ND	ND	5.0J
Sodium	173	78	86
Vanadium	23J	ND	21J
Zinc	51	8.0	25

NOTES: ND = Not detected. See Appendix C-2 for sample detection limits and complete list of compounds analyzed.
J = Estimated value from laboratory or as a result of quality control review.
R = Data rejected as a result of quality control review.

July 27, 1990
Balsam Project 6185/815:3591d

TABLE 2-8
PHASE II SOIL ANALYTICAL RESULTS
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NH

Sample Location	BE5	BE6	BE7	BE9
Sample Number	SS-BE5-004	SS-BE6-002	SS-BE7-001	SS-BE9-002
HSL VOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):				
Methylene Chloride	ND	ND	ND	5900J
Acetone	ND	ND	ND	2300J
Carbon Disulfide	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Trichloroethene	ND	ND	4J	ND
Tetrachloroethene	ND	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND
Toluene	ND	ND	ND	47000
Ethylbenzene	ND	ND	ND	140000
Total Xylenes	ND	ND	ND	270000
LEAD ANALYSIS (Concentrations in ppm):				
Lead	ND	27J	7.5J	118J

Sample Location	BE9	BE10	BE10	BE11
Sample Number	SS-BE9-003	SS-BE10-002	SS-BE10-004	SS-BE11-002A
HSL VOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):				
Methylene Chloride	2000	ND	ND	ND
Acetone	850J	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	4J	ND	ND
Chloroform	ND	3J	ND	ND
1,1,1-Trichlorethane	300J	ND	ND	ND
Trichloroethene	ND	4J	2J	ND
Tetrachloroethene	ND	2J	15	ND
4-Methyl-2-Pentanone	ND	ND	15	ND
Toluene	1400	3J	ND	8J
Ethylbenzene	9100	ND	3J	7J
Total Xylenes	25000	7J	34	29J
LEAD ANALYSIS (Concentrations in ppm):				
Lead	3.3J	117J	ND	13J

NOTES: ND = Not detected. See Appendix C-2 for sample detection limits and complete list of compounds analyzed.
J = Estimated value from laboratory or as a result of quality control review.

TABLE 2-8 (continued)
PHASE II SOIL ANALYTICAL RESULTS
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NH

Sample Location	BE12	BE13	BE14	BE15
Sample Number	SS-BE12-002	SS-BE13-003	SS-BE14-004	SS-BE15-002
HSL VOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):				
Acetone	ND	ND	ND	31
Carbon Disulfide	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	3J
1,2-Dichloroethene (total)	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Trichloroethene	2J	2J	ND	ND
Tetrachloroethene	ND	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	310	ND
Toluene	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Total Xylenes	ND	ND	ND	ND
LEAD ANALYSIS (Concentrations in ppm):				
Lead	ND	ND	ND	8.7J

Sample Location	BE16	BE16	BE17	BE18
Sample Number	SS-BE16-001	SS-BE16-004	SS-BE17-002	SS-BE18-004
HSL VOLATILE ORGANIC COMPOUNDS (Concentrations in ppb):				
Acetone	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	1J
1,1-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Trichloroethene	32J	4J	ND	ND
Tetrachloroethene	58	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Total Xylenes	ND	ND	ND	ND
LEAD ANALYSIS (Concentrations in ppm):				
Lead	107J	12J	6.8J	ND

NOTES: ND = Not detected. See Appendix C-2 for sample detection limits and complete list of compounds analyzed.
J = Estimated value from laboratory or as a result of quality control review.

TABLE 2-9

PHASE I AND PHASE II SOIL TOTAL VOLATILE SOLIDS RESULTS

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

BORING	BALSAM SAMPLE NUMBER	SAMPLING INTERVAL (FEET bgs)	TOTAL VOLATILE SOLIDS (% by weight)
BE2	SS-F5-006	10.0-12.0	1.00
BE3	SS-E6.5-002	2.0- 4.0	2.60
BE4	SS-D5-001	4.0- 6.0	4.00
BE5	SS-BE5-004	6.8- 8.8	0.47
BE6	SS-BE6-002	2.3- 3.7	0.95
BE7	SS-BE7-001	0.0- 2.3	1.40
BE9	SS-BE9-002	2.0- 4.0	8.63
BE9	SS-BE9-003	4.0- 6.0	1.36
BE10	SS-BE10-002	2.0- 4.0	4.54
BE10	SS-BE10-004	6.0- 8.3	0.83
BE11	SS-BE11-002A	2.0- 4.0	5.20
BE12	SS-BE12-002	2.0- 4.0	0.56
BE13	SS-BE13-003	4.0- 6.5	0.76
BE14	SS-BE14-004	5.8- 7.6	0.45
BE15	SS-BE15-002	2.0- 4.0	3.81
BE16	SS-BE16-001	0.0- 2.0	4.50
BE16	SS-BE16-004	5.0- 6.3	0.77
BE17	SS-BE17-002	2.0- 3.3	0.63
BE18	SS-BE18-004	6.0- 6.8	0.43

NOTES:

bgs = below ground surface

TABLE 2-10
MONITORING WELL INSTALLATION SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NH

Monitoring Well Designation	Location		Installation Technique(s)			Unit of Completion		
	Site Area	Study Area	HSA	Coring	Rotary	Overburden	Shallow Bedrock	Deep Bedrock
MW-7S	X		X			X		
MW-7D	X				M,A		X	
MW-8S	X		X			X		
MW-8D	X				A		X	
MW-9S	X		X			X		
MW-9D	X		X	X			X	
MW-10D		X			A			X
MW-11D	X		X	X			X	
MW-12S	X		X			X		
MW-12D	X		X	X			X	
MW-13S	X		X			X		
MW-13D	X		X	X			X	
MW-14S	X		X			X		
MW-14D	X			X			X	
MW-15S		X	X			X		
MW-15D		X			A			X
MW-16D		X			A			X
MW-17D		X			A			X
MW-18S		X	X			X		
MW-18D		X			M,A			X
MW-19D		X			A			X
MW-20D	X				A		X	
MW-20S	X		X			X		
MW-21D	X				A		X	
MW-21S	X		X			X		

TABLE 2-10 (continued)
MONITORING WELL INSTALLATION SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NH

Monitoring Well Designation	Location		Installation Technique(s)			Unit of Completion		
	Site Area	Study Area	HSA	Coring	Rotary	Overburden	Shallow Bedrock	Deep Bedrock
MO-2DR	X		X	X			X	
MO-3SR	X		X			X		
MO-3DR	X		X	X			X	
MO-5DR	X		X	X			X	
OW-2SR	X		X			X		
OW-2DR	X		X	X			X	
OW-3R	X			X			X	
OW-4SR	X		X			X		
OW-4DR	X		X	X			X	

HSA = Hollow Stem Auger.
R = Indicates replacement for existing well.
A = Air Hammer Rotary.
M = Mud Rotary.

TABLE 2-11
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	JB-5	JB-7	JB-8	MO-1	MO-2S	MO-2D	MO-2DR
DATE INSTALLED	05-06-80	05-06-80	05-06-80	06-26-85	06-28-85	06-26-85	12-28-88
DATE DEVELOPED	NR	NR	NR	04-11-89	NR	NR	01-23-89
PROTECTIVE CASING ELEVATION *	191.61	189.66	190.89	232.90	188.84	188.41	190.98
INNER CASING ELEVATION *	NA	NA	NA	232.80	188.65	188.40	190.11
GROUND SURFACE ELEVATION *	189.05	187.37	188.39	231.12	187.19	186.99	188.43
BEDROCK SURFACE ELEVATION	ID	ID	ID	225.6	177.2	177.0	176.5
OVERBURDEN THICKNESS (FEET)	ID	ID	ID	5.5	10.0	10.0	11.9
TOP OF SCREEN/ OPEN HOLE ELEVATION *	186.3	184.3	185.6	219.1	183.2	173.0	172.4
SCREENED/OPEN HOLE LENGTH (feet)	2.7	2.7	2.7	4.9	5.0	5.0	10.9
PROTECTIVE CASING STICK-UP * (feet) (above grade)	2.56a	2.29a	2.50a	1.78	1.65	1.42	2.55
INNER CASING STICK-UP * (feet) (above grade)	NA	NA	NA	1.68	1.46	1.41	1.68
OUTER CASING MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	NA	NA	NA	PVC	PVC	PVC	STEEL
OUTER CASING I.D. DIAMETER (inches)	1.25	1.25	1.25	3	3	3	4
INNER CASING I.D. DIAMETER (inches)	NA	NA	NA	1.5	1.5	1.5	3
OPEN HOLE DIAMETER (inches)	NA	NA	NA	NA	NA	NA	3
WELL DEPTH * (feet) (below top of inner-most casing)	8.1a	7.9a	7.5a	19.5	10.7	19.6	28.1

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-11 (Continued)
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	MO-3S	MO-3SR	MO-3D	MO-3DR	MO-4S	MO-4D	MO-5S	MO-5D	MO-5DR	MO-6
DATE INSTALLED	06-28-85	12-22-88	07-02-85	12-23-88	07-03-85	07-03-85	07-08-85	07-05-85	12-20-88	07-04-85
DATE DEVELOPED	NR	04-06-89	NR	04-06-89	04-11-89	04-11-89	04-11-89	04-11-89	01-20-89	NA
PROTECTIVE CASING ELEVATION *	190.08	189.63	190.41	191.15	189.40	189.95	184.10 b	183.60	184.13	170.08
INNER CASING ELEVATION *	189.27	189.29	190.37	191.03	189.40	189.77	183.87 b	183.15	184.17	NA
GROUND SURFACE ELEVATION *	187.01	187.51	188.15	188.05	187.49	187.61	181.7	182.0	181.90	168.31
BEDROCK SURFACE ELEVATION	177.3	177.2	179.2	177.7	174.5	174.6	169.2	169.5	173.8	158.3
OVERBURDEN THICKNESS (FEET)	9.7	10.3	9.0	10.4	13.0	13.0	12.5	12.5	8.1	10.0
TOP OF SCREEN/ OPEN HOLE ELEVATION *	183.0	180.5	177.2	173.4	183.0	170.6	177.7	167.0	169.3	147.7
SCREENED/OPEN HOLE LENGTH (feet)	5.0	2.5	2.0	10.0	5.0	2.0	4.75	2.0	10.6	109.3
PROTECTIVE CASING STICK-UP * (feet) (above grade)	3.07	2.12	2.26	3.10	1.91	2.34	2.40 b	1.62	2.23	1.77
INNER CASING STICK-UP * (feet) (above grade)	2.27	1.78	2.22	2.98	1.91	2.16	2.16 b	1.28	2.27	NA
OUTER CASING MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	PVC	PVC	PVC	STEEL	PVC	PVC	PVC	PVC	STEEL	NA
OUTER CASING I.D. DIAMETER (inches)	3	4	3	6	3	3	3	3	6	6
INNER CASING I.D. DIAMETER (inches)	1.5	2	1.5	4	1.5	1.5	1.5	1.5	3	NA
OPEN HOLE DIAMETER (inches)	NA	NA	NA	3.8	NA	NA	NA	NA	3	5
WELL DEPTH * (feet) (below top of inner-most casing)	10.5	11.4	16.0	27.3	10.7	21.5	11.0	19.0	25.5	18.5

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-11 (Continued)
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11D	MW-12S	MW-12D
DATE INSTALLED	11-21-88	12-06-88	11-29-88	12-06-88	11-10-88	12-01-88	12-07-88	12-07-88	11-21-88	12-09-88
DATE DEVELOPED	04-07-89	01-23-89	01-20-89	01-24-89	DRY 01-89	01-23-89	01-25-89	01-23-89	01-20-89	01-25-89
PROTECTIVE CASING ELEVATION *	230.80	229.90	232.16	232.13	221.44	221.42	258.05	222.86	191.35	189.65
INNER CASING ELEVATION *	229.80	NA	231.47	NA	221.32	221.47	NA	221.73	191.24	189.63
GROUND SURFACE ELEVATION *	228.58	228.65	230.28	230.57	218.61	218.99	256.98	220.21	188.66	186.88
BEDROCK SURFACE ELEVATION *	220.6	~220.7	NA	<210.0	213.6	214.0	~246	215.4	174.8	174.1
OVERBURDEN THICKNESS (FEET)	8.0	~8	>20	~16	5.0	5.0	~11	4.80	13.90	12.80
TOP OF SCREEN/ OPEN HOLE ELEVATION *	224.6	~214.7	222.5	~209.6	215.6	211.0	~234	211.2	181.7	169.1
SCREENED/OPEN HOLE LENGTH (feet)	2.0	11.0	10.0	11.0	2.0	10.0	202.0	10.0	6.0	10.0
PROTECTIVE CASING STICK-UP * (feet) (above grade)	2.22	1.25	1.88	1.56	2.83	2.43	1.07	2.65	2.69	2.77
INNER CASING STICK-UP * (feet) (above grade)	1.22	NA	1.19	NA	2.71	2.48	NA	1.52	2.58	2.75
OUTER CASING MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	PVC	NA	PVC	NA	PVC	STEEL	NA	STEEL	PVC	STEEL
OUTER CASING DIAMETER (inches)	4	6	4	6	4	6	6	6	4	6
INNER CASING DIAMETER (inches)	2	NA	2	NA	2	4	NA	4	2	3
OPEN HOLE DIAMETER (inches)	NA	5 7/8	NA	5 7/8	NA	3.8	5 7/8	3.8	NA	3
WELL DEPTH * (feet) (below top of inner-most casing)	6.7	28.1	19.5	34.9	7.5	19.8	227.4	19.1	15.5	31.2

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-11 (Continued)
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	MW-13S	MW-13D	MW-14S	MW-14D	MW-15S	MW-15D	MW-16D	MW-17D	MW-18S	MW-18D
DATE INSTALLED	11-17-88	11-30-88	01-19-89	01-13-89	12-23-88	12-09-88	12-08-88	12-09-88	01-12-89	12-10-88
DATE DEVELOPED	01-23-89	01-25-89	01-24-89	01-24-89	06-22-89	01-25-89	01-26-89	01-26-89	01-24-89	01-24-89
PROTECTIVE CASING ELEVATION *	184.20	183.44	184.61	183.76	182.54	183.89	199.17	195.64	166.01	165.81
INNER CASING ELEVATION *	183.99	182.93	184.06	182.05	182.50	NA	NA	NA	165.79	NA
GROUND SURFACE ELEVATION *	182.28	181.49	182.84	181.51	180.70	182.01	197.52	193.16	164.23	164.46
BEDROCK SURFACE ELEVATION *	163.3	162.5	153.8	151.7	170.7	~172.0	~190.5	~190.2	140.7	148.0
OVERBURDEN THICKNESS (FEET)	19	19.0	29	29.8	10.0	~10	~7	~3	23.5	~16.5
TOP OF SCREEN/ OPEN HOLE ELEVATION *	175.3	159.5	175.0	146.8	173.7	~166.0	~181.5	177.2	156.7	~136.5
SCREENED/OPEN HOLE LENGTH (feet)	7.5	10.0	19.5	7.0	2.5	209.0	209.0	209.0	15.0	197.0
PROTECTIVE CASING STICK-UP * (feet) (above grade)	1.92	1.95	1.77	2.25	1.84	1.88	1.65	2.48	1.78	1.35
INNER CASING STICK-UP * (feet) (above grade)	1.71	1.44	1.22	0.54	1.80	NA	NA	NA	1.56	NA
OUTER CASING MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	NA	NA	NA	PVC	NA
OUTER CASING DIAMETER (inches)	4	4	4	4	4	6	6	6	4	6
INNER CASING DIAMETER (inches)	2	2	2	2	2	NA	NA	NA	2	NA
OPEN HOLE DIAMETER (inches)	NA	NA	NA	NA	NA	5	5	5	NA	5
WELL DEPTH * (feet) (below top of inner-most casing)	16.1	29.9	28.7	41.2	10.9	228.1	227.6	229.2	20.6	227.7

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-11 (Continued)
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	MW-19D	MW-20S	MW-20D	MW-21S	MW-21D	OW-2SR	OW-2DR	OW-3	OW-3R	OW-4S
DATE INSTALLED	12-07-88	09-25-89	09-26-89	09-28-89	09-27-89	12-15-88	01-09-89	07-16-79	12-08-88	05-07-80
DATE DEVELOPED	12-15-88	09-29-89	09-29-89	09-29-89	09-29-89	01-23-89	01-23-89	NR	01-23-89	NR
PROTECTIVE CASING ELEVATION *	203.97	226.67	225.62	231.93	231.89	211.00	211.81	223.13	223.92	218.91
INNER CASING ELEVATION *	NA	226.57	225.27	231.48	231.72	210.49	211.59 (PVC)	222.34	223.96	219.04
GROUND SURFACE ELEVATION *	202.31	223.70	223.60	228.80	228.70	208.97	209.34	221.23	221.54	217.49
BEDROCK SURFACE ELEVATION *	~201.3	~211.7	210.0	~219.8	218.2	194.0	191.3	217.7	217.7	204.6
OVERBURDEN THICKNESS (FEET)	~1	12	13.6	ND	10.5	15.0	18.0	3.5	3.8	12.9
TOP OF SCREEN/ OPEN HOLE ELEVATION *	~196.3	217.50	197.70	222.80	207.30	199.7	184.34	212.8	214.7	210.5
SCREENED/OPEN HOLE LENGTH (feet)	216.0	5.0	20.0	3.0	20.0	5.0	10.0	3.0	12.2	3.0
PROTECTIVE CASING STICK-UP * (feet) (above grade)	1.66	2.97	2.02	3.13	3.19	2.03	2.47	1.90	2.38	1.42
INNER CASING STICK-UP * (feet) (above grade)	NA	2.87	1.67	2.68	3.02	1.52	2.25 (PVC)	1.11	2.42	1.55
OUTER CASING MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	NA	PVC	PVC	PVC	PVC	PVC	STEEL/PVC	STEEL	STEEL	STEEL
OUTER CASING DIAMETER (inches)	6	3	3	3	3	4	6	2.5	6	2.5
INNER CASING DIAMETER (inches)	NA	2	2	2	2	2	4/2	1.25	4	1.25
OPEN HOLE DIAMETER (inches)	5	NA	NA	NA	NA	NA	NA	NA	3.8	NA
WELL DEPTH * (feet) (below top of inner-most casing)	224.1	11.2	45.9	10.7	41.4	15.7	37.3	11.0	19.3	8.8

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-11 (Continued)
MONITORING WELL CONSTRUCTION SUMMARY DATA

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

WELL DESIGNATION	OW-4SR	OW-4D	OW-4DR
DATE INSTALLED	12-09-88	05-07-80	12-15-88
DATE DEVELOPED	01-20-89	NA	01-24-89
PROTECTIVE CASING ELEVATION *	219.88	218.91	219.48
INNER CASING ELEVATION *	219.30	NA	219.37
GROUND SURFACE ELEVATION *	217.98	217.49	217.57
BEDROCK SURFACE ELEVATION *	206.0	204.6	204.9
OVERBURDEN THICKNESS (FEET)	12.0	12.9	12.7
TOP OF SCREEN/ OPEN HOLE ELEVATION *	211.31	BARCAD @ 197.0	199.4
SCREENED/OPEN HOLE LENGTH (feet)	5.0	BARCAD @ 20.5 bgs	10.0
PROTECTIVE CASING STICK-UP * (feet) (above grade)	1.90	1.42	1.91
INNER CASING STICK-UP * (feet) (above grade)	1.32	NA	1.80
OUTER CASING MATERIAL	STEEL	STEEL	STEEL
INNER CASING MATERIAL	PVC	BARCAD	STEEL
OUTER CASING DIAMETER (inches)	4	2.5	4
INNER CASING DIAMETER (inches)	2	BARCAD	3
OPEN HOLE DIAMETER (inches)	NA	NA	3
WELL DEPTH * (feet) (below top of inner-most casing)	13.3	BARCAD @ 20.5 bgs	29.1

LEGEND:
* = Measurements taken at side of casing with lock hasp.
ID = Insufficient Data.
NA = Not Applicable.
NR = No record available indicating if well development was performed.
ND = Not Determined.
a = From top of riser with coupling attached.
b = Well has undergone heaving. Concrete collar is above ground surface.
~ = Elevation measurements are approximate due to borehole advance by air hammer methods.

NOTES:
1. JB-6, JB-9, OW-1, OW-2S, and OW-2D have been destroyed.
2. Elevations are in feet referenced to mean sea level unless noted otherwise.

TABLE 2-12

SUMMARY OF
HYDRAULIC CONDUCTIVITY ESTIMATES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Monitoring Well Designation	Screened Interval[1]	Hazen Method[2] (cm/sec)	Falling Permeameter Tests[3] (cm/sec)	Slug Tests[4] (cm/sec)
MW-8S	7.5-17.5	6.1×10^{-3} [14-15.5][5]	--	4.8×10^{-3}
OW-2SR	9-14	5.2×10^{-4} [10-12]	--	6.0×10^{-4}
OW-4SR	6.5-11.5	4.5×10^{-3} [6-7.5]	--	1.2×10^{-2}
MW-13S	7-14.5	1.9×10^{-4} [4-6]	8.7×10^{-3} [4-6]	5.8×10^{-3}
MW-12S	7-13	--	--	2.2×10^{-4}
MO-2S	4-9	--	--	5.3×10^{-4}
MO-2S	4-9	1.8×10^{-3} [0.9-1.5][7]	6.7×10^{-3} [0.9-1.5][7]	--
MO-2S	4-9	5.6×10^{-3} [4-6][7]	--	--
MO-2S	4-9	4.8×10^{-4} [6-8][7]	--	--
MO-3SR	7.0-9.5	2.0×10^{-3} [7.5-9.5][7]	--	--
MO-3SR	7.0-9.5	--	--	2.0×10^{-4}
MO-4S	4.5-9.5	--	--	5.6×10^{-4}
MO-5S	4-8.75	--	--	4.8×10^{-4}
MO-5S	4-8.75	1.0×10^{-2} [4-5.5][7]	5.7×10^{-3} [4-5.5]	--
MO-5S	4-8.75	1.5×10^{-3} [4-6][7]	--	--
MW-14S	8-27	--	--	4.1×10^{-4}
MW-18S	7.5-22.5	--	--	8.5×10^{-4}
MW-11D	9-20	--	--	1.3×10^{-2}
MW-20D	25.9-45.9	--	--	2.6×10^{-4}
MW-21D	21.4-41.4	--	--	1.8×10^{-4}
MO-2DR	16-27	--	--	1.1×10^{-3}

TABLE 2-12 (CONTINUED)

SUMMARY OF
HYDRAULIC CONDUCTIVITY ESTIMATES

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Monitoring Well Designation	Screened Interval[1]	Hazen Method[2] (cm/sec)	Falling Permeameter Tests[3] (cm/sec)	Slug Tests[4] (cm/sec)
MO-3DR	17.3-27.3	--	--	--
MO-5DR	13-23.2	--	--	8.2×10^{-3}
BE-9	--	1.4×10^{-3} [7.5-9.5]	--	--
OW-2DR	25-35	--	--	[6]
OW-4DR	18.2-28.2	--	--	[6]

NOTES:

1 Well screen interval depth is in feet below ground surface.
2 Estimates are based on formulas developed by Hazen (Lambe and Whitman, 1969). Grain-size data are provided in Appendix B-4.
3 Falling permeameter tests are measures of vertical hydraulic conductivity according to ASTM, Method D-2434-74..
4 Slug test data analyzed using the Bouwer and Rice (1976) and Bouwer (1989) methods. Analyses are provided in Appendix B-5.
5 [ ] = Depth in feet below ground surface from which samples were obtained for grain size analyses and laboratory permeameter tests.
6 Minimal change in water level after adding slug after initial increase.
7 Soil sample collected from boring for adjacent well couplet.

TABLE 2-13

QA/QC SAMPLE SUMMARY - GROUND WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	April 1989	September 1989	December 1989
EPA Split Locations	MO-3SR MW-8S MW-11D MW-13D MW-18D OW-4SR	MO-3SR MW-8S MW-11D MW-13D MW-18D OW-4SR	MW-18D MW-21D OW-2SR OW-4SR
EPA Duplicate Locations	MO-3SR	MO-3SR	OW-2SR
Balsam Duplicate Locations	MW-13D OW-2SR OW-2DR	MW-21D OW-2DR	OW-4SR
Balsam Field Blank Locations	MW-8S MW-17D	MO-5DR	OW-2DR

TABLE 2-14
SUMMARY OF GROUND WATER ANALYTICAL PARAMETERS

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

PARAMETERS ANALYZED

MONITORING WELL NUMBER	HSL VOCs	HSL SVOCs	HSL Pesticides PCBs	HSL Inorganics	Cyanide	Arsenic	BOD & COD	TOC	Total & Fecal Coliform	Alkalinity, Nitrate, Nitrite, Sulfate, & Chloride
MO1	1,2,3	1	1	1	1					1
MO2S	1,2,3	1,2	1	1	1	2,3	1			1
MO2DR	1,2,3	1,2	1	1	1	2,3				1
MO3SR	1,2,3	1	1	1	1	2,3	1			1
MO3DR	1,2,3	1	1	1	1	2,3				1
MO4S	1,2,3	1	1	1	1	2	1			1
MO4D	1,2,3	1	1	1	1	2				1
MO5S	1,2,3	1	1	1	1		1			1
MO5DR	1,2,3	1	1	1	1					1
MO6	1,2	1	1	1	1	2				1
MW7S	1,2	1	1	1	1		1			1
MW7D	1,2,3	1	1,2	1	1	2				1
MW8S	1,2,3	1	1	1	1	2,3				1
MW8D	1,3,4							1	1	
MW9S	1	1	1	1	1					1
MW9D	1,2,3	1	1	1	1					1
MW10D	1,2	1	1	1	1			1	1	1
MW11D	1,2,3	1	1,2	1	1					1
MW12S	1,2,3	1	1	1	1					1
MW12D	1,2,3	1	1	1	1					1

NOTES:

1. Numbers under each analytical parameter refer to the following ground water sampling rounds: (1) April 1989; (2) September 1989; (3) December 1989; and (4) supplemental sampling in March 1990.
2. HSL VOCs = Hazardous Substance List Volatile Organic Compounds. Tetrahydrofuran and methyl tert-butyl ether were analyzed as added compounds in April 1989, and tetrahydrofuran was analyzed as an added compound in September and December 1989.
3. HSL SVOCs = Hazardous Substance List Semivolatile or Acid/Base Neutral (ABN) Extractable Organic Compounds.
4. HSL Inorganics = Hazardous Substance List inorganic substances or metals, excluding cyanide.
5. BOD = Biological Oxygen Demand.
6. COD = Chemical Oxygen Demand.
7. TOC = Total Organic Carbon.

TABLE 2-14 (Continued)
SUMMARY OF GROUND WATER ANALYTICAL PARAMETERS

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

PARAMETERS ANALYZED

MONITORING WELL NUMBER	HSL VOCs	HSL SVOCs	HSL Pesticides PCBs	HSL Inorganics	Cyanide	Arsenic	BOD & COD	TOC	Total & Fecal Coliform	Alkalinity, Nitrate, Nitrite, Sulfate, & Chloride
MW13S	1,2,3	1	1	1	1					1
MW13D	1,2,3	1	1	1	1					1
MW14S	1,2,3	1	1	1	1					1
MW14D	1,2,3	1	1	1	1					1
MW15S	1	1	1	1	1					1
MW15D	1,2	1	1	1	1			1	1	1
MW16D	1,2	1	1	1	1			1	1	1
MW17D	1,2	1	1	1	1			1	1	1
MW18S	1,2	1	1	1	1					1
MW18D	1,2,3	1	1	1	1			1	1	1
MW19D	1,2	1	1	1	1	2		1	1	1
MW20S	2,3	2	2	2	2					
MW20D	2,3	2	2	2	2					
MW21S	2,3			2						
MW21D	2,3,4	2	2	2	2					
OW2SR	1,2,3	1,2	1,2	1	1	2,3	1			1
OW2DR	1,2,3	1,2	1,2	1	1	2,3				1
OW3R	1,2,3	1	1	1	1		1			1
OW4SR	1,2,3	1,2	1	1	1	2,3	1			1
OW4DR	1,2,3	1		2				1	1	

NOTES:

1. Numbers under each analytical parameter refer to the following ground water sampling rounds: (1) April 1989; (2) September 1989; (3) December 1989; and (4) supplemental sampling in March 1990.
2. HSL VOCs = Hazardous Substance List Volatile Organic Compounds. Tetrahydrofuran and methyl tert-butyl ether were analyzed as added compounds in April 1989, and tetrahydrofuran was analyzed as an added compound in September and December 1989.
3. HSL SVOCs = Hazardous Substance List Semivolatile or Acid/Base Neutral (ABN) Extractable Organic Compounds.
4. HSL Inorganics = Hazardous Substance List inorganic substances or metals, excluding cyanide.
5. BOD = Biological Oxygen Demand.
6. COD = Chemical Oxygen Demand.
7. TOC = Total Organic Carbon.

TABLE 2-15
GROUND WATER TEMPERATURE, pH, AND CONDUCTIVITY SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	TEMPERATURE (Celsius)			pH (Standard Units)			Conductivity (umhos/cm)		
WELL ID	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989
MO-1	7	13	5	4.5	5.8	6.3	30	30	20
MO-2S	4	9	3	6.2	6.1	6.5	160	205	130
MO-2DR	6	10	4	6.8	6.3	6.7	100	140	85
MO-3SR	8	8.5	6.5	6.0	6.3	6.5	170	220	160
MO-3DR	9	10	2.5	6.4	6.8	6.0	130	145	110
MO-4S	7	11	2	5.4	6.1	6.2	75	70	70
MO-4D	8.5	11	2	5.6	6.6	6.5	105	100	85
MO-5S	5	11	6	5.6	5.3	5.9	35	50	40
MO-5DR	6.5	10	6	6.5	6.5	6.3	100	110	85
MO-6	9	12	NS	6.4	6.6	NS	121	120	NS
MW-7S	6	NA	NS	5.3	6.1	NS	110	NA	NS
MW-7D	7	10	6	10.9	10.8	11.3	600	500	550
MW-8S	7	8	5	5.7	5.9	6.2	70	90	75
MW-8D	NA	NS	4.5	NA	NS	NA	NA	NS	175
MW-9S	5	NS	NS	4.6	NS	NS	30	NS	NS
MW-9D	6	11	4	6.3	5.2	5.9	30	70	45
MW-10D	8.5	12	NS	8.1	10.0	NS	80	100	NS
MW-11D	6	15	7	5.6	5.8	5.9	35	45	160
MW-12S	6.0	9.5	4.0	5.5	5.8	6.1	55	55	55
MW-12D	8.5	10	4	6.5	6.6	6.1	110	105	100
MW-13S	9	10	5	5.1	5.7	6.4	20	30	25
MW-13D	10	10	2.5	6.5	5.8	6.9	120	120	100
MW-14S	8	11	3.5	5.5	5.9	6.8	120	140	120
MW-14D	9	8.5	5	8.9	6.8	8.4	130	110	115

LEGEND:

NA = Not Analyzed
NS = Not Sampled
NI = Not Installed

TABLE 2-15
GROUND WATER TEMPERATURE, pH, AND CONDUCTIVITY SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	TEMPERATURE (Celsius)			pH (Standard Units)			Conductivity (umhos/cm)		
WELL ID	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989
MW-15S	4	NS	NS	5.6	NS	NS	90	NS	NS
MW-15D	8	15	NS	7.3	6.9	NS	120	130	NS
MW-16D	8	12	NS	6.2	5.3	NS	80	105	NS
MW-17D	10	16	NS	5.8	6.0	NS	145	175	NS
MW-18S	6	16	NS	5.1	5.7	NS	100	210	NS
MW-18D	8	12	8	7.1	6.6	6.7	180	208	225
MW-19D	9	11	NS	6.0	6.7	NS	130	125	NS
MW-20S	NI	11	3.5	NI	5.4	5.7	NI	70	45
MW-20D	NI	10	5.5	NI	6.3	8.8	NI	90	80
MW-21S	NI	12	4	NI	5.5	6.4	NI	170	80
MW-21D	NI	11	6	NI	6.3	6.5	NI	140	100
OW-2SR	7	12	6.5	6.0	6.2	6.4	410	400	400
OW-2DR	7	12	4	6.4	6.7	6.6	340	300	240
OW-3R	9	12	5.5	11.0	11.4	11.7	600	1200	1250
OW-4SR	5	14	6	5.9	6.1	6.0	190	360	310
OW-4DR	NA	NA	6.5	NA	NA	12.4	NA	NA	3700

LEGEND:

NA = Not Analyzed
NS = Not Sampled
NI = Not Installed

TABLE 2-16
GROUND WATER GENERAL CHEMISTRY DATA
APRIL 1989

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location Sample Number	MO1 GW-MO1-001	MO2S GW-MO2S-002	MO2DR GW-MO2DR-003	MO3SR GW-MO3SR-004	MO3DR GW-MO3DR-005	MO4S GW-MO4S-006	MO4D GW-MO4D-007	MO5S GW-MO5S-008	MO5DR GW-MO5DR-009	MO6 GW-MO6-010
Alkalinity (as CaCO3)	3.0	120	78	100	81	36	58	25	6.0	70
Chloride	1.3	4.9	3.6	6.8	5.5	2.1	2.6	1.8	2.2	3.2
Nitrite as N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate as N	0.46	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	8.9	1.6	3.7	7.9	11	14	15	6.8	9.8	13
BOD	NC	6.4	NC	15	NC	< 6.0	NC	< 6.0	NC	NC
COD	NC	25	NC	11	NC	< 2	NC	16	NC	NC
TOC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Fecal Coliform (#/100ml)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Coliform (#/100ml)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

NOTES: NC = Not Collected
NR = Not Reported
Results in mg/l unless noted otherwise.

TABLE 2-16
GROUND WATER GENERAL CHEMISTRY DATA
APRIL 1989

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location Sample Number	MW7S GW-MW7S-011	MW7D GW-MW7D-012	MW8S GW-MW8S-013	MW8D GW-MW8D-014	MW9S GW-MW9S-015	MW9D GW-MW9D-016	MW10D GW-MW10D-017	MW11D GW-MW11D-018	MW12S GW-MW12S-019	MW12D GW-MW12D-020
Alkalinity (as CaCO3)	8.0	0	46	NC	3.0	3.0	0	72	26	67
Chloride	2.8	1.8	1.3	NC	3.5	4.2	2.0	2.2	1.9	2.8
Nitrite as N	< 0.05	< 0.05	< 0.05	NC	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate as N	0.21	< 0.10	0.14	NC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	34	17	5.6	NC	8.8	11	14	7.3	12	12
BOD	< 6.0	NC	NC	NC	NC	NC	NC	NC	NC	NC
COD	< 2	NC	NC	NC	NC	NC	NC	NC	NC	NC
TOC	NC	NC	NC	6.7	NC	NC	0.83	NC	NC	NC
Fecal Coliform (#/100ml)	NC	NC	NC	< 2	NC	NC	< 1	NC	NC	NC
Total Coliform (#/100ml)	NC	NC	NC	< 2	NC	NC	< 2	NC	NC	NC

NOTES: NC = Not Collected
NR = Not Reported
Results in mg/l unless noted otherwise.

TABLE 2-16
GROUND WATER GENERAL CHEMISTRY DATA
APRIL 1989

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location Sample Number	MW13S GW-MW13S-021	MW13D GW-MW13D-022	MW14S GW-MW14S-023	MW14D GW-MW14D-024	MW15S GW-MW15S-025	MW15D GW-MW15D-026	MW16D GW-MW16D-027	MW17D GW-MW17D-028	MW18S GW-MW18S-029	MW18D GW-MW18D-030
Alkalinity (as CaCO3)	7.0	71	28	36	55	79	22	59	15	55
Chloride	1.5	1.9	27	5.0	5.8	2.3	17	11	15	28
Nitrite as N	< 0.05	< 0.05	< 0.05	< 0.05	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate as N	< 0.10	< 0.10	0.18	0.11	0.1	< 0.10	0.19	2.6	1.1	< 0.10
Sulfate	4.5	13	9.0	15	31	17	6.7	8.6	26	11
BOD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
COD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
TOC	NC	NC	NC	NC	NC	2.4	1.3	11	NC	3.6
Fecal Coliform (#/100ml)	NC	NC	NC	NC	NC	< 1	< 1	< 1	NC	1
Total Coliform (#/100ml)	NC	NC	NC	NC	NC	4	88	2	NC	4

NOTES: NC = Not Collected
NR = Not Reported
Results in mg/l unless noted otherwise.

TABLE 2-16
GROUND WATER GENERAL CHEMISTRY DATA
APRIL 1989

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location Sample Number	MW19D GW-MW19D-031	OW2SR GW-OW2SR-032	OW2SR GW-DUP-041	OW2DR GW-OW2DR-033	OW3R GW-OW3R-034	OW4SR GW-OW4SR-035	OW4DR GW-OW4DR-036
Alkalinity (as CaCO3)	71	220	210	250	< 0.20	260	NC
Chloride	5.1	5.2	4.7	7.8	2.4	2.9	NC
Nitrite as N	< 0.05	0.12	0.11	< 0.05	< 0.05	< 0.05	NC
Nitrate as N	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	NC
Sulfate	14	0.44	0.44	19	36	8.1	NC
BOD	NC	76	NR	NC	< 6.0	54	NC
COD	NC	160	230	NC	12	130	NC
TOC	2.2	NC	NC	NC	NC	NC	4.9
Fecal Coliform (#/100ml)	< 1	NC	NC	NC	NC	NC	< 2
Total Coliform (#/100ml)	4	NC	NC	NC	NC	NC	< 2

NOTES: NC = Not Collected
NR = Not Reported
Results in mg/l unless noted otherwise.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MO1			GW-MO2S			GW-MO2DR		
Sample Number	001	101	201	002	102	202	003	103	203
Date Collected	04-18-89	09-27-89	12-12-89	04-19-89	09-28-89	12-12-89	04-19-89	09-28-89	12-12-89
INORGANICS (ppb)									
Aluminum	-	NA	NA	-	NA	NA	-	NA	NA
Antimony	-	NA	NA	-	NA	NA	-	NA	NA
Arsenic	-	NA	NA	192	280	190	27.9	80	80
Barium	-	NA	NA	37.7	NA	NA	58.5	NA	NA
Cadmium	-	NA	NA	-	NA	NA	-	NA	NA
Calcium	2560	NA	NA	27500J	NA	NA	20800J	NA	NA
Chromium	-	NA	NA	-	NA	NA	-	NA	NA
Cobalt	-	NA	NA	51J	NA	NA	-	NA	NA
Copper	-	NA	NA	-	NA	NA	-	NA	NA
Iron	-	NA	NA	10700	NA	NA	1510	NA	NA
Lead	-	NA	NA	-	NA	NA	-	NA	NA
Magnesium	-	NA	NA	4410J	NA	NA	3860J	NA	NA
Manganese	-	NA	NA	3740	NA	NA	839	NA	NA
Mercury	-	NA	NA	-	NA	NA	-	NA	NA
Nickel	-	NA	NA	-	NA	NA	-	NA	NA
Potassium	-	NA	NA	3020J	NA	NA	2650J	NA	NA
Selenium	-	NA	NA	-	NA	NA	-	NA	NA
Silver	-	NA	NA	-	NA	NA	-	NA	NA
Sodium	2180	NA	NA	9970J	NA	NA	5120J	NA	NA
Vanadium	-	NA	NA	-	NA	NA	-	NA	NA
Zinc	516J	NA	NA	-	NA	NA	57.8J	NA	NA
Cyanide	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MO3SR			GW-MO3DR			GW-MO4S		
Sample Number:	004	104	204	005	105	205	006	106	206
Date Collected:	04-19-89	09-28-89	12-12-89	04-19-89	09-28-89	12-14-89	04-18-89	09-28-89	12-13-89
VOLATILES (ppb)									
Vinyl Chloride	34J	92	69	26	62	82	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	81	160	400	14	17	14	9	6	14
1,2-Dichloroethene (total)	170	85	51	200	200	200	-	-	-
1,1,1-Trichloroethane	-	3J	26	-	-	-	-	-	-
Trichloroethene	70	40	32	98	80	76	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	7J	-	-	-
Toluene	40	65	150	4J	2J	2J	-	-	-
Ethylbenzene	25	40	100	22	22	24	-	-	-
Total Xylenes	37	62	190	6	9	8J	-	-	-
Tetrahydrofuran	-	150	220	-	260	210	-	-	7J
SEMIVOLATILES (ppb)									
Phenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzyl Alcohol	-	NA	NA	-	NA	NA	-	NA	NA
2-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
4-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
Isophorone	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	NA	NA	-	NA	NA	-	NA	NA
2-Nitrophenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzoic Acid	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	NA	NA	-	NA	NA	-	NA	NA
Naphthalene	-	NA	NA	-	NA	NA	-	NA	NA
Acenaphthene	-	NA	NA	-	NA	NA	1J	NA	NA
Diethylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
Di-n-butylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	-	NA	NA	-	NA	NA	-	NA	NA
PESTICIDE/PCBs (ppb)									
alpha-BHC	-	NA	NA	-	NA	NA	-	NA	NA
beta-BHC	-	NA	NA	-	NA	NA	-	NA	NA
gamma-BHC (Lindane)	-	NA	NA	-	NA	NA	-	NA	NA
Aldrin	-	NA	NA	-	NA	NA	-	NA	NA
4,4'-DDT	-	NA	NA	-	NA	NA	-	NA	NA
Aroclor-1260	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MO3SR			GW-MO3DR			GW-MO4S		
Sample Number	004	104	204	005	105	205	006	106	206
Date Collected	04-19-89	09-28-89	12-12-89	04-19-89	09-28-89	12-14-89	04-18-89	09-28-89	12-13-89
INORGANICS (ppb)									
Aluminum	-	NA	NA	-	NA	NA	-	NA	NA
Antimony	-	NA	NA	-	NA	NA	-	NA	NA
Arsenic	433	570	540	19.1	40	51	10.4	12	NA
Barium	-	NA	NA	48.9	NA	NA	-	NA	NA
Cadmium	-	NA	NA	-	NA	NA	-	NA	NA
Calcium	16300J	NA	NA	24400J	NA	NA	6050	NA	NA
Chromium	-	NA	NA	-	NA	NA	-	NA	NA
Cobalt	-	NA	NA	-	NA	NA	-	NA	NA
Copper	-	NA	NA	-	NA	NA	-	NA	NA
Iron	18000	NA	NA	-	NA	NA	3950	NA	NA
Lead	3.0J	NA	NA	2.7J	NA	NA	-	NA	NA
Magnesium	3130J	NA	NA	4270J	NA	NA	1340	NA	NA
Manganese	4440	NA	NA	123	NA	NA	4250	NA	NA
Mercury	-	NA	NA	-	NA	NA	-	NA	NA
Nickel	-	NA	NA	-	NA	NA	-	NA	NA
Potassium	3160J	NA	NA	2840J	NA	NA	3050	NA	NA
Selenium	1.0J	NA	NA	-	NA	NA	-	NA	NA
Silver	-	NA	NA	-	NA	NA	-	NA	NA
Sodium	18000J	NA	NA	5630J	NA	NA	7710	NA	NA
Vanadium	-	NA	NA	-	NA	NA	-	NA	NA
Zinc	-	NA	NA	-	NA	NA	-	NA	NA
Cyanide	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MO4D			GW-MO5S			GW-MO5DR		
Sample Number:	007	107	207	008	108	208	009	109	209
Date Collected:	04-18-89	09-28-89	12-13-89	04-20-89	09-27-89	12-12-89	04-20-89	09-27-89	12-12-89
VOLATILES (ppb)									
Vinyl Chloride	-	-	-	-	-	-	5J	2J	7J
Chloroethane	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	4J	-	-	6	4J	4J
1,2-Dichloroethene (total)	-	-	-	27	4J	4J	55	33	37
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethene	1J	-	-	8	-	-	19	11	11
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	5J	8J	-	-	-	-	50	50
SEMIVOLATILES (ppb)									
Phenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzyl Alcohol	-	NA	NA	-	NA	NA	-	NA	NA
2-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
4-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
Isophorone	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	NA	NA	-	NA	NA	-	NA	NA
2-Nitrophenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzoic Acid	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	NA	NA	-	NA	NA	-	NA	NA
Naphthalene	-	NA	NA	-	NA	NA	-	NA	NA
Acenaphthene	-	NA	NA	-	NA	NA	-	NA	NA
Diethylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
Di-n-butylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	15	NA	NA	-	NA	NA	-	NA	NA
PESTICIDE/PCBs (ppb)									
alpha-BHC	-	NA	NA	-	NA	NA	-	NA	NA
beta-BHC	-	NA	NA	-	NA	NA	-	NA	NA
gamma-BHC (Lindane)	-	NA	NA	-	NA	NA	-	NA	NA
Aldrin	-	NA	NA	-	NA	NA	-	NA	NA
4,4'-DDT	-	NA	NA	-	NA	NA	-	NA	NA
Aroclor-1260	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-M06		GW-MW7S		GW-MW7D		
Sample Number	010	110	011	111	012	112	211
Date Collected	04-19-89	09-28-89	04-18-89	09-27-89	04-19-89	09-27-89	12-12-89
INORGANICS (ppb)							
Aluminum	-	NA	-	NA	3710	NA	NA
Antimony	-	NA	-	NA	-	NA	NA
Arsenic	5.5	6	-	NA	5.2J	27	NA
Barium	-	NA	-	NA	-	NA	NA
Cadmium	-	NA	-	NA	-	NA	NA
Calcium	20100J	NA	3410	NA	16800J	NA	NA
Chromium	-	NA	-	NA	-	NA	NA
Cobalt	-	NA	-	NA	37.9J	NA	NA
Copper	-	NA	-	NA	-	NA	NA
Iron	714	NA	-	NA	-	NA	NA
Lead	2.4J	NA	-	NA	2.8J	NA	NA
Magnesium	3040J	NA	-	NA	-	NA	NA
Manganese	145	NA	391	NA	-	NA	NA
Mercury	-	NA	-	NA	-	NA	NA
Nickel	-	NA	-	NA	-	NA	NA
Potassium	2440J	NA	-	NA	48800J	NA	NA
Selenium	-	NA	-	NA	-	NA	NA
Silver	-	NA	-	NA	-	NA	NA
Sodium	6380J	NA	14500	NA	68800J	NA	NA
Vanadium	-	NA	-	NA	-	NA	NA
Zinc	-	NA	-	NA	-	NA	NA
Cyanide	-	NA	-	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW8S			GW-MW8D			GW-MW9S
Sample Number:	013	113	214	014	213	301	015
Date Collected:	04-18-89	09-27-89	12-12-89	04-20-89	12-12-89	03-09-90	04-19-89
VOLATILES (ppb)							
Vinyl Chloride	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	3J
1,1-Dichloroethene	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	1J	-	44J	110	50	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Trichloroethene	110	120	76	210	790	220	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-
Tetrahydrofuran	-	9J	-	224	230	110	-
SEMIVOLATILES (ppb)							
Phenol	-	NA	NA	NA	NA	NA	-
Benzyl Alcohol	-	NA	NA	NA	NA	NA	-
2-Methylphenol	-	NA	NA	NA	NA	NA	-
4-Methylphenol	-	NA	NA	NA	NA	NA	-
Isophorone	-	NA	NA	NA	NA	NA	-
2,4-Dimethylphenol	-	NA	NA	NA	NA	NA	-
2-Nitrophenol	-	NA	NA	NA	NA	NA	-
Benzoic Acid	-	NA	NA	NA	NA	NA	-
2,4-Dichlorophenol	-	NA	NA	NA	NA	NA	-
Naphthalene	-	NA	NA	NA	NA	NA	-
Acenaphthene	-	NA	NA	NA	NA	NA	-
Diethylphthalate	-	NA	NA	NA	NA	NA	-
Di-n-butylphthalate	-	NA	NA	NA	NA	NA	-
bis(2-Ethylhexyl)phthalate	-	NA	NA	NA	NA	NA	-
PESTICIDE/PCBs (ppb)							
alpha-BHC	-	NA	NA	NA	NA	NA	-
beta-BHC	-	NA	NA	NA	NA	NA	-
gamma-BHC (Lindane)	-	NA	NA	NA	NA	NA	-
Aldrin	-	NA	NA	NA	NA	NA	-
4,4'-DDT	-	NA	NA	NA	NA	NA	-
Aroclor-1260	-	NA	NA	NA	NA	NA	-

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW8S			GW-MW8D			GW-MW9S
Sample Number	013	113	214	014	213	301	015
Date Collected	04-18-89	09-27-89	12-12-89	04-20-89	12-12-89	03-09-90	04-19-89
INORGANICS (ppb)							
Aluminum	-	NA	NA	NA	NA	NA	467
Antimony	-	NA	NA	NA	NA	NA	-
Arsenic	16.8	10	-	NA	NA	NA	-
Barium	-	NA	NA	NA	NA	NA	-
Cadmium	-	NA	NA	NA	NA	NA	2.8J
Calcium	7900	NA	NA	NA	NA	NA	1540J
Chromium	-	NA	NA	NA	NA	NA	-
Cobalt	-	NA	NA	NA	NA	NA	37.3J
Copper	-	NA	NA	NA	NA	NA	-
Iron	1520	NA	NA	NA	NA	NA	-
Lead	-	NA	NA	NA	NA	NA	3.6J
Magnesium	2350	NA	NA	NA	NA	NA	661J
Manganese	2670	NA	NA	NA	NA	NA	225
Mercury	-	NA	NA	NA	NA	NA	-
Nickel	-	NA	NA	NA	NA	NA	126J
Potassium	5000	NA	NA	NA	NA	NA	709J
Selenium	-	NA	NA	NA	NA	NA	-
Silver	-	NA	NA	NA	NA	NA	-
Sodium	5150	NA	NA	NA	NA	NA	3360J
Vanadium	-	NA	NA	NA	NA	NA	-
Zinc	-	NA	NA	NA	NA	NA	-
Cyanide	-	NA	NA	NA	NA	NA	-

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW9D			GW-MW10D		GW-MW11D		
Sample Number:	016	116	215	017	117	018	118	216
Date Collected:	04-18-89	09-27-89	12-12-89	04-19-89	09-28-89	04-20-89	09-27-89	12-12-89
VOLATILES (ppb)								
Vinyl Chloride	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)								
Phenol	-	NA	NA	-	NA	-	NA	NA
Benzyl Alcohol	-	NA	NA	-	NA	-	NA	NA
2-Methylphenol	-	NA	NA	-	NA	-	NA	NA
4-Methylphenol	-	NA	NA	-	NA	-	NA	NA
Isophorone	-	NA	NA	-	NA	-	NA	NA
2,4-Dimethylphenol	-	NA	NA	-	NA	-	NA	NA
2-Nitrophenol	-	NA	NA	-	NA	-	NA	NA
Benzoic Acid	-	NA	NA	-	NA	-	NA	NA
2,4-Dichlorophenol	-	NA	NA	-	NA	-	NA	NA
Naphthalene	-	NA	NA	-	NA	-	NA	NA
Acenaphthene	-	NA	NA	-	NA	-	NA	NA
Diethylphthalate	-	NA	NA	-	NA	-	NA	NA
Di-n-butylphthalate	-	NA	NA	-	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	-	NA	NA	-	NA	-	NA	NA
PESTICIDE/PCBs (ppb)								
alpha-BHC	-	NA	NA	-	NA	-	-	NA
beta-BHC	-	NA	NA	-	NA	-	-	NA
gamma-BHC (Lindane)	-	NA	NA	-	NA	-	-	NA
Aldrin	-	NA	NA	-	NA	-	-	NA
4,4'-DDT	-	NA	NA	-	NA	-	-	NA
Aroclor-1260	-	NA	NA	-	NA	0.59J	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW9D			GW-MW10D		GW-MW11D		
Sample Number	016	116	215	017	117	018	118	216
Date Collected	04-18-89	09-27-89	12-12-89	04-19-89	09-28-89	04-20-89	09-27-89	12-12-89
INORGANICS (ppb)								
Aluminum	194	NA	NA	676	NA	-	NA	NA
Antimony	-	NA	NA	-	NA	-	NA	NA
Arsenic	-	NA	NA	-	NA	-	NA	NA
Barium	-	NA	NA	-	NA	-	NA	NA
Cadmium	-	NA	NA	-	NA	-	NA	NA
Calcium	1920	NA	NA	12500	NA	4620	NA	NA
Chromium	-	NA	NA	-	NA	46.0J	NA	NA
Cobalt	-	NA	NA	-	NA	-	NA	NA
Copper	-	NA	NA	-	NA	-	NA	NA
Iron	662	NA	NA	-	NA	633	NA	NA
Lead	-	NA	NA	-	NA	-	NA	NA
Magnesium	-	NA	NA	-	NA	450	NA	NA
Manganese	108	NA	NA	-	NA	110	NA	NA
Mercury	-	NA	NA	-	NA	-	NA	NA
Nickel	-	NA	NA	-	NA	-	NA	NA
Potassium	-	NA	NA	5770	NA	1050	NA	NA
Selenium	-	NA	NA	-	NA	-	NA	NA
Silver	-	NA	NA	-	NA	-	NA	NA
Sodium	3720	NA	NA	6770	NA	3950	NA	NA
Vanadium	-	NA	NA	-	NA	-	NA	NA
Zinc	-	NA	NA	-	NA	48.2	NA	NA
Cyanide	-	NA	NA	-	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW12S			GW-MW12D			GW-MW13S		
Sample Number:	019	119	217	020	120	218	021	121	219
Date Collected:	04-18-89	09-27-89	12-12-89	04-18-89	09-27-89	12-14-89	04-18-89	09-27-89	12-12-89
VOLATILES (ppb)									
Vinyl Chloride	-	-	-	1J	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	19	9	11	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	6	2J	2J	-	-	-
4-Methyl-2-Pentanone	-	-	-	5J	-	2J	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	40	18	16	-	-	-
SEMIVOLATILES (ppb)									
Phenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzyl Alcohol	-	NA	NA	-	NA	NA	-	NA	NA
2-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
4-Methylphenol	-	NA	NA	-	NA	NA	-	NA	NA
Isophorone	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	NA	NA	-	NA	NA	-	NA	NA
2-Nitrophenol	-	NA	NA	-	NA	NA	-	NA	NA
Benzoic Acid	-	NA	NA	-	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	NA	NA	-	NA	NA	-	NA	NA
Naphthalene	-	NA	NA	-	NA	NA	-	NA	NA
Acenaphthene	-	NA	NA	-	NA	NA	-	NA	NA
Diethylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
Di-n-butylphthalate	-	NA	NA	-	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	5J	NA	NA	-	NA	NA	2J	NA	NA
PESTICIDE/PCBs (ppb)									
alpha-BHC	-	NA	NA	-	NA	NA	-	NA	NA
beta-BHC	-	NA	NA	-	NA	NA	-	NA	NA
gamma-BHC (Lindane)	-	NA	NA	-	NA	NA	-	NA	NA
Aldrin	-	NA	NA	-	NA	NA	-	NA	NA
4,4'-DDT	-	NA	NA	-	NA	NA	-	NA	NA
Aroclor-1260	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW12S			GW-MW12D			GW-MW13S		
Sample Number	019	119	217	020	120	218	021	121	219
Date Collected	04-18-89	09-27-89	12-12-89	04-18-89	09-27-89	12-14-89	04-18-89	09-27-89	12-12-89
INORGANICS (ppb)									
Aluminum	-	NA	NA	-	NA	NA	-	NA	NA
Antimony	-	NA	NA	-	NA	NA	-	NA	NA
Arsenic	-	NA	NA	6.0	NA	NA	-	NA	NA
Barium	-	NA	NA	36.8	NA	NA	-	NA	NA
Cadmium	-	NA	NA	-	NA	NA	-	NA	NA
Calcium	7480	NA	NA	22500	NA	NA	3690	NA	NA
Chromium	-	NA	NA	-	NA	NA	-	NA	NA
Cobalt	-	NA	NA	-	NA	NA	-	NA	NA
Copper	-	NA	NA	-	NA	NA	-	NA	NA
Iron	-	NA	NA	364	NA	NA	-	NA	NA
Lead	-	NA	NA	-	NA	NA	-	NA	NA
Magnesium	1450	NA	NA	3960	NA	NA	-	NA	NA
Manganese	184	NA	NA	82.9	NA	NA	-	NA	NA
Mercury	-	NA	NA	-	NA	NA	-	NA	NA
Nickel	-	NA	NA	-	NA	NA	-	NA	NA
Potassium	2790	NA	NA	2900	NA	NA	-	NA	NA
Selenium	-	NA	NA	-	NA	NA	-	NA	NA
Silver	-	NA	NA	-	NA	NA	-	NA	NA
Sodium	7120	NA	NA	4980	NA	NA	2400	NA	NA
Vanadium	-	NA	NA	-	NA	NA	-	NA	NA
Zinc	-	NA	NA	-	NA	NA	161J	NA	NA
Cyanide	-	NA	NA	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW13D				GW-MW14S		
Sample Number:	022	038	122	220	023	123	221
Date Collected:	04-18-89	04-18-89 Duplicate	09-27-89	12-13-89	04-18-89	09-27-89	12-13-89
VOLATILES (ppb)							
Vinyl Chloride	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)							
Phenol	-	-	NA	NA	-	NA	NA
Benzyl Alcohol	-	-	NA	NA	-	NA	NA
2-Methylphenol	-	-	NA	NA	-	NA	NA
4-Methylphenol	-	-	NA	NA	-	NA	NA
Isophorone	-	-	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	-	NA	NA	-	NA	NA
2-Nitrophenol	-	-	NA	NA	-	NA	NA
Benzoic Acid	-	-	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	-	NA	NA	-	NA	NA
Naphthalene	-	-	NA	NA	-	NA	NA
Acenaphthene	-	-	NA	NA	-	NA	NA
Diethylphthalate	-	-	NA	NA	-	NA	NA
Di-n-butylphthalate	-	-	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	3J	2J	NA	NA	-	NA	NA
PESTICIDE/PCBs (ppb)							
alpha-BHC	-	-	NA	NA	-	NA	NA
beta-BHC	-	-	NA	NA	-	NA	NA
gamma-BHC (Lindane)	-	-	NA	NA	-	NA	NA
Aldrin	-	-	NA	NA	-	NA	NA
4,4'-DDT	-	-	NA	NA	-	NA	NA
Aroclor-1260	-	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW13D				GW-MW14S		
Sample Number	022	038	122	220	023	123	221
Date Collected	04-18-89	04-18-89	09-27-89	12-13-89	04-18-89	09-27-89	12-13-89
		Duplicate					
INORGANICS (ppb)							
Aluminum	-	-	NA	NA	-	NA	NA
Antimony	-	-	NA	NA	-	NA	NA
Arsenic	2.6	2.6	NA	NA	4.7	NA	NA
Barium	-	-	NA	NA	-	NA	NA
Cadmium	-	-	NA	NA	-	NA	NA
Calcium	24400	24100	NA	NA	17500	NA	NA
Chromium	-	-	NA	NA	-	NA	NA
Cobalt	-	-	NA	NA	-	NA	NA
Copper	-	-	NA	NA	-	NA	NA
Iron	-	-	NA	NA	546	NA	NA
Lead	-	-	NA	NA	-	NA	NA
Magnesium	4060	3810	NA	NA	2980	NA	NA
Manganese	83.8	72.6	NA	NA	612	NA	NA
Mercury	-	-	NA	NA	-	NA	NA
Nickel	-	-	NA	NA	-	NA	NA
Potassium	2960	3050	NA	NA	3750	NA	NA
Selenium	-	-	NA	NA	-	NA	NA
Silver	-	-	NA	NA	-	NA	NA
Sodium	4880	4940	NA	NA	8410	NA	NA
Vanadium	-	-	NA	NA	-	NA	NA
Zinc	110J	178J	NA	NA	-	NA	NA
Cyanide	-	-	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW14D			GW-MW15S	GW-MW15D		GW-MW16D	
Sample Number:	024	124	222	025	026	126	027	127
Date Collected:	04-18-89	09-27-89	12-13-89	04-20-89	04-19-89	09-28-89	04-19-89	09-28-89
VOLATILES (ppb)								
Vinyl Chloride	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	1J	-
Ethylbenzene	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)								
Phenol	-	NA	NA	-	-	NA	-	NA
Benzyl Alcohol	-	NA	NA	-	-	NA	-	NA
2-Methylphenol	-	NA	NA	-	-	NA	-	NA
4-Methylphenol	-	NA	NA	-	-	NA	-	NA
Isophorone	-	NA	NA	-	-	NA	-	NA
2,4-Dimethylphenol	-	NA	NA	-	-	NA	-	NA
2-Nitrophenol	-	NA	NA	-	-	NA	-	NA
Benzoic Acid	-	NA	NA	-	-	NA	-	NA
2,4-Dichlorophenol	-	NA	NA	-	-	NA	-	NA
Naphthalene	-	NA	NA	4J	-	NA	-	NA
Acenaphthene	-	NA	NA	-	-	NA	-	NA
Diethylphthalate	-	NA	NA	-	-	NA	-	NA
Di-n-butylphthalate	-	NA	NA	-	-	NA	-	NA
bis(2-Ethylhexyl)phthalate	-	NA	NA	3J	10J	NA	-	NA
PESTICIDE/PCBs (ppb)								
alpha-BHC	-	NA	NA	-	-	NA	-	NA
beta-BHC	-	NA	NA	-	-	NA	-	NA
gamma-BHC (Lindane)	-	NA	NA	-	-	NA	-	NA
Aldrin	-	NA	NA	-	-	NA	-	NA
4,4'-DDT	-	NA	NA	-	-	NA	-	NA
Aroclor-1260	-	NA	NA	-	-	NA	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW14D			GW-MW15S	GW-MW15D		GW-MW16D	
Sample Number	024	124	222	025	026	126	027	127
Date Collected	04-18-89	09-27-89	12-13-89	04-20-89	04-19-89	09-28-89	04-19-89	09-28-89
INORGANICS (ppb)								
Aluminum	-	NA	NA	-	-	NA	-	NA
Antimony	-	NA	NA	5.0J	-	NA	-	NA
Arsenic	2.3	NA	NA	-	2.2	NA	-	NA
Barium	-	NA	NA	-	-	NA	-	NA
Cadmium	-	NA	NA	-	-	NA	-	NA
Calcium	25100	NA	NA	6220J	19800	NA	10300J	NA
Chromium	-	NA	NA	-	-	NA	-	NA
Cobalt	-	NA	NA	-	-	NA	-	NA
Copper	-	NA	NA	-	-	NA	-	NA
Iron	-	NA	NA	-	588	NA	-	NA
Lead	-	NA	NA	2.8J	-	NA	6.0J	NA
Magnesium	3460	NA	NA	1540J	3680	NA	1240J	NA
Manganese	63.2	NA	NA	1450	125	NA	22.1	NA
Mercury	-	NA	NA	-	-	NA	-	NA
Nickel	-	NA	NA	-	-	NA	-	NA
Potassium	4130	NA	NA	3150J	4500	NA	1200J	NA
Selenium	-	NA	NA	-	-	NA	-	NA
Silver	-	NA	NA	-	-	NA	-	NA
Sodium	8210	NA	NA	32000J	7540	NA	8730J	NA
Vanadium	-	NA	NA	-	-	NA	-	NA
Zinc	-	NA	NA	-	-	NA	-	NA
Cyanide	-	NA	NA	-	-	NA	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW17D		GW-MW18S		GW-MW18D			GW-MW19D	
Sample Number:	028	128	029	129	030	130	223	031	131
Date Collected:	04-19-89	09-28-89	04-20-89	09-28-89	04-19-89	09-28-89	12-12-89	04-19-89	09-28-89
VOLATILES (ppb)									
Vinyl Chloride	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	4J	-	-	-
SEMIVOLATILES (ppb)									
Phenol	-	NA	-	NA	-	NA	NA	-	NA
Benzyl Alcohol	-	NA	-	NA	-	NA	NA	-	NA
2-Methylphenol	-	NA	-	NA	-	NA	NA	-	NA
4-Methylphenol	-	NA	-	NA	-	NA	NA	-	NA
Isophorone	-	NA	-	NA	-	NA	NA	-	NA
2,4-Dimethylphenol	-	NA	-	NA	-	NA	NA	-	NA
2-Nitrophenol	-	NA	-	NA	-	NA	NA	-	NA
Benzoic Acid	-	NA	-	NA	-	NA	NA	-	NA
2,4-Dichlorophenol	-	NA	-	NA	-	NA	NA	-	NA
Naphthalene	-	NA	-	NA	-	NA	NA	-	NA
Acenaphthene	-	NA	-	NA	-	NA	NA	-	NA
Diethylphthalate	-	NA	-	NA	-	NA	NA	-	NA
Di-n-butylphthalate	-	NA	-	NA	-	NA	NA	-	NA
bis(2-Ethylhexyl)phthalate	-	NA	-	NA	-	NA	NA	-	NA
PESTICIDE/PCBs (ppb)									
alpha-BHC	-	NA	-	NA	-	NA	NA	-	NA
beta-BHC	-	NA	-	NA	-	NA	NA	-	NA
gamma-BHC (Lindane)	-	NA	-	NA	-	NA	NA	-	NA
Aldrin	-	NA	-	NA	-	NA	NA	-	NA
4,4'-DDT	-	NA	-	NA	-	NA	NA	-	NA
Aroclor-1260	-	NA	-	NA	-	NA	NA	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW17D		GW-MW18S		GW-MW18D			GW-MW19D	
Sample Number	028	128	029	129	030	130	223	031	131
Date Collected	04-19-89	09-28-89	04-20-89	09-28-89	04-19-89	09-28-89	12-12-89	04-19-89	09-28-89
INORGANICS (ppb)									
Aluminum	-	NA	-	NA	-	NA	NA	-	NA
Antimony	-	NA	-	NA	-	NA	NA	-	NA
Arsenic	-	NA	-	NA	-	NA	NA	41.3	36
Barium	-	NA	-	NA	-	NA	NA	-	NA
Cadmium	-	NA	-	NA	-	NA	NA	-	NA
Calcium	20700J	NA	11400J	NA	17800J	NA	NA	24700J	NA
Chromium	-	NA	-	NA	-	NA	NA	-	NA
Cobalt	32.7J	NA	30.1J	NA	-	NA	NA	-	NA
Copper	-	NA	-	NA	-	NA	NA	-	NA
Iron	4010	NA	-	NA	-	NA	NA	-	NA
Lead	2.6J	NA	-	NA	2.2J	NA	NA	-	NA
Magnesium	3040J	NA	1320J	NA	3990J	NA	NA	2620J	NA
Manganese	244	NA	552	NA	40.6	NA	NA	140	NA
Mercury	-	NA	-	NA	-	NA	NA	-	NA
Nickel	-	NA	-	NA	-	NA	NA	-	NA
Potassium	3090J	NA	1360J	NA	9750J	NA	NA	1650J	NA
Selenium	-	NA	-	NA	-	NA	NA	-	NA
Silver	-	NA	-	NA	-	NA	NA	-	NA
Sodium	7260J	NA	11700J	NA	11600J	NA	NA	5100J	NA
Vanadium	-	NA	-	NA	-	NA	NA	-	NA
Zinc	15.2J	NA	-	NA	-	NA	NA	-	NA
Cyanide	-	NA	-	NA	-	NA	NA	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW20S		GW-MW20D		GW-MW21S	
Sample Number:	132	224	133	225	134	226
Date Collected:	10-05-89	12-13-89	10-05-89	12-12-89	10-05-89	12-13-89
VOLATILES (ppb)						
Vinyl Chloride	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-
Acetone	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-
SEMIVOLATILES (ppb)						
Phenol	-	NA	-	NA	NA	NA
Benzyl Alcohol	-	NA	-	NA	NA	NA
2-Methylphenol	-	NA	-	NA	NA	NA
4-Methylphenol	-	NA	-	NA	NA	NA
Isophorone	-	NA	-	NA	NA	NA
2,4-Dimethylphenol	-	NA	-	NA	NA	NA
2-Nitrophenol	-	NA	-	NA	NA	NA
Benzoic Acid	-	NA	-	NA	NA	NA
2,4-Dichlorophenol	-	NA	-	NA	NA	NA
Naphthalene	-	NA	-	NA	NA	NA
Acenaphthene	-	NA	-	NA	NA	NA
Diethylphthalate	4J	NA	-	NA	NA	NA
Di-n-butylphthalate	-	NA	-	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	NA	-	NA	NA	NA
PESTICIDE/PCBs (ppb)						
alpha-BHC	-	NA	-	NA	NA	NA
beta-BHC	-	NA	-	NA	NA	NA
gamma-BHC (Lindane)	-	NA	-	NA	NA	NA
Aldrin	-	NA	-	NA	NA	NA
4,4'-DDT	-	NA	-	NA	NA	NA
Aroclor-1260	-	NA	-	NA	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW20S		GW-MW20D		GW-MW21S	
Sample Number	132	224	133	225	134	226
Date Collected	10-05-89	12-13-89	10-05-89	12-12-89	10-05-89	12-13-89
INORGANICS (ppb)						
Aluminum	-	NA	-	NA	-	NA
Antimony	-	NA	-	NA	-	NA
Arsenic	-	NA	-	NA	-	NA
Barium	-	NA	40	NA	30	NA
Cadmium	-	NA	-	NA	-	NA
Calcium	12000	NA	9300	NA	22000	NA
Chromium	-	NA	-	NA	-	NA
Cobalt	-	NA	-	NA	-	NA
Copper	-	NA	-	NA	-	NA
Iron	-	NA	-	NA	-	NA
Lead	-	NA	-	NA	-	NA
Magnesium	1300	NA	2700	NA	3600	NA
Manganese	600	NA	70	NA	1800	NA
Mercury	-	NA	-	NA	-	NA
Nickel	-	NA	-	NA	-	NA
Potassium	-	NA	7000	NA	5000	NA
Selenium	-	NA	-	NA	-	NA
Silver	-	NA	-	NA	-	NA
Sodium	7000	NA	7000	NA	12000	NA
Vanadium	-	NA	-	NA	-	NA
Zinc	30J	NA	40J	NA	10J	NA
Cyanide	5	NA	-	NA	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-MW21D				GW-OW2SR			
Sample Number:	135	142	227	302	032	041	136	228
Date Collected:	10-05-89	10-05-89 Duplicate	12-12-89	03-09-90	04-20-89	04-20-89 Duplicate	09-28-89	12-12-89
VOLATILES (ppb)								
Vinyl Chloride	-	NA	-	-	-	-	90	360
Chloroethane	-	NA	-	-	-	-	-	-
Acetone	-	NA	-	43	-	-	-	-
Carbon Disulfide	-	NA	-	-	-	-	-	-
1,1-Dichloroethene	-	NA	-	-	-	-	7J	-
1,1-Dichloroethane	-	NA	-	-	1300	1300	220	280
1,2-Dichloroethene (total)	32J	NA	7J	8	4000	4200	2800	4700
1,1,1-Trichloroethane	-	NA	-	-	2000	2100	510	200
Trichloroethene	1100	NA	220	170	2300	2400	14J	-
4-Methyl-2-Pentanone	-	NA	-	-	-	-	-	-
Toluene	-	NA	-	-	9100	9200	3600	3500
Ethylbenzene	-	NA	-	-	1700	1700	760	1100
Total Xylenes	-	NA	-	-	4600	4700	2000	2900
Tetrahydrofuran	-	NA	-	47	-	-	27J	-
SEMIVOLATILES (ppb)								
Phenol	-	NA	NA	NA	-	-	-	NA
Benzyl Alcohol	-	NA	NA	NA	13	12	-	NA
2-Methylphenol	-	NA	NA	NA	130J	84J	5J	NA
4-Methylphenol	-	NA	NA	NA	-	93J	6J	NA
Isophorone	-	NA	NA	NA	3J	3J	-	NA
2,4-Dimethylphenol	-	NA	NA	NA	19	17	-	NA
2-Nitrophenol	-	NA	NA	NA	-	-	-	NA
Benzoic Acid	-	NA	NA	NA	54J	44J	-	NA
2,4-Dichlorophenol	-	NA	NA	NA	-	-	6J	NA
Naphthalene	-	NA	NA	NA	2J	2J	3J	NA
Acenaphthene	-	NA	NA	NA	-	-	-	NA
Diethylphthalate	-	NA	NA	NA	-	-	-	NA
Di-n-butylphthalate	-	NA	NA	NA	26J	44J	-	NA
bis(2-Ethylhexyl)phthalate	-	NA	NA	NA	-	7J	-	NA
PESTICIDE/PCBs (ppb)								
alpha-BHC	0.26	NA	NA	NA	-	-	-	NA
beta-BHC	0.03	NA	NA	NA	-	-	-	NA
gamma-BHC (Lindane)	0.04	NA	NA	NA	-	-	-	NA
Aldrin	-	NA	NA	NA	0.37J	-	-	NA
4,4'-DDT	-	NA	NA	NA	0.42J	-	-	NA
Aroclor-1260	-	NA	NA	NA	-	-	-	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-MW21D				GW-OW2SR			
Sample Number	135	142	227	302	032	041	136	228
Date Collected	10-05-89	10-05-89	12-12-89	03-09-90	04-20-89	04-20-89	09-28-89	12-12-89
		Duplicate				Duplicate		
INORGANICS (ppb)								
Aluminum	-	-	NA	NA	-	-	NA	NA
Antimony	-	-	NA	NA	-	-	NA	NA
Arsenic	-	-	NA	NA	188	167	240	360
Barium	30	30	NA	NA	42.0	40.9	NA	NA
Cadmium	-	-	NA	NA	-	-	NA	NA
Calcium	18000	18000	NA	NA	11000	11100	NA	NA
Chromium	-	-	NA	NA	-	10.1J	NA	NA
Cobalt	-	-	NA	NA	-	-	NA	NA
Copper	-	-	NA	NA	-	30.4	NA	NA
Iron	2900	2800	NA	NA	104000	101000	NA	NA
Lead	-	-	NA	NA	-	-	NA	NA
Magnesium	4800	4800	NA	NA	2810	2890	NA	NA
Manganese	340	330	NA	NA	8910	8930	NA	NA
Mercury	-	-	NA	NA	-	1.10	NA	NA
Nickel	-	-	NA	NA	-	-	NA	NA
Potassium	5000	5000	NA	NA	5840	5650	NA	NA
Selenium	-	-	NA	NA	-	-	NA	NA
Silver	-	-	NA	NA	-	-	NA	NA
Sodium	10000	10000	NA	NA	33900	34700	NA	NA
Vanadium	-	-	NA	NA	35.7	40.0	NA	NA
Zinc	20J	30J	NA	NA	39.1	69.4	NA	NA
Cyanide	-	-	NA	NA	-	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-OW2DR					GW-OW3R		
Sample Number:	033	042	137	141	229	034	138	230
Date Collected:	04-20-89	04-20-89 Duplicate	09-29-89	09-29-89 Duplicate	12-12-89	04-20-89	09-28-89	12-12-89
VOLATILES (ppb)								
Vinyl Chloride	120	110	170	170	330	-	-	-
Chloroethane	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	42J	-	28
Carbon Disulfide	13J	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	2J	3J	-	-	-	-
1,1-Dichloroethane	220	180	140	150	120	-	-	-
1,2-Dichloroethene (total)	1900	1600	890	830	1200	-	-	-
1,1,1-Trichloroethane	-	-	2J	2J	-	-	-	-
Trichloroethene	190	180	100	110	120	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-
Toluene	67	54	16J	8J	-	2J	-	-
Ethylbenzene	52	49J	-	-	-	-	-	-
Total Xylenes	36J	-	7	-	-	-	-	-
Tetrahydrofuran	-	-	1500	1600	1600	38	20	16
SEMIVOLATILES (ppb)								
Phenol	-	2J	NA	NA	NA	-	NA	NA
Benzyl Alcohol	-	-	NA	NA	NA	-	NA	NA
2-Methylphenol	-	-	NA	NA	NA	-	NA	NA
4-Methylphenol	-	-	NA	NA	NA	-	NA	NA
Isophorone	10J	-	NA	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	-	NA	NA	NA	-	NA	NA
2-Nitrophenol	-	4J	NA	NA	NA	-	NA	NA
Benzoic Acid	-	-	NA	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	-	NA	NA	NA	-	NA	NA
Naphthalene	3J	-	NA	NA	NA	-	NA	NA
Acenaphthene	-	-	NA	NA	NA	-	NA	NA
Diethylphthalate	-	-	NA	NA	NA	-	NA	NA
Di-n-butylphthalate	-	-	NA	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	8J	9J	NA	NA	NA	-	NA	NA
PESTICIDE/PCBs (ppb)								
alpha-BHC	-	-	NA	NA	NA	-	NA	NA
beta-BHC	-	-	NA	NA	NA	-	NA	NA
gamma-BHC (Lindane)	-	-	NA	NA	NA	-	NA	NA
Aldrin	-	-	NA	NA	NA	-	NA	NA
4,4'-DDT	-	-	NA	NA	NA	-	NA	NA
Aroclor-1260	0.07J	-	NA	NA	NA	0.23J	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-OW2DR					GW-OW3R		
Sample Number	033	042	137	141	229	034	138	230
Date Collected	04-20-89	04-20-89	09-29-89	09-29-89	12-12-89	04-20-89	09-28-89	12-12-89
		Duplicate		Duplicate				
INORGANICS (ppb)								
Aluminum	-	-	NA	NA	NA	202	NA	NA
Antimony	-	-	NA	NA	NA	-	NA	NA
Arsenic	52.8	52.4	120	120	140	5.6	NA	NA
Barium	70.4	66.8	NA	NA	NA	251	NA	NA
Cadmium	-	-	NA	NA	NA	-	NA	NA
Calcium	44200J	39000J	NA	NA	NA	41200	NA	NA
Chromium	-	-	NA	NA	NA	15.7J	NA	NA
Cobalt	-	-	NA	NA	NA	-	NA	NA
Copper	-	-	NA	NA	NA	-	NA	NA
Iron	-	-	NA	NA	NA	-	NA	NA
Lead	9.0J	-	NA	NA	NA	-	NA	NA
Magnesium	4530J	4160J	NA	NA	NA	-	NA	NA
Manganese	230	233	NA	NA	NA	-	NA	NA
Mercury	-	-	NA	NA	NA	-	NA	NA
Nickel	-	-	NA	NA	NA	-	NA	NA
Potassium	27800J	26600J	NA	NA	NA	47200	NA	NA
Selenium	-	-	NA	NA	NA	-	NA	NA
Silver	-	-	NA	NA	NA	-	NA	NA
Sodium	48500J	51800J	NA	NA	NA	44100	NA	NA
Vanadium	-	-	NA	NA	NA	-	NA	NA
Zinc	-	22.5J	NA	NA	NA	33.9	NA	NA
Cyanide	-	-	NA	NA	NA	-	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location:	GW-OW4SR				GW-OW4DR		
Sample Number:	035	139	231	233	036	140	232
Date Collected:	04-19-89	09-28-89	12-12-89	12-12-89 Duplicate	04-20-89	09-28-89	12-12-89
VOLATILES (ppb)							
Vinyl Chloride	-	9J	2J	-	-	2J	-
Chloroethane	-	5J	-	-	-	-	-
Acetone	-	-	30	-	20	-	70
Carbon Disulfide	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-
1,1-Dichloroethane	1300	130	390	380	-	41	32
1,2-Dichloroethene (total)	-	10	2J	-	3J	15	6
1,1,1-Trichloroethane	-	66	16	-	-	3J	-
Trichloroethene	-	1J	-	-	-	12	-
4-Methyl-2-Pentanone	-	54	18	24J	-	-	-
Toluene	5300	400	7	12J	6	440	210
Ethylbenzene	560	120	60	73	2J	45	49
Total Xylenes	1700	230	120	120	4J	120	110
Tetrahydrofuran	-	6J	12	-	290	100	190
SEMIVOLATILES (ppb)							
Phenol	-	-	NA	NA	-	NA	NA
Benzyl Alcohol	41	-	NA	NA	-	NA	NA
2-Methylphenol	14	-	NA	NA	-	NA	NA
4-Methylphenol	5J	-	NA	NA	-	NA	NA
Isophorone	-	-	NA	NA	-	NA	NA
2,4-Dimethylphenol	-	-	NA	NA	-	NA	NA
2-Nitrophenol	-	-	NA	NA	-	NA	NA
Benzoic Acid	14J	-	NA	NA	-	NA	NA
2,4-Dichlorophenol	-	-	NA	NA	-	NA	NA
Naphthalene	-	-	NA	NA	-	NA	NA
Acenaphthene	-	-	NA	NA	-	NA	NA
Diethylphthalate	-	-	NA	NA	-	NA	NA
Di-n-butylphthalate	-	-	NA	NA	-	NA	NA
bis(2-Ethylhexyl)phthalate	3J	-	NA	NA	-	NA	NA
PESTICIDE/PCBs (ppb)							
alpha-BHC	-	NA	NA	NA	NA	NA	NA
beta-BHC	-	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	-	NA	NA	NA	NA	NA	NA
Aldrin	-	NA	NA	NA	NA	NA	NA
4,4'-DDT	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	NA	NA	NA	NA	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-17 (Continued)
GROUND WATER ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	GW-OW4SR				GW-OW4DR		
Sample Number	035	139	231	233	036	140	232
Date Collected	04-19-89	09-28-89	12-12-89	12-12-89 Duplicate	04-20-89	09-28-89	12-12-89
INORGANICS (ppb)							
Aluminum	-	NA	NA	NA	NA	600	NA
Antimony	-	NA	NA	NA	NA	-	NA
Arsenic	97.8	150	130	150	NA	-	NA
Barium	59.9	NA	NA	NA	NA	930	NA
Cadmium	-	NA	NA	NA	NA	-	NA
Calcium	12700	NA	NA	NA	NA	258000	NA
Chromium	-	NA	NA	NA	NA	-	NA
Cobalt	-	NA	NA	NA	NA	-	NA
Copper	-	NA	NA	NA	NA	30	NA
Iron	99500	NA	NA	NA	NA	-	NA
Lead	-	NA	NA	NA	NA	-	NA
Magnesium	3570	NA	NA	NA	NA	-	NA
Manganese	4630	NA	NA	NA	NA	-	NA
Mercury	-	NA	NA	NA	NA	-	NA
Nickel	-	NA	NA	NA	NA	-	NA
Potassium	4060	NA	NA	NA	NA	47000	NA
Selenium	-	NA	NA	NA	NA	-	NA
Silver	-	NA	NA	NA	NA	-	NA
Sodium	50200	NA	NA	NA	NA	48000	NA
Vanadium	-	NA	NA	NA	NA	-	NA
Zinc	-	NA	NA	NA	NA	30J	NA
Cyanide	-	NA	NA	NA	NA	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-18
SUMMARY OF SURFACE WATER/SEDIMENT ANALYTICAL PARAMETERS

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

PARAMETERS ANALYZED

SAMPLING LOCATIONS	HSL VOCs	HSL SVOCs	HSL Pesticides PCBs	HSL Inorganics	Cyanide	Alkalinity, Nitrate, Nitrite, Sulfate, & Chloride
Surface Water						
S1	1,2,3	1	1,2	1	1	1
S2	1,2,3	1	1,2	1	1	1
S3	1,2,3	1	1,2	1	1	1
S4	1,2	1	1	1	1	1
S5	1,2,3	1	1,2	1	1	1
S6	1,2,3	1	1,2	1	1	1
S7	1,2	1	1,2	1	1	1
S8	1,2	1	1,2	1	1	1
S9	1,2	1	1,2	1	1	1
S10	1,2,3	1	1,2	1	1	1
Sediment:						
S1	1	1	1	1	1	
S2	1	1	1	1	1	
S3	1	1	1	1	1	
S4	1	1	1	1	1	
S5	1	1	1	1	1	
S6	1	1	1	1	1	
S9	1	1	1	1	1	
S10	1	1	1	1	1	

NOTES:

1. Numbers under each analytical parameter refer to the following surface water/sediment sampling rounds: (1) April 1989; (2) September 1989; and (3) December 1989.
2. HSL VOCs = Hazardous Substance List Volatile Organic Compounds. Tetrahydrofuran and methyl tert-butyl ether were analyzed as added compounds in April 1989, and tetrahydrofuran was analyzed as an added compound in September and December 1989.
3. HSL SVOCs = Hazardous Substance List Semivolatile or Acid/Base Neutral (ABN) Extractable Organic Compounds.
4. HSL Inorganics = Hazardous Substance List inorganic substances or metals, excluding cyanide.

TABLE 2-19

QA/QC SAMPLE SUMMARY - SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	April 1989	September 1989	December 1989
EPA Split Locations	S3 S6 S9	S3 S6 S9	S3
EPA Duplicate Locations	S3	S3	
Balsam Duplicate Locations	S2	S9	S3

TABLE 2-20
SURFACE WATER FIELD DATA SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	TEMPERATURE (Celsius)			pH (Standard Units)			Conductivity (umhos/cm)		
LOCATION	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989	Apr. 1989	Sep. 1989	Dec. 1989
S-1	4	9	< 0	4.7	5.0	6.4	20	20	0
S-2	4	10	0	4.8	5.2	6.1	20	20	0
S-3	6	7	< 0	5.0	5.4	6.6	20	145	0
S-4	9	12	NS	4.2	4.1	NS	15	60	NS
S-5	5	7	< 0	5.0	5.9	6.6	20	20	0
S-6	5	6	< 0	5.4	5.3	6.5	20	20	10
S-7	11	12	NS	5.2	5.2	NS	65	60	NS
S-8	11	13	NS	5.4	6.4	NS	65	70	NS
S-9	8	10	NS	5.1	5.5	NS	35	50	NS
S-10	5	9	0	5.1	5.8	6.5	95	130	0

LEGEND:

NS = Not Sampled

TABLE 2-21
SURFACE WATER GENERAL CHEMISTRY DATA
APRIL 1989

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location Sample Number	S-1 SW-S1-001	S-2 SW-S2-002	S-3 SW-S3-003	S-4 SW-S4-009	S-5 SW-S5-005	S-6 SW-S6-006	S-7 SW-S7-007	S-8 SW-S8-008	S-9 SW-S9-004	S-10 SW-S10-010
Alkalinity (as CaCO3)	12	56	2.0	2.0	10	32	5.0	4.0	10	1.0
Chloride	2.1	2.0	2.4	3.2	2.3	2.3	15.0	15	3.4	2.2
Nitrite as N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate as N	< 0.10	0.10	0.17	< 0.10	0.15	0.12	< 0.10	< 0.10	< 0.10	8.1
Sulfate	5.2	5.5	6.6	4.3	6.8	6.0	6.4	5.9	6.6	12
BOD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
COD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
TOC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Fecal Coliform (#/100ml)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Coliform (#/100ml)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

NOTES: NC = Not Collected
Results in mg/l unless noted otherwise.

TABLE 2-22
SURFACE WATER DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	SW-S1			SW-S2			
Sample Number	001	101	201	002	011	102	202
Date of Collection	04-20-89	09-28-89	12-12-89	04-20-89	04-20-89 Duplicate	09-28-89	12-12-89
VOLATILES (ppb)							
1,1-Dichloroethane	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)							
bis(2-Ethylhexyl)phthalate	-	NA	NA	-	3	NA	NA
PESTICIDE/PCBs (ppb)							
Aroclor 1260	0.97J	-	NA	0.99J	-	-	NA
INORGANICS (ppb)							
Aluminum	81.5	NA	NA	111	104	NA	NA
Calcium	1880	NA	NA	2060	2130	NA	NA
Chromium	13.9J	NA	NA	20.2J	-	NA	NA
Iron	-	NA	NA	-	-	NA	NA
Lead	-	NA	NA	-	-	NA	NA
Magnesium	558	NA	NA	585	626	NA	NA
Manganese	-	NA	NA	-	-	NA	NA
Potassium	1290	NA	NA	1640	1320	NA	NA
Silver	-	NA	NA	-	-	NA	NA
Sodium	2320	NA	NA	2740	2370	NA	NA
Zinc	22.9	NA	NA	29.5	27.7	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-22 (Continued)
SURFACE WATER DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	SW-S3				SW-S4		SW-S5		
Sample Number	003	103	203	209	009	104	005	105	205
Date of Collection	04-20-89	09-28-89	12-12-89	12-12-89 Duplicate	04-20-89	09-28-89	04-20-89	09-28-89	12-12-89
VOLATILES (ppb)									
1,1-Dichloroethane	1J	-	3J	3J	-	-	-	-	2J
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethene	4J	-	-	-	-	-	-	-	-
Tetrachloroethene	9	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	1J	1J	-	-	-	-	-
Tetrahydrofuran	-	-	3J	4J	-	-	-	-	-
SEMIVOLATILES (ppb)									
bis(2-Ethylhexyl)phthalate	-	NA	NA	NA	-	NA	21	NA	NA
PESTICIDE/PCBs (ppb)									
Aroclor 1260	-	-	NA	NA	-	NA	0.11J	-	NA
INORGANICS (ppb)									
Aluminum	251	NA	NA	NA	233	NA	169	NA	NA
Calcium	2190	NA	NA	NA	1440	NA	2170	NA	NA
Chromium	18.5J	NA	NA	NA	-	NA	18.9J	NA	NA
Iron	268	NA	NA	NA	396	NA	223	NA	NA
Lead	-	NA	NA	NA	-	NA	-	NA	NA
Magnesium	595	NA	NA	NA	436	NA	720	NA	NA
Manganese	70	NA	NA	NA	38.6	NA	56.6	NA	NA
Potassium	1470	NA	NA	NA	927	NA	1360	NA	NA
Silver	-	NA	NA	NA	-	NA	87.1J	NA	NA
Sodium	2600	NA	NA	NA	2890	NA	2490	NA	NA
Zinc	17.2	NA	NA	NA	34.4	NA	16.7	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-22 (Continued)
SURFACE WATER DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	SW-S6			SW-S7		SW-S8		SW-S9		
Sample Number	006	106	206	007	107	008	108	004	109	111
Date of Collection	04-20-89	09-28-89	12-12-89	04-20-89	09-28-89	04-20-89	09-28-89	04-20-89	09-28-89	09-28-89 Duplicate
VOLATILES (ppb)										
1,1-Dichloroethane	-	-	-	-	-	-	-	41	19	19
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	7	9	8
1,1,1-Trichloroethane	-	-	-	-	-	-	-	15	15	14
Trichloroethene	-	-	-	-	-	-	-	-	2J	2J
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	10	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)										
bis(2-Ethylhexyl)phthalate	-	NA	NA	-	NA	-	NA	-	NA	NA
PESTICIDE/PCBs (ppb)										
Aroclor 1260	-	-	NA	-	-	0.17J	-	0.59J	-	-
INORGANICS (ppb)										
Aluminum	113	NA	NA	-	NA	-	NA	5880	NA	NA
Calcium	2130J	NA	NA	4340	NA	4210	NA	3040	NA	NA
Chromium	-	NA	NA	11.6J	NA	15.7J	NA	-	NA	NA
Iron	-	NA	NA	-	NA	197	NA	3650	NA	NA
Lead	-	NA	NA	-	NA	-	NA	13.4	NA	NA
Magnesium	586J	NA	NA	943	NA	805	NA	730	NA	NA
Manganese	19.4	NA	NA	-	NA	-	NA	1070	NA	NA
Potassium	1040J	NA	NA	1530	NA	1520	NA	1610	NA	NA
Silver	-	NA	NA	-	NA	-	NA	-	NA	NA
Sodium	2450J	NA	NA	9740	NA	9760	NA	5580	NA	NA
Zinc	-	NA	NA	28.1	NA	22.4	NA	21.9	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-22 (Continued)
SURFACE WATER DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	SW-S10		
Sample Number	010	110	208
Date of Collection	04-20-89	09-28-89	12-12-89
VOLATILES (ppb)			
1,1-Dichloroethane	-	-	-
1,2-Dichloroethene (total)	-	-	-
1,1,1-Trichloroethane	-	-	-
Trichloroethene	-	-	-
Tetrachloroethene	-	-	-
Toluene	-	-	-
Ethylbenzene	-	-	-
Tetrahydrofuran	-	-	-
SEMIVOLATILES (ppb)			
bis(2-Ethylhexyl)phthalate	-	NA	NA
PESTICIDE/PCBs (ppb)			
Aroclor 1260	0.47J	-	NA
INORGANICS (ppb)			
Aluminum	129	NA	NA
Calcium	13100	NA	NA
Chromium	12.0J	NA	NA
Iron	546	NA	NA
Lead	-	NA	NA
Magnesium	1970	NA	NA
Manganese	266	NA	NA
Potassium	5610	NA	NA
Silver	-	NA	NA
Sodium	3720	NA	NA
Zinc	21.5	NA	NA

NOTES:

- = Not detected. Refer to Appendices C-3, C-4, C-5 for detection limits and list of parameters analyzed.
J = Quantification approximate.
NA = Not analyzed.

TABLE 2-23
SEDIMENT ANALYTICAL DATA
SUMMARY OF COMPOUNDS DETECTED

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Sample Location	SD-S1	SD-S2	SD-S3	SD-S4	SD-S5		SD-S6	SD-S9	SD-S10
Sample Number	001	002	003	007	005	009	006	004	008
Date of Collection	04-20-89	04-20-89	04-20-89	04-20-89	04-20-89	4-20-89 Duplicate	04-20-89	04-20-89	04-20-89
VOLATILES (ppb)									
Acetone	-	-	-	-	-	-	-	-	390J
1,1-Dichloroethane	-	360J	-	-	-	-	-	25	-
1,2-Dichloroethene (total)	-	62	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	64J	-	-	-	-	-	27J	-
Trichloroethene	-	-	8J	-	-	-	-	-	-
Toluene	10J	-	-	-	-	-	-	-	-
Total Xylenes	-	48J	-	-	-	-	-	-	-
SEMIVOLATILES (ppb)									
Benzoic Acid	-	-	-	-	-	-	-	170J	-
Di-n-butylphthalate	-	180J	-	280J	-	-	-	280J	-
PESTICIDE/PCBs (ppb)									
4,4'-DDE	-	-	-	-	-	-	-	-	14J
INORGANICS (ppm)									
Aluminum	1710J	1920J	3580J	3840J	1120J	1230J	2050J	6120J	7220J
Antimony	-	-	-	1.8J	-	1.4J	-	-	-
Arsenic	1.4J	13.1J	2.4J	-	1.3J	1.9J	1.3J	4.2J	60.7J
Barium	44.9	39.4	31.6	19.8	-	-	19.8	-	448
Cadmium	-	-	-	-	-	-	-	-	3.0
Calcium	364	545	1910	409	240	297	607	368	6960
Chromium	-	-	-	-	-	-	-	6.3J	-
Cobalt	-	-	-	-	-	-	-	-	73.2
Iron	3970	8340	3680	5170	1430	1460	1900	6130	69900
Lead	5.6	8.0	4.0	9.6	4.3	2.6	4.7	12.1	26.9
Magnesium	594	479	951	285	284	308	367	624	1030
Manganese	2010J	706J	334J	54.5J	192J	161J	530J	301J	11800J
Sodium	79.8J	119J	107J	111J	69.1J	94.9J	89.6J	106J	261J
Vanadium	-	-	-	-	4.5J	-	-	6.5J	33.4J
Zinc	23.7J	22.9J	20.1J	15.7J	18.2J	6.0J	15.7J	19.9J	158J
Cyanide	31.3J	-	-	-	-	7.0J	-	4.1J	8.6J

NOTES:

- = Not detected. Refer to Appendix C-3 for detection limits and list of parameters analyzed.
J = Quantitation approximate.

TABLE 2-24

STREAM FLOW AND AVERAGE ANNUAL BASEFLOW ESTIMATES FOR BROOK A

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Gauging Station	Station Location	April 18, 1989 Discharge (cfs)[1]	Average Annual Baseflow (cfs)[4]
SF-1	Brook A, Upstream	0.5	0.07 (15% infiltration) 0.12 (25% infiltration)
SF-3	Brook A, Downstream of Swale	1.3	0.09 (15% infiltration) 0.14 (25% infiltration)
SF-4	Brook A, Northern Site Area	0.7	0.09 (15% infiltration) 0.15 (25% infiltration)
SF-6	Brook A, Northern Mottolo Boundary	1.0	NA
SF-5	Upper Swale	0.01	NA
SF-2	Lower Swale	0.02	NA

NOTES:

1. Discharge measurements obtained by Balsam personnel using pygmy current meter on April 20, 1989.

2. NA = Not available.

3. cfs = cubic feet per second.

4. Average annual baseflow estimates obtained using basin area contributing to flow at stream gauging station assuming 44-inches of annual precipitation.

July 27, 1990
Balsam Project 6185/818:3591j

TABLE 2-25

FLORA IDENTIFIED AT THE MOTTOLO SITE

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

TREES AND SHRUBS	INDICATOR STATUS*
Acer rubrum (Red Maple)	facultative
Acer saccharinum (Silver Maple)	facultative wetland
Alnus rugosa (Speckled Alder)	facultative wetland
Betula payrifera (Paper Birch)	facultative upland
Betula populifolia (Gray Birch)	facultative
Fagus grandfolia (American Beech)	facultative upland
Fraxinus sp. (Ash)	**
Ilex verticillata (Winterberry)	facultative wetland
Nyssa sylvatica (Black Gum)	facultative
Pinus resinosa (Red Pine)	facultative upland
Pinus strobus (Eastern White Pine)	facultative upland
Populus tremula (Quaking Aspen)	facultative upland
Quercus alba (White Oak)	facultative upland
Quercus palustris (Pin Oak)	facultative wetland
Quercus rubra (Northern Red Oak)	facultative upland
Quercus velutina (Black Oak)	obligate upland
Rhamnus frangula (Glossy Buckthorn)	facultative
Rhododendron viscosum (Swamp Azalea)	obligate wetland
Rhus typhina (Staghorn Sumac)	obligate upland
Salix sp. (Willow)	**
Tsuga canadensis (Eastern Hemlock)	facultative upland
HERBACEOUS PLANTS	
Aster sp. (Aster)	**
Eupatorium perfoliatum (Boneset)	facultative wetland
Fragaria virginiana (Wild Strawberry)	facultative upland

TABLE 2-25 (continued)

FLORA IDENTIFIED AT THE MOTTOLO SITE

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

HERBACEOUS PLANTS (continued)	INDICATOR STATUS*
Impatiens capensis (Spotted Touch-Me-Not)	facultative wetland
Plantago lanceolata (Common Plantain)	facultative
Polygonum sp. (Smartweed)	**
Potentilla sp. (Cinquefoil)	**
Solidago spp. (Goldenrod)	**
Trifolium arvense (Rabbits - Foot Clover)	obligate upland
Verbascum thapsus (Common Mullein)	obligate upland
GRASSES AND SEDGES	
Carex sp. (Sedge)	**
Typha sp. (Cat-Tail)	obligate wetland
OTHER FLORA	
Arisaema sp. (Jack-In-The-Pulpit)	facultative wetland
Dryopteris thelypteris (Marsh Fern)	facultative wetland
Onoclea sensibilis (Sensitive Fern)	facultative wetland
Polytrichium sp. (Moss)	**
Sphagnum sp. (Sphagnum Moss)	obligate wetland

*Indicator Status derived from U.S. Fish and Wildlife Service designations presented in Reed (1988) as defined below:

obligate wetland - always found in wetlands (99% probability)
facultative wetland - usually found in wetlands (67 - 99% probability)
facultative - sometimes found in wetlands (34 - 66% probability)
facultative upland - seldom found in wetlands (1 - 33% probability)
obligate upland - never found in wetlands (0% probability)

**The indicator status depends upon a more specific plant identification.

TABLE 2-26
RESIDENTIAL WELL ANALYTICAL DATA SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

LOT NO.	OWNER	WELL DEPTH (FT)	SAMPLING DATE	THF	1,1,1 TCA	XYLENES	TOLUENE	M-XYLENE	MEK	MTBE	E-BENZENE	ACETONE	C-FORM
52-2	Mc Dermott	117	04/14/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/14/88	ND	ND	2.1	3.3	<1.3	ND	ND	ND	ND	ND
			04/21/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	1.87	1.05	1.21	ND	ND	0.52	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-3	Strake	225	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-5	Vallet*	NA	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-8	Sullivan	NA	01/31/86	ND	ND	ND	ND	ND	ND	ND	ND	<5	ND
			04/13/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-10	McLaughlin	NA	06/01/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	0.96	ND	ND
52-11	Stewart *	160	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-13	Brimicomb *	NA	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-15	MO-6	130	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-17	Cadoret, John	335	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

ONLY COMPOUNDS DETECTED ARE REPORTED.
ND = NOT DETECTED.
NA = NOT AVAILABLE.
* = INDICATES WELL NOT SAMPLED IN APRIL 1989.
< = MEANS REPORTED PRESENT BUT AT A LEVEL LESS THAN RELIABLY QUANTIFIABLE.
ALL DATES = INDICATES COMPOUNDS NOT DETECTED IN SAMPLES COLLECTED DURING THE THREE 1989 RI SAMPLING PROGRAMS, BUT ALSO INCLUDES SAMPLES COLLECTED AND ANALYZED BY NHDES PRIOR TO 1989.
THF = TETRAHYDROFURAN; 1,1,1-TCA = 1,1,1-TRICHLOROETHANE; MEK = METHYL ETHYL KETONE; MTBE = METHYL-T-BUTYL ETHER; E-BENZENE = ETHYLBENZENE; C-FORM = CHLOROFORM.

TABLE 2-26 (CONTINUED)
RESIDENTIAL WELL ANALYTICAL DATA SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

LOT NO.	OWNER	WELL DEPTH (FT)	SAMPLING DATE	THF	1,1,1 TCA	XYLENES	TOLUENE	M-XYLENE	MEK	MTBE	E-BENZENE	ACETONE	C-FORM
52-21	Berube	160	04/29/87	<5	<5	ND	ND	ND	ND	<5	ND	ND	ND
			05/04/87	<5	<5	ND	ND	ND	ND	<5	ND	ND	ND
			08/12/87	<5	<5	ND	ND	ND	ND	ND	ND	ND	ND
			11/12/87	<15	<5	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/14/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-22	Cadoret, James	136	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-24	Carleton	162	08/25/86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			06/01/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			06/02/86	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
			05/13/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/14/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-27	Graves*	35	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-31	Sensale	295	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-39	Scuto	405	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-40	Fernald	300	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

ONLY COMPOUNDS DETECTED ARE REPORTED.
ND = NOT DETECTED.
NA = NOT AVAILABLE.
* = INDICATES WELL NOT SAMPLED IN APRIL 1989.
< = MEANS REPORTED PRESENT BUT AT A LEVEL LESS THAN RELIABLY QUANTIFIABLE.
ALL DATES = INDICATES COMPOUNDS NOT DETECTED IN SAMPLES COLLECTED DURING THE THREE 1989 RI SAMPLING PROGRAMS, BUT ALSO INCLUDES SAMPLES COLLECTED AND ANALYZED BY NHDES PRIOR TO 1989.
THF = TETRAHYDROFURAN; 1,1,1-TCA = 1,1,1-TRICHLOROETHANE; MEK = METHYL ETHYL KETONE; MTBE = METHYL-T-BUTYL ETHER; E-BENZENE = ETHYLBENZENE; C-FORM = CHLOROFORM.

TABLE 2-26 (CONTINUED)
RESIDENTIAL WELL ANALYTICAL DATA SUMMARY

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

LOT NO.	OWNER	WELL DEPTH (FT)	SAMPLING DATE	THF	1,1,1 TCA	XYLENES	TOLUENE	M-XYLENE	MEK	MTBE	E-BENZENE	ACETONE	C-FORM
52-41	Stiling	263	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-45	Oudekerk	120	09/06/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			06/05/87	21.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
			06/05/87	23.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
			11/16/87	<15	ND	ND	ND	ND	ND	ND	ND	ND	ND
			11/16/87	<15	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/14/88	<31	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/24/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/26/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/14/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-47	Iverson	240	ALL DATES	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-49	Wilkinson	220	06/09/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			07/27/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/24/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.44
			09/26/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/14/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-50	Robinson	140	11/16/87	<15	ND	ND	ND	ND	22.6	ND	ND	ND	ND
			04/20/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/21/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/27/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

ONLY COMPOUNDS DETECTED ARE REPORTED.
ND = NOT DETECTED.
NA = NOT AVAILABLE.
* = INDICATES WELL NOT SAMPLED IN APRIL 1989.
< = MEANS REPORTED PRESENT BUT AT A LEVEL LESS THAN RELIABLY QUANTIFIABLE.
ALL DATES = INDICATES COMPOUNDS NOT DETECTED IN SAMPLES COLLECTED DURING THE THREE 1989 RI SAMPLING PROGRAMS, BUT ALSO INCLUDES SAMPLES COLLECTED AND ANALYZED BY NHDES PRIOR TO 1989.
THF = TETRAHYDROFURAN; 1,1,1-TCA = 1,1,1-TRICHLOROETHANE; MEK = METHYL ETHYL KETONE; MTBE = METHYL-T-BUTYL ETHER; E-BENZENE = ETHYLBENZENE; C-FORM = CHLOROFORM.

TABLE 2-26 (CONTINUED)
RESIDENTIAL WELL ANALYTICAL DATA SUMMARY

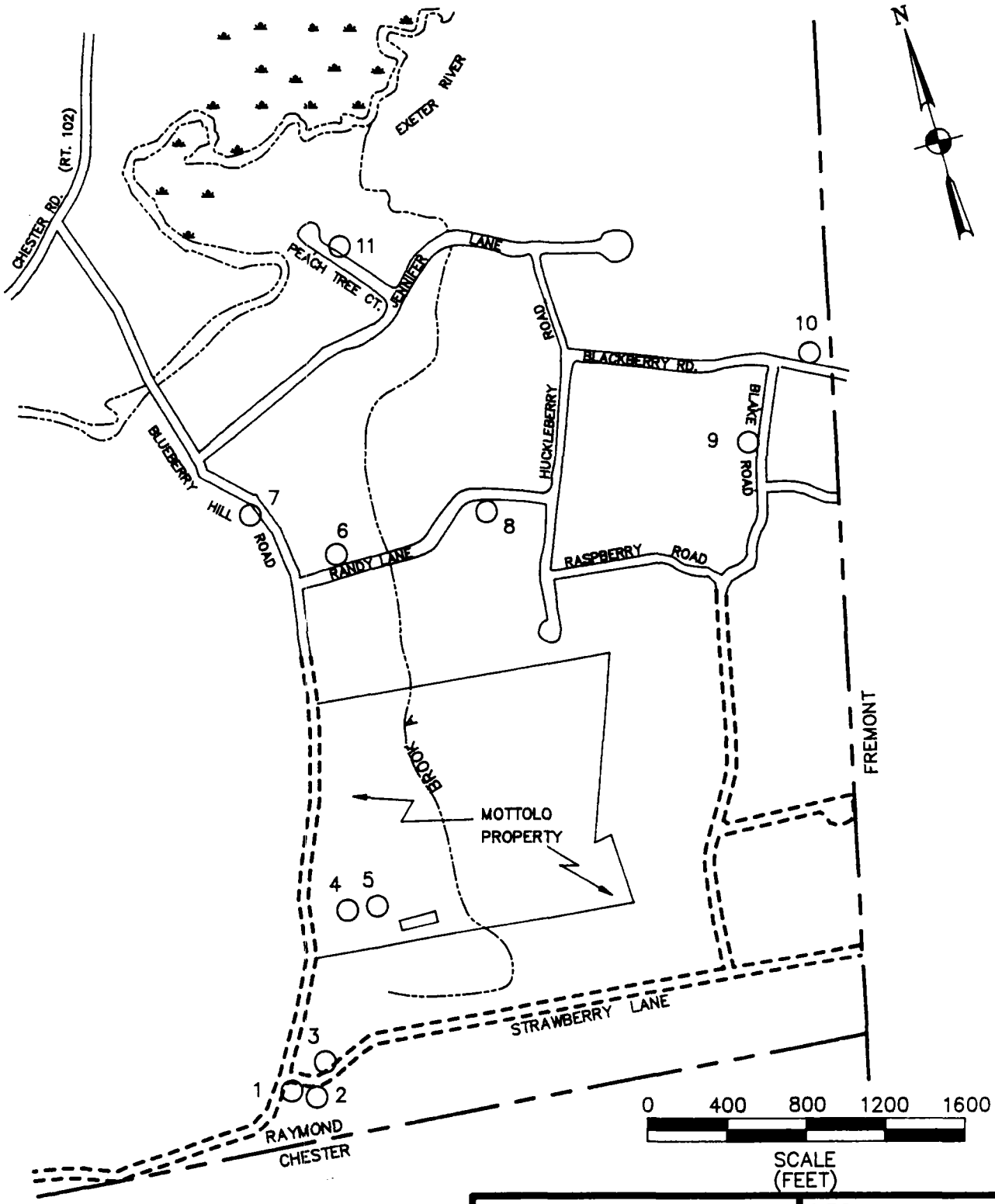
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

LOT NO.	OWNER	WELL DEPTH (FT)	SAMPLING DATE	THF	1,1,1 TCA	XYLENES	TOLUENE	M-XYLENE	MEK	MTBE	E-BENZENE	ACETONE	C-FORM
52-64	Cashman		10/01/87	19.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
			11/12/87	<15	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/14/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			04/20/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			09/28/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			12/13/89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-72	Dawson	148	09/14/88	ND	ND	ND	2.6	ND	ND	ND	ND	ND	ND

NOTES:

ONLY COMPOUNDS DETECTED ARE REPORTED.
ND = NOT DETECTED.
NA = NOT AVAILABLE.
* = INDICATES WELL NOT SAMPLED IN APRIL 1989.
< = MEANS REPORTED PRESENT BUT AT A LEVEL LESS THAN RELIABLY QUANTIFIABLE.
ALL DATES = INDICATES COMPOUNDS NOT DETECTED IN SAMPLES COLLECTED DURING THE THREE 1989 RI SAMPLING PROGRAMS, BUT ALSO INCLUDES SAMPLES COLLECTED AND ANALYZED BY NHDES PRIOR TO 1989.
THF = TETRAHYDROFURAN; 1,1,1-TCA = 1,1,1-TRICHLOROETHANE; MEK = METHYL ETHYL KETONE; MTBE = METHYL-T-BUTYL ETHER; E-BENZENE = ETHYLBENZENE; C-FORM = CHLOROFORM.

6185/818:3591LTSN

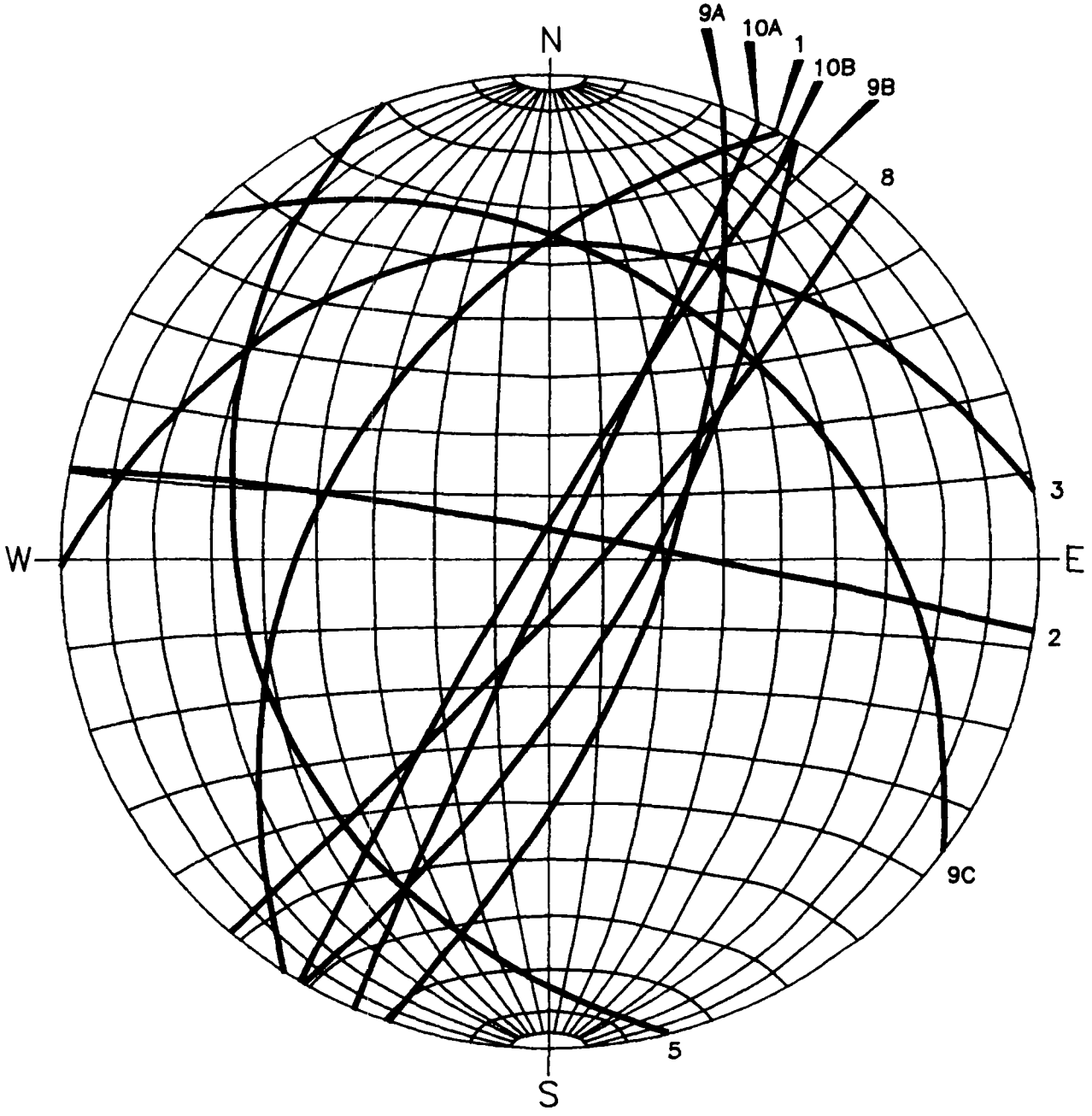


LEGEND

○ = OUTCROP LOCATION

SOURCE:
RAYMOND TAX MAPS AND RESIDENTIAL DEVELOPMENT PLANS

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE STUDY AREA BEDROCK OUTCROP LOCATIONS	
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI1-2	APPROVED T.S.S.	FIGURE NO. 2-1	PROJECT NO. 6185/818

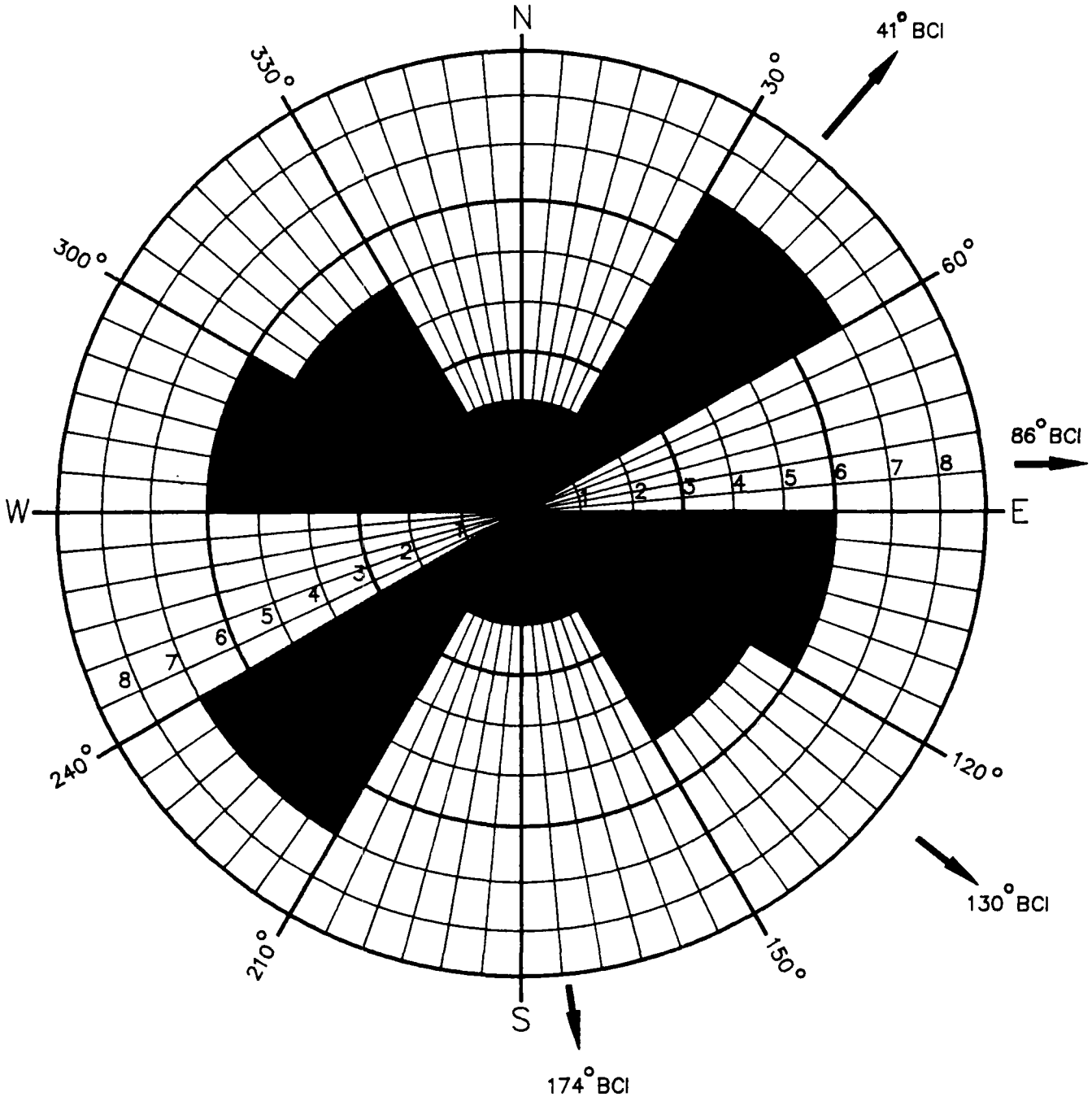


NOTES:

1. ARCS ARE THREE DIMENSIONAL REPRESENTATIONS OF ORIENTATIONS OF FOLIATION PLANES MEASURED ON BEDROCK OUTCROPS IN THE STUDY AREA.

2. NUMBERS REFER TO FOLIATION MEASUREMENTS SHOWN IN TABLE 2-2

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: BEDROCK OUTCROP STUDY FOLIATION DATA	
DATE: 7/19/90	DRAWN: P.J.S.	CHECKED: M.F.J.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: NONE	FILE NO: RI4	APPROVED: T.S.S.	FIGURE NO: 2-2	PROJECT NO: 6185/818

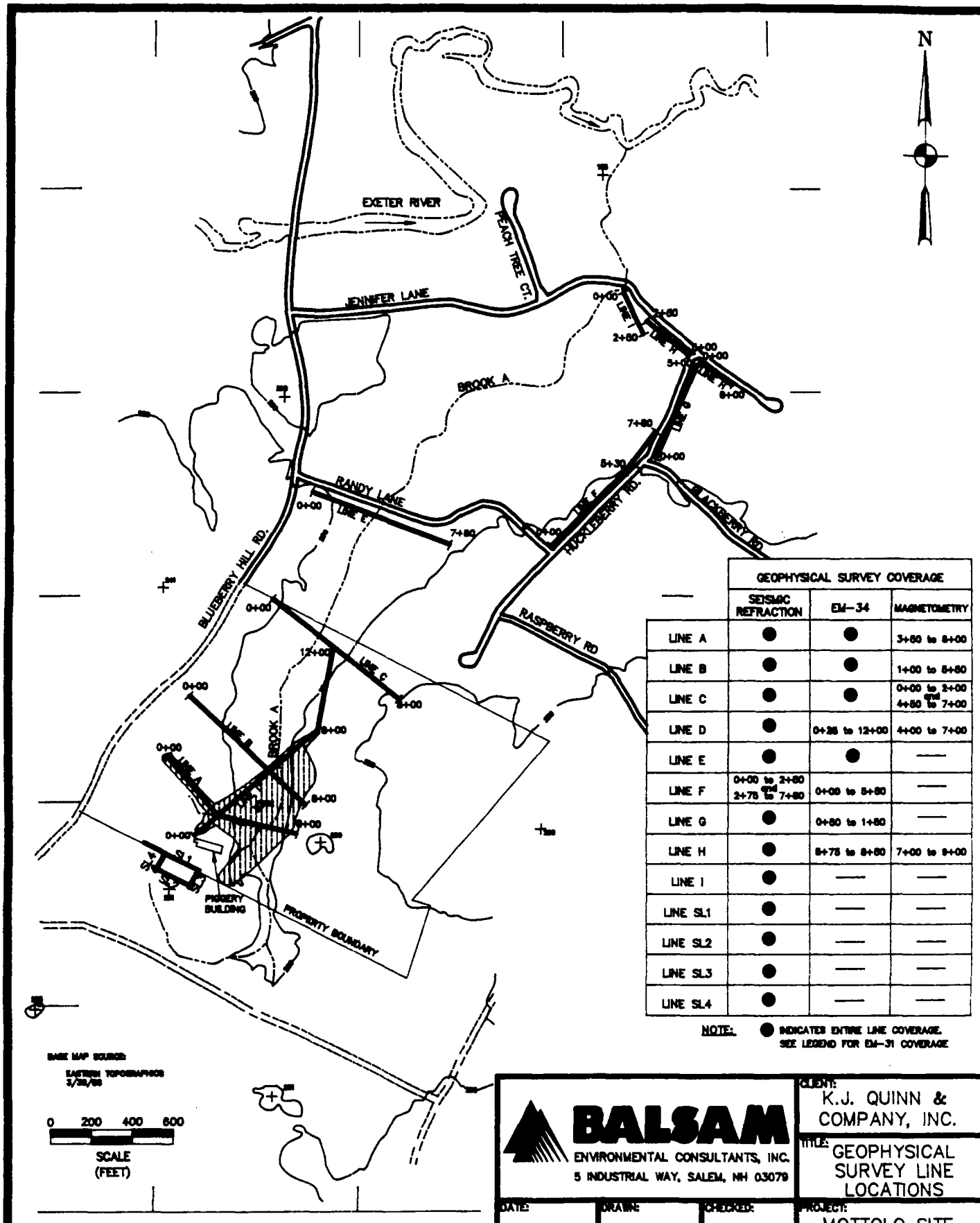


NOTES:

1. LENGTH OF SHADED AREA IS BASED UPON THE NUMBER OF JOINT ORIENTATION MEASUREMENTS WITHIN EACH 30° RANGE.

2. BCI GEONETICS MAXIMA SHOWN WITH ARROWS.

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: ROSE DIAGRAM OF BEDROCK OUTCROP JOINT ORIENTATIONS	
DATE: 7/19/90	DRAWN: P.J.S.	CHECKED: M.F.J.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: NONE	FILE NO: RI17	APPROVED: T.S.S.	FIGURE NO: 2-3	PROJECT NO: 6185/818



	GEOPHYSICAL SURVEY COVERAGE		
	SEISMIC REFRACTION	EM-34	MAGNETOMETRY
LINE A	●	●	3+50 to 8+00
LINE B	●	●	1+00 to 8+50
LINE C	●	●	0+00 to 3+00 and 4+50 to 7+00
LINE D	●	0+25 to 12+00	4+00 to 7+00
LINE E	●	●	—
LINE F	0+00 to 2+50 and 2+75 to 7+50	0+00 to 5+50	—
LINE G	●	0+50 to 1+50	—
LINE H	●	5+75 to 8+50	7+00 to 9+00
LINE I	●	—	—
LINE SL1	●	—	—
LINE SL2	●	—	—
LINE SL3	●	—	—
LINE SL4	●	—	—

NOTE: ● INDICATES ENTIRE LINE COVERAGE. SEE LEGEND FOR EM-31 COVERAGE

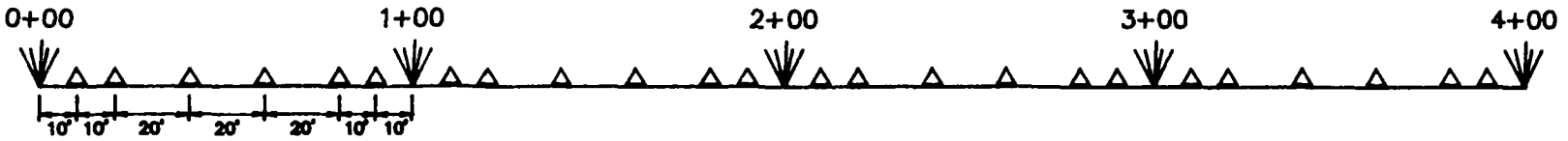
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: GEOPHYSICAL SURVEY LINE LOCATIONS

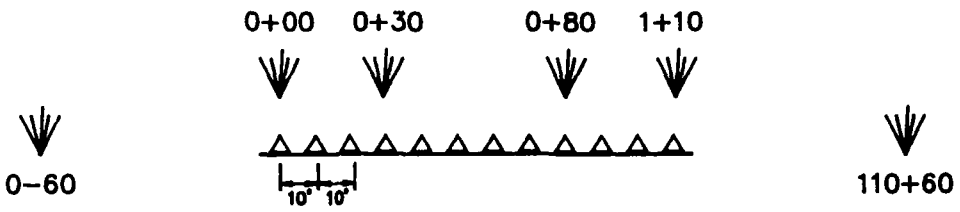
DATE:	DRAWN:	CHECKED:	PROJECT:
7/19/90	P.J.S.	M.F.J.	MOTTOLO SITE RI/FS

SCALE:	FILE NO:	APPROVED:	FIGURE NO:	PROJECT NO:
AS SHOWN	650 RI11	T.S.S.	2-4	6185/818



ON-SITE SEISMIC REFRACTION
SPREAD CONFIGURATION – WESTON

OFF-SITE SEISMIC REFRACTION
SPREAD CONFIGURATION – WESTON



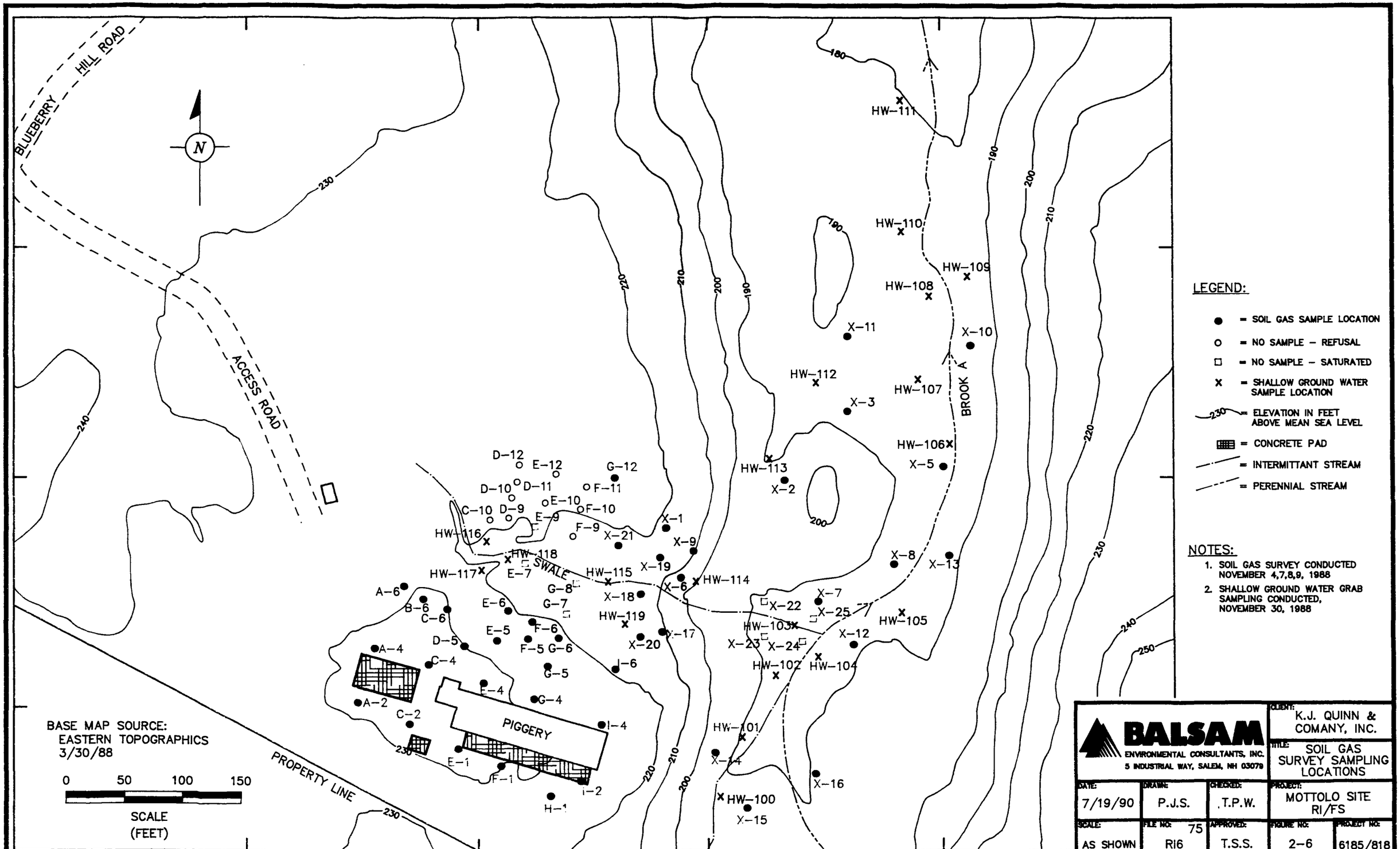
SOUTHERN SITE BOUNDARY SEISMIC
REFRACTION SPREAD CONFIGURATION
HAGER – RICHTER

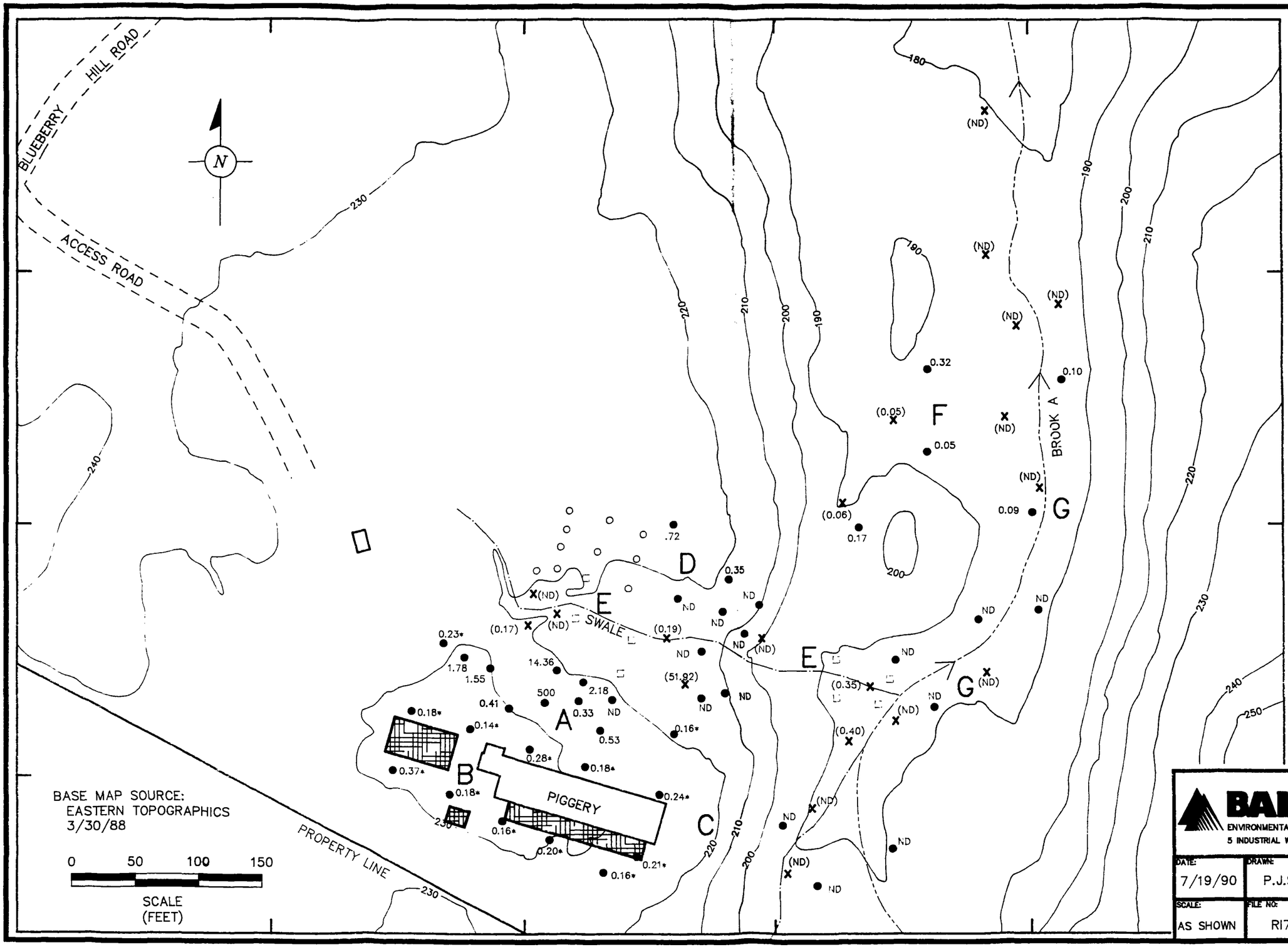
LEGEND:

△ = GEOPHONE

= SHOT POINT

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE SEISMIC REFRACTION SPREAD CONFIGURATIONS	
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE NONE	FILE NO. RI12	APPROVED T.S.S.	FIGURE NO. 2-5	PROJECT NO. 6185/818


BLUEBERRY HILL ROAD
ACCESS ROAD
PROPERTY LINE
PIGGERY
SWALE
BROOK A
N
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
● = SOIL GAS SAMPLE LOCATION
○ = NO SAMPLE – REFUSAL
□ = NO SAMPLE – SATURATED
X = SHALLOW GROUND WATER SAMPLE LOCATION
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= CONCRETE PAD
= INTERMITTANT STREAM
= PERENNIAL STREAM
NOTES:
1. SOIL GAS SURVEY CONDUCTED NOVEMBER 4,7,8,9, 1988
2. SHALLOW GROUND WATER GRAB SAMPLING CONDUCTED, NOVEMBER 30, 1988
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMANY, INC.
TITLE: SOIL GAS SURVEY SAMPLING LOCATIONS
DATE: 7/19/90
DRAWN: P.J.S.
CHECKED: T.P.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI6
APPROVED: T.S.S.
FIGURE NO: 2-6
PROJECT NO: 6185/818



LEGEND:

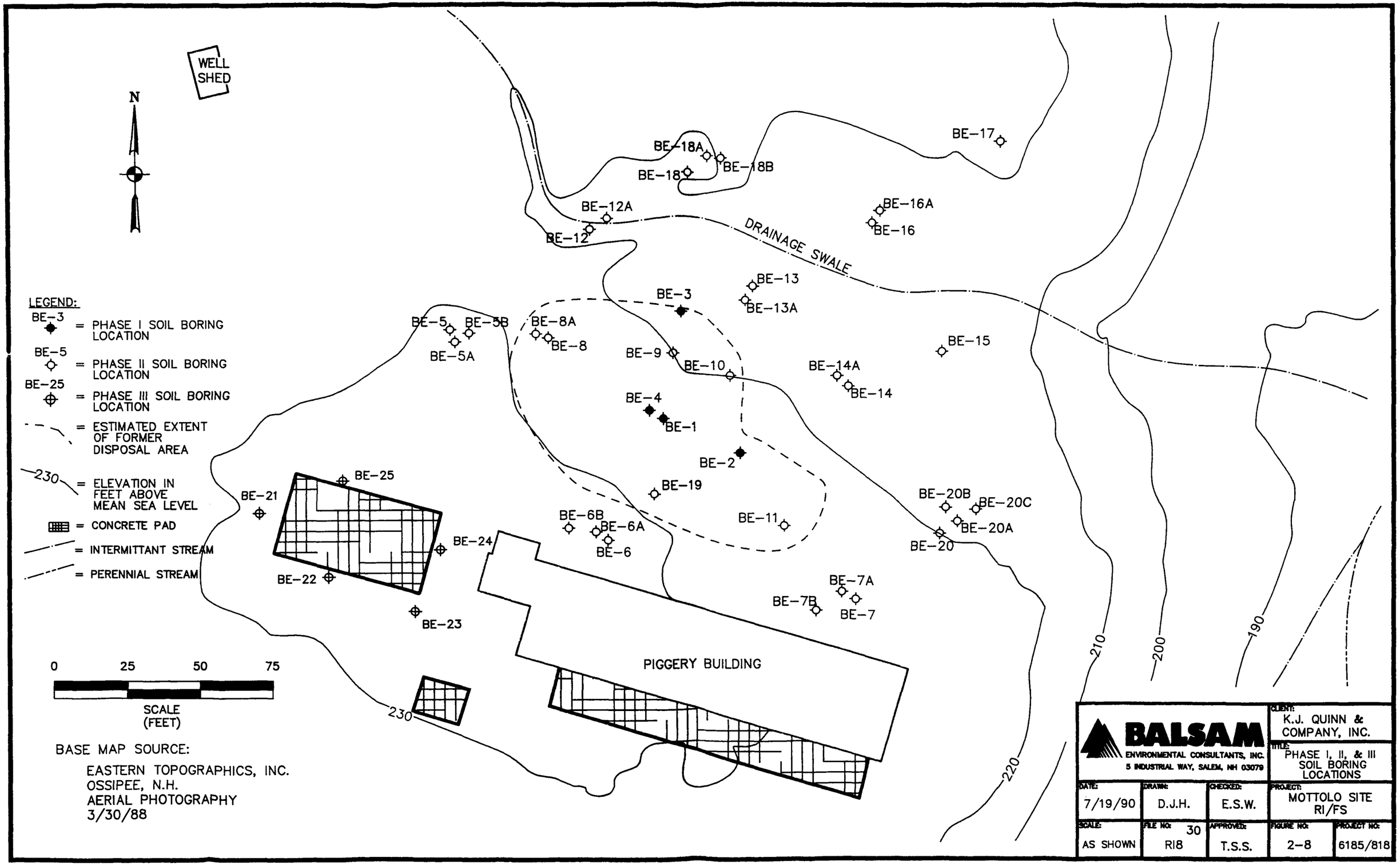
- 2.19 ● = SOIL GAS SAMPLE LOCATION AND RESULTS (PPM)
- ○ = NO SAMPLE – REFUSAL
- □ = NO SAMPLE – SATURATED
- (0.40) × = SHALLOW GROUND WATER SAMPLE LOCATION AND RESULTS (PPM)
- ND = NO LIBRARY COMPOUNDS DETECTED
- 230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- A = AREA OF INTEREST
- * = INDICATES A SIGNIFICANT PORTION OF REPORTED VOC MAY BE DUE TO SYRINGE CONTAMINATION
- = CONCRETE PAD
- = INTERMITTANT STREAM
- = PERENNIAL STREAM

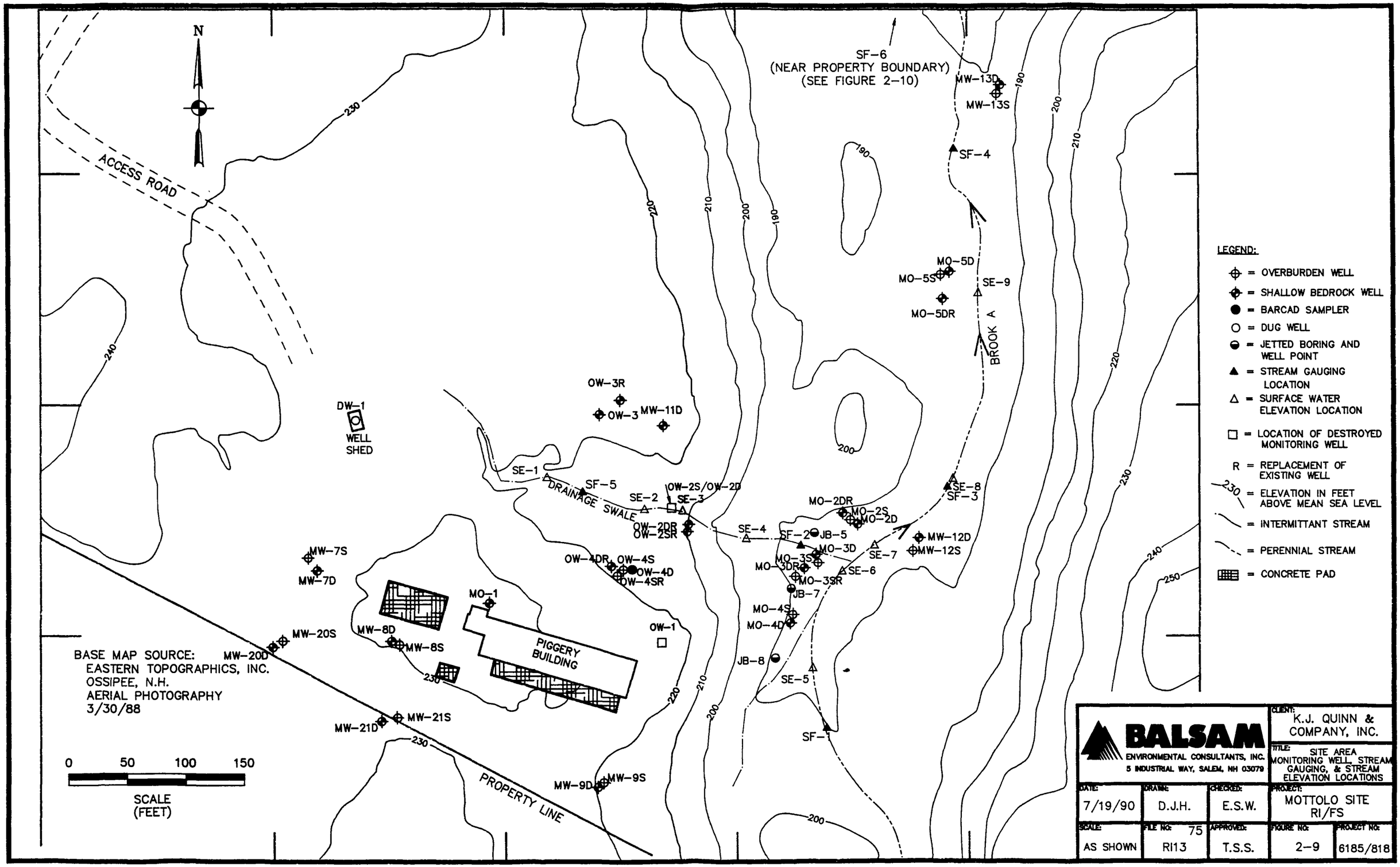
NOTES:

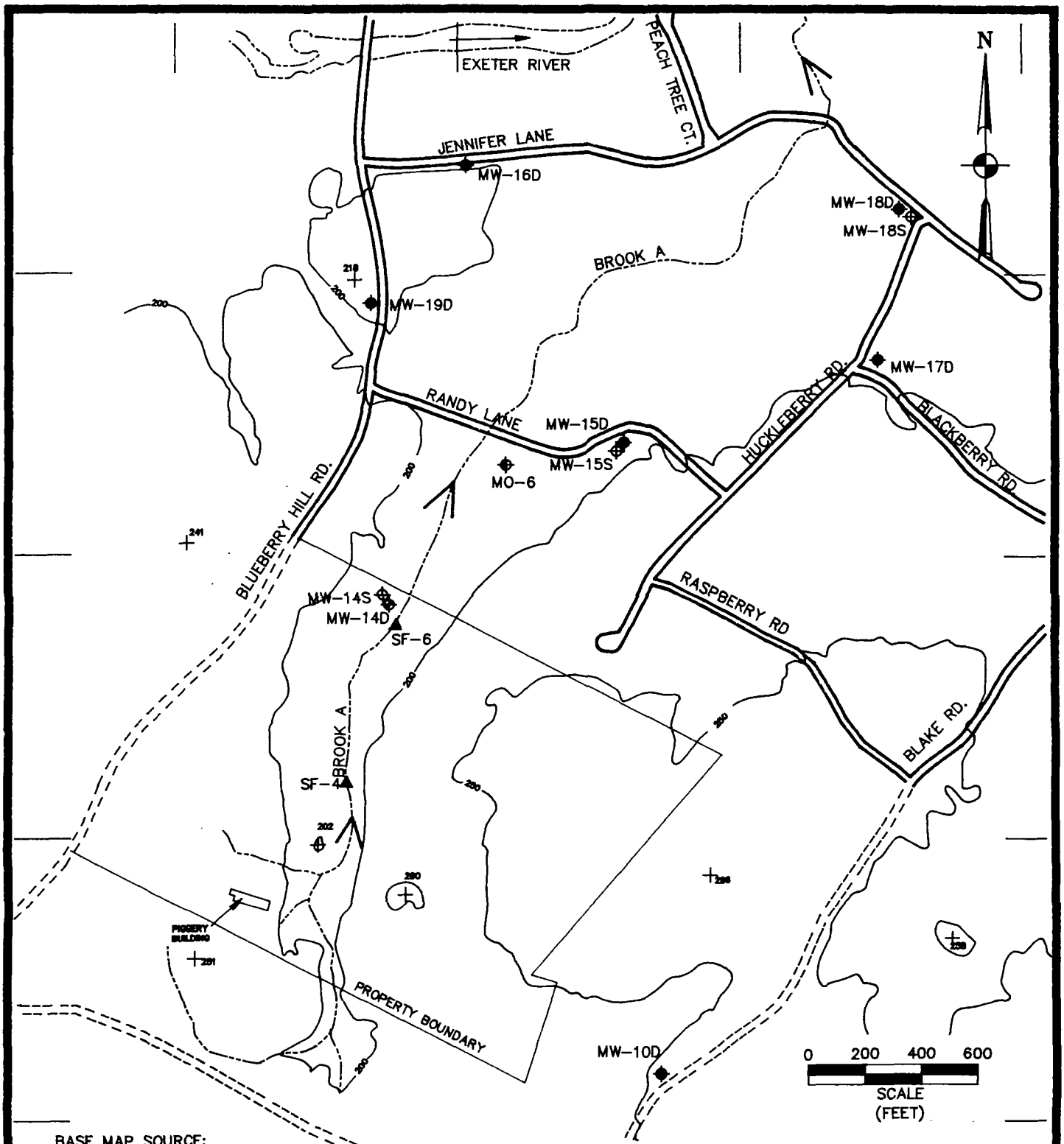
1. SOIL GAS SURVEY CONDUCTED NOVEMBER 4,7,8,9, 1988
2. SHALLOW GROUND WATER SAMPLING CONDUCTED NOVEMBER 30, 1988
3. ALL SAMPLES ANALYZED BY PHOTOVAC 10S50 GC
4. TOTAL CONCENTRATION OF DETECTED VOLATILE ORGANIC 10S50 LIBRARY COMPOUNDS ARE REPORTED
5. UNKNOWN PEAKS NOT INCLUDED, REFER TO TABLES 2–3 AND 2–4 FOR DETAILED INFORMATION.

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: SOIL GAS SURVEY RESULTS			
DATE: 7/19/90	DRAWN: P.J.S.	CHECKED: T.P.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: RI7	APPROVED: T.S.S.	FIGURE NO: 2–7 / PROJECT NO: 6185/818


WELL SHED
N
LEGEND:
BE-3 = PHASE I SOIL BORING LOCATION
BE-5 = PHASE II SOIL BORING LOCATION
BE-25 = PHASE III SOIL BORING LOCATION
= ESTIMATED EXTENT OF FORMER DISPOSAL AREA
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= CONCRETE PAD
= INTERMITTANT STREAM
= PERENNIAL STREAM
0 25 50 75
SCALE (FEET)
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
DRAINAGE SWALE
PIGGERY BUILDING
BE-17
BE-18A
BE-18B
BE-18
BE-12A
BE-12
BE-16A
BE-16
BE-13
BE-13A
BE-3
BE-5
BE-5B
BE-5A
BE-8A
BE-8
BE-9
BE-10
BE-15
BE-14A
BE-14
BE-4
BE-1
BE-2
BE-19
BE-11
BE-20B
BE-20C
BE-20A
BE-20
BE-6B
BE-6A
BE-6
BE-7A
BE-7B
BE-7
BE-25
BE-21
BE-24
BE-22
BE-23
230
210
200
190
220
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: PHASE I, II, & III SOIL BORING LOCATIONS
DATE: 7/19/90
DRAWN: D.J.H.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 30 RI8
APPROVED: T.S.S.
FIGURE NO: 2-8
PROJECT NO: 6185/818


N
ACCESS ROAD
SF-6
(NEAR PROPERTY BOUNDARY)
(SEE FIGURE 2-10)
MW-13D
MW-13S
SF-4
MO-5D
MO-5S
MO-5DR
SE-9
BROOK A
OW-3R
OW-3
MW-11D
DW-1
WELL SHED
SE-1
SF-5
DRAINAGE SWALE
SE-2
OW-2S/OW-2D
SE-3
OW-2DR
OW-2SR
SE-4
SF-2
JB-5
MO-2DR
MO-2S
MO-2D
SE-8
SF-3
MW-12D
MW-12S
SE-7
MO-3D
MO-3S
MO-3DR
MO-3SR
SE-6
JB-7
MO-4S
MO-4D
JB-8
SE-5
SF-1
MW-7S
MW-7D
OW-4DR
OW-4S
OW-4D
OW-4SR
MO-1
OW-1
MW-20S
MW-20D
MW-8D
MW-8S
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= BARCAD SAMPLER
= DUG WELL
= JETTED BORING AND WELL POINT
= STREAM GAUGING LOCATION
= SURFACE WATER ELEVATION LOCATION
= LOCATION OF DESTROYED MONITORING WELL
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTANT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: SITE AREA MONITORING WELL, STREAM GAUGING, & STREAM ELEVATION LOCATIONS
DATE: 7/19/90
DRAWN: D.J.H.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI13
APPROVED: T.S.S.
FIGURE NO: 2-9
PROJECT NO: 6185/818



BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

LEGEND
- = SHALLOW BEDROCK WELL
- = OVERBURDEN WELL
- = INTERMEDIATE BEDROCK WELL
- = DEEP BEDROCK WELL
- 200 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- ▲ = STREAM GAUGING LOCATION

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

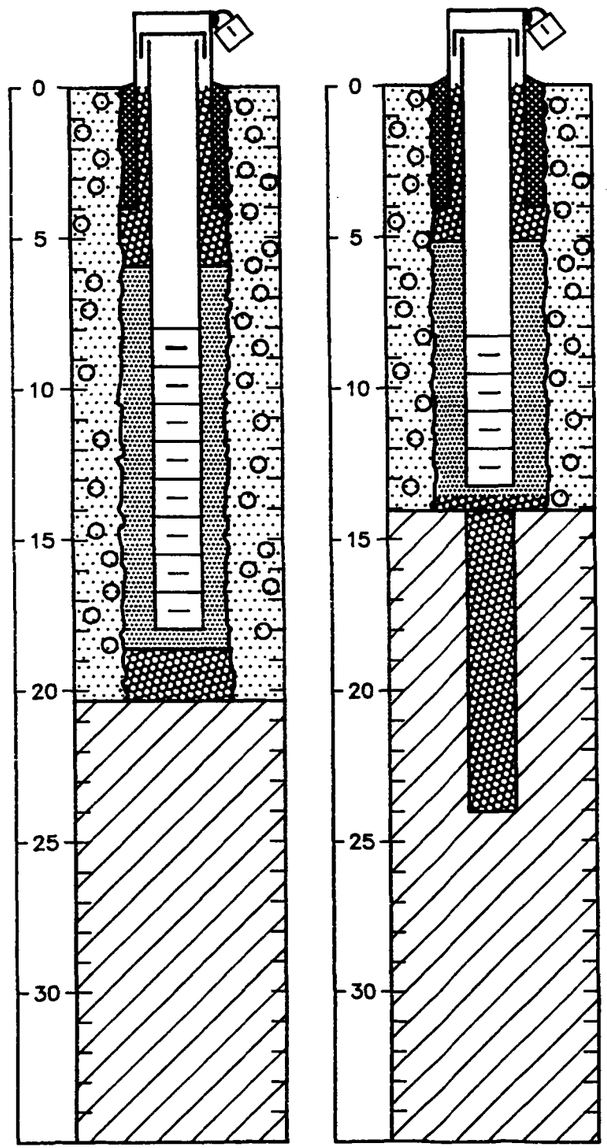
TITLE: OFF-SITE MONITORING WELL & STREAM GAUGING LOCATIONS

DATE:	DRAWN:	CHECKED:	PROJECT:	
7/19/90	D.J.H.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE:	FILE NO: 500	APPROVED:	FIGURE NO:	PROJECT NO:
AS SHOWN	RI10	T.S.S.	2-10	6185/818

OVERBURDEN WELLS

MW-7S, MW-8S, MW-9S, MW-13S, MW-14S, OW-2SR, OW-4SR, MW-20S, MW-21S

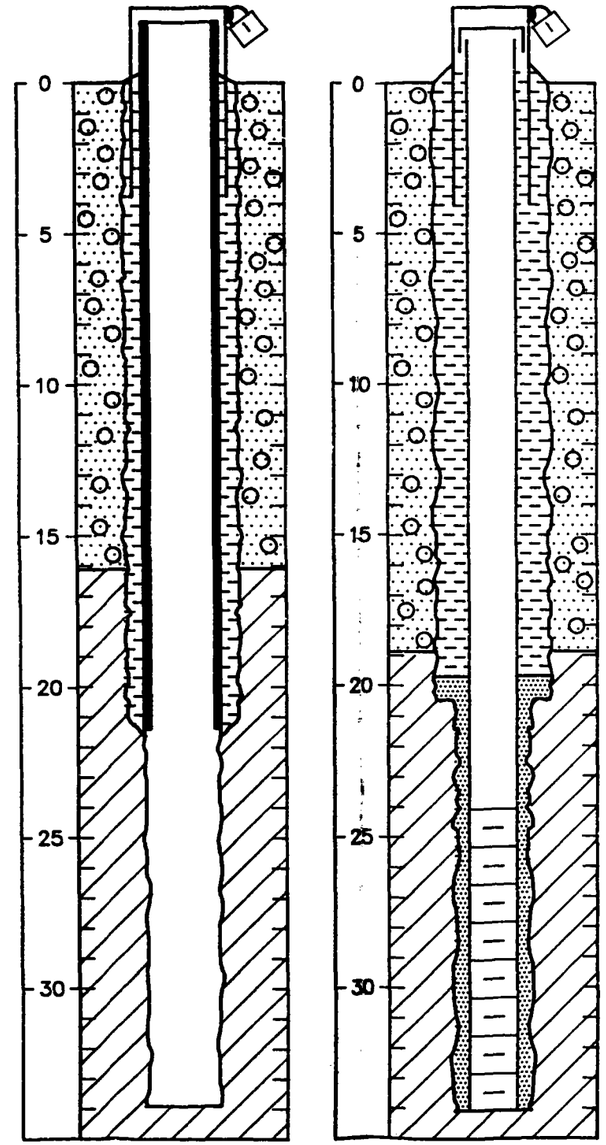
MW-12S, MW-15S, MW-18S, MO-3SR



SHALLOW BEDROCK WELLS

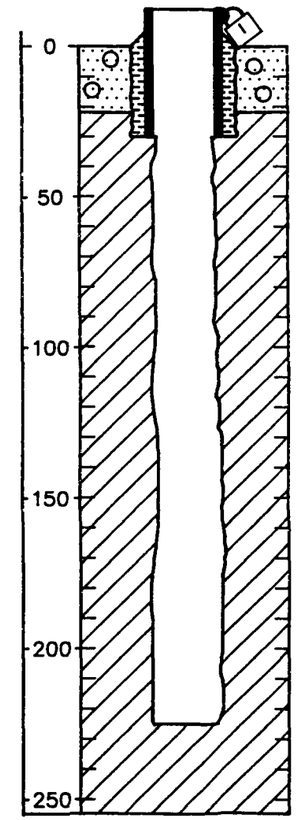
MO-2DR, MO-3DR, MO-5DR, OW-3R, OW-4DR, MW-7D, MW-8D, MW-9D, MW-11D, MW-12D

MW-13D, MW-14D, OW-2DR, MW-20D, MW-21D



DEEP BEDROCK WELLS

MW-10D, MW-15D, MW-16D, MW-17D, MW-18D, MW-19D



NOTES:

1. DEPTH REFERENCES ARE IN FEET BELOW GROUND SURFACE AND ARE FOR ILLUSTRATIVE PURPOSES ONLY.

LEGEND:

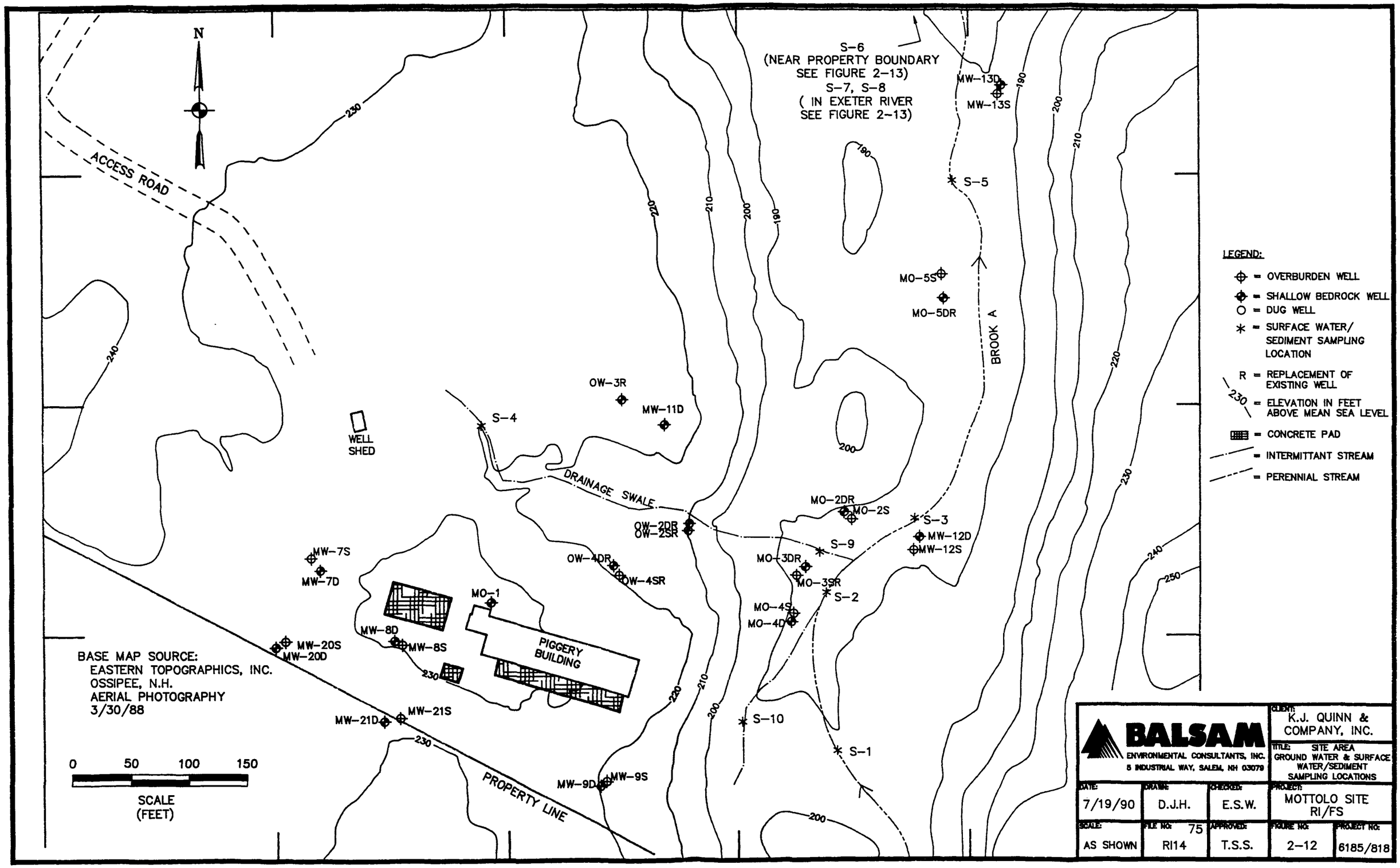
- = CONCRETE SEAL
- = HYDRATED BENTONITE PELLETS
- = FILTER PACK
- = BEDROCK
- = OVERBURDEN SOILS
- = CEMENT AND BENTONITE SEAL

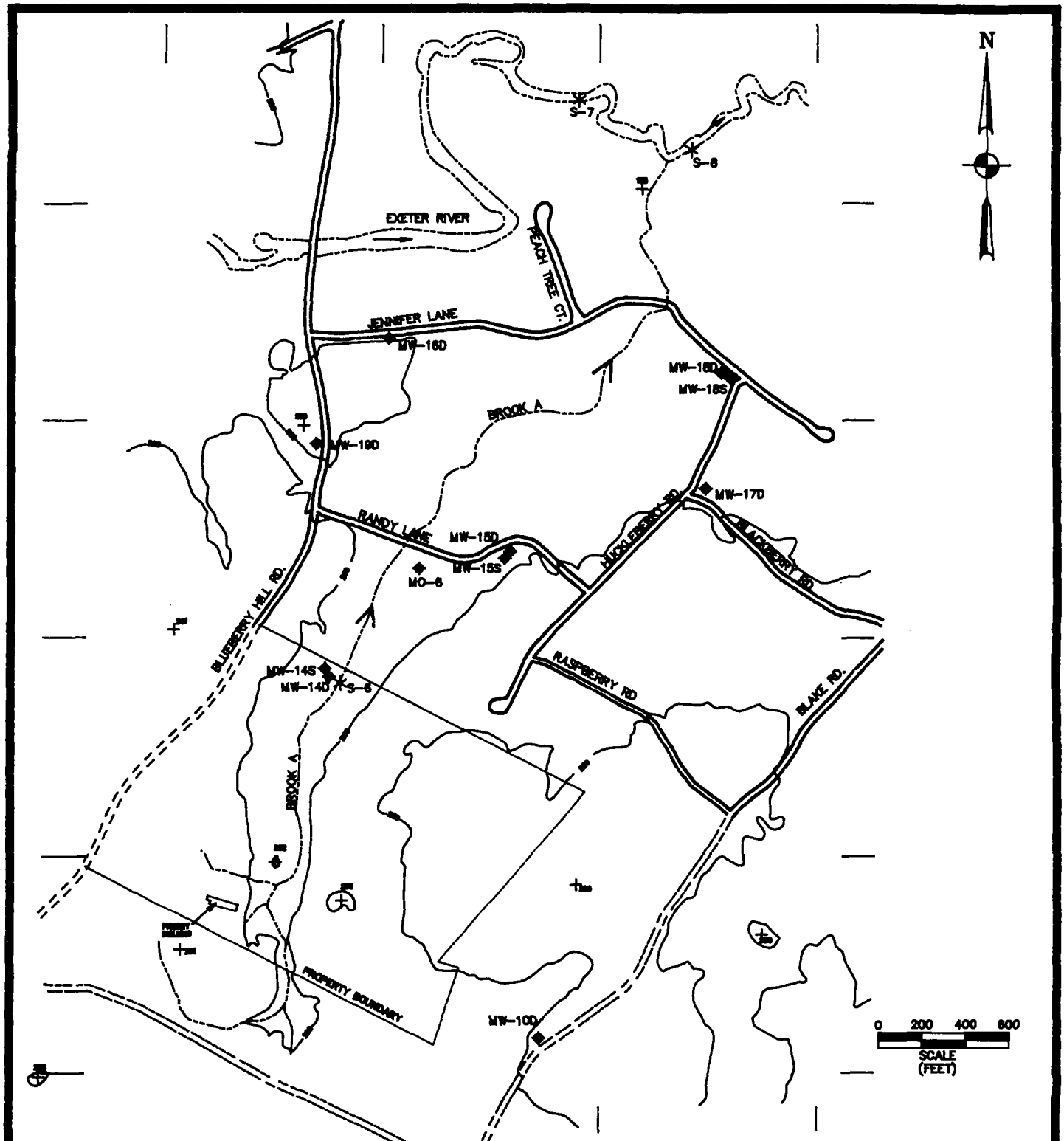
BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: TYPICAL MONITORING WELL INSTALLATIONS

DATE:	DRAWN:	CHECKED:	PROJECT:	
7/19/90	D.J.H.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE:	FILE NO:	APPROVED:	FIGURE NO:	PROJECT NO:
NONE	RI9	T.S.S.	2-11	6185/818


N
ACCESS ROAD
S-6
(NEAR PROPERTY BOUNDARY
SEE FIGURE 2-13)
S-7, S-8
(IN EXETER RIVER
SEE FIGURE 2-13)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
OW-3R
MW-11D
S-4
WELL SHED
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3DR
MO-3SR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-8D
MW-8S
MW-20S
MW-20D
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= CONCRETE PAD
= INTERMITTANT STREAM
= PERENNIAL STREAM
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: SITE AREA GROUND WATER & SURFACE WATER/SEDIMENT SAMPLING LOCATIONS
DATE: 7/19/90
DRAWN: D.J.H.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI14
APPROVED: T.S.S.
FIGURE NO: 2-12
PROJECT NO: 6185/818

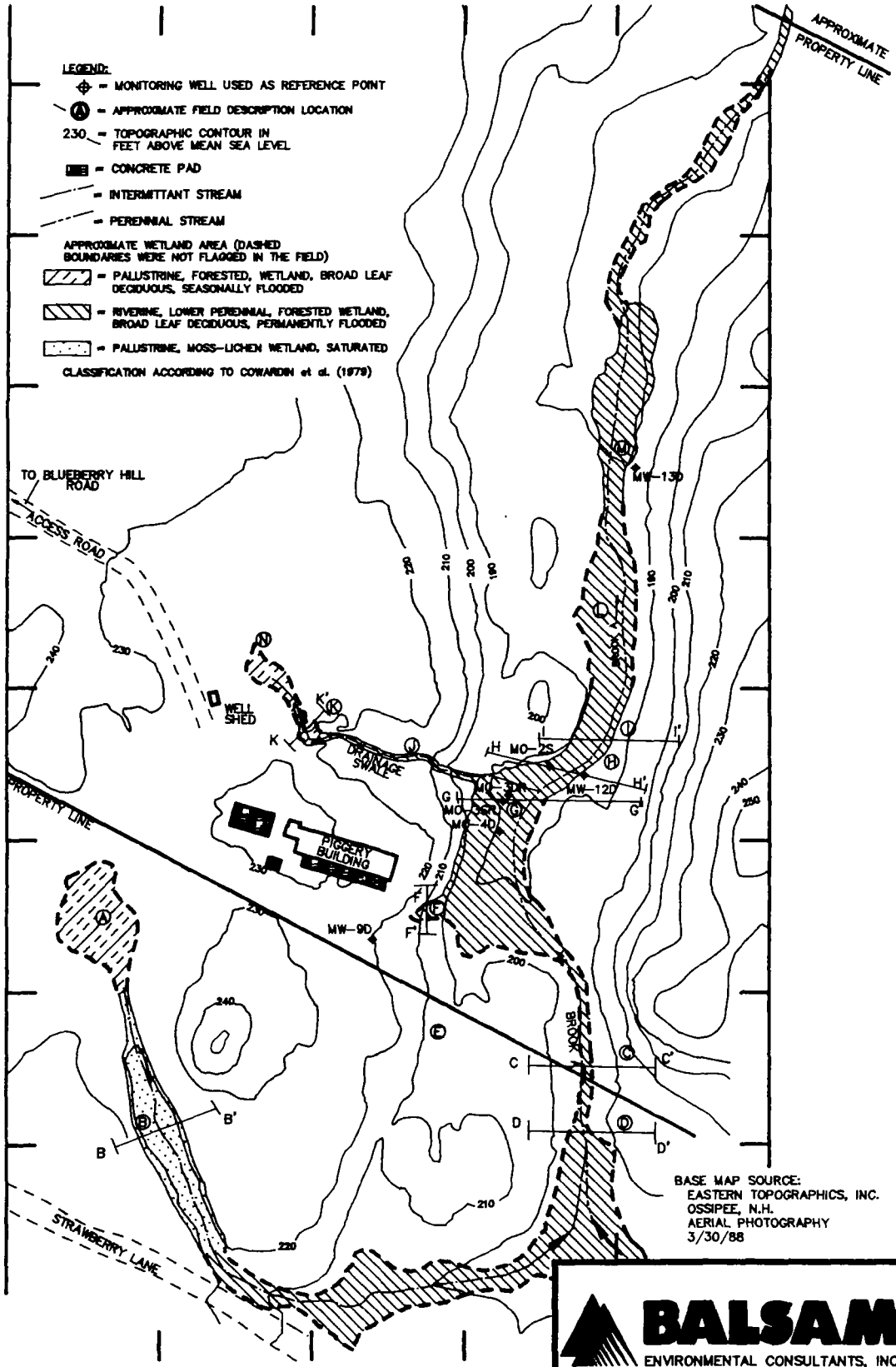


BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

LEGEND
- ◆ = SHALLOW BEDROCK WELL
- ◆ = OVERBURDEN WELL
- ◆ = INTERMEDIATE BEDROCK WELL
- ◆ = DEEP BEDROCK WELL
- = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- ✳ = SURFACE WATER/SEDIMENT SAMPLING LOCATION

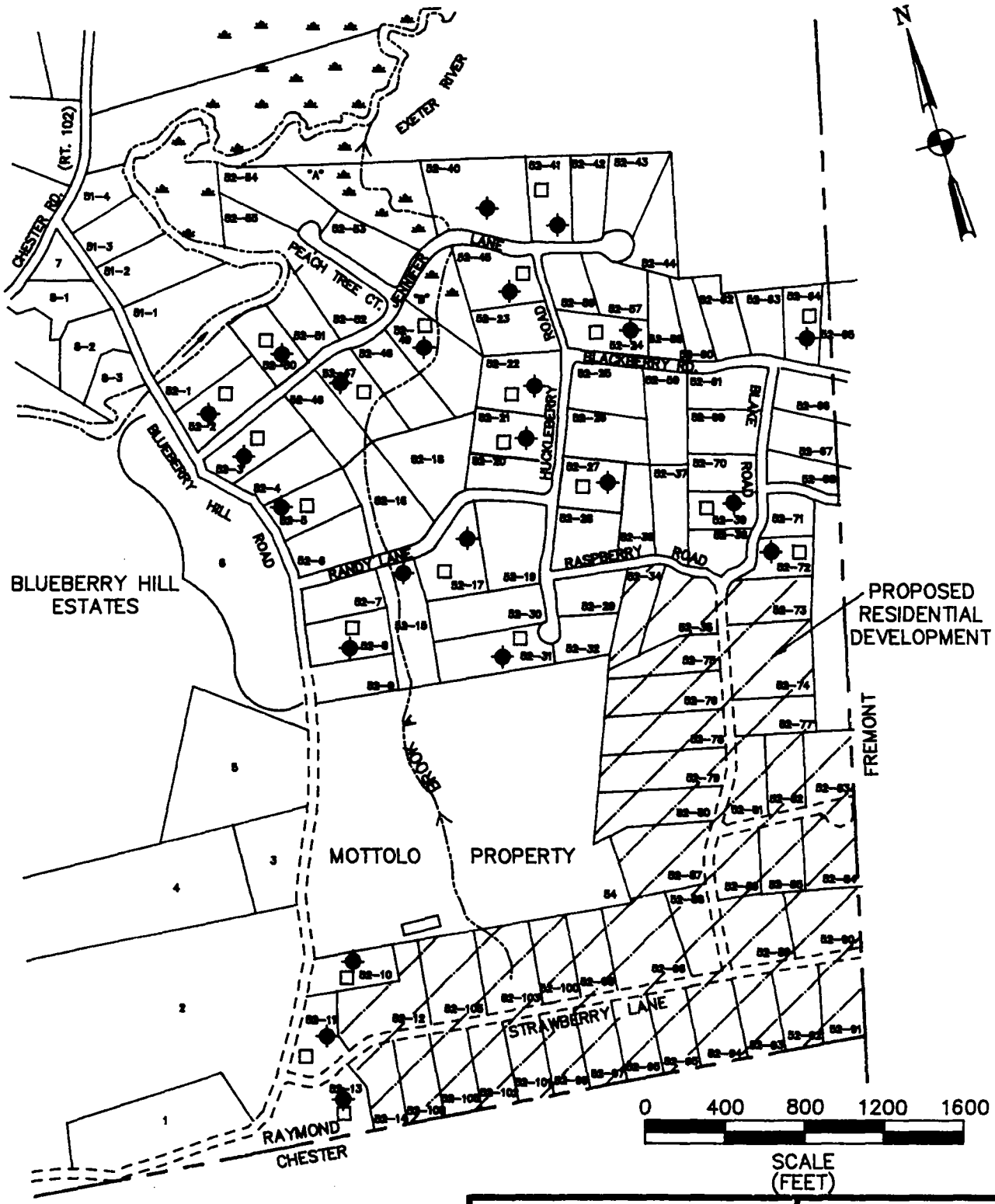
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: OFF-SITE GROUND WATER & SURFACE WATER SAMPLING LOCATIONS			
DATE: 7/19/90	DRAWN: D.J.H.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 650 RI18	APPROVED: T.S.S.	FIGURE NO: 2-13 / PROJECT NO: 6185/818



BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: APPROXIMATE WETLAND BOUNDARIES			
DATE: 7/19/90	DRAWN: D.J.H.	CHECKED: S.C.S.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 210 RI16	APPROVED: T.S.S.	FIGURE NO: 2-14 / PROJECT NO: 6185/818



LEGEND:

- 52-60 LOT NUMBER
- ◆ APPROXIMATE LOCATION OF RESIDENTIAL WELL
- □ APPROXIMATE LOCATION OF RESIDENTIAL SEPTIC SYSTEM

SOURCE:

RAYMOND TAX MAPS, RESIDENTIAL DEVELOPMENT PLANS, AND VISUAL OBSERVATIONS.

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT K.J. QUINN & COMPANY, INC.				
TITLE RESIDENTIAL WELLS INCLUDED IN NHDES RI SAMPLING PROGRAM				
DATE 7/19/90	DRAWN BY D.J.H.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI1-0	APPROVED T.S.S.	FIGURE NO. 2-15	PROJECT NO. 6185/818

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

Section 3

TABLE 3-1

SUMMARY OF VERTICAL HYDRAULIC GRADIENTS
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Measuring Point	Average Measuring Point Elevation[1] (feet)	April 1989 Potentiometric Head (feet)	September 1989 Potentiometric Head (feet)	December 1989 Potentiometric Head (feet)	April 1989 Vertical Gradient (ft/ft)	September 1989 Vertical Gradient (ft/ft)	December 1989 Vertical Gradient (ft/ft)
MW-7S	223.6	225.9	222.8	ID	-0.2[3]	-0.2	ID
MW-7D	209.2	223.6	220.5	222.2			
MW-8S	217.5	225.1	222.0	222.0	-1.7	-1.6	-1.5
MW-8D	204.1	202.8	200.8	201.8			
MW-20S	215.0	NA[5]	NA	221.5	NA	NA	-0.03
MW-20D	187.7	NA	NA	220.6	NA	NA	
MW-21S	221.3	NA	NA	222.6	NA	NA	-0.1
MW-21D	197.3	NA	NA	221.0			
OW-2SR	197.2	208.0	206.1	205.2	-0.1	-0.1	-0.1
OW-2DR	179.3	206.7	204.7	205.1			
OW-4SR	208.8	216.0	213.3	213.8	-0.7	-0.1	-0.6
OW-4DR	194.4	205.9	211.9	204.6			
MO-2S	180.7	186.8	186.4	186.4	+0.1[3]	+0.03	-0.3
MO-2DR	167.0	187.5	186.8	186.0			
MO-3S	180.5	186.9	186.7	ID	+0.3	+0.2	ID
MO-3D	176.2	188.1	187.5	187.6			
MO-3SR	179.3	188.2	187.8	187.9	+>0.3	+0.3	ID
MO-3DR	168.4	>191.0	190.8	ID			
MO-4S	180.5	187.8	187.6	187.5	+0.1	+0.1	+0.02
MO-4D	169.6	188.4	188.1	187.9			

TABLE 3-1 (continued)

SUMMARY OF VERTICAL HYDRAULIC GRADIENTS
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Measuring Point	Average Measuring Point Elevation[1] (feet)	April 1989 Potentiometric Head (feet)	September 1989 Potentiometric Head (feet)	December 1989 Potentiometric Head (feet)	April 1989 Vertical Gradient (ft/ft)	September 1989 Vertical Gradient (ft/ft)	December 1989 Vertical Gradient (ft/ft)
MO-5S	175.3	181.4	181.2	180.8	+0.1	+0.01	+0.04
MO-5DR	164.0	181.5	181.3	181.2			
MW-12S	178.7	185.5	185.2	184.8	+>0.3	+>0.3	+>0.3
MW-12D	164.1	>189.6	>189.6	>189.6			
SE-6	186.1(A)[4]	186.1	NA	NA	+0.1	NA	NA
MO-3S	180.5	186.9	NA	NA			
SE-6	185.8(S)	NA	185.8	NA	NA	+0.2	NA
MO-3S	180.5	NA	186.7	NA			
SE-6	186.1(A)	186.1	NA	NA	+0.3	NA	NA
MO-3SR	179.3	188.2	NA	NA			
SE-6	185.8(S)	NA	185.8	NA	NA	+0.3	NA
MO-3SR	179.3	NA	187.8	NA			
MW-14S	165.3	182.8	179.9	182.1	-0.1	-0.01	-0.1
MW-14D	143.3	181.8	179.8	180.7			
MW-15S	172.5	177.5	NA	172.0	-0.1	NA	-0.02
MW-15D	61.5	170.7	NA	169.8			
MW-18S	149.2	160.4	159.7	159.3	+0.02	+0.01	+0.03
MW-18D	38.0	162.5	161.2	162.2			

NOTES:

1. The potentiometric head measured in each well was assumed to occur at mid-section depth to estimate vertical gradients. Elevations and potentiometric head data are referenced to mean sea level.
2. ID = Insufficient data or point not existing at that time. See Appendix B-7.
3. (-) = Downward vertical gradient; (+) = Upward vertical gradient.
4. (A) = April 1989; (S) = September 1989.
5. NA = Not Applicable.

TABLE 3-2

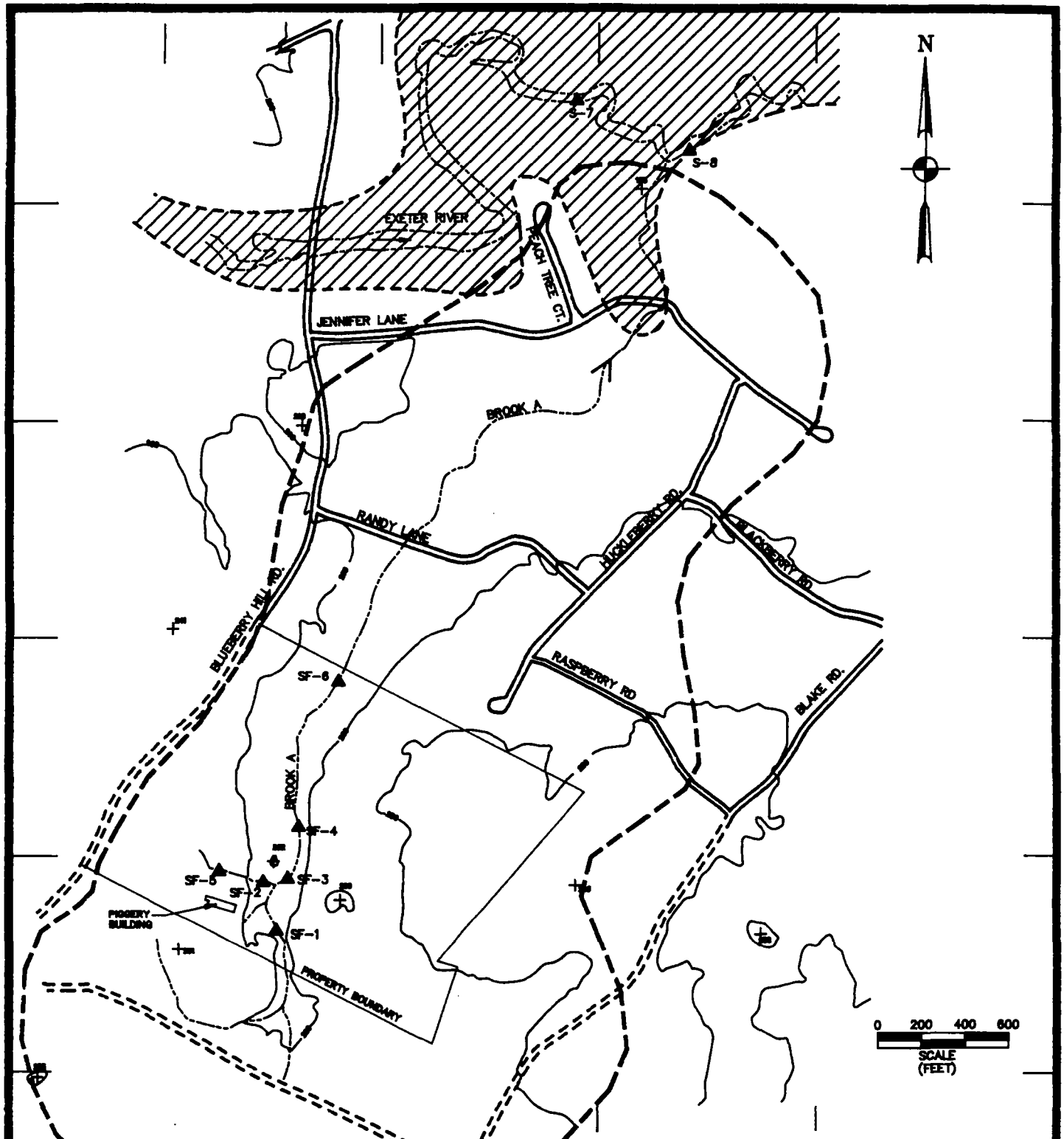
SATURATED THICKNESS AND TRANSMISSIVITY ESTIMATES IN OVERBURDEN

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Well Designation	Saturated Thickness (Feet)	Hydraulic Conductivity (Centimeters/ Second)	Average Transmissivity ($Feet^2$/Day)
OW-4SR	8.9	1.2×10^{-2}	299
MW-8S	11.9	4.8×10^{-3}	160
MW-13S	17.9	5.8×10^{-3}	30
OW-2SR	12.7	6.0×10^{-4}	22
MO-4S	13.0	5.6×10^{-4}	21
MO-5S	12.0	4.8×10^{-4}	16
MO-2S	9.2	5.3×10^{-4}	14
MW-12S	10.1	2.2×10^{-4}	6
MO-3SR	10.3	2.0×10^{-4}	6

NOTE:

Transmissivities are based upon hydraulic conductivity estimates and saturated thickness measurements conducted by Balsam Environmental Consultants, Inc. on June 22, 1989. See Appendix B-5 for analyses.



BASE MAP SOURCE:
- EASTERN TOPOGRAPHICS, INC OSSIPEE, N.H. AERIAL PHOTOGRAPHY 3/30/88
- FEMA, 1982

LEGEND:
- = APPROXIMATE 100 YEAR FLOOD PLAIN BOUNDARY
- = APPROXIMATE BROOK A DRAINAGE BASIN BOUNDARY
- SF-1 ▲ = STREAMFLOW MEASUREMENT LOCATIONS

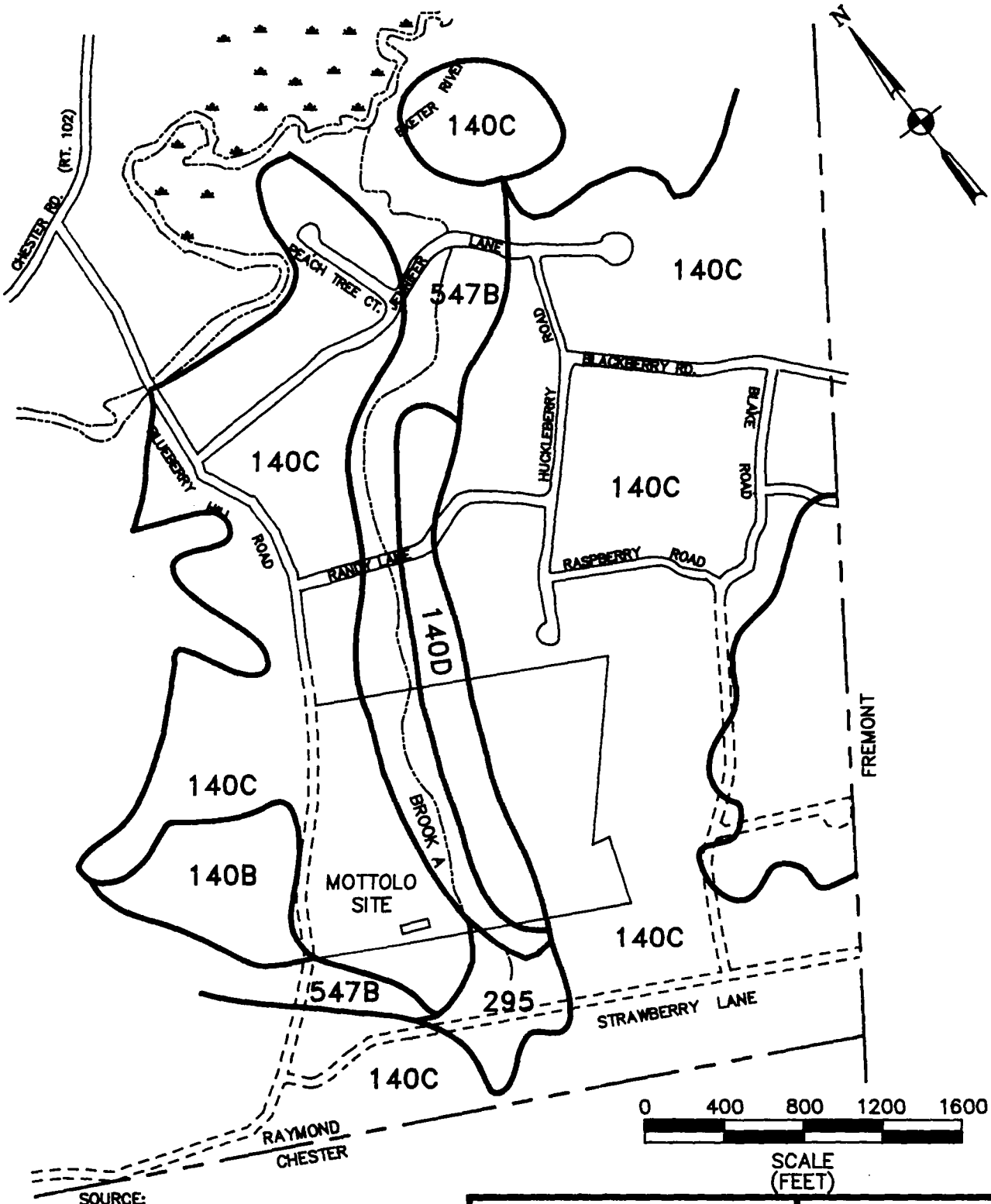
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: BROOK A DRAINAGE BASIN AND EXETER RIVER 100 YEAR FLOOD PLAIN BOUNDARY

DATE:	DRAWN:	CHECKED:	PROJECT:
6/25/90	T.S.S.	E.S.W.	MOTTOLO SITE RI/FS

SCALE:	FILE NO:	APPROVED:	FIGURE NO:	PROJECT NO:
AS SHOWN	RI50	L.C.S.	3-1	6185/818



SOURCE:
SOIL CONSERVATION SERVICE, 1982

LEGEND:

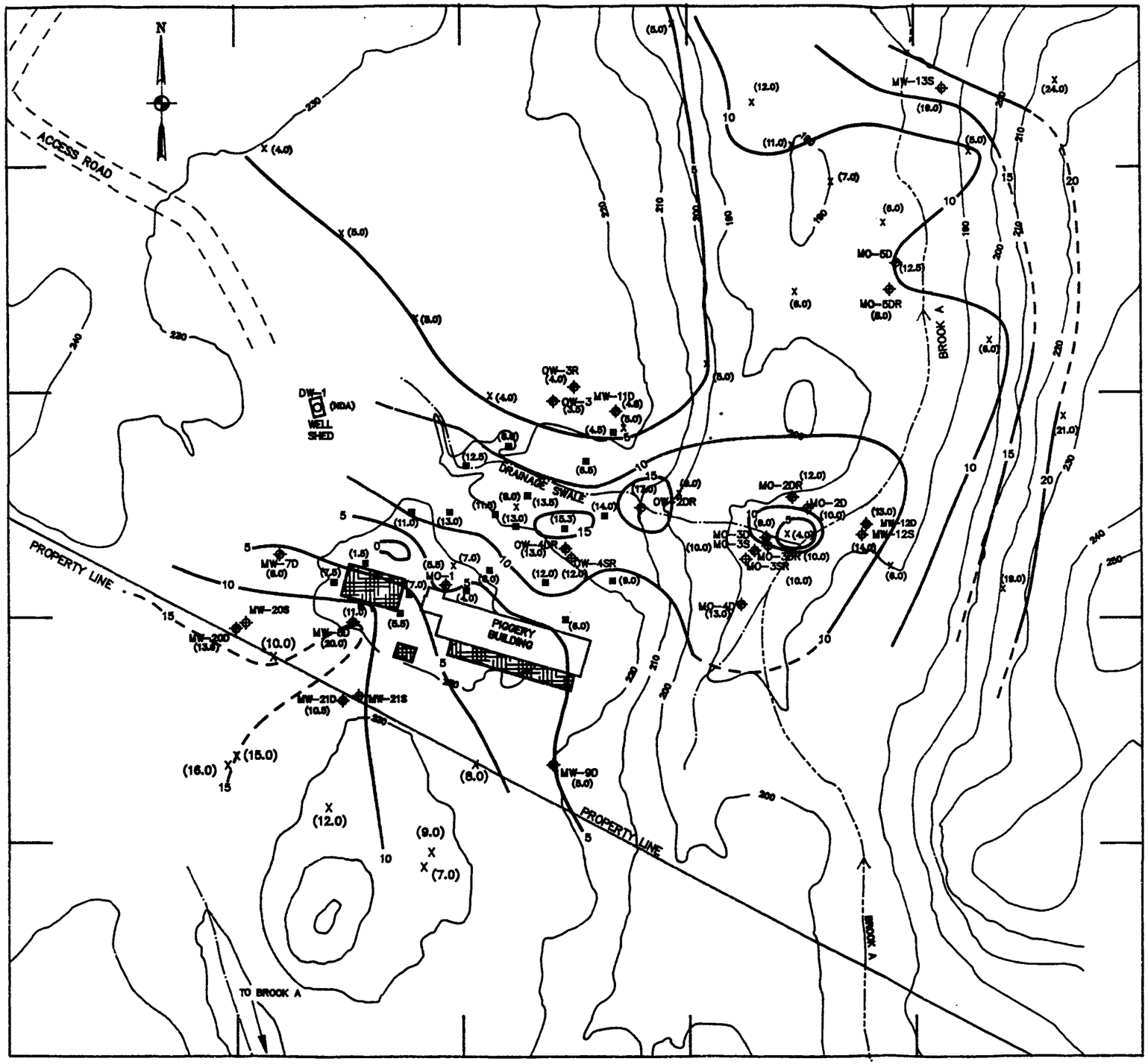
140 = CHATFIELD HOLLIS CANTON COMPLEX FINE SANDY LOAM, VERY STONEY

140B = 3 TO 8 PERCENT SLOPES
140C = 8 TO 15 PERCENT SLOPES
140D = 15 TO 35 PERCENT SLOPES

295 = GREENWOOD PEATY MUCK

547B = WALPOLE VERY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONEY

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE STUDY AREA SOILS MAP	
DATE 6/20/90	DRAWN BY T.S.S.	CHECKED M.F.J.	PROJECT MOTTOLO SITE RI/FS	
SCALE AS SHOWN	FILE NO. RI51	APPROVED E.S.W.	FIGURE NO. 3-2	PROJECT NO. 6185/818



LEGEND:

- ◈ = OVERBURDEN WELL
- ◆ = SHALLOW BEDROCK WELL
- o = DUG WELL
- ■ = SOIL BORING LOCATION
- x = SEISMIC REFRACTION DATA POINT
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (4.0) = OVERBURDEN THICKNESS (FEET)
- 10 = OVERBURDEN THICKNESS (FEET)
- NDA = NO DATA AVAILABLE
- ▦ = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTE:
ESTIMATED OVERBURDEN THICKNESS BASED UPON SOIL BORING AND GEOPHYSICAL DATA. CONTOURS ARE DASHED IN AREAS OF REDUCED DATA.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

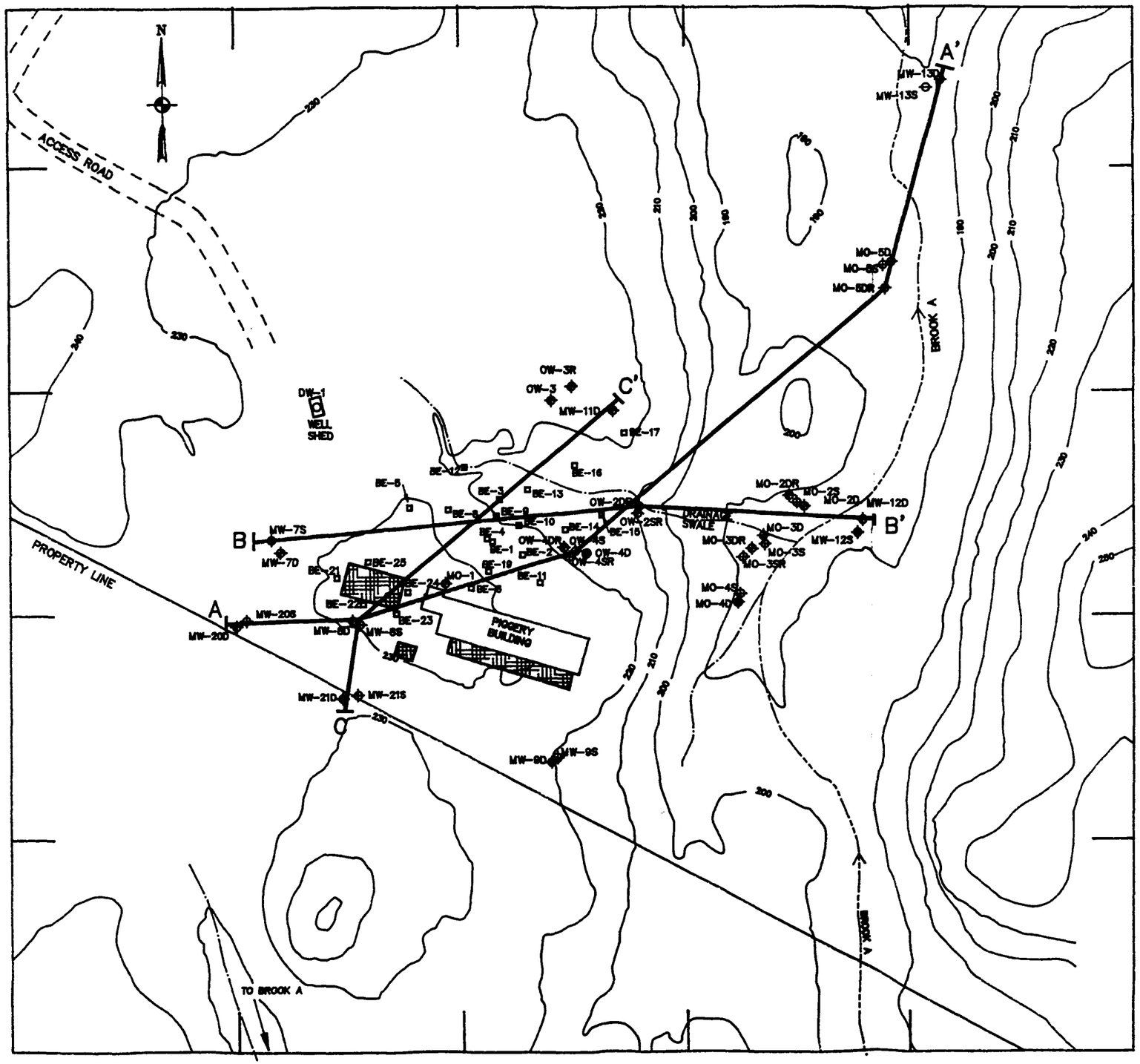
0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: SITE AREA OVERBURDEN THICKNESS MAP

DATE:	DRAWN:	CHECKED:	PROJECT:	
6/25/90	M.F.J.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 100 RI19	APPROVED: T.S.S.	FIGURE NO: 3-3	PROJECT NO: 6185/818



LEGEND:

- ◈ = OVERBURDEN WELL
- ◆ = SHALLOW BEDROCK WELL
- ● = BARCAD SAMPLER
- o = DUG WELL
- ▫ = SOIL BORING LOCATION
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- A — A' = GEOLOGIC CROSS SECTION LOCATION
- ▦ = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

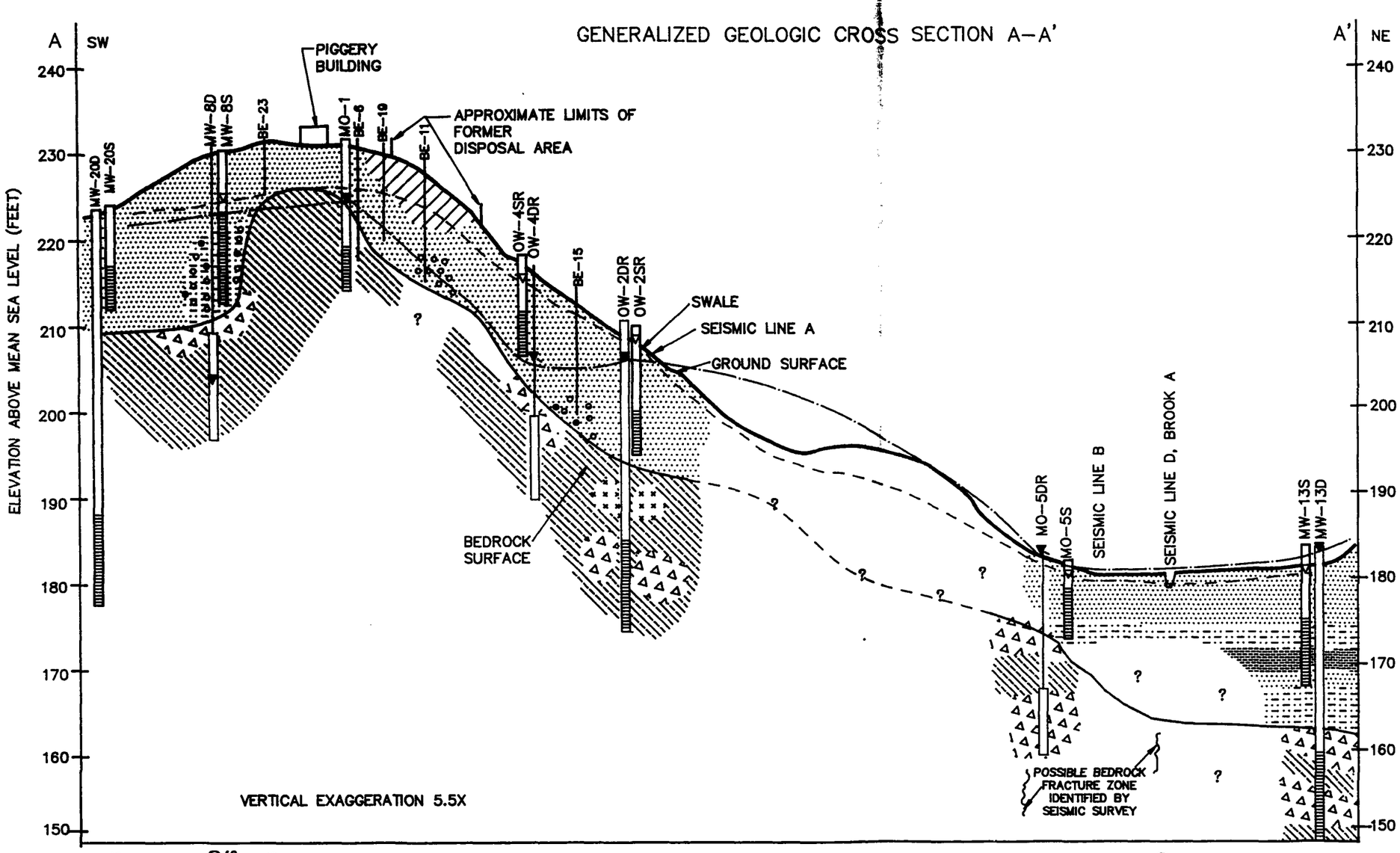
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

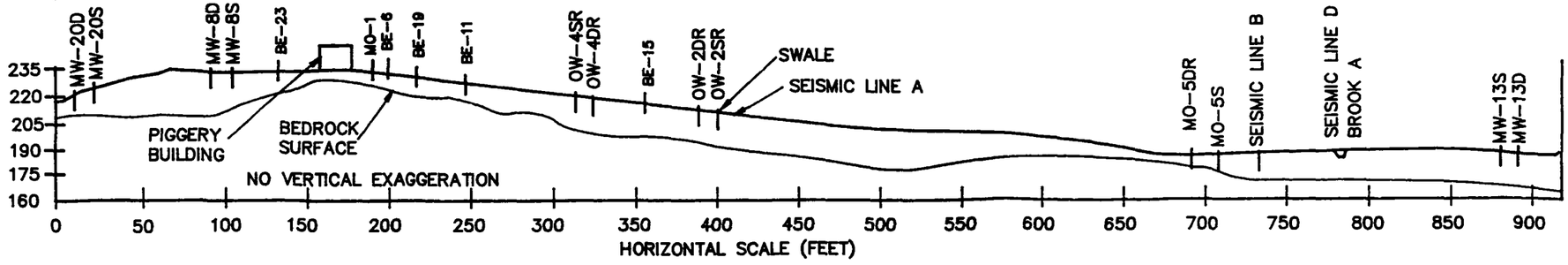
0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: SITE AREA GEOLOGIC CROSS SECTION LOCATIONS			
DATE: 6/25/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 100 RI20	APPROVED: T.S.S.	FIGURE NO: 3-4 / PROJECT NO: 6185/818

GENERALIZED GEOLOGIC CROSS SECTION A–A'





LEGEND

- CLAYEY SILT
- SILTY SAND
- FINE TO MEDIUM SAND, OR FINE TO COARSE SAND
- SILTY SAND AND GRAVEL
- SAND AND GRAVEL
- GRANITE AND PEGMATITE
- QUARTZITE
- INTERLAYERED BIOTITE SCHIST, QUARTZITE AND BIOTITE GRANOFELS
- SAND AND GRAVEL FILL
- OVERBURDEN WATER TABLE, 4/18/89
- BEDROCK POTENTIOMETRIC SURFACE 4/18/89
- SCREENED ZONE (PVC WELL)
- OPEN HOLE (BEDROCK WELL)

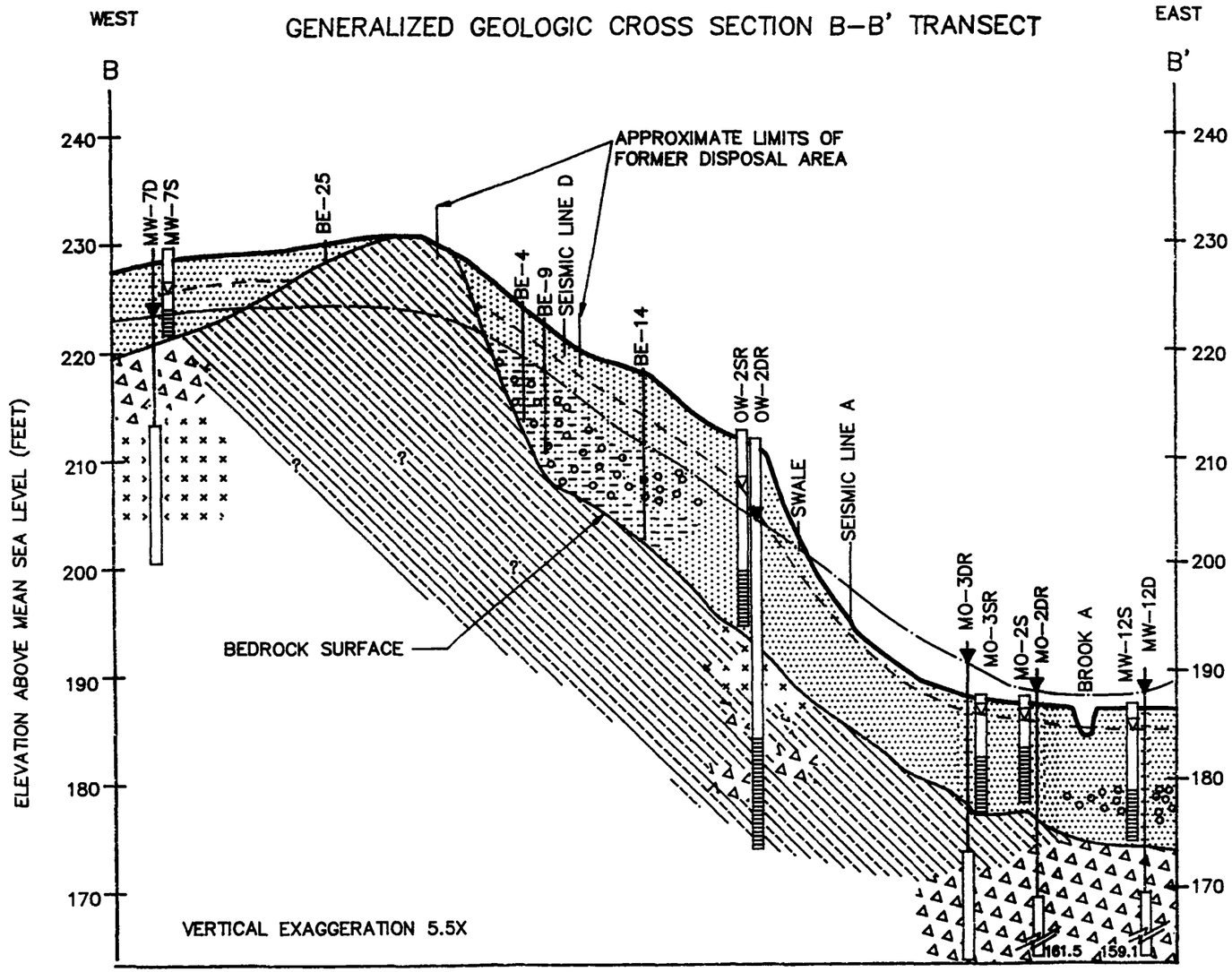
NOTES:

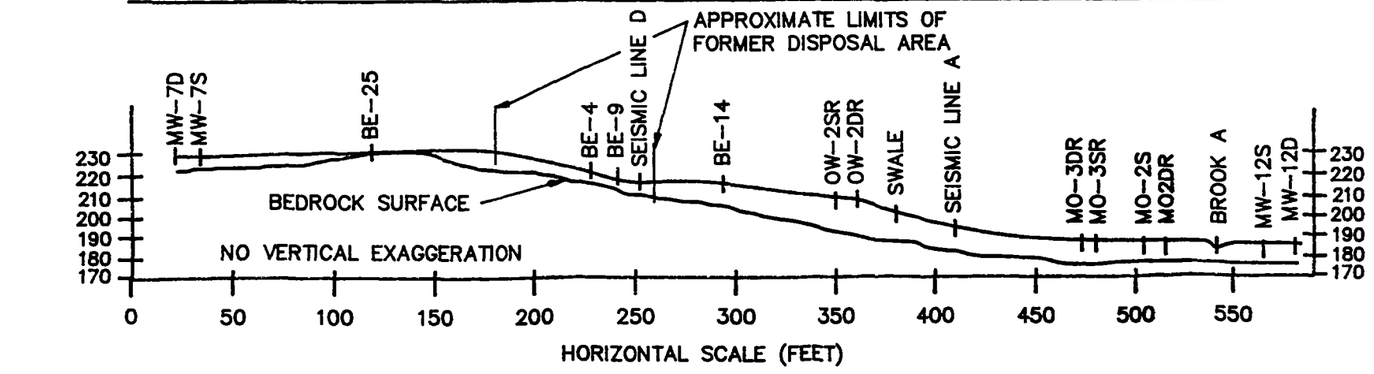
1. *GROUND SURFACE ELEVATIONS AND* BEDROCK ELEVATIONS ARE TAKEN FROM DATA PROVIDED BY NHDES AND BALSAM ENVIRONMENTAL CONSULTANTS, INC.
2. GEOLOGIC INFORMATION SHOWN IS BASED UPON INTERPRETATION OF SOIL BORING, ROCK CORING, AND GEOPHYSICAL DATA.
3. POTENTIOMETRIC DATA FOR MW–8D ARE INCONSISTENT WITH SITE AREA POTENTIOMETRIC DATA. SEE TEXT FOR EXPLANATION.
4. SOIL BORING DATA USED FOR GEOLOGIC INTERPRETATION ONLY. POTENTIOMETRIC SURFACES ARE BASED UPON DATA FROM MONITORING WELLS AND SURFACE WATER BODIES ONLY.

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT:			
K.J. QUINN & COMPANY, INC.			
TITLE: GEOLOGIC CROSS SECTION TRANSECT A–A'			
DATE: 9/14/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: RI21	APPROVED: T.S.S.	FIGURE NO: 3–5 / PROJECT NO: 6185/818

GENERALIZED GEOLOGIC CROSS SECTION B–B' TRANSECT





LEGEND

- CLAYEY SILT
- SILTY SAND
- FINE TO MEDIUM SAND, OR FINE TO COARSE SAND
- SILTY SAND AND GRAVEL
- SAND AND GRAVEL
- GRANITE AND PEGMATITE
- QUARTZITE
- INTERLAYERED BIOTITE SCHIST, QUARTZITE AND BIOTITE GRANOFELS
- OVERBURDEN WATER TABLE, 4/18/89
- BEDROCK POTENTIOMETRIC SURFACE 4/18/89
- SCREENED ZONE (PVC WELL)
- OPEN HOLE (BEDROCK WELL)

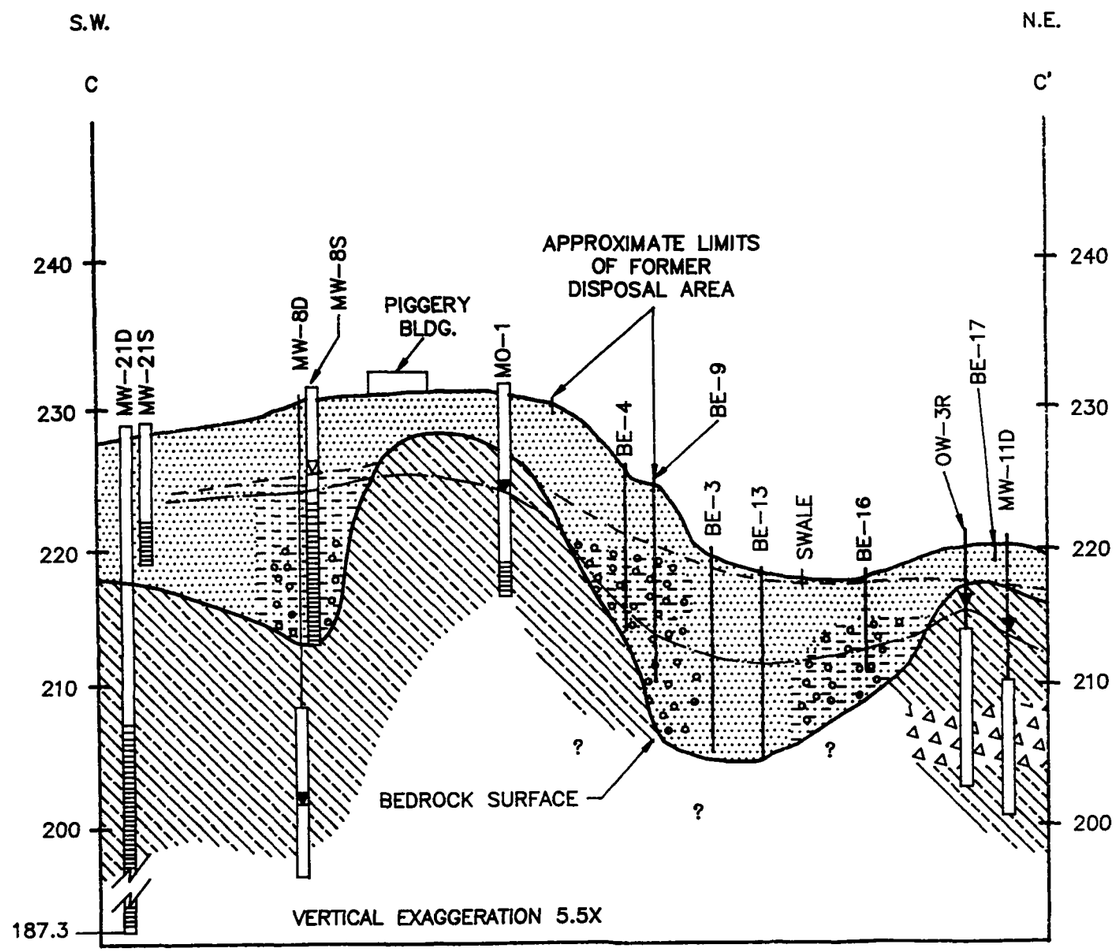
NOTES:

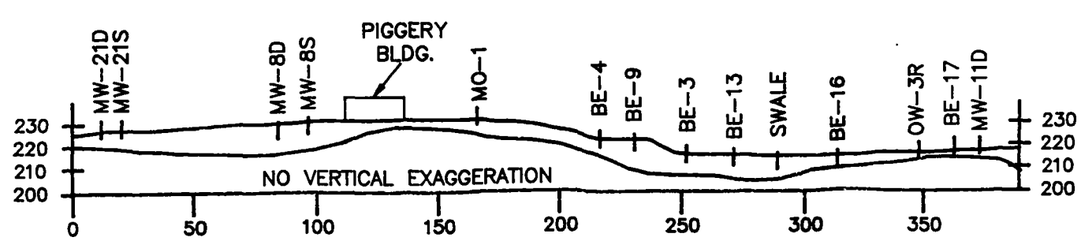
1. GROUND SURFACE ELEVATIONS AND BEDROCK ELEVATIONS ARE TAKEN FROM DATA PROVIDED BY NHDES AND BALSAM ENVIRONMENTAL CONSULTANTS, INC.
2. GEOLOGIC INFORMATION SHOWN IS BASED UPON INTERPRETATION OF SOIL BORING, ROCK CORING, AND GEOPHYSICAL DATA.
3. SOIL BORING DATA USED FOR GEOLOGIC INTERPRETATION ONLY. POTENTIOMETRIC SURFACES ARE BASED UPON DATA FROM MONITORING WELLS AND SURFACE WATER BODIES ONLY.

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT:			
K.J. QUINN & COMPANY, INC.			
TITLE: GEOLOGIC CROSS SECTION TRANSECT B–B'			
DATE: 9/13/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS NOTED	FILE NO: RI22	APPROVED: T.S.S.	FIGURE NO: 3–6 / PROJECT NO: 6185/818

GENERALIZED GEOLOGIC CROSS SECTION C–C' TRANSECT





HORIZONTAL SCALE (FEET)

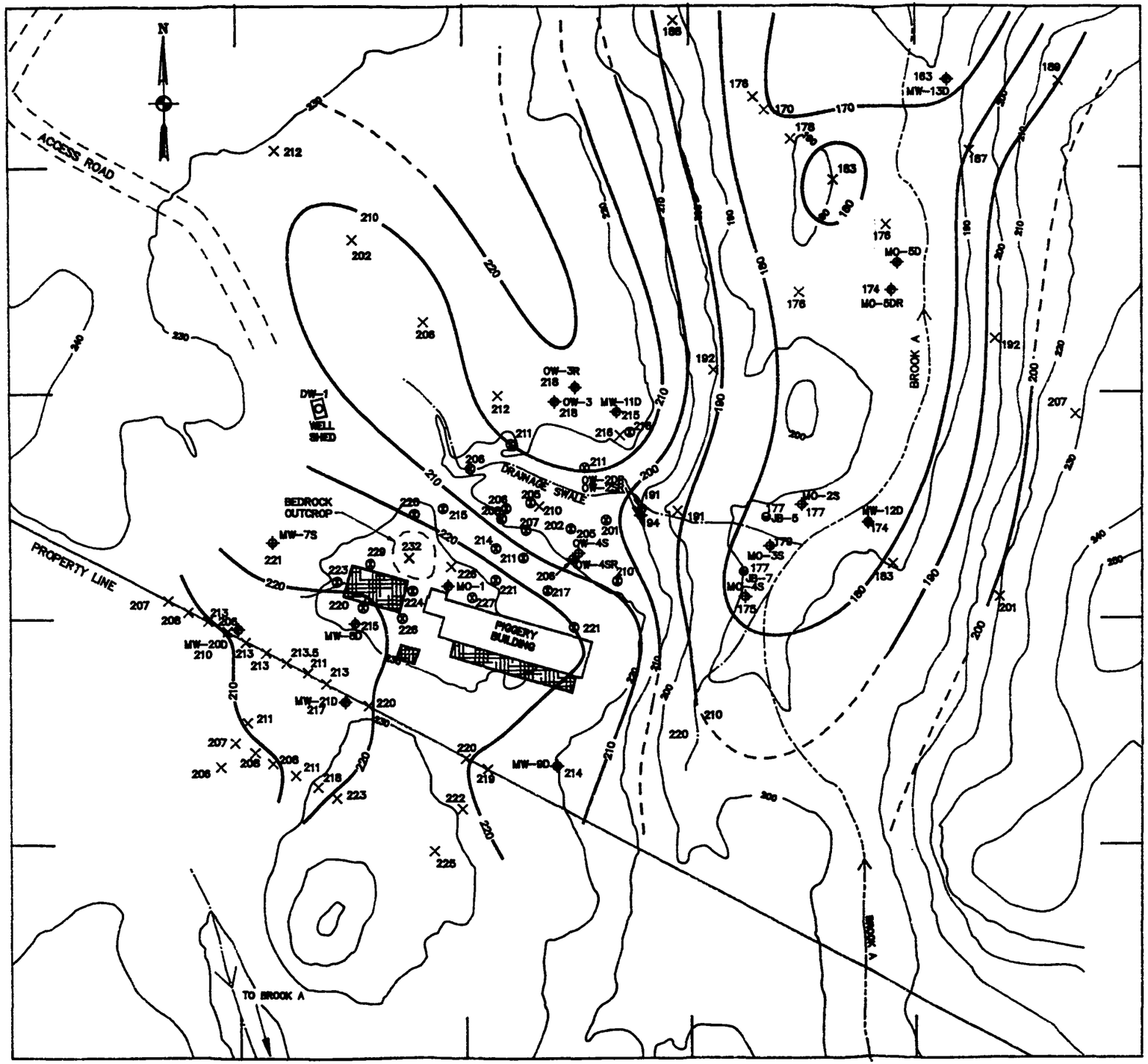
LEGEND

- CLAYEY SILT
- SILTY SAND
- FINE TO MEDIUM SAND, OR FINE TO COARSE SAND
- SILTY SAND AND GRAVEL
- SAND AND GRAVEL
- GRANITE AND PEGMATITE
- QUARTZITE
- INTERLAYERED BIOTITE SCHIST, QUARTZITE AND BIOTITE GRANOFELS
- OVERBURDEN WATER TABLE, 4/18/89
- BEDROCK POTENTIOMETRIC SURFACE 4/18/89
- SCREENED ZONE (PVC WELL)
- OPEN HOLE (BEDROCK WELL)

NOTES:

1. GROUND SURFACE ELEVATIONS AND BEDROCK ELEVATIONS ARE TAKEN FROM DATA PROVIDED BY NHDES AND BALSAM ENVIRONMENTAL CONSULTANTS, INC.
2. GEOLOGIC INFORMATION SHOWN IS BASED UPON INTERPRETATION OF SOIL BORING, ROCK CORING, AND GEOPHYSICAL DATA.
3. POTENTIOMETRIC DATA FOR MW–8D ARE INCONSISTENT WITH SITE AREA POTENTIOMETRIC DATA. SEE TEXT FOR EXPLANATION.
4. SOIL BORING DATA USED FOR GEOLOGIC INTERPRETATION ONLY. POTENTIOMETRIC SURFACES ARE BASED UPON DATA FROM MONITORING WELLS AND SURFACE WATER BODIES ONLY.

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: GEOLOGIC CROSS SECTION TRANSECT C–C'	
DATE: 9/13/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: RI23	APPROVED: T.S.S.	FIGURE NO: 3–7	PROJECT NO: 6185/818



LEGEND:

- ◆ = OVERBURDEN WELL
- ◆ = SHALLOW BEDROCK WELL
- o = DUG WELL
- ⊕ = JETTED BORING AND WELL POINT
- × 192 = ESTIMATED BEDROCK SURFACE ELEVATION SEISMIC REFRACTION DATA POINT
- ⊕ 221 = ESTIMATED BEDROCK SURFACE ELEVATION SOIL BORING DATA POINT
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 200 = ESTIMATED BEDROCK SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTE:
ESTIMATED BEDROCK SURFACE ELEVATIONS BASED UPON SOIL BORING AND GEOPHYSICAL DATA. CONTOURS ARE DASHED IN AREAS OF REDUCED DATA.

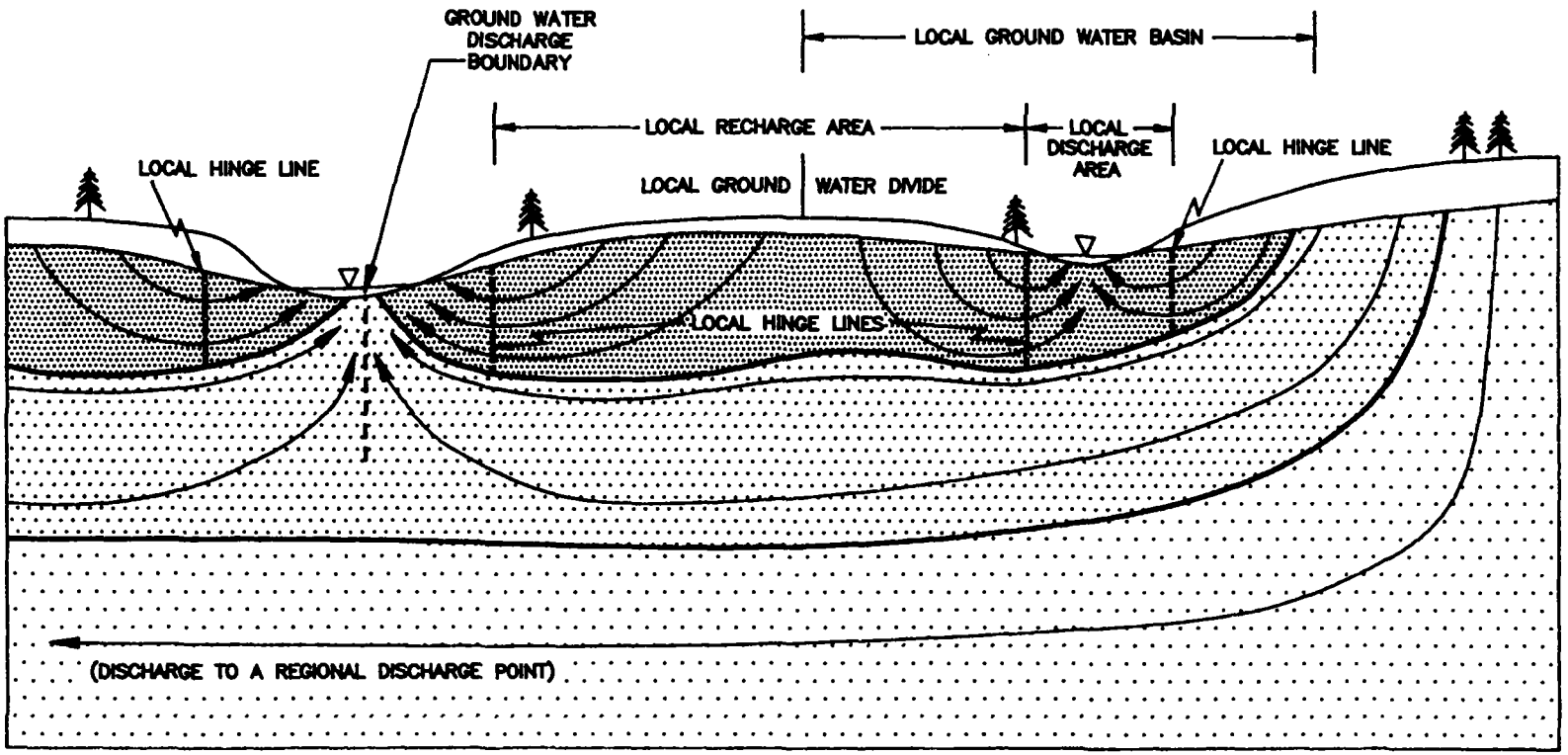
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: SITE AREA BEDROCK SURFACE CONTOUR MAP			
DATE: 6/27/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 100 RI24	APPROVED: T.S.S.	FIGURE NO: 3-8 / PROJECT NO: 6185/818

LOCAL, INTERMEDIATE, AND REGIONAL GROUND WATER FLOW SYSTEMS

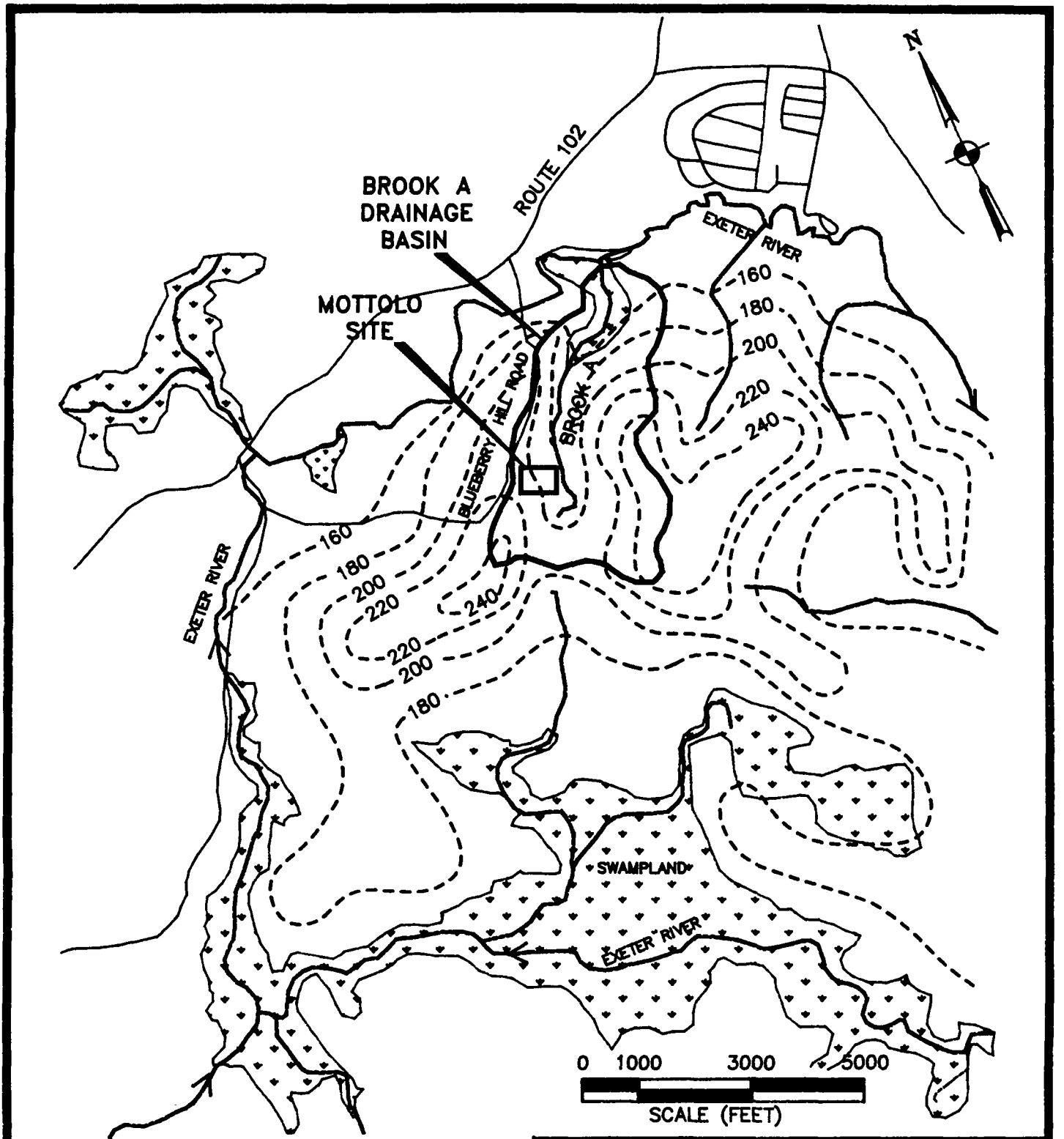


= LOCAL GROUND WATER FLOW SYSTEM

= INTERMEDIATE GROUND WATER FLOW SYSTEM

= REGIONAL GROUND WATER FLOW SYSTEM

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT K.J. QUINN & COMPANY, INC.	
			TITLE CONCEPTUAL GROUND WATER FLOW SYSTEMS	
DATE 9/13/90	DRAWN BY E.S.W.	CHECKED T.S.S.	PROJECT MOTTOLO SITE RI/FS	
SCALE NONE	FILE NO. R155	APPROVED L.C.S.	FIGURE NO. 3-9	PROJECT NO. 818/6185



LEGEND:

- CONCEPTUALIZED BEDROCK GROUND WATER CONTOUR

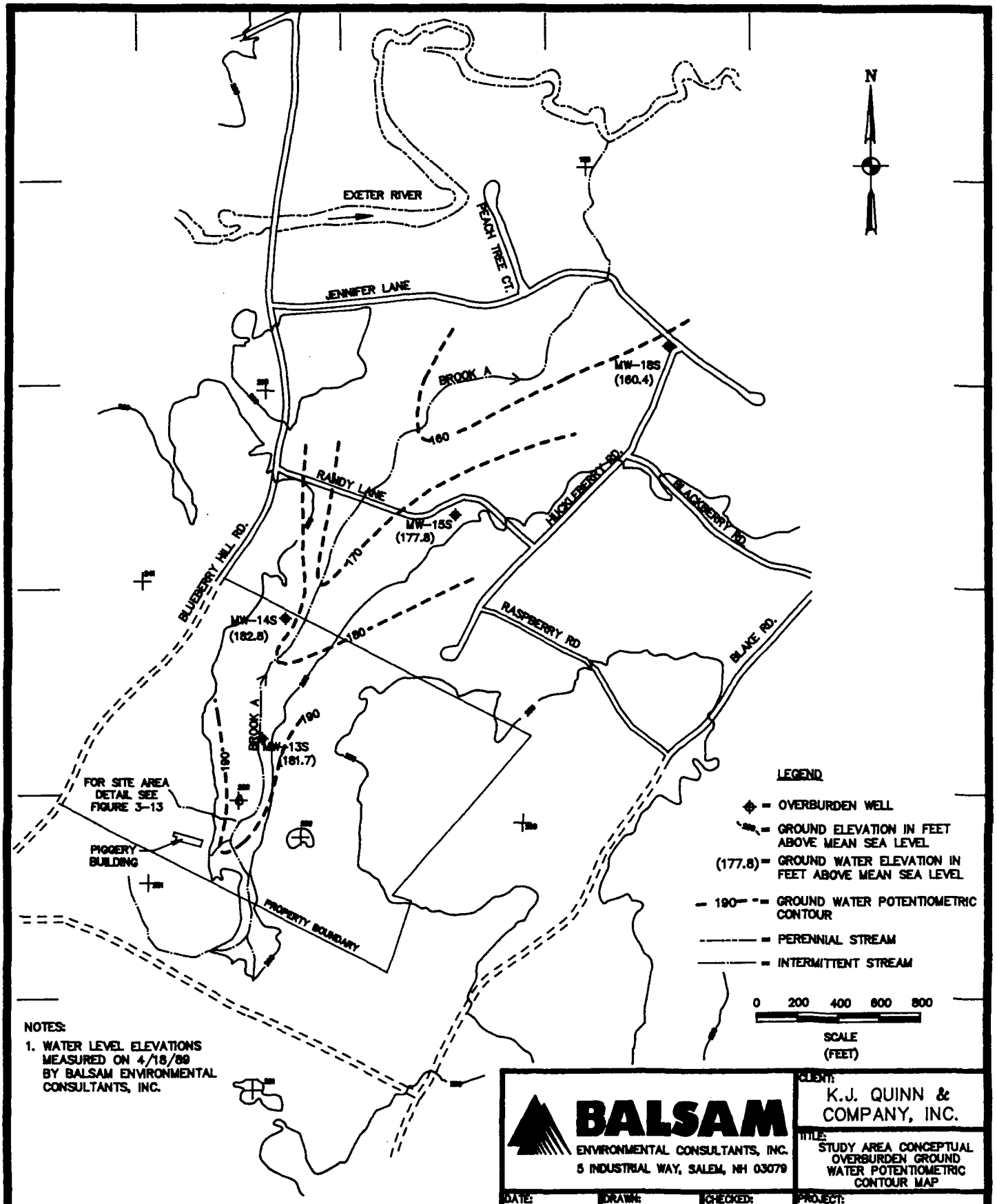
NOTE:

CONTOURS IN BROOK A DRAINAGE BASIN GENERALLY REFLECT MEASUREMENT IN BEDROCK MONITORING WELLS ON APRIL 28, 1989.

SOURCE:

USGS MT. PAWTUCKAWAY AND SANDOWN QUADRANGLE 7.5 MINUTE SERIES TOPOGRAPHIC MAPS

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: CONCEPTUALIZED REGIONAL BEDROCK GROUND WATER POTENTIOMETRIC CONTOUR MAP	
DATE: 9/13/90	DRAWN: T.S.S.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 2500 RI56	APPROVED: L.C.S.	FIGURE NO: 3-10	PROJECT NO: 6185/818



NOTES:

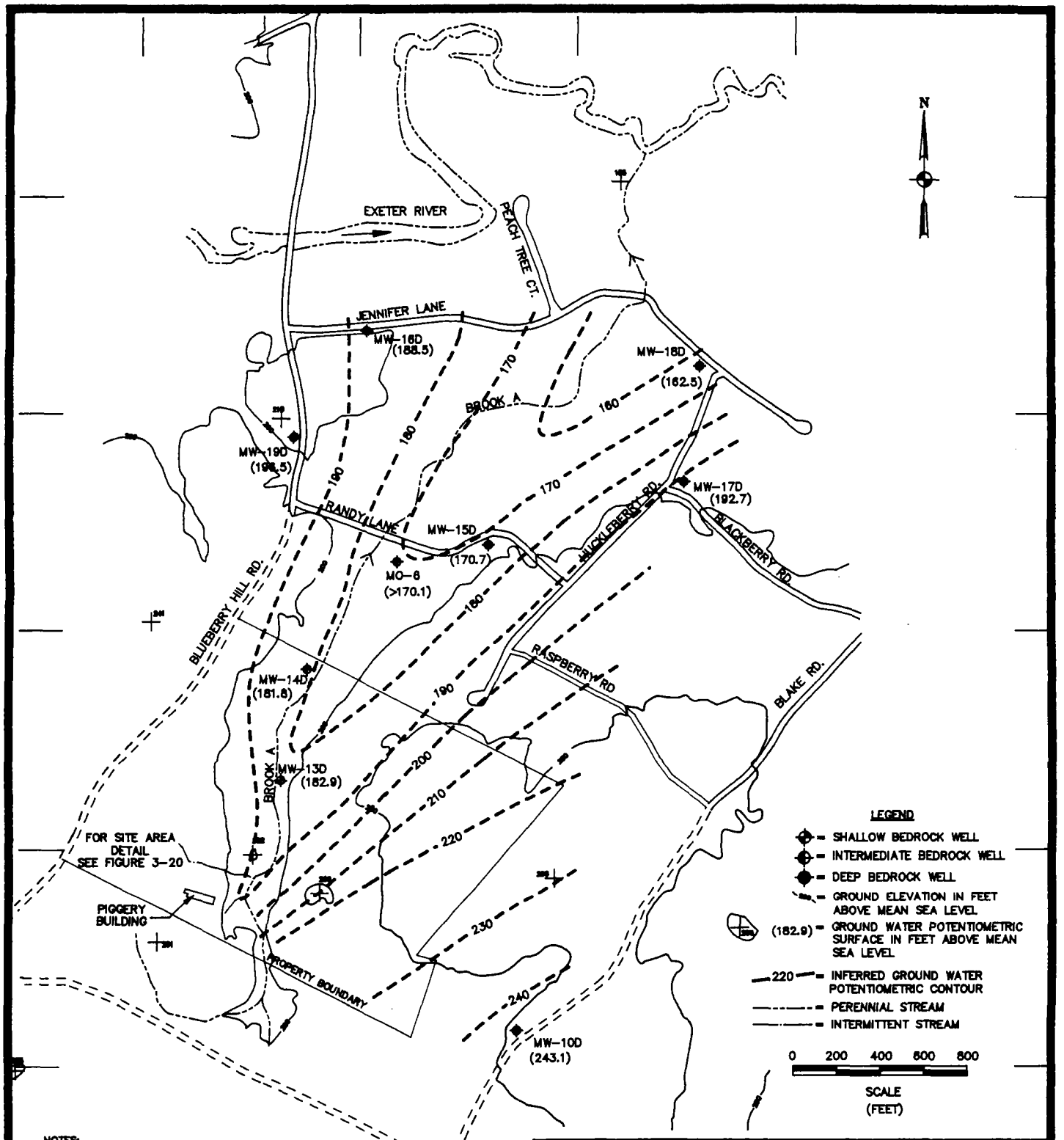
1. WATER LEVEL ELEVATIONS MEASURED ON 4/18/89 BY BALSAM ENVIRONMENTAL CONSULTANTS, INC.

BASE MAP SOURCE:

EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT:			
K.J. QUINN & COMPANY, INC.			
TITLE: STUDY AREA CONCEPTUAL OVERBURDEN GROUND WATER POTENTIOMETRIC CONTOUR MAP			
DATE: 9/14/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 400 RI28	APPROVED: T.S.S.	FIGURE NO: 3-11 / PROJECT NO: 6185/818



NOTES:

1. POTENTIOMETRIC SURFACE MEASURED ON 4/18/89 BY BALSAM ENVIRONMENTAL CONSULTANTS, INC.

BASE MAP SOURCE:

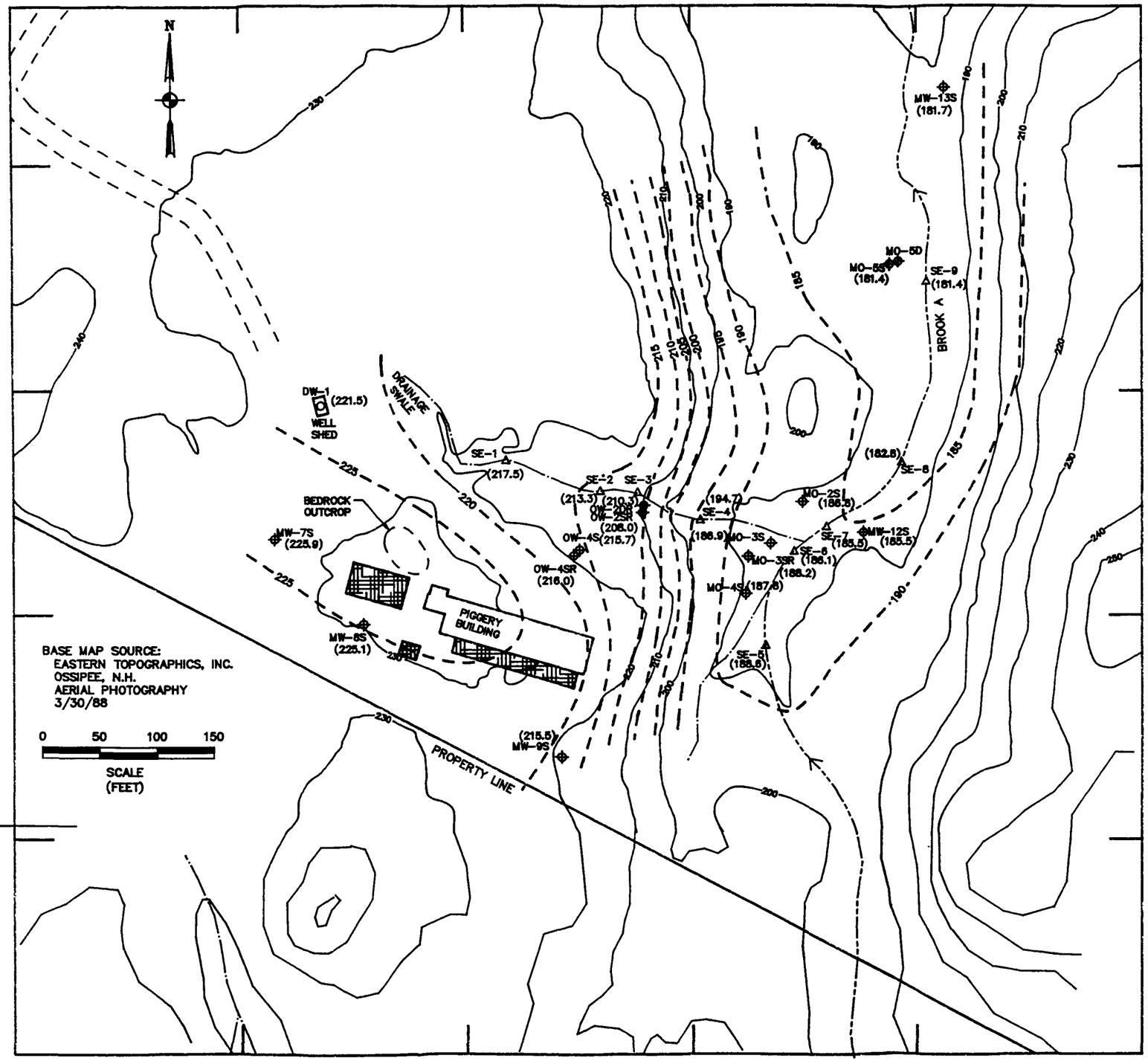
EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/90.

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: STUDY AREA BEDROCK GROUND WATER POTENTIOMETRIC CONTOUR MAP – APRIL 1989

DATE:	DRAWN:	CHECKED:	PROJECT:	
6/26/90	E.S.W.	M.F.J.	MOTTOLO SITE RI/FS	
SCALE:	FILE NO: 400	APPROVED:	FIGURE NO:	PROJECT NO:
AS SHOWN	RI32	T.S.S.	3-12	6185/818



LEGEND:

⊕ = OVERBURDEN WELL

○ = DUG WELL

△ = SURFACE WATER ELEVATION LOCATION

R = REPLACEMENT OF EXISTING WELL

230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL

(186.1)= GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL

205 = GROUND WATER POTENTIOMETRIC CONTOUR

▦ = CONCRETE PAD

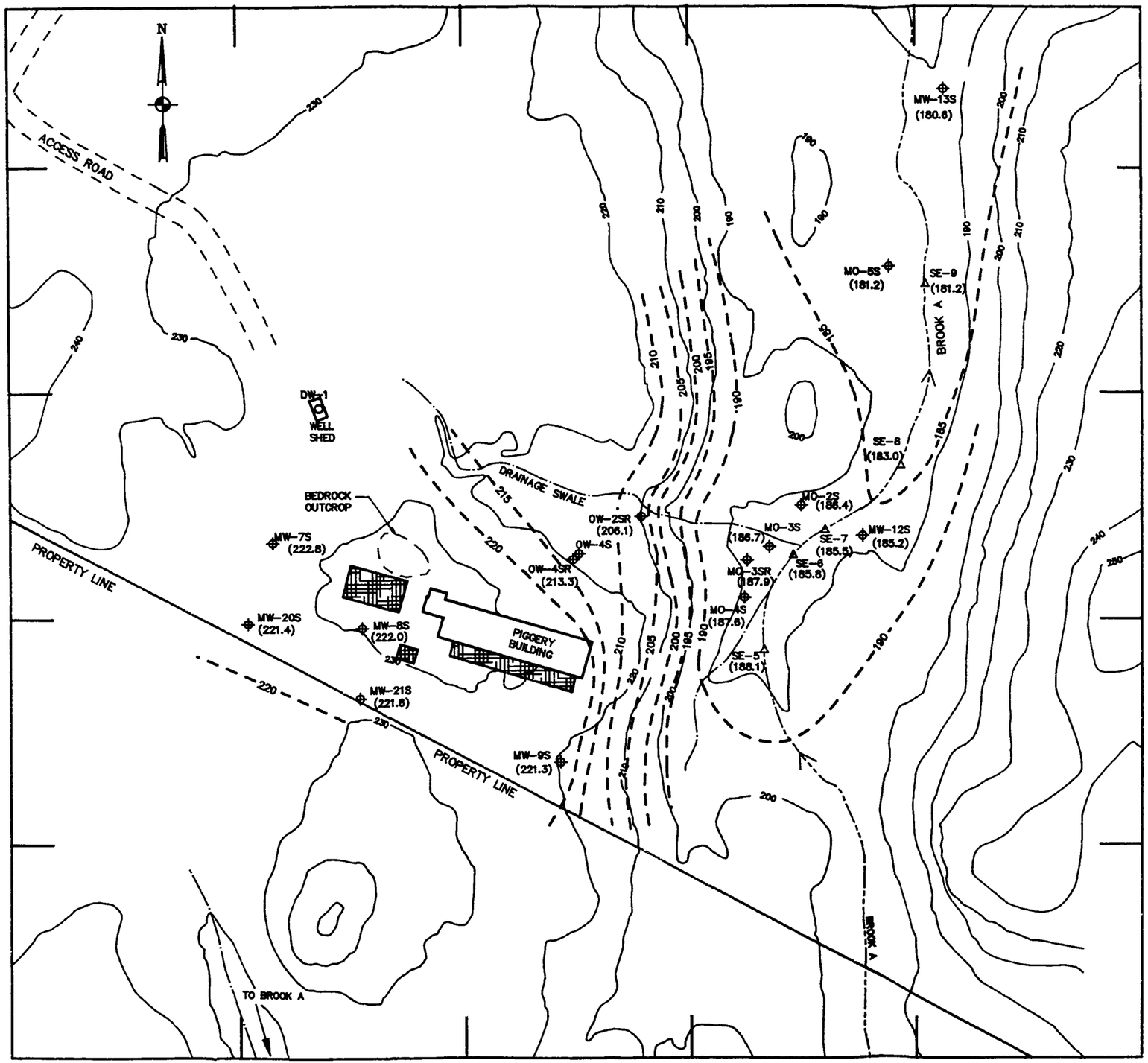
= INTERMITTENT STREAM

= PERENNIAL STREAM

NOTES:

1. WATER LEVEL ELEVATIONS MEASURED ON 4/18/89 BY BALSAM ENVIRONMENTAL CONSULTANTS, INC.

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: SITE AREA OVERBURDEN GROUND WATER POTENTIOMETRIC CONTOUR MAP APRIL 1989	
DATE: 9/13/90	DRAWN: E.S.W.	CHECKED: M.F.J.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: RI25	APPROVED: T.S.S.	FIGURE NO: 3-13	PROJECT NO: 6185/818



LEGEND:

- ⌖ = OVERBURDEN WELL
- o = DUG WELL
- Δ = SURFACE WATER ELEVATION LOCATION
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (186.1) = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL
- 190 = GROUND WATER POTENTIOMETRIC CONTOUR
- = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTES:

1. WATER LEVEL DATA MEASURED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC ON 9/28/89.
2. SURFACE WATER ELEVATIONS IN SWALE WERE NOT MEASURED DUE TO DRY CONDITIONS.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

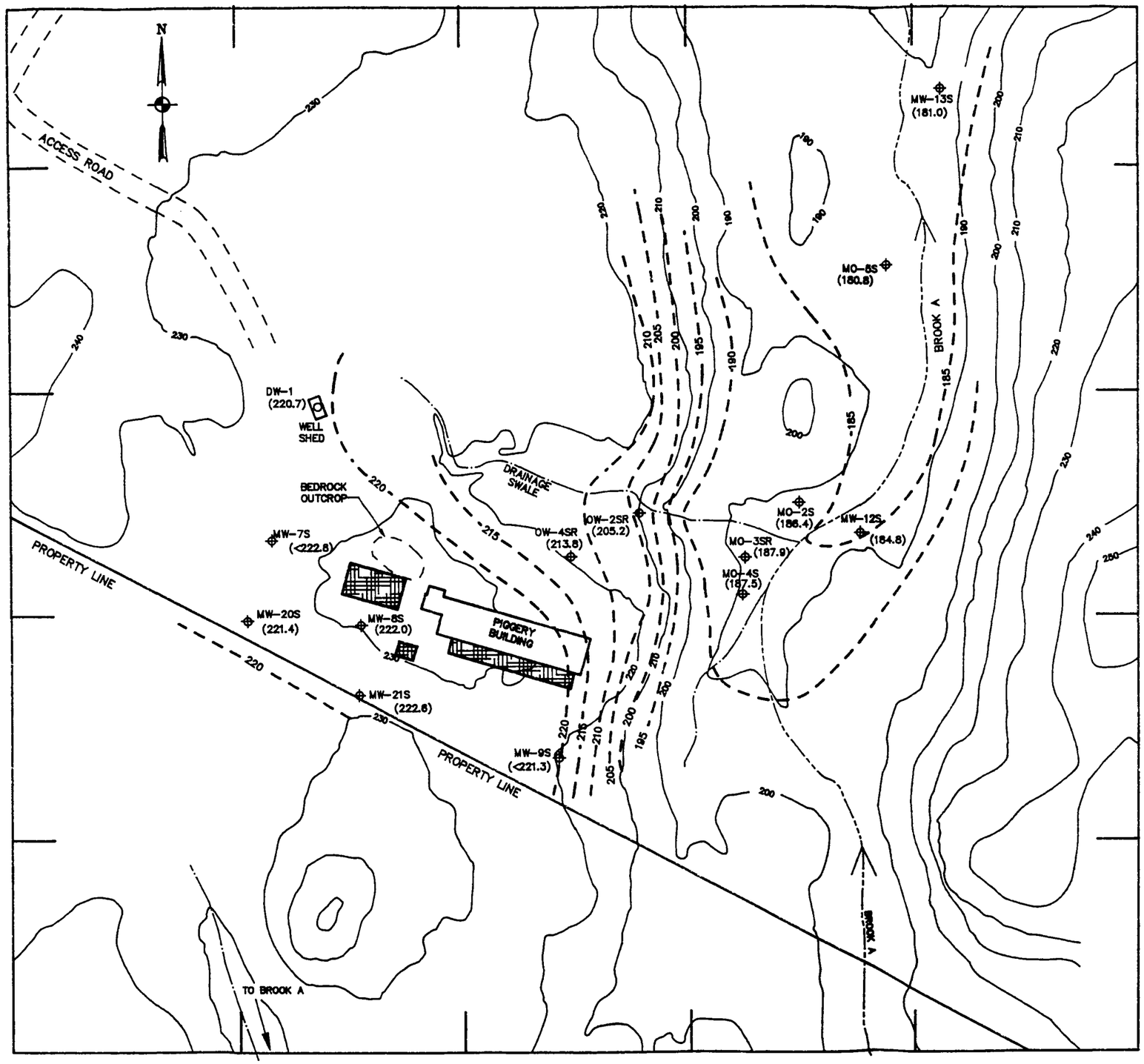
0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: SITE AREA OVERBURDEN GROUND WATER POTENTIOMETRIC CONTOUR MAP – SEPTEMBER 1989

DATE:	DRAWN:	CHECKED:	PROJECT:	
9/13/90	M.F.J.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 100 RI26	APPROVED: T.S.S.	FIGURE NO: 3–14	PROJECT NO: 6185/818



LEGEND:

- ⊕ = OVERBURDEN WELL
- o = DUG WELL
- Δ = SURFACE WATER ELEVATION LOCATION
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (186.1) = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL
- 190 = GROUND WATER POTENTIOMETRIC CONTOUR
- = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTES:

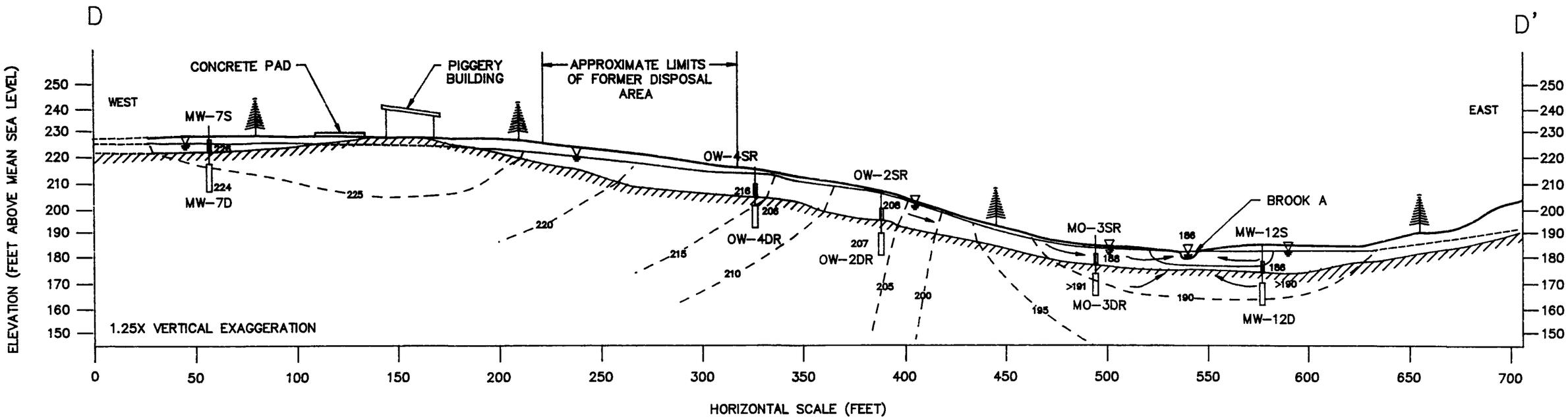
1. WATER LEVEL MEASUREMENTS WERE COLLECTED BY BALSAM ON 12/12/89.
2. SURFACE WATER ELEVATIONS IN SWALE AND BROOK A WERE NOT MEASURED DUE TO FROZEN CONDITIONS.

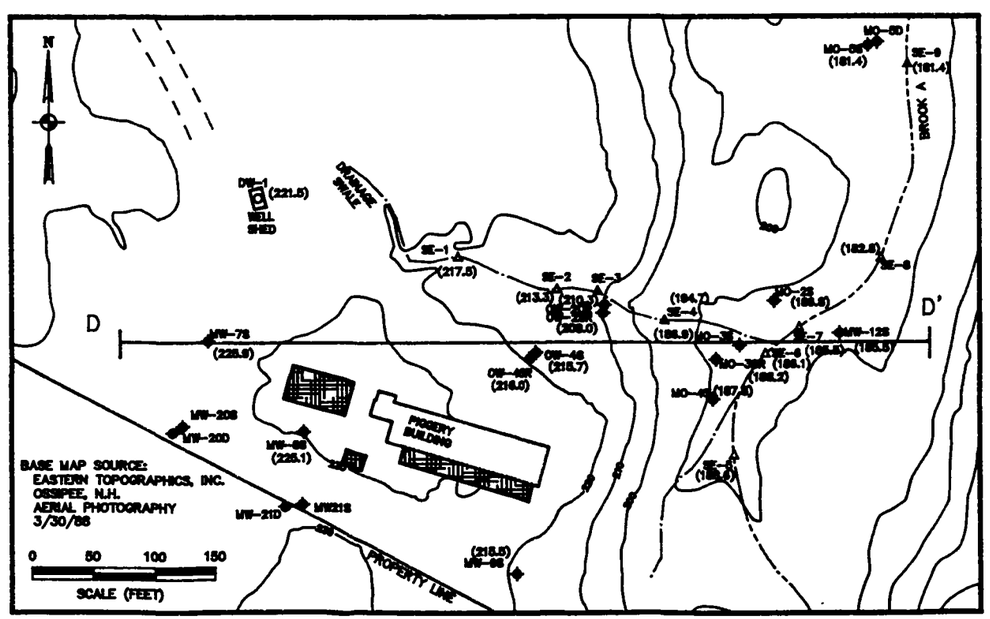
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.
			TITLE: SITE AREA OVERBURDEN GROUND WATER POTENTIOMETRIC CONTOUR MAP DECEMBER 1989
DATE: 9/13/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 100 RI27	APPROVED: T.S.S.	FIGURE NO: 3-15 / PROJECT NO: 6185/818

CONCEPTUAL GROUND WATER FLOW CROSS-SECTION D-D'





LOCATION MAP

LEGEND

- 220 GROUND WATER EQUIPOTENTIAL LINE (FEET ABOVE MEAN SEA LEVEL)
- APPROXIMATE GROUND WATER FLOW DIRECTION
- BEDROCK SURFACE
- WATER TABLE ELEVATION
- 208 GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL
- CONCRETE SLAB

NOTES:

1. HYDROGEOLOGIC INTERPRETATIONS BASED UPON SOIL BORING, GEOPHYSICAL, TOPOGRAPHIC, AND WATER QUALITY DATA COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. DURING REMEDIAL INVESTIGATION ACTIVITIES.
2. POTENTIOMETRIC DATA SHOWN ARE BASED UPON DATA COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 4/18/90.

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: SITE AREA CONCEPTUAL GROUND WATER FLOW CROSS SECTION	
DATE: 7/19/90	DRAWN: T.S.S.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 47 RI33	APPROVED: L.C.S.	FIGURE NO: 3-16	PROJECT NO: 6185/818

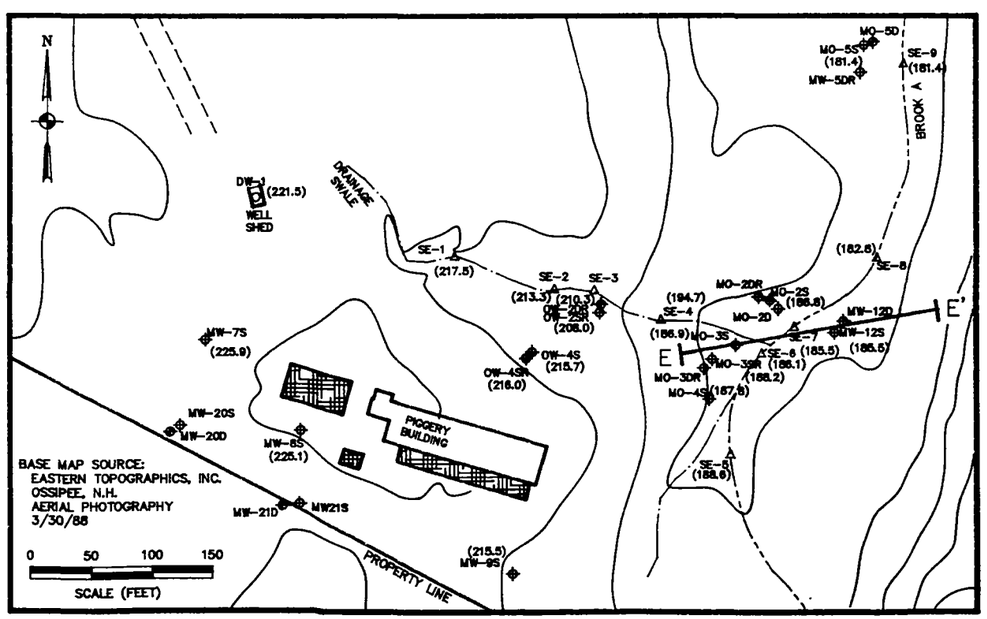
NOTES:

1. HYDROGROLOGIC INTERPRETATIONS BASED UPON SOIL BORING, GEOPHYSICAL, TOPOGRAPHIC, AND WATER QUALITY DATA COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. DURING REMEDIAL INVESTIGATION ACTIVITIES.

2. POTENTIOMETRIC DATA SHOWN WERE COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 4/18/89.

3. WATER TABLE SHOWN IS BASED UPON POTENTIOMETRIC DATA IN OVERBURDEN MONITORING WELLS. THE POTENTIOMETRIC SURFACE FROM BEDROCK WELLS IS NOT SHOWN.

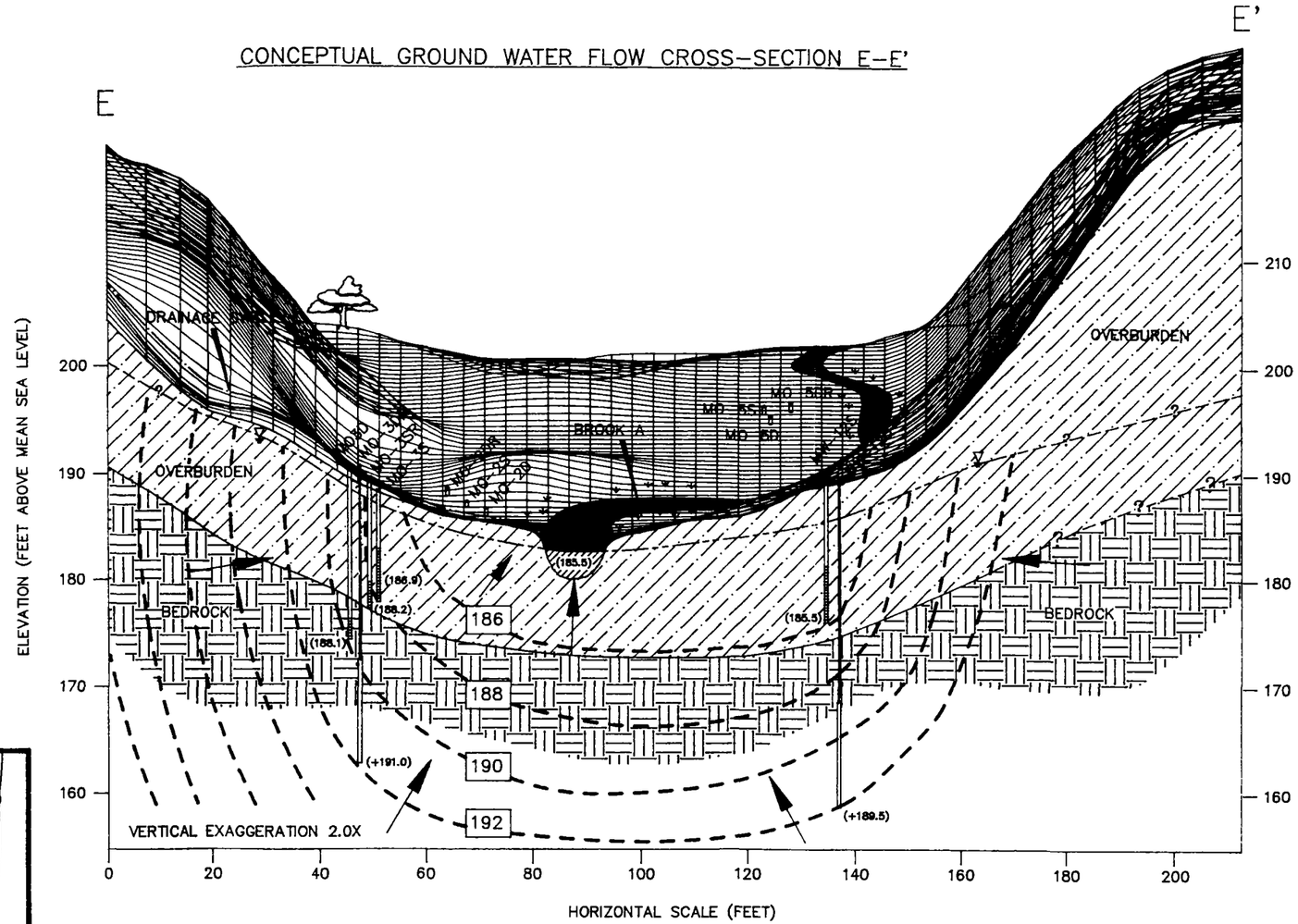
4. EQUIPOTENTIALS IN BEDROCK ARE CONCEPTUAL AND ARE BASED UPON THE ASSUMPTION OF AN EQUIVALENT POROUS MEDIUM.



BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

LOCATION MAP

CONCEPTUAL GROUND WATER FLOW CROSS-SECTION E-E'



LEGEND:

- 190 = GROUND WATER EQUIPOTENTIAL LINE IN FEET ABOVE MEAN SEA LEVEL
- = WATER TABLE
- = APPROXIMATE GROUND WATER FLOW DIRECTION

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: BROOK A VALLEY CONCEPTUAL GROUND WATER FLOW CROSS-SECTION E-E'	
DATE: 9/13/90	DRAWN: E.S.W.	CHECKED: T.S.S.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: RI58	APPROVED: L.C.S.	FIGURE NO: 3-17	PROJECT NO: 6185/818

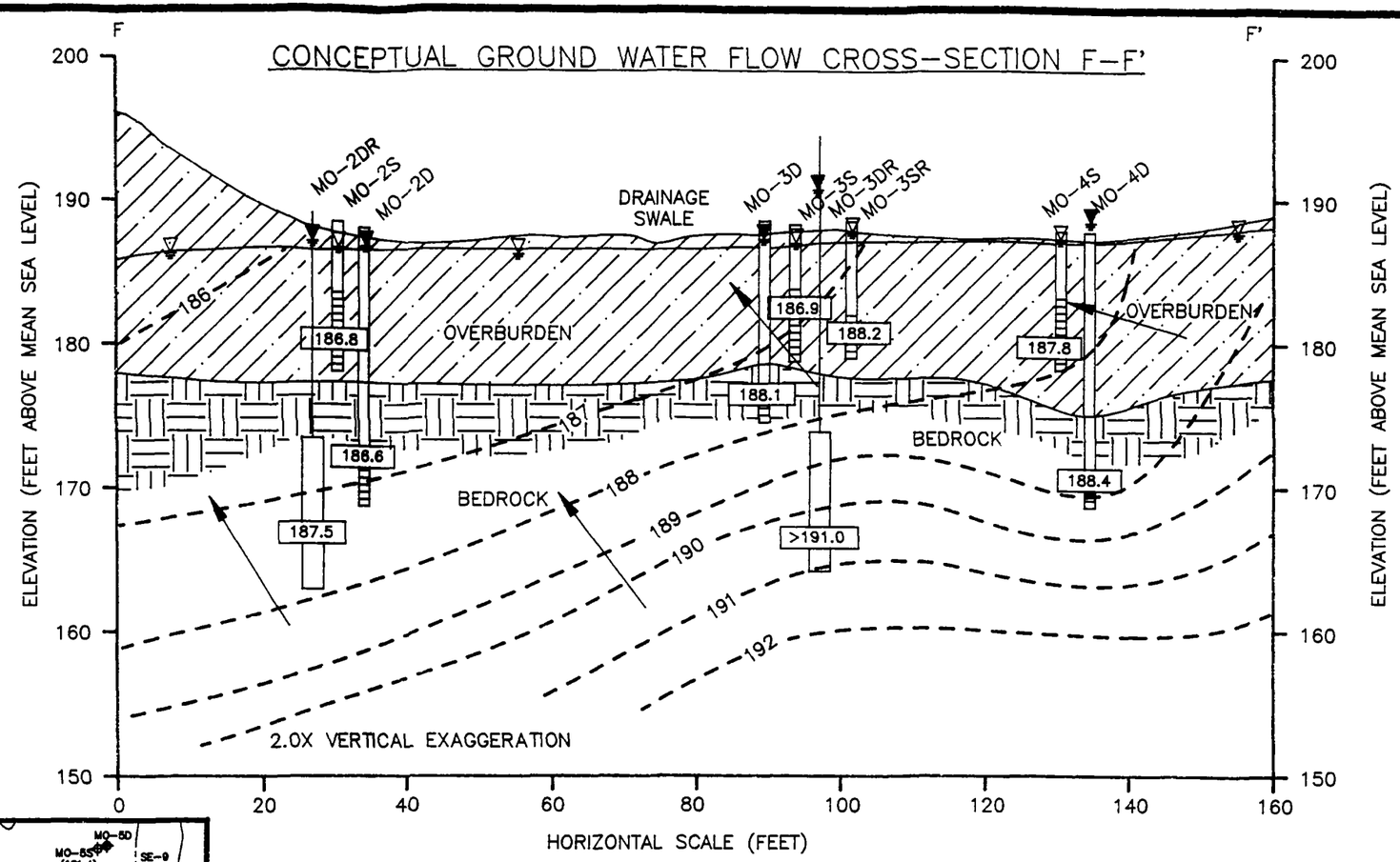
LEGEND

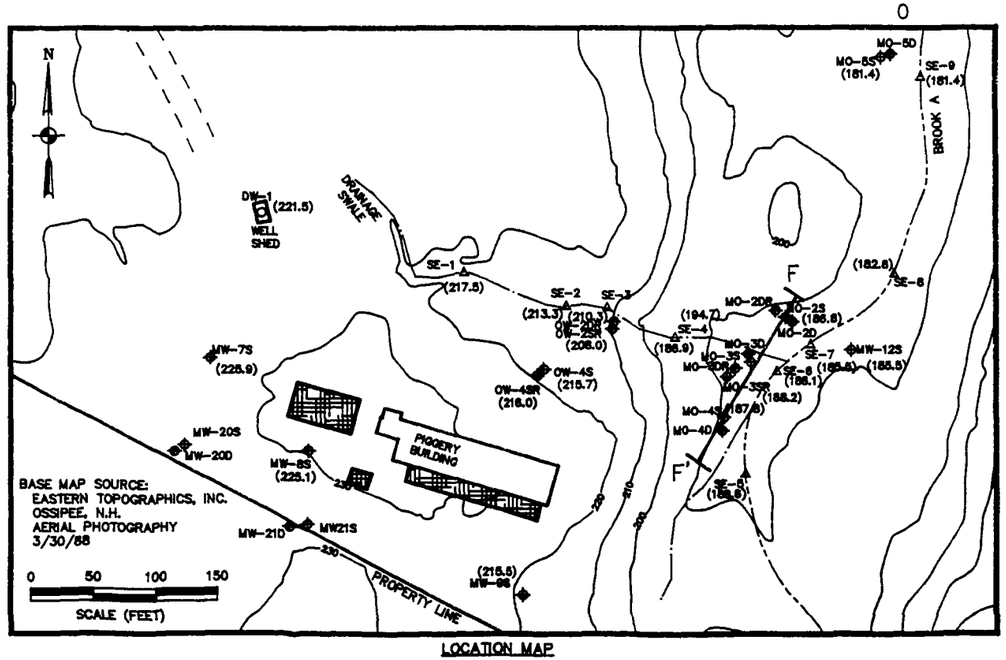
= WATER TABLE

190 = GROUND WATER EQUIPOTENTIAL LINE IN FEET ABOVE MEAN SEA LEVEL

187.5 = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL

= APPROXIMATE GROUND WATER FLOW DIRECTION





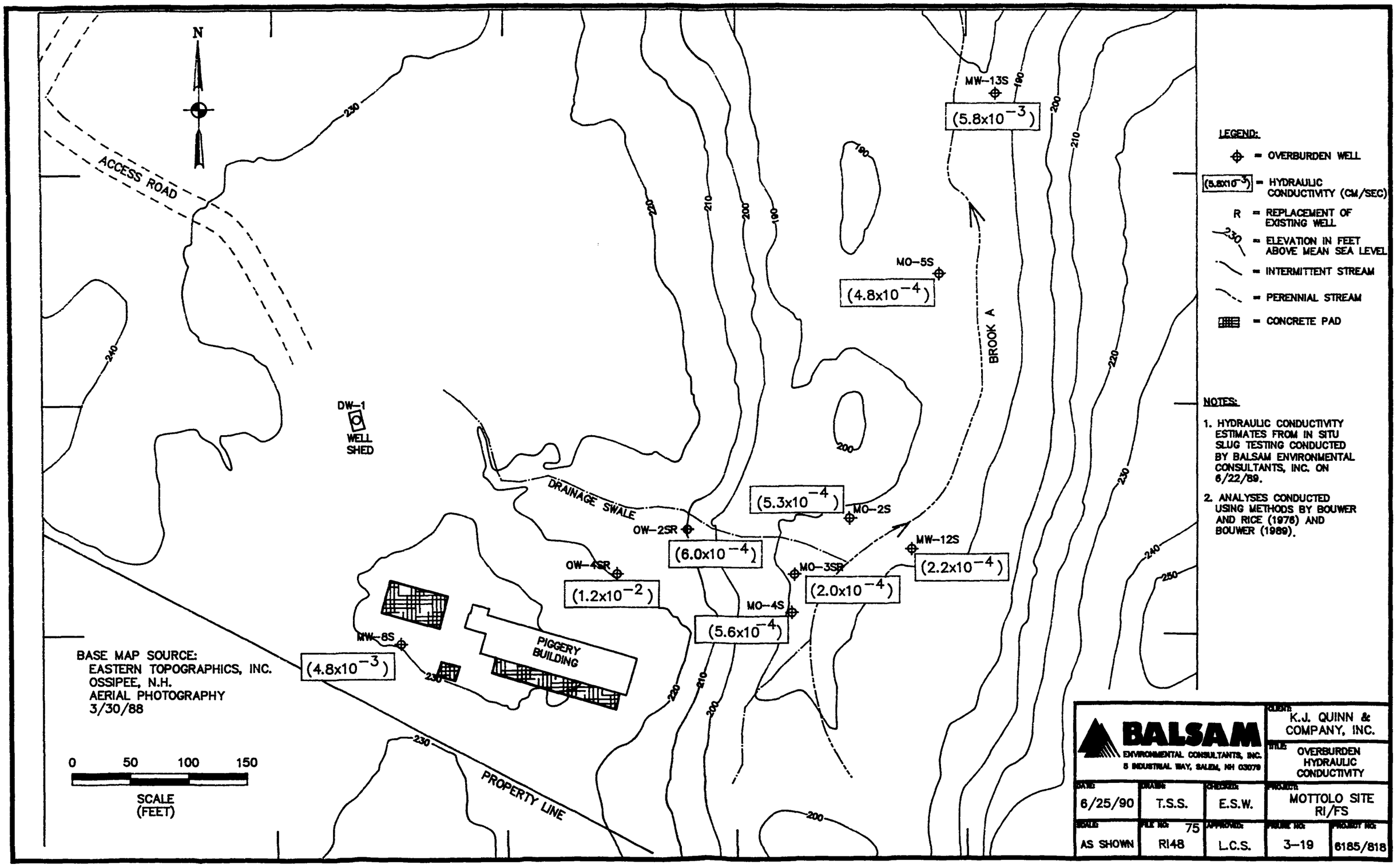
LOCATION MAP

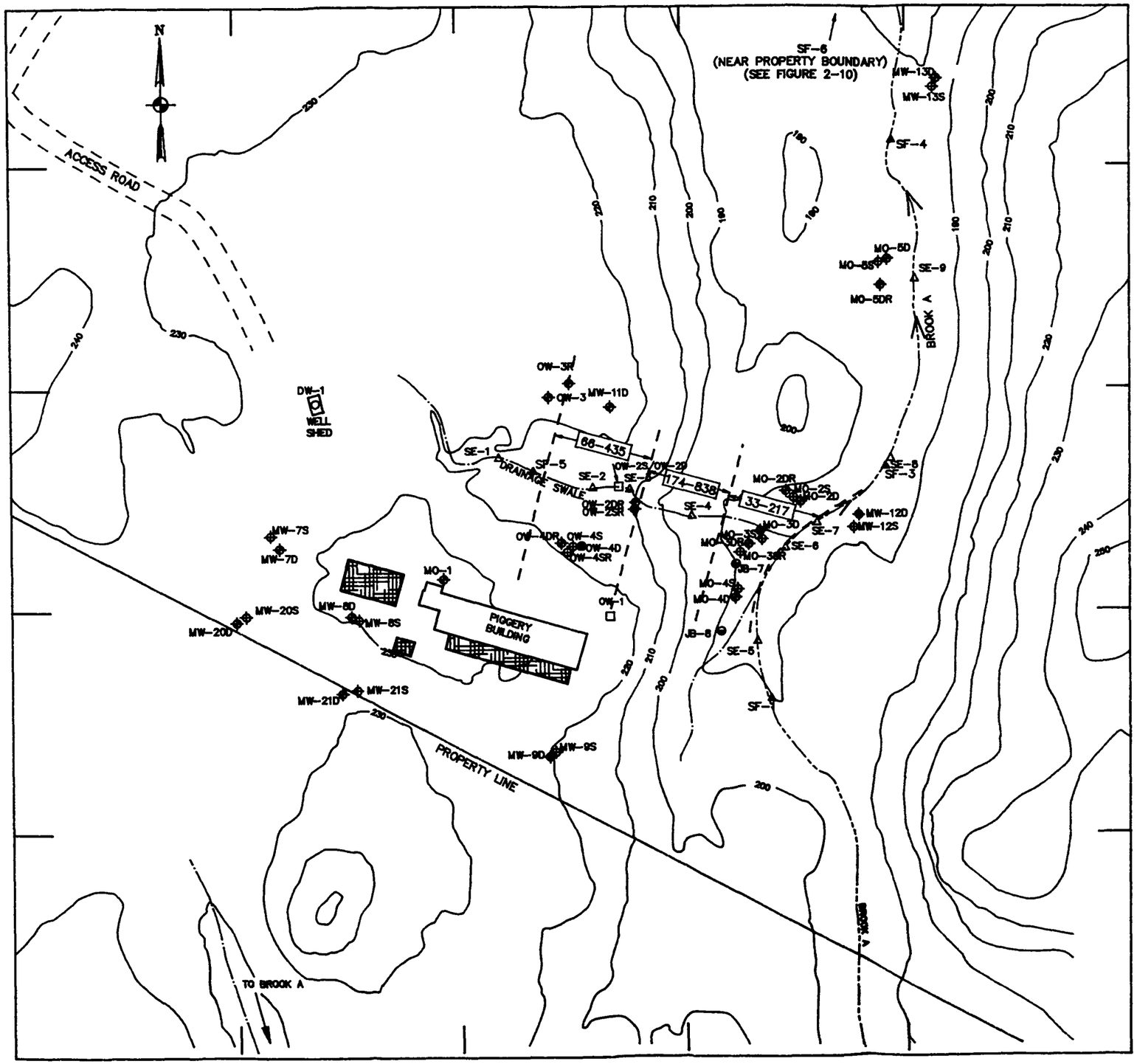
NOTES:

1. HYDROGEOLOGIC INTERPRETATIONS BASED UPON SOIL BORING, GEOPHYSICAL, TOPOGRAPHIC, AND WATER QUALITY DATA COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. DURING REMEDIAL INVESTIGATION ACTIVITIES.
2. POTENTIOMETRIC DATA SHOWN WERE COLLECTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 4/18/89.
3. WATER TABLE SHOWN IS BASED UPON POTENTIOMETRIC DATA IN OVERBURDEN MONITORING WELLS. THE POTENTIOMETRIC SURFACE FROM BEDROCK WELLS IS NOT SHOWN.
4. EQUIPOTENTIALS IN BEDROCK ARE CONCEPTUAL AND ARE BASED UPON THE ASSUMPTION OF AN EQUIVALENT POROUS MEDIUM.

BALSAM ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.				
TITLE: BROOK A VALLEY CONCEPTUAL GROUND WATER FLOW CROSS SECTION F-F'				
DATE: 9/13/90	DRAWN: E.S.W.	CHECKED: B.T.Q.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: RI54	APPROVED: T.S.S.	FIGURE NO: 3-18	PROJECT NO: 6185/818


N
ACCESS ROAD
DW-1
WELL SHED
DRAINAGE SWALE
PIGGERY BUILDING
PROPERTY LINE
BROOK A
MW-13S
(5.8x10^-3)
MO-5S
(4.8x10^-4)
MO-2S
(5.3x10^-4)
OW-2SR
(6.0x10^-4)
MW-12S
(2.2x10^-4)
OW-4SR
(1.2x10^-2)
MO-3SR
(2.0x10^-4)
MO-4S
(5.6x10^-4)
MW-8S
(4.8x10^-3)
230
240
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
(5.8x10^-3) = HYDRAULIC CONDUCTIVITY (CM/SEC)
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
NOTES:
1. HYDRAULIC CONDUCTIVITY ESTIMATES FROM IN SITU SLUG TESTING CONDUCTED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 6/22/89.
2. ANALYSES CONDUCTED USING METHODS BY BOUWER AND RICE (1976) AND BOUWER (1989).
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: OVERBURDEN HYDRAULIC CONDUCTIVITY
DATE: 6/25/90
DRAWN: T.S.S.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI48
APPROVED: L.C.S.
FIGURE NO: 3-19
PROJECT NO: 6185/818



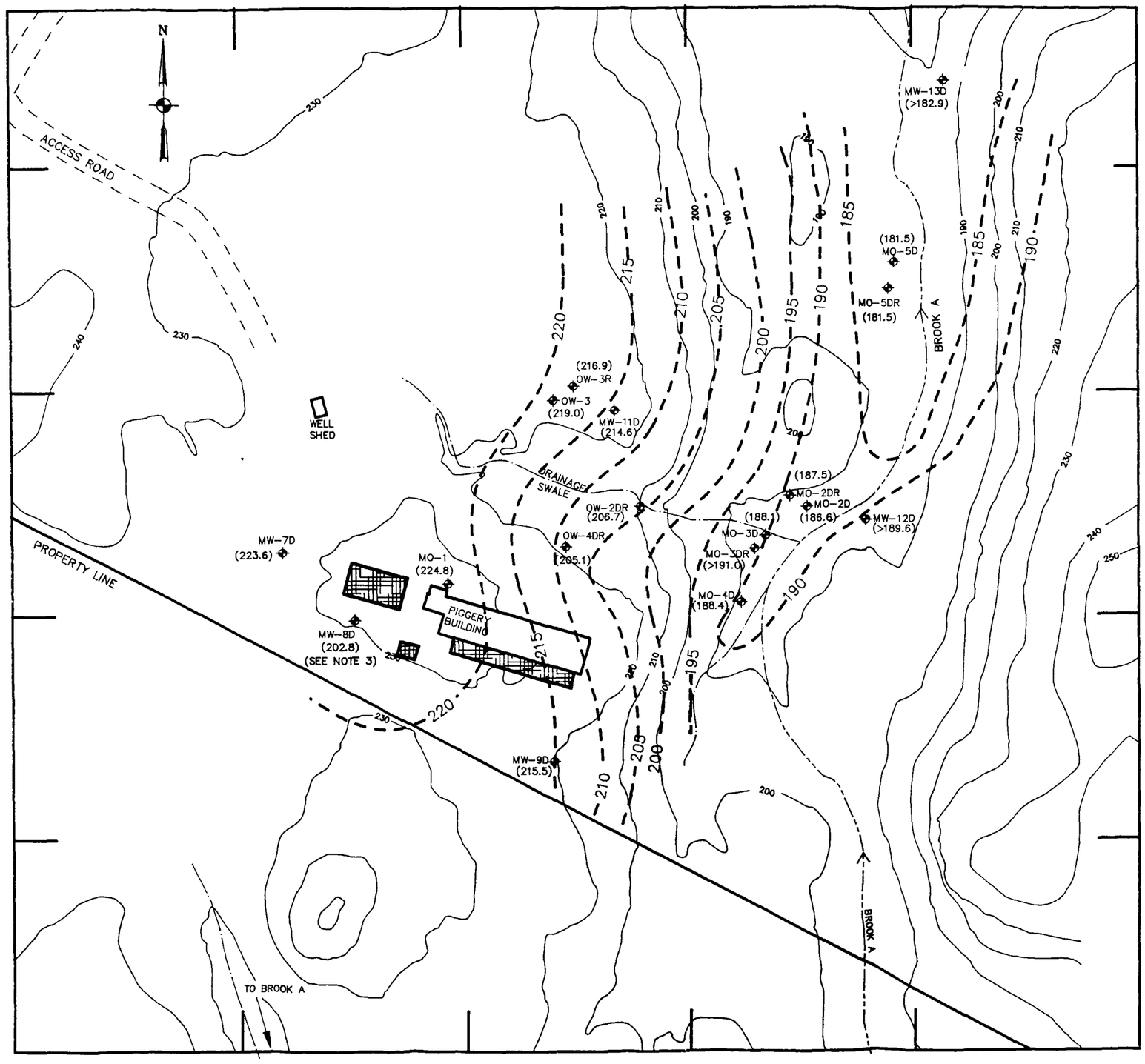
LEGEND:

- ⊕ = OVERBURDEN WELL
- ⊕ = SHALLOW BEDROCK WELL
- ● = BARCAD SAMPLER
- ○ = DUG WELL
- ◒ = JETTED BORING AND WELL POINT
- ▲ = STREAM GAUGING LOCATION
- △ = SURFACE WATER ELEVATION LOCATION
- □ = LOCATION OF DESTROYED MONITORING WELL
- R = REPLACEMENT OF EXISTING WELL
- 230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- = INTERMITTANT STREAM
- = PERENNIAL STREAM
- = CONCRETE PAD
- = APPROXIMATE AREA OF SIMILAR HYDRAULIC GRADIENT
- 66-435 = ESTIMATED OVERBURDEN GROUND WATER HORIZONTAL FLOW RATE (FEET PER YEAR)

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: AREAS OF OVERBURDEN GROUND WATER FLOW RATE ESTIMATES	
DATE: 9/14/90	DRAWN: E.S.W.	CHECKED: T.S.S.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 100 RI100	APPROVED: L.C.S.	FIGURE NO: 3-20	PROJECT NO: 6185/818



LEGEND:

- ◆ = SHALLOW BEDROCK WELL
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (224.8) = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL
- 220 = GROUND WATER POTENTIOMETRIC CONTOUR
- = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTES:

1. POTENTIOMETRIC SURFACE MEASURED ON 4/28/89 BY BALSAM ENVIRONMENTAL CONSULTANTS, INC.
2. POTENTIOMETRIC DATA FROM WELL MW-8D NOT USED TO GENERATE GROUND WATER POTENTIOMETRIC CONTOURS. SEE TEXT FOR EXPLANATION.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

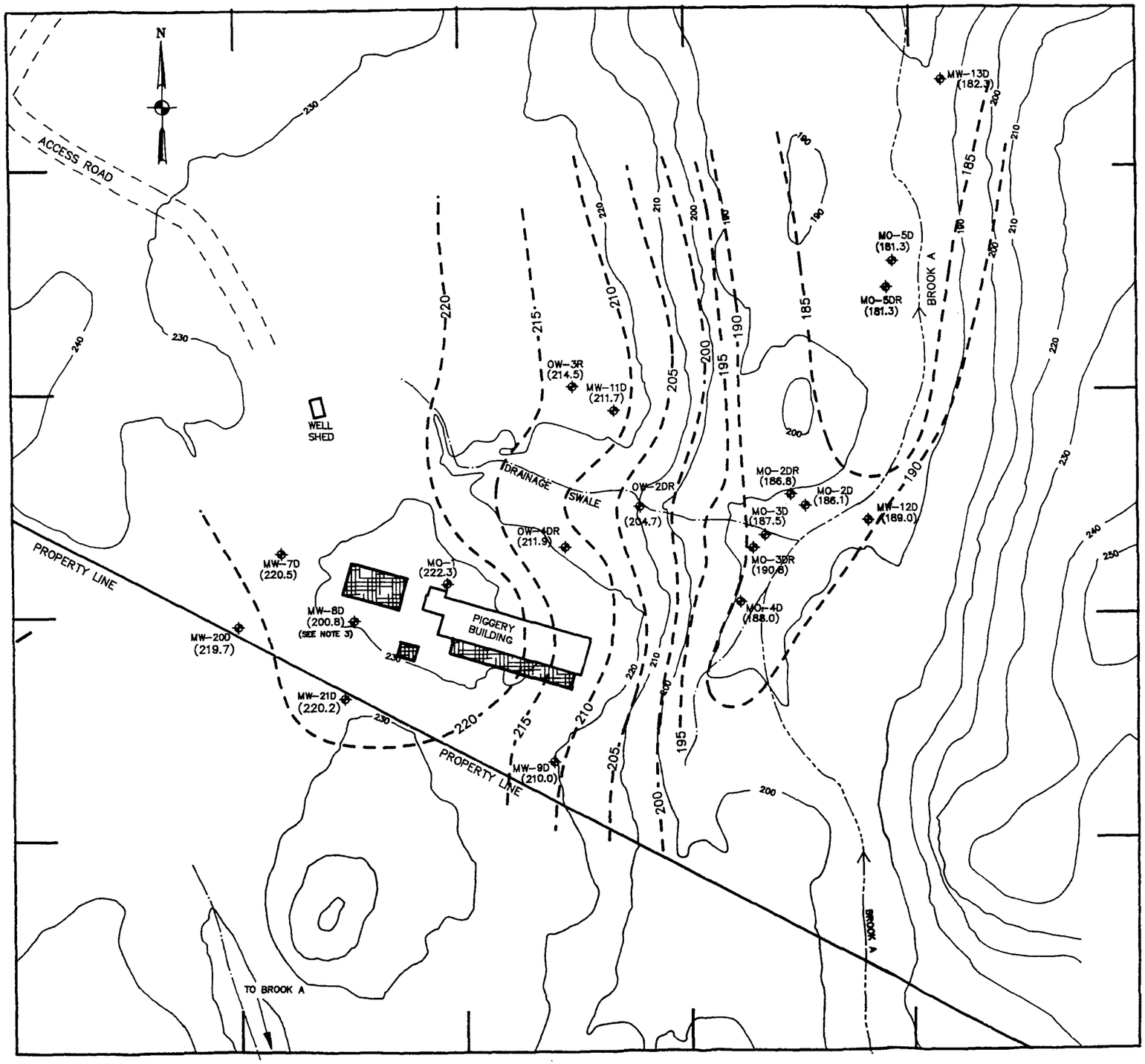
0 50 100 150
SCALE (FEET)

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: SITE AREA BEDROCK GROUND WATER POTENTIOMETRIC CONTOUR MAP APRIL 1989

DATE:	DRAWN:	CHECKED:	PROJECT:	
9/14/90	M.F.J.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE: AS SHOWN	FILE NO: 100 RI29	APPROVED: T.S.S.	FIGURE NO: 3-21	PROJECT NO: 6185/818



LEGEND:

- ◆ = SHALLOW BEDROCK WELL
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (186.1) = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL
- 185 = GROUND WATER POTENTIOMETRIC CONTOURS
- = CONCRETE PAD
- = INTERMITTENT STREAM
- = PERENNIAL STREAM

NOTES:

1. POTENTIOMETRIC SURFACE MEASURED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 9/28/89.
2. POTENTIOMETRIC DATA FROM WELL MW-8D NOT USED TO GENERATE GROUND WATER POTENTIOMETRIC CONTOURS. SEE TEXT FOR EXPLANATION.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

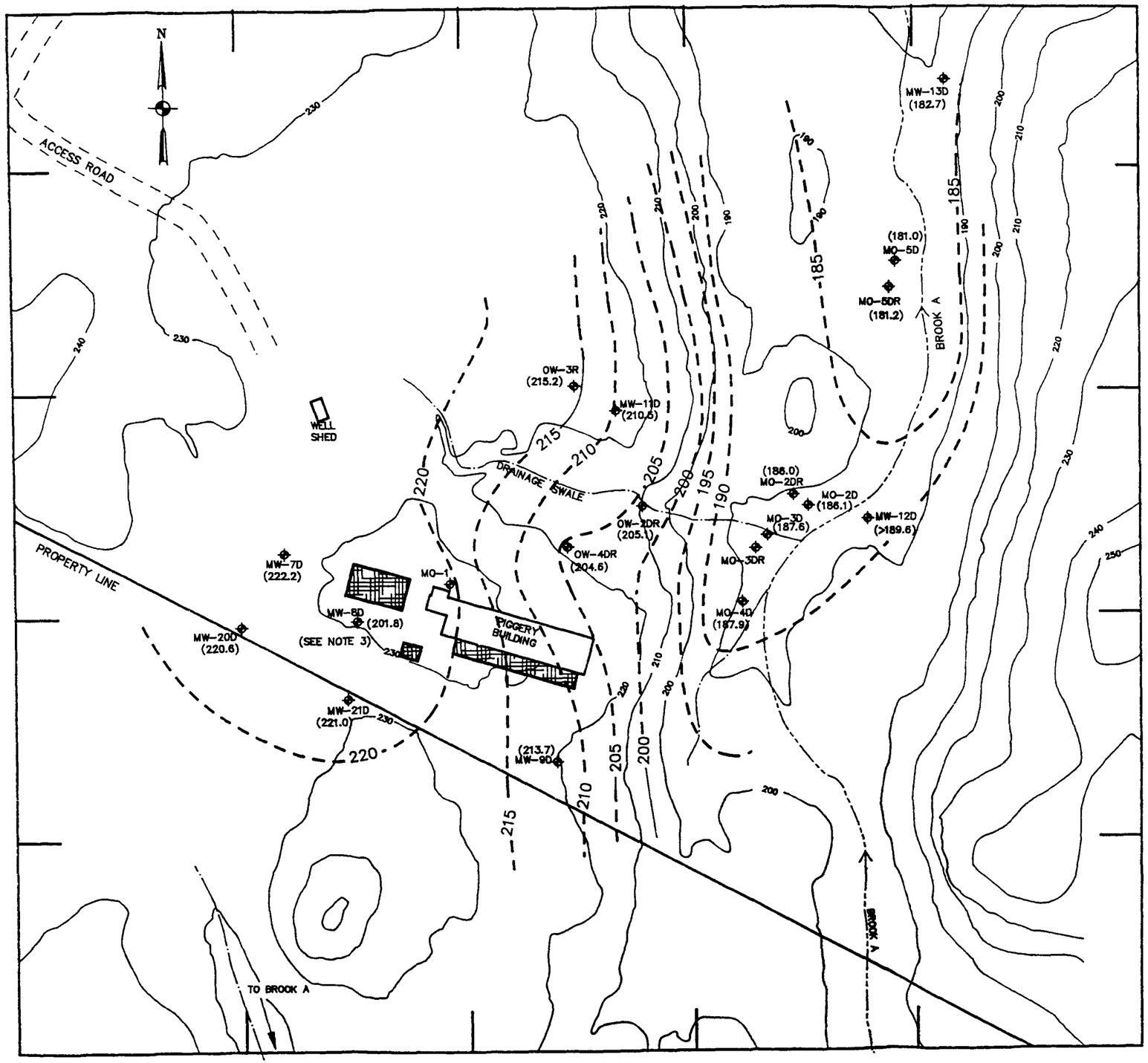
0 50 100 150
SCALE (FEET)

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: SITE AREA BEDROCK GROUND WATER POTENTIOMETRIC CONTOUR MAP SEPTEMBER 1989

DATE:	DRAWN:	CHECKED:	PROJECT:	
9/14/90	M.F.J.	E.S.W.	MOTTOLO SITE RI/FS	
SCALE:	FILE NO:	APPROVED:	FIGURE NO:	PROJECT NO:
AS SHOWN	RI30	T.S.S.	3-22	6185/818



LEGEND:

- ◆ = SHALLOW BEDROCK WELL
- R = REPLACEMENT OF EXISTING WELL
- 230 = GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 210 = GROUND WATER POTENTIOMETRIC CONTOUR
- = CONCRETE PAD
- = INTERMTTENT STREAM
- = PERENNIAL STREAM
- (186.1) = GROUND WATER POTENTIOMETRIC SURFACE IN FEET ABOVE MEAN SEA LEVEL

NOTES:

1. POTENTIOMETRIC SURFACE MEASURED BY BALSAM ENVIRONMENTAL CONSULTANTS, INC. ON 12/12/89.
2. POTENTIOMETRIC DATA FROM WELL MW-8D NOT USED TO GENERATE GROUND WATER POTENTIOMETRIC CONTOURS. SEE TEXT FOR EXPLANATION.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 50 100 150
SCALE (FEET)

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.
			TITLE: SITE AREA BEDROCK GROUND WATER POTENTIOMETRIC CONTOUR MAP DECEMBER 1989
DATE: 9/14/90	DRAWN: M.F.J.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 100 RI31	APPROVED: T.S.S.	FIGURE NO: 3-23 / PROJECT NO: 6185/818

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

Section 4

TABLE 4-1

CONCENTRATION RANGES FOR DETECTED COMPOUNDS
IN GROUND WATER AND SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	GROUND WATER					SURFACE WATER				
	Frequency of Detection (Rounds 1 to 3)			Detected Range (ppb)	Location of Maximum	Frequency of Detection (Rounds 1 to 3)			Detected Range (ppb)	Location of Maximum
Volatile Organic Compounds:										
Vinyl Chloride	8/39	10/39	7/31	1J-360	OW2SR	0/11	0/11	0/7	-	-
Chloroethane	0/39	1/39	0/31	5J	OW4SR	0/11	0/11	0/7	-	-
Acetone	2/39	0/39	1/31	20-70	OW4DR	0/11	0/11	0/7	-	-
Carbon Disulfide	5/39	0/39	0/31	1J-13J	OW2DR	0/11	0/11	0/7	-	-
1,1-Dichloroethene	0/39	3/39	0/31	2J-7J	OW2SR	0/11	0/11	0/7	-	-
1,1-Dichloroethane	12/39	11/39	11/31	4J-1300	OW2SR/OW4SR	2/11	2/11	3/7	1J-41	S9
1,2-Dichloroethene (total)	13/39	14/39	13/31	1J-4700	OW2SR	1/11	2/11	0/7	7-9	S9
1,1,1-Trichloroethane	2/39	7/39	3/31	2J-2100	OW2SR	1/11	2/11	0/7	14-15	S9
Trichloroethene	15/39	12/39	10/31	1J-2400	OW2SR	1/11	2/11	0/7	2J-4J	S3
4-Methyl-2-Pentanone	1/39	1/39	4/31	2J-54	OW4SR	0/11	0/11	0/7	-	-
Tetrachloroethene	0/39	0/39	0/31	-	-	1/11	0/11	0/7	9	S3
Toluene	12/39	7/39	7/31	1J-9200	OW2SR	1/11	0/11	0/7	10	S9
Ethylbenzene	10/39	7/39	8/31	2J-1700	OW2SR	0/11	0/11	2/7	1J	S3
Total Xylenes	9/39	8/39	8/31	6-4700	OW2SR	0/11	0/11	0/7	-	-
Tetrahydrofuran	4/39	15/39	14/31	5-1600	OW2DR	0/11	0/11	2/7	3J-4J	S3
Semi-Volatile Organic Compounds:										
Phenol	1/38	0/9	NA	2J	OW2SR	0/11	NA	NA	-	-
Benzyl Alcohol	3/38	0/9	NA	12-41	OW4SR	0/11	NA	NA	-	-
2-Methylphenol	3/38	1/9	NA	5J-130J	OW2SR	0/11	NA	NA	-	-
4-Methylphenol	2/38	1/9	NA	5J-93J	OW2SR	0/11	NA	NA	-	-
Isophorone	3/38	0/9	NA	3J-10J	OW2DR	0/11	NA	NA	-	-
2,4-Dimethylphenol	2/38	0/9	NA	17-19	OW2SR	0/11	NA	NA	-	-
Benzoic Acid	2/38	0/9	NA	44J-54J	OW2SR	0/11	NA	NA	-	-
2,4-Dichlorophenol	0/38	1/9	NA	6J	OW2SR	0/11	NA	NA	-	-
Naphthalene	4/38	1/9	NA	2J-4J	MW15S	0/11	NA	NA	-	-
Acenaphthene	1/38	0/9	NA	1J	MO4S	0/11	NA	NA	-	-
Diethylphthalate	0/38	1/9	NA	4J	MO20S	0/11	NA	NA	-	-
Di-n-butylphthalate	2/38	0/9	NA	26J-44J	OW2SR	0/11	NA	NA	-	-
bis(2-Ethylhexyl)phthalate	11/38	1/9	NA	2J-15	MO4D	2/11	NA	NA	3-21	S5

NOTES:
1. - = Not detected.
2. J = Estimated concentration.
3. NA = Not analyzed for this parameter.
4. ppb = parts per billion or ug/l.

TABLE 4-1 (continued)

CONCENTRATION RANGES FOR DETECTED COMPOUNDS
IN GROUND WATER AND SURFACE WATER
MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

	GROUND WATER					SURFACE WATER				
	Frequency of Detection (Rounds 1 to 3)			Detected Range (ppb)	Location of Maximum	Frequency of Detection (Rounds 1 to 3)			Detected Range (ppb)	Location of Maximum
Pesticides/PCBs:										
alpha-BHC	0/38	1/6	NA	0.26	MW21D	0/11	0/10	NA	-	-
beta-BHC	0/38	1/6	NA	0.03	MW21D	0/11	0/10	NA	-	-
gamma-BHC (Lindane)	0/38	1/6	NA	0.04	MW21D	0/11	0/10	NA	-	-
Aldrin	1/38	0/6	NA	0.37J	OW2SR	0/11	0/10	NA	-	-
4,4'-DDT	1/38	0/6	NA	0.42J	OW2SR	0/11	0/10	NA	-	-
Aroclor-1260	3/38	0/6	NA	0.07J-0.59J	MW11D	6/11	0/10	NA	0.11J-0.99J	S2
Inorganic Substances:										
Aluminum	6/37	0/6	NA	194-3710	MW7D	9/11	NA	NA	81.5-5880	S9
Antimony	1/37	0/6	NA	5J	MW15S	0/11	NA	NA	-	-
Arsenic	23/37	14/20	8/9	2.2-570	MO3SR	0/11	NA	NA	-	-
Barium	11/37	4/6	NA	30-930	OW4DR	0/11	NA	NA	-	-
Cadmium	1/37	0/6	NA	2.8J	MW9S	0/11	NA	NA	-	-
Calcium	37/37	5/6	NA	1250-258000	OW4DR	11/11	NA	NA	1440-13100	S10
Chromium	4/37	0/6	NA	10.1J-46J	MW11D	7/11	NA	NA	11.6J-20.2J	S2
Cobalt	5/37	0/6	NA	30.1J-51J	MO2S	0/11	NA	NA	-	-
Copper	2/37	1/6	NA	30-30.4	OW2SR	0/11	NA	NA	-	-
Iron	15/37	1/6	NA	364-104000	OW2SR	6/11	NA	NA	197-3650	S9
Lead	11/37	0/6	NA	2.1J-9J	OW2DR	1/11	NA	NA	13.4	S9
Magnesium	30/37	4/6	NA	661-4530	OW2SR	11/11	NA	NA	436-1970	S10
Mangenese	31/37	4/6	NA	22.1-8930	OW2SR	6/11	NA	NA	19.4-1070	S9
Mercury	2/37	0/6	NA	0.4-1.1	OW2SR	0/11	NA	NA	-	-
Nickel	1/37	0/6	NA	126J	MW9S	0/11	NA	NA	-	-
Potassium	33/37	4/6	NA	709J-48800J	MW7D	11/11	NA	NA	927-5610	S10
Selenium	1/37	0/6	NA	1J	MO3SR	0/11	NA	NA	-	-
Silver	1/37	0/6	NA	64J	MO4D	1/11	NA	NA	87.1J	S5
Sodium	37/37	4/6	NA	2180-68800J	MW7D	11/11	NA	NA	2320-9760	S8
Vanadium	2/37	0/6	NA	35.7-40	OW2SR	0/11	NA	NA	-	-
Zinc	13/37	5/6	NA	10-516	MO1	10/11	NA	NA	16.7-34.4	S4
Cyanide	0/37	1/6	NA	5	MW20S	0/11	NA	NA	-	-

NOTES:
1. - = Not detected.
2. J = Estimated concentration.
3. NA = Not analyzed for this parameter.
4. ppb = parts per billion or ug/l.

TABLE 4-2

CONCENTRATION RANGES FOR DETECTED COMPOUNDS
IN SOIL AND SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	SOIL			SEDIMENTS		
	Frequency of Detection	Detected Range (ppb)	Location of Maximum	Frequency of Detection	Detected Range (ppb)	Location of Maximum
Volatile Organic Compounds:						
Methylene Chloride	4/19	460-8700	BE3 (2'-4')	0/9	-	-
Acetone	3/19	31-2300J	BE9 (2'-4')	1/9	390	S10
Carbon Disulfide	1/19	1J	BE18 (6'-6.8')	0/9	-	-
1,1-Dichloroethane	1/19	3J	BE15 (2'-4')	2/9	25-360J	S2
1,2-Dichloroethene (total)	1/19	4J	BE10 (2'-4')	1/9	62	S2
Chloroform	1/19	3J	BE10 (2'-4')	0/9	-	-
1,1,1-Trichloroethane	1/19	300J	BE9 (4'-6')	2/9	27J-64J	S2
Trichloroethene	7/19	2J-32J	BE16 (0'-2')	1/9	8J	S3
Tetrachloroethene	3/19	2J-58	BE16 (0'-2')	0/9	-	-
4-Methyl-2-Pentanone	2/19	15-310	BE14 (5.8'-7.6')	0/9	-	-
Toluene	4/19	3J-47000	BE9 (2'-4')	1/9	10J	S1
Ethylbenzene	4/19	3J-140000	BE9 (2'-4')	0/9	-	-
Total Xylenes	5/19	7J-270000	BE9 (2'-4')	1/9	48J	S2
Semi-Volatile Organic Compounds:						
2-Methylphenol	1/3	440	BE4 (4'-6')	0/9	-	-
4-Methylphenol	1/3	150J	BE4 (4'-6')	0/9	-	-
2,4-Dimethylphenol	1/3	81J	BE4 (4'-6')	0/9	-	-
Butylbenzylphthalate	1/3	40J	BE3 (2'-4')	0/9	-	-
Benzoic Acid	1/3	390J	BE4 (4'-6')	1/9	170J	S9
Di-n-butylphthalate	0/3	-	-	3/9	180J-280J	S4, S9
Naphthalene	1/3	76J	BE4 (4'-6')	0/9	-	-
bis(2-Ethylhexyl)phthalate	3/3	70J-1300	BE3 (2'-4')	0/9	-	-
Pesticide/PCBs:						
4,4'-DDE	0/3	-	-	1/9	14J	S10

NOTES:

1. - = Not detected.
2. J = Estimated concentration.
3. NA = Not analyzed for this parameter.
4. ppb = parts per billion or ug/kg.

TABLE 4-2 (continued)

CONCENTRATION RANGES FOR DETECTED COMPOUNDS
IN SOIL AND SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

	SOIL			SEDIMENTS		
	Frequency of Detection	Detected Range (ppm)	Location of Maximum	Frequency of Detection	Detected Range (ppm)	Location of Maximum
Inorganics Substances:						
Aluminum	3/3	3300J-8990J	BE4 (4'-6')	9/9	1120-7220	S10
Antimony	1/1	38J	BE2 (10'-12')	2/9	1.4-1.8J	S4
Arsenic	3/3	1.2J-15J	BE4 (4'-6')	8/9	1.3-60.7	S10
Barium	3/3	11J-37J	BE2 (10'-12')	6/9	19.8-448	S10
Cadmium	0/3	-	-	1/9	3	S10
Calcium	3/3	406-887	BE2 (10'-12')	9/9	240-6960	S10
Chromium	2/3	21J-23J	BE2 (10'-12')	1/9	6.3J	S9
Cobalt	2/3	6.5-8.8	BE2 (10'-12')	1/9	73.2	S10
Copper	2/3	5.0-5.5	BE4 (4'-6')	0/9	-	-
Iron	3/3	3970-13400	BE2 (10'-12')	9/9	1430-69900	S10
Lead	13/19	3.3-181	BE4 (4'-6')	9/9	2.6-26.9	S10
Magnesium	3/3	739J-3960J	BE2 (10'-12')	9/9	284-1030	S10
Mangenese	3/3	51J-141J	BE2 (10'-12')	9/9	54.5J-11800J	S10
Nickel	1/3	18	BE2 (10'-12')	0/9	-	-
Potassium	3/3	429J-2580J	BE2 (10'-12')	0/9	-	-
Silver	1/3	5J	BE4 (4'-6')	0/9	-	-
Sodium	3/3	78-173	BE2 (10'-12')	9/9	69.1-261	S10
Vanadium	2/3	21J-23J	BE2 (10'-12')	3/9	4.5-33.4	S10
Zinc	3/3	8-51	BE2 (10'-12')	9/9	6J-158J	S10
Cyanide	0/3	-	-	4/9	4.1J-31.3J	S1

NOTES:

1. - = Not detected.
2. J = Estimated concentration.
3. NA = Not analyzed for this parameter.
4. ppm = parts per million or mg/kg.

TABLE 4-3

TYPICAL INORGANIC COMPOUND CONCENTRATION RANGES IN SOIL

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Inorganic Substance	Eastern United States Reference Range[1] (ppm)	Mottolo Site Raymond, New Hampshire Range (ppm)
Aluminum	7,000 - >100,000	3300J-8990J
Antimony	<1 - 8.8	38J
Arsenic	<0.1 - 73	1.2J-15J
Barium	10 - 1,500	11J-37J
Calcium	100 - 280,000	406-887
Chromium	1 - 1,000	21J-23J
Cobalt	<0.3 - 70	6.5-8.8
Copper	<1 - 700	5.0-5.5
Iron	0.01 - >100,000	3970-13400
Lead	<10 - 300	3.3-181
Magnesium	50 - 50,000	739J-3960J

TABLE 4-3 (Continued)

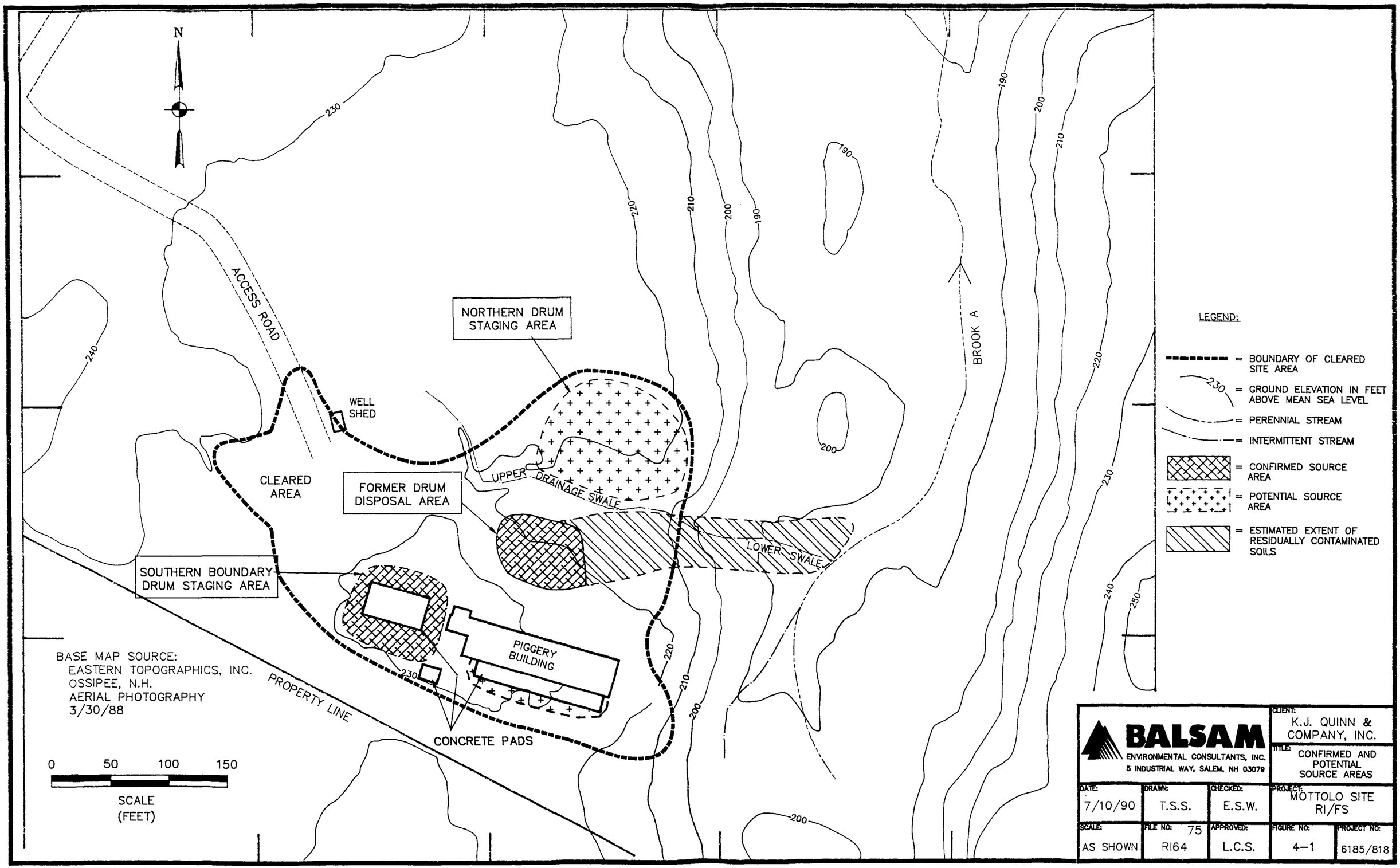
TYPICAL INORGANIC COMPOUND CONCENTRATION RANGES IN SOIL

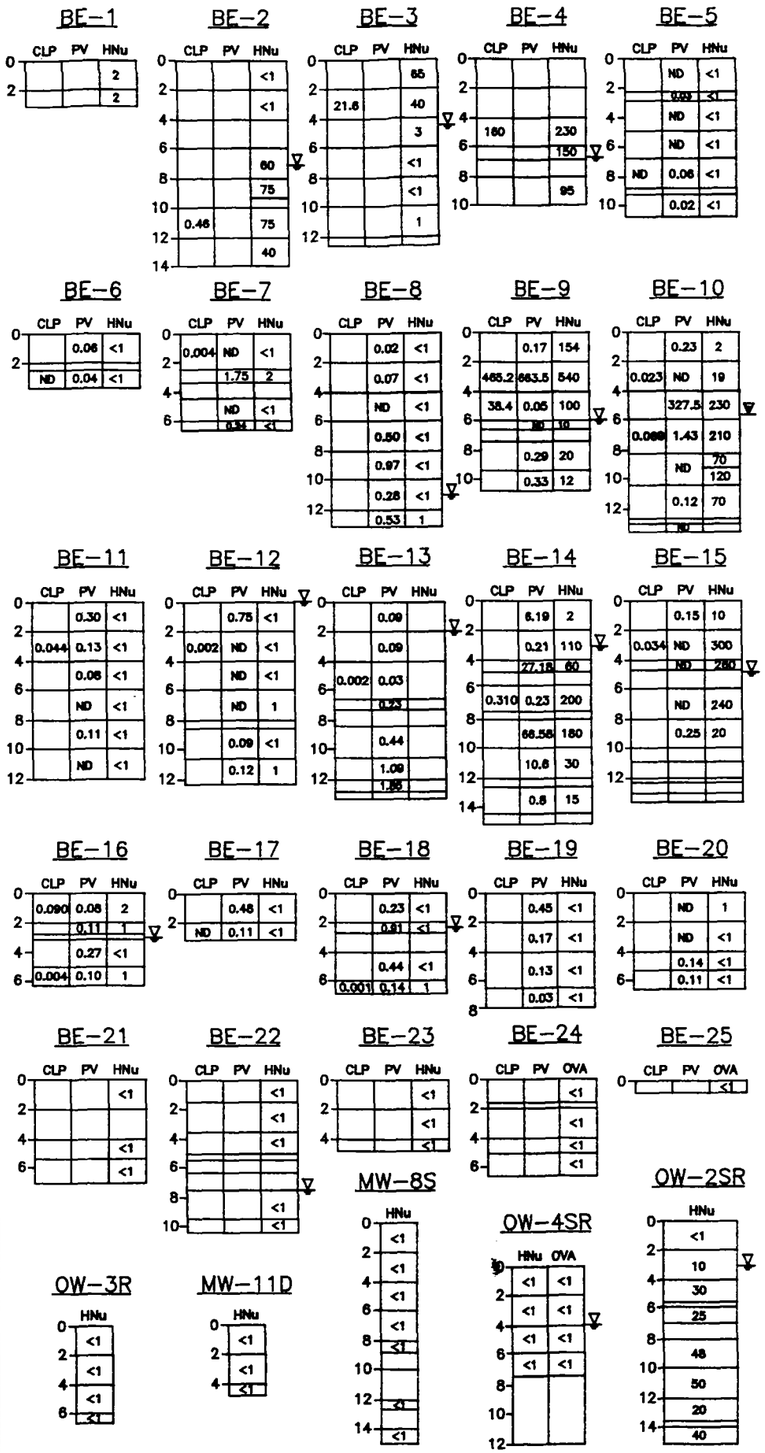
MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

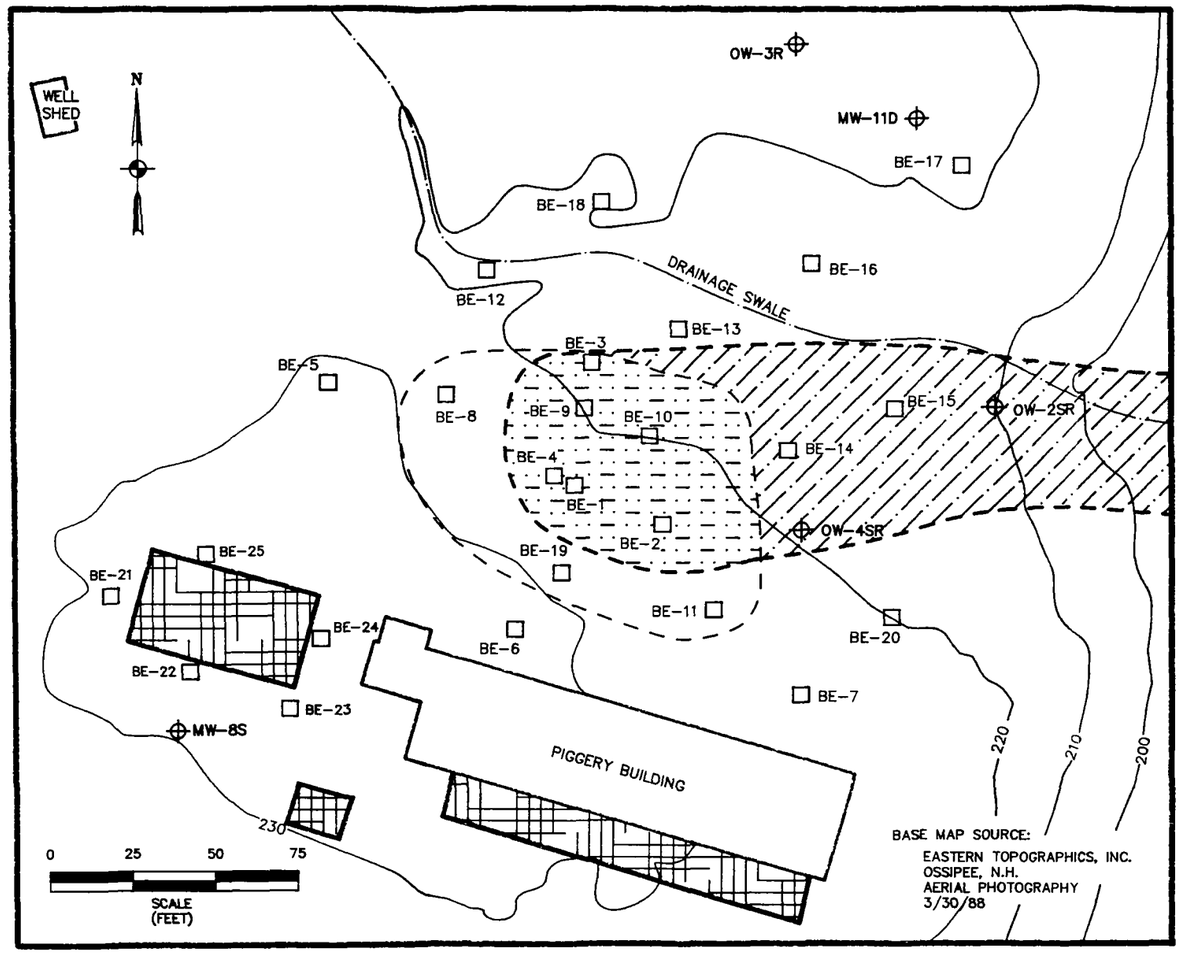
Inorganic Substance	Eastern United States Reference Range[1] (ppm)	Mottolo Site Raymond, New Hampshire Range (ppm)
Manganese	<2 - 7000	51J-141J
Nickel	<5 - 700	18
Potassium	50 - 37,000	429J-2580J
Silver	0.1 - 50[2]	5J
Sodium	<500 - 50,000	78-173
Vanadium	<7 - 300	21J-23J
Zinc	<5 - 2900	8-51

NOTES:

1. Reference: "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States" US Geological Survey, 1984.
2. Reference: "What Happens to Hazardous Material in Soil-Ground Water Systems," Hazardous Materials Control Research Institute, 1985.
3. ppm = parts per million or mg/kg.
4. J = Estimated concentration.


N
ACCESS ROAD
NORTHERN DRUM STAGING AREA
WELL SHED
CLEARED AREA
FORMER DRUM DISPOSAL AREA
UPPER DRAINAGE SWALE
LOWER SWALE
SOUTHERN BOUNDARY DRUM STAGING AREA
PIGGERY BUILDING
CONCRETE PADS
PROPERTY LINE
BROOK A
230
240
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= BOUNDARY OF CLEARED SITE AREA
= GROUND ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= PERENNIAL STREAM
= INTERMITTENT STREAM
= CONFIRMED SOURCE AREA
= POTENTIAL SOURCE AREA
= ESTIMATED EXTENT OF RESIDUALLY CONTAMINATED SOILS
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: CONFIRMED AND POTENTIAL SOURCE AREAS
DATE: 7/10/90
DRAWN: T.S.S.
CHECKED: E.S.W.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI64
APPROVED: L.C.S.
FIGURE NO: 4-1
PROJECT NO: 6185/818





LEGEND:

BE-15 □ = SOIL BORING LOCATION

OW-2SR ⊕ = OVERBURDEN WELL

= ESTIMATED EXTENT OF FORMER DISPOSAL AREA

= ESTIMATED EXTENT OF SOIL CONTAMINATION

= ESTIMATED EXTENT OF SOIL CONTAMINATION FROM FORMER DISPOSAL AREA ACTIVITIES

= ESTIMATED EXTENT OF RESIDUAL SOIL CONTAMINATION

230 = GROUND SURFACE ELEVATION IN FEET ABOVE MEAN SEA LEVEL

= CONCRETE PAD

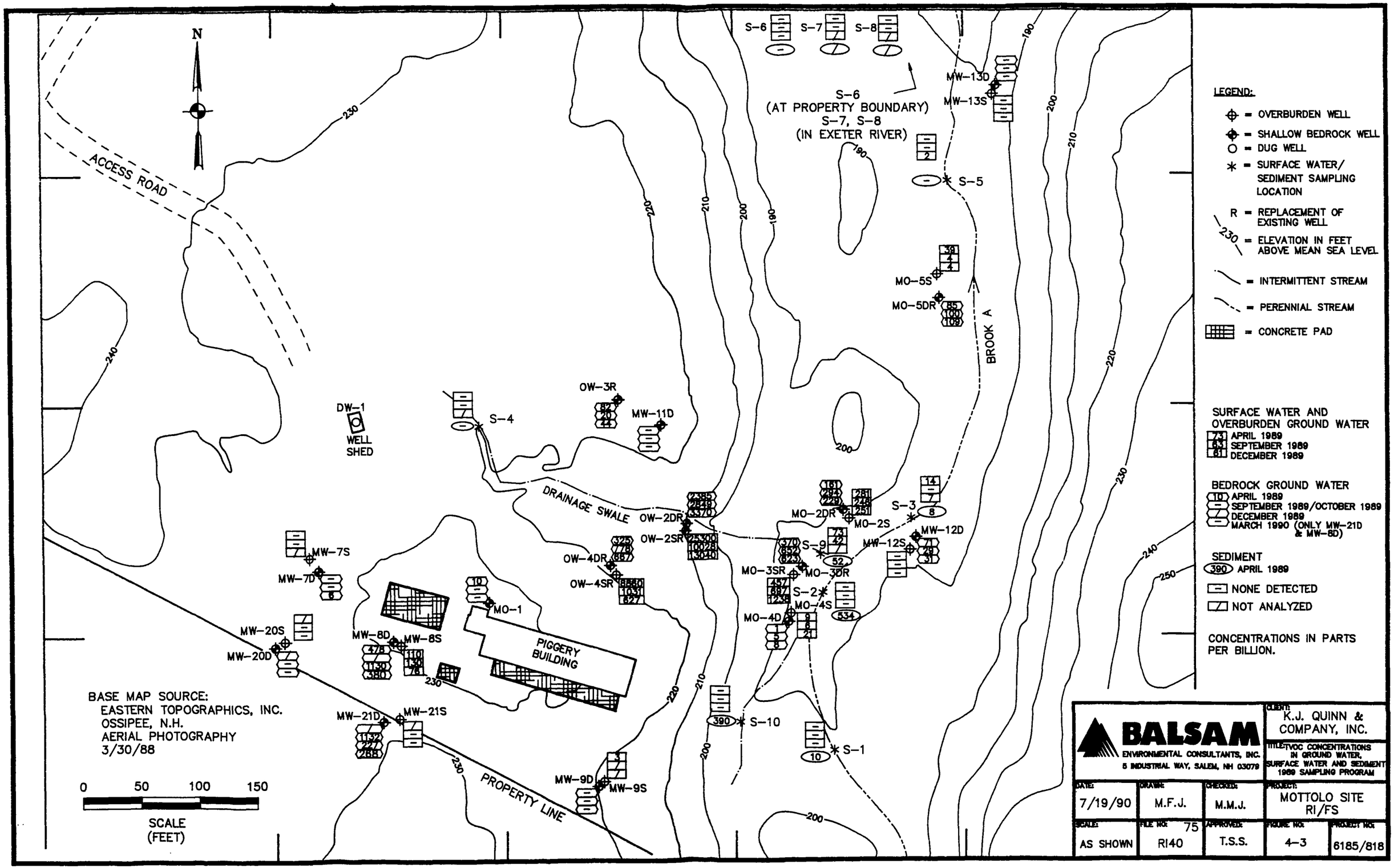
= INTERMITTENT STREAM

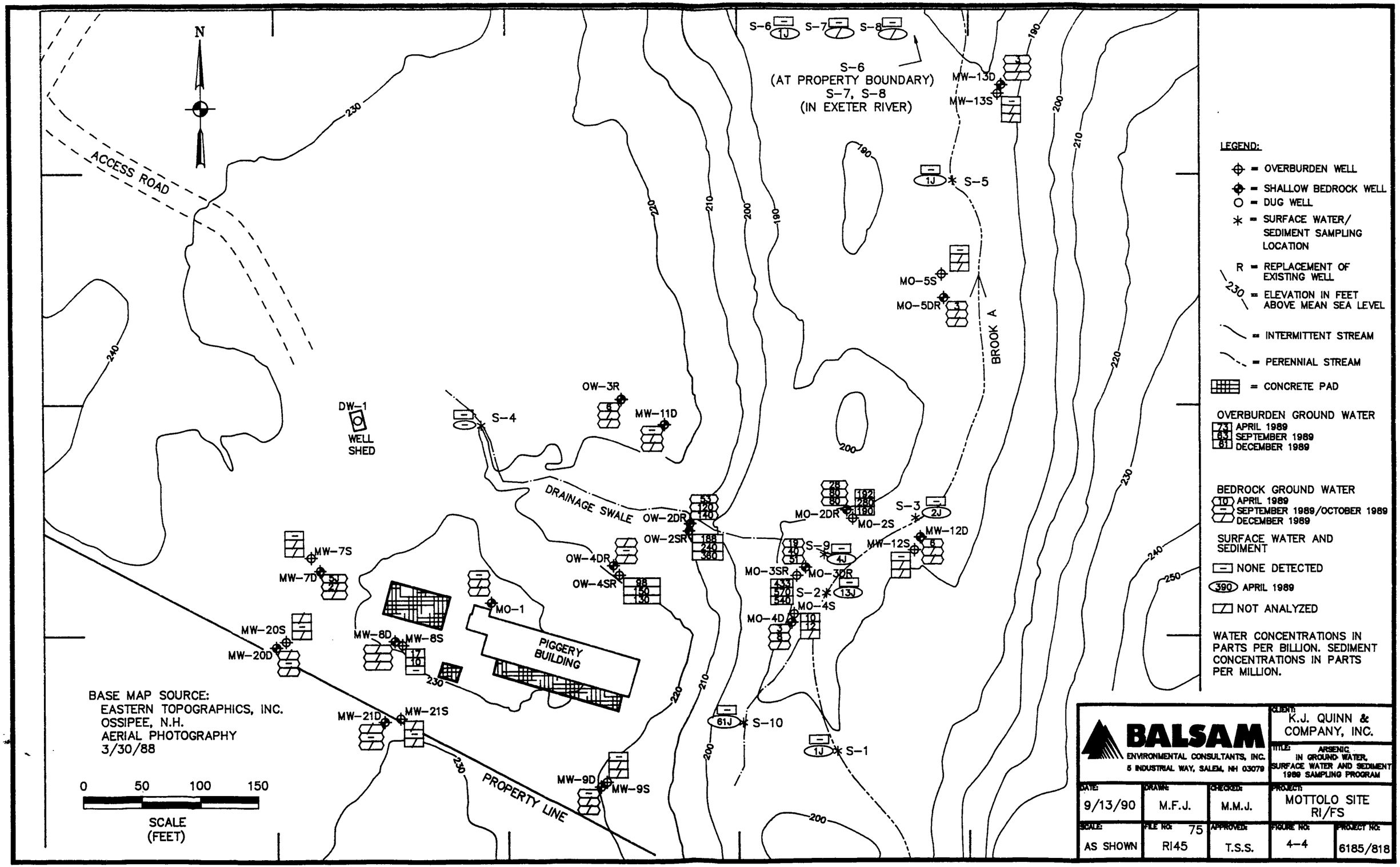
NOTES RELATED TO SOIL PROFILES:

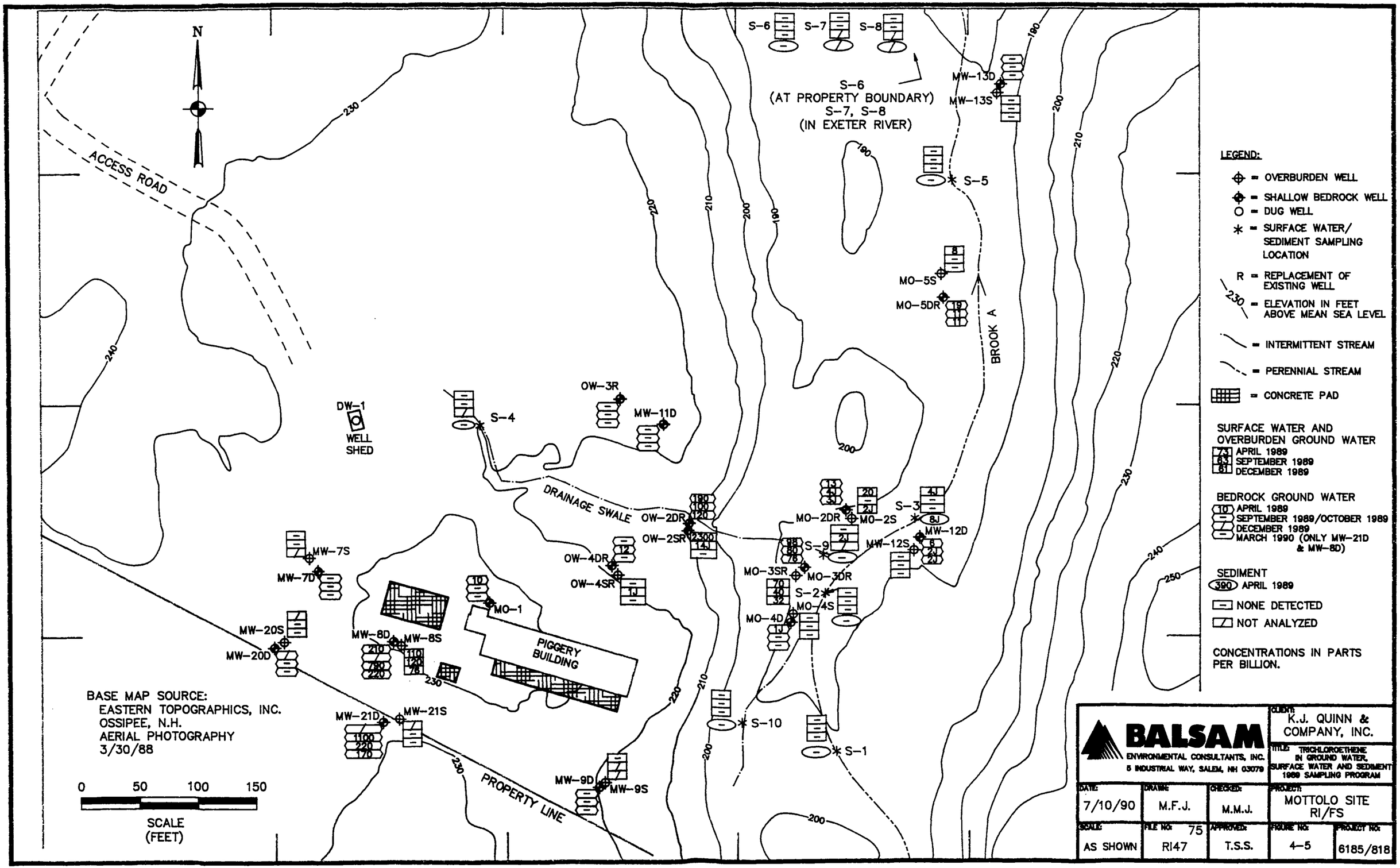
1. BLANK ENTRY ON SOIL PROFILE INDICATES NO ANALYSIS.
2. ∇ = WATER TABLE DEPTH OBSERVED AT TIME OF DRILLING. NO ENTRY INDICATES WATER TABLE NOT OBSERVED DURING DRILLING.
3. ANALYTICAL AND SCREENING RESULTS SHOWN ARE FOR TOTAL VOLATILE ORGANIC COMPOUNDS DETECTED IN PARTS PER MILLION (PPM). SEE APPENDIX C-2 FOR INDIVIDUAL COMPOUNDS IDENTIFIED BY CLP ANALYSIS AND METHOD DETECTION LIMITS.
4. CLP = CONTRACT LABORATORY PROGRAM ANALYSIS; PV = PHOTOVAC HEADSPACE SCREENING; HNu OR OVA HEADSPACE FIELD SCREENING.
5. ND = NOT DETECTED ABOVE METHOD DETECTION LIMITS.
6. DEPTHS ARE SHOWN ADJACENT TO SOIL BORING ANALYTICAL DATA IN FEET BELOW GROUND SURFACE.

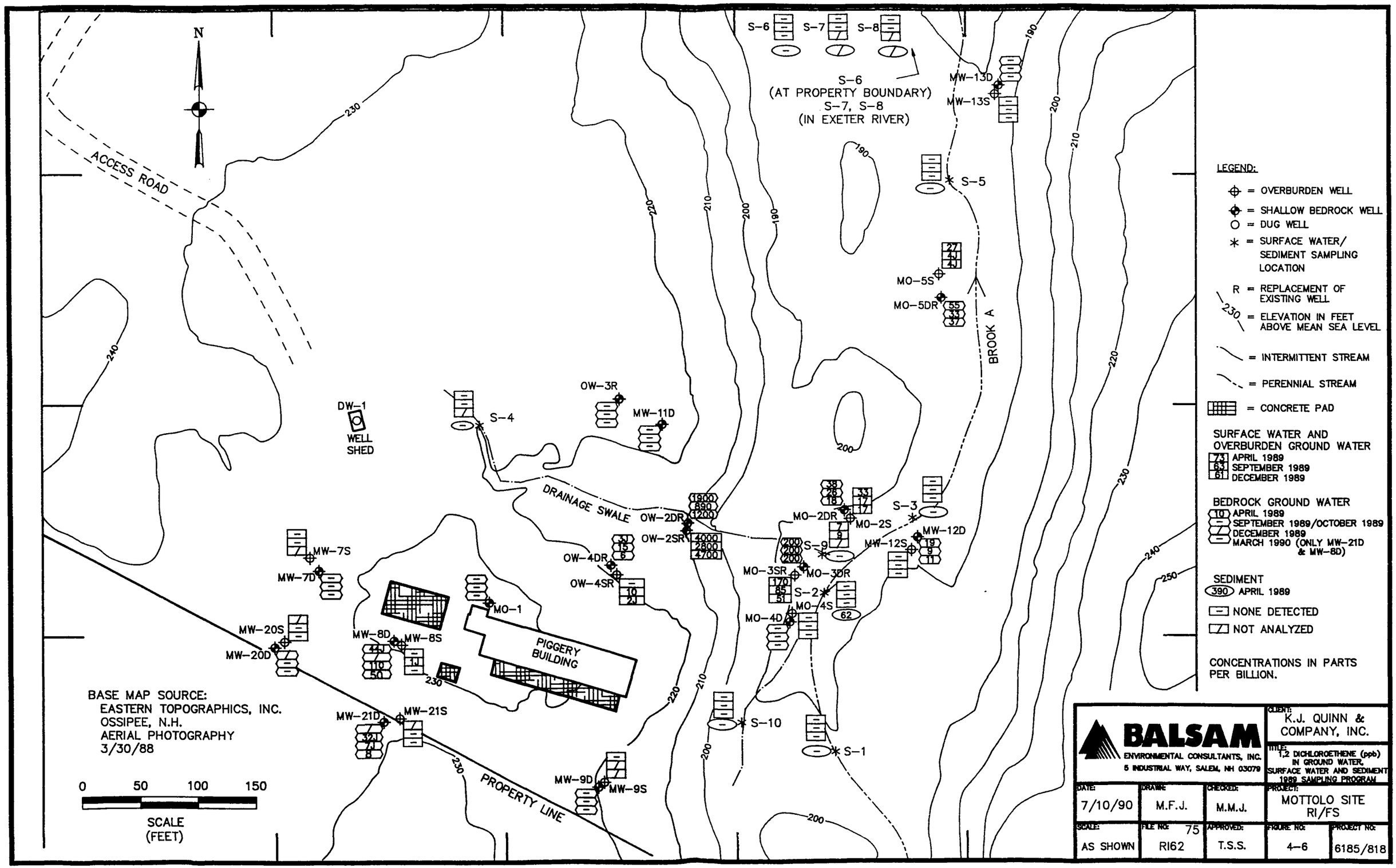
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

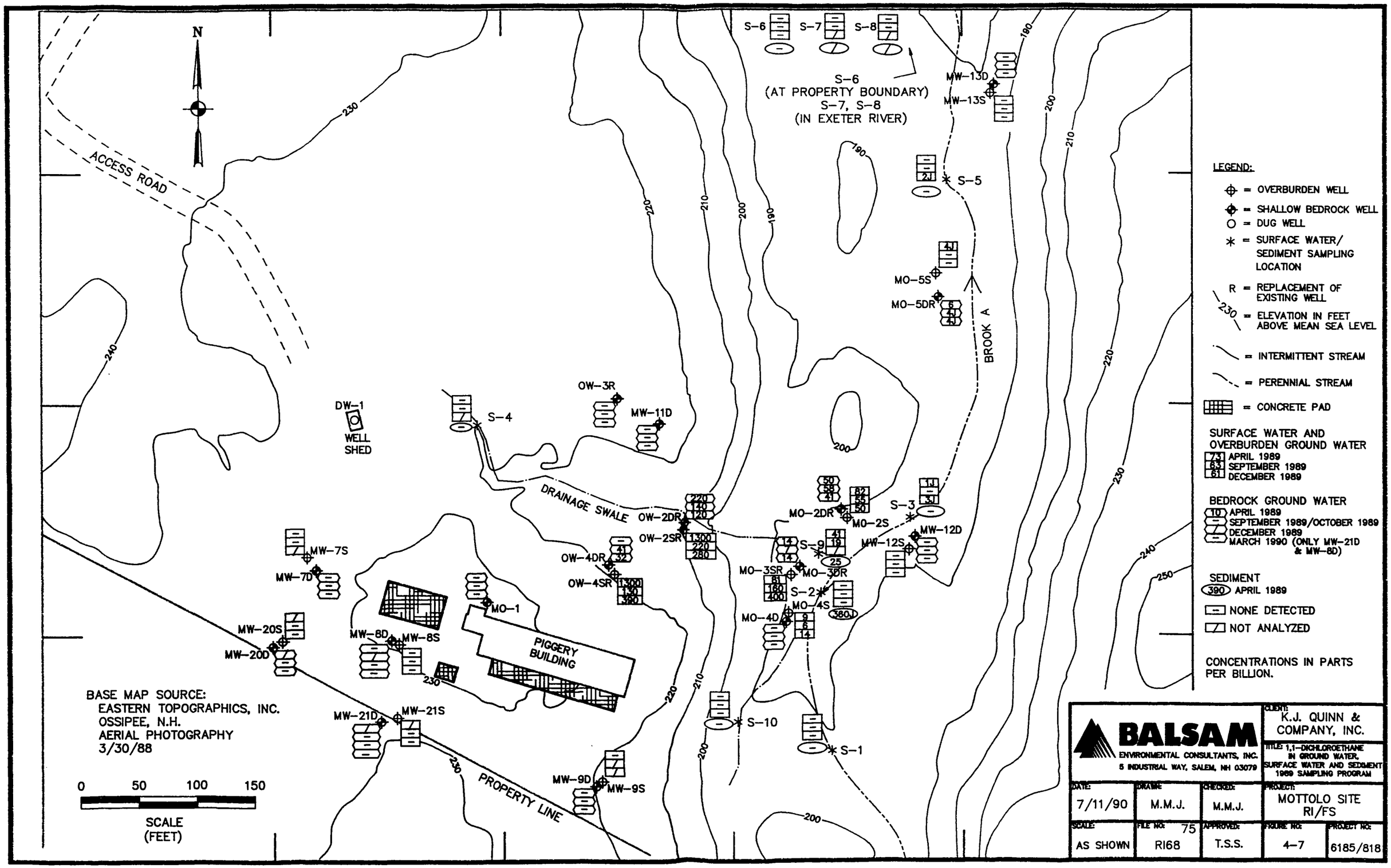
CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: SOIL INVESTIGATION SCREENING AND ANALYTICAL DATA			
DATE: 7/19/90	DRAWN: E.S.W.	CHECKED: P.J.K.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 50 RI52	APPROVED: T.S.S.	FIGURE NO: 4-2 / PROJECT NO: 6185/818

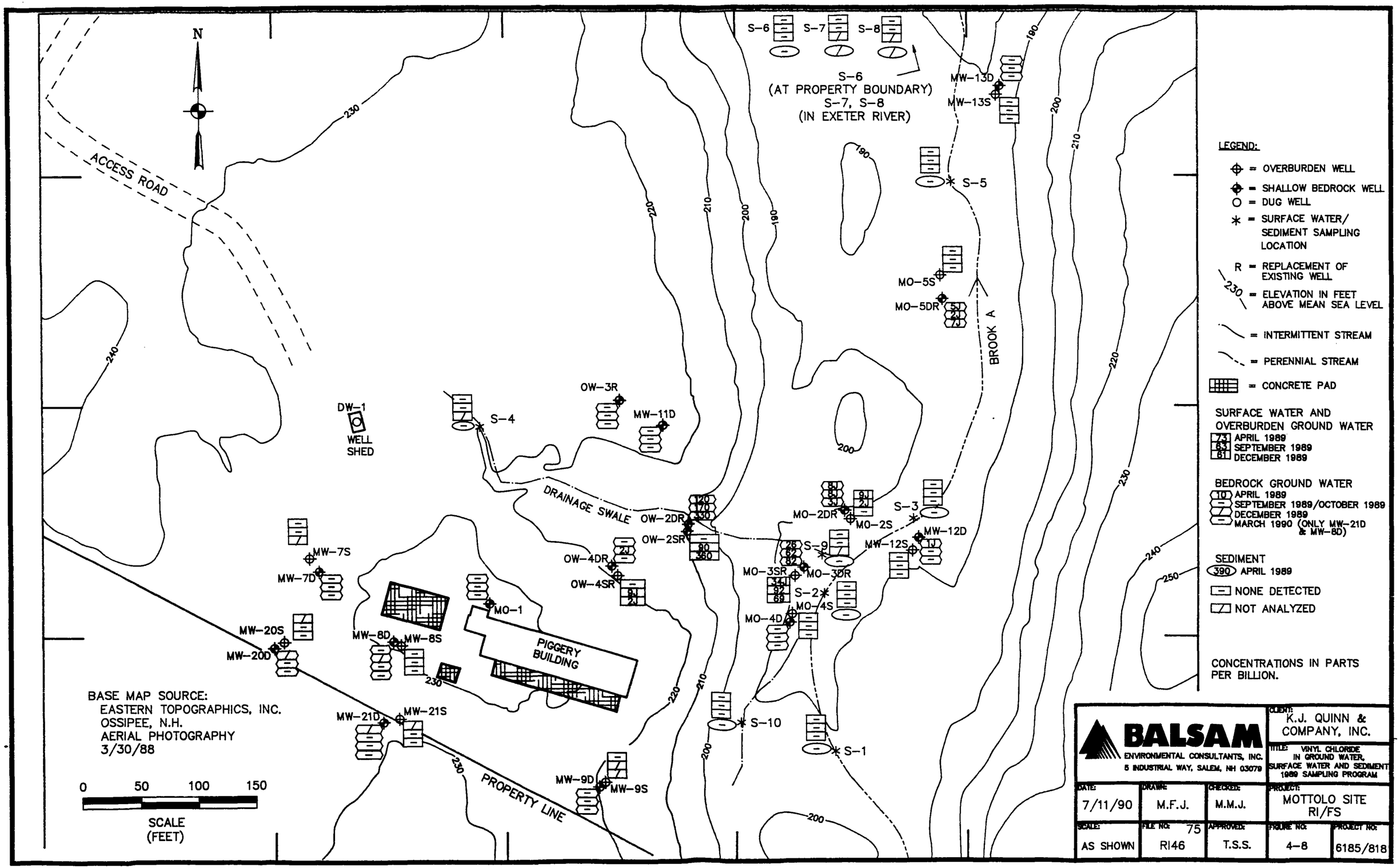

N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
MW-8D
MW-8S
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: TVOC CONCENTRATIONS IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/19/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI40
APPROVED: T.S.S.
FIGURE NO: 4-3
PROJECT NO: 6185/818

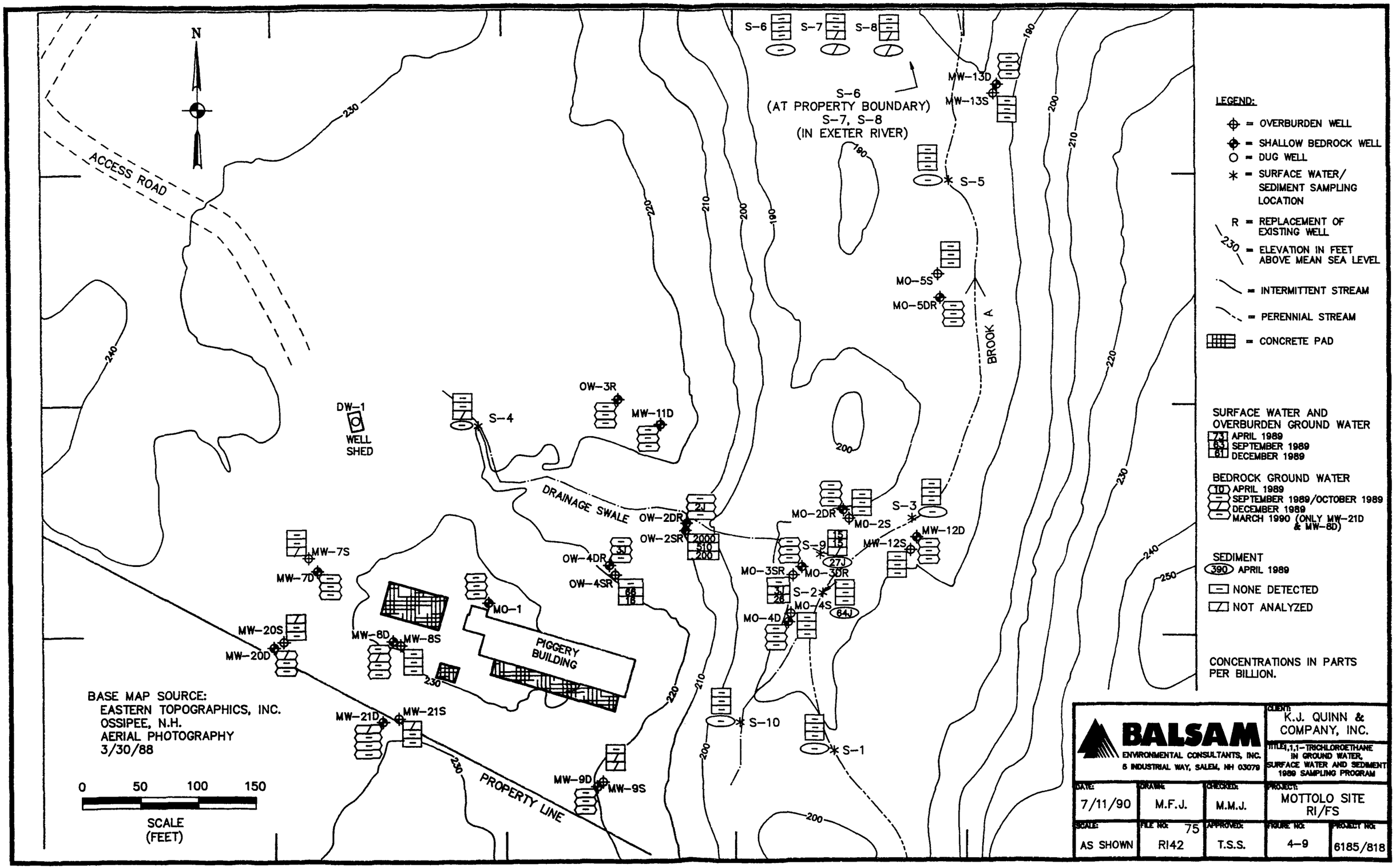

N
ACCESS ROAD
WELL SHED
DW-1
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MW-7S
MW-7D
MW-20S
MW-20D
MW-8D
MW-8S
MO-1
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
S-10
S-1
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
SURFACE WATER AND SEDIMENT
NONE DETECTED
390 APRIL 1989
NOT ANALYZED
WATER CONCENTRATIONS IN PARTS PER BILLION. SEDIMENT CONCENTRATIONS IN PARTS PER MILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ARSENIC IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 9/13/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI45
APPROVED: T.S.S.
FIGURE NO: 4-4
PROJECT NO: 6185/818

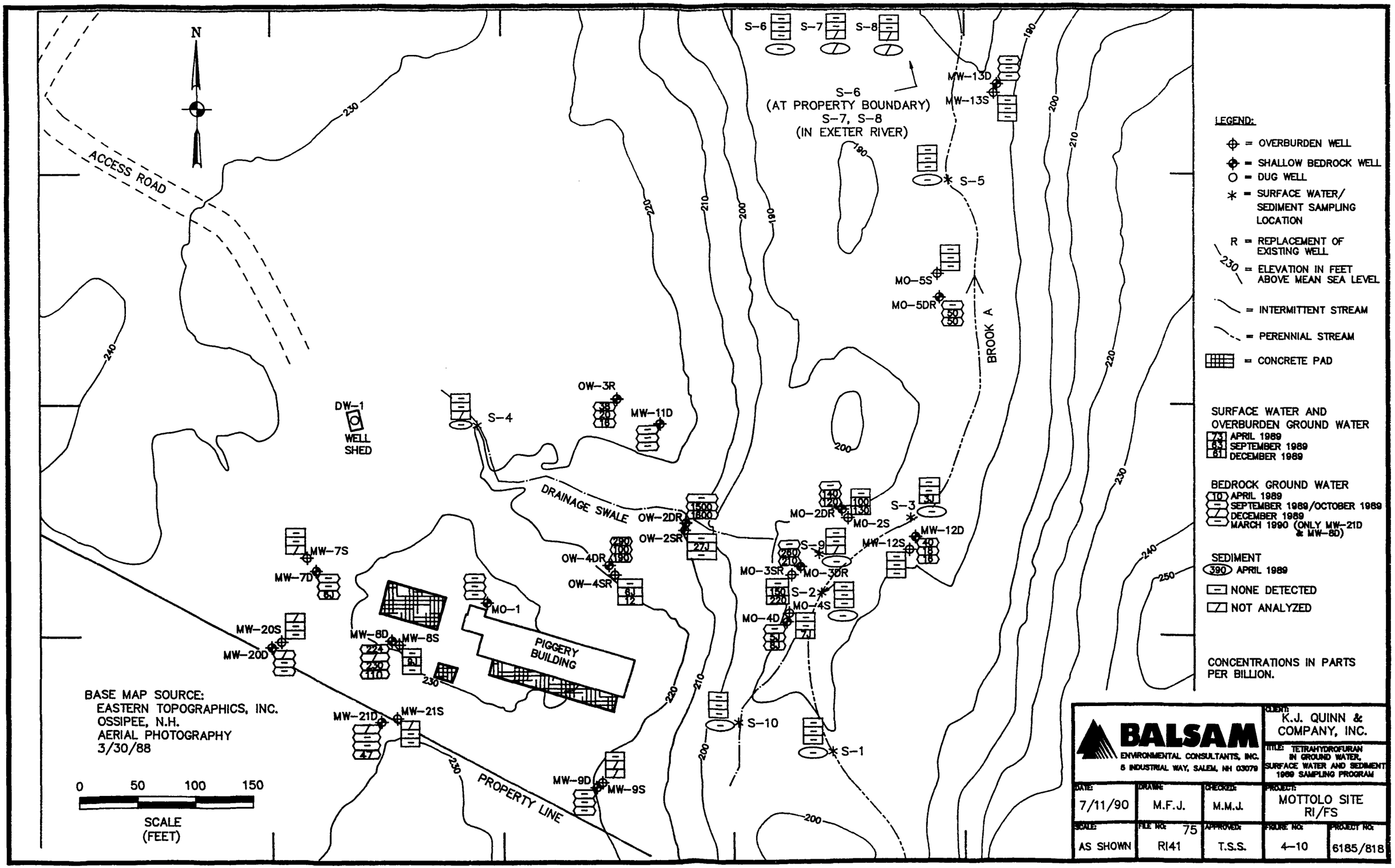

N
ACCESS ROAD
WELL SHED
DW-1
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MW-7S
MW-7D
MW-20S
MW-20D
MW-8D
MW-8S
MO-1
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-6
S-7
S-8
S-6 (AT PROPERTY BOUNDARY) S-7, S-8 (IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
S-10
S-1
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: TRICHLOROETHENE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/10/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI47
APPROVED: T.S.S.
FIGURE NO: 4-5
PROJECT NO: 6185/818

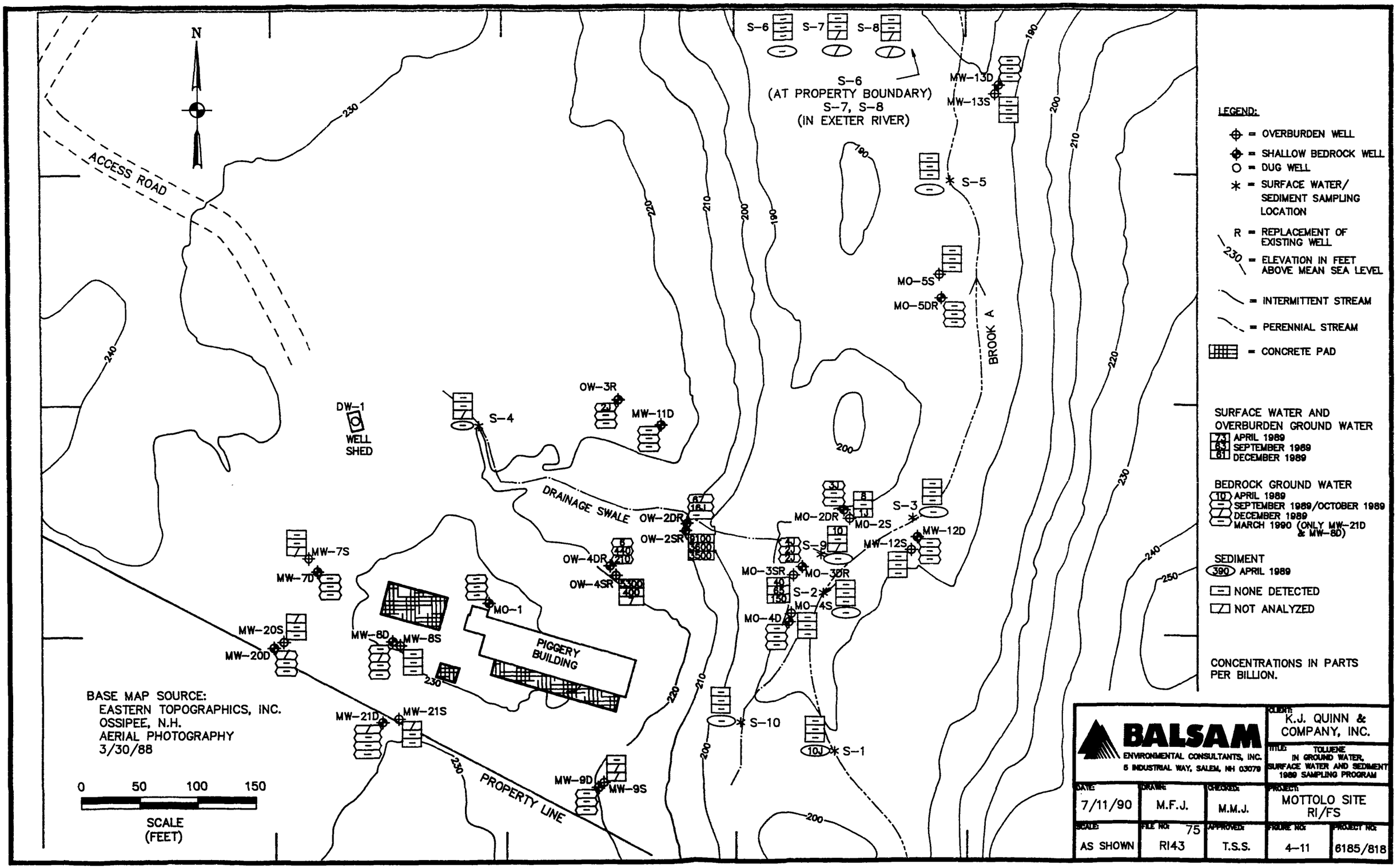

N
ACCESS ROAD
WELL SHED
DW-1
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MW-7S
MW-7D
MW-20S
MW-20D
MW-8D
MW-8S
MO-1
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-6
S-7
S-8
S-6 (AT PROPERTY BOUNDARY) S-7, S-8 (IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
S-10
S-1
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: 1,2 DICHLOROETHENE (ppb) IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/10/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI62
APPROVED: T.S.S.
FIGURE NO: 4-6
PROJECT NO: 6185/818

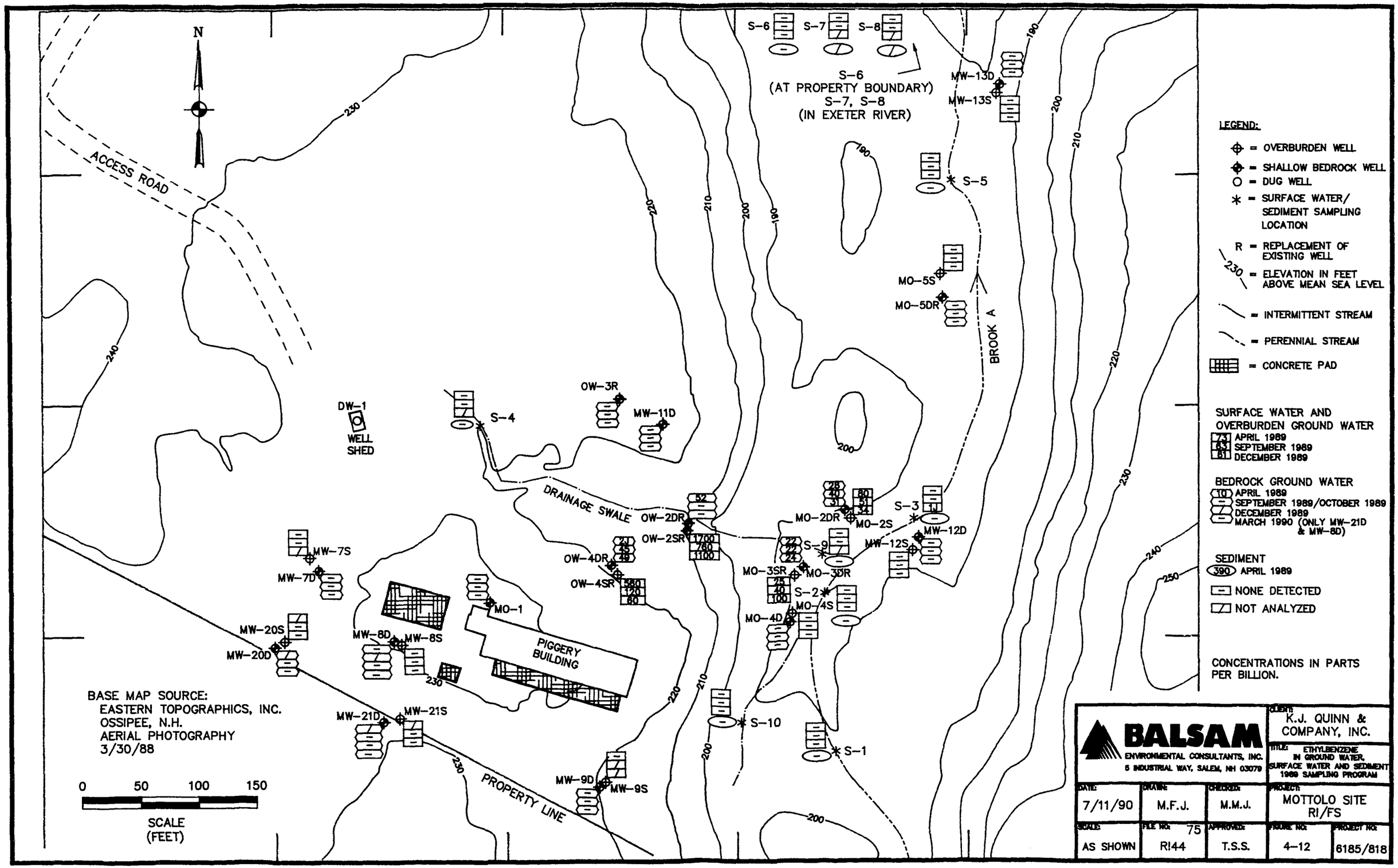

N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
OW-3R
MW-11D
S-4
DW-1
WELL
SHED
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-1
MW-7S
MW-7D
MW-20S
MW-20D
MW-8D
MW-8S
PIGGERY
BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
S-10
S-1
230
240
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: 1,1-DICHLOROETHANE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.M.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI68
APPROVED: T.S.S.
FIGURE NO: 4-7
PROJECT NO: 6185/818

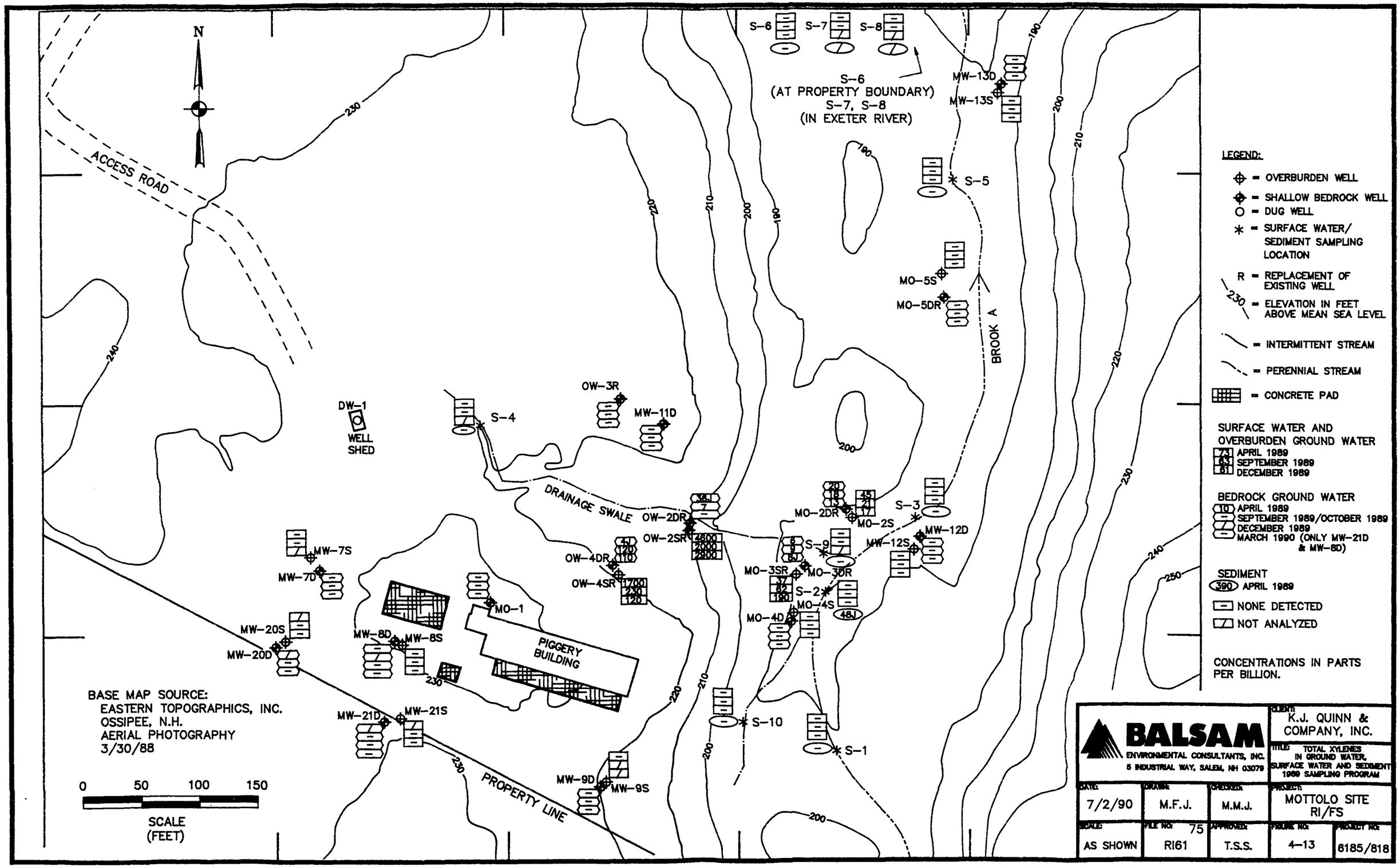

N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MW-20S
MW-20D
MW-8D
MW-8S
MO-1
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-10
S-1
240
230
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: VINYL CHLORIDE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI46
APPROVED: T.S.S.
FIGURE NO: 4-8
PROJECT NO: 6185/818

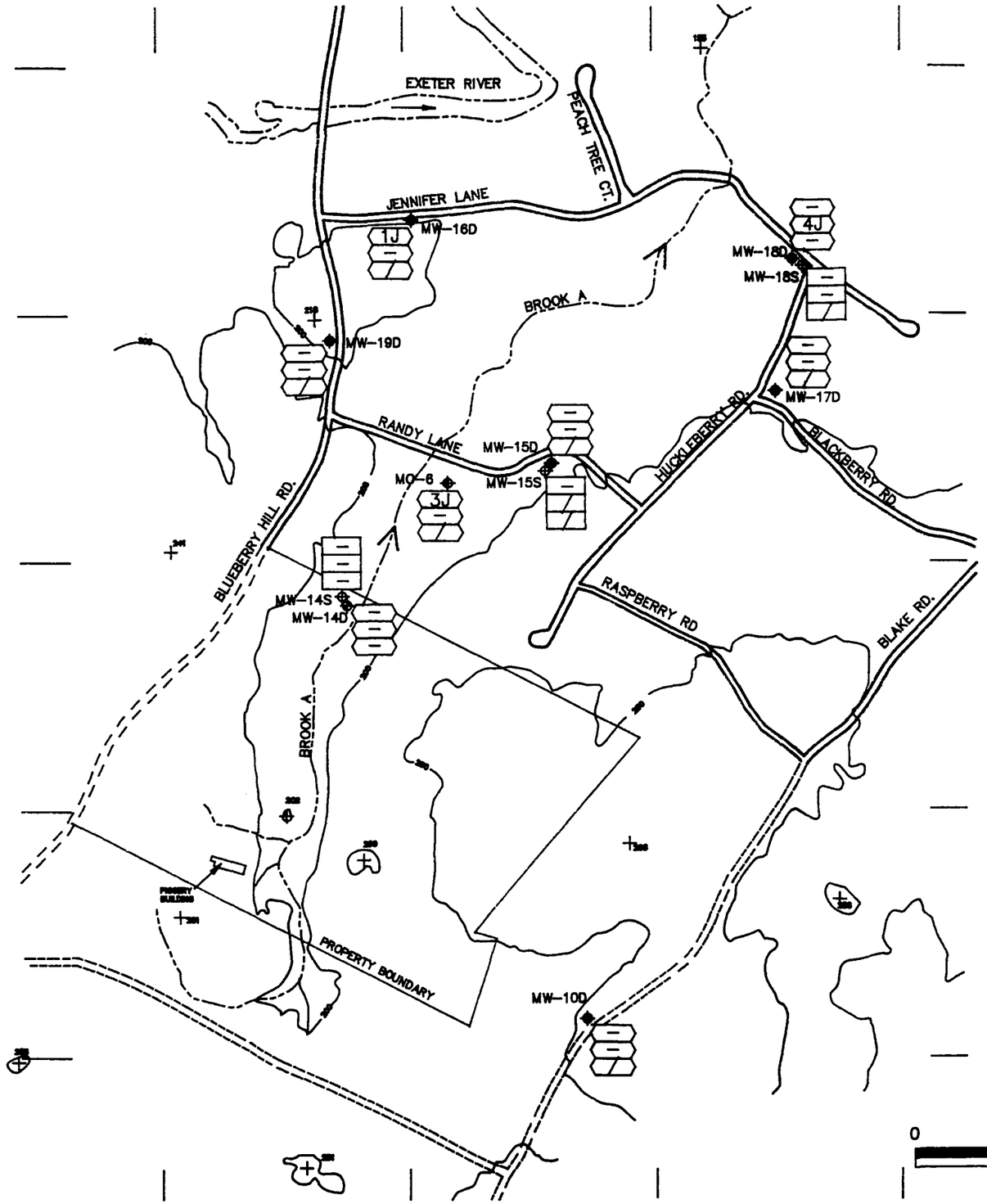

N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
OW-3R
MW-11D
S-4
DW-1
WELL SHED
DRAINAGE SWALE
OW-2DR
OW-2SR
2J
2000
510
200
OW-4DR
OW-4SR
3J
68
18
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
15
15
27J
MO-3SR
MO-3DR
S-2
31
28
MO-4S
64J
MO-4D
MW-7S
MW-7D
MO-1
MW-20S
MW-20D
MW-8D
MW-8S
PIGGERY BUILDING
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
240
230
220
210
200
190
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: 1,1,1-TRICHLOROETHANE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI42
APPROVED: T.S.S.
FIGURE NO: 4-9
PROJECT NO: 6185/818


N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
OW-3R
MW-11D
DW-1
WELL SHED
S-4
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
MW-8D
MW-8S
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: TETRAHYDROFURAN IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI41
APPROVED: T.S.S.
FIGURE NO: 4-10
PROJECT NO: 6185/818


N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
MW-8D
MW-8S
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
83 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: TOLUENE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI43
APPROVED: T.S.S.
FIGURE NO: 4-11
PROJECT NO: 6185/818


N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
MW-8D
MW-8S
MW-21D
MW-21S
S-10
S-1
MW-9D
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
81 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989/OCTOBER 1989
DECEMBER 1989
MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
NONE DETECTED
NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ETHYLBENZENE IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/11/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: R144
APPROVED: T.S.S.
FIGURE NO: 4-12
PROJECT NO: 6185/818


N
ACCESS ROAD
S-6
S-7
S-8
S-6
(AT PROPERTY BOUNDARY)
S-7, S-8
(IN EXETER RIVER)
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
BROOK A
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
OW-4DR
OW-4SR
MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
MW-20S
MW-20D
MW-8D
MW-8S
PIGGERY BUILDING
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-10
S-1
190
200
210
220
230
240
250
LEGEND:
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
SURFACE WATER AND OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989
BEDROCK GROUND WATER
10 APRIL 1989
7 SEPTEMBER 1989/OCTOBER 1989
– DECEMBER 1989
– MARCH 1990 (ONLY MW-21D & MW-8D)
SEDIMENT
390 APRIL 1989
– NONE DETECTED
/ NOT ANALYZED
CONCENTRATIONS IN PARTS PER BILLION.
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: TOTAL XYLENES IN GROUND WATER, SURFACE WATER AND SEDIMENT 1989 SAMPLING PROGRAM
DATE: 7/2/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI61
APPROVED: T.S.S.
FIGURE NO: 4-13
PROJECT NO: 6185/818



N

LEGEND

= SHALLOW BEDROCK WELL
= OVERBURDEN WELL
= INTERMEDIATE BEDROCK WELL
= DEEP BEDROCK WELL
200 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL

OVERBURDEN GROUND WATER
73 APRIL 1989
63 SEPTEMBER 1989
61 DECEMBER 1989

BEDROCK GROUND WATER
10 APRIL 1989
SEPTEMBER 1989
DECEMBER 1989

NONE DETECTED
NOT ANALYZED

CONCENTRATIONS IN PARTS PER BILLION.

BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 500 1000 1500
SCALE (FEET)

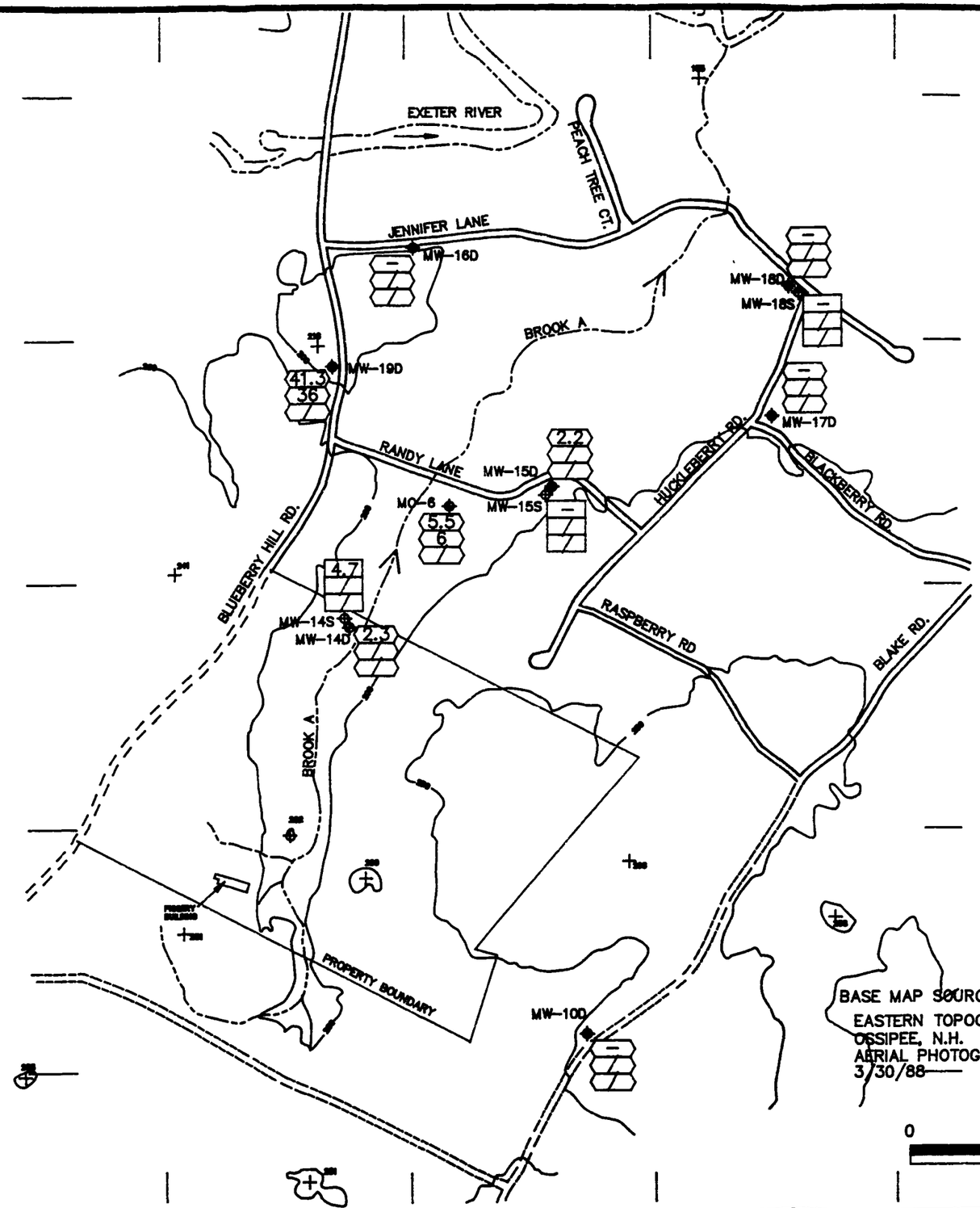
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.

TITLE: TOTAL VOC CONCENTRATIONS IN OFF-SITE GROUND WATER

DATE:	DRAWN:	CHECKED:	PROJECT:
7/19/90	E.S.W.	T.S.S.	MOTTOLO SITE RI/FS

SCALE:	FILE No:	APPROVED:	FIGURE No:	PROJECT No:
AS SHOWN	500 RI78	L.C.S.	4-14	6185/818



N

LEGEND

- = SHALLOW BEDROCK WELL
- = OVERBURDEN WELL
- = INTERMEDIATE BEDROCK WELL
- = DEEP BEDROCK WELL
- = ELEVATION IN FEET ABOVE MEAN SEA LEVEL

OVERBURDEN GROUND WATER
- 73 APRIL 1989
- 63 SEPTEMBER 1989
- 61 DECEMBER 1989

BEDROCK GROUND WATER
- 10 APRIL 1989
- – SEPTEMBER 1989/OCTOBER 1989
- / DECEMBER 1989

- – NONE DETECTED
- / NOT ANALYZED

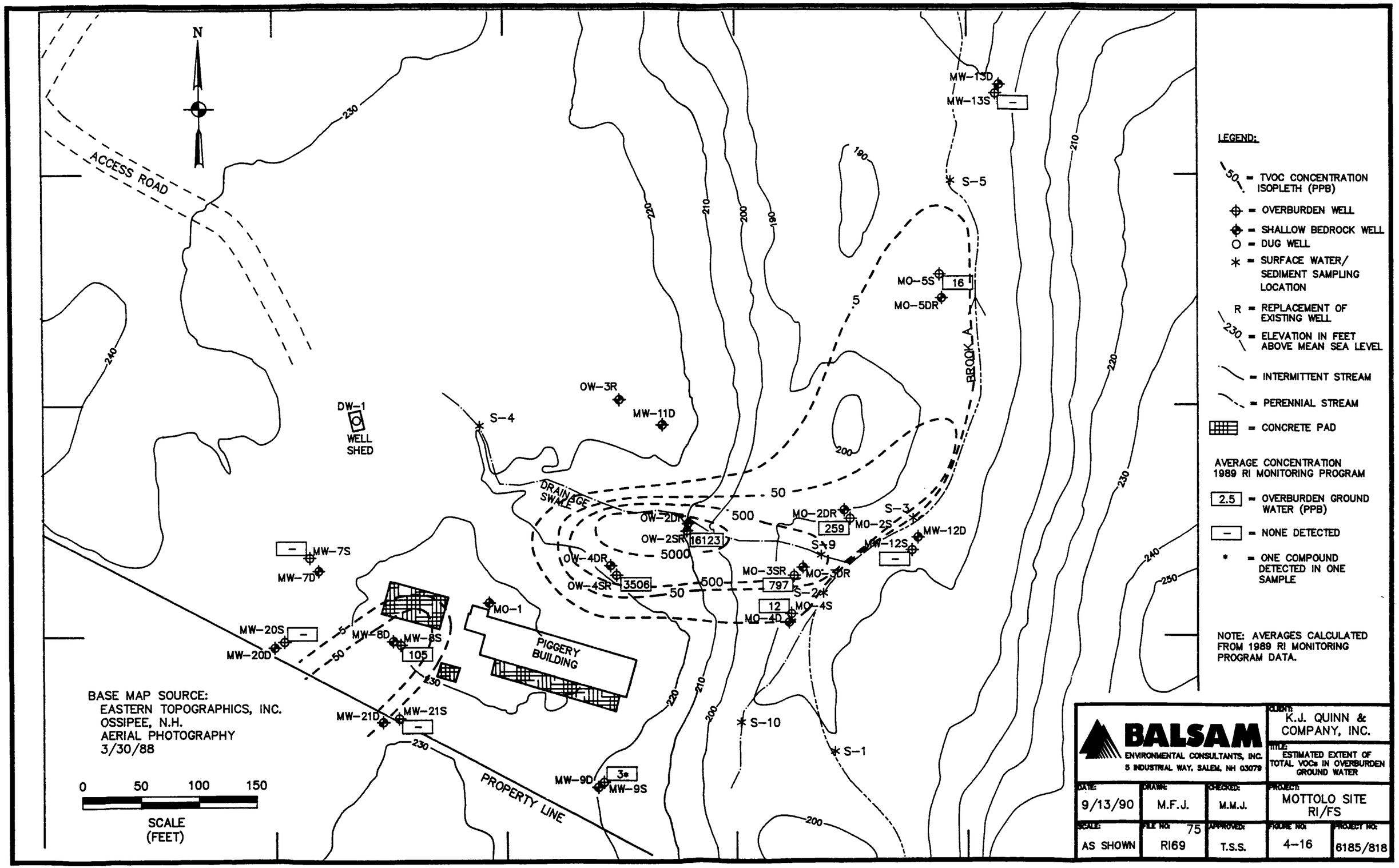
CONCENTRATIONS IN PARTS PER BILLION.

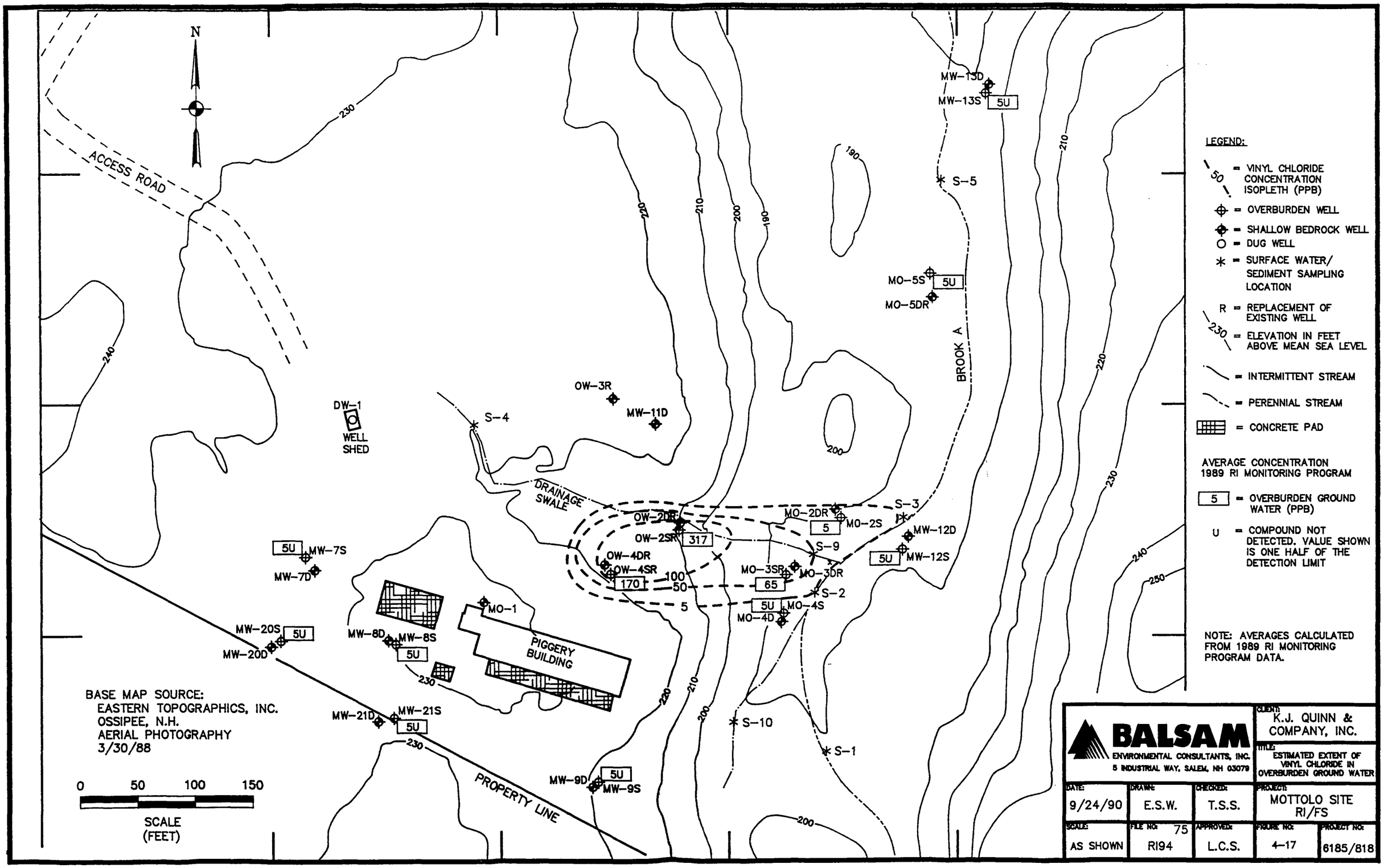
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

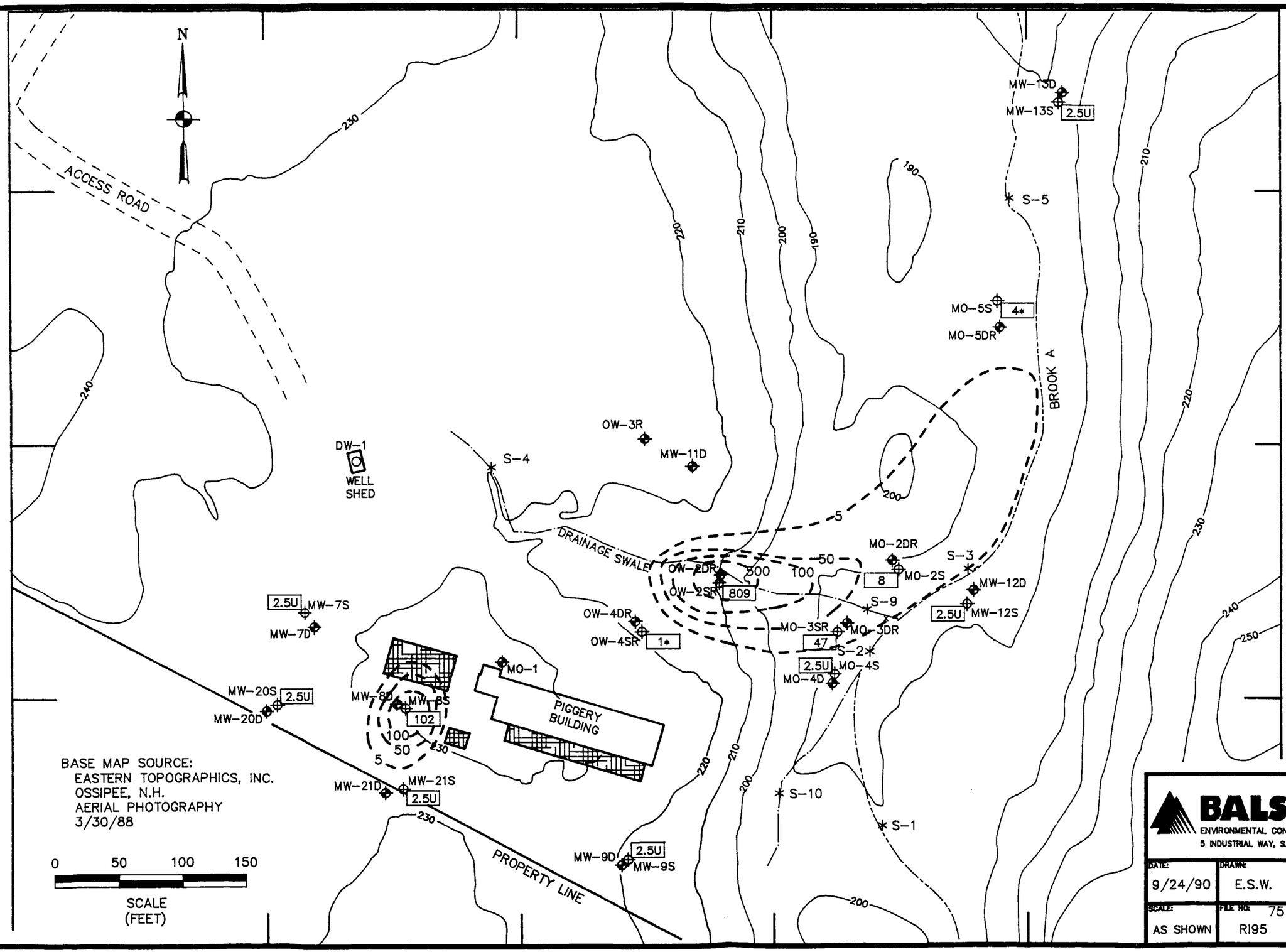
0 500 1000 1500
SCALE (FEET)

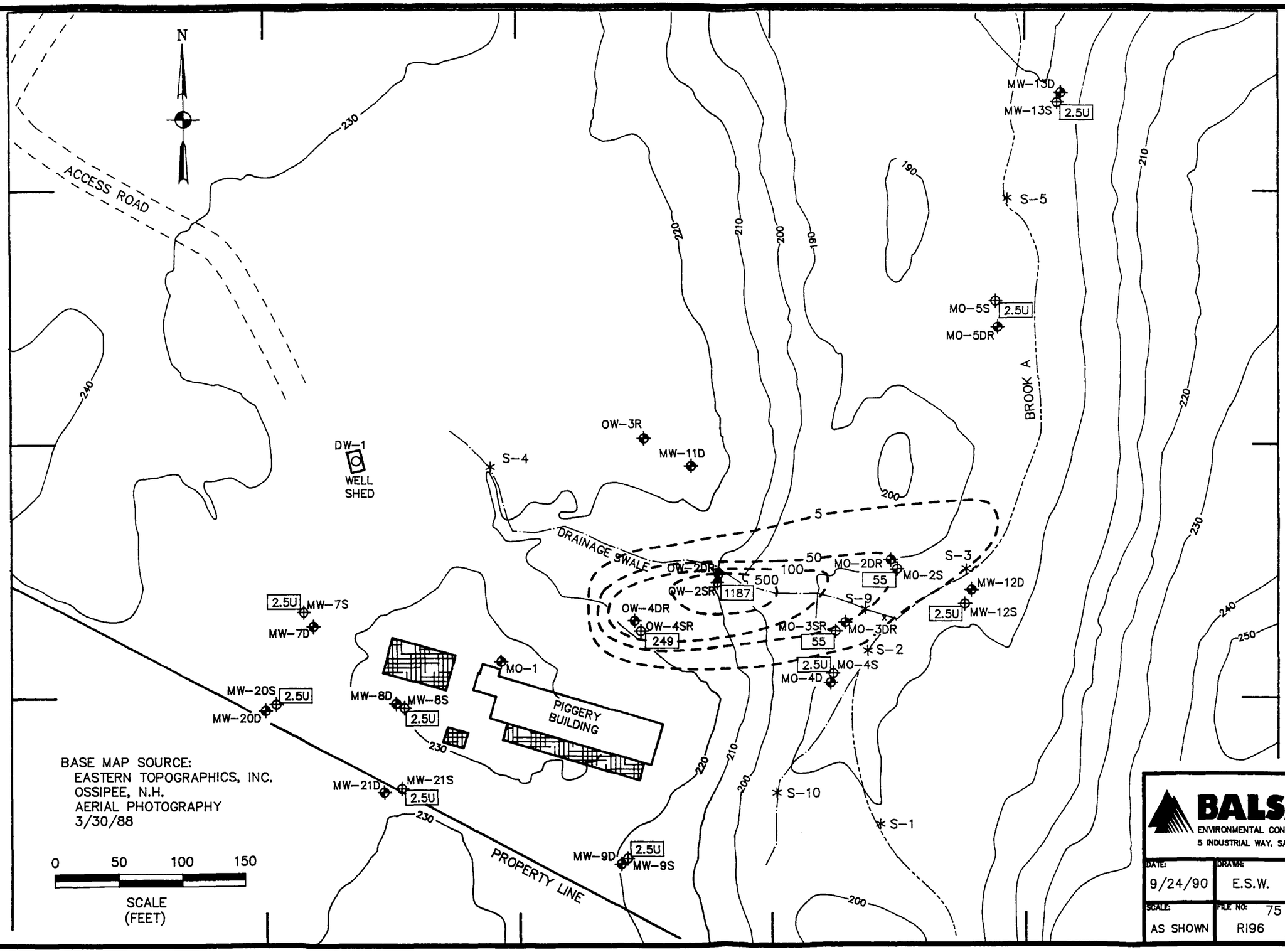
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: ARSENIC CONCENTRATIONS IN OFF-SITE GROUND WATER			
DATE: 7/19/90	DRAWN: E.S.W.	CHECKED: T.S.S.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: 500 RI77	APPROVED: L.C.S.	FIGURE NO: 4-15 / PROJECT NO: 6185/818


N
ACCESS ROAD
230
240
220
210
200
190
MW-13D
MW-13S
S-5
MO-5S
16
MO-5DR
5
BROOK A
OW-3R
MW-11D
DW-1
WELL SHED
S-4
DRAINAGE SWALE
50
500
5000
OW-2DR
OW-2SR
16123
MO-2DR
259
MO-2S
S-3
MW-12D
MW-12S
S-9
OW-4DR
OW-4SR
3506
MO-3SR
MO-3DR
797
S-2
12
MO-4S
MO-4D
MW-7S
MW-7D
MO-1
MW-20S
MW-20D
MW-8D
MW-8S
105
PIGGERY BUILDING
MW-21D
MW-21S
S-10
S-1
MW-9D
3*
MW-9S
PROPERTY LINE
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE
(FEET)
LEGEND:
50 = TVOC CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
2.5 = OVERBURDEN GROUND WATER (PPB)
– = NONE DETECTED
* = ONE COMPOUND DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF TOTAL VOCs IN OVERBURDEN GROUND WATER
DATE: 9/13/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI69
APPROVED: T.S.S.
FIGURE NO: 4-16
PROJECT NO: 6185/818


N
ACCESS ROAD
230
240
220
210
200
190
180
MW-13D
MW-13S
5U
S-5
MO-5S
5U
MO-5DR
BROOK A
OW-3R
MW-11D
DW-1
WELL SHED
S-4
DRAINAGE SWALE
OW-2DR
OW-2SR
317
MO-2DR
5
MO-2S
S-3
MW-12D
MW-12S
5U
S-9
OW-4DR
OW-4SR
170
100
50
5
MO-3SR
MO-3DR
65
S-2
5U
MO-4S
MO-4D
5U
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
5U
MW-20D
MW-8D
MW-8S
5U
MW-21D
MW-21S
5U
MW-9D
5U
MW-9S
PROPERTY LINE
S-10
S-1
250
0 50 100 150
SCALE (FEET)
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
LEGEND:
50 = VINYL CHLORIDE CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
O = DUG WELL
* = SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
5 = OVERBURDEN GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF VINYL CHLORIDE IN OVERBURDEN GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI94
APPROVED: L.C.S.
FIGURE NO: 4-17
PROJECT NO: 6185/818


N
ACCESS ROAD
230
240
DW-1
WELL SHED
S-4
OW-3R
MW-11D
DRAINAGE SWALE
OW-2DR
OW-2SR
809
300
100
50
5
MO-2DR
MO-2S
8
S-3
MW-12D
MW-12S
2.5U
S-9
MO-3SR
MO-3DR
47
S-2
MO-4S
MO-4D
OW-4DR
OW-4SR
1*
MW-7S
MW-7D
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
MW-8D
MW-8S
102
MW-21D
MW-21S
MW-9D
MW-9S
PROPERTY LINE
S-10
S-1
MO-5S
4*
MO-5DR
BROOK A
MW-13D
MW-13S
S-5
190
200
210
220
250
0 50 100 150
SCALE (FEET)
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
LEGEND:
= TRICHLOROETHENE CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
= ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
8 = OVERBURDEN GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
* = DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF TRICHLOROETHENE IN OVERBURDEN GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI95
APPROVED: L.C.S.
FIGURE NO: 4-18
PROJECT NO: 6185/818



BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

LEGEND:

50 = ETHYLBENZENE CONCENTRATION ISOPLETH (PPB)

= OVERBURDEN WELL

= SHALLOW BEDROCK WELL

O = DUG WELL

* = SURFACE WATER/ SEDIMENT SAMPLING LOCATION

R = REPLACEMENT OF EXISTING WELL

230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL

= INTERMITTENT STREAM

= PERENNIAL STREAM

= CONCRETE PAD

AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM

55 = OVERBURDEN GROUND WATER (PPB)

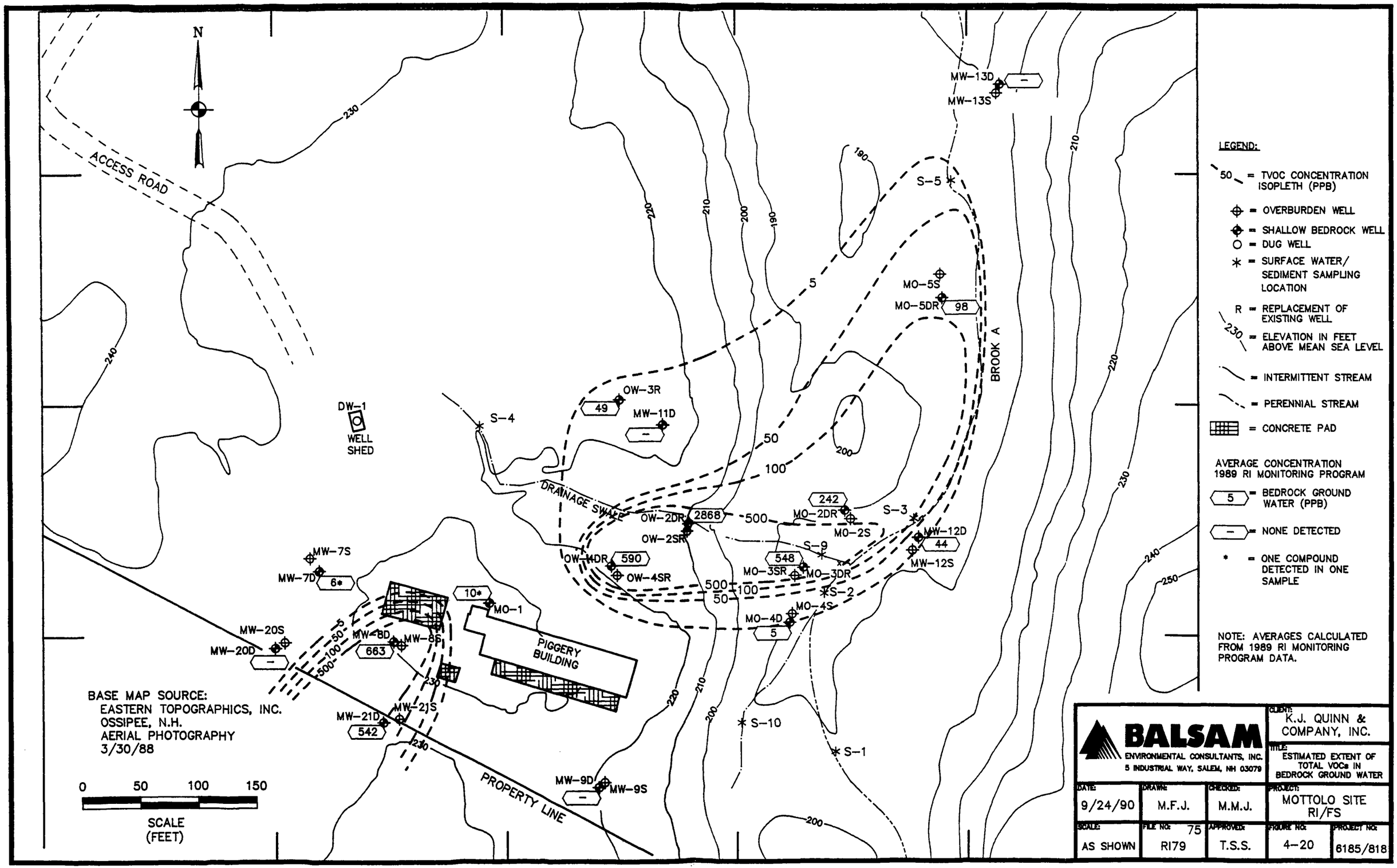
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT

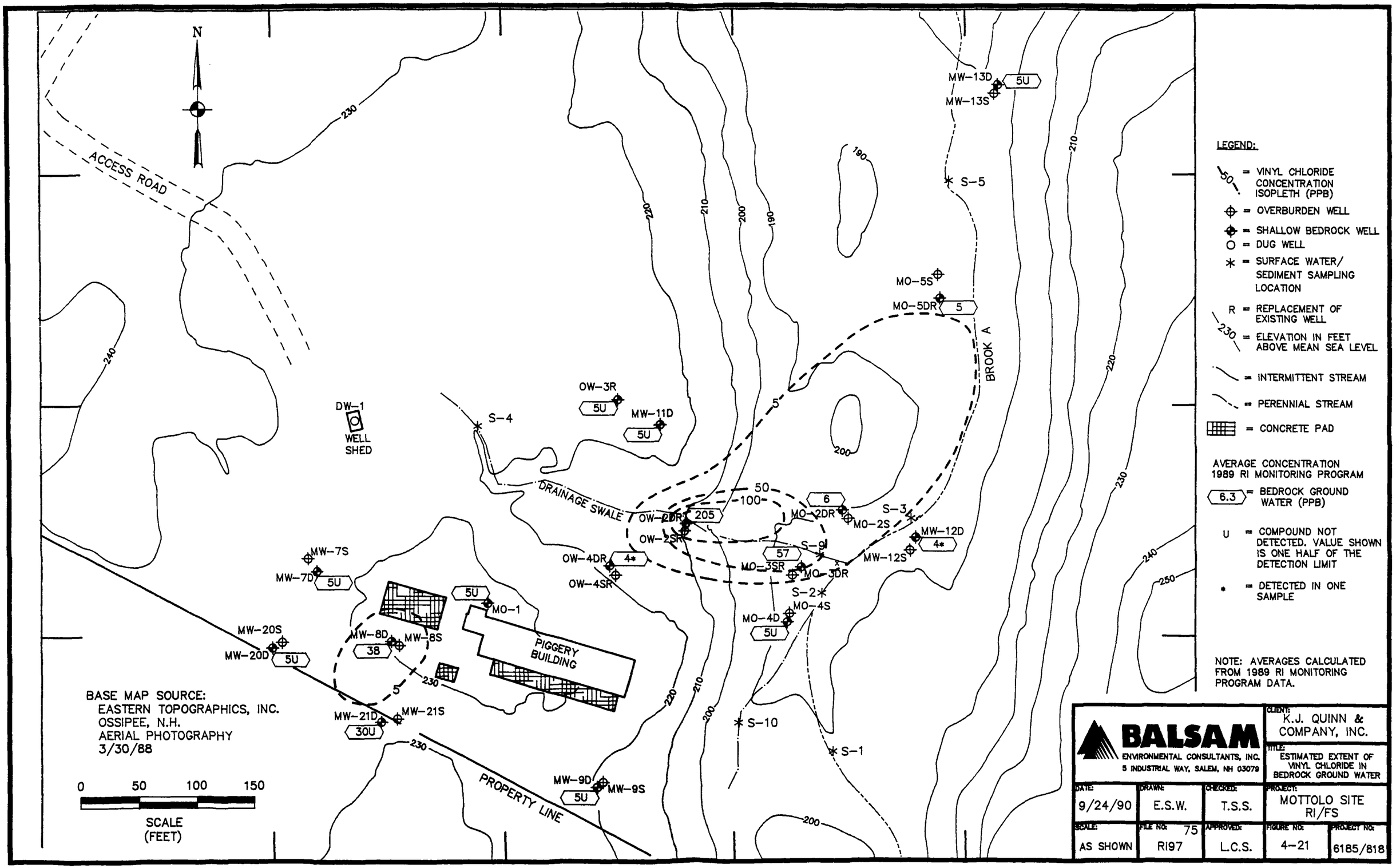
* = DETECTED IN ONE SAMPLE

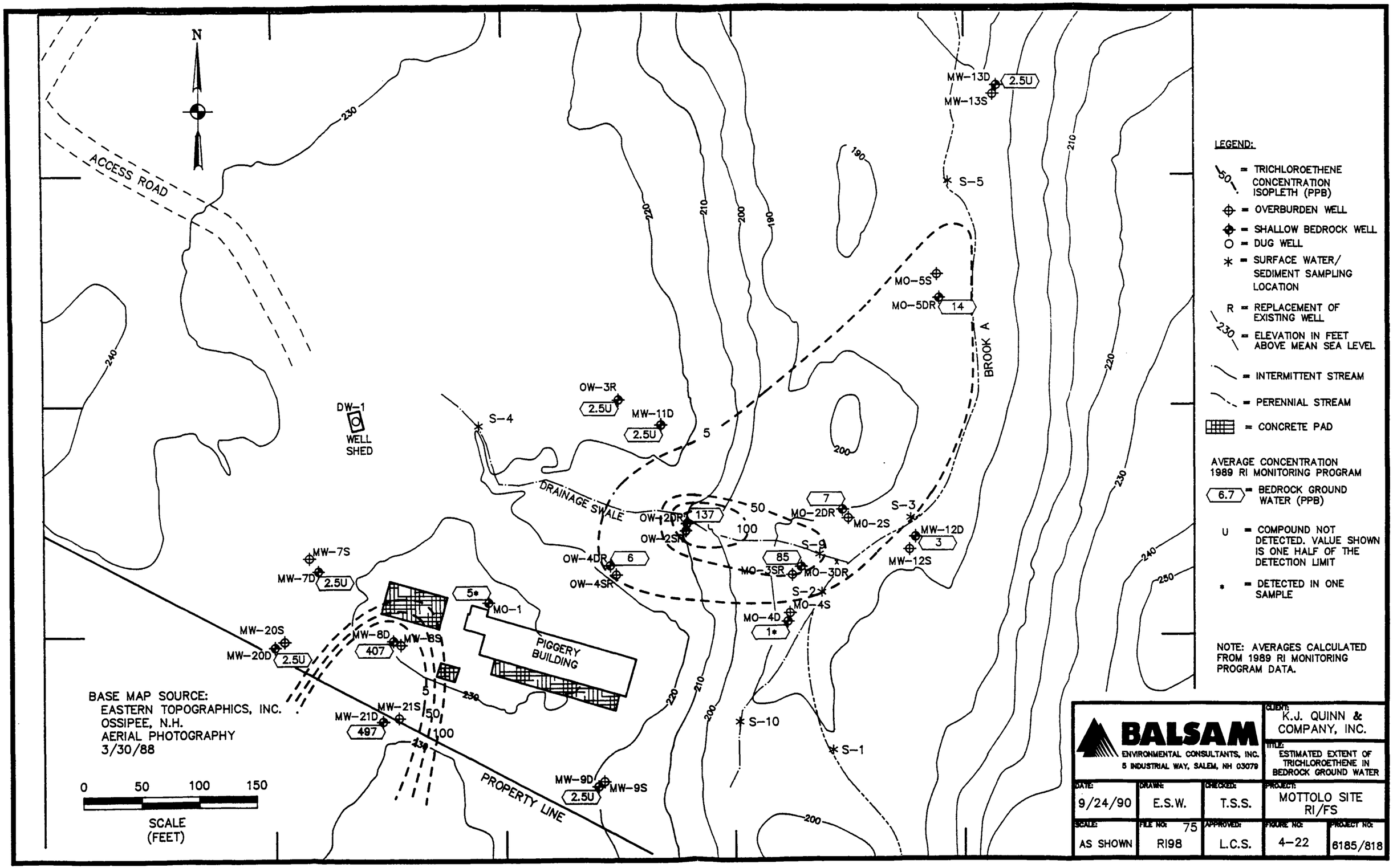
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.

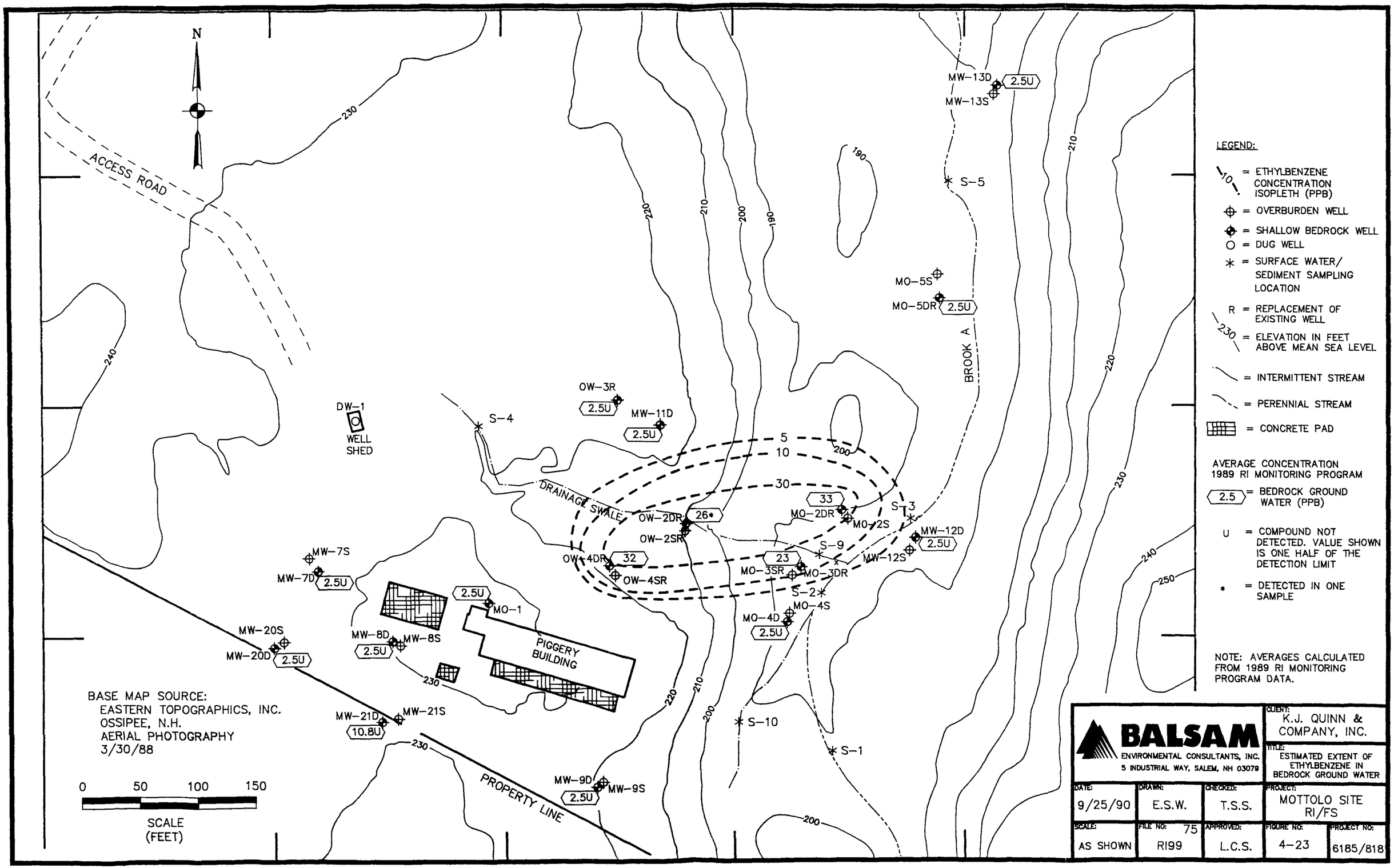
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

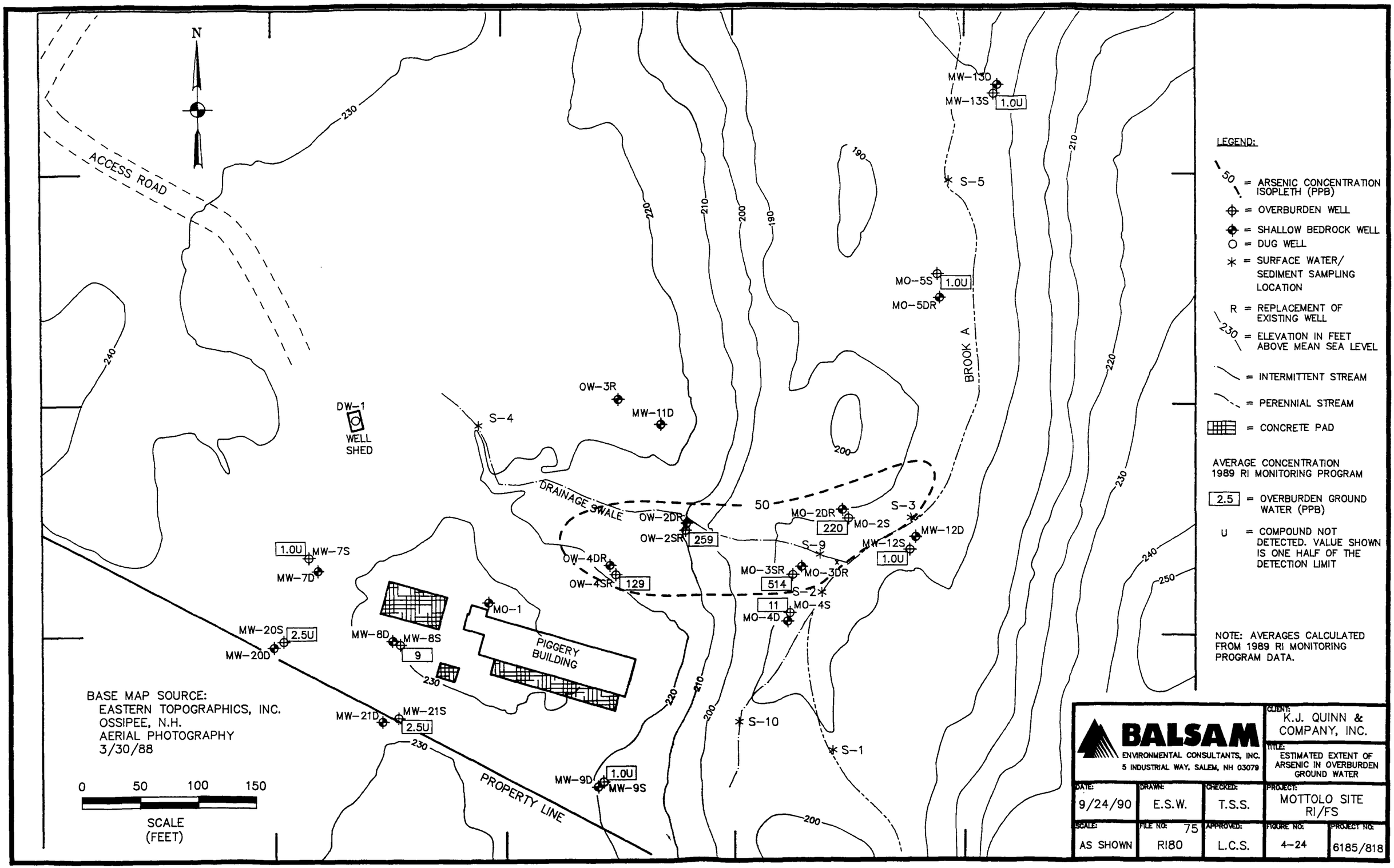
CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: ESTIMATED EXTENT OF ETHYLBENZENE IN OVERBURDEN GROUND WATER			
DATE: 9/24/90	DRAWN: E.S.W.	CHECKED: T.S.S.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: RI96	APPROVED: L.C.S.	FIGURE NO: 4-19 / PROJECT NO: 6185/818

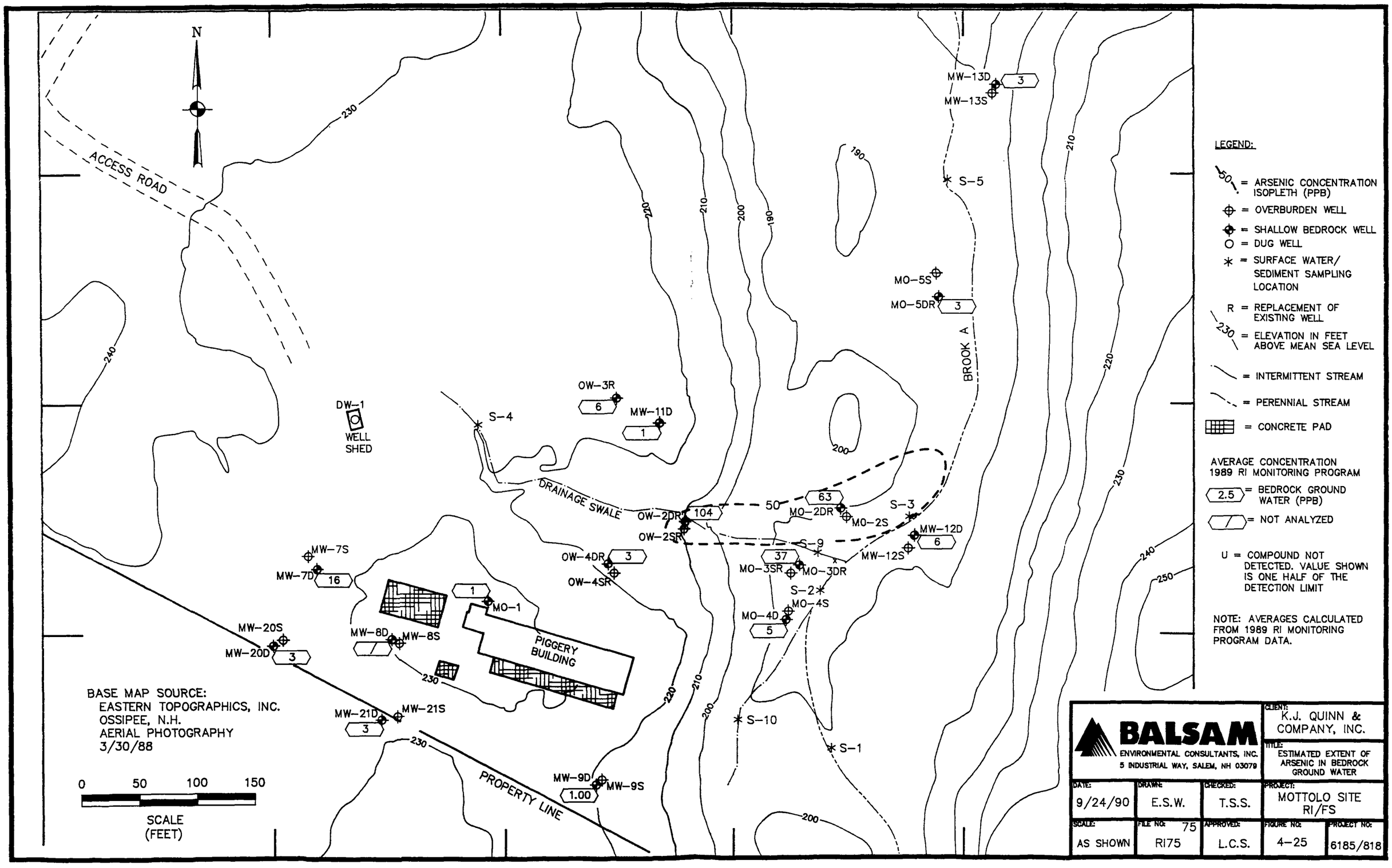

N
ACCESS ROAD
DRAINAGE SWALE
PROPERTY LINE
BROOK A
PIGGERY BUILDING
WELL SHED
DW-1
MW-13D
MW-13S
S-5
MO-5S
MO-5DR
98
OW-3R
49
MW-11D
S-4
242
MO-2DR
MO-2S
S-3
MW-12D
44
MW-12S
OW-2DR
2868
OW-2SR
S-9
OW-4DR
590
OW-4SR
548
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
5
MW-7S
MW-7D
6*
10*
MO-1
MW-20S
MW-20D
MW-8D
MW-8S
663
MW-21S
MW-21D
542
MW-9D
MW-9S
S-10
S-1
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
50 = TVOC CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
5 = BEDROCK GROUND WATER (PPB)
– = NONE DETECTED
* = ONE COMPOUND DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF TOTAL VOCs IN BEDROCK GROUND WATER
DATE: 9/24/90
DRAWN: M.F.J.
CHECKED: M.M.J.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI79
APPROVED: T.S.S.
FIGURE NO: 4-20
PROJECT NO: 6185/818


N
ACCESS ROAD
DW-1
WELL SHED
S-4
OW-3R
5U
MW-11D
5U
MW-13D
5U
MW-13S
S-5
MO-5S
MO-5DR
5
BROOK A
DRAINAGE SWALE
OW-2DR
205
OW-2SR
MO-2DR
6
MO-2S
S-3
MW-12D
4*
MW-12S
S-9
57
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
5U
OW-4DR
4*
OW-4SR
MW-7S
MW-7D
5U
MO-1
5U
PIGGERY BUILDING
MW-20S
MW-20D
5U
MW-8D
MW-8S
38
MW-21D
MW-21S
30U
MW-9D
MW-9S
5U
PROPERTY LINE
S-10
S-1
230
240
250
220
210
200
190
50
100
5
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
50 = VINYL CHLORIDE CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
6.3 = BEDROCK GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
* = DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF VINYL CHLORIDE IN BEDROCK GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI97
APPROVED: L.C.S.
FIGURE NO: 4-21
PROJECT NO: 6185/818


N
ACCESS ROAD
DW-1
WELL SHED
S-4
OW-3R
2.5U
MW-11D
2.5U
5
DRAINAGE SWALE
OW-12DR
137
OW-12SR
50
100
OW-4DR
6
OW-4SR
MW-7S
MW-7D
2.5U
5*
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
2.5U
MW-8D
407
MW-8S
MW-21S
MW-21D
497
PROPERTY LINE
MW-9D
2.5U
MW-9S
MW-13D
2.5U
MW-13S
S-5
MO-5S
MO-5DR
14
BROOK A
7
MO-2DR
MO-2S
S-3
MW-12D
3
MW-12S
S-9
85
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
1*
S-10
S-1
190
200
210
220
230
240
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
50 = TRICHLOROETHENE CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
* = SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
6.7 = BEDROCK GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
* = DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF TRICHLOROETHENE IN BEDROCK GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI98
APPROVED: L.C.S.
FIGURE NO: 4-22
PROJECT NO: 6185/818


N
ACCESS ROAD
230
240
220
210
200
190
MW-13D
2.5U
MW-13S
S-5
MO-5S
MO-5DR
2.5U
BROOK A
DW-1
WELL SHED
S-4
OW-3R
2.5U
MW-11D
2.5U
5
10
30
DRAINAGE SWALE
OW-2DR
26*
OW-2SR
33
MO-2DR
MO-2S
S-3
MW-12D
2.5U
MW-12S
S-9
23
MO-3SR
MO-3DR
S-2
MO-4S
MO-4D
2.5U
OW-4DR
32
OW-4SR
MW-7S
MW-7D
2.5U
2.5U
MO-1
PIGGERY BUILDING
MW-20S
MW-20D
2.5U
MW-8D
MW-8S
2.5U
MW-21D
10.8U
MW-21S
S-10
S-1
MW-9D
MW-9S
2.5U
PROPERTY LINE
250
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
10 = ETHYLBENZENE CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
2.5 = BEDROCK GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
* = DETECTED IN ONE SAMPLE
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF ETHYLBENZENE IN BEDROCK GROUND WATER
DATE: 9/25/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI99
APPROVED: L.C.S.
FIGURE NO: 4-23
PROJECT NO: 6185/818


N
ACCESS ROAD
230
240
220
210
200
190
250
DW-1
WELL SHED
OW-3R
MW-11D
S-4
DRAINAGE SWALE
OW-2DR
OW-2SR
259
50
OW-4DR
OW-4SR
129
1.0U
MW-7S
MW-7D
MW-20S
2.5U
MW-20D
MW-8D
MW-8S
9
MO-1
PIGGERY BUILDING
MW-21D
MW-21S
2.5U
MW-9D
1.0U
MW-9S
PROPERTY LINE
MW-13D
MW-13S
1.0U
S-5
MO-5S
1.0U
MO-5DR
BROOK A
MO-2DR
220
MO-2S
S-3
MW-12D
MW-12S
1.0U
S-9
MO-3SR
514
MO-3DR
S-2
11
MO-4S
MO-4D
S-10
S-1
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
0 50 100 150
SCALE (FEET)
LEGEND:
50 = ARSENIC CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
2.5 = OVERBURDEN GROUND WATER (PPB)
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF ARSENIC IN OVERBURDEN GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: 75 RI80
APPROVED: L.C.S.
FIGURE NO: 4-24
PROJECT NO: 6185/818

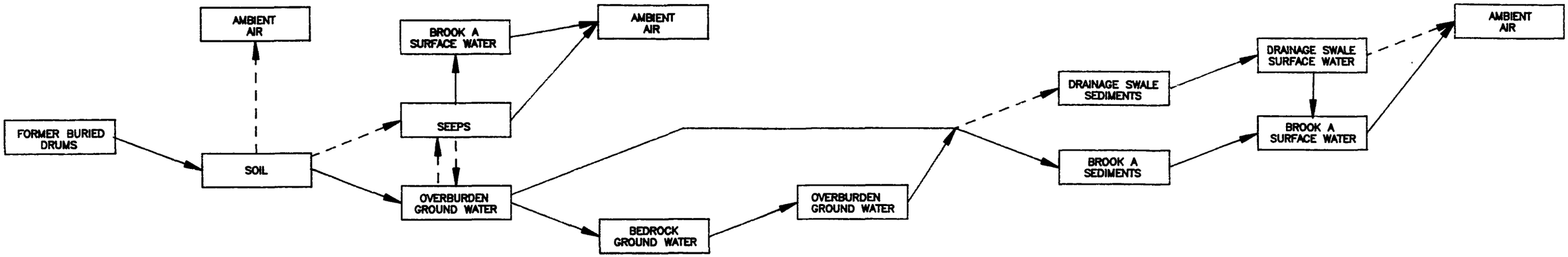

N
ACCESS ROAD
DRAINAGE SWALE
PROPERTY LINE
BROOK A
PIGGERY BUILDING
DW-1
WELL SHED
S-4
S-5
S-3
S-9
S-2
S-10
S-1
OW-3R
6
MW-11D
1
OW-2DR
104
OW-2SR
50
OW-4DR
3
OW-4SR
MW-13D
3
MW-13S
MO-5S
MO-5DR
3
63
MO-2DR
MO-2S
MW-12D
6
MW-12S
37
MO-3SR
MO-3DR
MO-4S
MO-4D
5
MW-7S
MW-7D
16
MO-1
1
MW-20S
MW-20D
3
MW-8D
MW-8S
7
MW-21D
MW-21S
3
MW-9D
MW-9S
1.00
230
240
220
210
200
190
250
0 50 100 150
SCALE (FEET)
BASE MAP SOURCE:
EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88
LEGEND:
50 = ARSENIC CONCENTRATION ISOPLETH (PPB)
= OVERBURDEN WELL
= SHALLOW BEDROCK WELL
= DUG WELL
= SURFACE WATER/ SEDIMENT SAMPLING LOCATION
R = REPLACEMENT OF EXISTING WELL
230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
= INTERMITTENT STREAM
= PERENNIAL STREAM
= CONCRETE PAD
AVERAGE CONCENTRATION 1989 RI MONITORING PROGRAM
2.5 = BEDROCK GROUND WATER (PPB)
/ = NOT ANALYZED
U = COMPOUND NOT DETECTED. VALUE SHOWN IS ONE HALF OF THE DETECTION LIMIT
NOTE: AVERAGES CALCULATED FROM 1989 RI MONITORING PROGRAM DATA.
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079
CLIENT: K.J. QUINN & COMPANY, INC.
TITLE: ESTIMATED EXTENT OF ARSENIC IN BEDROCK GROUND WATER
DATE: 9/24/90
DRAWN: E.S.W.
CHECKED: T.S.S.
PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN
FILE NO: RI75
APPROVED: L.C.S.
FIGURE NO: 4-25
PROJECT NO: 6185/818

Section 5

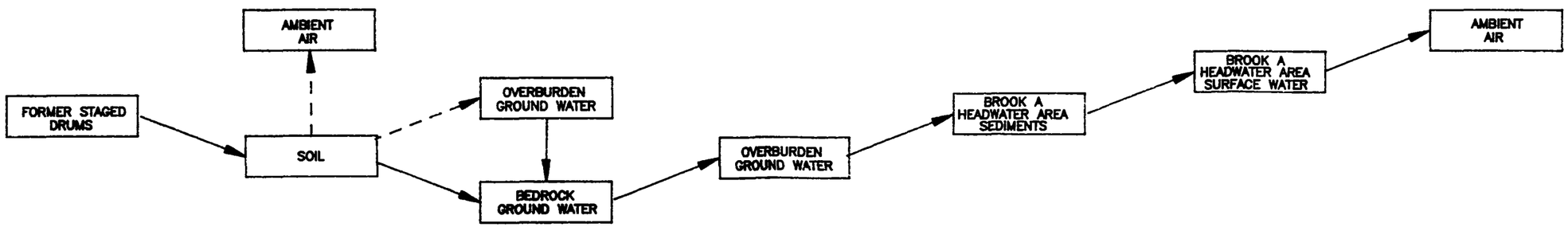
BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

CONCEPTUAL CONTAMINANT MIGRATION PATHWAY FLOW CHART

FORMER DRUM DISPOSAL AREA



SOUTHERN DRUM STAGING AREA



LEGEND

——— = PRIMARY PATHWAY

- - - - = SECONDARY PATHWAY

BALSAM ENVIRONMENTAL CONSULTANTS, INC. 5 INDUSTRIAL WAY, SALEM, NH 03079			CLIENT: K.J. QUINN & COMPANY, INC.	
			TITLE: CONCEPTUAL CONTAMINANT MIGRATION PATHWAY FLOWCHART	
DATE: 7/23/90	DRAWN: T.S.S.	CHECKED: E.S.W.	PROJECT: MOTTOLO SITE RI/FS	
SCALE: N.T.S.	FILE NO: RI89	APPROVED: L.C.S.	FIGURE NO: 5-1	PROJECT NO: 6185/818

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
Engineering, Environmental Science & Industrial Hygiene

Section 6

TABLE 6-1
SELECTION OF INDICATOR COMPOUNDS FOR GROUND WATER
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Rank According to Potential Carcinogenic Effects:

Compound	Maximum Concentration (mg/l)	Oral Toxicity Constant (l/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
* Vinyl Chloride	0.36	4.29E-03	1.54E-03	3	
1,1-Dichloroethene	0.007	1.23E-01	8.61E-04	4	Low frequency of detection; low concentration.
* Trichloroethene	2.4	4.29E-03	1.03E-02	2	
bis(2-Ethylhexyl)phthalate	0.015	5.71E-04	8.57E-06	9	Low frequency of detection; low concentration.
alpha-BHC	0.00026	1.56E+00	4.06E-04	6	Low frequency of detection; low concentration.
beta-BHC	0.00003	4.97E-02	1.49E-06	11	Low frequency of detection; low concentration.
gamma-BHC (Lindane)	0.00004	5.23E-02	2.09E-06	10	Low frequency of detection; low concentration.
Aldrin	0.00037	1.88E+00	6.96E-04	5	Low frequency of detection; low concentration.
4,4'-DDT	0.00042	1.59E-01	6.68E-05	8	Low frequency of detection; low concentration.
Aroclor-1260	0.00059	5.71E-01	3.37E-04	7	Low concentration; probable laboratory error.
* Arsenic	0.57	4.07E+00	2.32E+00	1	

Rank According to Noncarcinogenic Effects:

Compound	Maximum Concentration (mg/l)	Oral Toxicity Constant (l/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
* Vinyl Chloride	0.36	8.77E-02	3.16E-02	11	
Carbon Disulfide	0.013	4.24E-01	5.51E-03	19	Low frequency of detection; low concentration.
* 1,1-Dichloroethane	1.3	2.58E-02	3.35E-02	10	
1,1-Dichloroethene	0.007	3.71E-01	2.60E-03	20	Low frequency of detection; low concentration.
* 1,2-Dichloroethene (total)	4.7	5.29E-02	2.49E-01	6	
* 1,1,1-Trichloroethane	2.1	7.33E-04	1.54E-03	22	
* Trichloroethene	2.4	1.05E+00	2.52E+00	3	
* Toluene	9.2	5.20E-03	4.78E-02	9	
* Ethylbenzene	1.7	1.10E-02	1.87E-02	15	
Phenol	0.002	1.00E-01	2.00E-04	24	Low rank of indicator score; low frequency of detection.
2,4-Dichlorophenol	0.006	8.26E-02	4.96E-04	23	Low rank of indicator score; low frequency of detection.
Diethylphthalate	0.004	2.67E-04	1.07E-06	25	Low rank of indicator score; low frequency of detection.
Di-n-butylphthalate	0.044	3.81E-02	1.68E-03	21	Low rank of indicator score; low frequency of detection.
Antimony	0.005	4.35E+00	2.18E-02	12	Low frequency of detection; low concentration.
* Arsenic	0.57	1.80E+01	1.03E+01	1	
Barium	0.93	4.08E+00	3.79E+00	2	Below National Primary Drinking Water Regulation.
Cadmium	0.0028	4.45E+00	1.25E-02	16	Below National Primary Drinking Water Regulation.
Copper	0.0304	7.14E-01	2.17E-02	12	Below National Primary Drinking Water Regulation.
Lead	0.009	8.93E-01	8.04E-03	17	Below National Primary Drinking Water Regulation.
Mercury	0.0011	1.84E+01	2.02E-02	14	Below National Primary Drinking Water Regulation.
Nickel	0.126	4.26E+00	5.37E-01	5	One anomalous result; low frequency of detection.
Selenium	0.001	1.05E+02	1.05E-01	7	Below National Primary Drinking Water Regulation.
Silver	0.064	2.00E+01	1.28E+00	4	One anomalous result; comparable to background levels.
Vanadium	0.04	1.43E-01	5.72E-03	18	One anomalous result; comparable to background levels.
Zinc	0.516	1.07E-01	5.52E-02	8	One anomalous result; comparable to background levels.

TABLE 6-1 (Continued)
SELECTION OF INDICATOR COMPOUNDS FOR GROUND WATER
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Compounds Without Published Aqueous Oral Toxicity Constants:

Compound	Maximum Concentration (mg/l)	Rationale For Not Selecting As Indicator Compound
Chloroethane	0.005	Low frequency of detection.
Acetone	0.07	Low frequency of detection; low concentration.
4-Methyl-2-Pentanone	0.054	Low frequency of detection.
Total Xylenes	4.7	Below proposed Maximum Contaminant Level.
* Tetrahydrofuran	1.6	
Benzyl Alcohol	0.041	Low frequency of detection.
2-Methylphenol	0.13	Low frequency of detection.
4-Methylphenol	0.093	Low frequency of detection.
Isophorone	0.01	Low frequency of detection.
2,4-Dimethylphenol	0.019	Low frequency of detection.
Benzoic Acid	0.054	Low frequency of detection.
Napthalene	0.004	Low frequency of detection; low concentration.
Acenaphthene	0.001	Low frequency of detection; low concentration.
Aluminum	3.71	Generally comparable to background levels.
Calcium	258	Generally comparable to background levels.
Chromium	0.046	Below National Primary Drinking Water Regulation.
Cobalt	0.051	One anomalous result; comparable to background levels.
Iron	104	Generally comparable to background levels.
Magnesium	4.53	Generally comparable to background levels.
Manganese	8.93	Generally comparable to background levels.
Potassium	48.8	Generally comparable to background levels.
Sodium	68.8	Generally comparable to background levels.
Cyanide	0.005	Low frequency of detection; low concentration.

NOTES:

* = Selected indicator compound for ground water.

Oral toxicity constants obtained from Superfund Public Health Evaluation Manual (USEPA, 1986).
Concentrations reported in mg/l or parts per million (ppm).

TABLE 6-2
SELECTION OF INDICATOR COMPOUNDS FOR SURFACE WATER
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Rank According to Potential Carcinogenic Effects:

Compound	Maximum Concentration (mg/l)	Oral Toxicity Constant (l/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
Tetrachloroethene	0.009	8.86E-03	7.97E-05	2	Low frequency of detection; low concentration.
Trichloroethene	0.004	4.29E-03	1.72E-05	3	Low frequency of detection; low concentration.
bis(2-Ethylhexyl)phthalate	0.021	5.71E-04	1.20E-05	4	Low frequency of detection; low concentration.
Aroclor-1260	0.00099	5.71E-01	5.65E-04	1	Low concentration; probable laboratory error.

Rank According to Noncarcinogenic Effects:

Compound	Maximum Concentration (mg/l)	Oral Toxicity Constant (l/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
* 1,1-Dichloroethane	0.041	2.58E-02	1.06E-03	5	
* 1,2-Dichloroethene (total)	0.009	5.29E-02	4.76E-04	6	
1,1,1-Trichloroethane	0.015	7.33E-04	1.10E-05	9	Low rank of indicator score; low concentration.
Trichloroethene	0.004	1.05E+00	4.20E-03	3	Low frequency of detection; low concentration.
Tetrachloroethene	0.009	9.62E-03	8.66E-05	7	Low rank of indicator score; low frequency of detection.
Toluene	0.01	5.20E-03	5.20E-05	8	Low rank of indicator score; low frequency of detection.
Ethylbenzene	0.001	1.10E-02	1.10E-05	9	Low rank of indicator score; low frequency of detection.
Lead	0.0134	8.93E-01	1.20E-02	2	Below National Primary Drinking Water Regulation.
Silver	0.0871	2.00E+01	1.74E+00	1	One anomalous result; comparable to background levels.
Zinc	0.0344	1.07E-01	3.68E-03	4	Comparable to background levels.

Compounds Without Published Aqueous Oral Toxicity Constants:

Compound	Maximum Concentration (mg/l)	Rationale For Not Selecting As Indicator Compound
Tetrahydrofuran	0.004	Low frequency of detection; low concentration.
Aluminum	5.88	One anomalous result; comparable to background levels.
Calcium	13.1	One anomalous result; comparable to background levels.
Chromium	0.0202	Below National Primary Drinking Water Regulation.
Iron	3.65	One anomalous result; comparable to background levels.
Magnesium	1.97	One anomalous result; comparable to background levels.
Manganese	1.07	One anomalous result; comparable to background levels.
Potassium	5.61	One anomalous result; comparable to background levels.
Sodium	9.76	Comparable to background levels.

NOTES:

* = Selected indicator compound for surface water.

Oral toxicity constants obtained from Superfund Public Health Evaluation Manual (USEPA, 1986).
Concentrations reported in mg/l or parts per million (ppm).

TABLE 6-3
SELECTION OF INDICATOR COMPOUNDS FOR SEDIMENT
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Rank According to Potential Carcinogenic Effects:

Compound	Maximum Concentration (mg/kg)	Oral Toxicity Constant (kg/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
Trichloroethene	0.008	2.14E-07	1.71E-09	3	Low rank of indicator score; low frequency of detection.
4,4'-DDE	0.014	5.64E-06	7.90E-08	2	Low rank of indicator score; low frequency of detection.
Arsenic	60.7	2.03E-04	1.23E-02	1	One anomalous result per upstream location.

Rank According to Noncarcinogenic Effects:

Compound	Maximum Concentration (mg/kg)	Oral Toxicity Constant (kg/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
* 1,1-Dichloroethane	0.36	1.29E-06	4.64E-07	9	
1,2-Dichloroethene (total)	0.062	2.65E-06	1.64E-07	11	Low rank of indicator score; low frequency of detection.
* 1,1,1-Trichloroethane	0.064	3.67E-08	2.35E-09	13	
Trichloroethene	0.008	5.26E-05	4.21E-07	10	Low frequency of detection; low concentration.
Toluene	0.01	2.60E-07	2.60E-09	12	Low rank of indicator score; low frequency of detection.
Di-n-butylphthalate	0.28	1.90E-06	5.32E-07	8	Low rank of indicator score.
Antimony	1.8	2.17E-04	3.91E-04	6	Comparable to background levels.
Arsenic	60.7	9.00E-04	5.46E-02	2	One anomalous result per upstream location.
Barium	448	2.04E-04	9.14E-02	1	One anomalous result; comparable to background levels.
Cadmium	3	2.23E-04	6.69E-04	5	One anomalous result; comparable to background levels.
Lead	26.9	4.66E-05	1.25E-03	3	Comparable to background levels.
Vanadium	33.4	7.14E-06	2.38E-04	7	One anomalous result; comparable to background levels.
Zinc	158	5.33E-06	8.42E-04	4	One anomalous result; comparable to background levels.

Compounds Without Published Soil Oral Toxicity Constants:

Compound	Maximum Concentration (mg/kg)	Rationale For Not Selecting As Indicator Compound
Acetone	0.39	Low frequency of detection.
Total Xylenes	0.048	Low frequency of detection; low concentration.
Benzoic Acid	0.17	Low frequency of detection.
Aluminum	7220	Comparable to background levels.
Calcium	6960	One anomalous result; comparable to background levels.
Chromium	6.3	One anomalous result; comparable to background levels.
Cobalt	73.2	One anomalous result per upstream location.
Iron	69900	One anomalous result per upstream location.
Magnesium	1030	Comparable to background levels.
Manganese	11800	One anomalous result; comparable to background levels.
Sodium	261	Comparable to background levels.
Cyanide	31.3	One anomalous result; comparable to background levels.

NOTES: * = Selected indicator compound for sediment.
Oral toxicity constants obtained from Superfund Public Health Evaluation Manual (USEPA, 1986).
Concentrations reported in mg/kg or parts per million (ppm).

TABLE 6-4
SELECTION OF INDICATOR COMPOUNDS FOR SOIL
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Rank According to Potential Carcinogenic Effects:

Compound	Maximum Concentration (mg/kg)	Oral Toxicity Constant (kg/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
Chloroform	0.003	2.81E-06	8.43E-09	5	Low rank of indicator score; low frequency of detection.
Tetrachloroethene	0.058	4.43E-07	2.57E-08	3	Low rank of indicator score; low frequency of detection.
Trichloroethene	0.032	5.14E-07	1.64E-08	4	Low rank of indicator score; low frequency of detection.
bis(2-Ethylhexyl)phthalate	1.3	2.86E-08	3.72E-08	2	Low rank of indicator score.
Arsenic	15	2.03E-04	3.05E-03	1	Generally comparable to background levels.

Rank According to Noncarcinogenic Effects:

Compound	Maximum Concentrationn (mg/kg)	Oral Toxicity Constant (kg/mg)	Indicator Score	Rank	Rationale For Not Selecting As Indicator Compound
Methylene Chloride	8.7	4.60E-08	4.00E-07	13	Low rank of indicator score.
Carbon Disulfide	0.001	2.12E-05	2.12E-08	15	Low rank of indicator score; low frequency of detection.
1,1-Dichloroethane	0.003	1.29E-06	3.87E-09	18	Low rank of indicator score; low frequency of detection.
1,2-Dichloroethene (total)	0.004	2.65E-06	1.06E-08	17	Low rank of indicator score; low frequency of detection.
1,1,1-Trichloroethane	0.3	3.67E-08	1.10E-08	16	Low rank of indicator score.
Trichloroethene	0.032	5.26E-05	1.68E-06	12	Low rank of indicator score; low concentration.
Tetrachloroethene	0.058	4.81E-07	2.79E-08	14	Low rank of indicator score; low concentration.
* Toluene	47	2.60E-07	1.22E-05	11	
* Ethylbenzene	140	5.52E-07	7.73E-05	10	
Antimony	38	2.17E-04	8.25E-03	2	Generally comparable to background levels.
Arsenic	15	9.00E-04	1.35E-02	1	Generally comparable to background levels.
Barium	37	2.04E-04	7.55E-03	4	Comparable to background levels.
Copper	5.5	3.57E-05	1.96E-04	8	Comparable to background levels.
Lead	181	4.46E-05	8.07E-03	3	Below CERCLA action level.
Nickel	18	2.13E-04	3.83E-03	6	Comparable to background levels.
Silver	5	1.00E-03	5.00E-03	5	Comparable to background levels.
Vanadium	23	7.14E-06	1.64E-04	9	Comparable to background levels.
Zinc	51	5.33E-06	2.72E-04	7	Comparable to background levels.

TABLE 6-4 (Continued)
SELECTION OF INDICATOR COMPOUNDS FOR SOIL
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Compounds Without Published Soil Oral Toxicity Constants:

Compound	Maximum Concentration (mg/kg)	Rationale For Not Selecting As Indicator Compound
Acetone	2.3	Low frequency of detection.
4-Methyl-2-Pentanone	0.31	Low frequency of detection.
* Total Xylenes	270	
2-Methylphenol	0.44	Low frequency of detection; low concentration.
4-Methylphenol	0.15	Low frequency of detection; low concentration.
2,4-Dimethylphenol	0.081	Low frequency of detection; low concentration.
Butylbenzylphthalate	0.04	Low frequency of detection; low concentration.
Benzoic Acid	0.39	Low frequency of detection.
Napthalene	0.076	Low frequency of detection; low concentration.
Aluminum	8990	Comparable to background levels.
Calcium	887	One anomalous result; comparable to background levels.
Chromium	23	One anomalous result; comparable to background levels.
Cobalt	8.8	One anomalous result; comparable to background levels.
Iron	13400	One anomalous result; comparable to background levels.
Magnesium	3960	Comparable to background levels.
Manganese	141	Comparable to background levels.
Potassium	2580	Comparable to background levels.
Sodium	173	Comparable to background levels.

NOTES:

* = Selected indicator compound for soil.

Oral toxicity constants obtained from Superfund Public Health Evaluation Manual (USEPA, 1986).
Concentrations reported in mg/kg or parts per million (ppm).

TABLE 6-5

MAXIMUM CONTAMINANT LEVELS, NATIONAL PRIMARY DRINKING WATER REGULATIONS, AND STATE HEALTH ADVISORIES FOR DETECTED COMPOUNDS MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Indicator Compounds (Aqueous media)	Criterion (ug/1)
1,2-Dichloroethene (total)	70 MP
Ethylbenzene	700 MP
Toluene	2000 MP
1,1,1-Trichloroethane	200 MF
Trichloroethene	5 MF
Vinyl Chloride	2 MF
Arsenic	50 NF
1,1-Dichloroethane	81 H
Tetrahydrofuran	154 H
Non-Indicator Compounds (Aqueous Media)	
1,1-Dichloroethene	7 MF
gamma-BHC (Lindane)	4 NF
Antimony	5 MT
Barium	1000 NF
Cadmium	10 NF
Chromium	50 NF
Copper	1300 MP
Lead	50 NF
Mercury	2 NF
Nickel	100 MT
Selenium	10 NF
Silver	50 NF
Total Xylenes	10000 MP

Notes:

1. Maximum Contaminant Level (MCL) values and National Primary Drinking Water Regulations (NPDWRs) derived from EPA Drinking Water Regulations and Health Advisories, April 1990 (USEPA, 1990a); New Hampshire Division of Public Health Services (NHDPHS) criteria represent total exposure from 2 liters of drinking water per day plus an additional exposure of four times greater from an additional exposure pathway, and are derived from "Relevant Health Standards and Criteria for Contaminants in Drinking Water" (NHDPHS, 1990).

2. Criteria were listed using the following hierarchy: final MCL, final NPDWR, proposed MCL or NHDPHS criterion. Letters associated with each criterion indicate whether the MCL (M) or NPDWR (N) is final (F), proposed (P) or tentative (T). New Hampshire Health Standards are indicated (H).

TABLE 6-6

DOSE-RESPONSE DATA FOR INDICATOR COMPOUNDS[1]
MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Chemical	Chronic Oral Reference Dose (mg/kg/day)	Oral Cancer Potency Factor $(mg/kg/day)^{-1}$	EPA Weight-of-Evidence Classification[3]
Arsenic	---	1.8E+00[4]	A
1,1-Dichloroethane	--	9.1E-02[2]	C
1,2-Dichloroethene (total)	2.0E-02[5]	---	D
Ethylbenzene	1.0E-01	---	D
Tetrahydrofuran	2.0E-03[6]	---	Not Rated
Toluene	3.0E-01	---	D
1,1,1-Trichloroethane	9.0E-02	---	D
Trichloroethene	---	1.1E-02[2]	B2
Vinyl Chloride	---	2.3E+00[2]	A
Total Xylenes	2.0E+00	---	D

Notes:

1. Dose-response data derived from EPA Integrated Risk Information System (IRIS) Database, March, 1990, unless otherwise indicated.
2. Dose-response data obtained from Health Effects Assessment Summary Tables (HEAST), March, 1990 (USEPA, 1990b).
3. EPA weight-of-evidence categories are as follows: A, human carcinogen; B1, probable human carcinogen, limited evidence of carcinogenicity in humans; B2, probable human carcinogen, sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans; C, possible human carcinogen; and D, not classified.
4. Calculated from recommended unit risk of 5.0E-05/ug/l (IRIS, 1990).
5. Value presented represents the trans-1,2-dichloroethene isomer.
6. Based on the provisional oral RfD derived by EPA Environmental Criteria and Assessment Office, May 3, 1990, which includes an uncertainty factor of 10,000 (Hurst, 1990).

TABLE 6-7
SUMMARY OF EXPOSURE PATHWAYS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation	Rationale for Selection or Exclusion
Current On-Site Land Use:			
None	Ingestion of ground water	No	No on-site residential wells
Older Children	Dermal contact with and incidental ingestion of contaminated soils in former drum disposal and drum staging areas	Yes	Children are believed to enter the site area
Children	Dermal contact with and incidental ingestion of surface water or sediments from Brook A or the drainage swale	Yes	Children are believed to enter the site area
None	Inhalation of contaminants in air	No	No detected exposure

TABLE 6-7 (continued)
SUMMARY OF EXPOSURE PATHWAYS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation	Rationale for Selection or Exclusion
Current Off-Site Land Use:			
None	Ingestion, inhalation, or dermal contact with ground water from local private wells	No	No apparent off-site migration of contaminants
None	Dermal contact with or incidental ingestion of off-site surface water or sediment	No	Off-site levels are at background concentrations
None	Inhalation of contaminants in air	No	No exposure pathway
None	Consumption of contaminated fish	No	No apparent off-site migration of contaminants

TABLE 6-7 (continued)
SUMMARY OF EXPOSURE PATHWAYS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation	Rationale for Selection or Exclusion
Future On-Site Land Use:			
Residents	Ingestion, inhalation, and dermal contact with ground water from private wells installed along the southern border of the Mottolo property (Area 2)	Yes	Southern areas of the site may be developed
Residents	Ingestion, inhalation, and dermal contact with ground water from private wells installed within the former drum disposal area on the Mottolo property (Area 1)	Yes	Areas within the former drum disposal area may be developed
Children and Adults	Direct contact with and incidental ingestion of contaminated soils in former drum disposal and drum staging areas	Yes	Children may play in newly developed site areas

TABLE 6-7 (continued)
SUMMARY OF EXPOSURE PATHWAYS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation	Rationale for Selection or Exclusion
Future On-Site Land Use (continued):			
Children	Dermal contact with and incidental ingestion of surface water or sediment from Brook A	Yes	Children may play in newly developed site areas
Residents	Inhalation of contaminants in air	No	Likely to be a very short-term potential pathway
Future Off-Site Land Use:			
Residents	Ingestion, inhalation, or dermal contact with ground water from private wells installed within lots south of the Mottolo property (Area 2)	Yes	Areas south of the site may be developed
None	Ingestion of ground water from other off-site areas	No	No apparent off-site migration of contaminants to other off-site areas

TABLE 6-7 (continued)
SUMMARY OF EXPOSURE PATHWAYS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation	Rationale for Selection or Exclusion
Future Off-Site Land Use (continued):			
None	Dermal contact with or incidental ingestion of off-site surface water or sediment	No	Off-site levels are at background concentrations
None	Consumption of contaminated fish	No	No apparent off-site migration of contaminants
None	Inhalation of contaminants in air	No	No exposure pathway

TABLE 6-8
EXPOSURE POINT CONCENTRATIONS FOR INDICATOR COMPOUNDS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

	Ground Water (Area 1 Bedrock Wells)			Ground Water (Area 2 Bedrock Wells)		
Indicator Compound	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)
Arsenic	0.028	0.036	0.14	----	----	----
1,1-Dichloroethane	0.032	0.044	0.22	----	----	----
1,2-Dichloroethene (total)	0.19	0.28	1.9	0.029	0.048	0.11
Ethylbenzene	0.016	0.022	0.052	----	----	----
Tetrahydrofuran	0.2	0.3	1.6	0.076	0.094	0.23
Toluene	0.033	0.065	0.44	----	----	----
1,1,1-Trichloroethane	0.003	0.003	0.003	----	----	----
Trichloroethene	0.032	0.042	0.19	0.3	0.63	1.1
Vinyl Chloride	0.029	0.055	0.33	----	----	----

NOTE:

---- = Not detected.

TABLE 6-8 (continued)*
EXPOSURE POINT CONCENTRATIONS FOR INDICATOR COMPOUNDS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

	Ground Water (Area 1 Overburden Wells)			Ground Water (Area 2 Overburden Wells)		
Indicator Compound	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)
Arsenic	0.19	0.23	0.57	----	----	----
1,1-Dichloroethane	0.25	0.52	1.3	----	----	----
1,2-Dichloroethene (total)	0.67	0.82	4.7	0.001	0.001	0.001
Ethylbenzene	0.26	0.41	1.7	----	----	----
Tetrahydrofuran	0.043	0.067	0.22	0.005	0.006	0.009
Toluene	1.2	2.4	9.2	----	----	----
1,1,1-Trichloroethane	0.16	0.37	2.1	----	----	----
Trichloroethene	0.15	0.42	2.4	0.036	0.042	0.12
Vinyl Chloride	0.04	0.08	0.36	----	----	----

NOTE:

---- = Not detected.

TABLE 6-8 (continued)
EXPOSURE POINT CONCENTRATIONS FOR INDICATOR COMPOUNDS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Surface Water

Indicator Compound	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)
1,1-Dichloroethane	0.007	0.009	0.041
1,2-Dichloroethene (total)	0.003	0.004	0.009

Sediment

Indicator Compound	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)
1,1-Dichloroethane	0.068	0.36	0.36
1,1,1-Trichloroethane	0.019	0.064	0.064

NOTE:

---- = Not detected.

TABLE 6-8 (continued)
EXPOSURE POINT CONCENTRATIONS FOR INDICATOR COMPOUNDS

MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE

Soil

Indicator Compound	Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)
Ethylbenzene	9.2	44	140
Toluene	4.1	19	47
Total Xylenes	22	103	270

NOTE:

---- = Not detected.

TABLE 6-9
CURRENT CONDITIONS - EXPOSURE DOSES FOR SITE SOIL

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Soil Contact Rate (mg/day)	Exposure Duration (years)	Dermal Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	9.2	44	140	500	10	0.5	30	10	1.05E-06	1.00E-05	3.20E-05
Toluene	4.1	19	47	500	10	0.5	30	10	4.68E-07	4.34E-06	1.07E-05
Total Xylenes	22	103	270	500	10	0.5	30	10	2.51E-06	2.35E-05	6.16E-05

INCIDENTAL INGESTION:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Ingestion Rate (mg/day)	Exposure Duration (years)	Gastric Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	9.2	44	140	100	10	1	30	10	4.20E-07	4.02E-06	1.28E-05
Toluene	4.1	19	47	100	10	1	30	10	1.87E-07	1.74E-06	4.29E-06
Total Xylenes	22	103	270	100	10	1	30	10	1.00E-06	9.41E-06	2.47E-05

NOTES: Dermal contact and incidental ingestion scenarios are based on an exposure frequency of 5 days per year for average exposure dose, and 10 days per year for maximum plausible and maximum calculated exposure doses.

TABLE 6-10
CURRENT CONDITIONS - EXPOSURE DOSES FOR SITE SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.007	0.009	0.041	0.2	10	30	70	1.83E-07	5.87E-07	2.67E-06
1,2-Dichloroethene (Total)	0.003	0.004	0.009	0.2	10	30	10	5.48E-07	1.83E-06	4.11E-06

DERMAL CONTACT:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Permeability Constant (cm/hr)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.007	0.009	0.041	8.00E-04	10	30	70	4500	2	7.31E-10	2.35E-09	1.07E-08
1,2-Dichloroethene (Total)	0.003	0.004	0.009	8.00E-04	10	30	10	4500	2	2.19E-09	7.31E-09	1.64E-08

NOTE: Ingestion and dermal contact scenarios are based on an exposure frequency of 10 days per year for average exposure dose and 25 days per year for maximum plausible and maximum calculated exposure doses.

TABLE 6-11
CURRENT CONDITIONS - EXPOSURE DOSES FOR SITE SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Soil Contact Rate (mg/day)	Exposure Duration (years)	Dermal Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.068	0.36	0.36	500	10	0.5	30	70	2.22E-09	2.94E-08	2.94E-08
1,1,1-Trichloroethane	0.019	0.064	0.064	500	10	0.5	30	10	4.34E-09	3.65E-08	3.65E-08

INCIDENTAL INGESTION:
Ages 6-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Ingestion Rate (mg/day)	Exposure Duration (years)	Gastric Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.068	0.36	0.36	100	10	1	30	70	8.87E-10	1.17E-08	1.17E-08
1,1,1-Trichloroethane	0.019	0.064	0.064	100	10	1	30	10	1.74E-09	1.46E-08	1.46E-08

NOTES: Dermal contact and incidental ingestion scenarios are based on an exposure frequency of 10 days per year for average exposure dose, and 25 days per year for maximum plausible and maximum calculated exposure doses.

TABLE 6-12(A)
FUTURE CONDITIONS - EXPOSURE DOSES FOR AREA 2 BEDROCK GROUND WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

BEDROCK
GROUND WATER INGESTION:

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,2-Dichloroethene (Total)	0.029	0.048	0.11	2	70	70	70	8.29E-04	1.37E-03	3.14E-03
Tetrahydrofuran	0.076	0.094	0.23	2	70	70	70	2.17E-03	2.69E-03	6.57E-03
Trichloroethene	0.3	0.63	1.1	2	70	70	70	8.57E-03	1.80E-02	3.14E-02

BEDROCK
GROUND WATER DERMAL CONTACT:

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Dermal Permeability Constant (mg/L)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,2-Dichloroethene (Total)	0.029	0.048	0.11	8.00E-04	70	70	70	19400	0.17	1.09E-06	1.81E-06	4.15E-06
Tetrahydrofuran	0.076	0.094	0.23	8.00E-04	70	70	70	19400	0.17	2.86E-06	3.54E-06	8.67E-06
Trichloroethene	0.3	0.63	1.1	8.00E-04	70	70	70	19400	0.17	1.13E-05	2.37E-05	4.15E-05

NOTE: Ingestion and dermal contact scenarios are based on an exposure frequency of 365 days/year.

TABLE 6-12(B)
FUTURE CONDITIONS - EXPOSURE DOSES FOR AREA 2 OVERBURDEN GROUND WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

OVERBURDEN
GROUND WATER INGESTION:

	CONCENTRATIONS			EXPOSURE PARAMETERS				EXPOSURE DOSES		
Compound	Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,2-Dichloroethene (Total)	0.001	0.001	0.001	2	70	70	70	2.86E-05	2.86E-05	2.86E-05
Tetrahydrofuran	0.005	0.006	0.009	2	70	70	70	1.43E-04	1.71E-04	2.57E-04
Trichloroethene	0.036	0.042	0.12	2	70	70	70	1.03E-03	1.20E-03	3.43E-03

OVERBURDEN
GROUND WATER DERMAL CONTACT:

	CONCENTRATIONS			EXPOSURE PARAMETERS						EXPOSURE DOSES		
Compound	Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	Dermal Permeability Constant (mg/L)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,2-Dichloroethene (Total)	0.001	0.001	0.001	8.00E-04	70	70	70	19400	0.17	3.77E-08	3.77E-08	3.77E-08
Tetrahydrofuran	0.005	0.006	0.009	8.00E-04	70	70	70	19400	0.17	1.88E-07	2.26E-07	3.39E-07
Trichloroethene	0.036	0.042	0.12	8.00E-04	70	70	70	19400	0.17	1.36E-06	1.58E-06	4.52E-06

NOTE: Ingestion and dermal contact scenarios are based on an exposure frequency of 365 days/year.

TABLE 6-13(A)
FUTURE CONDITIONS - EXPOSURE DOSES FOR AREA 1 BEDROCK GROUND WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

BEDROCK
GROUND WATER INGESTION:

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Arsenic	0.028	0.036	0.14	2	70	70	70	8.00E-04	1.03E-03	4.00E-03
1,1-Dichloroethane	0.032	0.044	0.22	2	70	70	70	9.14E-04	1.26E-03	6.29E-03
1,2-Dichloroethene (Total)	0.19	0.28	1.9	2	70	70	70	5.43E-03	8.00E-03	5.43E-02
Ethylbenzene	0.016	0.022	0.052	2	70	70	70	4.57E-04	6.29E-04	1.49E-03
Tetrahydrofuran	0.2	0.3	1.6	2	70	70	70	5.71E-03	8.57E-03	4.57E-02
Toluene	0.033	0.065	0.44	2	70	70	70	9.43E-04	1.86E-03	1.26E-02
1,1,1-Trichloroethane	0.003	0.003	0.003	2	70	70	70	8.57E-05	8.57E-05	8.57E-05
Trichloroethene	0.032	0.042	0.19	2	70	70	70	9.14E-04	1.20E-03	5.43E-03
Vinyl Chloride	0.029	0.055	0.33	2	70	70	70	8.29E-04	1.57E-03	9.43E-03

BEDROCK
GROUND WATER DERMAL CONTACT:

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Dermal Permeability Constant (mg/L)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.032	0.044	0.22	8.00E-04	70	70	70	19400	0.17	1.21E-06	1.66E-06	8.29E-06
1,2-Dichloroethene (Total)	0.19	0.28	1.9	8.00E-04	70	70	70	19400	0.17	7.16E-06	1.06E-05	7.16E-05
Ethylbenzene	0.016	0.022	0.052	1.00E-03	70	70	70	19400	0.17	7.54E-07	1.04E-06	2.45E-06
Tetrahydrofuran	0.2	0.3	1.6	8.00E-04	70	70	70	19400	0.17	7.54E-06	1.13E-05	6.03E-05
Toluene	0.033	0.065	0.44	9.00E-04	70	70	70	19400	0.17	1.40E-06	2.76E-06	1.87E-05
1,1,1-Trichloroethane	0.003	0.003	0.003	8.00E-04	70	70	70	19400	0.17	1.13E-07	1.13E-07	1.13E-07
Trichloroethene	0.032	0.042	0.19	8.00E-04	70	70	70	19400	0.17	1.21E-06	1.58E-06	7.16E-06
Vinyl Chloride	0.029	0.055	0.33	8.00E-04	70	70	70	19400	0.17	1.09E-06	2.07E-06	1.24E-05

NOTES: Ingestion and dermal contact scenarios are based on an exposure frequency of 365 days/year.
Based on the kinetics of arsenic, no transdermal absorption of this indicator compound was assumed for the dermal contact scenario.

TABLE 6-13(B)
FUTURE CONDITIONS - EXPOSURE DOSES FOR AREA 1 OVERBURDEN GROUND WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

OVERBURDEN
GROUND WATER INGESTION:

	CONCENTRATIONS			EXPOSURE PARAMETERS				EXPOSURE DOSES		
Compound	Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Arsenic	0.19	0.23	0.57	2	70	70	70	5.43E-03	6.57E-03	1.63E-02
1,1-Dichloroethane	0.25	0.52	1.3	2	70	70	70	7.14E-03	1.49E-02	3.71E-02
1,2-Dichloroethene (Total)	0.67	0.82	4.7	2	70	70	70	1.91E-02	2.34E-02	1.34E-01
Ethylbenzene	0.26	0.41	1.7	2	70	70	70	7.43E-03	1.17E-02	4.86E-02
Tetrahydrofuran	0.043	0.067	0.22	2	70	70	70	1.23E-03	1.91E-03	6.29E-03
Toluene	1.2	2.4	9.2	2	70	70	70	3.43E-02	6.86E-02	2.63E-01
1,1,1-Trichloroethane	0.16	0.37	2.1	2	70	70	70	4.57E-03	1.06E-02	6.00E-02
Trichloroethene	0.15	0.42	2.4	2	70	70	70	4.29E-03	1.20E-02	6.86E-02
Vinyl Chloride	0.04	0.08	0.36	2	70	70	70	1.14E-03	2.29E-03	1.03E-02

OVERBURDEN
GROUND WATER DERMAL CONTACT:

	CONCENTRATIONS			EXPOSURE PARAMETERS						EXPOSURE DOSES		
Compound	Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	Dermal Permeability Constant (mg/L)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.25	0.52	1.3	8.00E-04	70	70	70	19400	0.17	9.42E-06	1.96E-05	4.90E-05
1,2-Dichloroethene (Total)	0.67	0.82	4.7	8.00E-04	70	70	70	19400	0.17	2.53E-05	3.09E-05	1.77E-04
Ethylbenzene	0.26	0.41	1.7	1.00E-03	70	70	70	19400	0.17	1.22E-05	1.93E-05	8.01E-05
Tetrahydrofuran	0.043	0.067	0.22	8.00E-04	70	70	70	19400	0.17	1.62E-06	2.53E-06	8.29E-06
Toluene	1.2	2.4	9.2	9.00E-04	70	70	70	19400	0.17	5.09E-05	1.02E-04	3.90E-04
1,1,1-Trichloroethane	0.16	0.37	2.1	8.00E-04	70	70	70	19400	0.17	6.03E-06	1.39E-05	7.92E-05
Trichloroethene	0.15	0.42	2.4	8.00E-04	70	70	70	19400	0.17	5.65E-06	1.58E-05	9.05E-05
Vinyl Chloride	0.04	0.08	0.36	8.00E-04	70	70	70	19400	0.17	1.51E-06	3.02E-06	1.36E-05

NOTES: Ingestion and dermal contact scenarios are based on an exposure frequency of 365 days/year. Based on the kinetics of arsenic, no transdermal absorption of this indicator compound was assumed for the dermal contact scenario.

September 28, 1990
Balsam Project 6185/818:ra2

TABLE 6-14
FUTURE CONDITIONS - EXPOSURE DOSES FOR SITE SOIL

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT:
Ages 1-70

	CONCENTRATIONS			EXPOSURE PARAMETERS					EXPOSURE DOSES		
Compound	Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	Soil Contact Rate (mg/day)	Exposure Duration (years)	Dermal Absorption Factor	Body Weight (kg)	Number of Years Averaged	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	9.2	44	140	500	70	0.5	70	70	7.02E-06	6.89E-05	2.19E-04
Toluene	4.1	19	47	500	70	0.5	70	70	3.13E-06	2.97E-05	7.36E-05
Total Xylenes	22	103	270	500	70	0.5	70	70	1.68E-05	1.61E-04	4.23E-04

NOTES: Exposure frequencies of 78 times per year are applied to average dermal contact scenarios, and exposure frequencies of 160 times per year are applied to maximum plausible and maximum maximum calculated exposure scenarios.

TABLE 6-14 (Continued)
FUTURE CONDITIONS - EXPOSURE DOSES FOR SITE SOIL

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INCIDENTAL INGESTION:
Ages 1-6

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Ingestion Rate (mg/day)	Exposure Duration (years)	Gastric Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES (ages 1-6) Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	9.2	44	140	200	6	1	10	6	3.93E-05	3.86E-04	1.23E-03
Toluene	4.1	19	47	200	6	1	10	6	1.75E-05	1.67E-04	4.12E-04
Total Xylenes	22	103	270	200	6	1	10	6	9.40E-05	9.03E-04	2.37E-03

INCIDENTAL INGESTION:
Ages 7-70

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Ingestion Rate (mg/day)	Exposure Duration (years)	Gastric Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES (ages 7-70) Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	9.2	44	140	100	64	1	70	64	2.81E-06	2.76E-05	8.77E-05
Toluene	4.1	19	47	100	64	1	70	64	1.25E-06	1.19E-05	2.94E-05
Total Xylenes	22	103	270	100	64	1	70	64	6.72E-06	6.45E-05	1.69E-04

LIFETIME EXPOSURE DOSES FOR
INCIDENTAL INGESTION:

Compound	Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
Ethylbenzene	4.16E-06	4.08E-05	1.30E-04
Toluene	1.85E-06	1.76E-05	4.36E-05
Total Xylenes	9.94E-06	9.55E-05	2.50E-04

NOTES: Soil ingestion scenario is divided into two age groups, ages 1-6 and ages 7-70. Exposure frequencies of 78 times per year are applied to average ingestion scenarios, and exposure frequencies of 160 times per year are applied to maximum plausible and maximum calculated scenarios. Lifetime exposure doses for incidental ingestion are combined values based on the ratio of exposure doses for the age groups 1-6 and 7-70.

TABLE 6-15
FUTURE CONDITIONS - EXPOSURE DOSES FOR SITE SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION:
Ages 1-15

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Ingestion Rate (L/day)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.007	0.009	0.041	0.2	15	20	70	8.22E-07	2.64E-06	1.20E-05
1,2-Dichloroethene (Total)	0.003	0.004	0.009	0.2	15	20	15	1.64E-06	5.48E-06	1.23E-05

DERMAL CONTACT:
Ages 1-15

Compound	CONCENTRATIONS Average (mg/L)	Maximum Plausible (mg/L)	Maximum Detected (mg/L)	EXPOSURE PARAMETERS Permeability Constant (cm/hr)	Exposure Duration (years)	Body Weight (kg)	Number of Years Averaged	Skin Surface Area (cm2)	Exposure Time (hours/day)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.007	0.009	0.041	8.00E-04	15	20	70	4500	2	2.96E-08	9.51E-08	4.33E-07
1,2-Dichloroethene (Total)	0.003	0.004	0.009	8.00E-04	15	20	15	4500	2	5.92E-08	1.97E-07	4.44E-07

NOTE: Ingestion and dermal contact scenarios are based on an exposure frequency of 20 days per year for average exposure dose and 50 days per year for maximum plausible and maximum calculated exposure doses.

TABLE 6-16
FUTURE CONDITIONS - EXPOSURE DOSES FOR SITE SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT:
Ages 1-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Soil Contact Rate (mg/day)	Exposure Duration (years)	Dermal Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.068	0.36	0.36	500	15	0.5	20	70	9.98E-09	1.32E-07	1.32E-07
1,1,1-Trichloroethane	0.019	0.064	0.064	500	15	0.5	20	15	1.30E-08	1.10E-07	1.10E-07

INCIDENTAL INGESTION:
Ages 1-15

Compound	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE PARAMETERS Ingestion Rate (mg/day)	Exposure Duration (years)	Gastric Absorption Factor	Body Weight (kg)	Number of Years Averaged	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)
1,1-Dichloroethane	0.068	0.36	0.36	100	15	1	20	70	3.99E-09	5.28E-08	5.28E-08
1,1,1-Trichloroethane	0.019	0.064	0.064	100	15	1	20	15	5.21E-09	4.38E-08	4.38E-08

NOTES: Dermal contact and incidental ingestion scenarios are based on an exposure frequency of 20 days per year for average exposure dose, and 50 days per year for maximum plausible and maximum calculated exposure doses.

TABLE 6-17
CURRENT RISK ASSOCIATED WITH DERMAL CONTACT AND INCIDENTAL INGESTION OF SITE SOIL

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
Ethylbenzene	liver	1.0E-01	9.2	44	140	1.1E-06	1.0E-05	3.2E-05	1.0E-05	1.0E-04	3.2E-04
Toluene	nervous system	3.0E-01	4.1	19	47	4.7E-07	4.3E-06	1.1E-05	1.6E-06	1.4E-05	3.6E-05
Total Xylenes	nervous system	2.0E+00	22	103	270	2.5E-06	2.4E-05	6.2E-05	1.3E-06	1.2E-05	3.1E-05
							TOTAL:		1E-05	1E-04	4E-04

INCIDENTAL INGESTION

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
Ethylbenzene	liver	1.0E-01	9.2	44	140	4.2E-07	4.0E-06	1.3E-05	4.2E-06	4.0E-05	1.3E-04
Toluene	nervous system	3.0E-01	4.1	19	47	1.9E-07	1.7E-06	4.3E-06	6.2E-07	5.8E-06	1.4E-05
Total Xylenes	nervous system	2.0E+00	22	103	270	1.0E-06	9.4E-06	2.5E-05	5.0E-07	4.7E-06	1.2E-05
							TOTAL:		5E-06	5E-05	1E-04

NOTE: The selected indicator compounds for soils have not been designated as carcinogens by EPA and were therefore not evaluated for carcinogenic risk.

TABLE 6-18
CURRENT RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF SITE SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INCIDENTAL INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.007	0.009	0.041	1.8E-07	5.9E-07	2.7E-06	1.7E-08	5.3E-08	2.4E-07
							TOTAL:		2E-08	5E-08	2E-07

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.003	0.004	0.009	5.5E-07	1.8E-06	4.1E-06	2.7E-05	9.2E-05	2.1E-04
							TOTAL:		3E-05	9E-05	2E-04

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.007	0.009	0.041	7.3E-10	2.4E-09	1.1E-08	6.7E-11	2.1E-10	9.7E-10
							TOTAL:		7E-11	2E-10	1E-09

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.003	0.004	0.009	2.2E-09	7.3E-09	1.6E-08	1.1E-07	3.7E-07	8.2E-07
							TOTAL:		1E-07	4E-07	8E-07

TABLE 6-19
CURRENT RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF SITE SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INCIDENTAL INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.068	0.36	0.36	2.2E-09	2.9E-09	2.9E-09	2.0E-10	2.7E-10	2.7E-10
							TOTAL:		2E-10	3E-10	3E-10

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,1,1-Trichloroethane	liver	9.0E-02	0.019	0.064	0.064	4.3E-09	3.7E-08	3.7E-08	4.8E-08	4.1E-07	4.1E-07
							TOTAL:		5E-08	4E-07	4E-07

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.068	0.36	0.36	8.9E-10	1.2E-08	1.2E-08	8.1E-11	1.1E-09	1.1E-09
							TOTAL:		8E-11	1E-09	1E-09

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,1,1-Trichloroethane	liver	9.0E-02	0.019	0.064	0.064	1.7E-09	1.5E-08	1.5E-08	1.9E-08	1.6E-07	1.6E-07
							TOTAL:		2E-08	2E-07	2E-07

TABLE 6-20(A)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 2 BEDROCK

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Trichloroethene	B2	1.1E-02	0.3	0.63	1.1	8.6E-03	1.8E-02	3.1E-02	9.4E-05	2.0E-04	3.5E-04
							TOTAL:		9E-05	2E-04	3E-04

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.029	0.048	0.11	8.3E-04	1.4E-03	3.1E-03	4.1E-02	6.9E-02	1.6E-01
Tetrahydrofuran	liver	2.0E-03	0.076	0.094	0.23	2.2E-03	2.7E-03	6.6E-03	1.1E+00	1.3E+00	3.3E+00
							TOTAL:		1E+00	1E+00	3E+00

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Trichloroethene	B2	1.1E-02	0.3	0.63	1.1	1.1E-05	2.4E-05	4.2E-05	1.2E-07	2.6E-07	4.6E-07
							TOTAL:		1E-07	3E-07	5E-07

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.029	0.048	0.11	1.1E-06	1.8E-06	4.2E-06	5.5E-05	9.1E-05	2.1E-04
Tetrahydrofuran	liver	2.0E-03	0.076	0.094	0.23	2.9E-06	3.5E-06	8.7E-06	1.4E-03	1.8E-03	4.3E-03
							TOTAL:		1E-03	2E-03	5E-03

TABLE 6-20(B)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 2 OVERBURDEN

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Trichloroethene	B2	1.1E-02	0.036	0.042	0.12	1.0E-03	1.2E-03	3.4E-03	1.1E-05	1.3E-05	3.8E-05
						TOTAL:			1E-05	1E-05	4E-05

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.001	0.001	0.001	2.9E-05	2.9E-05	2.9E-05	1.4E-03	1.4E-03	1.4E-03
Tetrahydrofuran	liver	2.0E-03	0.005	0.006	0.009	1.4E-04	1.7E-04	2.6E-04	7.2E-02	8.6E-02	1.3E-01
						TOTAL:			7E-02	9E-02	1E-01

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Trichloroethene	B2	1.1E-02	0.036	0.042	0.12	1.4E-06	1.6E-06	4.5E-06	1.5E-08	1.7E-08	5.0E-08
						TOTAL:			1E-08	2E-08	5E-08

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.001	0.001	0.001	3.8E-08	3.8E-08	3.8E-08	1.9E-06	1.9E-06	1.9E-06
Tetrahydrofuran	liver	2.0E-03	0.005	0.006	0.009	1.9E-07	2.3E-07	3.4E-07	9.4E-05	1.1E-04	1.7E-04
						TOTAL:			1E-04	1E-04	2E-04

TABLE 6-21(A)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 1 BEDROCK

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Arsenic	A	1.8E+00	0.028	0.036	0.14	8.0E-04	1.0E-03	4.0E-03	1.4E-03	1.9E-03	7.2E-03
1,1-Dichloroethane	C	9.1E-02	0.032	0.044	0.22	9.1E-04	1.3E-03	6.3E-03	8.3E-05	1.1E-04	5.7E-04
Trichloroethene	B2	1.1E-02	0.032	0.042	0.19	9.1E-04	1.2E-03	5.4E-03	1.0E-05	1.3E-05	6.0E-05
Vinyl Chloride	A	2.3E+00	0.029	0.055	0.33	8.3E-04	1.6E-03	9.4E-03	1.9E-03	3.6E-03	2.2E-02
							TOTAL:		3E-03	6E-03	3E-02

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.19	0.28	1.9	5.4E-03	8.0E-03	5.4E-02	2.7E-01	4.0E-01	2.7E+00
Ethylbenzene	liver	1.0E-01	0.016	0.022	0.052	4.6E-04	6.3E-04	1.5E-03	4.6E-03	6.3E-03	1.5E-02
Tetrahydrofuran	liver	2.0E-03	0.2	0.3	1.6	5.7E-03	8.6E-03	4.6E-02	2.9E+00	4.3E+00	2.3E+01
Toluene	nervous system	3.0E-01	0.033	0.065	0.44	9.4E-04	1.9E-03	1.3E-02	3.1E-03	6.2E-03	4.2E-02
1,1,1-Trichloroethane	liver	9.0E-02	0.003	0.003	0.003	8.6E-05	8.6E-05	8.6E-05	9.5E-04	9.5E-04	9.5E-04
							TOTAL:		3E+00	5E+00	3E+01

TABLE 6-21(A) (continued)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 1 BEDROCK

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.032	0.044	0.22	1.2E-06	1.7E-06	8.3E-06	1.1E-07	1.5E-07	7.5E-07
Trichloroethene	B2	1.1E-02	0.032	0.042	0.19	1.2E-06	1.6E-06	7.2E-06	1.3E-08	1.7E-08	7.9E-08
Vinyl Chloride	A	2.3E+00	0.029	0.055	0.33	1.1E-06	2.1E-06	1.2E-05	2.5E-06	4.8E-06	2.9E-05
							TOTAL:		3E-06	5E-06	3E-05

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.19	0.28	1.9	7.2E-06	1.1E-05	7.2E-05	3.6E-04	5.3E-04	3.6E-03
Ethylbenzene	liver	1.0E-01	0.016	0.022	0.052	7.5E-07	1.0E-06	2.5E-06	7.5E-06	1.0E-05	2.4E-05
Tetrahydrofuran	liver	2.0E-03	0.2	0.3	1.6	7.5E-06	1.1E-05	6.0E-05	3.8E-03	5.7E-03	3.0E-02
Toluene	nervous system	3.0E-01	0.033	0.065	0.44	1.4E-06	2.8E-06	1.9E-05	4.7E-06	9.2E-06	6.2E-05
1,1,1-Trichloroethane	liver	9.0E-02	0.003	0.003	0.003	1.1E-07	1.1E-07	1.1E-07	1.3E-06	1.3E-06	1.3E-06
							TOTAL:		4E-03	6E-03	3E-02

TABLE 6-21(B)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 1 OVERBURDEN

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
Arsenic	A	1.8E+00	0.19	0.23	0.57	5.4E-03	6.6E-03	1.6E-02	9.8E-03	1.2E-02	2.9E-02
1,1-Dichloroethane	C	9.1E-02	0.25	0.52	1.3	7.1E-03	1.5E-02	3.7E-02	6.5E-04	1.4E-03	3.4E-03
Trichloroethene	B2	1.1E-02	0.15	0.42	2.4	4.3E-03	1.2E-02	6.9E-02	4.7E-05	1.3E-04	7.5E-04
Vinyl Chloride	A	2.3E+00	0.04	0.08	0.36	1.1E-03	2.3E-03	1.0E-02	2.6E-03	5.3E-03	2.4E-02
							TOTAL:		1E-02	2E-02	6E-02

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.67	0.82	4.7	1.9E-02	2.3E-02	1.3E-01	9.6E-01	1.2E+00	6.7E+00
Ethylbenzene	liver	1.0E-01	0.26	0.41	1.7	7.4E-03	1.2E-02	4.9E-02	7.4E-02	1.2E-01	4.9E-01
Tetrahydrofuran	liver	2.0E-03	0.043	0.067	0.22	1.2E-03	1.9E-03	6.3E-03	6.2E-01	9.6E-01	3.1E+00
Toluene	nervous system	3.0E-01	1.2	2.4	9.2	3.4E-02	6.9E-02	2.6E-01	1.1E-01	2.3E-01	8.8E-01
1,1,1-Trichloroethane	liver	9.0E-02	0.16	0.37	2.1	4.6E-03	1.1E-02	6.0E-02	5.1E-02	1.2E-01	6.7E-01
							TOTAL:		2E+00	3E+00	1E+01

TABLE 6-21(B) (continued)
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF GROUND WATER FROM AREA 1 OVERBURDEN

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.25	0.52	1.3	9.4E-06	2.0E-06	4.9E-05	8.6E-07	1.8E-07	4.5E-06
Trichloroethene	B2	1.1E-02	0.15	0.42	2.4	5.7E-06	1.6E-05	9.1E-05	6.2E-08	1.7E-07	1.0E-06
Vinyl Chloride	A	2.3E+00	0.04	0.08	0.36	1.5E-06	3.0E-06	1.4E-05	3.5E-06	6.9E-06	3.1E-05
							TOTAL:		4E-06	7E-06	3E-05

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.67	0.82	4.7	2.5E-05	3.1E-05	1.8E-04	1.3E-03	1.5E-03	8.9E-03
Ethylbenzene	liver	1.0E-01	0.26	0.41	1.7	1.2E-05	1.9E-05	8.0E-05	1.2E-04	1.9E-04	8.0E-04
Tetrahydrofuran	liver	2.0E-03	0.043	0.067	0.22	1.6E-06	2.5E-06	8.3E-06	8.1E-04	1.3E-03	4.1E-03
Toluene	nervous system	3.0E-01	1.2	2.4	9.2	5.1E-05	1.0E-04	3.9E-04	1.7E-04	3.4E-04	1.3E-03
1,1,1-Trichloroethane	liver	9.0E-02	0.16	0.37	2.1	6.0E-06	1.4E-05	7.9E-05	6.7E-05	1.5E-04	8.8E-04
							TOTAL:		2E-03	3E-03	2E-02

TABLE 6-22
FUTURE RISK ASSOCIATED WITH DERMAL CONTACT AND INCIDENTAL INGESTION OF SITE SOIL

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

DERMAL CONTACT

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
Ethylbenzene	liver	1.0E-01	9.2	44	140	7.0E-06	6.9E-05	2.2E-04	7.0E-05	6.9E-04	2.2E-03
Toluene	liver	3.0E-01	4.1	19	47	3.1E-06	3.0E-05	7.4E-05	1.0E-05	9.9E-05	2.5E-04
Total Xylenes	liver	2.0E+00	22	103	270	1.7E-05	1.6E-04	4.2E-04	8.4E-06	8.1E-05	2.1E-04
							TOTAL:		9E-05	9E-04	3E-03

INCIDENTAL INGESTION

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/kg)	Maximum Plausible (mg/kg)	Maximum Detected (mg/kg)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
Ethylbenzene	liver	1.0E-01	9.2	44	140	4.2E-06	4.1E-05	1.3E-04	4.2E-05	4.1E-04	1.3E-03
Toluene	liver	3.0E-01	4.1	19	47	1.9E-06	1.8E-05	4.4E-05	6.2E-06	5.9E-05	1.5E-04
Total Xylenes	liver	2.0E+00	22	103	270	9.9E-06	9.6E-05	2.5E-04	5.0E-06	4.8E-05	1.3E-04
							TOTAL:		5E-05	5E-04	2E-03

NOTE: The selected indicator compounds for soils have not been designated as carcinogens by EPA and were therefore not evaluated for carcinogenic risk.

TABLE 6-23
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF SITE SURFACE WATER

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INCIDENTAL INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.007	0.009	0.041	8.2E-07	2.6E-06	1.2E-05	7.5E-08	2.4E-07	1.1E-06
							TOTAL:		7E-08	2E-07	1E-06

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.003	0.004	0.009	1.6E-06	5.5E-06	1.2E-05	8.2E-05	2.7E-04	6.2E-04
							TOTAL:		8E-05	3E-04	6E-04

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	Maximum Plausible	Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.007	0.009	0.041	3.0E-08	9.5E-08	4.3E-07	2.7E-09	8.7E-09	3.9E-08
							TOTAL:		3E-09	9E-09	4E-08

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATIONS Average (mg/l)	Maximum Plausible (mg/l)	Maximum Detected (mg/l)	EXPOSURE DOSES Average (mg/kg/day)	Maximum Plausible (mg/kg/day)	Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	Maximum Plausible	Maximum Calculated
1,2-Dichloroethene (total)	serum enzymes	2.0E-02	0.003	0.004	0.009	5.9E-08	2.0E-07	4.4E-07	3.0E-06	9.9E-06	2.2E-05
							TOTAL:		3E-06	1E-05	2E-05

TABLE 6-24
FUTURE RISK ASSOCIATED WITH INGESTION AND DERMAL CONTACT OF SITE SEDIMENT

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

INCIDENTAL INGESTION

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATION Average (mg/kg)	CONCENTRATION Maximum Plausible (mg/kg)	CONCENTRATION Maximum Detected (mg/kg)	EXPOSURE DOSE Average (mg/kg/day)	EXPOSURE DOSE Maximum Plausible (mg/kg/day)	EXPOSURE DOSE Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	LIFETIME CANCER RISK Maximum Plausible	LIFETIME CANCER RISK Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.068	0.36	0.36	1.0E-08	1.3E-07	1.3E-07	9.1E-10	1.2E-08	1.2E-08
							TOTAL:		9E-10	1E-08	1E-08

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATION Average (mg/kg)	CONCENTRATION Maximum Plausible (mg/kg)	CONCENTRATION Maximum Detected (mg/kg)	EXPOSURE DOSE Average (mg/kg/day)	EXPOSURE DOSE Maximum Plausible (mg/kg/day)	EXPOSURE DOSE Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	HAZARD INDEX Maximum Plausible	HAZARD INDEX Maximum Calculated
1,1,1-Trichloroethane	liver	9.0E-02	0.019	0.064	0.064	1.3E-08	1.1E-07	1.1E-07	1.4E-07	1.2E-06	1.2E-06
							TOTAL:		1E-07	1E-06	1E-06

DERMAL CONTACT

Lifetime Cancer Risk:

Potentially Carcinogenic Indicator Compounds	Weight of Evidence	Oral Cancer Potency Factor (mg/kg/day)-1	CONCENTRATION Average (mg/kg)	CONCENTRATION Maximum Plausible (mg/kg)	CONCENTRATION Maximum Detected (mg/kg)	EXPOSURE DOSE Average (mg/kg/day)	EXPOSURE DOSE Maximum Plausible (mg/kg/day)	EXPOSURE DOSE Maximum Calculated (mg/kg/day)	LIFETIME CANCER RISK Average	LIFETIME CANCER RISK Maximum Plausible	LIFETIME CANCER RISK Maximum Calculated
1,1-Dichloroethane	C	9.1E-02	0.068	0.36	0.36	4.0E-09	5.3E-08	5.3E-08	3.6E-10	4.8E-09	4.8E-09
							TOTAL:		4E-10	5E-09	5E-09

Noncarcinogenic Risk:

Noncarcinogenic Indicator Compounds	Endpoint of Concern	Oral Reference Dose (mg/kg/day)	CONCENTRATION Average (mg/kg)	CONCENTRATION Maximum Plausible (mg/kg)	CONCENTRATION Maximum Detected (mg/kg)	EXPOSURE DOSE Average (mg/kg/day)	EXPOSURE DOSE Maximum Plausible (mg/kg/day)	EXPOSURE DOSE Maximum Calculated (mg/kg/day)	HAZARD INDEX Average	HAZARD INDEX Maximum Plausible	HAZARD INDEX Maximum Calculated
1,1,1-Trichloroethane	liver	9.0E-02	0.019	0.064	0.064	5.2E-09	4.4E-08	4.4E-08	5.8E-08	4.9E-07	4.9E-07
							TOTAL:		6E-08	5E-07	5E-07

TABLE 6-25

TYPICAL FAUNA OF NEW ENGLAND TRANSITIONAL FORESTS

MOTTOLO SITE RI/FS
RAYMOND, NEW HAMPSHIRE

Common Name	Scientific Name
Mammals	
Gray Squirrel	Sciurus carolinensis
Red Squirrel	Tamiasciurus hudsonicus
Racoon	Procyon lotor
Virginia Opossum	Didelphis virginiana
White-Tailed Deer	Odocoileus virginianus
Red Fox	Vulpes vulpes
Deer Mouse	Peromyscus maniculatus
White-Footed Mouse	Peromyscus leucopus
Woodland Vole	Microtus pinetorum
Eastern Chipmunk	Tamias striatus
New England Cottontail	Sylvilagus transitionalis
Striped Skunk	Mephitis mephitis
Birds	
Ruffed Grouse	Bonasa umbellus
Black-Capped Chickadee	Parus atricapillus
Cedar Waxwing	Bombycilla cedrorum
Mourning Dove	Zenaida macroura
Blue Jay	Cyanocitta cristata
Northern Oriole	Icetus galbula
Northern Flicker	Colaptes auratus
Red-Tailed Hawk	Buteo jamaicensis
Warblers	Dendroica spp.
White-Breasted Nuthatch	Sitta carolinensis
Downy Woodpecker	Picoides pubescens
Reptiles and Amphibians	
Common Garter Snake	Thamnophis sirtalis
Wood Frog	Rana sylvatica
American Toad	Bufo americanus
Eastern Newt	Notophthalmus viridescens

NOTE: Based on species described in Sutton and Sutton (1986).

TABLE 6-26

AMBIENT WATER QUALITY CRITERIA FOR FRESHWATER ORGANISMS

MOTTOLO SITE RI/FS RAYMOND, NEW HAMPSHIRE

Indicator Compound	Acute (mg/l)	Chronic (mg/l)
Arsenic (III)	0.36[1]	0.19[1]
1,1-Dichloroethane	----	----
Dichloroethenes	11.6[2] (LEL)	----
Ethylbenzene	32[1] (LEL)	----
Tetrahydrofuran	----	----
Toluene	17.5[2] (LEL)	----
1,1,1-Trichloroethane	----	----
Trichloroethene	45[1] (LEL)	21.9[2]
Vinyl Chloride	----	----
Total Xylenes	----	----

NOTES:

1. Value derived from IRIS data base, March 1990.
2. Value is not included in IRIS data base; derived from "Quality Criteria for Water, 1986" (USEPA, 1987).
3. "----" indicates Ambient Water Quality Criteria (AWQC) for freshwater organisms have not been developed.
4. LEL = Lowest effect level derived from the literature. Does not represent an AWQC.

N

ACCESS ROAD

S-6
(AT PROPERTY BOUNDARY)

S-7, S-8
(IN EXETER RIVER)

MW-13D
MW-13S

S-5

APPROXIMATE AREA IN WHICH CONTAMINATED SOILS HAVE BEEN REPORTED (BASED ON SOIL BORING PROGRAM AND SOIL GAS RESULTS)

APPROXIMATE BOUNDARY AREA 1 MONITORING WELLS

APPROXIMATE BOUNDARY AREA 2 MONITORING WELLS

WELL SHED

S-4

OW-3R
MW-11D

DRAINAGE SWALE

OW-2DR
OW-2SR
OW-4DR
OW-4SR

MO-5S
MO-5DR

BROOK A

MO-2DR
MO-2S
S-3
MW-12D
MW-12S
S-9
MO-3DR
MO-3SR
S-2
MO-4S
MO-4D

MW-7S
MW-7D

MO-1

PIGGERY BUILDING

MW-20S
MW-20D
MW-8D
MW-8S
MW-21D
MW-21S

S-10

S-1

MW-9D
MW-9S

PROPERTY LINE

190 200 210 220 230 240 250

BASE MAP SOURCE:

EASTERN TOPOGRAPHICS, INC.
OSSIPEE, N.H.
AERIAL PHOTOGRAPHY
3/30/88

0 50 100 150
SCALE
(FEET)

LEGEND:

- ⊕ = OVERBURDEN WELL
- ⊕ = SHALLOW BEDROCK WELL
- O = DUG WELL
- ✳ = SURFACE WATER/ SEDIMENT SAMPLING LOCATION
- R = REPLACEMENT OF EXISTING WELL
- 230 = ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- = INTERMITTENT STREAM
- = PERENNIAL STREAM
- = CONCRETE PAD

NOTE:
BOUNDARIES INDICATE AREAS IN WHICH WELLS WERE GROUPED OR SOILS WERE EVALUATED AS POTENTIAL EXPOSURE POINTS, BUT ARE NOT MEANT TO PRECISELY DELINEATE THE EXTENT OF CONTAMINATION.

BALSAM
ENVIRONMENTAL CONSULTANTS, INC.
5 INDUSTRIAL WAY, SALEM, NH 03079

CLIENT: K.J. QUINN & COMPANY, INC.			
TITLE: APPROXIMATE POTENTIAL EXPOSURE POINT AREAS			
DATE: 7/20/90	DRAWN: S.C.S.	CHECKED: S.C.S.	PROJECT: MOTTOLO SITE RI/FS
SCALE: AS SHOWN	FILE NO: RI87	APPROVED: L.C.S.	FIGURE NO: 6-1 / PROJECT NO: 6185/818