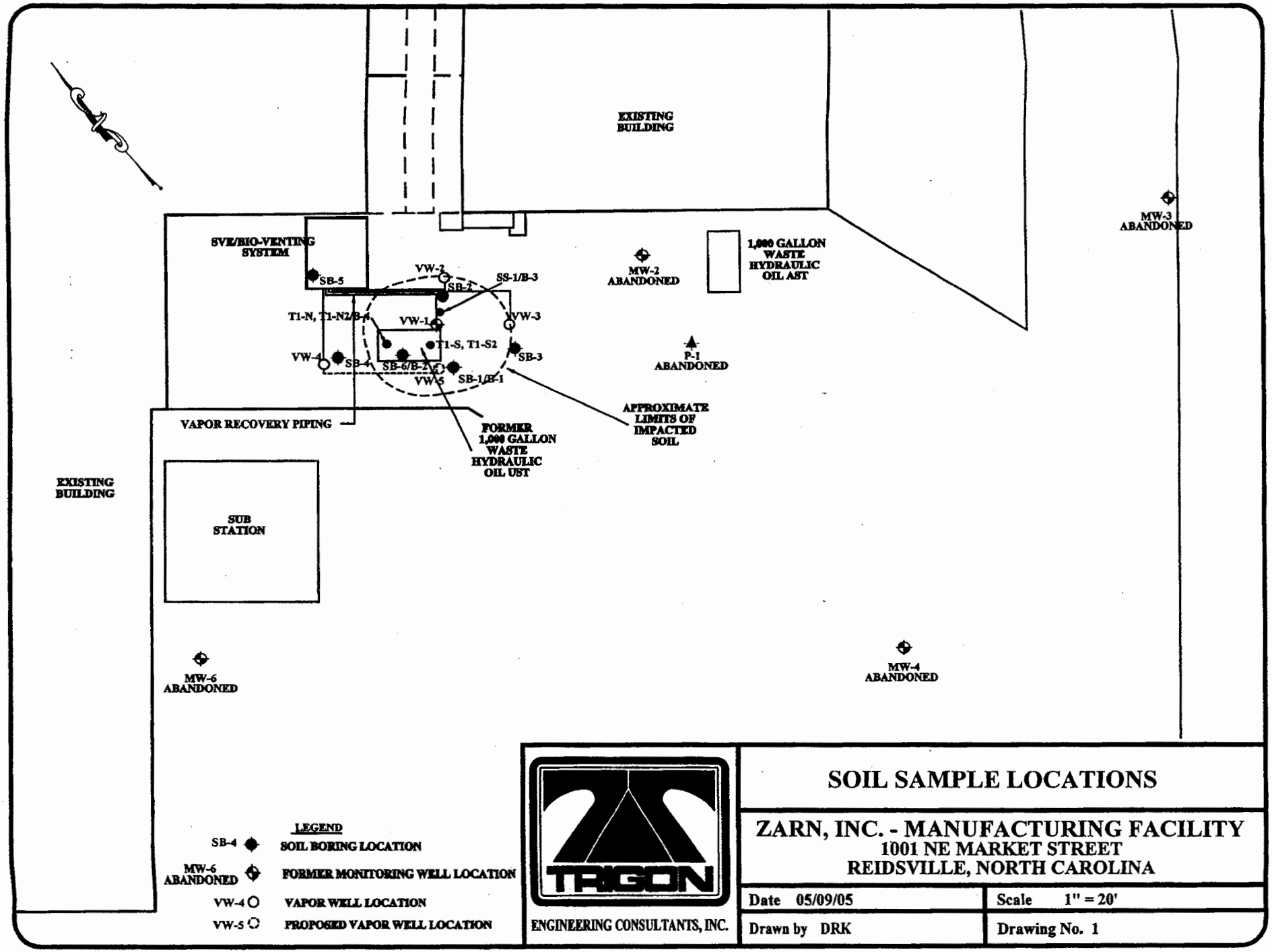
EXISTING BUILDING
SVE/BIO-VENTING SYSTEM
SB-5
VW-2
SB-2
SS-1/B-3
T1-N, T1-N2/B-4
VW-1
VW-3
T1-S, T1-S2
VW-4
SB-4
SB-6/B-2
VW-5
SB-1/B-1
SB-3
MW-2 ABANDONED
1,000 GALLON WASTE HYDRAULIC OIL AST
P-1 ABANDONED
MW-3 ABANDONED
APPROXIMATE LIMITS OF IMPACTED SOIL
VAPOR RECOVERY PIPING
FORMER 1,000 GALLON WASTE HYDRAULIC OIL UST
EXISTING BUILDING
SUB STATION
MW-6 ABANDONED
MW-4 ABANDONED
LEGEND
SB-4 SOIL BORING LOCATION
MW-6 ABANDONED FORMER MONITORING WELL LOCATION
VW-4 VAPOR WELL LOCATION
VW-5 PROPOSED VAPOR WELL LOCATION
TRIGON
ENGINEERING CONSULTANTS, INC.
SOIL SAMPLE LOCATIONS
ZARN, INC. - MANUFACTURING FACILITY
1001 NE MARKET STREET
REIDSVILLE, NORTH CAROLINA
Date 05/09/05
Scale 1" = 20'
Drawn by DRK
Drawing No. 1

TABLE 1: GROUNDWATER ANALYTICAL RESULTS

Location	EPA Methods 601 and 602* (µg/l)			MADEP EPH/VPH Methods (µg/l)				Metals (µg/l)	
Sampling Date	1,1 Dichloroethane	Tetrachloroethene	1,1,1 Trichloroethane	C_5 - C_8 Aliphatics	C_9 - C_{18} Aliphatics	C_{19} - C_{36} Aliphatics	C_9 - C_{22} Aromatics	Chromium	Lead
NCGWS	700	0.7	200	420	4,200	42,000	210	50	15
MW-1									
06/05/98	2	3	9	10	25	10,000	11	BDL	BDL
10/09/01	8.5	BDL	25	BDL	BDL	BDL	NA	NA	NA
11/19/02	4.4	BDL	19	BDL	BDL	600	BDL	NA	NA
02/25/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA
06/20/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA
MW-2									
11/24/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10/09/01	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA	NA
MW-3									
12/01/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	18	BDL
MW-4									
11/24/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-5									
11/24/98	BDL	BDL	4.8	BDL	BDL	BDL	BDL	BDL	BDL
MW-6									
11/24/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
P-1									
11/24/98	0.7	BDL	3.5	BDL	BDL	BDL	BDL	40	BDL
10/09/01	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA	NA

Notes:
* Volatile organic compound analysis by EPA Method 6210D for samples collected in 1998.
µg/l = micrograms per liter, analogous to parts per billion
BOLD - Concentration exceeds the 2L Groundwater Quality Standards
2L Standards - Title 15A North Carolina Administrative Code, Subchapter 2L Quality Standards for Class GA Groundwater
BDL = Below Laboratory Detection Limits

TABLE 2: HISTORICAL SOIL SAMPLE ANALYTICAL SUMMARY

Parameter	Analytical Results												Comparison Criteria	
	South of Former UST				**SE Wall of UST Excavation**			**East of Former UST**		**North End of UST Excavation**				
Sample ID	SB-1	SB-1	B-1	B-1	SB-6	SB-6	B-2	SS-1	B-3	T1-N2	T1-S2	B-4	Soil-to-Groundwater MSCC	Residential MSCC
Collection Depth (feet bgs)	13.5	23.5	17.5	17.5	13.0	22.0	18.0	15.0	17.0	16.0	16.0	18.0		
Collection Date	03/29/95	03/29/95	04/15/05	08/04/05	03/31/95	03/31/95	04/15/05	06/14/99	04/15/05	04/10/92	04/10/92	04/15/05		
VOCs by EPA Method 8260														
Acetone	BDL	BDL	0.91	NA	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	1564
Tetrachloroethene	BDL	0.033	BDL	NA	BDL	BDL	BDL	0.060	BDL	BDL	BDL	BDL	0.007	12
1,1,1 Trichloroethane	0.014	BDL	BDL	NA	BDL	BDL	BDL	0.145	BDL	BDL	BDL	BDL	1.50	NS
1,1-Dichloroethane	BDL	BDL	BDL	NA	BDL	BDL	BDL	0.016	BDL	BDL	BDL	BDL	4.0	1560
1,2,4-Trimethylbenzene	BDL	BDL	BDL	NA	BDL	BDL	BDL	0.009	BDL	BDL	BDL	BDL	7.0	782
2- Butanone (MEK)	BDL	BDL	0.19	NA	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.7	9385
2- Hexane	BDL	BDL	0.06	NA	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.9	625
SVOCs by EPA Method 8270 BN														
All Targeted Analytes	NA	NA	BDL	NA	NA	NA	BDL	NA	BDL	NA	NA	BDL	--	--
MADEP VPH/EPH Method														
C9 - C18 Aliphatics	NA	NA	38	110	NA	NA	BDL	2,200	NA	NA	NA	BDL	3,255	9,386
C19 - C36 Aliphatics	NA	NA	1,100	5,900	NA	NA	BDL	3,130	NA	NA	NA	BDL	#	93,860
C9 - C22 Aromatics	NA	NA	**53**	**640**	NA	NA	BDL	482	NA	NA	NA	BDL	34	469
EPA Method 9071														
Oil and Grease	41,800	141	NA	NA	22,500	166	NA	NA	NA	150,000	43,000	NA	--	--
EPA Method 3050														
Chromium	NA	NA	NA	NA	NA	NA	NA	2.12	NA	NA	NA	NA	27	47
Lead	NA	NA	NA	NA	NA	NA	NA	57.5	NA	NA	NA	NA	270	400

Notes:
Results presented in parts per million (ppm)
Feet bgs = Feet below ground surface
BN = Base neutral compounds
NA= Not Applicable
# = Considered immobile
BDL = Below detection limits
MSCC = Maximum soil contaminant concentration
Bold denotes concentration exceeds the Soil-to-Groundwater MSCC
NS = No Standard Established

Prepared by: GGL
Checked by: CWH

s:\0420\projects\2005\133~\tables.xls

4.0 GROUNDWATER SAMPLING

On June 20, 2003, groundwater samples were collected from monitoring well MW-1. The well was purged of three well volumes of water with a disposable bailer. After allowing the well to recharge, groundwater samples were collected and placed in laboratory prepared containers. The groundwater samples were maintained on ice until delivery to Pace Analytical Laboratories in Huntersville, North Carolina.

Groundwater samples collected from monitoring well MW-1 were analyzed for volatile organic compounds by EPA Methods 601 and 602 plus xylenes and volatile and extractable petroleum hydrocarbons by the Massachusetts Department of Environmental Protection Methods. Groundwater sample analytical results indicate that no targeted analytes were detected. Historical groundwater analytical results are summarized in Table 1. A copy of the complete laboratory report is included in Appendix A.

5.0 SVE/BIO-VENTING SYSTEM MONITORING

On June 20, 2003, exhaust from the remediation system was sampled and measurements were recorded from the remediation system. The information was collected to quantify the emissions and evaluate the effectiveness of the system. Table 2 summarizes the recorded system data including the vacuum at each venting well, the vacuum at the blower, the flow rate, and temperature of the system exhaust.

A sample of the system exhaust was recovered through a sampling port for analysis of volatile organic compounds by Method TO-14. In addition, the sample was analyzed for total hydrocarbons. The sample was collected with a laboratory supplied vacuum canister and sent to Pace Analytical Laboratories in Huntersville, North Carolina. Dichlorodifluoromethane, chloromethane, trichlorofluoromethane, methylene chloride, chloroform, 1,1,1-trichloroethane, and tetrachloroethene concentrations were detected above the method detection limits. Results of the laboratory analysis are summarized in Table 3. The complete laboratory report is included in Appendix B.