Tyson's Site
Montgomery County, Pennsylvania

Off-Site Operable Unit Remedial Investigation Report

Volume II
Appendices

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Prepared For
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AR300370

APPENDIX A

RESULTS FROM MICHAEL BAKER, JR., REPORT

TABLE III-2

TYSON'S DUMP SITE RI RESULTS
METALS AND TOX CONCENTRATIONS IN SOIL SAMPLES COLLECTED NORTH OF RR TRACKS

Sample I.D.	840034	840035	840036	840037	840038
Date Sampled	1/8/84	1/8/84	1/8/84	1/8/84	1/8/84
Parameter					
Aluminum	8,820	10,100	5,860	6,700	5,240
Chromium	12	14	6.8	9.3	7.5
Barium	92	82	110	94	71
Beryllium	0.61	0.69	0.54	0.54	0.42
Cobalt	6.7	10	3.3	4.9	3.0
Copper	25	13	30	15	15
Iron	12,900	14,000	7,180	10,800	10,800
Nickel	9.7	12	6.0	6.6	4.8
Manganese	252	566	235	59	33
Arsenic	13	10	6.0	9.4	7.4
Antimony	<1	<1	<1	<1	<1
Selenium	1.2	<1	1.1	<1	<1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	57	57	41	51	50
Vanadium	16	16	11	18	14
Silver	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	18	21	13	13	6.9
Cadmium	0.76	1.3	0.78	1.0	0.72
Lead	69	60	61	59	47
TOX	<100	<100	<100	<100	<100

Note: Results in mg/kg dry weight.

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TABLE III-3

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED NORTH OF RR TRACKS

Sample I.D.	840034	840035	840036	840037	840038
Date Sampled	1/8/84	1/8/84	1/8/84	1/8/84	1/8/84
Benzoic Acid	--	8,300	7,000	25,000	6,800
Fluoranthene	LT	--	--	LT	LT
N-Nitrosodiphenylamine	560	--	LT	--	--
Phenanthrene	LT	--	--	--	LT
Pyrene	--	--	--	--	680
Methylene Chloride	6	5	8	110	18
Fluorotrichloromethane	11	8	11	6	5.3
Tetrachloroethene	--	--	--	LT	--
4,4'-DDE	--	--	18 PN	11 PN	41 PN
4,4'-DDD	--	--	180 PN	47 PN	150 PN
PCB-1242	93 PN	--	--	--	--

Note: Results in µg/kg dry weight.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
PN - Presence not confirmed by GC/MS.
-- - Below detection limit.

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED NORTH OF RR TRACKS

Sample I.D.		840034	840035	840036	840037	840038
Date Sampled		1/8/84	1/8/84	1/8/84	1/8/84	1/8/84
VOLATILE SCAN						
CAS #	Compound					
96-18-4	Propane,1,2,3-trichloro-	18*	--	12.8*	464*	30*
EXTRACTABLE SCAN						
CAS #	Compound					
630-06-8	Hexatriacontane	1,800*	--	--	1,500*	--
108-88-3	~~Benzene,methyl-~~	--	--	390*	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	3,500*	--	1,200
96-18-4	Propane,1,2,3-trichloro-	--	--	1,800*	5,900*	3,500
124-07-2	~~Octanoicacid-~~	--	--	710*	--	--

Note: Results in µg/kg dry weight.

* or isomer
-- Not identified in sample or library spectrum computer match less than 80% purity.

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TABLE III-5

TYSON'S DUMP SITE RI RESULTS
METALS AND TOX CONCENTRATIONS IN SOIL SAMPLES COLLECTED ADJACENT TO SITE

Sample I.D.	840019	840020	840021	840022	840023	840032	840033	840150	840152	840153	840154	840156
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	2/27/84	2/28/84	2/28/84	2/28/84	2/28/84
Parameter												
Aluminum	6,060	3,450	8,080	8,910	5,680	10,100	4,550	5,360	4,690	6,970	7,800	4,700
Chromium	6.5	2.0	7.6	6.2	21	8.8	7.5	5.5	4.5	5.0	6.0	3.5
Barium	47	37	56	36	60	204	102	40	60	45	50	40
Beryllium	0.36	<0.25	0.39	0.35	0.64	0.90	0.78	0.25	0.50	0.25	0.5	0.25
Cobalt	3.4	<2.5	3.3	3.5	8.9	4.5	5.6	2.5	2.5	2.5	5.0	2.5
Copper	100	<2.5	8.8	<2.5	100	10	46	25	5.0	2.5	5.0	10.0
Iron	5,150	2,520	7,350	5,010	49,900	8,590	11,200	4,790	2,900	3,660	4,780	2,360
Nickel	6.5	5.5	6.7	6.6	19	7.9	9.5	8.0	4.0	6.0	6.0	4.0
Manganese	131	33	130	70	251	800	164	128	121	87	101	116
Arsenic	7.6	4.0	11	12	7.0	14	7.6	3.9	3.3	4.5	3.6	3.5
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	1.2	<1	<1	<1	<1	0.3	0.2	<0.1	<0.1	<0.1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	18	4.0	99	12	50	55	49	33.5	24.5	14	15.5	14.5
Vanadium	<10	<10	<10	<10	11	17	<10	<10	<10	<10	<10	<10
Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	INV	INV	INV	INV	INV
Tin	15	7.8	20	23	<1	25	7.4	NDB	NDB	NDB	NDB	NDB
Cadmium	0.37	0.30	0.58	0.47	3.5	0.77	0.80	0.2	0.1	<0.05	<0.05	0.05
Lead	23	9.3	48	26	55	63	95	37	29	5.7	6.8	12
TOX	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100

Note: Results in mg/kg dry weight.

NDB - Not detected due to laboratory blank correction.
INV - Invalid data, see Appendix D.

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TABLE III-6

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED ADJACENT TO SITE

Sample I.D.	840019	840020	840021	840022	840023	840032	840033	840150	840152	840153	840154	840156
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	2/27/84	2/28/84	2/28/84	2/28/84	2/28/84
Benzoic Acid	--	--	--	--	--	--	--	INV	INV	INV	INV	INV
Fluoranthene	--	--	--	--	1,900	--	--	49	--	--	--	--
Naphthalene	--	--	--	--	960	--	--	--	--	--	--	--
Bis (2-Ethylhexyl) Phthalate	--	--	--	--	--	--	LT	470	300	--	--	--
Di-n-butyl Phthalate	--	--	--	--	--	--	--	--	770 BG	NDB	NDB	290
Diethyl Phthalate	--	--	--	--	--	--	LT	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	LT	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	LT	--	--	--	--	--	--	--
Chrysene	--	--	--	--	670	--	--	--	--	--	--	--
Anthracene	--	--	--	--	580	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	1,800	--	LT	--	--	--	--	--
Pyrene	--	--	--	--	960	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	670	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--		--	--	--	--	--	--	--
Methylene Chloride	19	9	7	3.9 BG	65 BG	LT	7	INV	INV	INV	INV	INV
Fluorotrichloromethane	LT	--	LT	LT	3.1	8	5	INV	INV	INV	INV	INV
Trichloroethene	--	--	--	--	LT	--	--	INV	INV	INV	INV	INV
Dieldrin	--	--	--	--	--	--	--	1.8	--	0.5K	--	--
Chlordane	--	--	--	--	--	--	--	5 PN	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	10 PN	--	--	--	4.5 PN
4,4'-DDE	--	--	--	--	--	--	--	3.5	0.78	0.5K	1.1 PN	4.2 PN

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TABLE III-6

- Continued -

Sample I.D.	840019	840020	840021	840022	840023	840032	840033	840150	840152	840153	840154	840156
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	2/27/84	2/28/84	2/28/84	2/28/84	2/28/84
4,4'-DDD	--	--	--	--	--	--	--	7.2 PN	--	--	--	3.5 PN
Endosulfan I	--	--	--	--	--	--	--	1.0 PN	--	--	--	1.3 PN
PCB-1254	--	--	--	--	--	--	--	4.4	--	12K	12K, PN	10K, PN
PCB-1260	--	--	--	--	130 PN	--	--	--	--	--	--	--
Beta-BHC	--	--	--	--	--	--	--	1.4	4.8 PN	1.1 PN	1.1 PN	--
Gamma-BHC	--	--	--	--	--	--	--	--	1.0 PN	--	--	--

Note: Results in µg/kg dry weight.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
BG - The conc. in the blank was greater than one half of the method detection limit and was less than or equal to one half the conc. detected in the sample; the conc. in the blank was subtracted from the sample value.
PN - Pesticide or PCB cannot be confirmed by GC/MS.
NDB - Not detected due to laboratory blank correction.
K - Actual value is less than value given.
INV - Invalid data, see Appendix D.
-- - Below detection limit.

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TABLE III-7

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED ADJACENT TO SITE

Sample I.D.		840019	840020	840021	840022	840023	840032	840033	840150	840152	840153	840154	840156
Date Sampled		1/7/84	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	2/27/84	2/28/84	2/28/84	2/28/84	2/28/84
VOLATILE SCAN													
CAS #	Compound												
96-18-4	Propane,1,2,3-trichloro-	--	--	17*	--	4.3	--	--	65	--	--	--	--
108-87-2	Cyclohexane,methyl-	--	--	--	--	3.5	--	--	--	--	--	--	--
EXTRACTABLE SCAN													
CAS #	Compound												
96-18-4	Propane,1,2,3-trichloro-	--	--	3,600*	--	7,900*	--	1,600	1,800	--	--	--	--
112-92-5	1-Octadecanol	--	--	980*	--	--	--	--	--	--	--	--	--
108-88-3	Benzene,methyl-	--	--	--	--	930	--	--	--	--	--	--	--
127-18-4	Ethene,tetrachloro-	--	--	--	--	530	--	--	--	--	--	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	--	--	1,800*	--	1,000	--	--	--	--	--
91-57-6	Naphthalene,2-methyl-	--	--	--	--	500*	--	--	--	--	--	--	--
57-10-3	Hexadecanoic acid	--	--	--	--	--	480	--	--	--	--	--	--
121-33-5	Benzaldehyde,4-hydroxy-3-methoxy-	--	--	--	--	--	--	--	1,700	--	--	--	--
134-96-3	Benzaldehyde,4-hydroxy-3,5-dimethoxy-	--	--	--	--	--	--	--	2,000	--	--	--	--
930-68-7	2-Cyclopenten-1-one	--	--	--	--	--	--	--	--	--	--	760	910

Note: Results in µg/kg dry weight.

* or isomer
-- Not identified in sample or library spectrum computer match less than 80% purity.

TABLE III-8

TYSON'S DUMP SITE RI RESULTS
METALS AND TOX CONCENTRATIONS IN SOIL SAMPLES COLLECTED ON SITE

Sample I.D.	840024	840025	840026	840027	840028	840029	840030	840031	840155
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	1/8/84	1/8/84	2/28/84
Parameter									
Aluminum	4,420	7,520	4,550	4,930	4,460	5,860	10,500	8,500	4,720
Chromium	4.5	6.8	3.0	16	6.4	7.3	13	8.5	7.0
Barium	50	33	27	51	37	39	276	70	100
Beryllium	0.37	0.41	<0.25	0.35	0.30	0.35	2.4	0.54	0.75
Cobalt	2.8	3.2	2.5	2.5	<2.5	2.5	7.7	4.2	2.5
Copper	24	46	<2.5	246	284	257	13	5.6	107
Iron	3,560	6,390	2,520	4,680	3,060	3,940	11,500	9,050	3,440
Nickel	6.1	8.0	6.1	5.9	7.8	7.3	16	6.3	10
Manganese	70	66	68	73	41	43	143	231	61.5
Arsenic	5.3	5.4	5.8	5.5	5.4	6.4	7.0	12	2.9
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	1.1	<1	1.4	<1	<1	1.2	<0.1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	19	27	8.2	72	122	111	27	24	40
Vanadium	<10	<10	<10	<10	<10	<10	16	12	<10
Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	<0.1	<0.1	<0.1	1.2	0.55	1.2	<0.1	<0.1	INV
Tin	10	19	12	13	11	15	24	19	NDB
Cadmium	0.55	0.50	0.32	0.54	0.50	0.64	0.62	0.66	0.09
Lead	17	28	13	53	31	34	32	35	12
TOX	<100	<100	<100	<100	306	106	<100	<100	<100

Note: Results in mg/kg dry weight.

NDB – Not detected due to laboratory blank correction.
INV – Invalid data, see Appendix D.

TABLE III-9

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED ON SITE

Sample I.D.	840024	840025	840026	840027	840028	840029	840030	840031	840155
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	1/8/84	1/8/84	2/28/84
2,4-Dimethylphenol	--	--	540	--	--	--	--	--	INV
Phenol	--	--	LT	--	LT	--	--	--	INV
2-Methylphenol	--	--	LT	--	6,700	920	--	--	INV
4-Methylphenol	--	--	500	--	--	--	--	--	INV
1,2,4-Trichlorobenzene	--	--	--	--	200,000	210,000	--	--	1,200	
1,2-Dichlorobenzene	--	--	--	--	120,000	96,000	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	200
1,4-Dichlorobenzene	--	--	--	--	LT	LT	--	--	--
Naphthalene	--	--	--	--	5,600	4,400	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	8,400	--	--	--	--
Bis (2-Ethylhexyl) Phthalate	--	--	--	42,000	46,000	42,000	--	--	6,500
Di-n-butyl Phthalate	--	--	--	8,300	290,000	310,000	--	--	4,600
Aniline	--	--	--	--	6,700	--	--	--	3,400
Chlorobenzene	--	--	--	--	--	22	--	--	INV
Ethylbenzene	--	--	--	--	LT	120	--	--	INV
Methylene Chloride	8 BG	12 BG	6 BG	110 BG	2,200	NDB	LT	13	INV
Trichlorofluoromethane	5.3	3.6	--	4.9	--	--	--	3.2	INV
Tetrachloroethene	--	LT	--	LT	--	48	--	--	INV
Toluene	--	--	--	11	LT	145 BG	--	--	INV
o-Xylene	--	--	--	5.6	17	1,000	--	--	INV
Aldrin	--	--	--	--	--	--	--	--	5.3 PN
Dieldrin	--	--	--	--	--	--	--	--	5.6 PN
4,4'-DDE	--	--	--	--	--	--	--	--	3.3
4,4'-DDD	--	--	--	--	--	--	--	--	16 PN

TABLE III-9

- Continued -

Sample I.D.	840024	840025	840026	840027	840028	840029	840030	840031	840155
Date Sampled	1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	1/8/84	1/8/84	2/28/84
Beta - BHC	--	--	--	--	--	--	--	--	15 PN
Delta - BHC	--	--	--	--	--	--	--	--	12 PN
PCB - 1254	--	--	--	--	--	--	--	--	81 PN

Note: Results in µg/kg dry weight.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
BG - The conc. in the blank was greater than one half of the method detection limit and was less than or equal to one half the conc. detected in the sample; the conc. in the blank was subtracted from the sample value.
NDB - Not detected due to laboratory blank correction.
PN - Pesticide or PCB cannot be confirmed by GC/MS.
K - Actual value is less than value given.
INV - Invalid data, see Appendix D.
-- - Below detection limit.

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TABLE III-10

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SOIL SAMPLES COLLECTED ON SITE

Sample I.D.		840024	840025	840026	840027	840028	840029	840030	840031	840155
Date Sampled		1/7/84	1/7/84	1/7/84	1/7/84	1/8/84	1/8/84	1/8/84	1/8/84	2/28/84
VOLATILE SCAN										
CAS #	Compound									
96-18-4	Propane,1,2,3-trichloro-	8.4	120	2.5*	150	14,000*	430	--	--	--
625-31-0	~~4-Penten-2-ol~~	--	--	--	6.3	--	--	--	--	--
107-31-3	~~Formicacid,methylester~~	--	--	--	21	--	--	--	--	--
60-29-7	~~Ethane,1,1'-oxybis-~~	--	--	--	3.5	--	--	--	--	--
108-87-2	Cyclohexane,methyl-	--	--	--	7.1	--	--	--	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	--	4.3	--	880*	--	--	--
106-42-3	Benzene, 1,4-dimethyl-	--	--	--	--	--	--	--	--	9.6
EXTRACTABLE SCAN										
CAS #	Compound									
108-38-3	Benzene,1,3-dimethyl-	--	1100*	--	44,000*	840,000*	470,000*	--	--	--
88-99-3	~~1,2-Benzenedicarboxylicacid~~	--	--	2,300	--	--	--	--	--	--
100-41-4	Benzene,ethyl-	--	--	--	6,600*	110,000	84,000*	--	--	--
108-88-3	Benzene,methyl-	--	--	--	--	140,000	110,000*	--	--	--
96-18-4	Propane,1,2,3-trichloro-	--	--	--	--	320,000*	230,000*	--	--	--
57-10-3	Hexadecanoicacid	--	--	--	--	170,000*	--	--	--	--
92-39-7	10H-Phenothiazine,2-chloro-	--	--	--	--	--	--	--	--	8,000
127-18-4	Ethene,tetrachloro-	--	--	--	--	--	20,000	--	--	--
106-42-3	Benzene,1,4-dimethyl-	--	--	--	--	--	--	--	--	8,200
94-59-7	~~1,3-Benzodioxole,5-(2-propenyl)-~~	--	--	--	--	--	--	--	1,000*	--

Note: Results in µg/kg dry weight.

* or isomer
-- Not identified in sample or library spectrum computer match less than 80 percent purity.

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TABLE III-11

TYSON'S DUMP SITE RI RESULTS
CONSTITUENTS IN SURFACE WATER SAMPLES

Sample I.D.	840043	840045	840047	840049	840051	840053 (Dup)	840055	840057	840059	840061	840063	840065	840067	840069	840071	840073
Date Sampled	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84
Parameter																
Aluminum	226	252	<200	<200	<200	<200	357	409	264	248	241	270	257	243	854	659
Chromium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Barium	140	105	120	<100	<100	<100	<100	119	<100	<100	<100	<100	<100	<100	112	107
Beryllium	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Copper	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Iron	78	507	128	100	281	279	1,510	319	118	1,690	200	14,200	376	280	662	456
Nickel	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
Manganese	<10	59	26	21	42	42	148	<10	<10	184	18	2,280	252	228	20	17
Arsenic	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Antimony	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Selenium	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	15	13	13	40	71	65	61	50	30	48	50	22	28	26	<10	34
Vanadium	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Silver	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tin	<20	<20	<20	<20	<20	<20	<20	<20	21	23	23	<20	30	26	<20	25
Cadmium	2.0	28	25	28	1.3	2.4	<1	<1	2.3	<1	27	2.3	10	<1	<1	26
Lead	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	8.3	6.5	<5	5.5	<5	<5
TOC	<5	443	425	17	14	<5	2,640	<5	393	2,290	400	154	125	<5	<5	<5
TOC (Dup)	5.3	336	507	24	13	<5	2,420	<5	347	2,160	443	160	124	<5	5	<5
Oil & Grease	<1,000	1,430	1,390	1,960	<1,000	<1,000	<1,000	1,200	<1,000	<1,000	3060	<1,000	<1,000	1,880	<1,000	1,440
pH (SU)	7.6	6.7	6.0	7.5	6.9	—	7.6	7.6	7.7	6.8	7.6	7.1	6.8	7.0	7.2	7.2
Temperature (°C)	2	8	10	4	4	—	3	5	0	5	1	3	4	4	4	4
Specific Conductance (umhos/cm @ 25°C)	770	660	560	360	360	—	420	630	585	510	660	590	690	730	405	405

Note: Results in µg/L unless otherwise noted.

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TABLE III-12

TYSON'S DUMP SITE RI RESULTS
RSL ORGANIC COMPOUNDS IN SURFACE WATER SAMPLES

Sample I.D.	840043	840045	840047	840049	840051	840053	840055	840057	840059	840061	840063	840065	840067	840069	840071	840073
Date Sampled	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84
1,2,4-Trichlorobenzene	--	--	--	--	--	LT	--	--	--	26	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	LT	--	--	--	33	--	--	--	--	--	--
Di-n-Octyl Phthalate	--	--	--	--	--	LT	--	--	42	--	--	--	--	LT	--	--
Diethyl Phthalate	--	--	--	--	--	--	--	LT	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	5.6	--	--	--	--	7	--	--	--	--
Chloroform	--	--	LT	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Trans-Dichloroethene	--	--	--	--	--	--	-	--	--	--	--	LT	--	--	--	--
Methylene Chloride	LT	--	--	--	--	--	LT	LT	LT	LT	LT	LT	5	LT	--	LT
Tetrachloroethene	--	12	7.7	--	--	--	11	--	--	9.4	LT	--	--	--	--	--
Toluene	--	--	--	--	--	LT	60	--	--	6.8	--	--	--	--	--	--
Trichloroethene	--	16	9.0	--	--	--	10	--	--	8.6	--	LT	--	--	--	--
Acetone	--	--	--	--	--	130	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-Pentanone	--	--	--	--	--	--	LT	--	--	--	--	--	--	--	--	--
o-Xylene	LT	7.7	--	--	LT	5.3	190	--	--	120	5.8	LT	6.7	--	--	--

Note: Results in µg/l.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).

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TABLE III-13

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SURFACE WATER SAMPLES

Sample I.D.		840043	840045	840047	840049	840051	840053	840055	840057	840059	840061	840063	840065	840067	840069	840071	840073
Date Sampled		1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84
VOLATILE SCAN																	
CAS #	Compound																
96-18-4	Propane,1,2,3-trichloro-	—	530*	170*	14*	26	21	1,700*	—	330*	910*	520*	6*	180*	7*	—	—
115-07-1	1-Propene	—	—	—	—	—	—	12*	—	—	31	—	28	—	—	—	—
16136-84-8	1-Propene,1-chloro-,(Z)-	—	—	—	—	—	—	33*	—	—	35	—	—	—	—	—	—
557-98-2	1-Propene,2-chloro-	—	—	—	—	—	—	—	—	—	—	—	6	—	—	—	—
557-40-4	1-Propene,3,3'-oxybis-	—	—	—	—	—	—	—	—	—	—	—	9	—	—	—	—
EXTRACTABLE SCAN																	
CAS #	Compound																
96-18-4	Propane,1,2,3-trichloro-	—	930	180*	—	—	2,600*	—	—	250*	—	300*	—	50*	—	—	—
108-10-1	2-Pentanone,4-methyl-	—	—	—	—	—	120*	—	—	—	—	—	—	—	—	—	—
108-11-2	3-Pentanol,4-methyl-	—	—	—	—	—	36*	—	—	—	160*	—	—	—	—	—	—
108-98-3	Benzene,1,3-dimethyl-	—	—	—	—	—	190*	—	—	—	700*	—	—	—	—	—	—
616-23-9	1-Propanol,2,3-dichloro-	—	—	—	—	—	75*	—	—	—	400*	—	—	—	—	—	—
111-36-7	Ethane,1,1'-oxybis\2-ethoxy-	—	—	—	—	—	730*	—	—	—	660*	—	—	—	—	—	—
105-89-8	Oxisone,(chloromethyl)-	—	—	—	—	—	—	—	—	—	400*	—	—	—	—	—	—
100-88-2	Benzene,methyl-	—	—	—	—	—	160*	—	—	—	330*	—	—	—	—	—	—
612-22-4	Urea,tetramethyl-	—	—	—	—	—	—	—	—	—	71*	—	—	—	—	—	—

Note: Results in µg/l

* or Isomer

-- Not identified in sample or library spectrum computer match less than 80 percent purity.

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TABLE III-14

TYSON'S DUMP SITE RI RESULTS
CONSTITUENTS IN SEDIMENT SAMPLES

Sample I.D.	840044	840046	840048	840050	840052	840054	840056	840058	840151	840060	840062	840064	840066	840068	840070	840072	840074
Date Sampled	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	2/28/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84
Parameter																	
Aluminum	1,840	1,830	4,030	3,400	4,790	3,480	7,550	1,920	2,580	7,640	2,120	3,770	1,680	5,980	6,110	2,760	2,940
Chromium	2.1	9.7	4.4	5.4	8.0	6.6	30	2.1	2.5	21	4.2	6.2	5.1	23	24	2.8	3.1
Barium	34	64	55	31	82	73	67	17	45	188	89	112	73	62	66	48	45
Beryllium	<0.25	0.46	1.1	0.36	0.72	0.63	0.88	<0.25	<0.25	0.89	0.69	0.38	<0.25	0.75	0.83	0.35	0.32
Cobalt	<2.5	3.6	3.1	3.1	6.8	6.1	20	<2.5	<2.5	17	7.8	5.1	<2.5	17	20	<2.5	<2.5
Copper	<2.5	17	35	15	12	13	49	<2.5	5	32	19	23	30	38	43	3.1	3.1
Iron	2,410	9,340	7,640	6,190	15,500	9,140	19,700	1,530	2,630	14,800	14,400	5,830	6,770	9,990	10,600	3,870	3,750
Nickel	<2	6.0	3.7	4.8	7.4	6.0	23	2.6	2.0	21	7.0	6.4	5.3	22	26	2.6	2.9
Manganese	94	185	205	73	568	469	658	70	93.8	3,240	29	231	116	594	659	149	112
Arsenic	3.1	5.4	6.3	3.0	6.2	3.1	6.6	3.8	1.7	14	7.0	6.4	6.1	15	10	4.3	6.2
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	0.2	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	11	35	30	54	100	81	146	24	52	154	292	106	63	130	144	14	33
Vanadium	<10	<10	<10	<10	<10	<10	12	<10	<10	15	<10	<10	<10	10	10	<10	<10
Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	<0.1	<0.1	<0.1	<0.1	0.70	0.85	0.10	<0.1	INV	0.10	<0.1	0.10	0.16	0.10	<0.1	<0.1	<0.1
Tin	3.5	<1	7.3	7.1	5.1	5.4	14	5.3	NDB	13	<1	6.7	1.6	10	11	5.4	6.3
Cadmium	0.47	0.87	0.58	0.56	0.98	0.60	2.1	<0.05	0.1	1.9	1.5	1.2	0.75	2.2	1.9	0.26	0.40
Lead	9.5	75	25	21	32	32	69	11	17	85	23	54	58	63	76	18	17
TOC	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Oil & Grease	<100	200	<100	<100	190	280	1,500	<100	—	<100	<100	<100	340	130	150	<100	190

Note: Results in ug/kg dry weight.

INV – Invalid data, see Appendix D.

AR300386

TABLE III-15

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN SEDIMENT SAMPLES

Sample I.D.	840044	840046	840048	840050	840052	840054	840056	840058	840151	840060	840062	840064	840066	840068	840070	840072	840074
Date Sampled	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	2/20/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86
Phenol	--	--	--	--	--	--	--	--	INV	--	--	--	12,400	--	--	--	--
Benzoic Acid	--	10,000	--	--	--	--	--	--	INV	--	--	--	--	--	--	--	--
4-Methylphenol	--	--	--	--	--	--	1,000	--	INV	--	25,000	--	LT	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	LT	--
1,2,4-Trichlorobenzene	--	--	--	--	LT	160	--	--	--	--	44,000	--	1,300	LT	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	LT	--	4,000	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	1,700	LT	--	--	--
Fluoranthene	--	1,600	--	--	--	LT	LT	1,600	--	LT	--	1,000	1,600	35,000	--	--	--
Naphthalene	--	LT	--	--	--	--	--	--	--	--	--	--	1,700	--	--	--	--
N-Nitrosodiphenylamine	--	LT	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	2,600	--	--	--
Bis (2-Ethylhexyl) Phthalate	--	--	--	--	--	--	--	--	530	--	--	--	--	19,000	LT	--	--
Di-n-Butyl Phthalate	--	--	--	--	--	--	--	--	2,300	--	--	--	--	LT	--	--	--
Diethyl Phthalate	--	--	LT	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	600	--	--	--	--	LT	720	--	--	--	--	--	LT	--	--	--
Benzo(a)pyrene	--	LT	--	--	--	--	--	LT	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	1,300	--	--	--	--	--	LT	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	LT	1,000	--	--	--	--	--	--	--	--
Chrysene	--	900	--	--	--	--	LT	760	1,700	--	--	--	LT	13,000	--	--	--
Anthracene	--	LT	--	--	--	--	--	LT	--	--	--	--	--	LT	--	--	--
Benzo(ghi)perylene	--	1,900	--	--	LT	--	--	LT	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	2,300	--	--	--	--	13,000	--	--	--
Phenanthrene	--	1,100	--	--	--	--	--	720	2,100	--	--	1,200	2,500	40,000	--	--	--
Dibenzo(a,h)anthracene	--	1,000	--	--	LT	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)Pyrene	--	1,900	--	--	LT	--	--	LT	--	--	--	--	--	--	--	--	--
Pyrene	--	1,700	--	--	LT	LT	LT	1,700	2,300	LT	--	LT	1,700	34,000	--	--	--
Dibenzofuran	--	LT	--	--	--	--	--	--	--	--	--	--	LT	--	--	--	--

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TABLE III-15

- Continued -

Sample I.D.	840044	840046	840048	840050	840052	840054	840056	840058	840152	840060	840062	840064	840066	840068	840070	840072	840074
Date Sampled	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/20/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86
Chlorobenzene	--	--	--	--	--	--	--	--	INV	--	LT	--	LT	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	INV	--	65	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	26	--	INV	--	--	--	--	LT	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	INV	--	LT	--	--	--	--	--	--
Methylene Chloride	12	28	13	6.6	12	32	9	6	INV	8	41	21	45	LT	LT	LT	2.5
Fluorotrichloromethane	4.9	--	5.1	2.9	5.4	--	--	4	INV	LT	LT	6.0	8	--	--	LT	3.3
Tetrachloroethene	--	28	--	--	LT	--	LT	--	INV	--	37	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	INV	--	59	--	--	--	--	--	--
Trichloroethene	--	9.4	--	--	--	--	--	--	INV	--	30	--	LT	--	--	--	--
o-Xylene	--	--	--	--	--	--	LT	--	INV	--	330	LT	--	--	--	--	--
Chlordane	--	--	--	--	--	--	30 PN	--	--	--	--	--	--	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	--	--	--	--	1,300	1,000 PC	--	86 PN	--	--
4,4'-DDE	--	--	--	--	--	--	--	--	--	16 PN	--	510	530 PC	--	40 PN	--	--
4,4'-DDD	--	--	--	--	--	--	--	--	1,100 PN	30 PN	130 PN	1,600	2,900 PC	--	--	--	--
Beta-BHC	--	--	--	--	--	--	--	--	55 PN	--	--	--	--	--	--	--	--
PCB-1254	--	--	--	--	--	--	--	250 PN	5,200 PC	--	--	--	--	--	--	--	--
PCB-1260	--	110 PN	--	--	--	--	99 PN	--	--	--	--	--	--	190 PN	27 PN	--	--

Note: Results in µg/kg dry weight.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
PC - Pesticide or PCB confirmed by GC/MS.
PN - Pesticide or PCB cannot be confirmed by GC/MS.
NDE - Not detected due to laboratory blank correction.
INV - Invalid data, see Appendix D.
-- - Below detection limit.

AR300388

TABLE III-16

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SEDIMENT SAMPLES

Sample I.D.		860044	860046	860048	860050	860052	860054	860056	860058	860151	860060	860062	860064	860066	860068	860070	860072	860074
Date Sampled		1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	1/9/86	2/20/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86	1/10/86
VOLATILE SCAN																		
CAS #	Compound																	
78-91-1	1-Propene,2-methyl-	--	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
96-18-4	Propane,1,2,3-trichloro-	--	38	9.2*	9*	47*	16	--	--	--	23*	--	390	189*	47*	61	--	--
142-28-9	Propane,1,3-dichloro-	--	--	--	--	--	--	14.8	--	--	--	--	--	--	--	--	--	--
115-07-1	1-Propene	--	--	--	--	--	--	--	--	--	--	153	--	--	--	--	--	--
674-92-0	Dicyclopentadiene	--	--	--	--	--	--	--	--	--	--	59	--	--	--	--	--	--
106-42-3	Benzene,1,4-dimethyl-	--	--	--	--	--	--	--	--	--	--	148	--	--	--	--	--	--
EXTRACTABLE SCAN																		
CAS #	Compound																	
79-34-5	Ethane,1,1,2,2-tetrachloro-	310	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
127-18-4	Ethene,tetrachloro-	--	1,800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
108-38-3	Benzene,1,3-dimethyl-	--	560*	--	--	--	1,000*	--	--	--	--	--	6,000	50,000*	--	--	--	--
96-18-4	Propane,1,2,3-trichloro-	--	6,900*	550	--	1,500*	2,900*	2,700*	--	--	1,500*	87,000	5,300	35,000*	--	--	--	--
57-10-3	Hexadecanoic acid	--	--	--	--	--	--	--	--	--	--	300,000*	--	--	--	--	--	--
55162-61-3	Tetracosane,9,6,04-tetramethyl-	--	--	690	--	--	--	--	--	--	--	--	--	--	--	--	--	--
544-25-2	1,3,5-Cycloheptatriene	--	--	--	570	--	--	1,900*	--	--	--	--	--	--	--	--	--	--
100-41-4	Benzene,ethyl-	--	--	--	--	440*	--	--	--	--	--	--	1,000	25,000*	--	--	--	--
88-99-3	Benzenedicarboxylic acid	--	--	--	--	--	2,900*	--	--	--	--	--	--	--	--	--	--	--

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TABLE III-16

- Continued -

Sample I.D.		840044	840046	840048	840050	840052	840054	840056	840058	840151	840060	840067	840064	840066	840068	840070	840072	840074
Date Sampled		1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	1/9/84	2/28/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84	1/10/84
EXTRACTABLE SCAN																		
CAS #	Compound																	
1002-69-3	Benzene,1-chloro-	--	--	--	--	--	--	3,200*	--	--	--	--	--	--	--	--	--	--
70-55-3	Benzenesulfonamide,4-methyl-	--	--	--	--	--	--	3,700*	--	--	--	--	--	--	--	--	--	--
10544-50-0	Sulfur,mol.-[illegible]	--	--	--	--	--	--	--	--	--	--	170,000*	--	--	--	--	--	--
55401-55-3	Benzene,1-dacyl-	--	--	--	--	--	--	--	--	--	--	980,000*	--	--	--	--	--	--
108-88-3	Benzene,methyl-	--	--	--	--	--	--	--	--	--	--	--	2,500	10,000*	--	--	--	--
630-06-8	Mesotriacontane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,500*	--	--
108-90-7	Benzene,chloro-	--	--	--	--	--	--	--	--	--	--	--	--	13,000*	--	--	--	--
334-49-5	Decanoic acid	--	--	--	--	--	--	--	--	--	--	--	--	6,900*	--	--	--	--
112-95-8	Eicosane	--	--	--	--	--	--	--	--	--	--	--	--	--	25,000	--	--	--
367-12-4	2-Fluorophenol	--	--	--	--	--	--	--	--	9,300	--	--	--	--	--	--	--	--

Note: Results in µg/kg dry weight.

* or isomer

-- Not identified in sample or library spectrum computer match less than 80 percent purity.

AR300390

TABLE III-17

TYSON'S DUMP SITE RI RESULTS
CONSTITUENTS IN LEACHATE TREATMENT SYSTEM SAMPLES

Sample I.D. Location	840042 Influent	840041 Effluent
Date Sampled	1/9/84	1/6/84
Parameter		
Aluminum	314	<200
Chromium	<10	<10
Barium	119	125
Beryllium	<5	<5
Cobalt	<50	<50
Copper	<50	<50
Iron	30,400	2,050
Nickel	<40	<40
Manganese	349	272
Arsenic	<10	<10
Antimony	<20	<20
Selenium	<2	<2
Thallium	<10	<10
Zinc	825	211
Vanadium	<200	<200
Silver	<10	<10
Mercury	<0.2	<0.2
Tin	<20	<20
Cadmium	<1	14
Lead	<5	<5
TOX	8,110	13,900
TOX (Dup)	8,220	12,500
Oil & Grease	2,290	1,220
pH (SU)	5.8	6.6
Temperature (°C)	5	9
Specific Conductance (µmhos/cm @ 25°C)	630	500

Note: Results in µg/l unless otherwise noted.

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TABLE III-18

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN LEACHATE TREATMENT SYSTEM SAMPLES

Sample I.D.	840042	840041
Location	Influent	Effluent
Date Sampled	1/9/84	1/6/84
1,2,4-Trichlorobenzene	80	49
1,2-Dichlorobenzene	78	51
Aniline	74	--
Benzene	LT	--
Chlorobenzene	140	LT
Ethylbenzene	260	--
Methylene Chloride	LT	--
Tetrachloroethene	97	--
Toluene	2,400	1,000
Trichloroethene	97	--
4-Methyl-2-Pentanone	LT	--
o-Xylene	2,500	1,500
Heptachlor Epoxide	--	0.21 PN

Note: Results in µg/l.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
PN - Pesticide or PCB cannot be confirmed by GC/MS.
-- - Below detection limit.

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TABLE III-19

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN LEACHATE TREATMENT SYSTEM SAMPLES

Sample I.D.		840042	840041
Location		Influent	Effluent
Date Sampled		1/9/84	1/6/84
VOLATILE SCAN			
CAS #	Compound		
115-07-1	~~1-Propene~~	420*	1,600
16136-84-8	~~1-Propene,1-chloro-,(2)-~~	260*	--
96-18-4	Propane,1,2,3-trichloro-	8,900*	15,000
108-38-3	Benzene,1,3-dimethyl-	4,600*	--
	EXTRACTABLE SCAN		
CAS #	Compound		
106-89-8	~~Oxirane,(chloromethyl)-~~	100*	220*
108-10-1	2-Pentanone,4-methyl-	380*	240*
108-11-2	~~2-Pentanol,4-methyl-~~	130*	84*
127-18-4	~~Ethene,tetrachloro-~~	27*	--
108-90-7	~~Benzene,chloro-~~	90*	--
100-41-4	~~Benzene,ethyl-~~	440*	--
108-38-3	Benzene,1,3-dimethyl-	1,700*	520*
616-23-9	~~1-Propanol,2,3-dichloro-~~	500*	130*
632-22-4	Urea,tetramethyl-	66*	24*

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TABLE III-19

- Continued -.

Sample I.D.		840042	840041
Location		Influent	Effluent
Date Sampled		1/9/84	1/6/84
EXTRACTABLE SCAN			
CAS #	Compound		
112-36-7	Ethane,1,1'-oxybis\2-ethoxy-	460*	340*
589-18-4	Benzenemethanol,4-methyl-	27*	--
78-88-6	1-Propene,2,3-dichloro-	--	37*
108-88-3	Benzene,methyl-	--	55*

Note: Results in µg/l

* or isomer

-- Not identified in sample or library spectrum computer match less than 80 percent purity.

AR300394

TABLE III-20

TYSON'S DUMP SITE RI RESULTS
RESIDENTIAL WATER SUPPLY SAMPLES

Sample I.D.	840001	840002	840003	840004	840005	Drinking Water Standards
Location	Barnshaw Well	Nicholson Well	Jordan Well	Wallick Well	Krauss Spring	
Date Sampled	1/4/84	1/4/84	1/5/84	1/5/84	1/5/84	
Parameter						
Aluminum	<200	263	236	<200	313	—
Chromium	<10	<10	<10	<10	<10	50
Barium	192	<100	544	154	135	1,000
Beryllium	<5	<5	<5	<5	<5	—
Cobalt	<50	<50	<50	<50	<50	—
Copper	356	120	87	102	<50	1,000 (s)
Iron	<50	107	73	166	66	300 (s)
Nickel	<40	<40	<40	<40	<40	—
Manganese	<10	<10	<10	<10	<10	50 (s)
Arsenic	<10	<10	<10	<10	<10	50
Antimony	<20	<20	<20	<20	<20	—
Selenium	<2	<2	<2	<2	<2	10
Thallium	<10	<10	<10	<10	<10	—
Zinc	135	38	20	69	11	5,000 (s)
Vanadium	<200	<200	<200	<200	<200	—
Silver	<10	<10	<10	<10	<10	50
Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	2
Tin	<20	363	20	22	<20	—
Cadmium	<1	<1	<1	<1	<1	10
Lead	5.9	12	<5	6.9	<5	50
TOX	<5	44	8.3	6.4	<5	—
TOX (Dup)	<5	46	14	11	12	—
pH (SU)	5.5	5.9	6.2	5.5	6.0	6.5-8.5

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TABLE III-20

– Continued –

Sample I.D.	840001	840002	840003	840004	840005	Drinking Water Standards
Location	Barnshaw Well	Nicholson Well	Jordan Well	Wallick Well	Krauss Spring	
Date Sampled	1/4/84	1/4/84	1/5/84	1/5/84	1/5/84	
Parameter						
Temperature (°C)	12	10	12.5	9.5	8.0	
Specific Conductance (μmhos/cm @25°C)	145	250	190	155	145	
HSL Organic Compounds						
Methylene Chloride	LT	—	LT	—	2.6	

Note: No tentatively identified organic compounds detected. Results in μg/l unless otherwise noted.
LT – Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
(s) – Secondary drinking water standard.
— – Below detection limit.

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TABLE III-21

TYSON'S DUMP SITE RI RESULTS
WELL AND ELEVATION DATA SUMMARY

Well	Installed Well Depth (ft) Below Ground	Screen Length (ft)	Ground Surface Elev.	Top of Casing Elev.	Groundwater Elevation 1/4-6/84	Groundwater Elevation 2/28/84-3/1/84
ERT-1 (Shallow)	23.0	?	101.24	102.54	88.6	89.4
(Deep)*	33.0	?	101.24	102.54	89.3	90.3
ERT-2*	35.0	?	87.16	88.76	76.9	77.3
001	16.0	10.0	68.64	70.94	62.4	62.5
002	12.0	10.0	68.1	70.1	61.3	62.9
003	12.0	10.0	71.3	72.85	62.3	63.0
004	16.0	5.0	104.85	107.18	94.5	--
005	10.0	5.0	88.56	90.46	80.1	81.1
NUS 2A	9.5	6.0	108.0	110.0	--	dry (<98.5)
NUS 3	13.9	10.0	121.53	123.53	--	dry (<107.6)
NUS 4	7.0	4.0	81.76	84.16	--	80.3
NUS 5	14.0	10.0	108.8	110.8	--	99.4
NUS 7	14.7	8.0	70.97	73.17	--	62.7
B-4	22.7	7.0	105.2	107.2	--	88.5

*Redrock Well

AR300397

TABLE III-22

TYSON'S DUMPSITE RI RESULTS

CONSTITUENTS IN MONITORING WELL SAMPLES COLLECTED SOUTH OF RR TRACKS

Well Name	ERT-1 (Shallow)			ERT-1 (Deep)		NUS 5	004	B-4	005		ERT-2			NUS 4
Sample I.D.	840012	840013	840164	840014	840165	840170	840017	840171	840015	840169	840016	840167	840168	840166
Date Sampled	1/5/84	1/5/84	2/28/84	1/5/84	2/28/84	3/1/84	1/6/84	3/1/84	1/5/84	2/29/84	1/5/84	2/29/84	2/29/84	2/29/84
Parameter														
Aluminum	16,200	13,200	11,000	27,000	10,000	46,200	71,100	412,000	*	19,200	11,100	69,600	66,200	17,600
Chromium	18	17	10	17	<10	460	180	900	*	40	17	80	80	50
Barium	555	435	500	1,790	1,000	1,400	1,700	8,000	*	500	269	3,300	3,000	100
Beryllium	<5	<5	<5	<5	<5	<5	19	50	*	<5	<5	5	5	<5
Cobalt	<50	<50	<50	<50	<50	<50	78	<500	*	<50	<50	<50	<50	<50
Copper	<50	<50	<50	<50	<50	1,800	3,300	1,000	*	450	<50	500	450	<50
Iron	9,810	8,070	7,250	11,600	4,600	82,900	76,000	283,000	*	14,300	12,000	73,600	69,500	16,700
Nickel	<40	<40	<40	<40	<40	<40	173	400	*	<40	<40	80	80	<40
Manganese	1,430	1,140	1,440	1,710	825	1,260	3,310	3,150	*	1,380	469	16,700	14,900	870
Arsenic	21	21	<10	31	<10	11	94	180	*	<10	16	38	30	<10
Antimony	<20	<20	<20	<20	<20	<20	250	<20	*	<20	<20	<20	<20	<20
Selenium	<2	<2	<2	<2	<2	<2	<2	<2	*	<2	<2	<2	<2	<2
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	*	<10	<10	<10	<10	<10
Zinc	68	60	40	34	10	480	1,800	1,500	*	2,030	36	160	140	60
Vanadium	<200	<200	<200	<200	<200	<200	<200	<2,000	*	<200	<200	<200	<200	<200
Silver	<10	<10	<10	<10	<10	<10	<10	<100	*	<10	<10	<10	<10	<10
Mercury	<0.2	0.23	0.5	0.33	0.3	1.2	5.5	1	*	2.2	<0.2	<0.2	<0.2	<0.2
Tin	67	34	NDB	80	NDB	NDB	1,060	NDB	*	NDB	26	NDB	NDB	NDB
Cadmium	2.1	<1	<1	<1	<1	2	6.0	4	*	3	1.4	<1	<1	<1
Lead	60	43	15	78	6	320	387	270	*	320	40	30	24	140
TOC	608	886	636	2,220	1,220	19,600	587,000	650,000	*	15,100	8.0	16.5	18.2	82.6
TOC (Dup)	822	960	—	2,330	—	—	387,000	—	*	—	10	—	—	—
pH (SU)	5.9	5.9	5.4	5.1	5.5	5.7	—	7.0	*	—	6.0	5.8	5.8	9.5
Temperature (°C)	9	9	7.5	9	9	2.5	—	7	*	—	12	6.5	6.5	6
Specific Conductance (mhos/cm @ 25°C)	535	535	210	610	210	255	—	2,850	*	—	290	190	190	1,105

*Insufficient sample volume for inorganic analyses

Note: Results in µg/l unless otherwise noted

NDB – Not detected due to laboratory blank correction.

TABLE III-23

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN MONITORING WELL SAMPLES COLLECTED SOUTH OF RR TRACKS

Well Name	ERT-1 (Shallow)			ERT-1 (Deep)		MUS 5	004	B-4	005		ERT-2			MUS 4
Sample I.D.	840012	840013	840164	840014	840165	840170	840017	840171	840015*	840169	840016	840167	840168	840166
Date Sampled	1/5/84	1/5/84	2/28/84	1/5/84	2/28/84	3/1/84	1/6/84	3/1/84	1/5/84	2/29/84	1/5/84	2/29/84	2/29/84	2/29/84
1,2,4-Trichlorobenzene	--	--	--	--	--	--	1,200	193	--	848	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	LT	1,200	240	--	832	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	LT	--	--	--	LT	--	--	--	--
Bis(2-Ethylhexyl)Phthalate	--	--	--	--	--	LT	--	--	--	LT	--	--	--	--
Di-n-butyl Phthalate	--	--	--	--	--	--	460	58	--	--	--	--	--	--
Di-n-octyl Phthalate	--	--	--	--	--	45	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	15	14,000	880	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	LT	9,500	1,060	12	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	385	--	--	--	--	--	--	--	--
Chloroform	7.6	7.3	--	11	--	--	--	--	--	--	--	--	--	--
1,2-Trans-Dichloroethene	--	--	--	--	--	2,958	--	--	120	--	--	--	--	--
Trans-1,3-Dichloropropene	--	--	--	--	--	4,558	--	1,540	--	77	--	--	8	LT
Ethylbenzene	--	--	--	8.4	--	352	6,700	6,230	5	--	--	--	--	--
Methylene Chloride	--	--	--	LT	--	279	LT	LT	LT	LT	LT	LT	--	--
Tetrachloroethene	LT	6.1	--	8.1	--	73	67,000	--	100	198	--	--	--	--
Toluene	--	--	--	7.9	--	547	34,000	25,000	130	--	--	--	--	--
Trichloroethene	--	--	--	--	--	119	--	790	220	70	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--	--	LT	--	--	--	--	--
4-Methyl-2-Pentanone	--	--	--	--	--	--	110,000	42,000	--	94	--	--	--	--
Total Xylenes	--	--	--	--	--	--	--	26,500	--	700	--	--	--	16
o-Xylene	--	--	--	29	--	--	22,000	--	610	--	--	--	--	--
Aldrin	--	--	--	--	--	--	--	--	--	0.4	--	--	--	--
4,4'-DDT	--	--	--	--	--	0.1	--	1.4	--	--	--	--	--	--
4,4'-DDE	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
Endosulfan I	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--

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TABLE III-23

- Continued -

Well Name	ERT-1 (Shallow)			ERT-1 (Deep)		MUS 5	004	B-4	005		ERT-2			MUS 4
Sample I.D.	840012	840013	840164	840014	840165	840170	840017	840171	840015*	840169	840016	840167	840168	840166
Date Sampled	1/5/84	1/5/84	2/28/84	1/5/84	2/28/84	3/1/84	1/6/84	3/1/84	1/5/84	2/29/84	1/5/84	2/29/84	2/29/84	2/29/84
Endosulfan II	--	--	--	--	--	0.1	--	1.8	--	--	--	--	--	--
Heptachlor	--	--	--	--	--	--	--	2.0	--	0.4	--	--	--	--
Alpha-BHC	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--
Gamma-BHC	--	--	--	--	--	--	--	3.1	--	--	--	--	--	--

Note: Results in µg/l.

*Sample No. 840015 analyzed solely for volatile organic compounds due to insufficient sample volume.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).

-- - Below detection limit.

AR300400

TABLE III-24

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN MONITORING WELL SAMPLES COLLECTED SOUTH OF RR TRACKS

Well Name		ERT-1 (Shallow)			ERT-1 (Deep)		MUS 5	006	B-4	005		ERT-2			MUS 4
Sample I.D.		840012	840013	840164	840014	840165	840170	840017	840171	840015	840169	840016	840167	840168	840166
Date Sampled		1/5/84	1/5/84	2/28/84	1/5/84	2/28/84	3/1/84	1/6/84	3/1/84	1/5/84	2/29/84	1/5/84	2/29/84	2/29/84	2/29/84
VOLATILE SCAN															
CAS #	Compound														
115-07-1	~~1-Propene~~	5	7	--	--	--	--	--	--	200	--	--	--	--	--
96-18-4	Propane,1,2,3-trichloro-	440	410	--	1,400	--	--	280,000	--	--	--	--	--	--	--
78-88-6	~~1-Propene,2,3-dichloro-~~	--	--	--	18	--	--	--	--	6	--	--	--	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	--	27	--	--	45,000	--	4,900	--	--	--	--	--
16136-84-8	~~1-Propene,1-chloro-,(2)-~~	--	--	--	--	--	--	--	--	300	--	--	--	--	--
557-40-4	~~1-Propene,3,5'-oxybis-~~	--	--	--	--	--	--	--	--	24	--	--	--	--	--
812-03-3	Propane,1,1,1,2-tetrachloro-	--	--	120	--	--	2,600	--	2,400,000	--	--	--	2,600	40	50
109-99-9	~~Tetrahydrofuran~~	--	--	--	--	--	--	--	--	--	--	--	--	--	2,000
590-21-6	~~1-Propene,1-chloro-~~	--	--	--	--	--	1,600	--	--	--	--	--	--	--	--
EXTRACTABLE SCAN															
CAS #	Compound														
96-18-4	Propane,1,2,3-trichloro-	240*	300*	--	1,800	--	--	--	--	--	--	--	--	--	--
105-60-2	~~2H-Azepin-2-one,hexahydro-~~	150*	190	--	--	--	--	--	--	--	--	--	--	--	--
106-89-8	Oxirane,(chloromethyl)-	--	--	--	--	--	--	3,200	--	--	--	--	--	--	--

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TABLE III-24

- Continued -

Well Name		ERT-1 (Shallow)			ERT-1 (Deep)		MUS 5	004	B-4	005		ERT-2			MUS 4
Sample I.D.		840012	840013	840164	840014	840165	840170	840017	840171	840015	840169	840016	840167	840168	840166
Date Sampled		1/5/84	1/5/84	2/28/84	1/5/84	2/28/84	3/1/84	1/6/84	3/1/84	1/5/84	2/29/84	1/5/84	2/29/84	2/29/84	2/29/84
EXTRACTABLE SCAN															
CAS #	Compound														
108-10-1	2-Pentanone,4-methyl-	--	--	--	--	--	--	30,000	--	--	--	--	--	--	--
108-11-2	2-Pentanol,4-methyl-	--	--	--	--	--	--	12,000	--	--	--	--	--	--	--
108-90-7	Benzene,chloro-	--	--	--	--	--	--	4,000	--	--	--	--	--	--	--
100-41-4	Benzene,ethyl-	--	--	--	--	--	--	4,600	--	--	--	--	--	--	--
812-03-3	Propane,1,1,1,2-tetrachloro-	--	--	250	--	1,171	--	--	--	--	4,650	--	--	--	--
112-36-7	Ethane,1,1'-oxybis(2-ethoxy-	--	--	--	--	--	--	--	--	--	239	--	--	--	--
112-34-5	Ethanol,2-(2-butoxyethoxy)-	--	--	--	--	--	--	--	--	--	51	--	--	--	--
87-61-6	Trichlorobenzene	--	--	--	--	--	--	--	--	--	153	--	--	--	--
2568-90-3	1,1'-Methylene bis(oxy)bis butane	--	--	--	--	--	--	--	--	--	107	--	--	--	--
92-39-7	10H-Phenothiazine,2-chloro-	--	--	--	--	--	--	--	--	--	37	--	--	--	--
90-00-6	2-Ethylphenol	--	--	--	--	--	48	--	--	--	--	--	--	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	--	--	--	1,758	22,000	--	--	--	--	--	--	--
616-23-9	1-Propanol,2,3-dichloro-	--	--	--	--	--	--	19,000	--	--	--	--	--	--	--
95-48-7	Phenol,2-methyl-	--	--	--	--	--	--	5,200	--	--	--	--	--	--	--
103-84-4	Acetamide,n-phenyl-	--	--	--	--	--	--	5,400	--	--	--	--	--	--	--
526-73-8	Trimethylbenzene	--	--	--	--	--	31	--	--	--	--	--	--	--	--

Note: Results in µg/l

or isomer

Not identified in sample or library spectrum computer match less than 80 percent purity.

AR 00402

TYSON'S DUMP SITE RI RESULTS
CONSTITUENTS IN MONITORING WELL SAMPLES COLLECTED NORTH OF RR TRACKS

Well Name	001		002		NUS 7	003	
Sample I.D.	840009	840160	840010	840161	840163	840011	840162
Date Sampled	1/4/84	2/28/84	1/4/84	2/28/84	2/28/84	2/8/84	2/28/84
Parameter							
Aluminum	38,600	29,000	244,000	82,600	160,000	331,000	174,000
Chromium	48	40	256	100	230	264	180
Barium	426	300	1,220	500	1,700	1,870	1,000
Beryllium	<5	<5	12	<5	10	21	10
Cobalt	<50	<50	233	50	100	300	150
Copper	<50	<50	344	100	250	458	200
Iron	42,100	31,300	365,000	120,000	271,000	476,000	225,000
Nickel	40	40	264	80	200	375	160
Manganese	893	810	10,000	2,520	16,400	12,000	5,750
Arsenic	33	19	290	64	91	460	95
Antimony	<20	<20	<20	<20	<20	<20	<20
Selenium	<2	<2	3.0	<2	<2	<20	<2
Thallium	<10	<10	<10	<10	<10	<10	<10
Zinc	144	110	695	260	450	4,650	1,910
Vanadium	<200	<200	427	<200	200	517	200
Silver	<10	<10	<10	<10	<10	<10	<10
Mercury	<0.2	0.3	0.32	0.3	0.2	<0.2	0.4
Tin	81	NDB	479	NDB	NDB	708	NDB
Cadmium	<1	<1	25	<1	3	30	1
Lead	124	25	795	62	260	984	110
TOX	52	148	124	145	630	85	61.5
TOX (Dup)	54		115			87	
pH (SU)	6.8	5.9	6.4	5.5	5.8	5.0	4.6
Temperature (°C)	6	6	10	6	6	7	6.5
Specific Conductance (µmhos/cm @ 25°C)	385	160	810	220	475	225	210

Note: Results in µg/l unless o[illegible]erwise noted.
NDB – Not detected due to labo[illegible]ory blank correction.

AR300403

TABLE III-26

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN MONITORING WELL SAMPLES COLLECTED NORTH OF RR TRACKS

Well Name	001		002		NUS 7	003	
Sample I.D.	840009	840160	840010	840161	840163	840011	840162
Date Sampled	1/4/84	2/28/84	1/4/84	2/28/84	2/28/84	2/8/84	2/28/84
1,4-Dichlorobenzene	--	--	LT	--	--	--	--
Benzene	--	--	37	--	12	--	--
Chlorobenzene	--	--	39	--	29	--	--
1,1-Dichloroethane	--	--	LT	--	9	--	--
1,2-Dichloroethene	--	--	--	--	24	--	--
Ethylbenzene	--	--	66	--	--	--	--
1,3-Dichloropropene	--	--	--	--	LT	--	--
Tetrachloroethene	LT	1.4K	--	--	--	--	--
Trichloroethene	--	--	--	--	2K	--	--
Toluene	--	--	190	--	20	--	--
Total Xylenes	--	--	--	LT	78	--	--
o-Xylene	--	--	140	--	--	--	--

Note: Results in µg/l.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
K - Actual value is less than value given.
-- - Below detection limit.

AR300404

TABLE III-27

TYSON'S DUMP SITE RI RESULTS
ESTIMATED CONCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN MONITORING WELL SAMPLES COLLECTED NORTH OF RR TRACKS

Well Name		001		002		NUS 7	003	
Sample I.D.		840009	840160	840010	840161	840163	840011	840162
Date Sampled		1/4/84	2/28/84	1/4/84	2/28/84	2/28/84	2/8/84	2/28/84
VOLATILE SCAN								
CAS #	Compound							
115-07-1	1-Propene	--	--	1,300	--	--	--	--
557-98-2	1-Propene,2-chloro-	--	--	74	--	--	--	--
540-54-5	Propane,1-chloro-	--	--	30	--	--	--	--
1759-81-5	Cyclopentene,4-methyl-	--	--	9	--	--	--	--
592-42-7	1,5-Hexadiene	--	--	18	--	150	--	--
96-18-4	Propane,1,2,3-trichloro-	--	--	29	--	--	36*	--
108-38-3	Benzene,1,3-dimethyl-	--	--	280	--	--	--	--
812-03-3	Propane,1,1,2,2,-tetrachloro-	--	--	--	6	--	--	30
557-98-2	2-Chloropropene	--	--	--	--	92	--	--
540-54-5	1-Chloropropene	--	--	--	--	30	--	--
29921-38-8	1,3-Dioxolane,4-ethyl	--	--	--	--	4	--	--
1120-62-3	Cyclopentene,3-methyl	--	--	--	--	43	--	--
557-40-4	1-Propene,3,3'-oxybis-	--	--	--	--	38	--	--
EXTRACTABLE SCAN								
CAS #	Compound							
108-88-3	Benzene,methyl-	--	--	77	--	--	--	--
108-90-7	Benzene,chloro-	--	--	17	--	--	--	--
100-41-4	Benzene,ethyl-	--	--	29	--	108	--	--
108-38-3	Benzene,1,3-dimethyl-	--	--	64	--	238	--	--
112-36-7	Ethane,1,1'-oxybis\2-ethoxy-	--	--	120	--	--	--	--
105-60-2	2H-Azepin-2-one,hexahydro-	--	--	28	--	--	--	--

Note: Results in µg/l

* or isomer
-- Not identified in sample or library spectrum computer match less than 80 percent purity.

AR300405

TABLE III-28

TYSON'S DUMP SITE RI RESULTS
CONSTITUENTS IN SUBSURFACE SOIL SAMPLES

Boring I.D.	NUS 7	NUS 5		B-3			B-1	NUS 3			NUS 1	B-2	NUS 2A
Sample Depth in Feet	11.5-12.7	7.5-9.0	10.0-11.5	2.5-4.0	5.0-6.5	7.5-9.0	10.0-11.5	5.0-6.5	10.0-11.5	12.5-14.0	2.5-4.0	2.5-4.0	2.5-4.0
Sample I.D.	840095	840098	840099	840101	840102	840103	840107	840109	840110	840111	840112	840113	840115
Date Sampled	1/17/84	1/26/84	1/26/84	1/27/84	1/27/84	1/27/84	1/28/84	1/30/84	1/30/84	1/30/84	1/31/84	1/31/84	2/1/84
Parameter													
Aluminum	9,680	10,600	9,790	9,650	8,310	9,380	7,760	13,400	9,030	18,900	7,060	7,160	10,300
Chromium	18	9.6	16	8.1	41	11	11	18	9.0	29	5.2	5.2	15
Barium	69	47	22	36	172	68	88	144	33	303	31	42	274
Beryllium	0.68	0.37	0.34	0.45	0.57	1.3	0.69	1.4	0.50	2.2	0.31	0.44	2.4
Cobalt	13	3.3	3.2	3.4	4.4	4.6	4.5	7.4	3.8	17	<2.5	4.3	8.2
Copper	17	3.5	9.7	33	4,520	5.1	12	7.4	10	<2.5	87	<2.5	4.8
Iron	21,600	5,160	5,920	6,810	8,920	9,620	9,140	15,700	8,360	23,300	4,510	3,610	12,000
Nickel	21	6.0	7.4	5.5	15	9.2	7.7	13	7.9	27	3.9	5.1	17
Manganese	466	31	44	89	98	89	71	124	66	246	60	214	130
Arsenic	12	15	18	13	12	14	7.5	22	12	27	7.5	11	14
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	42	16	11	14	902	16	272	616	215	235	11	8.9	24
Vanadium	24	<10	<10	<10	12	<10	<10	16	<10	26	<10	<10	18
Silver	<0.5	<0.5	<0.5	<0.5	3.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	<0.1	<0.1	<0.1	0.22	0.85	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	13	30	29	25	27	22	17	30	22	41	17	19	24
Cadmium	1.4	0.51	0.50	0.64	1.9	0.72	0.83	1.1	0.58	1.1	0.18	0.20	0.80
Lead	26	32	213	29	210	29	32	35	24	50	21	20	29
TOC	<100	<100	<100	224	17,300	378	7,380	102	3,160	<100	<100	<100	<100

Note: Results in mg/kg dry weight.

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TABLE III-28

– Continued –

Boring I.D.	B-4					B-6					NUS 4
Sample Depth in Feet	Auger Cuttings	10.0-11.5	12.5-14.0	15.0-16.5	18.0-19.5	7.5-9.0	10.0-11.5	15.0-16.5	17.5-19.0	20.0-21.5	2.5-4.0
Sample I.D.	840121	840122	840123	840124	840125	840131	840132	840134	840135	840136	840138
Date Sampled	2/2/84	2/2/84	2/2/84	2/2/84	2/2/84	2/6/84	2/6/84	2/6/84	2/6/84	2/6/84	2/7/84
Parameter											
Aluminum	10,000	8,930	13,000	9,530	20,200	10,000	9,040	9,680	7,280	5,020	9,820
Chromium	12	7.3	19	11	102	10	12	16	7.3	7.3	9.1
Barium	42	50	294	73	471	68	165	155	110	41	48
Beryllium	0.45	0.43	2.6	1.0	2.0	0.77	1.1	0.92	0.56	0.40	0.48
Cobalt	3.8	4.3	7.5	5.2	13	4.4	5.6	5.6	3.5	2.7	4.6
Copper	14	2.9	3.5	<2.5	<2.5	80	28	12	3.2	5.2	9.3
Iron	6,590	5,600	15,400	8,860	15,400	7,610	9,420	8,940	5,640	5,140	11,200
Nickel	6.1	5.7	17	10	44	8.2	10	8.6	6.2	5.0	7.1
Manganese	65	46	79	52	143	76	74	100	69	46	180
Arsenic	18	14	20	15	36	14	12	13	9.0	8.0	15
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	32	49	24	14	20	41	21	17	13	8.4	17
Vanadium	<10	<10	21	15	84	12	15	19	<10	10	12
Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	0.80	0.14	<0.1	<0.1	<0.1	0.40	<0.1	0.12	<0.1	<0.1	<0.1
Tin	26	22	29	23	52	25	21	23	16	11	21
Cadmium	0.40	0.33	0.92	0.71	0.94	0.56	0.54	0.55	0.30	0.46	0.78
Lead	35	27	36	26	50	34	25	27	20	14	26
TOC	340	572	2,270	672	2,880	2,360	<100	1,600	508	<100	<100

Note: Results in mg/kg dry weight.

TABLE III-29

TYSON'S DUMP SITE RI RESULTS
HSL ORGANIC COMPOUNDS IN SUBSURFACE SOIL SAMPLES

Boring I.D.	NUS 7	NUS 5		B-3			B-1	NUS 3			NUS 1	B-2	NUS 2A
Sample Depth in Feet	11.5-12.7	7.5-9.0	10.0-11.5	2.5-4.0	5.0-6.5	7.5-9.0	10.0-11.5	5.0-6.5	10.0-11.5	12.5-14.0	2.5-4.0	2.5-4.0	2.5-4.0
Sample I.D.	840095	840098	840099	840101	840102	840103	840107	840109	840110	840111	840112	840113	840115
Date Sampled	1/17/84	1/26/84	1/26/84	1/27/84	1/27/84	1/27/84	1/28/84	1/30/84	1/30/84	1/30/84	1/31/84	1/31/84	2/1/84
2-Chlorophenol	--	--	--	--	--	--	--	1,300	7,000	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--	4,500	7,000	1,200	--	--	--
Phenol	--	--	--	--	--	--	--	--	11,000	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	2,100	14,000	1,700	--	--	--
4-Methylphenol	--	--	--	--	--	--	--	2,300	18,000	2,200	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	1,100	12,000	6,900	4,800	1,400	--	--	--
2-Chloronaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	20,000	LT	3,600	LT	6,000	13,000	1,000	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	LT	--	550	--	--	--	--	--
Fluoranthene	--	--	--	--	--	LT	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	LT	--	--	--	--
Naphthalene	--	--	--	--	--	--	LT	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	23,000	6,900	6,600	7,700	--	--	--
N-Nitrosodiphenylamine	--	--	LT	--	--	--	--	--	--	--	--	LT	--
Bis (2-Ethylhexyl) Phthalate	--	--	LT	--	--	--	--	--	--	--	--	--	--
Di-n-butyl Phthalate	--	--	--	11,000	--	620	5,900	5,100	5,700	--	--	--	--
Di-n-octyl Phthalate	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	LT	--	--	--	--	--	--	--	--
Aniline	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	12,000	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	LT	--	LT	--	--	--	--	--	--

TABLE III-29

- Continued -

Boring I.D.	NUS 7	NUS 5		B-3			B-1	NUS 3			NUS 1	B-2	NUS 7A
Sample Depth in Feet	11.5-12.7	7.5-9.0	10.0-11.5	2.5-4.0	5.0-6.5	7.5-9.0	10.0-11.5	5.0-6.5	10.0-11.5	12.5-14.0	2.5-4.0	2.5-4.0	2.5-4.0
Sample I.D.	840095	840098	840099	840101	840102	840103	840107	840109	840110	840111	840112	840113	840115
Date Sampled	1/17/84	1/26/84	1/26/84	1/27/84	1/27/84	1/27/84	1/28/84	1/30/84	1/30/84	1/30/84	1/31/84	1/31/84	2/1/84
Ethylbenzene	--	-	NDB	160,000	13,000,000	--	1,700,000	660,000	810,000	LT	550,000	6,200	--
Methylene Chloride	NDB	--	--	--	--	--	--	--	--	--	--	--	--
Fluorotrichloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	13,000,000	--	490,000	--	--	--	--	9,200	--
Toluene	--	--	18,000	--	1,600,000	--	410,000	--	--	--	--	3,600	5,000
Trichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	16,000	460,000	27,000,000	290,000	2,500,000	1,300,000	1,600,000	280,000	310,000	9,900	--
4,4'-DDE	--	--	--	18 PN	--	--	--	--	--	--	--	--	--
4,4'-DDD	--	--	--	120 PN	--	--	--	16 PN	--	--	--	--	--

Note: Results in µg/kg dry weight.

LT -- Less than the specified detection limit but greater than one half of the detection limit (present but below detection limit).
PN -- Pesticide or PCB cannot be confirmed by GC/MS.
NDB -- Not detected due to laboratory blank correction.
-- Below detection limit.

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TABLE III-29

- Continued -

Boring I.D.	B-4					B-6					MIS 4
Sample Depth In Feet	Auger Cuttings	10.0-11.5	12.5-14.0	15.0-16.5	18.0-19.5	7.5-9.0	10.0-11.5	15.0-16.5	17.5-19.0	20.0-21.5	2.5-4.0
Sample I.D.	840121	840122	840123	840124	840125	840131	840132	840134	840135	840136	840138
Date Sampled	2/2/84	2/2/84	2/2/84	2/2/84	2/2/84	2/6/84	2/6/84	2/6/84	2/6/84	2/6/84	2/7/84
2-Chlorophenol	--	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	LT	--	1,200	530	--	--	--	--	--	--
Phenol	--	240,000	31,000	21,000	3,400	--	--	--	--	1,100	--
2-Methylphenol	--	22,000	--	950	700	--	--	--	--	LT	--
4-Methylphenol	--	13,000	--	1,100	1,100	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	LT	--
1,2,4-Trichlorobenzene	150,000	--	11,000	1,600	11,000	16,000	29,000	110,000	210,000	89,000	--
2-Chloronaphthalene	--	--	--	--	570	--	--	--	--	--	--
1,2-Dichlorobenzene	140,000	--	57,000	9,000	15,000	5,300	33,000	23,000	39,000	12,000	--
1,3-Dichlorobenzene	--	--	--	--	LT	--	--	--	--	--	--
1,4-Dichlorobenzene	LT	--	--	620	1,100	LT	--	--	--	800	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	920	--	--	--	--	470	--
Nitrobenzene	--	--	--	--	LT	--	--	--	--	--	--
N-Nitrosodiphenylamine	LT	--	--	--	1,300	860	--	--	--	LT	--
Bis (2-Ethylhexyl) Phthalate	14,000	--	--	LT	1,800	1,500	--	--	--	2,000	--
Di-n-butyl Phthalate	110,000Q	--	130,000	17,000Q	21,000	530	20,000	46,000	88,000	21,000	--
Di-n-octyl Phthalate	--	--	11,000	LT	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--	--
Aniline	20,000	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	LT	--
Chlorobenzene	--	--	--	--	--	--	--	--	--	6,400	--

TABLE III-29

- Continued -

Boring I.D.	B-4					B-6					MIS 4
Sample Depth in Feet	Auger Cuttings	10.0-11.5	12.5-14.0	15.0-16.5	18.0-19.5	7.5-9.0	10.0-11.5	15.0-16.5	17.5-19.0	20.0-21.5	2.5-4.0
Sample I.D.	840121	840122	840123	840124	840125	840131	840132	840134	840135	840136	840138
Date Sampled	2/2/84	2/2/84	2/2/84	2/2/84	2/2/84	2/6/84	2/6/84	2/6/84	2/6/84	2/6/84	2/7/84
Ethylbenzene	1,100,000	4,300,000	480,000	53,000	55,000	92,000	700,000	990,000	660,000	100,000Q	--
Methylene Chloride	--	--	--	--	--	--	--	--	--	--	21 BG
Fluorotrichloromethane	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	9,100	--
Toluene	1,100,000	8,800,000	370,000	31,000	LT	LT	--	450,000	720,000	220,000Q	--
Trichloroethene	--	--	--	--	--	--	--	--	--	820	--
o-Xylene	2,000,000	8,700,000	830,000	140,000	150,000	220,000	2,200,000	2,400,000	1,100,000	22,000Q	--
4,4'-DDE	--	--	--	--	--	--	--	--	--	--	--
4,4'-DDD	--	--	--	--	--	--	--	--	--	--	--

Note: Results in µg/kg dry weight.

LT - Less than the specified detection limit but greater than one half of the detection limit (present but below defection limit).
BG - The conc. in the blank was greater than one half of the method detection limit and was less than or equal to one half the conc. detected in the sample; the conc. in the blank was subtracted from the sample.
Q - Quantitated from secondary ion.
-- - Below detection limit.

TABLE III-30

[illegible]TSON'S DUMP SITE BI RESULTS
ESTIMATED C NCENTRATIONS OF
TENTATIVELY IDENTIFIED ORGANIC COMPOUNDS IN SUBSURFACE SOIL SAMPLES

Boring I.D.		MWS 7	MWS 5		B-3			B-1	MWS 3			MWS 1	B-2	MWS 2A
Sample Depth in Feet		11.5-12.7	7.5-9.0	10.0-11.5	2.5-4.0	5.0-6.5	7.5-9.0	10.0-11.5	5.0-6.5	10.0-11.5	12.5-14.0	2.5-4.0	2.5-4.0	2.5-4.0
Sample I.D.		840095	840098	840099	840101	840102	840103	840107	840109	840110	840111	840112	840113	840115
Date Sampled		1/17/84	1/26/84	1/26/84	1/27/84	1/27/84	1/27/84	1/28/84	1/30/84	1/30/84	1/30/84	1/31/84	1/31/84	2/1/84
VOLATILE SCAN														
CAS #	Compound													
107-31-3	Formic acid, methyl ester	22*	—	—	—	—	—	—	—	—	—	—	—	—
96-18-4	Propane,1,2,3-trichloro-	—	650,000*	25,000*	405,000*	—	340,000	25,000,000	450,000*	14,999,000	7,800,000	2,299,000	67,000	—
108-38-3	Benzene,1,3-dimethyl-	—	—	—	2,700,000*	120,000,000*	—	12,999,000	8,700,000*	7,100,000	980,000*	5,700,000	46,000*	—
541-05-9	Cyclotrisiloxane,hexamethyl-	—	—	—	—	—	1,200,000	—	—	—	—	—	—	—
95-47-6	Benzene,1,2-dimethyl-	—	—	—	—	—	1,300,000*	—	—	—	—	—	—	—
108-10-1	2-Pentanone,4-methyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
106-42-3	Benzene,1,4-dimethyl-	—	—	78,000*	—	—	—	—	—	—	—	—	—	—
EXTRACTABLE SCAN														
CAS #	Compound													
108-38-3	Benzene,1,3-dimethyl-	—	9,000	2,700*	360,000*	24,000*	—	490,000*	190,000*	990,000*	36,000*	2,600,000*	—	—
96-18-4	Propane,1,2,3-trichloro-	—	29,000	11,000*	190,000*	37,000*	—	690,000*	—	1,500,000*	23,000*	1,680,000*	10,000*	3,400*
57-10-3	Hexadecanoic acid	—	—	—	—	—	—	—	—	—	—	—	—	2,200
544-25-2	1,3,5-Cycloheptatriene	—	—	—	15,000*	1,300*	—	—	—	47,000*	—	—	—	—
127-18-4	Ethene,tetrachloro-	—	—	—	7,300*	4,500*	5,000	100,000	4,300	29,000*	—	—	—	—
108-90-7	Benzene,chloro-	—	—	—	3,200	—	—	100,000	—	19,000*	6,200	—	—	—
100-41-4	Benzene,ethyl-	—	—	—	170,000*	8,800*	22,000*	—	6,800	300,000*	—	960,000*	—	—
110-86-1	Pyridine	—	—	—	—	—	—	—	6,500	—	—	—	—	—
108-88-3	Benzene,methyl-	—	—	—	—	—	—	110,000	5,400	—	—	—	—	470
1120-21-4	Undecane ?	—	—	—	—	—	—	100,000*	—	—	—	—	—	—
112-40-3	Dodecane	—	—	—	—	—	—	190,000*	—	—	—	—	—	—

AR300412

TABLE III-30

- Continued -

Boring I.D.		MW 7	MW 5		B-3			B-1	MW 3			MW 1	B-2	MW 2A
Sample Depth in Feet		11.5-12.7	7.5-9.0	10.0-11.5	2.5-4.0	5.0-6.5	7.5-9.0	10.0-11.5	5.0-6.5	10.0-11.5	12.5-14.0	2.5-4.0	2.5-4.0	2.5-4.0
Sample I.D.		840095	840098	840099	840101	840102	840103	840107	840109	840110	840111	840112	840113	840115
Date Sampled		1/17/84	1/26/84	1/26/84	1/27/84	1/27/84	1/27/84	1/28/84	1/30/84	1/30/84	1/30/84	1/31/84	1/31/84	2/1/84
EXTRACTABLE SCAN														
CAS #	Compound													
629-50-5	Tridecane	—	—	—	—	—	—	420,000*	—	—	—	—	—	—
544-76-3	Hexadecane	—	—	—	—	—	—	340,000*	—	—	—	—	—	—
109-55-7	2,3-Propanediazine,a,a-dimethyl-	—	—	—	—	—	—	—	11,000*	—	—	—	—	—
108-94-1	Cyclohexanone	—	—	—	—	—	—	—	—	9,700*	—	—	—	—
121-33-5	Benzaldehyde,4-hydroxy-3-methoxy-	—	—	—	—	—	—	—	—	—	—	—	730*	—
108-10-1	2-Pentanone,4-methyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
95-63-6	Benzene,1,2,4-trimethyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
112-36-7	Ethane,1,1'-oxybis[2-ethoxy-	—	—	—	—	—	—	—	—	—	—	—	—	—
632-22-4	Urea,tetramethyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
106-42-3	Benzene,1,4-dimethyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
616-23-9	1-Propanol,2,3-dichloro-	—	—	—	—	—	—	—	—	—	—	—	—	—
111-84-2	Nonane	—	—	—	—	—	—	—	—	—	—	—	—	—
5129-60-2	Pentadecanoic acid,14-methyl-, methyl ester	—	—	—	—	—	—	—	—	—	—	—	—	—
10544-50-0	Sulfur,mol.(S8)	—	—	—	—	—	—	—	—	—	—	—	—	—
611-14-3	Benzene,1-ethyl-2-methyl-	—	—	—	—	—	—	—	—	—	—	—	—	—
108-70-3	Benzene,1,3,5-trichloro-	—	—	—	—	—	—	—	—	—	—	—	—	—

Note: Results in µg/kg dry weight.

* or Isomer

— Not identified in sample or library spectrum computer match less than 80% priority.

AR300413

TABLE III-30

- Continued -

Boring I.D.		B-4					B-6					MWS 4
Sample Depth in Feet		Auger Cuttings	10.0-11.5	12.5-14.0	15.0-16.5	18.0-19.5	7.5-9.0	10.0-11.5	15.0-16.5	17.5-19.0	20.0-21.5	2.5-4.0
Sample I.D.		840121	840122	840123	840124	840125	840131	840132	840134	840135	840136	840138
Date Sampled		2/2/84	2/2/84	2/2/84	2/2/84	2/2/84	2/6/84	2/6/84	2/6/84	2/6/84	2/6/84	2/7/84
VOLATILE SCAN												
CAS #	Compound											
107-31-3	Formicacid,methylester-	—	—	—	—	—	—	—	—	—	—	—
96-18-4	Propane,1,2,3-trichloro-	320,000*	5,100,000*	270,000*	1,399,000*	960,000	—	2,800,000*	9,900,000*	3,360,000*	—	—
108-38-3	Benzene,1,3-dimethyl-	—	53,000,000*	4,300,000	530,000*	670,000	820,000	13,000,000*	—	5,580,000*	—	—
541-05-9	Cyclotrisilanone,hexamethyl-	—	—	—	—	—	—	—	—	—	—	—
95-47-6	Benzene,1,2-dimethyl-	13,000,000*	—	—	—	—	—	—	15,000,000*	—	—	—
108-10-1	2-Pentanone,4-methyl-	—	—	—	—	—	—	—	—	—	450*	—
106-42-3	Benzene,1,4-dimethyl-	—	—	—	—	—	—	—	—	—	—	—
EXTRACTABLE SCAN												
CAS #	Compound											
108-38-3	Benzene,1,3-dimethyl-	1,500,000*	260,000*	540,000*	58,000*	41,000*	—	—	840,000*	740,000*	—	—
96-18-4	Propane,1,2,3-trichloro-	110,000*	9,700*	48,000*	—	—	—	360,000*	600,000*	690,000*	15,000*	—
57-10-3	Hexadecanoic acid	—	—	—	—	—	—	—	—	—	—	—
544-25-2	1,3,5-Cycloheptatriene	—	—	—	—	—	—	—	140,000*	—	—	—
127-18-4	Ethene,tetrachloro-	11,000*	—	—	—	—	—	—	6,600*	13,000*	—	—
108-98-7	Benzene,chloro-	22,000*	—	11,000*	3,600*	—	—	—	13,000*	20,000*	—	—
100-41-4	Benzene,ethyl-	420,000*	79,000*	100,000*	33,000*	25,000	—	350,000	190,000*	300,000*	35,000*	—
110-86-1	Pyridine	—	—	—	—	—	—	—	—	—	—	—
108-88-3	Benzene,methyl-	440,000*	92,000*	70,000*	34,000*	—	—	—	—	260,000	—	—
1120-21-4	Undecane	—	—	—	—	—	—	—	—	—	—	—
112-40-3	Dodecane	—	—	—	—	—	—	—	—	—	—	—
629-50-5	Tridecane	—	—	—	—	—	—	—	—	—	—	—
544-76-3	Hexadecane	—	—	—	—	—	—	—	—	—	—	—

AR300414

TABLE III-30

- Continued -

Boring I.D.		B-4					B-6					BHG 4
Sample Depth in Feet		Auger Cuttings	10.0-11.5	12.5-14.0	15.0-16.5	18.0-19.5	7.5-9.0	10.0-11.5	15.0-16.5	17.5-19.0	20.0-21.5	2.5-4.0
Sample I.D.		840121	840122	840123	840124	840125	840131	840132	840134	840135	840136	840138
Date Sampled		2/2/84	2/2/84	2/2/84	2/2/84	2/2/84	2/6/84	2/6/84	2/6/84	2/6/84	2/6/84	2/7/84
EXTRACTABLE SCAN												
CAS #	Compound											
109-55-7	1,3-Propanediamine,n,n-dimethyl-	—	—	—	—	—	—	—	—	—	—	—
108-94-1	Cyclohexanone	—	—	—	—	—	—	—	—	—	—	—
121-33-5	Benzaldehyde,4-hydroxy-3-methoxy-	—	—	—	—	—	—	—	—	—	—	—
108-10-1	2-Pentanone,4-methyl-	66,000*	41,000	11,000*	—	2,100	—	—	—	—	—	—
95-63-6	Benzene,1,2,4-trimethyl-	20,000*	—	—	—	—	—	—	—	—	—	—
112-36-7	Ethane,2,1'-oxybis\2-ethoxy-	13,000*	150,000*	—	28,000*	3,900*	—	—	—	—	—	—
632-22-4	Urea,tetramethyl-	—	35,000	—	—	—	—	—	—	—	—	—
106-42-3	Benzene,1,4-dimethyl-	—	—	—	—	—	—	1,500,000*	—	—	—	—
616-23-9	1-Propanol,2,3-dichloro-	—	—	—	—	3,000*	—	—	—	—	—	—
111-84-2	Nonane	—	—	—	—	—	—	7,300	—	—	—	—
5129-40-2	Pentadecarmicucid,14-methyl-, methylester	—	—	—	—	—	—	18,000	—	—	—	—
30544-50-0	Sulfur,mol.(SN)	—	—	—	—	—	—	12,000	—	—	—	—
611-14-3	Benzene,1-ethyl-2-methyl-	—	—	—	—	—	—	—	—	14,000*	—	—
[illegible]-70-3	Benzene,1,3,5-trichloro-	—	—	—	—	—	—	—	—	24,000*	—	—

Note: Results in µg/kg dry weight.

[illegible] Isomer

*Not identified in sample or library spectrum computer match less than 80% purity.

AR300415

TABLE IV-2

TYSON'S DUMP SITE
SUMMARY OF CONCENTRATION OF METALS IN WATER SAMPLES

	SURFACE WATER			GROUNDWATER			DRINKING WATER STANDARDS	
	Frequency[1]	Range (µg/l)	Mean[2] (µg/l)	Frequency	Range (µg/l)	Mean (µg/l)	Primary Standard (µg/l)	Secondary Standard (µg/l)
Aluminum	12/16	<200-854	267	20/20	10,000-412,000	92,480	—	—
Chromium	0/16	<10	—	19/20	<10-900	149	50	—
Barium	6/16	<100-140	44	20/20	100-8,000	1,478	1,000	—
Beryllium	0/16	<5	—	8/20	<5-50	6	—	—
Cobalt	0/16	<50	—	6/20	<50-300	46	—	—
Copper	0/16	<50	—	11/20	<50-3,300	443	—	1,000
Iron	16/16	78-14,200	1,324	20/20	7,250-476,000	109,986	—	300
Nickel	0/16	<40	—	11/20	<40-400	95	—	—
Manganese	13/16	<10-2,280	209	20/20	469-16,700	4,847	—	50
Arsenic	0/16	<10	—	16/20	<10-460	75	50	—
Antimony	0/16	<20	—	1/20	<20-250	12	—	—
Selenium	0/16	<2	—	1/20	<2-3	0.1	10	—
Thallium	0/16	<10	—	0/20	<10	—	—	—
Zinc	15/16	<10-71	36	20/20	10-4,650	732	—	5,000
Vanadium	0/16	<200	—	4/20	<200-517	67	—	—
Silver	0/16	<10	—	0/20	<10-<100	—	50	—
Mercury	0/16	<0.2	—	13/20	<0.2-5.5	0.6	2	—
Tin	6/16	<20-30	9	8/20	NDB[3]-1,060	127	—	—
Cadmium	11/16	<1-28	10	10/20	<1-30	4	10	—
Lead	3/16	<5-8.3	1	20/20	6-984	205	50	—

[1]Frequency is shown as number of occurrences above detection limit per the total number of samples analyzed.

[2]Means calculated using a value of zero for all values below the limit of detection.

[3]NDB - Not detected due to laboratory blank correction.

AR300416

TABLE IV-3

TYSON'S DUMP SITE
SUMMARY OF CONCENTRATION OF METALS IN SOIL AND SEDIMENT SAMPLES

	SURFACE SOILS			SUBSURFACE SOILS			SEDIMENTS			Typical
	Frequency[1]	Range (mg/kg)	Mean[2] (mg/kg)	Frequency	Range (mg/kg)	Mean (mg/kg)	Frequency	Range (mg/kg)	Mean (mg/kg)	Soil Range[3] (mg/kg)
Aluminum	26/26	3,450-10,500	6,482	24/24	5,020-20,200	10,147	17/17	1,680-7,640	3,789	10,000-300[illegible]
Chromium	26/26	2-21	8	24/24	5.2-102	17	17/17	2.1-30	9	1-1,0[illegible]
Barium	26/26	27-276	73	24/24	31-471	119	17/17	17-188	68	100-3,0[illegible]
Beryllium	24/26	<0.25-2.4	0.6	24/24	0.31-2.6	0.9	13/17	<0.25-1.1	0.5	0.1-40
Cobalt	24/26	<2.5-10	4	23/24	<2.5-17	6	11/17	<2.5-20	6	1-40
Copper	23/26	<2.5-284	61	21/24	<2.5-4,520	203	15/17	<2.5-49	20	2-100
Iron	26/26	2,360-49,900	8,155	24/24	3,610-21,600	9,769	17/17	1,530-15,500	7,946	--
Nickel	26/26	4-19	8	24/24	3.9-21	11	16/17	<2-26	9	5-50[illegible]
Manganese	26/26	33-800	157	24/24	31-466	111	17/17	29-3,240	444	20-3,0[illegible]
Arsenic	26/26	2.9-14	7	24/24	7.5-36	15	17/17	1.7-15	6	1-50
Antimony	0/26	<1	--	0/24	<1	--	0/17	<1	--	2-10
Selenium	8/26	<0.1-1.4	0.3	0/24	<1	--	1/17	<1-0.2	0.1	0.1-2
Thallium	0/26	<0.5	--	0/24	<0.5	--	0/17	<0.5	--	--
Zinc	26/26	4-122	42	24/24	8.4-902	110	17/17	11-292	86	10-300
Vanadium	9/26	<10-18	5	13/24	<10-84	12	4/17	<10-15	3	20-500
Silver	0/26	<0.5	--	1/24	<0.5-3.8	0.2	0/17	<0.5	--	0.01-5
Mercury	3/20	<0.1-1.2	0.1	6/24	<0.1-0.85	0.1	7/17	<0.1-0.85	0.1	0.01-0.1
Tin	19/26	NDB[4]-25	11	24/24	11-52	24	14/17	NDB-14	6	2-200
Cadmium	24/26	<0.05-1.3	0.6	24/24	0.18-1.9	0.7	16/17	<0.05-2.2	1	0.01-0.7
Lead	26/26	5.7-95	37	24/24	14-213	45	17/17	9.5-85	40	2-20[illegible]

[1]Frequency is shown as number of occurrences above detection limit per the total number of samples analyzed.

[2]Means calculated using a value of zero for all values below the limit of detection.

[3]From Lindsay, 1979.

[4]NDB - Not detected due to laboratory blank correction.

TABLE IV-4

TYSON'S DUMP SITE
SUMMARY OF HSL ORGANIC COMPOUNDS FOUND ABOVE DETECTION LIMITS
IN WATER DURING THE REMEDIAL INVESTIGATION

	SURFACE WATERS			GROUNDWATER		
		Concentration			Concentration	
	Frequency[1]	Range (µg/l)	Mean (µg/l)	Frequency	Range (µg/l)	Mean (µg/l)
Benzene	0/16	BDL[2]	--	5/21	BDL-14,000	712
Chlorobenzene	2/16	BDL-7	1	5/21	BDL-9,500	506
1,1-dichloroethane	0/16	BDL	--	2/21	BDL-385	11
Chloroform	0/16	BDL	--	3/21	BDL-11	1
Trans-1,2-dichloroethene	0/16	BDL	--	2/21	BDL-2,958	146
Trans-1,3-dichloropropene	0/16	BDL	--	4/21	BDL-4,558	294
Ethylbenzene	0/16	BDL	--	6/21	BDL-6,700	636
Methylene chloride	1/16	BDL-5	0.3	1/21	BDL-279	13
Tetrachloroethene	4/16	BDL-12	3	7/12	BDL-67,000	3,209
Toluene	2/16	BDL-60	4	7/21	BDL-34,000	2,852
Trichloroethene	4/16	BDL-16	3	5/21	BDL-790	57
:etone	1/16	BDL-130	8	0/21	BDL	--
4-methyl-2-pentanone	0/16	BDL	--	3/21	BDL-110,000	7,243
o-xylene	6/16	BDL-190	21	4/21	BDL-22,000	1,085
Total xylenes	0/16	BDL	--	4/21	BDL-26,500	1,300
2,4-trichlorobenzene	1/16	BDL-26	2	3/21	BDL-1,200	107
ichlorobenzene	1/16	BDL-33	2	0/21	BDL	--
1,2-dichlorobenzene	0/16	BDL	--	3/21	BDL-1,200	108
Di-n-butyl phthalate	0/16	BDL	--	2/21	BDL-460	25
Di-n-octyl phthalate	1/16	BDL-42	3	1/21	BDL-45	2
Aldrin	0/16	BDL	--	1/21	BDL-0.4	0.02
4,4'-DDT	0/16	BDL	--	2/21	BDL-1.4	0.07
4,4'-DDE	0/16	BDL	--	1/21	BDL-0.1	0.005
α-endosulfan	0/16	BDL	--	1/21	BDL-0.1	0.005
β-endosulfan	0/16	BDL	--	2/21	BDL-1.8	0.09
Heptachlor	0/16	BDL	--	2/21	BDL-2.0	0.1
α-BHC	0/16	BDL	--	1/21	BDL-0.1	0.005
γ-BHC (lindane)	0/16	BDL	--	1/21	BDL-3.1	0.1

[1]Frequency refers to the number of samples found to have concentrations above the detection limit for a given compound per the total number of samples analyzed.

[2]BDL - Below detection limit.

[3]Mean values computed on basis of sum of concentrations divided by total number of samples collected. Value of zero for all values below limit of detection.

AR300418

TABLE IV-5

TYSON'S DUMP SITE
SUMMARY OF HSL ORGANIC COMPOUNDS FOUND ABOVE DETECTION LIMITS
IN SOILS AND SEDIMENTS DURING THE REMEDIAL INVESTIGATION

	SURFACE SOILS			SUBSURFACE SOILS			SEDIMENTS		
	Frequency[1]	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)
Chlorobenzene	1/25	BDL[2]-22	1	1/24	BDL-6,400	267	0/17	BDL	
Chloroform	0/25	BDL	--	0/24	BDL	--	1/17	BDL-65	
1,2-dichloropropane	0/25	BDL	--	0/24	BDL	--	1/17	BDL-26	
Ethylbenzene	1/25	BDL-120	5	17/24	BDL-13,000,000	1,059,008	0/17	BDL	
Methylene chloride	17/20	BDL-2,200	130	1/24	BDL-21	0.9	13/17	BDL-45	
Tetrachloroethene	1/20	BDL-48	2	4/24	BDL-13,000,000	562,846	2/17	BDL-77	
Toluene	2/20	BDL-145	8	12/24	BDL-1,600,000	571,983	1/17	BDL-59	
Trichloroethene	0/20	BDL	--	1/24	BDL-820	34	2/17	BDL-30	
2-butanone	1/26	BDL-8	0.3	0/24	BDL	--	0/17	BDL	
o-xylene	3/26	BDL-1,000	39	20/24	BDL-27,000,000	2,146,996	1/17	BDL-330	
1,2,4-trichlorobenzene	3/26	BDL-210,000	15,815	14/24	BDL-210,000	27,242	3/17	BDL-44,000	2,[illegible]
2-chloronaphthalene	0/26	BDL	--	1/24	BDL-570	24	0/17	BDL	
1,2-dichlorobenzene	2/26	BDL-120,000	8,308	14/24	BDL-140,000	15,704	1/17	BDL-4,800	[illegible]
1,3-dichlorobenzene	1/26	BDL-200	.8	0/24	BDL	--	0/17	BDL	
1,4-dichlorobenzene	0/26	BDL	--	4/24	BDL-1,100	128	1/17	BDL-1,700	[illegible]
Fluoranthene	2/26	BDL-1,900	75	0/24	BDL	--	5/17	BDL-35,000	2,[illegible]
Naphthalene	3/26	BDL-5,600	422	2/24	BDL-920	58	1/17	BDL-1,700	1
Nitrobenzene	0/26	BDL	--	4/24	BDL-23,000	1,842	0/17	BDL	
N-nitrosodiphenylamine	2/26	BDL-8,400	345	2/24	BDL-1,300	90	0/17	BDL	
N-nitrosodipropylamine	0/26	BDL	--	0/24	BDL	--	1/17	BDL-2,600	[illegible]
Bis(2-ethylhexyl)phthalate	6/26	BDL-46,000	5,280	4/24	BDL-14,000	804	2/17	BDL-19,000	1,[illegible]
Di-n-butyl phthalate	6/26	BDL-310,000	23,614	14/24	BDL-130,000	20,077	1/17	BDL-2,300	1
Di-n-octyl phthalate	0/26	BDL	--	1/24	BDL-11,000	458	0/17	BDL	
Benzo(a)anthracene	0/26	BDL	--	0/24	BDL	--	2/17	BDL-720	
Benzo(b)fluoranthene	0/26	BDL	--	0/24	BDL	--	1/17	BDL-1,300	
Benzo(k)fluoranthene	0/26	BDL	--	0/24	BDL	--	1/17	BDL-1,000	
Chrysene	1/26	BDL-670	26	0/24	BDL	--	4/17	BDL-13,000	[illegible]
Anthracene	1/26	BDL-580	22	0/24	BDL	--	0/17	BDL	
Benzo(ghi)perylene	0/26	BDL	--	0/24	BDL	--	1/17	BDL-1,900	1
Fluorene	0/26	BDL	--	0/24	BDL	--	2/17	BDL-13,000	9
Phenanthrene	1/26	BDL-1,800	69	0/24	BDL	--	6/17	BDL-40,000	2,8[illegible]

- continued -

	SURFACE SOILS			SUBSURFACE SOILS			SEDIMENTS		
	Frequency[1]	Range (µg/kg)	Mean (µg/kg)	Frequency	Range (µg/kg)	Mean (µg/kg)	Frequency	Range (µg/kg)	Me (µg
Dibenzo(a,h)anthracene	0/26	BDL	--	0/24	BDL	--	1/17	BDL-1,800	
Indeno(1,2,3-cd)pyrene	0/26	BDL	--	0/24	BDL	--	1/17	BDL-1,900	
Pyrene	2/26	BDL-960	63	0/24	BDL	--	5/17	BDL-34,000	2,
Aniline	2/26	BDL-6,700	388	1/24	BDL-20,000	833	0/17	BDL	
Dibenzofuran	1/26	BDL-670	26	0/24	BDL	--	0/17	BDL	
2-methylnaphthalene	0/26	BDL	--	1/24	BDL-12,000	500	0/17	BDL	
2-chlorophenol	0/26	BDL	--	2/24	BDL-7,000	346	0/17	BDL	
2,4-dimethylphenol	1/25	BDL-540	22	5/24	BDL-7,000	601	0/17	BDL	
Phenol	0/25	BDL	--	6/24	BDL-240,000	12,816	1/17	BDL-1,400	
Benzoic acid	4/21	BDL-25,000	2,243	0/24	BDL	--	0/17	BDL	
2-methylphenol	2/25	BDL-6,700	305	6/24	BDL-28,000	1,727	0/17	BDL	
4-methylphenol	1/25	BDL-500	20	6/24	BDL-18,000	1,571	2/17	BDL-25,000	1,
Aldrin	1/26	BDL-5.3	0.2	0/24	BDL	--	0/17	BDL	
Dieldrin	3/26	BDL-516	0.3	0/24	BDL	--	0/17	BDL	
Chlordane	1/26	BDL-5	0.2	0/24	BDL	--	1/17	BDL-30	
4,4'-DDT	2/26	BDL-10	0.6	0/24	BDL	--	3/17	BDL-1,300	
4,4'-DDE	9/26	BDL-41	3	1/24	BDL-18	0.7	4/17	BDL-530	
4,4'-DDD	6/26	BDL-180	15	2/24	BDL-120	6	5/17	BDL-2,900	3
α-endosulfan	2/26	BDL-1.3	0.09	0/24	BDL	--	0/17	BDL	
β-BHC	5/26	BDL-15	0.9	0/24	BDL	--	1/17	BDL-55	
δ-BHC	1/26	BDL-12	0.5	0/24	BDL	--	0/17	BDL	
γ-BHC (lindane)	1/26	BDL-1	0.04	0/24	BDL	--	0/17	BDL	
PCB-1242	1/26	BDL-93	4	0/24	BDL	--	0/17	BDL	
PCB-1254	5/26	BDL-81	5	0/24	BDL	--	2/17	BDL-5,200	3
PCB-1260	1/26	BDL-130	5	0/24	BDL	--	4/17	BDL-190	

[1]Frequency refers to the number of samples found to have concentrations above the detection limit for a given compound per the total number of samples analyzed.

[2]BDL - Below detection limit.

[3]Mean values computed on basis of sum of concentrations divided by total number of samples collected. Value of zero for all values below limit of detection.

TABLE IV-6

TYSON'S DUMP SITE
SUMMARY OF 1,2,3-TRICHLOROPROPANE (OR ISOMER)
RESULTS BY SAMPLE TYPES

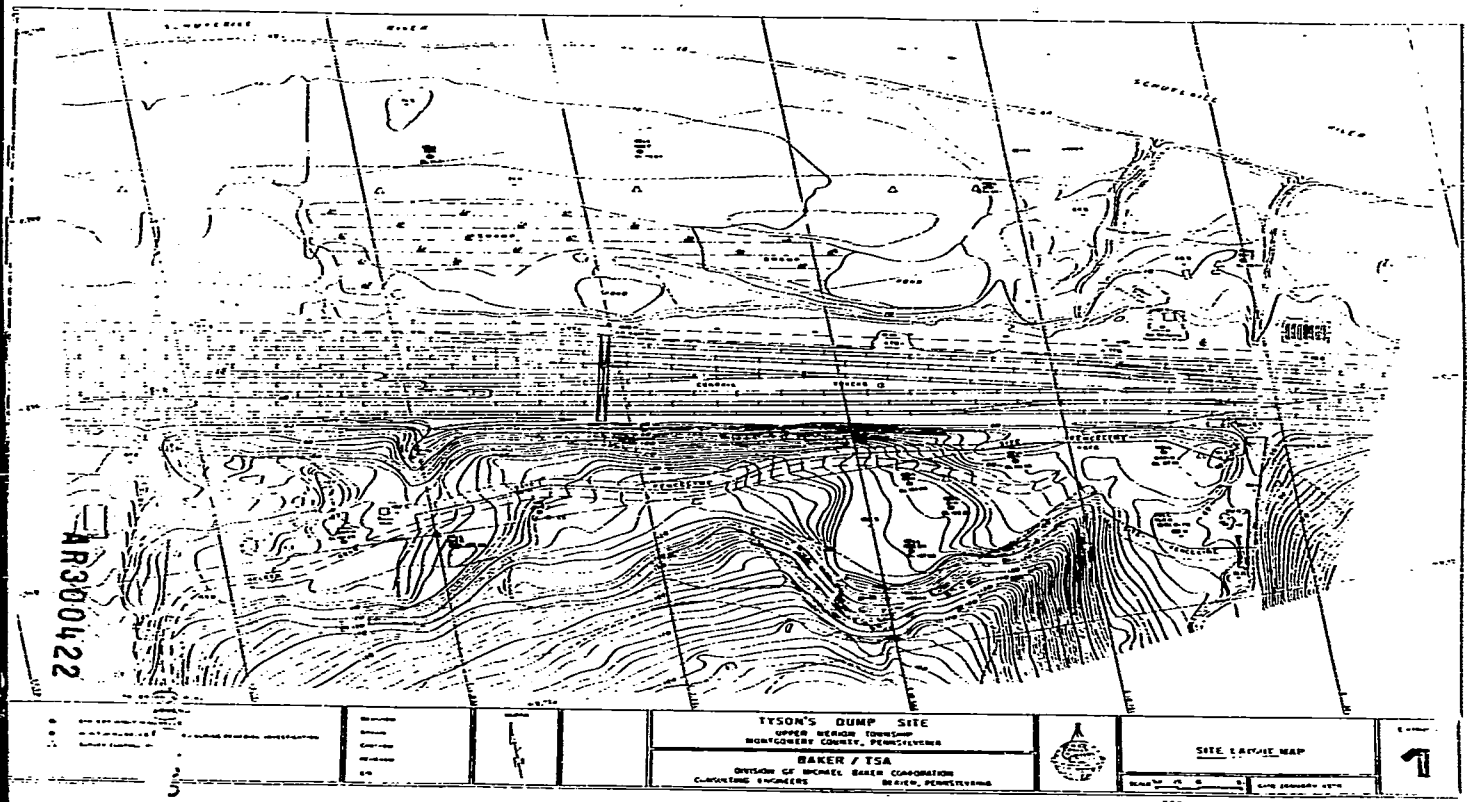
Sample Type	Frequency[1]	ESTIMATED CONCENTRATION Range	Mean[2]
1. Surface Water	12/16	ND[3]-2,400 µg/l	450 µg/l
2. Groundwater	6/21	ND-280,000 µg/l	13,500 µg/l
3. Surface Soils	17/26	ND-320,000 µg/kg	22,200 µg/kg
4. Subsurface Soils	21/24	ND-25,000,000 µg/kg	3,200,000 µg/kg
5. Sediments	12/17	ND-87,000 µg/kg	8,400 µg/kg

[1]Frequency is shown as number of occurrences above the detection limit per the total number of samples analyzed.

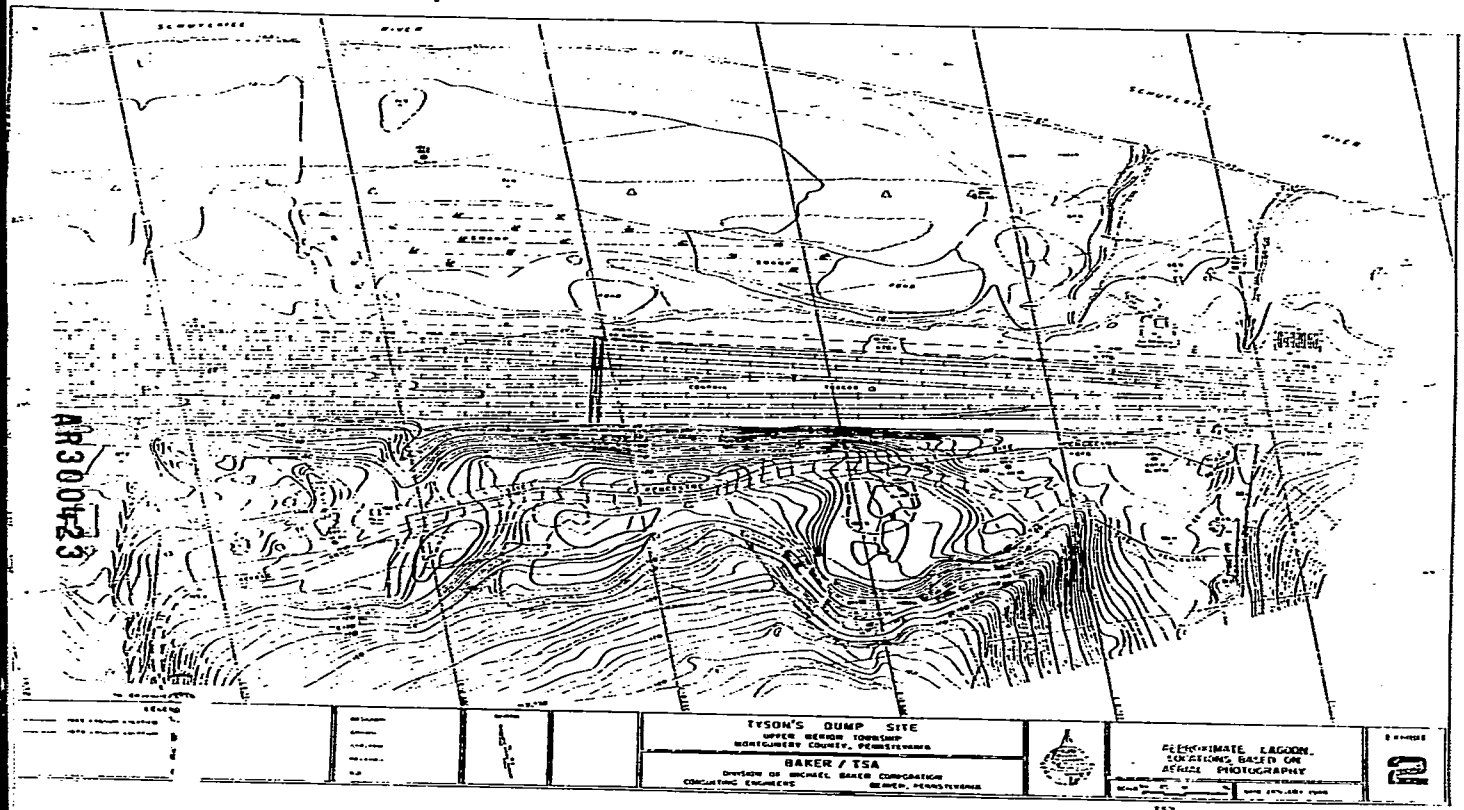
[2]Means calculated using a value of zero for all samples in which the compound was not detected.

[3]ND - Not detected or reported for sample.

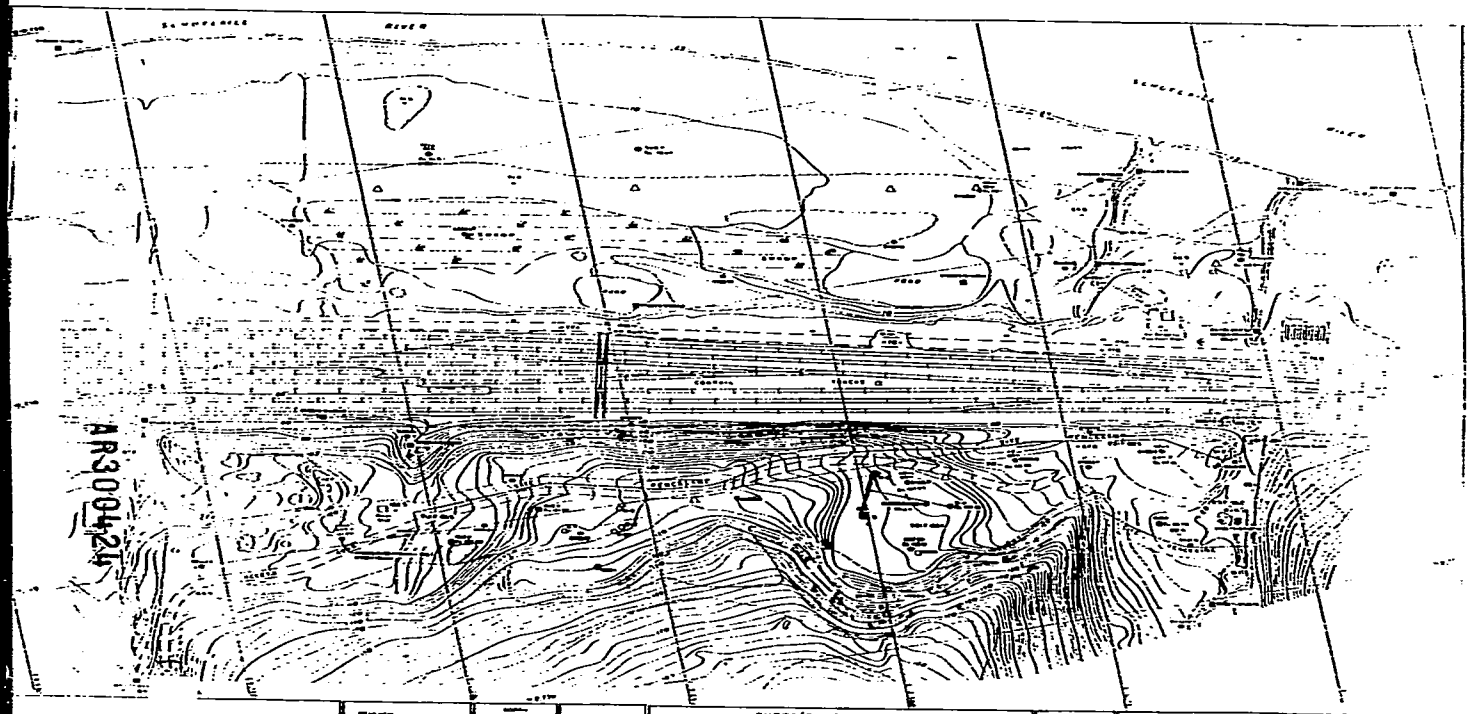
AR300421


TYSON'S DUMP SITE
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA
BAKER / TSA
DIVISION OF MICHAEL BAKER CORPORATION
CONSULTING ENGINEERS
BEAVER, PENNSYLVANIA
SITE LAYOUT MAP
1

AR300422


TYSON'S DUMP SITE
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA
BAKER / TSA
DIVISION OF MICHAEL BAKER CORPORATION
CONSULTING ENGINEERS
BERWYN, PENNSYLVANIA
APPROXIMATE LAGOON LOCATIONS BASED ON AERIAL PHOTOGRAPHY

AR300423



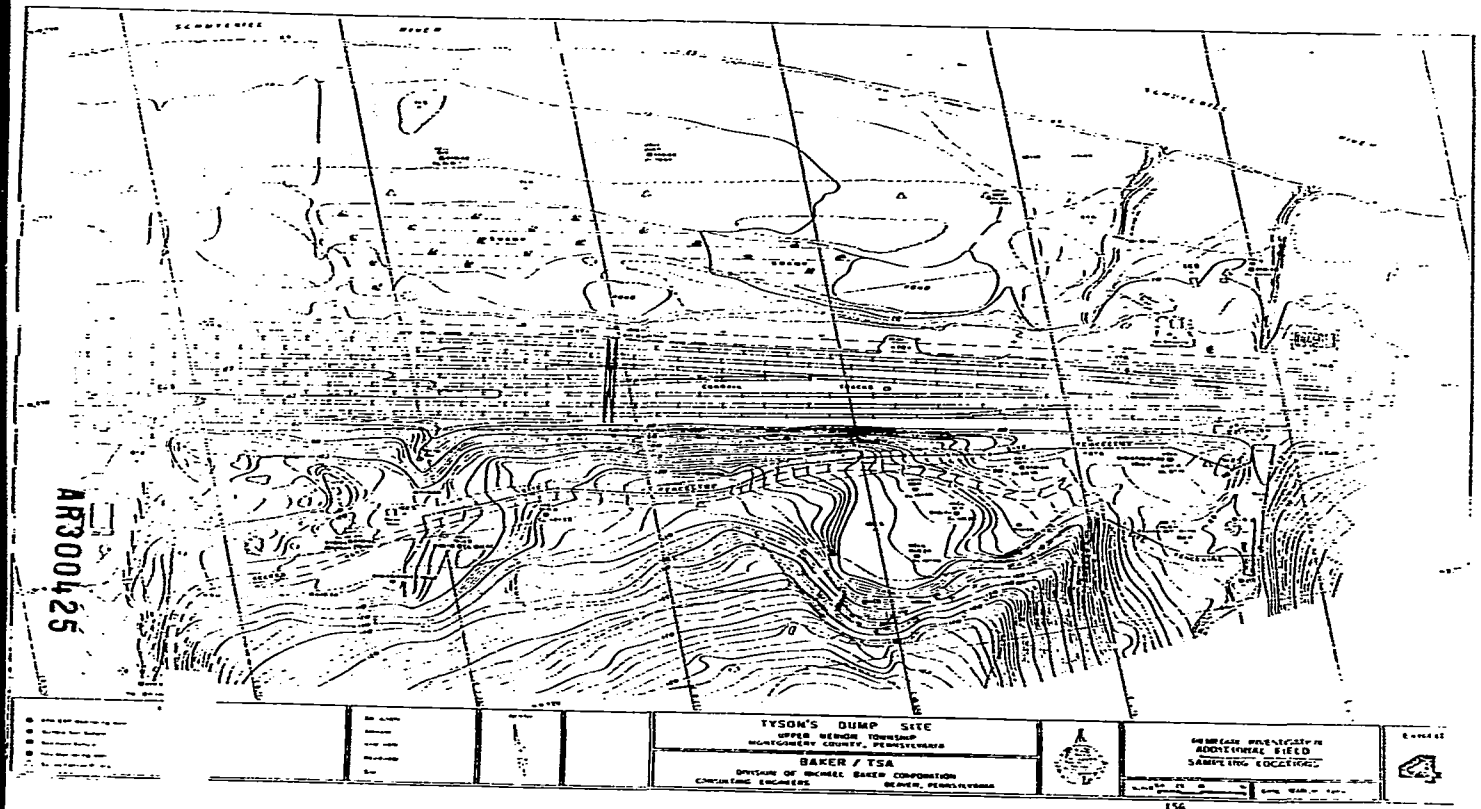
TYSON'S DUMP SITE
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

BAKER / TSA
DIVISION OF MICHAEL BAKER CORPORATION
CONSULTING ENGINEERS BEAVER, PENNSYLVANIA

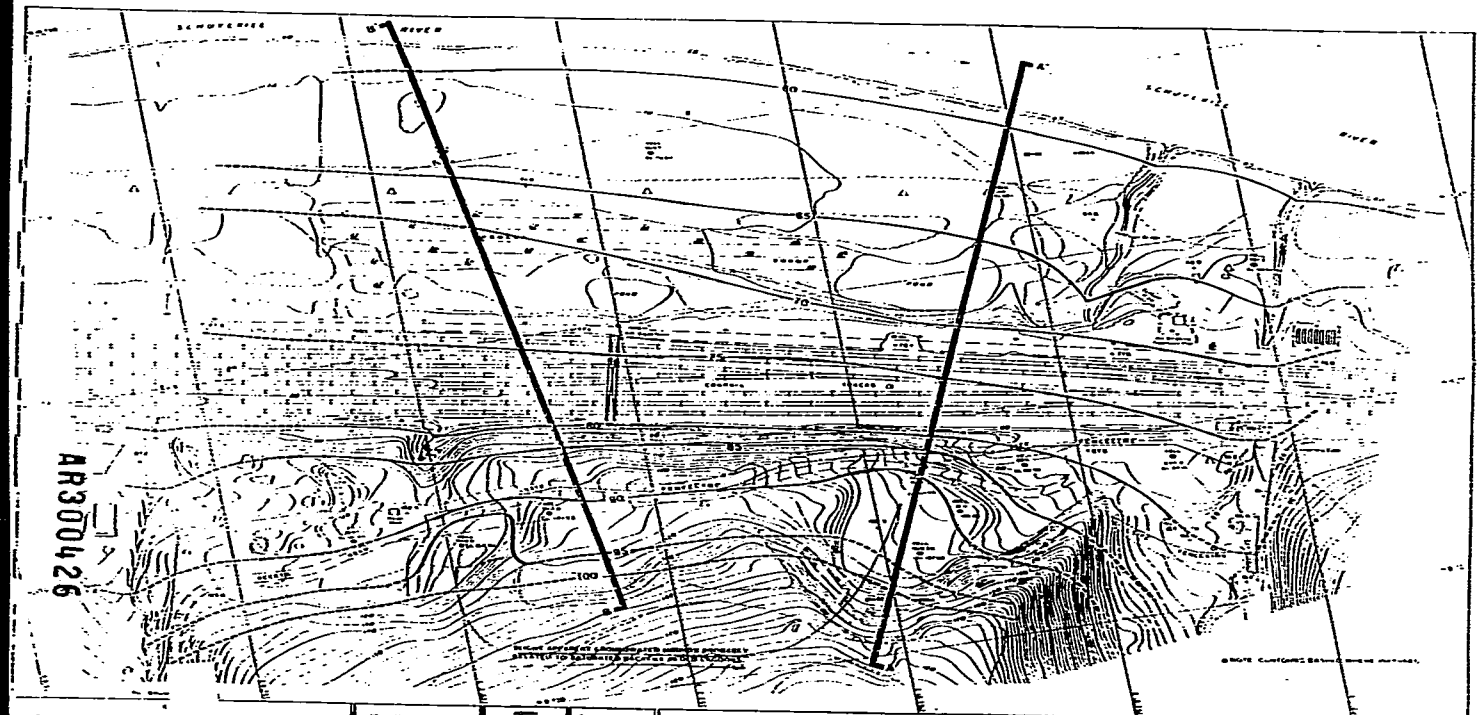
PRELIMINARY INVESTIGATION
INITIAL FIELD
SAMPLING LOCATIONS

3

AR300424


TYSON'S DUMP SITE
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA
BAKER / TSA
DIVISION OF MICHAEL BAKER CORPORATION
CONSULTING ENGINEERS
BEAVER, PENNSYLVANIA
ADDITIONAL FIELD
SAMPLING LOCATIONS

AR300425



AR300426

155

Project Tyson's Dump

Boring No. NUS-4 Ground Elev. 89.5

Location King of Prussia, Pa.

Date Started 2/7/84 Date Completed 2/7/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
					CLAY, Sandy, Lt. Brn., Damp			
					4.0	▼ 24 Hrs.		
5					SAND, Some Slag & Gravel, Blk & Gy.			
		*						
10					Auger Refusal @ 7.0'			

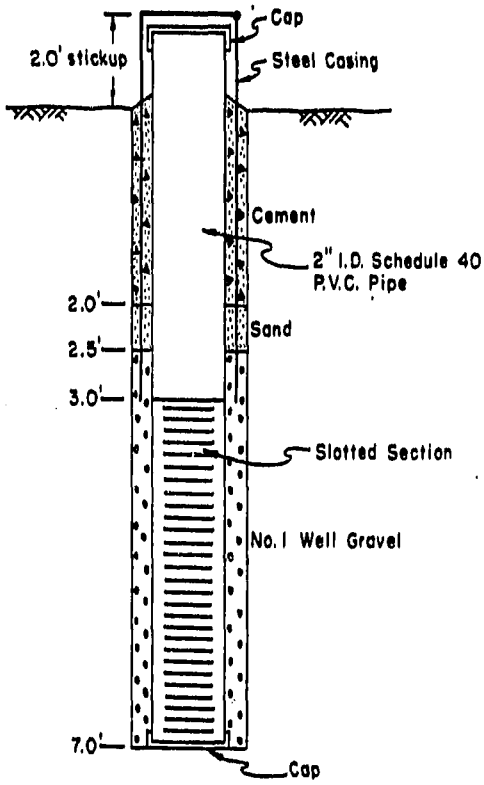
* Exceeds 50 Blows/ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300427

WELL NUS-4



TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None	S.O. No. 14572-ARA	MICHAEL BAKER, JR., INC. Consulting Engineers BEAVER, PENNSYLVANIA
DATE: April 1984	FILE: TSH	

AR300428

Project Tyson's Dump

Boring No. NUS-5 Ground Elev. 108.8

Location King of Prussia, PA

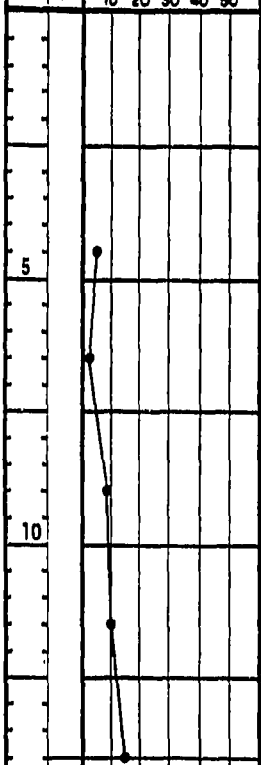
Date Started 1/26/84 Date Completed 1/26/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
					CLAY, Sandy, Brn., Some Gravel, Damp			
					4.5			
5					SLAG & Org. Material., Black, Very Wet			
					6.5			
					FILL, Clay, Slag, Rock Frags. & Wood, Brn., Damp			
					9.0			
10					SLAG, Damp			
					11.5	▽		
					SLAG, Gy. & Purple w/ Two Large Rock Frags., Damp			
					14.0			
15					Auger Refusal at 14.0'			



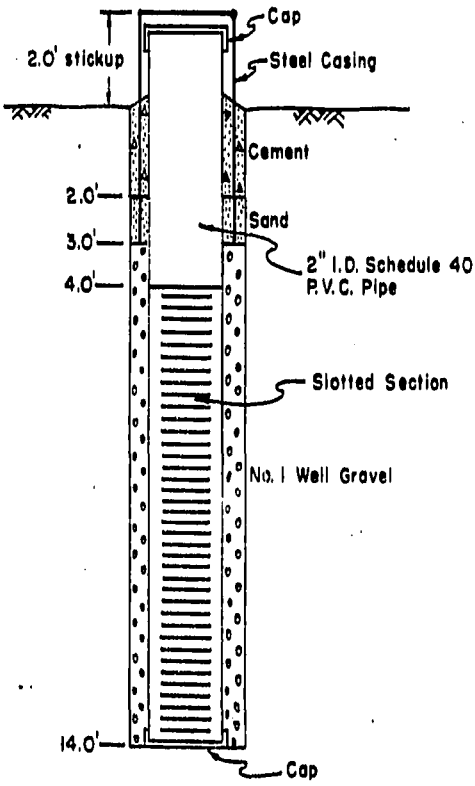
* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

AR300429

MBJ REP. Carl Brown w/SRW

WELL NUS-5



TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None S.O.No. 14572-ARA

DATE: April 1984 FILE: TSH

MICHAEL BAKER, JR., INC.
Consulting Engineers
BEAVER, PENNSYLVANIA

AR300

Project Tyson's Dump

Boring No. NUS-7 Ground Elev. 71.0

Location King of Prussia, PA

Date Started 1/17/84 Date Completed 1/20/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
					SILT, Sandy, Brn., Dry, Tr. of Twigs, (Boulder at 5.0')			
5								
					8.0			
					SAND & GRAVEL, Brn., Damp			
10					10.3			
		* 54/.3'			SANDSTONE FRAGS & SAND Brn., Moist to Wet	▼ 24 Hrs.		
					12.7			
15					Auger Refusal at 12.7' SANDSTONE BOULDERS, Gy. & Brn. Hole collapsed at 14.7' after removal of core barrel. Lost most of core.			
			16		18.9			
20					Bottom of hole at 18.9'			

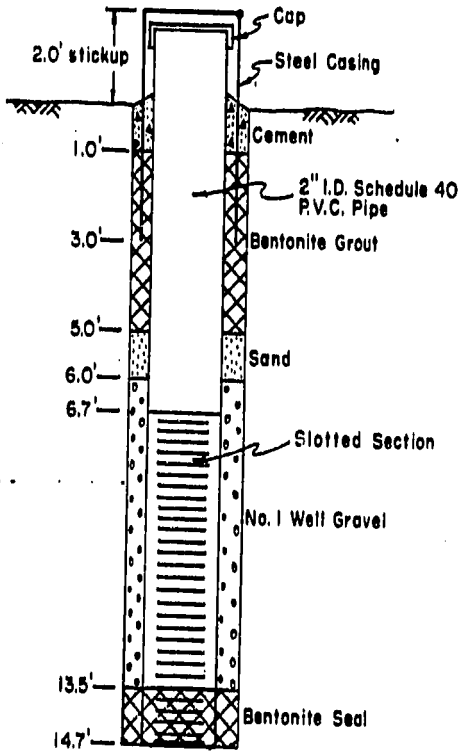
* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

AR300431

MBJ REP. Earl Brown w/SRN

WELL NUS-7



Note: Cored portion of boring beneath well sealed with Bentonite.

AR300432

TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None S.O.No. 14572-ARA

DATE: April 1984 FILE: TSH

MICHAEL BAKER JR., INC.
Consulting Engineers
BEAVER, PENNSYLVANIA

Project Tyson's Dump

Boring No. NUS-7A Ground Elev. 70.9

Location King of Prussia, PA

Date Started 1/23/84 Date Completed 1/24/84

Remarks Location approx. 25' SE of NUS-7

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
5					Augered from 0'-12.7' (No Samples)			
10					12.7			
15					Auger Refusal at 12.7' Lost most of core. Roller bit was used to clean out hole; however, hole collapsed below 13.9' after roller bit was removed.			
20			28		21.0			
25					Bottom of hole at 21.0'. Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

AR300433

MBJ REP. Earl Brown w/SRW

Project Tyson's Dump

Boring No. B-1 Ground Elev. 124.9

Location King of Prussia, PA

Date Started 1/28/84 Date Completed 1/28/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
					SLAG, some Sand and Br. Clay at Top, Brn.-Purpsh. Dry			
					4.0			
5					CLAY & SLAG, Brn.-Purpsh. Damp			
					6.5			
					SLAG, Some Sand, Brn.-Purpsh., Very Wet			
					9.0			
10					SLAG, Some Sand, Brn.-Purpsh., M. Dense, Moist-Wet			
					12.5			
					Auger refusal at 12.5'. Bottom of Hole backfilled with Bentonite Grout (Total 12.5')			
					No Well Installed			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

AR300434 MBJ REP. Earl Brown w/SRW

Project: Tyson's Dump

Boring No. B-2 Ground Elev. 125.5

Location: King of Prussia, PA

Date Started 1/31/84 Date Completed 2/1/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
					SLAG, Some Wood, Brn.-Purpsh., Damp			
					4.0			
5					SLAG, Brn.-Purpsh., Some Gy.			
		50/.3			5.5			
					Auger Refusal at 5.5'			
					Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300435

Project Tyson's Dump

Boring No. B-2-A Ground Elev. 125.5

Location King of Prussia, PA

Date Started 2/1/84 Date Completed 2/1/84

Remarks Located 10' West of B-2

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
					SLAG, Brn. & Purple, Damp			
5								
					7.5			
					Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

AR300436

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

Project Tyson's Dump

Boring No. B-3 Ground Elev. 122.8

Location King of Prussia, PA

Date Started 1/27/84 Date Completed 1/27/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
					CLAY, Sandy, Brn.-Purpsh., Dry			
					4.0			
5					ORGANIC SILT, Brn. & Blk., Tr. Hair, Damp			
					6.5			
					SLAG, Brn.-Purpsh., Dense, Wet			
					9.5			
10					Auger Refusal @ 9.5'			
					Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300437

Project Tyson's Dump

Boring No. B-4 Ground Elev. 105.2

Location King of Prussia, PA

Date Started 2/2/84 Date Completed 2/3/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 2

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
5					SLAG, Some Sand & Rock Frags., Brn.-Purpsh., Moist to Wet 9.0			
10					SILT, Sandy, Brn., Moist 11.5			
					SLAG, Silt, Sand & Shale Frags., Blk., Dry 14.0			
15					SLAG, some Brn.Clay, Reddog, Brn.-Purpsh., Dry 16.5			
20		50/.3'			SLAG, Sand & Gravel, Rock Frags., Brn., Purple & Gy., Dry Wet below 19.5' 0.1' of Sand at bottom of boring. 22.6			
25		50/.11'			Auger Refusal at 22.7'			

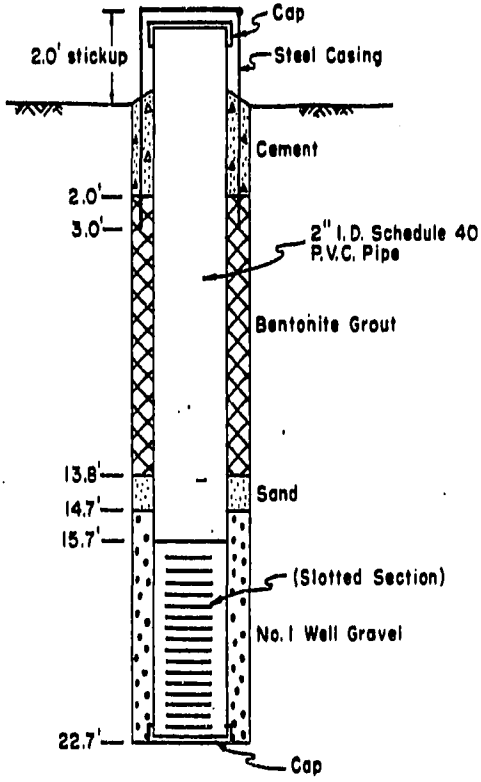
* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

BY REP. Earl Brown w/SRW

AR300456

WELL B-4



AR300439

TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None	S.O. No. 14572-ARA	MICHAEL BAKER, JR., INC. Consulting Engineers BEAVER, PENNSYLVANIA
DATE: April 1984	FILE: TSH	

Project: Tyson's Dump

Boring No. B-5 Ground Elev. 108.5

Location: King of Prussia, PA

Date Started 2/1/84 Date Completed 2/1/84

Remarks:

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
1					Auger refusal at 2.0'. Backfilled with uncontaminated natural soil. Relocated Hole to B-5-A, 5' N and 5' W of B-5.			
2								
					Auger Refusal at 2.0'. Backfilled with uncontaminated natural soil.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

B-20

AR300440

Project Tyson's Dump

Boring No. B-5-A Ground Elev. 108.5

Location King of Prussia, PA

Date Started 2/1/84 Date Completed 2/1/84

Remarks Located 5' N and 5' W of B-5

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
1					Auger refusal at 2.0'. Backfilled with uncontaminated natural soil.			
2								
					Auger Refusal at 2.0'. Backfilled with uncontaminated natural soil.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

AR300441

MBJ REP. Earl Brown w/SRW

Project Tyson's Dump

Boring No. B-6 Ground Elev. 107.5

Location King of Prussia, PA

Date Started 2/6/84 Date Completed 2/6/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
5					SAND; Some Slag & Sandstone Frags, Brn.-Purpsh, Dry 4.5			
10					SLAG & SAND, Tr. Clay, Red, Gy. & Blk. Damp to Dry (Wet 11.5' to 14.0') 16.5			
15								
20					SAND, Little Sandstone Frags., Wet			
25		50/5'			White Clay at Bottom of Hole 25.5			
					Auger Refusal @ 25.5' Boring backfilled with bentonite.			

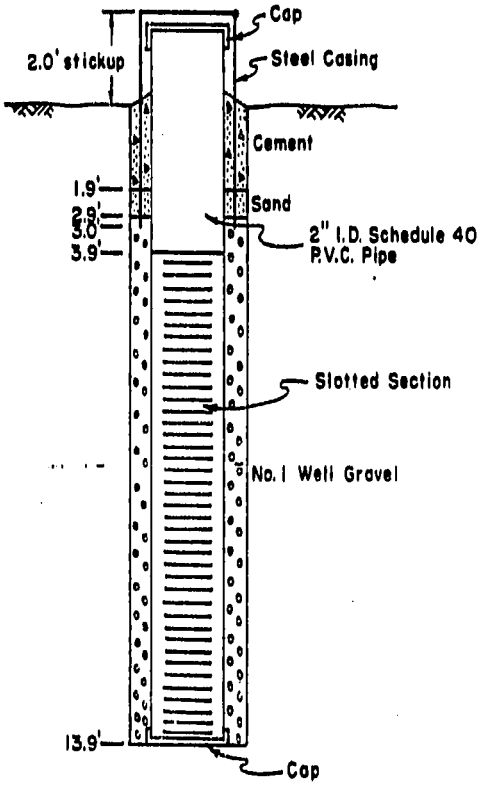
* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300442

WELL NUS-3



TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None S.O. No. 14572-ARA

DATE: April 1984 FILE: TSH

MICHAEL BAKER, JR., INC.
Consulting Engineers
BEAVER, PENNSYLVANIA

AR300443

Project Tyson's Dump

Boring No. NUS-3 Ground Elev. 121.5

Location King of Prussia, PA

Date Started 1/30/84 Date Completed 1/30/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot (10 20 30 40 50)	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
					CLAY, Sandy, Some Slag, Brn., Damp			
					4.0			
5					CLAY, Slag, Tr. Twigs, Brn.-Purple & Gy., Damp			
					6.5			
					SLAG, Purple			
					8.3			
10					SLAG & SAND, Tr. Clay, Brn.-Purple, Dry			
					11.3			
					SAND & SLAG, Tr. Clay, Mica, Brn.-Purple, Dry			
					13.9			
15					Auger Refusal at 13.9'			

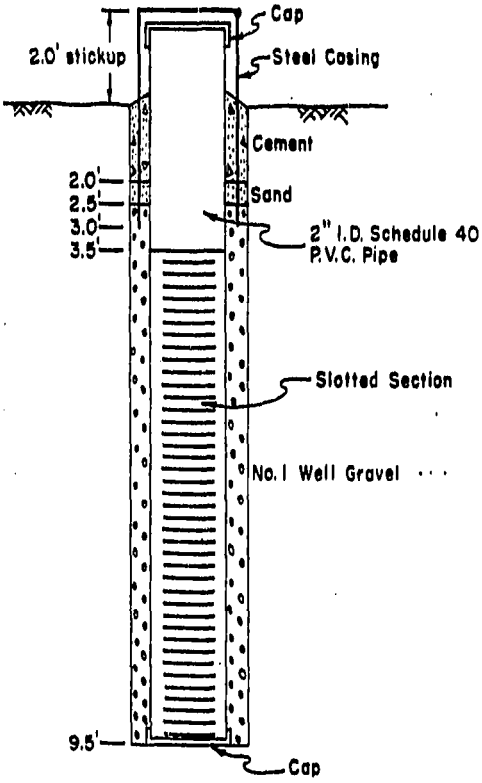
* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300444

WELL NUS-2-A



TYSON'S DUMP, KING OF PRUSSIA, PA.

SCALE: None S.O. No. 14572-ARA

DATE: April 1984 FILE: TSH

MICHAEL BAKER, JR., INC.
Consulting Engineers
BEAVER, PENNSYLVANIA

Project Tyson's Dump

Boring No. NUS-2-A Ground Elev. 108.0

Location King of Prussia, PA

Date Started 2/1/84 Date Completed 2/2/84

Remarks

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
					SLAG, Sand, Gravel, Some Clay, Brn.-Purple, Dry			
					4.0			
5					SLAG, Brn.-Purple, Dry to Damp			
					6.5			
					SAND, SS Frags, Gravel, Tr. of Clay, Brn.-Purple, Damp	▼ 24 Hrs.		
					9.5			
10					Auger Refusal at 9.5'			
					Boring NUS-2 had Auger Refusal at 2.0'.			
					Boring NUS-2A located 7.0' North of NUS-2.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes

MBJ REP. Earl Brown w/SRW

AR300446

Project Tyson's Dump

Boring No. NUS-1-A Ground Elev. 132.1

Location King of Prussia, PA

Date Started 1/31/84 Date Completed 1/31/84

Remarks Located 5' East of NUS-1

Michael Baker, Jr., Inc.
Test Boring Record

SHEET 1 OF 1

Depth (ft)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft)
1					SAND, Brn., Wet			
2								
3								
4					Auger Refusal at 4.0' 4.0			
					Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes MBJ REP. Earl Brown w/SRW

Project Tyson's Dump

Boring No. NUS-1 Ground Elev. 132.1

Location King of Prussia, PA

Date Started 1/31/84 Date Completed 1/31/84

Remarks

Michael Baker, Jr., Inc.

Test Boring Record

SHEET 1 OF 1

Depth (ft.)	Sample Type	Standard Penetration Test Blows Per Foot 10 20 30 40 50	Core Data Rec. (%)	Core Data RQD (%)	Visual Description	Laboratory Analysis Class.	Laboratory Analysis Moisture Content (%)	Elevation (ft.)
1					SAND, Brn., Wet Relocated Hole to NUS-1-A, 5' East of NUS-1			
2								
3								
4					Auger Refusal at 4.0' 4.0			
					Boring backfilled with bentonite.			

* Exceeds 50 Blows/Ft.

DRILLING CO. A. C. Schultes MBJ REP. Earl Brown w/SRW

AR300448

data indicates not very efficient

TABLE C-7
TYSON'S DUMP SITE
LEACHATE TREATMENT PLANT SAMPLING RESULTS

Sample Type	Influent	Effluent	Influent Not Pumped	Influent Pumped	Effluent
EPA Sample No.	830401-04	830401-05	830608-16	830608-18	830608-17
Date Sampled	4-1-83	4-1-83	6-8-83	6-8-83	6-8-83
Parameters (µg/l)					
Volatile Compounds	*	*			
Benzene	ND[a]	ND	1.9	16	4.6
Chlorobenzene	ND	ND	NDB[b]	76	35
1,1-Dichloroethane	ND	ND	1.5	ND	ND
Ethylbenzene	ND	ND	ND	270	75
Tetrachloroethylene	ND	ND	20	ND	34
Toluene	540**	33**	3.1	410	28
Trichloroethylene	ND	ND	36	ND	60
Acetone	ND	ND	(1-10)EE1	(1-10)EE1	(1-10)EE1
4-Methyl-2-Pentanone	220**	210**	(1-10)EE1	(1-10)EE2	(1-10)EE1
(o,m)-Xylene isomers	750**	83**	1-10	(1-10)EE3	(1-10)EE3
p-Xylene isomer	(1-10)EE3	ND	(1-10)EE2	(1-10)EE2	(1-10)EE1
1,2,3-Trichloropropane	(1-10)EE4	(1-10)EE4	(1-10)EE2	(1-10)EE2	(1-10)EE2
1-Chloro-1-propene isomer	ND	ND	(1-10)EE1	(1-10)EE1	(1-10)EE1
Substituted Benzene	ND	ND	ND	(1-10)EE1	(1-10)EE1
Base/Neutral Compounds			***	***	***
n-Butylbenzylphthalate	ND	Trace (0.38)			
1,2-Dichlorobenzene	55.4	20.9			
1,4-Dichlorobenzene	3.9	Trace (0.97)			
1,2,4-Trichlorobenzene	50.6	22.5			
Chloroethene	120	100			
Acid Extract. Compounds			***	***	***
2-Chlorophenol	Trace (0.60)				
2,4-Dimethylphenol	24.6	4.1			
Phenol	17.9	31.7			
Methyl Phenol isomer	170	28			
Ethyl Phenol isomer	41	6.0			

Source: Compiled from EPA Region III Central Regional Laboratory Results Sheets, 1983.

*Detection limit greater than 100 µg/l due to high concentration of 1,2,3-trichloropropane.
**Detected in base/neutral scan.
***Not reported.

[a]ND = Not Detected. EPA Region III Central Regional Laboratory's nominal detection limit for these compounds is 1 µg/l.

[b]NDB = Not Detected due to field blank correction.

Note: (1-10)EE3 = represents the exponent for concentrations written in scientific notation. For example, (1-10)EE3 represents a reported concentration range of 1,000 to 10,000 µg/l.

AR300449

TABLE C-8

– Continued –

Location	In Path	Tributary Sediment	Lower Lagoon Surface	Lower Lagoon Subsurface	Upper Lagoon Surface	Upper Lagoon Subsurface	Cliff Face
EPA Sample No.	830126-03	830126-07	830330-02	830330-03	830330-04	830330-05	830330-06
Date Sampled	1-26-83	1-26-83	3-30-83	3-30-83	3-30-83	3-30-83	3-30-83
Parameter (mg/kg)							
Volatile Organic Compounds – Continued							
Dichlorobenzene isomers	<0.005	<0.005	<0.005	<0.005	<0.005	1.0-10	<0.005
Ethyl Methyl Benzene isomers	<0.005	<0.005	<0.005	<0.005	<0.005	0.1-1.0	<0.005
4-Methyl-2-Pentanone	0.01-0.1	<0.005	<0.005	<0.005	<0.005	0.1-1.0	<0.005
Trimethyl Benzene isomers	<0.005	<0.005	<0.005	<0.005	<0.005	0.1-1.0	<0.005
(o,m)-Xylene isomers	0.1-14	>560*	13-52*	<0.005	10-51*	10-100	5.6-280*
p-Xylene isomers	0.01-0.1	120*	<0.005	<0.005	<0.005	10-100	0.01-0.1
1,2,3-Trichloropropane	0.1-1.0	54*	0.1-2.0*	0.01-0.1	0.1-3.1*	1.0-69*	10-100
Benzeneacetaldehyde	<0.005	<0.005	<0.005	<0.005	<0.005	0.1-1.0	<0.005
Base/Neutral Compounds							
Bis (2-Ethylhexyl) phthalate	2.6	11.9	6.05	<1	58.5	2.73	<10
1,2-Dichlorobenzene	<1	42.7	1.91	<1	Trace (0.39)	6.23	<10
1,4-Dichlorobenzene	<1	1.4	<1	<1	<1	<1	<10
Naphthalene	<1	<1	<1	<1	<1	0.01-0.1	<10
1,2,4-Trichlorobenzene	<1	15.0	3.66	<1	Trace (0.92)	8.61	<10
2-Chloro-10H-Phenothiazine	2.0	15-36	<1	<1	42	<1	<10
Di-n-Butylphthalate	<1	<1	4.4	2.1	3.1	<1	<10
Benzenamine	<1	<1	<1	<1	5.3	<1	<10
4-Hydroxybenzene Acetonitrile	<1	<1	<1	<1	12	<1	23

Source: Compiled from EPA Region III Central Regional Laboratory Results Sheets, 1983.

*Detected in base/neutral scan.

[a]NA = Samples Not Analyzed for Metals

AR300450

TABLE C-8

TYSON'S DUMP SITE

EPA SOIL SAMPLING RESULTS

Location	In Path	Tributary Sediment	Lower Lagoon Surface	Lower Lagoon Subsurface	Upper Lagoon Surface	Upper Lagoon Subsurface	Cliff Face
EPA Sample No.	830126-03	830126-07	830330-02	830330-03	830330-04	830330-05	830330-06
Date Sampled	1-26-83	1-26-83	3-30-83	3-30-83	3-30-83	3-30-83	3-30-83
Parameter (mg/kg)							
Metals							
Antimony	NA[a]	NA	<2.0	NA	2.8	NA	NA
Arsenic	NA	NA	0.92	NA	2.8	NA	NA
Beryllium	NA	NA	<0.5	NA	<0.5	NA	NA
Cadmium	NA	NA	0.34	NA	0.93	NA	NA
Chromium	NA	NA	8.8	NA	29	NA	NA
Copper	NA	NA	48	NA	11,200	NA	NA
Lead	NA	NA	6.5	NA	46	NA	NA
Mercury	NA	NA	0.97	NA	4.6	NA	NA
Nickel	NA	NA	2.9	NA	9.3	NA	NA
Selenium	NA	NA	<0.2	NA	<0.2	NA	NA
Silver	NA	NA	<0.1	NA	1.3	NA	NA
Thallium	NA	NA	<1.0	NA	<1.0	NA	NA
Zinc	NA	NA	22	NA	168	NA	NA
Volatile Organic Compounds							
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	0.084	<0.005
Chlorobenzene	<0.005	11*	<0.005	<0.005	<0.005	1.3	0.002
Ethylbenzene	0.006	120*	5.8*	<0.005	6.7*	7.8-53*	0.009-27*
Tetrachloroethylene	<0.005	<0.005	0.0056	<0.005	0.104	1.3	1.5
Toluene	0.009	130*	<0.005	<0.005	<0.005	8.3	0.018
Trichloroethylene	<0.005	<0.005	<0.005	<0.005	0.015	0.165	0.006
Acetone	<0.005	<0.005	<0.005	<0.005	<0.005	0.01-0.1	<0.005

AR300451

TABLE C-6

- Continued -

Location	Leachate Along RR Tracks	Dacon Well (ERT-1)	Seep Well (ERT-2)
EPA Sample No.	830308-07	830401-02	830401-03
Date Sampled	3-8-83	4-1-83	4-1-83
Parameters (in µg/l)			
Base/Neutral Compounds			
Hexanal	ND	2.8	1.1-3.7
1,2-Dichlorobenzene	1.3	1.6	1.5
Trichlorobenzene isomer	95	ND	ND
Dichlorobenzene isomer	130	ND	ND
Diethylphthalate	ND	1.5	1.3
Di-n-octylphthalate	ND	1.6	3.4
Hexahydro-2H-azepin-2-one	ND	14-21	20-28
Acid Extract. Compounds			
Methylphenol isomer	47	ND	ND
Ethylphenol isomer	Trace	ND	ND

Source: Compiled from EPA Region III Central Regional Laboratory Results Sheets, 1983.

*Detected in base/neutral scan.

[a]NA = Sample Not Analyzed for Metals

[b]ND = Not Detected. EPA Region III Central Laboratory's nominal detection limit for these compounds is 1 µg/l.

AR300452

TABLE C-6

TYSON'S DUMP SITE

EPA GROUNDWATER SAMPLING RESULTS

Location	Leachate Along RR Tracks	Decon Well (ERT-1)	Seep Well (ERT-2)
EPA Sample No.	830308-07	830401-02	830401-03
Date Sampled	3-8-83	4-1-83	4-1-83
Parameters (in µg/l)			
Metals			
Antimony	NA*	<20	<20
Thallium	NA	<10	<10
Arsenic	NA	<2	5.4
Beryllium	NA	<5	<5
Cadmium	NA	<1.0	<1.0
Chromium	NA	<50	66
Copper	NA	<25	<25
Lead	NA	6.1	5.6
Mercury	NA	0.32	<0.2
Nickel	NA	<25	39
Selenium	NA	<2	<2
Silver	NA	<1	<1
Zinc	NA	40	91
Volatile Organics			
1,2,3-Trichloropropane	160,000	10,000-100,000	1-10
Trichloromethane	4.2	ND	ND
Trichloroethane	60.4	ND	ND
Toluene	942	ND	ND
Tetrachloroethane	65.7	ND	ND
Chlorobenzene	48.4	ND	ND
Ethylbenzene	1.3	ND	ND
Benzene	ND[b]	6.2	ND
Carbon Tetrachloride	ND	4.3	ND
Chloroform	ND	30	ND
1,2-Dichloroethane	ND	13	ND
4-Methyl-2-Pentanone	750*	ND	2.4
Dimethyl benzene isomer (Xylenes)	1740-4120*	ND	ND
p-Xylene isomer	ND	1-10	10-100

AR300453

TABLE C-5

TYSON'S DUMP SITE

EPA SAMPLING RESULTS OF RESIDENTIAL WATER SUPPLIES

Off-Site (Private Wells)	EPA Sample No.	Parameter	
		Dichloromethane	Toluene
1. Crause Well	830308-10	*	*
2. Farina Well	830308-11	*	*
3. Barnshaw Well	830308-12	2	2
4. Rhoads Well	830308-13	*	*
5. Valley Brook Drive	830310-02	*	*
6. Boxford Circle	830310-03	*	*
7. Essex Circle	830310-04	*	*
8. Nantucket Circle	830310-05	*	*
9. Nicholson Well	830325-02	*	*
10. Swim Club Well	830322-02	*	*
11. Jordan Well	830323-12	*	*

Source: Compiled from EPA Region III Central Regional Laboratory Results Sheets, 1983.

*No volatile, base/neutral or acid extractable organic compounds detected at a nominal detection limit of <1 µg/l.

All concentrations in µg/l.

AR300454

TABLE C-3

– Continued –

Lab No.	2-8886	2-8887	2-8888	2-8889	2-8890	2-8891	2-8892	2-8893	2-8894	2-8895
Sample ID	5	6	7	8	Blank	A-9	A-10	A-11	A-12	Blank
Air Volume (liters)	340	327	293	280	—	33.85	34.90	21.74	26.80	—
Parameters										
Xylenes (mg)	0.011	0.003	0.240	<0.002	<0.002	<0.001	<0.001	0.018	<0.001	<0.001
(mg/m³)	0.032	0.009	0.819	<0.007	—	<0.030	<0.029	0.828	<0.037	—
Detection Limit (mg)	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001
Perchloroethylene (mg)	<0.016	<0.016	0.024	<0.016	<0.016	NA	NA	NA	NA	NA
(mg/m³)	<0.047	<0.049	0.082	<0.057	—					
Detection Limit (mg)	0.016	0.016	0.016	0.016	0.016					
1,2,3-Trichloropropane (mg)	<0.028	<0.028	0.100	<0.028	<0.028	NA	NA	NA	NA	NA
(mg/m³)	<0.082	<0.086	0.341	<0.100	—					
Detection Limit (mg)	0.028	0.028	0.028	0.028	0.028					
Total Hydrocarbons as Toluene (mg)	NA	NA	0.354	NA	NA	<0.001	<0.001	0.030	<0.001	<0.001
(mg/m³)			1.21			<0.030	<0.029	1.38	<0.037	—
Detection Limit			0.002			0.001	0.001	0.001	0.001	0.001

Source: Clayton Environmental Consultants, Inc., Laboratory Analytical Results Sheets, 1983

[1]NA – Not Analyzed for parameter

AR300455

TABLE C-3

TYSON'S DUMP SITE

RESULTS OF THE MARCH 22, 1983 AIR MONITORING

Lab No.	2-8886	2-8887	2-8888	2-8889	2-8890	2-8891	2-8892	2-8893	2-8894	2-8895
Sample ID	5	6	7	8	Blank	A-9	A-10	A-11	A-12	Blank
Air Volume (liters)	340	327	293	280	—	33.85	34.90	21.74	26.80	—
Parameters										
Methylene Chloride (mg)	<0.014	<0.014	0.082	<0.014	<0.014	<0.007	<0.007	<0.007	<0.007	<0.007
(mg/m³)	<0.041	<0.043	0.280	<0.050	—	<0.207	<0.201	<0.322	<0.261	—
Detection Limit (mg)	0.014	0.014	0.014	0.014	0.014	0.007	0.007	0.007	0.007	0.007
Methyl Ethyl Ketone (mg)	<0.016	<0.016	0.040	<0.016	<0.016	<0.008	<0.008	0.008	<0.008	<0.008
(mg/m³)	<0.047	<0.049	0.137	<0.057	—	<0.236	<0.229	0.368	<0.299	—
Detection Limit (mg)	0.016	0.016	0.016	0.016	0.016	0.008	0.008	0.008	0.008	0.008
Benzene (mg)	<0.004	<0.004	0.012	<0.004	<0.004	<0.002	<0.002	0.003	0.003	<0.002
(mg/m³)	<0.012	<0.012	0.041	<0.014	—	<0.059	<0.057	0.136	0.112	—
Detection Limit (mg)	0.004	0.004	0.004	0.004	0.004	0.002	0.002	0.002	0.002	0.002
Ethylene Dichloride (mg)	<0.012	<0.012	0.045	<0.012	<0.012	NA[1]	NA[1]	NA[1]	NA[1]	NA[1]
(mg/m³)	<0.035	<0.037	0.154	<0.043	—					
Detection Limit (mg)	0.012	0.012	0.012	0.012	0.012					
Carbon Tetrachloride (mg)	<0.120	<0.120	0.193	<0.120	<0.120	NA	NA	NA	NA	NA
(mg/m³)	<0.353	<0.367	0.659	<0.429	—					
Detection Limit (mg)	0.120	0.120	0.120	0.120	0.120					
1,1,2-Trichloroethane (mg)	<0.014	<0.014	0.014	<0.014	<0.014	NA	NA	NA	NA	NA
(mg/m³)	<0.041	<0.043	0.048	<0.050	—					
Detection Limit (mg)	0.014	0.014	0.014	0.014	0.014					
Toluene (mg)	0.005	<0.002	0.107	<0.002	<0.002	<0.001	<0.001	0.008	<0.001	<0.001
(mg/m³)	0.015	<0.006	0.365	<0.007	—	<0.030	<0.029	0.368	<0.037	—
Detection Limit (mg)	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001

TABLE C-2

– Continued –

Lab No.	2-7210	2-7211	2-7212	2-7213	2-7214	2-7215*	2-7216	2-7217	2-7218	2-7219	2-7220	2-7207	2-7208	2-7209
Sample ID	1Z	2L	3A	4E	5G	7D	8H	Blank	6C	9B	Blank	2G	3G	Blank
Air Volume (liters)	35.63	6.61	20.79	25.00	27.83	15.29	22.08	—	24.63	23.81	—	383.0	283.0	—
Parameters														
o-Toluidine (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.057	<0.057	<0.057
(mg/m³)												<0.149	<0.201	—
Detection Limit (mg)												0.057	0.057	0.057
2,4-Xylidine (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.025	<0.025	<0.025
(mg/m³)												<0.065	<0.088	—
Detection Limit												0.025	0.025	0.025
o-Anisidine (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.028	<0.028	<0.028
(mg/m³)												<0.073	<0.099	—
Detection Limit (mg)												0.028	0.028	0.028
p-Anisidine (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.098	<0.098	<0.098
(mg/m³)												<0.256	<0.346	—
Detection Limit (mg)												0.098	0.098	0.098
p-Nitroaniline (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.05	—
(mg/m³)												<0.131	<0.180	—
Detection Limit (mg)												0.050	0.050	0.050

Source: Clayton Environmental Consultants, Inc. Laboratory Analytical Results Sheets, 1983

*Not sample taken off site

NA - Not Analyzed for parameter

AR004457

TABLE G-2

TYSON'S DUMP SITE

RESULTS OF THE FEBRUARY 9, 1983 AIR MONITORING

Lab No.	2-7210	2-7211	2-7212	2-7213	2-7214	2-7215*	2-7216	2-7217	2-7218	2-7219	2-7220	2-7207	2-7208	2-7209
Sample ID	1Z	2L	3A	4E	5G	7D	8H	Blank	6C	9B	Blank	2G	3G	Blank
Air Volume (liters)	35.63	6.61	20.79	25.00	27.83	15.29	22.08	—	24.63	23.81	—	383.0	283.0	—
Parameters														
Benzene (mg)	<0.001	<0.001	<0.001	0.0012	<0.001	0.0074	<0.001	<0.001	NA[1]	NA	NA	NA	NA	NA
(mg/m³)	<0.028	<0.151	<0.048	0.048	<0.036	0.483	<0.045	—						
Detection Limit (mg)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001						
Toluene (mg)	<0.001	<0.001	0.0071	0.050	<0.001	0.0548	<0.001	<0.001	NA	NA	NA	NA	NA	NA
(mg/m³)	<0.028	<0.151	0.342	2.000	<0.036	3.582	<0.045	—						
Detection Limit (mg)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001						
Xylenes (mg)	<0.001	<0.001	0.0204	0.1292	0.0049	0.3567	<0.001	<0.001	NA	NA	NA	NA	NA	NA
(mg/m³)	<0.028	<0.151	0.981	5.168	0.177	23.326	<0.045	—						
Detection Limit (mg)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001						
Mineral Spirits (mg)	<0.040	<0.040	<0.040	<0.040	<0.040	4.1854	<0.040	<0.040	NA	NA	NA	NA	NA	NA
(mg/m³)	<1.123	<6.051	<1.924	<1.600	<1.437	273.74	<1.812	—						
Detection Limit (mg)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040						
PCBs (mg)	NA	NA	NA	NA	NA	NA	NA	NA	<0.001	<0.001	<0.001	NA	NA	NA
(mg/m³)									<0.041	<0.042	—			
Detection Limit (mg)									0.001	0.001	0.001			
Aniline (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.012	<0.012	<0.012
(mg/m³)												<0.031	<0.042	—
Detection Limit (mg)												0.012	0.012	0.012
N,N-Dimethyl Aniline (mg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.076	<0.076	<0.076
(mg/m³)												<0.198	<0.269	—
Detection Limit (mg)												0.076	0.076	0.076

00 0 4 5 0 0

TABLE C-4

- Continued -

EPA Sample No. / Date Collected	UNNAMED TRIBUTARY TO SCHUYLKILL RIVER: Upstream of Seep 830126-02 1-26-83	Seep Area NW of Site 830126-05 1-26-83	Downstream of Seep 830126-04 1-26-83	830201-02 2-1-83	830401-06 4-1-83	SEEPS: Downstream of Station 03 830126-06 1-26-83	Near Cliff 830126-07 1-26-83	SWAMP: N. of Site 830201-01 2-1-83	Upstream of Schuylkill River 830201-04 2-1-83
Parameters (in µg/l)									
Base/Neutral Compounds									
1,2-Dichlorobenzene	ND	Trace	20.0	11.7	9.3	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	1.6	Trace	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	Trace	6.3	2.0	Trace	ND	ND	ND	ND
Bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND	230
1,2,4-Trichlorobenzene	ND	ND	ND	ND	8.7	ND	ND	ND	ND
Acid Extract. Compounds									
2,4-Dimethylphenol	4.6	ND	4.1	4.6	Trace	ND	ND	ND	ND
Phenol	19.3[c]	ND	13.7[c]	19.3	ND	ND	ND	ND	ND

Source: Compiled from EPA Region III Central Regional Laboratory Results Sheets, 1983.

Note: Exact sampling locations unknown.

[a]ND = Not Detected. EPA reported nominal detection limits for water samples were 1 µg/l for volatile, base/neutral and acid extractable compounds.

[b](1-10)E1 - represents the exponent for concentrations written in scientific notation. For example, (1-10)E1 represents a reported concentration range of 10 to 100 µg/l.

[c]µg/l detected in the field blank, results not corrected.

AR300459

TABLE C-4

TYSON'S DUMP SITE

RESULTS OF THE SURFACE WATER SAMPLES COLLECTED BY EPA ERT

	UNNAMED TRIBUTARY TO SCHUYLKILL RIVER					SEEPS		SWAMP	
	Upstream of Seep	Seep Area NW of Site	Downstream of Seep			Downstream of Station 03	Near Cliff	N. of Site	Upstream of Schuylkill River
EPA Sample No.	830126-02	830126-05	830126-04	830201-02	830401-06	830126-06	830126-07	830201-01	830201-04
Date Collected	1-26-83	1-26-83	1-26-83	2-1-83	4-1-83	1-26-83	1-26-83	2-1-83	2-1-83
Parameters (in µg/l)									
Volatile Compounds									
Benzene	ND[a]	ND	22	6.3	ND	99	950	ND	ND
Chlorobenzene	ND	3.4	170	23	ND	>600	12,000	ND	ND
Chloroform	ND	8.9	1.7	ND	ND	9.8	ND	ND	ND
1,1-Dichloroethane	ND	7.1	3.5	2.3	ND	2.5	ND	ND	ND
Ethylbenzene	ND	4	400	10	ND	>500	42,000	ND	ND
Toluene	ND	5.3	420	290	ND	>1,000	52,000	ND	1.1
Trichloroethylene	ND	86	51	17	ND	150	24,000	ND	ND
Acetone	ND	ND	(1-10)EE1	ND	ND	1-10	ND	ND	ND
2-Butanone	ND	ND	1-10	ND	ND	0.1-1.0	ND	ND	ND
(o,m)-Xylene isomers	ND	(1-10)EE1[b]	(1-10)EE3	(1-10)EE3	ND	(1-10)EE3	(1-10)EE5	1-10	1-10
p-Xylene isomer	ND	(1-10)EE1	(1-10)EE3	(1-10)EE3	(1-10)EE2	(1-10)EE3	(1-10)EE5	ND	ND
Tetrachloroethylene	ND	44	51	ND	ND	>350	9,000	ND	ND
cis-1,2-Dichloroethylene	ND	(1-10)EE1	(1-10)EE1	ND	ND	(1-10)EE1	ND	ND	ND
4-Methyl-1,2-Pentanone	ND	ND	(1-10)EE1	ND	ND	(1-10)EE2	ND	ND	ND
Tetrahydrofuran	ND	ND	ND	ND	ND	1-10	ND	ND	ND
1,2,3-Trichloropropane	ND	(1-10)EE3	(1-10)EE3	(1-10)EE3	(1-10)EE4	(1-10)EE3	(1-10)EE4	(1-10)EE1	ND

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AR300461

APPENDIX B

RESULTS FROM WOODWARD-CLYDE CONSULTANTS REPORTS

LOG of BORING No. EXAMPLE

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
				Denotes interval sampled using a 3" O.D. split-spoon sampler		
5		28	1075	Sample Number		2/3
10				Sampler resistance - blows per foot for 140 lbs. hammer falling 30" on a 3-inch O.D. split-spoon		
15				Organic vapor reading at the top of the hollow stem auger		
20				Maximum organic vapor reading scanning split-spoon sample upon opening sampler		
				Rig Type: _____		
				Drilling Company: _____		
				Drillers Name: _____		
				WCC Rep. (s) _____		

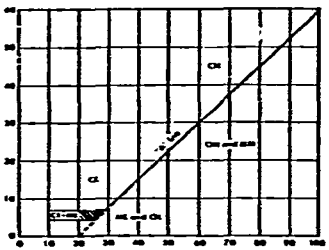
Completion Depth _____ Feet Water Depth _____ Feet Date _____

Project Name _____ Project Number _____

AR300463

Woodward-Clyde Consultants

Major Divisions		Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained Soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well graded gravels, gravel sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		GP	Poorly graded gravels, gravel sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		GM*	Silty gravels, gravel sand silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
		GC	Clayey gravels, gravel sand clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Clean gravels (Little or no fines)	GW	Well graded gravels, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		GP	Poorly graded gravels, gravelly sands, little or no fines	Not meeting all gradation requirements for GW
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	SM*	Silty sands, sand silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
		SC	Clayey sands, sand clay mixtures	Atterberg limits above "A" line with P.I. > than 7
	Clean sands (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
Fine-Grained Soils (More than half of material is smaller than No. 200 sieve size)	Silts and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent ..... GW, GP, SW, SP; More than 12 percent ..... GM, GC, SM, SC; 5 to 12 percent ..... Borderline cases requiring use of dual symbols
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH	Inorganic clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity, organic silts	
Highly Organic Soils		Pt	Peat and other highly organic soils	



*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivisions to be based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 5 or less, the suffix u used when L.L. is greater than 28.

**Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols.

For example: GW-GC, well graded gravel sand mixture with clay binder.

Sieve Size	Gravel	Sand	Silt	Clay
Passing	3 in. to 3/4 in.	3/4 in. to #4	#4 to #200	#200
Retained	3/4 in. to #4	#4 to #200	#200	

Sieve Size	Coarse	Medium	Fine
Passing	#10 to #40	#40 to #60	#60 to #200
Retained	#4 to #10	#10 to #40	#40 to #60

Sieve Size	Gravel	Sand	Silt	Clay
Passing	3 in. to 3/4 in.	3/4 in. to #4	#4 to #200	#200
Retained	3/4 in. to #4	#4 to #200	#200	

Sieve Size	Coarse	Medium	Fine
Passing	#10 to #40	#40 to #60	#60 to #200
Retained	#4 to #10	#10 to #40	#40 to #60

KEY TO SOIL SYMBOLS AND TERMS

Terms used on this report for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System, as described in Technical Memorandum No. 3-357, Waterways Experiment Station, March 1953.

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on No. 200 sieve). Includes (1) clean gravels and (2) silty or clayey gravels and sands. Condition is based upon rating to resistance (density)[1]

Descriptive Term	Relative Density
Very loose	0 to 15%
Loose	15 to 40%
Medium dense	40 to 70%
Dense	70 to 85%
Very dense	85 to 100%

FINE GRAINED SOILS (major portion passing No. 200 sieve). Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) silty soils. Consistency is rated according to chosen strength, as indicated by penetrometer readings or by unconfined compression tests.

Descriptive Term	Unconfined Compressive Strength, nominal, tsf
Very soft	less than 0.25
Soft	0.25 to 0.50
Firm	0.50 to 1.00
Stiff	1.00 to 2.00
Very stiff	2.00 to 4.00
Hard	4.00 and higher

TEST AND SAMPLE IDENTIFICATION

16	— The number of blows (16) of a 140 pound hammer falling 30 inches used to drive a 2" O.D. split barrel sampler for the last 12 inches of penetration
BW2	— Number of blows (BW2) used to drive the split barrel a certain number of inches (2)
P	— Thin-walled tube sample
P2000	— Thin wall tube pushed hydraulically, using a variable pressure (2000 psi) to push the last 6 inches.
C_n	— Dimension or Pitcher Type — undisturbed sample
Pq	— Piston sample
A	— Auger sample
BX	— Rock core with BX size barrel, which obtains a 1.648" diameter core
NX	— Rock core with NX size barrel, which obtains a 2.115" diameter core
85%	— Percentage (85%) of rock core recovered
20	— 20% — Rock Quality Designation (RQD)[2]
VS	— Vane Shear Test
Sample Retained	C — Consolidation and specific gravity tests; D — Dispersion & moisture density; DS — Direct Shear test; G — Specific gravity test; K — Permeability test; M — Moisture content or hydrometer analysis; T — Triaxial compression test; U — Unconfined compression test; W — Unit weight & natural moisture content; X — Special tests performed — see Laboratory test results
Sample Not Retained	Laboratory Test Performed

[1] RQD = $\frac{\Sigma \text{ Core Segments} > 4 \text{ inches}}{\text{Core Interval}} \times 100$

[2] ASTM 2049-69

Where Segmentation is Not Caused By Drilling Effects

LOG of BORING No. DH84-1

DATE 4/26/85 SURFACE ELEVATION 100.9 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Very dense red-brown micaceous coarse to medium SAND (SP-SM), parts have little silt, trace clay, roots and stems at top		
	36	1092			ND
5	34	1093	Moist dark brown organic micaceous clayey SILT(OL) trace fine sand, root traces, lenses of decayed wood, lenses medium to fine silty clayey sand		1/3
	50/4"				1/ND
10	29	1094	Very dense red-brown micaceous coarse to fine SAND(SM) little silt, trace clay and fine gravel in parts, very friable sandstone fragments, black organic silty sand lense at 11 feet		100/10
	60/5.5	1095			3/3
15			Auger refusal at 12.5 feet		
20					

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Ed Birckhead
Gary Sheehan

Completion Depth 12.5 Feet Water Depth dry Feet Date 4/26/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300465

LOG of BORING No. DH84-2

DATE 4/26/85 SURFACE ELEVATION 100.9 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	25	1082	Very dense dark red-brown micaceous organic medium to fine SAND(SM), some silt, trace clay; TOPSOIL		ND
5	19	1083			ND
	20	1084	Medium dense to dense purple-gray-brown micaceous coarse to medium SAND(SP-SM), little to trace silt, trace clay, hard to decomposed arkose sandstone fragments		ND
10	11	1085			ND
	15	1086			ND
15	6	1090 1090D	Loose dark brown to black micaceous medium to fine SAND(SM), little silt and clay, becoming severely weathered, very friable coarse to fine purple-gray SANDSTONE		2/ND
	100/5"	1091			ND
20			Auger refusal at 19.0 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s): Gary Sheehan
Rick Karr

Completion Depth 19.0 Feet Water Depth 15 Feet Date 4/26/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300466

LOG of BORING No. DH84-3

DATE 4/24/85 SURFACE ELEVATION 103.4 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
		19	1062	Dense to very dense red-brown micaceous medium to fine SAND(SM), little silt, friable arkose fragments, becoming;		ND
5		29	1063 1063D			0.2/ND
		19	1064			ND
10		22	1069 1069D	Moderately weathered red-brown SANDSTONE, minor arkosic content		ND/1
		175/11.5"	1070 1070S			0.2/ND
15		100/5.5"	1071			ND
				Auger refusal at 17.0 feet.		
20						

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 17.0 Feet Water Depth 8 Feet Date 4/24/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300467

LOG of BORING No. DH84-4

DATE 4/24/85 SURFACE ELEVATION 113.60 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) t/SA / SS
		100/3"	1059	Very dense brown becoming red-brown micaceous SILT and fine SAND(SM), trace to little clay, root traces at top, becoming;		ND
5		56	1060 1060D 1060S	moderately weathered to decomposed silty fine SANDSTONE		ND
		100/5"	1061			ND
10				Auger refusal at 8.0 feet		

Rig Type: CME 550
Drilling Company: Empire
Drillers Name: Jeff Jaworski
WCC Representative (s): Gary Sheehan
Ed Birckhead

Completion Depth 8.0 Feet Water Depth dry Feet Date 4/24/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300468

LOG of BORING No. DH84-5

DATE 4/24/85 SURFACE ELEVATION 116.0 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
		None	Red-brown micaceous medium to fine SILT and SAND(SM)		ND
5			Auger refusal at 2.0 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 2.0 Feet Water Depth dry Feet Date 4/24/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300469

LOG of BORING No. DH84-6

DATE 4/30/85 SURFACE ELEVATION 105.2 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	60	1124 1124D 1124S	Dense to very dense gray fine SAND(SC) some clay, sandstone fragments, root trace traces		ND
5	22	1125D 1125S			ND
	90	1126	Gray-brown to red coarse to fine moderately weathered argillaceous SANDSTONE		ND
10	113/9"	1127	Gray-green thinly bedded SILTSTONE		ND
	50/0"		Red-brown CLAYSTONE		
			Slightly weathered to fresh SANDSTONE		
15			Auger refusal at 12.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Ed Birckhead
Rick Karr

Completion Depth 12.5 Feet Water Depth dry Feet Date 4/30/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300470

LOG of BORING No. DH84-7

DATE 4/26/85 SURFACE ELEVATION 103.5 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) ±SA / SS
	15	1079	Dense to very dense red-brown micaceous medium to fine SAND(SM), little silt, trace clay, with hard non-friable coarse to medium purple-gray arkosic SANDSTONE		ND
5	39	1080			ND
	84	1081			ND
10			Auger refusal at 9.5 feet OVA in open hole after auger removal 10-25 ppm, 50 ppm peaks		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Rick Karr

Completion Depth 9.5 Feet Water Depth dry Feet Date 4/26/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300471

LOG of BORING No. DH84-8

DATE 4/25/85 SURFACE ELEVATION 103.0 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
				TOPSOIL - dark red-brown organic SILT and fine SAND(SM), root traces, stems, etc.		
		60	1073	Dense to very dense red-brown to purple-brown and orange micaceous coarse to fine SAND(SP-SM), varying silt, clay and gravel content, contains slightly to severely weathered arkosic to non-arkosic coarse to fine silty to clean SANDSTONE fragments of varying size; QUARRY RUBBLE FILL		ND
5		16	1074			ND
		31	1075			0.2/ND
10		100/3"	1076			
		147/9"	1078			ND
15				Auger refusal at 10.0 feet, Spoon refusal at 11.75 feet; Spoon filled with water at approximately 10 feet, water surface has oily sheen		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s): Gary Sheehan
Rick Karr

Completion Depth 11.75 Feet Water Depth 10 Feet Date 4/25/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300472

LOG of BORING No. DH84-9

DATE 4/24/85 SURFACE ELEVATION 131.4 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	8	1052	Medium dense to dense red-brown clayey fine SAND(SC), contains black organic silty sludge		500/-
5	14	1053			ND/88
	99/10"	1054	Very dense brown fine gravelly SILT and fine SAND(SW-SP); decomposed rock		10/-
10			Auger refusal at 9.3 feet		

* OVM used

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Kerr

Completion Depth 9.3 Feet Water Depth dry Feet Date 4/24/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300473

LOG of BORING No. DH84-10

DATE 4/22/85 SURFACE ELEVATION 127.0 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Brown fine sandy clayey SILT, roots, stems TOPSOIL		
	45	1036	Very dense red-brown micaceous fine SAND (SM), some silt, grades to severely weathered to decomposed coarse to medium SANDSTONE, minor arkosic constituent		ND/ND
5			Auger refusal at 4.5 feet		

Rig Type: CME 550

Drilling Company: Empire Drilling

Drillers Name: Jeff Jaworski

WCC Representative (s): Gary Sheehan, Ed Birckhead

Completion Depth 4.5 Feet Water Depth dry Feet Date 4/22/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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LOG of BORING No. DH84-11B

DATE 4/19/85 SURFACE ELEVATION 113.0 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / CS
		No Sample	Red to purple-brown micaceous coarse to fine SAND(SW)		
5			Auger refusal at 1.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 1.5 Feet Water Depth dry Feet Date 4/19/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300475

LOG of BORING No. DH84-12

DATE 4/19/85 SURFACE ELEVATION 121.7 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
		No Sample	Red to purple-brown micaceous coarse to fine SAND(SW), grass, leaves, stems, and roots at surface, sandstone fragments		ND
5			Auger refusal at 1.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 1.5 Feet Water Depth dry Feet Date 4/19/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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LOG of BORING No. DH84-13A

DATE 4/22/85 SURFACE ELEVATION 126.5 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
		145/9"	1032	Very dense red-brown micaceous silty fine SAND(SM) becoming highly weathered to decomposed silty sandstone, interbedded with moderately to severely weathered red-brown to clear coarse to medium conglomerate SANDSTONE, moderate arkosic constituent (feldspars, mica)		0.2/ND
5		100/5.5"	1033			ND/ND
				Auger refusal at 6.0'		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 6 Feet Water Depth dry Feet Date 4/22/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300477

LOG of BORING No. DH84-14

DATE 4/22/85 SURFACE ELEVATION 131.0 LOCATION Tysons Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Dark brown fine SAND and SILT, TOPSOIL		
	75/5.5"	1034	Very dense red-brown micaceous silty medium to fine SAND(SM) becoming severely weathered to decomposed red-brown, purple and orange coarse to fine SANDSTONE of variable arkosic content, silty interbeds, traces fine gravel		ND/ND
5	75/6"	1035			ND/ND

Auger refusal at 6.0 feet

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 6.0 Feet Water Depth dry Feet Date 4/22/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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LOG of BORING No. DH84-15A

DATE 4/30/85 SURFACE ELEVATION 124.1 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
		26	1117 1117D	Very dense red-brown coarse to fine SAND (SM), little to trace silt and clay, weathered sandstone fragments		90/-
5		24	1118			200/400
		86/8.5"	1119			350/650
10		75/5"	1120			80/700
15		NX/100 RQD= 83.3%		STOCKTON FORMATION - hard to very hard coarse to fine arkosic SANDSTONE, good quality, conglomeratic layers, frequent horizontal and high angle fracturing some discoloration along fractures, becoming conglomeratic and very closely fractured, of poor quality at 17.0 feet	Run 1: 12.0-17.0'	
20		NX/100 RQD= 51.6%			Run 2: 17.0-22.0	
				Auger refusal at 11.7 feet NX rock coring from 12 - 22 feet		* OVM used

Rig Type: Acker - AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Gary Sheehan
Bob Ehlenberger

Completion Depth 22.0 Feet Water Depth not obtained Feet Date 4/30/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300479

LOG of BORING No. DH84-16

DATE 4/23/85 SURFACE ELEVATION 97.3 LOCATION Tyson's Dump

DEPTH ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	16	1042	Dense to very dense red-brown to brown micaceous medoum to fine SAND(SM), some silt, trace clay, moderately weathered arkose fragments		ND
5	3	1043			ND
	37	1044			ND
10	20	1056	Interbedded severely weathered olive-green SILTSTONE and completely weathered orange-brown medium to fine arkosic SANDSTONE		ND
	27	1057			ND
15	64	1058			ND
	50/0"				
20			Auger refusal at 17.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 17.5 Feet Water Depth dry Feet Date 4/23/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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LOG of BORING No. DH84-17

DATE 4/18/85 SURFACE ELEVATION 83.8 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Black organic TOPSOIL		
	40	1019	Purple to red-brown micaceous medium to fine decomposed to moderately weathered SANDSTONE of variable arkosic content, pale green totally friable silty fine sandstone interbeds from 5-7 feet, becomes light gray, slightly arkosic at approximately 8 feet		0.2/ND
5	19	1020			ND
	115/10.5	1021			0.2/0.2
10			Auger refusal at 9.0 feet		
15					

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 9.0 Feet Water Depth dry Feet Date 4/18/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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LOG of BORING No. DH84-18

DATE 4/23/85 SURFACE ELEVATION 91.5 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
5	36 52 50/0"	1045 1046	Very dense gray to black coarse to fine SAND(SM-SW), some to little silt, little coarse to fine gravel		25/130 25/-
10			Auger refusal at 7.8 feet		

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

* OVM used

Completion Depth 7.8 Feet Water Depth dry Feet Date 4/23/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300482

LOG of BORING No. DH84-19

DATE 4/23/85 SURFACE ELEVATION 99.5 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	28	1037	Dark brown to purple and brown micaceous silty medium to fine SAND, grades to medium to fine SAND and SILT(SM), trace clay and fine gravel, moderately weathered arkose fragments		ND/ND
5	35	1038			4/1
	19	1039	-black sludge-like material, parts having fibrous texture, encountered from ∿ 8.0 - 14.5 feet		30/1
10	35	1040			25/6
	34	1041			4/10
15	100/5"				ND/ND
20			* Auger refusal at 15.5 feet, OVA reading in hole approximately 30 - 40 ppm, 100 peaks after augers were removed		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 15.5 Feet Water Depth dry Feet Date 4/23/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300483

LOG of BORING No. DH84-20A

DATE 4/23/85 SURFACE ELEVATION 95.4 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
		21	1047	Very dense light gray silty SAND(SM) containing BLACK SLUDGE		80/-
5		128	1048			-
		50/1"				6/-
10				Auger refusal at 7.8 feet Spoon wet at approximately 5 feet		
						*OVM used

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

Completion Depth 7.8 Feet Water Depth dry Feet Date 4/23/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300484

LOG of BORING No. DH84-21

DATE 4/23/85 SURFACE ELEVATION 99.1 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	39	1049	Very dense dark gray to brown coarse to fine SAND(SW-SM), trace to little silt, little coarse to fine gravel		120/-
5	30	1050			150/-
	100/4" 25/0"	1051			15/-
10			Auger refusal at 9.2 feet		
					* OVM used

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

Completion Depth 9.2 Feet Water Depth dry Feet Date 4/23/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300485

LOG of BORING No. DH84-21

DATE 4/23/85 SURFACE ELEVATION 99.1 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	39	1049	Very dense dark gray to brown coarse to fine SAND(SW-SM), trace to little silt, little coarse to fine gravel		120/-
5	30	1050			150/-
	100/4" 25/0"	1051			15/-
10			Auger refusal at 9.2 feet		
					* OVM used

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

Completion Depth 9.2 Feet Water Depth dry Feet Date 4/23/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

AR300486

LOG of BORING No. DH84-22A

DATE 4/18/85 SURFACE ELEVATION 107.2 LOCATION Tysons Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	63	1026	Very dense gray coarse to fine SAND(SW-SM) some silt, some coarse to fine gravel		8/-
5	104	1027			6/-
	50/0"				300/-
10			Auger refusal at 8.4 feet		
					* OVM used

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

Completion Depth 8.4 Feet Water Depth dry Feet Date 4/18/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward Clyde Consultants

AR300487

LOG of BORING No. DH84-23

DATE 4/19/85 SURFACE ELEVATION 108.4 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	28	1024	Very dense moist dark red-brown medium to fine SAND(SC) trace silt and clay, weathered sandstone fragments		4/-
5	111/11"	1025			1.5/-
10			Auger refusal at 7.3 feet		

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

* OVM used

Completion Depth 7.3 Feet Water Depth dry Feet Date 4/19/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

AR300189

LOG of BORING No. DH84-24

DATE 4/25/85 SURFACE ELEVATION 106.6 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	8	1065			ND/ND
5	12	1066			-/270
	70/4"	1067			67/-
10	37	1055	Medium to very dense red-brown to brown coarse to fine SAND(SW-SM), some silt, little coarse to fine gravel, contains black silty sludge below 4.5 feet		-/270
	73	1068			4/200
15	34	1077			130/400
	72	1087			200/400
20	81	1088	Very dense gray coarse to fine SAND(SW-SM), some silt, some coarse to fine gravel; decomposed rock		100/140
	NX/100 RQD=77%		STOCKTON FORMATION- very hard, very slightly weathered arkosic SANDSTONE, occasional horizontal and high angle fracturing, some discoloration along fractures, fair to good quality;	Run 1: 22.7-23.6'	
25	NX/95 RQD= 83.3%			Run 2: 23.6-28.6'	50[1]
30	NX/100 RQD= 37.5%		becomes moderately weathered, conglomeratic and very closely fractured, poor quality	Run 3: 28.6-32.6'	5[1]
35			Auger refusal at 22.5 feet, NX rock coring from 22.7-32.6 feet		
			Rig Type: Acker AD-2 Drilling Company: Empire Drilling Drillers Name: Rick Empson WCC Representative (s) Bob Ehlenberger, Ed Birckhead 1) OVM reading in high angle fracture planes		*OVM used

Completion Depth 32.6 Feet Water Depth not obtained Feet Date 4/29/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300489

LOG of BORING No. DH84-25

DATE 4/22/85 SURFACE ELEVATION 108.0 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	* OVA READING (ppm) HSA / SS
	18	1028			4/-
5	51	1029	Dense to very dense gray-brown coarse to fine SAND(SW-SM), little silt, little coarse to fine gravel		3/30
	91	1030			130/55
10	70/7"	1031			150/1400
			Auger refusal at 12.2 feet		

Rig Type: Acker AD-2
Drilling Company: Empire Drilling
Drillers Name: Rick Empson
WCC Representative (s) Bob Ehlenberger
Rick Karr

* OVM used

Completion Depth 12.2 Feet Water Depth dry Feet Date 4/22/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300490

LOG of BORING No. DH84-26

DATE 4/17/85 SURFACE ELEVATION 85.2 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Dark brown organic TOPSOIL		
	45	1011	Very dense orange-brown to purple micaceous coarse to fine SAND(SW), traces of silt and coarse to fine gravel		0.2/-
5	56	1012			ND
	162/11"	1013	Orange-brown decomposed coarse to medium arkosic SANDSTONE		ND/0.2
10	153/5.5"	1014			15/-
	100/5"	1015	Pale green to gray highly weathered to decomposed coarse to fine arkosic SANDSTONE		
	100/3"				6.0/0.3
15	100/5.5"	1016	Orange to gray severely weathered coarse to medium arkosic SANDSTONE		0.4/ND
			Auger refusal at 15.5 feet		
20					

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 15.5 Feet Water Depth dry Feet Date 4/17/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300491

LOG of BORING No. DH84-27

DATE 4/18/85 SURFACE ELEVATION 87.2 LOCATION Tysons Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Dark brown organic TOPSOIL		
			Cobble encountered 1.75-2.0 feet		
	39	1017	Interbeded purple, pale green and orange coarse to fine highly weathered partially friable SANDSTONE, variable arkosic content		0.2/ND
5	95	1018			ND
			Auger refusal at 6.75 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 6.75 Feet Water Depth dry Feet Date 4/18/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300492

LOG of BORING No. DH84-28

DATE 4/16/85 SURFACE ELEVATION 87.7 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			Brown micaceous clayey SILT, trace fine sand		
	34	1001	Dense gray micaceous silty fine SAND(SM), trace clay, severely weathered arkosic sandstone fragments		ND
5	11	1002	Medium dense to very dense orange-brown micaceous medium to fine SAND(SM/SC), little to trace silt, trace clay severely weathered to decomposed arkosic sandstone fragments		ND
	26	1003	-green-gray to tan		ND
10	24	1004	-purple		0.5/ND
	40	1005	-red-brown, trace coarse sand		0.8/ND
15	123/11.5"	1006	Wet brown clayey SILT(ML), trace fine sand		ND
	100/4"	1007	Very dense orange-brown micaceous silty coarse to fine SAND(SM), grades to severely weathered to decomposed coarse to medium ARKOSIC SANDSTONE, interbedded with purple-tray moderately to severely weathered coarse to medium arkosic sandstone		ND
20	76	1008			ND
	75/6"	1009			ND
25	100/4.5"	1010			ND
			Spoon refusal at 25.4 feet		
30					

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 25.4 Feet Water Depth 17.0 Feet Date 4/17/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300493

LOG of BORING No. DH84-29

DATE 4/18/85 SURFACE ELEVATION 87.7 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	10	1022	Medium dense red-brown to green-gray coarse to fine SAND, some to trace silt(SM), trace coarse gravel, black organic silty fine sand interbeds, becoming medium dense red-brown fine sand and silt of medium plasticity, root traces		2/ND
5	29	1023	Very stiff red-brown micaceous silty CLAY (CL), trace fine sand, root traces		1/ND
			Orange and tan interbedded coarse to medium arkosic SANDSTONE, severely weathered, totally friable		
10			Auger refusal at 7.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Ed Birckhead

Completion Depth 7.5 Feet Water Depth dry Feet Date 4/18/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300494

LOG of BORING No. DH84-30

DATE 4/25/85 SURFACE ELEVATION 113.8 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
				Yellow-brown SILT and fine SAND(SM), root traces		
		118/10"	1072	Moderately weathered thinly bedded red silty fine SANDSTONE, becoming more massive purple-gray coarse to medium arkosic SANDSTONE, slightly friable		ND
5				Auger refusal at 5.0 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Rick Karr

Completion Depth 5.0 Feet Water Depth dry Feet Date 4/25/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

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AR300495

LOG of BORING No. DH84-31

DATE 4/30/85 SURFACE ELEVATION 84.4 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
	22	1110	Dense to very dense yellow-brown to gray fine SAND(SP-SC), trace to little clay, traces coarse sand and fine gravel sized sandstone fragments		ND
5	27	1111			ND
	15	1112			0.4/ND
10	25	1113			ND
	20	1114 1115			ND
15					
	22	1116	Dense to very dense gray medium to fine SAND(SP-SC) some clay, sandstone fragments		ND
20	50/1"				ND
			Spoon refusal at 20.5 feet		
25					

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Ed Birckhead
Rick Karr

Completion Depth 20.5 Feet Water Depth 10 Feet Date 4/30/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300496

LOG of BORING No. DH84-32

DATE 4/29/85 SURFACE ELEVATION 78.5 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
				Soft to firm moist light and dark brown fine sandy CLAY(SC) trace silt, root traces, leaves, TOPSOIL		
				Very dense moist purple-gray micaceous fine SAND(SP)		
		19	1103	Medium to very dense dark brown to gray brown micaceous organic medium to fine SAND(SM), some to trace silt, traces of clay, coarse sand, coarse to fine gravel, organic debris lenses		ND
5		13	1104			ND
		12	1105			400/0.4
10		77	1106			7/- OVM (ppm) 1/0.5
		100/4"	1107	Gray, purple and buff coarse to medium partly conglomeratic SANDSTONE, decomposed to moderately weathered, traces feldspar, mica, becomes argillaceous and gray-brown near bottom of boring		
15		50/2"	1108			1/ND
		50/2"				ND
20		100/4.5"				ND
		100/1"				ND
25				Spoon refusal at 22.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Rick Karr

Completion Depth 22.5 Feet Water Depth 5 Feet Date 4/29/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

AR300497

LOG of BORING No. DH84-33

DATE 4/29/85 SURFACE ELEVATION 84.4 LOCATION Tyson's Dump

DEPTH, ft.	SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
				Red-brown to gray fine sandy CLAY to clayey fine SAND(SC), root traces		
		43	1096	Very dense rusty orange to gray micaceous coarse to medium SAND(SP), trace silt, clay, fine gravel, becoming decomposed arkosic SANDSTONE		1/ND
5		49	1097			0.8/ND
		100/5"	1098			0.2/ND
10		20/3"		Very dense buff severely weathered coarse to medium quartzose SANDSTONE, very friable, becoming arkosic near bottom		ND
		50/3"				0.2/ND
15				Auger refusal at 14.5 feet		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Rick Karr

Completion Depth 14.5 Feet Water Depth 12 Feet Date 4/29/85
Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300498

LOG of BORING No. DH84-34

DATE 4/29/85 SURFACE ELEVATION 80.3 LOCATION Tyson's Dump

DEPTH, ft. / SAMPLES	SAMPLER RESISTANCE Blows/Foot	SAMPLE NUMBER	DESCRIPTION	REMARKS	OVA READING (ppm) HSA / SS
			TOPSOIL; dark brown micaceous SILT and fine SAND(SM), trace clay, root traces		
	49	1099	Very dense moist orange-brown clayey medium to fine SAND(SC), trace silt, occasional coarse sand lense, becoming; orange, purple-gray moderately weathered to decomposed coarse to medium arkosic sandstone		ND
5	27	1100			ND
	41	1101			0.8/ND
10	55	1102			ND
	50/3"				
15			Auger refusal at 13.5'		

Rig Type: CME 550
Drilling Company: Empire Drilling
Drillers Name: Jeff Jaworski
WCC Representative (s) Gary Sheehan
Rick Karr

Completion Depth 13.5 Feet Water Depth 11 Feet Date 4/29/85

Project Name Tysons Dump Supplemental Site Assessment Project Number 84 C 8570 C

Woodward-Clyde Consultants

AR300499

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APPENDIX C

RESULTS FROM SRW REPORT

AR300501

SRW ASSOCIATES INC.

civil, geotechnical & environmental engineers & geologists

November 1, 1985

2783 Noblestown Road • Pittsburgh, Pennsylvania 15205 • (412) 921-0321
408 Wood Ave. • P.O. Box 488 • Big Stone Gap, Virginia 24219 • (703) 523-5530

Department of the Army
Omaha District Corps of Engineers
6014 U. S. Post Office and Courthouse
Omaha, Nebraska 68102

Attention: Mr. Randal K. Petersen, P.E.
Project Manager - Engineering Division

Gentlemen:

Subject: Report on Additional Subsurface Exploration and Analysis
Tyson's Dump Superfund Project
Montgomery County, Pennsylvania
Contract No. DACW45-85-C-0085
SRW Project 85275

We are pleased to present our report presenting our findings from the additional subsurface exploration and analyses performed at the Tyson's Dump site.

This report includes a record of field activities, test boring logs, sampling methodologies, and results from laboratory chemical analyses of the soil samples. Additionally, this report contains our conclusions on the vertical and lateral extent of soil contamination at the western edge of Tyson's Dump, and the volume of soil which will require excavation and offsite disposal.

We appreciate the opportunity to be of continuing service to the U. S. Army Corps of Engineers on the Tyson's Dump project. If you have any questions, or would like to discuss any aspect of this report, please do not hesitate to call us.

Sincerely,

SRW ASSOCIATES INC.

Kenneth R. Miller, P.E.
Senior Project Manager

Bruce H. Laswell, P.E.
Vice President

KRM:BHL:jr

Enclosures

1.0 INTRODUCTION

1.1 Site History

Tyson's Dump Superfund site is an abandoned septic waste and chemical waste disposal site which reportedly was operated from 1962 to 1970 within an old stone quarry. The site is located in southeastern Pennsylvania, 15 miles northwest of Philadelphia in Upper Merion Township, Montgomery County. The Tyson's Dump site is situated on the flood plain of the Schuylkill River with the old quarry highwall to the south.

Several former lagoons, which were located in the central and western areas of the site, were apparently used for the disposal of various industrial, septic tank, and chemical wastes. Spills and overflows reportedly occurred during the period of operation and thus allowed for the possible dispersal of wastes throughout the site. The waste operations presumably took placed on a four acre portion of the site that is currently fenced in.

The Pennsylvania Department of Environmental Resources ordered the dump closed in 1973. The site was revegetated after the lagoons were supposedly drained and backfilled.

In early 1983, the U. S. Environmental Protection Agency received a citizen complaint of noxious odors emanating from the site. EPA determined that immediate removal measures were necessary following the initial site investigation. EPA installed monitoring wells, a leachate collection and treatment system, a security fence, and a soil cap, and regraded portions of the site.

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A Remedial Investigation/Feasibility Study was performed by Baker/TSA for NUS Corporation in December, 1983. The U. S. Army Corps of Engineers selected a remedial alternative in the record of decision that involved excavation of the highly contaminated soils at Tyson's Dump. Additional information was required to define the limits of contamination at the site. Woodward-Clyde Consultants drilled an additional 34 test borings in late April, 1985 to determine the limits of contamination, and to estimate the volume of contaminated soil to be excavated. The chemical analyses of the soil samples obtained by Woodward-Clyde indicated that the limits of contamination were not defined at the western edge of the site. USEF

SRW Associates Inc. is currently performing the engineering design for the excavation to be performed at the Tyson's Dump site and was selected to drill additional holes west of the Tyson's Dump site to eliminate the data gaps concerning the extent of contamination and excavation volumes.

1.2 Authorization

This study was performed in accordance with Contract No. DACW45-85-C-0085 and our revised proposal dated August 22, 1985.

1.3 Purpose and Scope

The purpose and scope of the two phases of the project are as follows:

Purpose

Phase I: Perform exploratory drilling, sampling and chemical analyses on soil samples obtained to define lateral extent of contamination at the western end of the Tyson's Dump site.

Phase II: Define the limits of contaminated soils and calculate the volume of excavation required to remove contaminated soils from the western portion of the site.

Scope

Phase I:

1. Prepared the following documents after notice to proceed and submitted them to the COE, Omaha District, for review:

   a. Soil Sampling/Chemical Analysis Plan

   b. Quality Management Plan

   c. Health and Safety Plan

2. Attended a meeting with the COE for review of the above plans at the offices of SRW Associates Inc. in Pittsburgh, Pennsylvania.

3. Revised plans as requested by the COE.

4. Performed site briefing for onsite personnel including SRW Associates' project representative, Pennsylvania Drilling personnel, and Phoenix Safety

SRW

project representatives at the offices of Phoenix Safety in Phoenixville, Pennsylvania prior to mobilizing to the site. The Phoenix Safety office is 15 miles from the site and served as the base for communication and coordination.

5. Performed a terrain conductivity survey (magnetometer and EM) at proposed boring locations and at survey grid points to identify obstructions.

6. Surveyed the test boring locations and elevations using control points established during the remedial investigation.

7. Drilled six test borings at the Tyson's Dump site in accordance with procedures outlined in the Soil Sampling/Chemical Analysis Plan. Five of the locations were selected by the Corps, the sixth location was determined based on conditions encountered in the field.

8. Provided a full-time project representative to observe the test boring drilling, observe decontamination procedures, log and label the samples, arrange for shipment in accordance with the Soil Sampling/Chemical Analysis Plan, and modify the test boring program as necessary.

9. Provided a full-time health and safety representative to perform environmental surveillance. This individual was responsible for assuring that all operations were performed in accordance with the Health and Safety Plan requirements.

10. Selected one sample from each boring based on highest jar head space OVA readings obtained from the samples from the boring and submitted the samples to the laboratory for chemical analysis. Additionally, one duplicate of the six samples and one purified kaolinite sample (blank) was sent to the laboratory. One other sample was obtained from a specified depth in one of the holes and split. One of the splits was sent to the Corps as directed, and the other split was submitted to the laboratory for analysis. A total of nine samples were submitted to the laboratory contracted by SRW for analysis. Samples were obtained, labeled, and shipped in accordance with standard sample handling protocol (COE/EPA provided by MRDED-L) to maintain both sample integrity and the chain of custody.

11. Analyzed the nine submitted samples for volatiles and semi-volatiles (Base/Neutral/Acid [BNA]) extractable compounds by a GC/MS scan on the EPA Hazardous Substance List. One split sample, as requested by the COE, was submitted to the COE laboratory for analysis. In addition, the 20 highest non-HSL base/neutral/acid compound peaks and the 10 highest non-HSL volatile peaks were tentatively identified and their concentrations estimated using a forward search of the EPA/NIH Mass Spectral Library or equivalent.

All CLP testing was performed in accordance with procedures outlined in the Quality Assurance/Quality Control and Sample Management Plan.

Phase II:

1. Reviewed and analyzed the test boring and laboratory chemical analyses.

2. Estimated the approximate limits of contamination at the western end of the Tyson's Dump site.

3. Determined the approximate limits of the area of excavation due to contaminated soils on the western end of the site.

4. Performed calculations to estimate the volume of contaminated soil to be excavated.

5. Prepared a plan drawing (1 in. = 50 ft.) showing the sample locations and the estimated limits of excavation.

6. Prepared this analytical report presenting test boring logs, description of bedrock from auger cuttings, sampling and test results, and the results of all quality assurance testing.

7. Submitted three copies of the analytical report to the COE.

1.4 Warranty

In performing our professional services, we have used that degree of care and skill ordinarily exercised under similar circumstances by members of the profession. This warranty is in lieu of all other warranties expressed or implied.

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2.0 SITE INVESTIGATION, SAMPLING METHODOLOGIES, AND ANALYTICAL RESULTS

2.1 Grid and Test Boring Survey

A grid pattern was established with the use of transit and tape survey methods by SRW Associates Inc. in order to establish geophysical survey points and to locate the test borings. The grid was set up using the site fence as the basis of the layout since the site baseline established during the Remedial Investigation was no longer staked in the field. The grid was set up with lines running approximately east and west labeled "A" through "H," and lines running approximately north and south labeled "100" through "400." The grid system established is shown on Dwg. 85275-81.

The elevations of the test boring locations were surveyed using the top of casing elevation of Well ERT-1 as the benchmark. The proposed locations, actual drilled locations and the elevations of the test borings are presented in the following table:

Test Boring	Proposed Location	Actual Location	Elevation (ft.,MSL)
DH85-1	B + 3, 263	B + 3, 263	102.08
DH85-2	B, 340	B, 340	103.21
DH85-3	C + 21, 291	E, 300	103.95
DH85-4	E + 12, 234	E + 3, 217	106.35
DH85-5	E + 19, 156	E + 16, 135	102.87
DH85-6	To Be Determined by COE	F + 11.5, 172	110.71

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LEGEND

DH 85-4 △ PROPOSED TEST BORING LOCATION

DH 85-4 ● ACTUAL TEST BORING LOCATION

• LOCATED SURVEY POINT ON GRID FOR MAGNETOMETER / EM SURVEY

GEOPHYSICAL SUBSURFACE EXPLORATION AND ANALYSIS - TYSONS DUMP SUPERFUND PROJECT MONTGOMERY COUNTY, PA	GRID SURVEY MAP AND TEST BORING LOCATIONS
SRW ASSOCIATES INC. PITTSBURGH, PA	DATE: OCT. 28, 1985 / DR. M. MARKS
	SCALE: 1" = 50' / DWG NO. 85275-B1

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2.2 Geophysical Survey

Woodward-Clyde Consultants were subcontracted to perform magnetometer and EM surveys to identify locations that may be underlain by buried metal or drums. These surveys were performed to reduce the likelihood of drilling a test boring into buried drums containing chemicals. The surveys were performed at the boring locations and at the grid intersection points shown on Dwg. 85275-B1. The grid points were surveyed to clear areas for the drilling of additional or relocated test borings that may have been required.

The survey indicated that Test Borings DH85-1, DH85-2, DH85-3 and DH85-5 were located in areas where buried metal was unlikely to be encountered. However, DH85-4 had magnetometer readings well above background values, which indicated buried metal may be present. DH85-4 was relocated approximately 15 ft. toward the Tyson's Dump site where magnetometer readings returned to background levels.

The location of DH85-6, which was selected by the COE's field representative, was also located in an area where the survey indicated buried metal should not be enocuntered.

A copy of the report prepared by Woodward-Clyde Consultants presenting the results of the geophysical survey is included in Appendix C.

2.3 Subsurface Exploration

The subsurface exploration program was performed in accordance with the Quality Management and Soil Sampling/Chemical Analysis plans. A review of the activities performed is included in the following items:

2.3.1 Boring Locations: The originally proposed locations of three of the five test borings had to be changed in the field based on conditions encountered at the site. The original location of DH85-3 was on a large mound of debris with dense brush and trees preventing access. DH85-4 was originally located in a gully with tree stumps, boulders and 4 to 6 ft. deep gullies hindering drill rig access. DH85-5 was originally located between two sheds by a steep hill with dense trees that would have made drilling very difficult. The revised locations of the borings were approved in the field by Mr. Jack Rodgers of the COE. Mr. Rodgers also selected the location of Boring DH85-6. The locations of the borings are shown on Dwg. 85275-81.

2.3.2 Drilling Method: Drilling was performed by Pennsylvania Drilling Company using a track-mounted drill rig. The rig was inspected for significant fluid leaks prior to moving on site. The tools, augers, and sampling equipment were steam cleaned prior to moving on site and between borings.

The test borings were advanced to refusal using 8 in. outside diameter hollow stem augers. Samples were obtained using a 2 in. diameter split-spoon sampler driven 2 ft. (using a 140 lb. hammer with 30 in. drop) at 3 ft. intervals. The sample that was split with the COE's laboratory was obtained using a 3 in. diameter split-spoon sampler driven by a 300 lb. hammer. Split spoons were decontaminated by steam cleaning between samples to prevent cross contamination.

All borings were backfilled at the completion of drilling with auger spoil to within 2 ft. of the ground surface. The remaining 2 ft. was backfilled with

non-shrinking grout. Prior to demobilization from the site, the drill rig and all equipment were decontaminated by steam cleaning.

2.3.3 Soil Sampling: Each soil sample obtained was transferred from the split-spoon sampler into a set of sample jars consisting of two 125 ml glass vials with teflon-lined septum, and a clean 8 oz. glass jar with a teflon inner cap. Parafilm was placed over the mouth of the 8 oz. jars. Within 24 hrs. of the completion of each boring, all the samples from the boring underwent a headspace scan. This analysis was performed on the 8 oz. jar sample. The jar lid was removed and the OVA probe was placed through the parafilm. This allowed the headspace analysis to be performed without losing the volatiles and with minimal risk of sample contamination. The sample with the highest organic vapor concentration from each boring was submitted for laboratory analysis. The OVA readings from the headspace scan are presented on Table 1.

The field blank was prepared by pushing the split-spoon sampler into a purified kaolinite powder and transferring the kaolinite powder to the sample jars using the same techniques with which the other samples were taken.

2.3.4 Soil and Bedrock Data: The soils encountered in the test borings were logged by SRW's field representative. The logs developed are included in Appendix A. Appendix B contains driller's logs provided by Pennsylvania Drilling Company.

TABLE 1
SOIL SAMPLE HEADSPACE OVA READINGS

Test Boring Number	Depth (ft.)	Sample Number	Headspace OVA Readings (ppm)	Comments
DH85-1	0.0-2.0	2000	0.2	Shipped to S-R Analytical
	3.0-5.0	2001	0.0	
	6.0-6.7	2002	0.0	
DH85-2	0.0-2.0	2003	0.8	Shipped to S-R Analytical
DH85-2A	2.5-3.1	2004	0.0	
DH85-3	0.0-2.0	2005	0.0	
	3.0-3.8	2006	0.0	Shipped to S-R Analytical
	5.0-7.0	2007		Split Shipped to COE
	5.0-7.0	2008		Split Shipped to S-R Analytic
		2009	Blank	Shipped to S-R Analytical
DH85-4	0.0-2.0	2010	0.0	Shipped to S-R Analytical
	3.0-3.8	2011	0.0	
DH85-5	0.0-2.0	2018	0.0	
	3.0-5.0	2019	0.0	
	6.0-8.0	2020	0.0	Insufficient Recovery
	9.0-10.8	2021	0.4	Shipped to S-R Analytical
		2022		Duplicate of 2021 Taken from 2019
				Shipped to S-R Analytical
DH85-6	0.0-2.0	2012	0.2	
	3.0-5.0	2013	0.3	Insufficient Recovery
	6.0-8.0	2014	0.2	Shipped to S-R Analytical
	9.0-11.0	2015	0.2	
	12.0-14.0	2016	0.2	
	15.0-16.0	2017	0.2	

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The depths to auger refusal are presented below:

Test Boring No.	Surface Elevation (ft., MSL)	Depth (ft.)	Bedrock Elev.
DH85-1	102.08	6.7	95.38
DH85-2	103.21	2.0	101.21
DH85-2A	103.21	3.1	100.11
DH85-3	103.95	7.5	96.45
DH85-4	106.35	5.0	101.35
DH85-5	102.87	12.0	90.87
DH85-6	110.71	16.0	94.71

Boring DH85-2 encountered auger refusal at a depth of about 2 ft. at its original location. In accordance with the sampling plan, the boring was relocated approximately 15 ft. north of the original location and was labeled Boring DH85-2A. This boring encountered auger refusal at a depth of about 3.1 ft., which indicated bedrock in the vicinity of the borings was probably shallow.

The top of bedrock elevations obtained in the borings drilled by Woodward-Clyde near the western site boundary and from EPA Monitoring Well ERT-1 are shown on Dwg. 85275-B2. A comparison of the top of bedrock elevations at these locations indicates that the top of bedrock rises moving westward from the site boundary and the previously drilled boring locations.

2.4 Analytical Analyses

Nine soil samples were submitted to S-R Analytical, Inc. for the performance of chemical analysis. The samples were analyzed for volatiles and semi-volatiles (Base/Neutral/Acid [BNA]) extractable compounds by GC/MS scan on the EPA Hazardous Substance List. In addition, the 20 highest non-HSL base/neutral/acid

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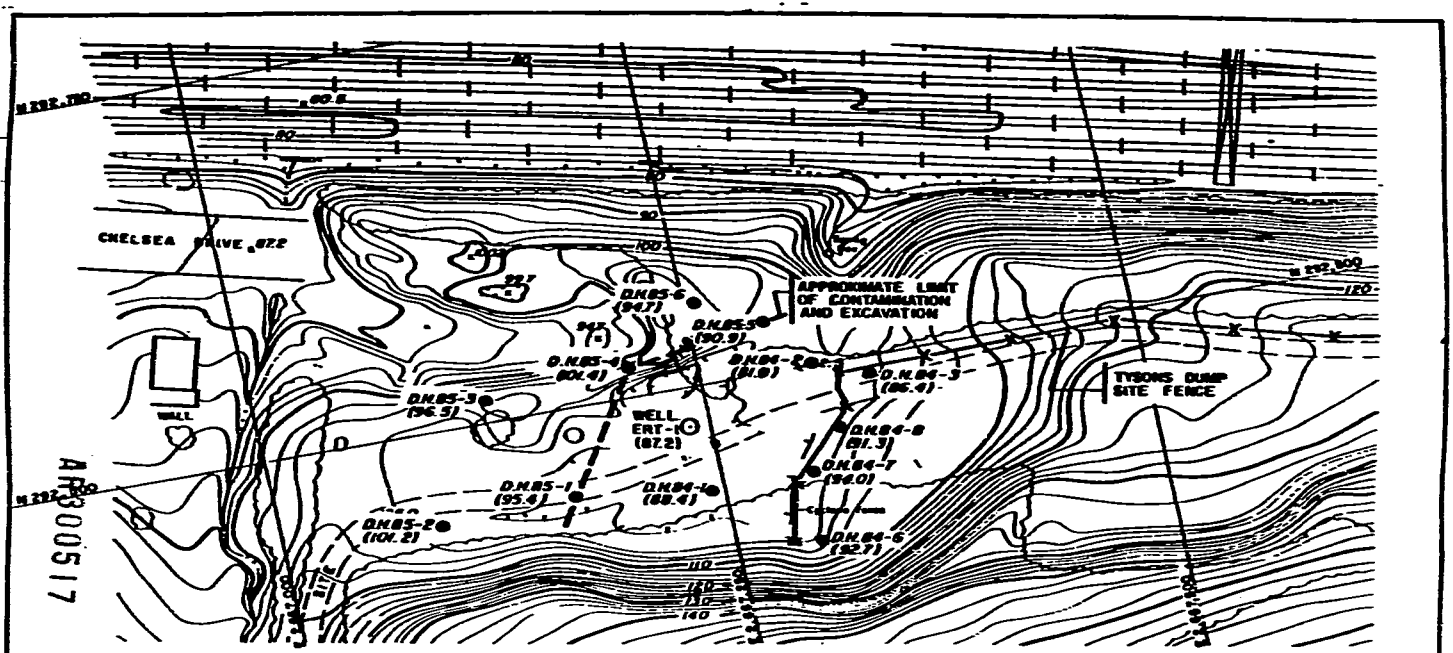

LEGEND

DH84-3 ●(86.4)	WOODWARD CLYDE TEST BORING LOCATIONS (TOP OF BEDROCK ELEV. IN PARENTHESIS)
DH85-1 ●(95.4)	SRW TEST BORING LOCATIONS (TOP OF BEDROCK ELEV. IN PARENTHESIS)
ERT-1 ⊙(87.2)	EPA MONITORING WELL (TOP OF BEDROCK ELEV. IN PARENTHESIS)

[illegible] EXPLORATION AND ANALYSIS TYSONS DUMP SUPERFUND PROJECT MONTGOMERY COUNTY, PA	APPROXIMATE LIMIT OF CONTAMINATION AND EXCAVATION
SRW ASSOCIATES INC. PITTSBURGH, PA	DATE OCT. 31, 1985 / DR. M. MARKS
	SCALE: 1" = 50' / DWG NO. 85272-B2

AR300517

compound peaks and the 10 highest non-HSL volatile peaks were tentatively identified and their concentrations estimated using a forward search of the EPA/NIH Mass Spectral Library.

The results of the analyses are summarized on Tables 2, 3, 4 and 5. The data package prepared by S-R Analytical is included as Appendix D of this report. The data package includes the results of all soil samples and QC sample analyses.

AR300518

3.0 DATA ANALYSIS AND CONCLUSIONS

3.1 Laboratory Test Results

A review of S-R Analytical's laboratory data on the soil samples indicated that only a few analyses detected contamination that was not laboratory related. S-R Analytical identified Methylene Chloride, Toluene, Di-n-Butylphthalate, and bis(2-Ethylhexyl)Phthalate as laboratory or blank contaminants. Acetone and Diethylphthalate were also concluded to be a laboratory contaminants by SRW based on our experience with similar projects. These chemicals were eliminated during the analysis of the type and extent of contamination.

Chemicals which were considered as possible volatile organic contaminants of the samples were Carbon Disulfide (DH85-5), 1,2-Dichloroethane (DH85-4), Benzene (DH85-3) and Styrene (DH85-3). Volatile organic constituents in the offsite soil samples are summarized in Table 2. Chemicals which were considered as possible semi-volatile organic contaminants of the soil samples were Phenanthrene, Flouranthene, and Pyrene all detected in Boring DH85-1. Semi-volatile organic constituents in the offsite soil samples are summarized in Table 3. Several tentatively identified compounds were detected for each sample. Tables 4 and 5 summarize the tentatively identified compounds in the offsite soils. The volatiles, semi-volatiles and tentatively identified compounds discussed above were considered in the analysis of the extent of contamination.

TABLE 2
TYSON'S DUMP SITE
VOLATILE ORGANIC CONSTITUENTS IN OFFSITE SOILS

Test Boring	85-1	85-2	85-3	85-3	*	85-4	85-6	85-5	85-5
Sample No.	2000	2003	2006	2008	2009	2010	2014	2021	2022
Date Sampled	10/1	10/1	10/1	10/1	10/1	10/1	10/2	10/2	10/2
Chloromethane	—	—	—	—	—	—	—	—	—
Bromomethane	—	—	—	—	—	—	—	—	—
Vinyl Chloride	—	—	—	—	—	—	—	—	—
Chloroethane	—	—	—	—	—	—	—	—	—
Methylene Chloride	890B	780B	750B	790B	930B	850B	890B	810B	820B
Acetone	—	—	—	—	—	—	—	3700	—
Carbon Disulfide	—	—	—	—	—	—	—	180J	—
1,1-Dichloroethane	—5	—	—	—	—	—	—	—	—
1,1-Dichloroethane	—	—	—	—	—	—	—	—	—
Trans-1,2-Dichloroethene	—	—	—	—	—	—	—	—	—
Chloroform	—	—	—	—	—	—	—	—	—
1,2-Dichloroethane	—1	—	—	—	—	4400	—	—	—
2-Butanone	—	—	—	—	—	—	—	—	—
1,1,1-Trichloroethane	—	—	—	—	—	—	—	—	—
Carbon Tetrachloride	—	—	—	—	—	—	—	—	—
Vinyl Acetate	—	—	—	—	—	—	—	—	—
Bromodichloromethane	—	—	—	—	—	—	—	—	—
,2-Dichloropropane	—	—	—	—	—	—	—	—	—
Trans-1,3-Dichloropropene	—	—	—	—	—	—	—	—	—
Trichloroethene	—	—	—	—	—	—	—	—	—
Dibromochloromethane	—	—	—	—	—	—	—	—	—
1,1,2-Trichloroethane	—	—	—	—	—	—	—	—	—
Benzene	—5	—	—	230J	—	—	—	—	—
cis-1,3-Dichloropropene	—	—	—	—	—	—	—	—	—
2-Chloroethylvinylether	—	—	—	—	—	—	—	—	—
Bromoform	—8	—	—	—	—	—	—	—	—
4-Methyl-2-Pentanone	—	—	—	—	—	—	—	—	—
2-Hexanone	—	—	—	—	—	—	—	—	—
Tetrachloroethene	—	—	—	—	—	—	—	—	—
1,1,2,2-Tetrachloroethane	—	—	—	—	—	—	—	—	—
Toluene	2508J5	—	—	2508J	—	—	—	—	—
Chlorobenzene	—	—	—	—	—	—	—	—	—
Ethylbenzene	—	—	—	—	—	—	—	—	—
Styrene	—	—	—	320J	—	—	—	—	—
Total Xylenes	—	—	—	—	—	—	—	—	—

— Compound not detected; value below the detection limit

Value - The result is a value greater than or equal to the detection limit.

All values presented in units of ug/kg.

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TABLE 2 (continued)
TYSON'S DUMP SITE
VOLATILE ORGANIC CONSTITUENTS IN OFFSITE SOILS

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10 ug/kg and a concentration of 3 ug/kg is calculated, report as 3J.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

* - denotes blank sample.

1 - Data problem, see data qualification Item 2 in Appendix D.
5 - Data problem, see data qualification Item 7 in Appendix D.
8 - Data problem, see data qualification Item 10 in Appendix D.

SRW

TABLE 3
TYSON'S DUMP SITE
SEMI-VOLATILE ORGANIC CONSTITUENTS IN OFFSITE SOILS

Test Boring	B5-1	B5-2	B5-3	B5-3	*	B5-4	B5-6	B5-5	B5-5
Sample No.	2000	2003	2006	2008	2009	2010	2014	2021	2022
Date Sampled	10/1	10/1	10/1	10/1	10/1	10/1	10/2	10/2	10/2
Phenol	—	—2	—	—	—	—	—	—	—
bis(-2-Chloroethyl)Ether	—	—	—	—	—	—	—	—	—
2-Chlorophenol	—4	—	—	—	—	—	—	—	—
1,3-Dichlorobenzene	—	—	—	—	—	—	—	—	—
1,4-Dichlorobenzene	—	—	—	—	—	—	—	—	—
Benzyl Alcohol	—	—	—	—	—	—	—	—	—
1,2-Dichlorobenzene	—	—	—	—	—	—	—	—	—
2-Methylphenol	—	—	—	—	—	—	—	—	—
bis(-2-chloroisopropyl)Ether	—	—	—	—	—	—	—	—	—
4-Methylphenol	—	—	—	—	—	—	—	—	—
N-Nitroso-Di-n-Propylamine	—	—	—	—	—	—	—	—	—
Hexachloroethane	—	—	—	—	—	—	—	—	—
Nitrobenzene	—	—	—	—	—	—	—	—	—
Isophorone	—	—	—	—	—	—	—	—	—
2-Nitrophenol	—	—	—	—	—	—	—	—	—
2,4-Dimethylphenol	—	—	—	—	—	—	—	—	—
Benzoic Acid	—	—	—	—	—	—	—	—	—
bis(-2-Chloroethoxy)Methane	—	—	—	—	—	—	—	—	—
2,4-Dichlorophenol	—	—	—	—	—	—	—	—	—
1,2,4-Trichlorobenzene	—3,6	—	—	—	—	—	—	—	—
Naphthalene	—	—	—	—	—	—	—	—	—
4-Chloroaniline	—	—	—	—	—	—	—	—	—
Hexachlorobutadiene	—	—	—	—	—	—	—	—	—
4-Chloro-3-Methylphenol	—	—	—	—	—	—	—	—	—
2-Methylnaphthalene	—	—	—	—	—	—	—	—	—
Hexachlorocyclopentadiene	—	—	—	—	—	—	—	—	—
2,4,6-Trichlorophenol	—	—	—	—	—	—	—	—	—
2,4,5-Trichlorophenol	—	—	—	—	—	—	—	—	—
2-Chloronaphthalene	—	—	—	—	—	—	—	—	—
2-Nitroaniline	—	—	—	—	—	—	—	—	—
Dimethyl Phthalate	—	—	—	—	—	—	—	—	—
Acenaphthalene	—6	—	—	—	—	—	—	—	—
3-Nitroaniline	—	—	—	—	—	—	—	—	—
Acenaphthene	—	—	—	—	—	—	—	—	—
2,4-Dinitrophenol	—	—	—	—	—	—	—	—	—
4-Nitrophenol	—4	—	—	—	—	—	—	—	—
Dibenzofuran	—	—	—	—	—	—	—	—	—
2,4-Dinitrotoluene	—	—	—	—	—	—	—	—	—
2,6-Dinitrotoluene	—	—	—	—	—	—	—	—	—
Diethylphthalate	—	—	—	—	—	110J	—	—	—
4-Chlorophenyl-phenylether	—	—	—	—	—	—	—	—	—
Fluorene	—	—	—	—	—	—	—	—	—
4-Nitroaniline	—	—	—	—	—	—	—	—	—
4,6-Dinitro-2-Methylphenol	—	—	—	—	—	—	—	—	—
N-Nitrosodiphenylamine(1)	—	—	—	—	—	—	—	—	—

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TABLE 3 (continued)
TYSON'S DUMP SITE
SEMI-VOLATILE ORGANIC CONSTITUENTS IN OFFSITE SOILS

Test Boring.	85-1	85-2	85-3	85-3	*	85-4	85-6	85-5	85-5
Sample No.	2000	2003	2006	2008	2009	2010	2014	2021	2022
Date Sampled	10/1	10/1	10/1	10/1	10/1	10/1	10/2	10/2	10/2
4-Bromophenyl-phenylether	—	—	—	—	—	—	—	—	—
Hexachlorobenzene	—	—	—	—	—	—	—	—	—
Pentachlorophenol	—4,7	—	—	—	—	—	—	—	—
Phenanthrene	31J	—	—	—	—	—	—	—	—
Anthracene	—	—	—	—	—	—	—	—	—
Di-n-Butylphthalate	670B	1200B	1100B	430B	850B	250BJ	430B	120BJ	470B
Fluoranthene	64J	—	—	—	—	—	—	—	—
Pyrene	60J	—	—	—	—	—	—	—	—
Butylbenzylphthalate	—	—	—	—	—	—	—	—	—
3,3-Dichlorobenzidine	—	—	—	—	—	—	—	—	—
Benzo(a)Anthracene	—	—	—	—	—	—	—	—	—
bis(2-Ethylhexyl)Phthalate	460B	390B	350B	390B	180BJ	230BJ	280BJ	230BJ	270BJ
Chrysene	—	—	—	—	—	—	—	—	—
Di-n-Octyl Phthalate	—	—	—	—	—	—	—	—	—
Benzo(b)Fluoranthene	—	—	—	—	—	—	—	—	—
Benzo(k)Fluoranthene	—	—	—	—	—	—	—	—	—
Benzo(a)Pyrene	—	—	—	—	—	—	—	—	—
Indeno(1,2,3-cd)Pyrene	—	—	—	—	—	—	—	—	—
Dibenz(a,h)Anthracene	—	—	—	—	—	—	—	—	—
Benzo(g,h,i)Perylene	—	—	—	—	—	—	—	—	—

— Compound not detected; value below the detection limit

Value - The result is a value greater than or equal to the detection limit.

All values presented in units of ug/kg.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10 ug/kg and a concentration of 3 ug/kg is calculated, report as 3J.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

* - denotes blank sample.

2 - Data problem, see data qualification Item 4 in Appendix D
[illegible] - Data problem, see data qualification Item 5 in Appendix D
[illegible] - Data problem, see data qualification Item 6 in Appendix D
6 - Data problem, see data qualification Item 8 in Appendix D
7 - Data problem, see data qualification Item 9 in Appendix D

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TABLE 4
TYSON'S DUMP SITE
SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS WITH CAS NUMBER IDENTIFIED

Test Boring	85-1	85-2	85-3	85-3	*	85-4	85-6	85-5	85-5
Sample No.	2000	2003	2006	2008	2009	2010	2014	2021	2022
Date Sampled	10/1	10/1	10/1	10/1	10/1	10/1	10/2	10/2	10/2
2-Cyclohexen-1-One	290	650	510	750	—	840	620	580	520
1,3-Benzodioxole, 5-(2-Propenyl)-	—	—	—	—	—	—	2220	—	—
1,3-Benzodioxole, 5-(2-Propenyl)-	—	—	—	—	—	—	11830	—	—
1,3-Benzodioxole, 5-(2-Propenyl)-	—	—	—	—	—	—	6840	—	—
Hexanedioic Acid, Dioctyl Ester	—	1390	—	540	1130	—	—	—	—
Benzenamine, N-Phenyl	—	—	—	—	—	89	—	—	—

— Compound not detected; value below the detection limit

Value - The result is a value greater than or equal to the detection limit.

All values presented in units of ug/kg.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10 ug/kg and a concentration of 3 ug/kg is calculated, report as 3J.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

* - denotes blank sample.

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TABLE 5
TYSON'S DUMP SITE
TENTATIVELY IDENTIFIED COMPOUNDS IN OFFSITE SITES

Test Boring	Sample Number	CAS Number	Compound Name	Fraction	RT or Scan No.	Estimated Concentration (ug/kg)
85-1	2000		Unknown	VOA	547	4,300
			Unknown	VOA	673	16,000
			Unknown	BNA	510	209
			Unknown	BNA	551	1,310
		930-68-7	2-Cyclohexan-1-One	BNA	579	290
			Unknown	BNA	650	720
			Unknown	BNA	661	380
			Unknown	BNA	689	200
			Unknown	BNA	2,067	310
			Unknown	BNA	2,089	830
			Unknown	BNA	2,174	190
			Unknown	BNA	2,607	1,180
			Unknown	BNA	2,475	670
85-2	2003		Unknown	VOA	434	2,700
			Unknown	VOA	547	4,600
			Unknown	VOA	673	17,000
			Unknown	BNA	479	910
			Unknown	BNA	519	340
			Unknown	BNA	557	1,530
		930-68-7	2-Cyclohexan-1-One	BNA	585	660
			Unknown	BNA	656	840
			Unknown	BNA	665	360
			Unknown	BNA	690	570
			Unknown Alkane	BNA	1,212	200
			Unknown	BNA	1,266	140
			Unknown Aromatic	BNA	1,332	150
			Unknown	BNA	1,785	210
			Unknown	BNA	1,849	140
			Unknown	BNA	1,882	270
		123-79-5	Hexanedioic Acid, Dioctyl Ester.	BNA	2,091	1,390
			Unknown	BNA	2,068	370
			Unknown	BNA	2,611	1,960
			Unknown Alkane	BNA	2,729	510
			Unknown	BNA	3,236	59
85-3	2006		Unknown	VOA	546	6,100
			Unknown	VOA	672	20,000
			Unknown	BNA	477	1,900
			Unknown	BNA	518	290
			Unknown	BNA	557	2,030

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Test Boring	Sample Number	CAS Number	Compound Name	Fraction	RT or Scan No.	Estimated Concentration (ug/kg)
85-3	2006	930-68-7	2-Cyclohexan-1-One	BNA	583	510
			Unknown	BNA	654	2,120
			Unknown	BNA	690	510
			Unknown Alkane	BNA	1,695	150
			Unknown Alkane	BNA	1,780	250
			Unknown Alkane	BNA	1,861	230
			Unknown	BNA	2,068	530
			Unknown	BNA	2,090	880
			Unknown	BNA	2,176	190
			Unknown Alkane	BNA	2,322	690
			Unknown	BNA	2,613	3,090
			Unknown	BNA	2,727	400
85-3	2008		Unknown	VOA	546	4,200
			Unknown	VOA	573	17,000
			Unknown	BNA	549	1,550
		930-68-7	2-Cyclohexan-1-One	BNA	575	750
			Unknown	BNA	648	2,230
			Unknown	BNA	661	260
			Unknown	BNA	685	550
			Unknown	BNA	2,069	310
		123-79-5	Hexanedioic Acid, Dioctyl Ester	BNA	2,092	540
			Unknown	BNA	2,612	900
Blank	2009		Unknown	VOA	545	3,700
			Unknown	VOA	672	15,000
			Unknown	BNA	549	350
			Unknown	BNA	579	210
			Unknown	BNA	658	640
			Unknown	BNA	664	610
			Unknown	BNA	670	650
			Unknown	BNA	676	260
			Unknown	BNA	681	210
			Unknown	BNA	688	370
			Unknown	BNA	694	270
			Unknown	BNA	711	40
			Unknown	BNA	722	260
			Unknown	BNA	728	420
			Unknown	BNA	731	640
			Unknown	BNA	734	76
			Unknown	BNA	1,914	420
			Unknown	BNA	1,927	800
			Unknown	BNA	1,944	260
			Unknown	BNA	2,070	4,270
		123-79-5	Hexanedioic Acid, Dioctyl Ester	BNA	2,089	1,130
			Unknown	BNA	2,522	2,980

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Test Boring	Sample Number	CAS Number	Compound Name	Fraction	RT or Scan No.	Estimated Concentration (ug/kg)
85-4	2010		Unknown	VOA	546	8,800
			Unknown	VOA	673	25,000
			Unknown	BNA	477	710
			Unknown	BNA	518	190
			Unknown	BNA	557	1,400
		930-68-7	2-Cyclohexen-1-One	BNA	594	840
			Unknown	BNA	654	850
			Unknown	BNA	654	420
			Unknown	BNA	689	410
		122-39-4	Benzenamine, N-Phenyl	BNA	1,447	89
			Unknown	BNA	1,928	260
			Unknown	BNA	2,058	930
			Unknown	BNA	2,091	320
			Unknown	BNA	2,615	750
			Unknown Alkane	BNA	2,735	210
			Unknown	BNA	3,242	71
85-6	2014		Unknown	VOA	546	4,400
			Unknown	VOA	673	17,000
			Unknown	BNA	477	840
			Unknown	BNA	519	270
			Unknown	BNA	557	1,760
		930-68-7	2-Cyclohexen-1-One	BNA	585	620
			Unknown	BNA	655	1,480
			Unknown	BNA	691	400
			Unknown	BNA	902	1,870
		94-59-7	1,3-Benzodioxole, 5-(2-Propenyl)-	BNA	1,077	2,220
		94-59-7	1,3-Benzodioxole, 5-(2-Propenyl)-	BNA	1,082	11,830
		94-59-7	1,3-Benzodioxole, 5-(2-Propenyl)-	BNA	1,086	6,840
			Unknown	BNA	1,927	220
			Unknown	BNA	2,065	800
			Unknown	BNA	2,088	680
			Unknown	BNA	2,602	640
			Unknown	BNA	2,710	150
			Unknown	BNA	3,199	130
85-5	2021		Unknown	VOA	546	4,300
			Unknown	VOA	673	16,000
			Unknown	BNA	508	160
			Unknown	BNA	548	1,340
		930-68-7	2-Cyclohexen-1-One	BNA	575	580
			Unknown	BNA	647	1,230
			Unknown	BNA	659	250
			Unknown	BNA	685	210
			Unknown	BNA	1,926	230
			Unknown	BNA	2,054	980
			Unknown alkane	BNA	2,086	450
			Unknown	BNA	2,593	220

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Test Boring	Sample Number	CAS Number	Compound Name	Fraction	RT or Scan No.	Estimated Concentration (ug/kg)
85-5	2022		Unknown	VOA	546	4,200
			Unknown	VOA	674	16,000
			Unknown	BNA	477	400
			Unknown	BNA	556	1,070
		930-68-7	2-Cyclohexan-1-One	BNA	594	520
			Unknown	BNA	652	580
			Unknown	BNA	654	270
			Unknown	BNA	693	180
			Unknown	BNA	1,927	190
			Unknown	BNA	2,065	800
			Unknown	BNA	2,088	530
			Unknown	BNA	2,602	1,570
			Unknown	BNA	2,713	180
			Unknown	BNA	3,201	37

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3.2 Extent of Contamination

SRW has concluded that the compounds identified in the soil samples were not indicative of site related contaminant migration based on a review of laboratory analyses of samples collected by Woodward-Clyde Consultants during recent work for the COE and by Baker/TSA during the Remedial Investigation. Baker/TSA identified 1,2,3 Trichloropropane as the contaminant of major concern at the site and was identified in Borings DH84-1 and DH84-2 drilled by Woodward Clyde at the west site boundary. Laboratory analyses of all samples collected from DH85-1 through DH85-6 did not show 1,2,3 Trichloropropane to be present. Additionally, contaminants identified in Woodward-Clyde Borings DH84-1, DH84-2, DH84-3, DH84-6, DH84-7, and DH84-8 located near the western end of the site were not found in the samples from the six test borings drilled by SRW. SRW has concluded that none of the six test borings drilled indicate that site contaminants have migrated to the boring locations and that the estimated limit of contamination should not extend beyond a line that would connect DH85-1, DH85-4 and DH85-5 based on the above analyses. The estimated extent of contamination is shown on Dwg. 85275-B2.

3.3 Bedrock Surface Configuration

The bedrock surface west of the site appears to have a trough or a depression located in the vicinity of Borings DH84-1 and DH84-2 drilled by Woodward-Clyde. This conclusion is based on a review of SRW and Woodward-Clyde boring logs, the log of monitoring well ERT-1, surface topographic features, and the spring located north of the area in question.

SRW's logs indicate that the bedrock surface is at a higher elevation than the area near DH84-1 and DH84-2. This is shown by the comparison of top of bedrock elevations in the borings presented on Dwg. 85275-82. Surface topography in this area also forms a depression that can indicate a depression in the underlying bedrock. Additionally, there is a spring located north of the area which is an indication that a subsurface feature exists that would direct groundwater to form a spring.

The location of a depression or trough is also demonstrated by the results of laboratory test results. The soil, sediment and water from the spring box in this area were tested and indicated the presence of 1,2,3 Trichloropropane and other site contaminants. Additionally, samples from DH84-1, DH84-2 and ERT-1 all detected 1,2,3 Trichloropropane and other site related contaminants. Since these contaminants were not detected in any of the SRW borings, it appears that contaminant transport by groundwtaer is interrupted in the area west of the site.

Using the analysis of the top of bedrock data, the line of contamination and excavation shown on Dwg. 85275-82 should provide for the excavation of contaminated soils adjacent to the site.

3.4 Contaminated Soil Excavation Volumes

The excavation configuration used in the Tyson's Dump concept design prepared by SRW lies approximately along the line of extent of contaminant migration con-

necting DH85-1, DH85-4 and DH85-5, as shown on Dwg. 85275-82. Excavation to this line would result in only a very small volume of additional material to be excavated in the area of DH85-1. Therefore, the volume of 48,000 cu. yds. calculated in the Tyson's Dump concept design appears to be appropriate, and no significant additional excavation will be required.

AR300531

APPENDIX A

SRW TEST BORING LOGS

AR300532

TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DHB5-1

Location: Off Site, West of Tyson's Dump Site
Elevation: 102.08

Drilling Date: 10/1/85
G.W. at 0 hrs.: Dry at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	O/A Reading (ppm) HSA/SS
0.0-2.0	2-26-15-14	2000	Gray to Brown Silty Sand with Sandstone Fragments, Compact, Dry to Damp	Shipped to S-R Analytical	0.2
3.0-5.0	10-10-11-13	2001	Reddish-Brown Clayey Sand with Sandstone Fragments, Medium Compact, Damp		0.0
6.0-6.7	28-50/.2	2002	Dark Brown to Gray Clayey Sand with Sandstone Fragments, Very Compact, Dry to Damp		0.0

Auger Refusal at 6.7 ft.

SRW

TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DH85-2A

Location: Off Site, West of Tyson's Dump Site
Elevation: 103.21

Drilling Date: 10/1/85
GWL at 0 hrs.: 2.0 ft. at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	OVA Reading (ppm)HSA/SS
0.0	Augered				
2.5-3.1	1-50/.1	2004	Reddish-Brown Clayey Sand, Very Compact, Moist to Wet		0.0

Auger Refusal at 3.1 ft.

AR300534

SRW

TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DHB5-3

Location: Off Site, West of Tyson's Dump Site
Elevation: 103.95

Drilling Date: 10/1/85
GWL at 0 hrs.: Dry at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	O/A Reading (ppm) HSA/SS
0.0-2.0	2-4-14-27	2005	Brown to Gray Clayey Sand with Sandstone Fragments, Compact, Dry to Damp		0.0
3.0-3.8	27-50/.3	2006	Brown to Gray Clayey Sand with Sandstone Fragments, Compact, Dry to Damp	Shipped to S-R Analytical	0.0
5.0-7.0	2-4-10-12	2007 2008	Brown to Gray Clayey Sand with Coarse Grained Sandstone Fragments, Medium Compact, Damp	Split Shipped to COE Split Shipped to S-R Analytical	

Auger Refusal at 7.5 ft.

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TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DH85-4

Location: Off Site West of Tyson's Dump Site
Elevation: 106.35

Drilling Date: 10/1/85
GWL at 0 hrs.: Dry at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	OVA Reading (ppm)HSA/SS
0.0-2.0	3-9-7-17	2010	Brown to Light Brown Silt with Sand and Sandstone Fragments, Medium Compact, Dry	Shipped to S-R Analytical	0.0
3.0-3.8	21-50/.3	2011	Light Gray to Brown Clayey Sandstone, Very Compact, Dry		0.0

Auger Refusal at 5.0 ft.

SRW

TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DH85-5

Location: Off Site, West of Tyson's Dump Site
Elevation: 102.87

Drilling Date: 10/2/85
GWL at 0 hrs.: Dry at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	OVA Reading (ppm) HSA/SS
0.0-2.0	1-3-4-4	2018	Brown to Dark Brown Clayey Sand with Sandstone Fragments, Loose, Damp		0.0
3.0-5.0	1-4-5-4	2019	Dark Brown to Reddish Gray Clayey Sand with Sandstone Fragments, Loose, Damp to Moist		0.0
6.0-8.0	1-2-3-2	2020	Reddish Brown Clayey Sand with Sandstone Fragments, Loose, Damp to Moist	Insufficient Recovery	0.0
9.0-10.8	19-39-39-50/.4	2021	Light Gray Sand and Sandstone Fragments, Very Compact, Dry	Shipped to S-R Analytical	0.4
		2022	Duplicate of Sample 2021 Constructed from Sample 2019	Shipped to S-R Analytical	

Auger Refusal at 12.0 ft.

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TEST BORING LOG
ADDITIONAL SUBSURFACE EXPLORATION AND ANALYSIS
TYSON'S DUMP SUPERFUND PROJECT

BORING NO. DH85-6

Location: Off Site, West of Tyson's Dump Site
Elevation: 110.71

Drilling Date: 10/2/85
GWL at 0 hrs.: Dry at 24 hrs. Backfilled

Rig Type: Track Mounted Simco Drill Rig
Drilling Company: Pennsylvania Drilling Co.
Driller: Tom Stewart
Helpers: Kurt Waddell, Randy Malcomb
SRW Representative: Patrick J. Sullivan, Jr.

Depth	No. Blows	Sample No.	Description	Remarks	O/A Reading (ppm)HSA/SS
0.0-2.0	9-11-19-17	2012	Light Gray to Brown Clayey Sand with Sandstone Fragments, Compact, Dry		0.2
3.0-5.0	8-9-7-5	2013	Brown Silty Sand with Sandstone Fragments, Medium Compact, Dry	Insufficient Recovery	0.3
6.0-8.0	8-8-8-6	2014	Gray to Brown Sand with Sandstone Fragments, Medium Compact, Dry to Damp	Shipped to S-R Analytical	0.2
9.0-11.0	5-1-1-2	2015	Brown Silty Sand and Gray Sandstone Fragments, Very Loose, Dry to Damp		0.2
12.0-14.0	10-11-19-27	2016	Brown and Gray Clayey Sand with Sandstone Fragments, Compact, Dry		0.2
15.0-16.0	21-47-50/0.0	2017	Brown to Dark Brown and Gray Silty Sand with Sandstone Fragments, Very Compact, Dry		0.2

Auger Refusal at 16.0 ft.

AR300538

APPENDIX B

PENNSYLVANIA DRILLING COMPANY LOGS

AR300539

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level:
1 hr. Dry 24 hrs. Dry
Casing Hammer Wt. ____ lbs. Drop ____ in.
Sampler Hammer Wt. 140 lbs. Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-1 Surface Elevation ____ Sheet 1 of 1
For: SRW Associates, Inc.
Tyson's Dump Site
Location: King of Prussia, PA
Started 10/1/85 Completed 10/1/85 Job No. 85138-1

Elevation	Depth	Casing Hammer Blows	Driller's Log ☑ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows / Penetration on Sampler
	0.0					
	2.0		2.0' Loose to Medium Dense Gray & Brown Silty Sand, Dry to Damp		2.0	2-26-1[illegible]
	6.7		4.7' Reddish Brown & Gray Clayey Sand, Some Rock Fragments, Damp		5.0	10-10-[illegible]
					6.7	28-50/[illegible]

AR300540

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level:
1 hr. 2.0 24 hrs. Backfilled
Casing Hammer Wt. ..... lbs. Drop ..... in.
Sampler Hammer Wt. 140 lbs. Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-2 Surface Elevation ..... Sheet 1 of 1
For: SRW Associates, Inc.
Tyson's Dump Site
Location: King of Prussia, PA
Started 10/1/85 Completed 10/1/85 Job No. 85138-1

ELEVATION	DEPTH 0.0	Casing Hammer Blows	Driller's Log ☒ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows /6" Penetration on Sampler
	2.0		2.0' Soft Brown & Grey Clayey Sand, Damp		2.0	1-4-4-5

AR300541

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level: 1 hr. Dry 24 hrs. Dry
Casing Hammer Wt. ..... lbs. Drop ..... in.
Sampler Hammer Wt. 140 lbs Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-2A Surface Elevation ..... Sheet 1 of 1
For: SRW Associates, Inc.
Tyson's Dump Site
Location: King of Prussia, PA
Started 10/1/85 Completed 10/1/85 Job No. 85138-1

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☒ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows Penetration on Sampler
	0.0		3.1' Soft Brown & Gray Clayey Sand, Damp to Wet			
	3.1				3.1	1-50/.

B-4 AR300542

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level:
1 hr. Dry 24 hrs. Dry
Casing Hammer Wt. ..... lbs. Drop ..... in.
Sampler Hammer Wt. 140 lbs Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-3 Surface Elevation ..... Sheet 1 of 1
For: SRW Associates, Inc.
Tyson's Dump Site
Location: King of Prussia, PA
Started 10/1/85 Completed 10/1/85 Job No. 85138-1

ELEVATION	DEPTH 0.0	Casing Hammer Blows	Driller's Log ☑ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows / Penetration on Sample
			7.5' Loose & Medium Dense Brown & Grey Clayey Sand, Some Cobbles & Rock Fragments, Damp		2.0	2-4-14-
					3.8	27-50/.
	7.5		Auger Refusal		7.0 7.5	2-4-10-

AR300543

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller .....Thomas Stewart.....
Water Level
1 hr. Dry 24 hrs. Dry
Casing Hammer Wt.....lbs. Drop.....in.
Sampler Hammer Wt. 140 lbs Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-4 Surface Elevation ..... Sheet 1 of 1
For SRW Associates, Inc.
Tyson's Dump Site
Location King of Prussia, PA
Started 10/1/85 Completed 10/1/85 Job No. 85138-1

ELEVATION	DEPTH 0.0	Casing Hammer Blows	Driller's Log ☒ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows Penetration on Sampler
	3.0		3.0' Loose to Medium Dense Brown Silt & Rock Fragments, Dry		2.0	3-9-7-
	5.0		2.0' Soft to Hard Brown & Gray Claystone		3.8	21-50/
			Auger Refusal		5.0	

AR300544

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level:
1 hr. Dry 24 hrs. Backfilled
Casing Hammer Wt. ..... lbs. Drop ..... in.
Sampler Hammer Wt. 140 lbs Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-5 Surface Elevation ..... Sheet 1 of 1
For: SRW Associates, Inc.
Tyson's Dump Site
Location: King of Prussia, PA
Started 10/2/85 Completed 10/2/85 Job No. 85138-1

ELEVATION	DEPTH 0.0	Casing Hammer Blows	Driller's Log ☒ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows Penetration on Sam
			8.0' Loose Brown & Gray Clayey Sand, Some Rock Fragments, Damp		2.0	1-3-4-
					5.0	1-4-5-
	8.0				8.0	1-2-3-
			4.0' Medium Hard to Hard Gray Sandstone, Some Sand		10.8	19-39-
	12.0				12.0	50
			Auger Refusal			

AR300545

PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA. 15220

TEST BORING RECORD

Driller: Thomas Stewart
Water Level
1 hr. Dry 24 hrs. Dry
Casing Hammer Wt. ..... lbs. Drop ..... in.
Sampler Hammer Wt. 140 lbs Drop 30 in.
Sampler Size 2 in. O.D. Casing Size 4 in.

Hole No. DH85-6 Surface Elevation ..... Sheet 1 of 1
For SRW Associates, Inc.
Tyson's Dump Site
Location King of Prussia, PA
Started 10/2/85 Completed 10/2/85 Job No. 85138-1

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☒ / Geologist's Log ☐ / Mechanical Analysis ☐	Remarks	Sample Depth	Blows /6" Penetration on Sampler
	0.0				2.0	9-11-19-
			15.0' Loose & Medium Dense Brown & Grey Sand, Some Silty Rock Fragments		5.0	8-9-7-5
					8.0	8-8-8-6
					11.0	5-1-1-2
					14.0	10-11-19 27
	15.0					
	16.0		1.0' Hard Red & Grey Claystone		16.0	21-47-50 .0"

AR300546

APPENDIX C

WOODWARD-CLYDE CONSULTANTS GEOPHYSICAL SURVEY RESULTS

5120 Butler Pike
Plymouth Meeting
Pennsylvania 19462
215-825-3000
Telex 846-343

OCT 16 1985

Woodward-Clyde Consultants

October 9, 1985
85C2563-3

Kenneth R. Miller, P.E.
SRW Associates, Inc.
2783 Noblestown Road
Pittsburgh, PA 15205

GEOPHYSICAL SURVEY RESULTS
TYSON'S DUMP SITE

Dear Mr. Miller:

Woodward-Clyde Consultants is pleased to present herein the results of our geophysical surveys performed at Tyson's Dump Site. This report is in response to your letter of authorization dated September 25, 1985.

INTRODUCTION

On Monday, September 30, 1985, magnetometer and terrain conductivity surveys were performed at the Tyson's Dump Site in King of Prussia, PA. A 67 point grid was established the previous day by employees of SRW Associates, Inc. These grid points, and five proposed well locations, were measured during both surveys. The purpose of these surveys was to locate any possible buried materials which would interfere with drilling procedures, and recommend alternate locations for the proposed wells.

INTERPRETATION

Lines A through D, positions 175 through 350, along the southern half of the grid were measured at background magnetometer readings of approximately 55,300 gammas, and background conductivity readings of 2 to 4 millimhos/meter (mmhos/m). Slightly higher conductivity values of 5 to 6 mmhos/m were measured along Line B, near a drainage ditch which held standing water. This water is probably responsible for these slightly high readings. Positions 100 to 150 along these first four lines were too close to the site fence to provide useful data.

The area encompassing Lines E, F, G, and H, positions 225 through 375, in the northwest corner of the grid, appears to contain buried trash and metallic debris,

resulting in anomalously high magnetometer and conductivity meter readings in this area. An old stove and a large piece of treadplate were partially visible in the ditch along Line G. Other trash, which contributed to these high readings, was visible along Lines F and G.

Lines E and F, positions 100 to 200, to the northeast, are located on the backfilled test pit. This area had a few rusted drums centered around Line F, position 125. Two large metal sheds were located between Lines E and F. These metallic objects on the ground surface caused high readings during both surveys.

CONCLUSIONS

DH85-1 and DH85-2 are located in clean areas as indicated by both the magnetometer and terrain conductivity surveys and should present no problems during drilling. Measurements at DH85-3, at E 300 appear to indicate that the area is free of trash and metal debris. Readings taken near DH85-5 were influenced by surface metal, but based on previous work done at the decon pits, this area should now be free of buried metal.

Magnetometer readings at DH85-4 were 160 gammas above background values, indicating the presence of buried metal. Consequently, the location of this well will be moved approximately 10-15 feet up the slope, toward E200, where the readings return to background levels.

If any questions arise concerning this report, or if we may be of any further service, please do not hesitate to contact us.

Very truly yours,

WOODWARD-CLYDE CONSULTANTS

Mark W. Lucas
Senior Staff Geophysicist

Robert G. Ehlenberger
Project Manager

AR300549

MWL/RGE/mm/20A

APPENDIX D

S-R ANALYTICAL SAMPLE DATA PACKAGE

(LABORATORY CHEMICAL ANALYSIS)

(SEE VOLUMES 2 AND 3 OF THIS REPORT)

AR300550

D

APPENDIX D

BIOLOGICAL SAMPLE COLLECTORS PERMIT

AR300552

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
HARRISBURG 17120

July 7, 1986 $50.00 Fee TYPE III

PERMIT NO. 38

THIS IS TO CERTIFY THAT acting under the provisions of the Fish and Boat Code, Act 1980-175:

George Potera, Senior Biologist
999 West Chester Pike
West Chester, PA 19382

or his assistants, are hereby authorized to collect fish or other aquatic life for scientific purposes ERM INC. 999 West Chester Pike, West Chester, PA 19382.

PERMIT TO BE VALID FOR COLLECTION OF SNAPPING TURTLES (Chelydra serpentina) AND FRESHWATER CLAIMS (Corbicula sp.). PERMIT VALID FOR AREAS BRIDGEPORT, MONTGOMERY COUNTY, SCHUYKILL RIVER-VICINITY OF BARBADOS ISLAND. ANY OTHER AREAS MUST BE APPROVED BY THE PENNSYLVANIA FISH COMMISSION.

This permit is good for the calendar year 19 86 , when it is to be returned to the Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, Pennsylvania 17105-1673, with a statement of the number and kinds of fish and aquatic life taken and the specific water area in which they were collected.

The said GEORGE T. POTERA or his assistants, must be the holders of a RESIDENT or NONRESIDENT FISHING LICENSE which must be carried with them at all times when using this permit, and proper notification must be given to the Waterways Patrolman in the county when any collecting is being done.

The above mentioned persons must be the holders of a NET PERMIT covering the nets in their possession providing they are over four (4) feet square or four (4) feet in diameter. Trap nets or similar devices that are placed in waters for extended periods of time must be tended daily.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Commission the day and date first above written.

ATTEST:

Paul F. O'Brien

Ralph W. Abele

Paul F. O'Brien, Director
Bureau of Administrative Services

AR300553

Ralph W. Abele
Executive Director

PFC-11 1M (Rev. 10/81)

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
P.O. BOX 1673
HARRISBURG 17120

July 7, 1986

Fee Waived

PERMIT NO. *

THIS IS TO CERTIFY that acting under the provisions of 1980-175, 30 Pa. C.S. Ch.29,

George Potera, Senior Biologist
999 West Chester Pike
West Chester, PA 19382

is hereby authorized to possess the following net or nets:

TYPE SEINE OR NET	PURPOSE FOR WHICH USED
Nets: Hoop Net Net size 10'x 3' 1" mesh	*To be used in connection with Scientific Collector's Permit No. 38, TYPE III.

This permit is good until December 31, 19 86 , when it is to be returned to the Pennsylvania Fish Commission, Harrisburg, Pennsylvania, with a request for renewal, if so desired. If any nets are disposed of, appropriate notation shall be made on this permit.

IN WITNESS THEREOF I have hereunto set my hand and affixed the official seal of the Commission the day and date first above written.

ATTEST:

Paul F. O'Brien

Ralph W. Abele

ADMINISTRATIVE OFFICER

EXECUTIVE DIRECTOR

AR300554

E

AR300555

APPENDIX E

BORING LOGS

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY
Location: Railroad Area | W.O. Number: 27210
Well Number: B-1 | Total Depth: 25.5' | Diameter: 4"
Surface Elevation: | Water Level: Initial: NA | 24-hrs.: NA
Screen: Dia.: NA | Length: NA | Slot Size: NA
Casing: Dia.: NA | Length: NA | Type: NA
Drilling Company: Walton | Drilling Method: Hollow Stem Auger
Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/14/86

Sketch Map

Notes: North of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				0'-5.5' FILL: black, cinder type containing some railroad ballast
5			SS026 (4'-6')	5.5'-7.0' WEATHERED SANDSTONE: red/gray/pink 7.0'-10.5' SANDY CLAY: brownish red, becoming reddish brown at 10.05'
10			SS027 (8'-12')	10.5'-12.0' WEATHERED SANDSTONE: brownish-yellow 12.0'-13.5' SANDY CLAY: Reddish brown, becoming brownish yellow at 13.0'
			SS028 (12'-14')	13.5'-17.0' SAND: brownish red, some clay, moist
15			SS029 (16'-18)	17.0'-17.6' CLAY: dark gray 17.6'-21.0' CLAY: mottled, light gray to orange
20			SS030 (20'-22'	21.0'-21.5' CLAY: dark gray * AUGER REFUSAL AT 25.5'
25			SS031 (24'-25	

AR300557

Environmental Resources Management

Drilling Log

Project: Tysons — Owner: CIBA GEIGY

Location: Railroad Area — W.O. Number: 27210

Well Number: B-2 — Total Depth: 31.5' — Diameter: 4"

Surface Elevation: — Water Level: Initial: NA — 24-hrs.: NA

Screen: Dia.: NA — Length: NA — Slot Size: NA

Casing: Dia.: NA — Length: NA — Type: NA

Drilling Company: Walton — Drilling Method: Hollow Stem Auger

Driller: W. Patterson — Log By: R. Hoose — Date Drilled: 7/18/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS058 (0'-2')	0'-9.4' FILL: black, cinder type, containing some railroad ballast
5				
				9.4'-13.2' SILTY SAND: light brown to orange
10			SS059 (10'-12')	
				13.2'-21.8' CLAY: orange to light brown, trace sand, stiff, dry
15				
20			SS060 (20'-22')	21.8'-22.5' SAND: yellowish green, some clay
				22.5'-30.0' CLAY: light brown to tan, grading to reddish brown, trace sand stiff
25				

AR300558

Environmental Resources Management

Drilling Log

Project: Tysons Owner: CIBA GEIGY

Location: Railroad Area W.O. Number: 27210

Well Number: B-2 Total Depth: 31.5' Diameter: 4"

Surface Elevation: Water Level: Initial: NA 24-hrs.: NA

Screen: Dia.: NA Length: NA Slot Size: NA

Casing: Dia.: NA Length: NA Type: NA

Drilling Company: Walton Drilling Method: Hollow Stem Auger

Driller: W. Patterson Log By: R. Hoose Date Drilled: 7/18/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25				
30				30.0'-31.5' WEATHERED SANDSTONE: brownish red * AUGER REFUSAL AT 31.5'

AR300559

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY
Location: Railroad Area | W.O. Number: 27210
Well Number: B-3 | Total Depth: 23.0' | Diameter: 4"
Surface Elevation: | Water Level: Initial: NA | 24-hrs: NA
Screen: Dia.: NA | Length: NA | Slot Size: NA
Casing: Dia.: NA | Length: NA | Type: NA
Drilling Company: Walton | Drilling Method: Hollow Stem Auger
Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/15/86

Sketch Map

Notes: North of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0		SS032 (0'-2')		0'-3.0' FILL: balck, cinder type, mixing with some soil and railroad ballast
				3.0'-10.0' SANDY SILT: dark brown, becoming lighter at 4.0', darkening at 8.0'
5		SS033 (4'-6')		
10		SS035 (8'-12')		10.0'-13.5' SANDY CLAY: light brown, becoming orange brown at 11.0', light brown at 13.0'
		SS036 (12'-14')		13.5'-21.8' CLAY: light brown, becoming darker at 14.0', grading to dark brown at 21.8'
15				
20		SS037 (20'-22')		21.8'-23.0' WEATHERED SANDSTONE: brownish red
				* AUGER REFUSAL AT 23.0'
25				

AR300560

Environmental Resources Management

Drilling Log

Project: Tysons Owner: CIBA GEIGY

Location: Railroad Area W.O. Number: 27210

Well Number: B-4 Total Depth: 5.5' Diameter: 4"

Surface Elevation: ____ Water Level: Initial: NA 24-hrs.: NA

Screen: Dia.: NA Length: NA Slot Size: NA

Casing: Dia.: NA Length: NA Type: NA

Drilling Company: Walton Drilling Method: Hollow Stem Auger

Driller: W. Patterson Log By: R. Hoose Date Drilled: 7/17/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				0'-3.5' FILL: black, cinder type, containing some railroad ballast
				3.5'-4.5' SILTY CLAY: light brown, stiff, dry
				4.5'-5.2' CLAY: black, damp
5			SS057 (4'-6')	5.2'-5.5' SILTY CLAY: greenish yellow grading to tan, stiff, dry
				*AUGER REFUSAL AT 5.5'
10				
15				
20				
25				

AR300561

Environmental Resources Management

Drilling Log

Project: Tysons Owner: CIBA GEIGY

Location: Railroad Area W.O. Number: 27210

Well Number: B-5 Total Depth: 26.9' Diameter: 4"

Surface Elevation: ____ Water Level: Initial: NA 24-hrs.: NA

Screen: Dia.: NA Length: NA Slot Size: NA

Casing: Dia.: NA Length: NA Type: NA

Drilling Company: Walton Drilling Method: Hollow Stem Auger

Driller: W. Patterson Log By: R. Hoose Date Drilled: 7/15/86

Sketch Map

Notes: North of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS038 (0'-2')	0'-5.7' FILL: black, cinder type, some sand, some railroad ballast, thin layer of white to gray sandy clay at 5.7'
5			SS039 (4'-6')	5.7'-9.4' SANDY CLAY: light gray, wet
				9.4'-12.0' SANDY CLAY: greyish brown, stiff
10			SS041 (8'-12')	
				12.0'-13.5' SANDY CLAY: brownish gray, wet
			SS042 (12'-14')	13.5'-21.7' SANDY CLAY: red to brown to orange
15				
20			SS043 (20'-22')	21.7'-26.9' WEATHERED SANDSTONE: brownish red
25				* AUGER REFUSAL AT 26.9'

AR300562

Environmental Resources Management

Drilling Log

Project: Tysons Owner: CIBA GEIGY

Location: Railroad Area W.O. Number: 27210

Well Number: B-6 Total Depth: 3.0' Diameter: 4"

Surface Elevation: ____ Water Level: Initial: NA 24-hrs: NA

Screen: Dia. NA Length: NA Slot Size: NA

Casing: Dia. NA Length: NA Type: NA

Drilling Company: Walton Drilling Method: Hollow Stem Auger

Driller: W. Patterson Log By: R. Hoose Date Drilled: 7/21/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS061 (0'-2')	0'-1.5' FILL: black, cinder type 1.5'-3.0' SAND: brownish red, some clay, weathered sandstone pebbles, grades to reddish brown at 1.75'
5				* AUGER REFUSAL AT 3.0'
10				
15				
20				
25				

AR300563

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY

Location: Railroad Area | W.O. Number: 27210

Well Number: B-7 | Total Depth: 25.75' | Diameter: 4"

Surface Elevation: | Water Level: Initial: NA | 24-hrs.: NA

Screen: Dia.: NA | Length: NA | Slot Size: NA

Casing: Dia.: NA | Length: NA | Type: NA

Drilling Company: Walton | Drilling Method: Hollow Stem Auger

Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/16/86

Sketch Map

Notes: North of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS044 (0'-2')	0'-1.4' FILL: black, cinder tpye, some railroad ballast
				1.4'-1.8' SANDY CLAY: yellowish brown
				1.8'-3.0' SAND: yellowish brown
				3.0'-5.4' SANDY CLAY: dark brown grading to yellowish brown
5			SS045 (4'-6')	5.4'-5.8' SANDY CLAY: grayish brown, coarse sand
				5.8'-7.5' CLAY: gray, stiff
				7.5'-10.0' SANDY CLAY: browninsh gray to reddish brown
10			SS047 (8'-12')	10.0'-10.8' CLAY: gray
				10.8'-12.0' CLAY: reddish brown with little sand
			SS048 (12'-14')	12.0'-12.9' SANDY CLAY: dark gray
				12.9'-13.4' CLAY: light gray grading to reddish brown
15				13.4'-25.75' SANDY CLAY: dark brown, grading to sand and weathered sandstone at 21.7'
				* AUGER REFUSAL AT 25.75'
20			SS049 (20'-22')	
25				

AR300564

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY
Location: Railroad Area | W.O. Number: 27210
Well Number: B-8 | Total Depth: 6.5' | Diameter: 4"
Surface Elevation: | Water Level: Initial: NA | 24-hrs.: NA
Screen: Dia.: NA | Length: NA | Slot Size: NA
Casing: Dia.: NA | Length: NA | Type: NA
Drilling Company: Walton | Drilling Method: Split spoon
Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/21/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS062 (0.5'-2.5')	0'-1.5' FILL: black, abundant organic matter
				1.5'-5.0' CLAYEY SAND: reddish brown, some pebble sized clasts of weathered Arkosic Sandstone
5			SS063 (2.5'-6.5')	5.0'-5.3' SILTY CLAY: reddish brown
				5.3'-6.5' WEATHERED SANDSTONE: brownish red
				* SPLIT SPPON REFUSAL AT 6.5'
10				
15				
20				
25				

AR300565

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY
Location: Railroad Area | W.O. Number: 27210
Well Number: B-9 | Total Depth: 23.5' | Diameter: 4"
Surface Elevation: | Water Level: Initial: NA | 24-hrs.: NA
Screen: Dia.: NA | Length: NA | Slot Size: NA
Casing: Dia.: NA | Length: NA | Type: NA
Drilling Company: Walton | Drilling Method: Hollow Stem Auger
Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/16/86

Sketch Map

Notes: North of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				0'-2.3' FILL: black, cinder type containing some railroad ballast
				2.3'-4.5' SANDY CLAY: brownish gray
				4.5'-5.6' CLAY: light brown, grading to gray
5			SS051 (4'-6')	5.6'-6.0' CLAYEY SAND: reddish brown
				6.0'-9.1' SANDY CLAY: light brown, grading to reddish brown
				9.1'-12.0' CLAY: gray
10			SS053 (8'-12')	
			SS054 (12'-14')	12.0'-13.5' SANDY CLAY: light brown, grading to reddish brown
				13.5'-14.5' SAND: reddish brown, medium grained
15				14.5'-21.5' SANDY CLAY: light brown
20			SS055 (20'-22')	21.5'-23.5' SAND: reddish brown, and weathered sandstone at 22.8'
				* AUGER REFUSAL AT 23.5'
25				

AR300566

Environmental Resources Management

Drilling Log

Project: Tysons | Owner: CIBA GEIGY
Location: Railroad Area | W.O. Number: 27210
Well Number: B-10 | Total Depth: 10.9' | Diameter: 4"
Surface Elevation: | Water Level: Initial: NA | 24-hrs: NA
Screen: Dia.: NA | Length: NA | Slot Size: NA
Casing: Dia.: NA | Length: NA | Type: NA
Drilling Company: Walton | Drilling Method: Split spoon
Driller: W. Patterson | Log By: R. Hoose | Date Drilled: 7/22/86

Sketch Map

Notes: South of tracks

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0			SS064 (0'-2')	0'-1.4' SAND: dark brown, abundant organic matter, little clay
				1.4'-3.8' SAND: reddish brown, little clay, grading to orange brown at 1.9', contains some Arkosic Sandstone clasts
5				3.8'-7.0' SILTY CLAY: gray, stiff, grading to reddish at 5.3', orange brown at 5.6'
				7.0'-7.7' SILTY CLAY: mottled, light brown to orange gray
			SS065 (6'-10')	7.7'-8.0' GRAVEL: white, fine quartz fragments
10				8.0'-10.9' SILTY SAND: orange brown, pebble sized clasts of weathered Arkosic Sandstone
				* SPLIT SPOON REFUSAL AT 10.9'
15				
20				
25				

AR300567

TYSON'S SITE
DESCRIPTION OF SCHUYLKILL RIVER SEDIMENT CORES
October, 1986

Station A (Depth to river bottom 6')

One Attempt, 12" recovery, No odors.

0-8" Dark grey brown coarse well rounded gravel, fine cobbles and coarse sand, little fine-medium gravel, trace coal fragments, soft.

8"-12" Dark black coarse sand (80% coal), trace medium subround gravel, trace organic matter (leaves and shells), soft.

Station B (Depth to river bottom 5.5')

One Attempt, 23" recovery, fishy odor.

0-3" Dark yellow brown medium to coarse sandy well rounded Gravel, which grades into medium and coarse Sand with fine well-subrounded gravel, abundant organic matter-wood, firm.

3"-14" Dark black fine sand and silt, dominated by fine coal fragments, trace clay, crude stratification, soft to firm.

14"-23" Dark black medium to coarse sand (dominated by coal clasts), crude stratification, some organic matter including leaves and clams, trace fine well rounded gravel, soft.

Bottom two lithologies and top lithology were submitted as separate samples.

Station C (Depth to river bottom 7.1')

One Attempt, 24" recovery, no odor.

0-5" Dark grey clay with coarse well rounded Gravel, trace silt, organic matter (leaves) and red mottling of clays, soft to firm.

5"-24" Dark black and dark grey coarse angular - subangular coal and quartz sand, trace fine subround gravel with organic matter, soft.

Each lithology was submitted as separate samples.

Station D (Depth to river bottom 7.1')

One Attempt, 23" recovery, strong swampy odor.

0-5" Black medium and fine subangular sand (clasts composited of Quartz, little black coal and a trace biotite), trace fine and coarse well rounded gravel, one large clam shell, little stratification, soft.

5"-23" Dark black medium to coarse Coal and quartz sand, abundant organic matter (shells and leaves), at 20", a 1" dark grey brown clay stringer was observed, sample was stratified, soft. Top 1/2 inch dark grey silty clay, soft.

Each lithology was submitted as a separate sample.

Station E (Depth to river bottom 8.9')

One Attempt, 16" recovery, slight solvent odor possible.

0-1.5" Dark red weathered shale, trace medium well rounded sandstone gravel, hard.

1.5"-16" Dark brown fine Cobbles and medium-coarse well rounded Gravel, some fine to coarse sand, trace coal which grades into dark black coarse Sand (75% coal) and a trace to some well rounded gravel, trace organic matter, soft.

Sample was submitted to the lab as a composite of both lithologies.

Station F (Depth to river bottom 8.9')

One Attempt, 12" recovery, no odors.

0-8" Dark grey brown coarse well rounded Gravel and fine well rounded Cobbles, little fine and medium gravel, trace coal fragments, soft.

AR300569

8"-12" Dark black coarse Sand (80% coal), trace medium subround gravel, trace organic matter (leaves, shells), soft.

Sample was submitted to the lab as a composite of both lithologies.

Station G (Depth to river bottom 10.9')

3 Attempts, 22" recovery (0" recovery during the first two attempts), no odors.

0-3" Dark brown coarse subround Gravel with coarse Sand (coal and quartz), trace fine to medium sand, organic matter (shells) soft.

3"-22" Dark black and brown angular to subangular Sand (coal/quartz, 60/40), trace clams, crude stratification, soft.

Sample submitted to lab was a composite of both lithologies.

Station H (Depth to river bottom 6.8')

3 Attempts, 6" recovery (0 and 3" recovery first two attempts), no odor to a fishy odor.

3" recovery Single large rounded Sandstone Cobble, trace medium to coarse angular quartz sand and trace coal.

6" recovery Dark brown black fine Cobbles (quartzite & sandstone) and coarse Sand (dominated by angular coal clasts), many clams and live crustacean in sediment.

Sample submitted to lab was a composite of the sediment from both attempts.

Station I (Depth to river bottom 11.2')

One Attempt, 18" recovery, swampy odor.

0-3" Weathered Red shale, trace sand, soft.

3"-9" Dark grey brown Clay, trace sand, soft.

AR300570

9"-18" Dark grey brown fine and medium sand, trace coarse Gravel, some sand, trace shells.

Top 9" and bottom 9" were submitted as separate samples.

F

AR300572

APPENDIX F

TEST PIT LOGS

ERM

Test Pit Log

Project: CIBA-GEIGY Tyson's
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 88°F, sunny and humid
On-Site Personnel: S. Gilliland, T. Schuller, D. Blye, R. Hoose, J. Ferry, J. Strickland, A. Brebowitz, J. Miller

Test Pit I.D. No.: TP-1
Date Excavated: 6/30/86
Date Backfilled: 6/30/86
Surface Elevation: 95.8 feet
Location: N 10068.09 E9723.38

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-2.8	brownish sand with tree roots	
2.8-3.4	dark purplish brown silty sand with roots	
	damp	
3.4-3.6	grey/orange thin silty clay (discontinuous)	
3.6-5.8	Broken sandstone used as fill material.	
	Not found in place.	
5.8-9.5	Reddish brown weathered sandstone in place.	10 ppm
	Looks like natural soil. Wet. Some	
	mottling.	

Sample Analysis.

Sampling Interval (Feet)	Sample Number	Description	Comments
2.8-3.4	SS 001	Dark purplish brown silty	
		sand with roots, damp.	
9.5	SS 002	Reddish brown weathered	
		sandstone in place. Appears	
		as natural soil, wet. Some	
		mottling.	

For Internal Use Only:

Notebook No.: 1 Page: 24+25

AR300574

ERM

Test Pit Log

Project: Tyson's CIBA-GEIGY
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 88°F, sunny and humid
On-Site Personnel: S. Gilliland, T. Schuller, D. Blye, R. Moose, J. Ferry, J. Strickland, A. Brebowitz, J. Miller

Test Pit I.D. No.: TP-2
Date Excavated: 6/30/86
Date Backfilled: 6/30/86
Surface Elevation: 94.2 feet
Location: N 10071.90 E9708.02

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-2.3	Dark purplish brown silty sand with coarse	1.5' 30 ppm
	sand with large cobbles (weathered arkose).	
	Cinderblocks present.	
2.3-3.6	Orange/brown clayey sand with mottling.	Water seeping in at
	Also a coarse weathered sandstone found as	2.5'*
	small cobbles and gravel. Wet.	3.0' >100 ppm
		*additional digging was
		conducted approximately
		3.0' North of TP-2 and
3.6-4.5	Reddish brown sandy silt with clay. More	ground water was en-
	of sandstone (described above) encountered.	countered at 1.5'-2.0'
	Wet.	4.5' - 25 ppm average
		peak at 140 ppm

Sample Analysis:

Sampling Interval (Feet)	Sample Number	Description	Comments
2.3-3.6	SS 003	Orange/brown clayey sand	
		with mottling. Also a	
		coarse weathered sandstone	
		found as small cobbles and	
		gravel. Wet.	
1.9-2.3	SS 004	Dark purplish brown silty	
		sand with large cobbles	
		(weathered arkose).	

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Notebook No.: 1 Page: 28

AR300575

ERM

Test Pit Log

Project: Tyson's CIBA-GEIGY
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 88°F, sunny and humid
On-Site Personnel: S. Gilliland, T. Schuller, D. Blye, R. Hoose, J. Ferry, J. Strickland, A Brebowitz, J. Miller

Test Pit I.D. No.: TP-3
Date Excavated: 6/30/86
Date Backfilled: 6/30/86
Surface Elevation: 95.5 feet
Location: N10096.17 E9722.99

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-2.6	Reddish brown silty clay with some sand and	Concrete blocks also
	some shaley gravel. Some wood.*	encountered 1-1.5'
		>100 ppm approximately
		2.0' 100 peak
2.6-3.0	Dark purplish black sandy silt with some	2.5-3.0' OVA=45
	clay. Some gravel sized clasts of weathered	
	sandstone. Abundance of decayed organic	Plastic found at base
	matter.	of pit. Glass found
		during sampling. Dug
	*water at 2.25'	deeper to find building
	2-2.5' 650 ppm peak	material, wood, and
	2'- 200 ppm peak during first attempt of	more plastic.
	TP-3	

Sample Analysis:

Sampling Interval (Feet)	Sample Number	Description	Comments
3.0	SS 005	Dark purplish black sandy	
		silt with some clay. Some	
		gravel sized clasts of	
		weathered sandstone. Abun-	
		dance of decayed organic	
		matter.	

For Internal Use Only:

Notebook No.: 1 Page: 31

AR300576

ERM

Test Pit Log

Project: Tyson's CIBA-GEIGY
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 72°F, sunny and mild
On-Site Personnel: J. Ferry, R. Hoose, R. Deist, (ERM); J. Strickland, B. Fitzpatrick, (NUS); J. Miller (Guardian)

Test Pit I.D. No.: TP-4
Date Excavated: 7/1/86
Date Backfilled: 7/1/86
Surface Elevation: 94.5 feet
Location: N10066.90 E9814.98

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-1.0	Roots, tree stumps, garbage, etc.	1-1.5' 68 ppm
1.0-2.0	Dark brown sandy silt with clay. Abundance	2.0 15 ppm average
	of organic matter from trees.	>100 ppm peak
2.0-2.7	Black sandy silt. Little to trace clay.	
	Black plastic found. Some mica, damp.	
	Also some white silty clay.	
2.7-9 to 10	Fine, medium and coarse sand with some silt.	at approximately 4'
	Trace clay. mica present, damp. Occasion-	9-10 ppm background
	al cobble sized weathered arkosic sandstone	30 ppm peaks
	fragments.	

Sample Analysis:

Sampling Interval (Feet)	Sample Number	Description	Comments
1-2.0	SS 006	Dark Brown sandy silt with	
		clay, damp-wet. abundance	
		organic matter from trees.	
1-2.0	SS 101 dup.	same as above	duplicate of SS 006
2-2.7	SS 007	Black sandy silt. Little to	
		trace clay. Black plastic	
		also present. Some mica.	
		Damp. Some white silty clay	
from bucket 9-10	SS 008	Fine, medium and coarse sand	
		with some silt. Trace clay.	
		mica present. Damp. Occa-	
		sional cobble sized weathered	
		arkosic sandstone fragments.	

For Internal Use Only:

Notebook No.: 1 Page: 35

AR300577

ERM

Test Pit Log

Project: Tyson's CIBA-GEIGY
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 72°F, sunny and mild
On-Site Personnel: J. Ferry, R. Hoose, R. Deist, (ERM); J. Strickland, B. Fitzpatrick (NUS); J. Miller (Guardian)

Test Pit I.D. No.: TP-5
Date Excavated: 7/1/86
Date Backfilled: 7/1/86
Surface Elevation: 97.7 feet
Location: N10066.80 E9796.32

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-3.2	Brown, fine-medium-coarse sand with some	2' background = 25 ppm
	large cobbles of weathered sandstone with	peak >100 ppm
	trace clay. Abundant roots and recent fill	2.5-3.0 peak >100 ppm
	material. Dry-damp. Not uniform from	average approximately
	2.2-3.2'.	50 ppm
3.2-4.0	Dark black and brown fine-medium-coarse	at 3.8' root matter
	sandy clay. Some arkosic sandstone gravel.	
4.0-9.0	Very cobbly sand. Cobbles are angular and	4' peak >100 ppm
	weathered sand is medium-coarse. Little	4-5' frequent peaks
	silt, little clay. Some pebbles. Some	above 100 ppm above
	organic matter.	test pit. Average =
		10-15 ppm. 5-6' 8 ppm
		from bucket. 9' 9 ppm
		above pit

Sample Analysis.

Sampling Interval (Feet)	Sample Number	Description	Comments
2'	SS 009	Brown, fine-medium-coarse	
		sand with some large cobbles	
		of weathered sandstone with	
		trace clay. Abundant roots	
		and fill material. Dry to	
		damp.	
3.2-4.0	SS-010	Dark black and brown, fine-	
		medum-coarse sandy clay.	
		Some arkosic sandstone gravel.	
9.0 from bucket	SS-011	Very cobbly sand. Cobbles are angular and weathered. Sand is medium brown and medium to coarse. Little silt, Little clay, some pebbles, some organic matter.	

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Notebook No.: 1 Page: 40

AR300578

ERM

Test Pit Log

Project: Tyson's Ciba-Geigy
W.O. No.: 272i0-01-01
Excavator: John Miller
Equipment: backhoe
Weather: sunny, mild, 72°F
On-Site Personnel: J. Ferry, R. Hoose, R. Deist ERM; J. Strickland, B. Fitzpatrick NUS; J. Miller, Guardian

Test Pit I.D. No.: TP-6
Date Excavated: 7/1/86
Date Backfilled: 7/1/86
Surface Elevation: 91.6 ft
Location: N10133.04 E9712.17

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-3.1	Orange brown silty clay with sand. Abundant shale fragments up to the size of large gravel/small cobble.	Dark reddish brown H_2O at 3.0' 10 ppm
3.1-3.6	Dark purplish black clay with some silt. Trace coarse sand. Some sandstone cobbles.	Average = 50 ppm peaks 100 ppm-150 ppm
3.6-5.8	Same as above.	50-100 ppm (peaked)
5.8-6.8	Orange/brown coarse sand made of quartz with silt and clay. Hard and dry.	
6.8-11.0	Orange and white mottled clay with coarse medium sand, trace silt and coarse gravel, damp.	Interface difficult to discern. 8'-11' peaks 50-70 ppm

Sample Analysis:

Sampling Interval (Feet)	Sample Number	Description	Comments
0-3.1	SS 012	Orange/brown silty clay with some sand. Abundant shale fragments up to the size of large gravel/small cobble.	
3.1-3.6	SS 013	Dark purplish black clay with some silt. Trace coarse sand Some sandstone cobbles.	
5.8-6.8	SS 014	Orange/brown coarse sand made of quartz with silt and clay. Hard and dry.	
11.0	SS 015	Orange/brown and white mottled clay with coarse-medium sand, trace silt and coarse gravel,	

For Internal Use Only:

Notebook No.: 1 Page: 42

AR300579

ERM

Test Pit Log

Project: Tyson's CIBA-GEIGY
W.O. No.: 272-10-01-01
Excavator: John Miller
Equipment: Backhoe
Weather: 72°F, sunny and mild
On-Site Personnel: J. Ferry, R. Hoose, R. Deist, (ERM); J. Strickland, B. Fitzpatrick (NUS); J. Miller (Guardian)

Test Pit I.D. No.: TP-7
Date Excavated: 7/1/86
Date Backfilled: 7/1/86
Surface Elevation: 100.8 feet
Location: N10048.70 E9767.06

Sketch Map

Test Pit Log:

Depth (Feet)	Material Description	Comments
0-2.1	Dark brownish black fine-medium sand and silt-dry. Abundant organic matter. Occasional sandstone cobble.	No OVA readings >0 ppm in TP-7
2.1-4.7	Orange/brown medium sand some clay. Trace to little silt. Dry to damp. Also, cobbles of weathered sandstone.	
4.7-5.5	Orangish brown clay with some medium sand.	
5.5-7.8	Same as above.	
7.8-8.5	Orangish brown medium to coarse sand with clay and trace silt and weathered sandstone cobbles.	

Sample Analysis:

Sampling Interval (Feet)	Sample Number	Description	Comments
4.7	SS 016	Orange/brown medium sand with some clay. trace to little silt. Dry to damp. Also cobbles of weathered sandstone.	

For Internal Use Only:

Notebook No.: 1 Page: 45

AR300580

AR300581

APPENDIX G

DRILLING LOGS

(GEOLOGIC LOGS)

Environmental Resources Management **Drilling Log**

Project: Tyson' Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 1 Total Depth: 100' Diameter: 10"/6"
Surface Elevation: ------ Water Level: Initial: DTW on 4/18 24-hrs. 45.32'
Screen: Dia. ------ Length: ------ Slot Size: ------
Casing: Dia. 6" ID Length: 20.5 Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Pete Dougherty Date Drilled: 3/19/86

Sketch Map

Notes: Open borehole 20.5-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 1 was finished with a locking cap, sanitary seal, and is mounted flush to ground level.
0			0-1'	Top soil.
			1-5'	Brown Sandy SILT with a trace clay.
5			5-10	Brown fine to coarse SAND with a trace silt, moist, no odors. Weathered BEDROCK - soft.
10			10-15	Tan SANDSTONE, harder drilling.
15			15-16	Soft zone, dry, no odor.
			16-17	Tannish white SANDSTONE, firm.
			17-18	Soft zone, dry, no odor.
			18-23	Tannish white SANDSTONE, slight fracturing, dry, no odors.
20				
			23-25.5	Dark grey SANDSTONE, dry to moist, no odors.

AR300583

Environmental Resources Management **Drilling Log**

Project: Tyson' Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 1
Total Depth: 100'
Diameter: 10"/6"
Surface Elevation: ------
Water Level: Initial: DTW on 4/18
24-hrs.: 45.32'
Screen: Dia.: 6" ID
Length: 20.5
Slot Size: Steel
Casing: Dia.:
Length:
Type:
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Pete Dougherty
Date Drilled: 3/19/86

Sketch Map

Notes: Open borehole 20.5-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			25.5-27'	Tannish white Arkosic SANDSTONE, some fractures.
			27-29	Soft zone, tan brown SANDSTONE, moist, no odors.
			29-35	Same.
30				
				6" ID open borehole
35			35-39	Same.
				6" ID open borehole.
			39-44	Soft zones, little water approx 1/8th gpm.
40				
			44-50	Soft zones continue.
45				
50			50-52	Red brown SANDSTONE, weathered and soft.

AR300584

Environmental Resources Management **Drilling Log**

Project: Tyson' Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 1 Total Depth: 100' Diameter: 10"/6"
Surface Elevation: ------ Water Level: Initial: DTW on 4/18 24-hrs.: 45.32' ------
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 6" ID Length: 20.5 Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Pete Dougherty Date Drilled: 3/19/86

Sketch Map

Notes: Open borehole 20.5-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			52-57'	Grey SANDSTONE, hard, some fracturing.
55				
			57-61.5'	Arkosic SANDSTONE, firm.
60				
			61.5-62'	Soft zone.
			62-64'	Soft zone, possible water-bearing zone.
			64-71'	Red brown SANDSTONE, fairly soft.
65				
70			70-71'	Same.
			71-74'	Green-grey SANDSTONE, firm.
			74-80'	Arkosic SANDSTONE, firm.
75				

AR300585

Environmental Resources Management **Drilling Log**

Project: Tyson' Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 1
Total Depth: 100'
Diameter: 10"/6"
Surface Elevation: ------
Water Level: Initial: DTW on 4/18
24-hrs: 45.32'
Screen: Dia.: 6" ID
Length: 20.5
Slot Size: ------
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Pete Dougherty
Date Drilled: 3/19/86

Sketch Map

Notes: Open borehole 20.5-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85	Same.
85			85-90	Green-grey SANDSTONE, some feldspar, firm.
90			90-95	Same.
				6" ID open borehole
95			95-100'	Same.
100				Well completed to a depth of 100'. Well yield was less than 1.0 gpm after completion.

AR300586

Environmental Resources Management **Drilling Log**

Project: Tyson' Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 1 Total Depth: 100' Diameter: 10"/6"
Surface Elevation: ------ Water Level: Initial: DTW on 4/18 24-hrs.: 45.32' ------
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 6" ID Length: 20.5 Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Pete Dougherty Date Drilled: 3/19/86

Sketch Map

Note: Open borehole 20.5-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				TOTAL DEPTH = 100'
				Well Specifications:
				6" casing to 20.5'
				6" open borehole to 100'

AR300587.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 2-S | Total Depth: 51' | Diameter: 14"/10"/6"
Surface Elevation: 119.3 | Water Level: Initial: ------ | 24-hrs.: DTW = 40.0'
Screen: Dia.: ------ | Length: ------ | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 19.5/29.5' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/10-12/12/86

Sketch Map

Notes: Open borehole 29.5-51'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 2-S was finished with a protective well cap and 2.89' of 6" ID steel riser.
0			0-5'	Dark reddish brown Silty Sand, trace weathered sandstone cobbles, damp to dry, "Overburden".
5			5-8'	Dark red brown medium to coarse Arkosic Sandstone, damp to dry.
			8-14'	Light brown coarse Arkosic Sandstone, damp to dry.
10				
			14-15'	Light red brown coarse Arkosic Sandstone, dry, some rig chatter.
15			15-19'	Dark red brown coarse Arkosic Sandstone, dry.
				20' of 10" ID steel casing was driven into place at 19.5' and grouted to the surface.
20			19-24'	Same, some rig chatter, dry.

AR300588

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 2-S Total Depth: 51' Diameter: 14"/10"/6"
Surface Elevation: 119.3 Water Level: Initial: DTW = 40.0' 24-hrs.:
Screen: Dia.: ------- Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 19.5/29.5' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/10-12/12/86

Sketch Map

Notes: Open borehole 29.5-51'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			24'	Same, very dry.
25			25-29'	Same, very dry. 30' of 6" ID steel casing was displacement grouted and driven into place at 29.5'.
			29-31'	Same, dry.
30			31-33'	Dark red brown Arkosic Sandstone, possible weathered cobble zone, dry.
			33-37'	Light reddish brown coarse Arkosic Sandstone, dry.
35			37-40'	Same, soft zone, allowed to sit several minutes, yield 0.5 gpm.
40			40-45'	Same, several thin weathered zones.
45			45-48'	Same, several thin weathered zones.
			48-49'	Same, water producing zone, 1 gpm-1.5gpm.
			49-51'	Same, firmed up, likely not water-bearing zone.
50				

AR301589

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 2-S
Total Depth: 51'
Diameter: 14"/10"/6"
Surface Elevation: 119.3
Water Level: Initial: DTW = 40.0'
24-hrs.: ------
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 19.5/29.5'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 12/10-12/12/86

Sketch Map

Notes: Open borehole 29.5-51'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well was completed to a depth of 51'. Well yield was estimated to be 2.75-3 gpm.
				TOTAL DEPTH = 51'
55				Well Specifications:
				10" casing to 19.5'
				6" casing to 29.5'
				6" open borehole to 51'

AR300590

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 2-I
Total Depth: 135'
Diameter: 14"/10"/6"
Surface Elevation: 120.9
Water Level. Initial: 38.65' 12/10/85
24-hrs.: ----
Screen: Dia.: ----
Length: ----
Slot Size: ----
Casing: Dia.: 10"/6" ID
Length: 18'/110'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 12/5-12/9/85

Sketch Map

Notes: open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 2-I was finished with a protective locking well cap and 2.26' of 6" ID steel riser.
0				
			1-5	Dark brown coarse to fine Sand and Silt, trace fragments of weathered bedrock - sand sized clasts of quartz and feldspar, damp.
5			5-10	Light red fine to medium Sand, some very fine sand, dry, "Weathered Bedrock".
10			10-15	Light red fine Sand, dry.
				18' of 10" ID steel casing was driven and grouted into place at 18'.
15			15-16	Same, rig chatter.
			16-17	Same, heavy rig chatter.
			17-18	Same, trace coarse sand aggregates.
			18-25	Light reddish grey medium quartz Arkosic Sandstone, hard, dry.
20				

AR300591

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 2-I | Total Depth: 135' | Diameter: 14"/10"/6"
Surface Elevation: 120.9 | Water Level: Initial: 38.65' 12/10/85 | 24-hrs.: ------
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" ID | Length: 18'/110' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/5-12/9/85

Sketch Map

Note: open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			25-32	Same, dry.
30			32-34	Light red Sandstone, possible cobble zone, weathered, easy drilling, dry.
			34-40	Light red grey medium grained quartz Arkosic Sandstone, hard, unweathered, dry.
35				
40			40-42	Same.
			42-44	Same, possible cobble zone.
			44-50	Light red grey medium quartz Arkosic Sandstone, trace cobbles (quartz), water producing zone, approximately 1 gpm.
45				
50			50-52	Same.

AR300592

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 2-I | Total Depth: 135' | Diameter: 14"/10"/6"
Surface Elevation: 120.9 | Water Level: Initial: 38.65' 12/10/85 | 24-hrs.:
Screen: Dia.: ---- | Length: ---- | Slot Size: ----
Casing: Dia.: 10"/6" ID | Length: 18'/110' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/5-12/9/85

Sketch Map

Note: Open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			52-55	Same, easy drilling, possible weathered bedding plane or fracture.
			54'	Same.
55			55-60	Same, abundance of greenish black clasts, little additional water.
60			60-65	Same.
65			65-73	Same, little additional water.
				6" ID steel casing, cement bentonite grout
70				
			73-75	Drilling somewhat harder.
75			75-80	Light green grey fine grained Silty Sandstone, hard drilling, no additional water.

AR300593

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 2-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 120.9 Water Level: Initial: 38.65' 12/10/85 24-hrs.: ------
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 18'/110' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/5-12/9/85

Sketch Map

Notes: open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-90'	Light green grey fine to coarse Silty Sandstone, no additional water-bearing zones.
85				
90				Open borehole producing 1 to 1.5 gpm at 90'.
			90-96'	Light green grey coarse grained Arkosic Sandstone, no additional water-bearing zones.
95			96-105'	Light green grey coarse Arkosic Sandstone, no additional water-bearing zones.
100				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 2-I
Total Depth: 135'
Diameter: 14"/10"/6"
Surface Elevation: 120.9
Water Level: Initial: 38.65' 12/10/85
24-hrs.:
Screen: Dia.: ------
Length: -------
Slot Size: -----
Casing: Dia.: 10"/6" ID
Length: 18'/110'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 12/5-12/9/85

Sketch Map

Note: Open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-110'	Same, no additional water-bearing zones.
110			110-120'	Light green coarse to medium Arkosic Sandstone, very dry. 110' of 6" ID steel casing was displacement grouted and driven into place at 110'.
115				
120			120-125'	Light green coarse to medium Arkosic Sandstone, very dry. 6" ID steel casing
125			125-128'	Same, dry.
			128-132'	Same, soft drilling, water-bearing zone, 2.7 gal/15 sec. or 10.8 gpm.
130				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 2-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 120.9 Water Level: Initial: 38.65' 12/10/85 24-hrs.:
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 18'/110' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/5-12/9/85

Sketch Map

Note: Open borehole 110'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			133-135'	Dark grey green medium Arkosic Sandstone, trace quartz gravel.
135				
				Well was completed to a depth of 135'. Well yield was estimated to be 10.8 gpm (bucket/stop watch).
				TOTAL DEPTH = 135'
				Well Specifications:
				10" casing to 18'
				6" casing to 110'
				6" open borehole to 135'

AR300596

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 3-S | Total Depth: 44' | Diameter: 14"/10"/6"
Surface Elevation: 100.7' | Water Level: Initial: --- | 24-hrs: 24.68 1/8/86
Screen: Dia.: ---- | Length: ----- | Slot Size: ----
Casing: Dia.: 10"/6" ID | Length: 20'/23' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Karen Ekstrom | Date Drilled: 1/4-1/6/86

Sketch Map

Notes: Open borehole 23-44'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 3-S was finished with a protective locking well cap and 2.04' of 6" ID steel riser.
0			0-2.5'	Light brown Sandy Silt, loose, dry.
			2.5-10'	Dark red brown Silty Sand, dry.
5				
10			10-20'	Red, Silty Sand with some clay and gravel (sandstone fragments), damp.
15				
				20' of 10" ID steel casing was driven and grouted into place at 20'
20			20-23'	Yellowish white medium grained Arkosic Sandstone with some cobbles, dry.
				23' of 6" ID steel casing was displacement grouted and driven into place at 23'.

AR300597

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-S Total Depth: 44' Diameter: 14"/10"/6"
Surface Elevation: 100.7' Water Level: Initial: --- 24-hrs: 24.68 1/8/86
Screen: Dia.: ---- Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 20'/23' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Karen Ekstrom Date Drilled: 1/4-1/6/86

Sketch Map

Notes: Open borehole 23-44'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			23-28'	Red medium to fine Arkosic Sandstone, damp.
25				
			28-30'	Green medium to fine Sandstone, damp, easier drilling.
			29-30'	Soft zone, water producing zone (less than 1 gpm).
30			30-35'	Light grey and greenish grey medium to coarse Arkosic Sandstone, firm drilling, damp.
35			35-40'	Same.
				6" ID open borehole
40			40-44'	Light grey green medium to coarse Arkosic Sandstone, damp to wet.
				Well was completed to a depth of 44'. Well yield was estimated to be less than 1 gpm during development.
45				
				TOTAL DEPTH = 44'
50				

AR300598

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 3-S
Total Depth: 44'
Diameter: 14"/10"/6"
Surface Elevation: 100.7'
Water Level: Initial: ---
24-hrs: 24.68 1/8/86
Screen: Dia.: ---
Length: ---
Slot Size: ---
Casing: Dia.: 10"/6" ID
Length: 20'/23'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Karen Ekstrom
Date Drilled: 1/4-1/6/86

Sketch Map

Notes: Open borehole 23-44'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well Specifications:
				10" casing to 20'
				6" casing to 23'
				6" open borehole to 44'

AR300599

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-I Total Depth: 99' Diameter: 14"/10"/6"
Surface Elevation: 103.2' Water Level: Initial: Dry 24-hrs: 29.8' 1/2/86
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 18.5'/75.0' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/30/85-1/2/86

Sketch Map

Notes: Open borehole 75-99'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 3-I was finished with a protective locking cap and 2.26' of 6" ID steel riser.
0			0-1'	Light reddish grey fine Sand and Silt, some cobbles of weathered and unweathered sandstone, dry.
			1-2.5'	Dark red brown fine Sand, trace silt, damp to dry.
			2.5-7.4'	Light brown fine Sand and Silt, some organic matter, trace sandstone cobbles, dry to damp.
5				
			7.5-10'	Light brown fine to coarse Arkosic Sandstone, damp to dry.
10			10-13'	Light reddish grey fine and medium Arkosic Sandstone, difficult drilling, dry.
			13-14'	Light brown medium to coarse Arkosic Sandstone, soft zone.
			14-16.5'	Dark green medium to coarse Arkosic Sandstone, dry.
15			16.5-17'	Soft zone. 18.5' of 10" ID steel casing was driven and grouted into place at 18.5'.
			17-18.5'	Dark green medium to coarse Arkosic Sandstone, dry.
20			18.5'	Light green, fine sandstone, soft.
			18.5-25'	Light grey green fine to medium Sandstone, trace to some feldspar, trace black clasts.

AR300600

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 3-I | Total Depth: 99' | Diameter: 14"/10"/6"
Surface Elevation: 103.2' | Water Level: Initial: Dry | 24-hrs.: 29.8' 1/2/86
Screen: Dia.: ------ | Length: ------ | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 18.5'/75.0' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/30/85-1/2/86

Sketch Map

Notes: Open borehole 75-99'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			25-30'	Same.
30			30-34'	Light and dark green medium Arkosic Sandstone, dry.
			34-35	Soft zone.
35			35-40	Dark green medium Arkosic Sandstone, dry.
40			40-42	Light green fine to medium Arkosic Sandstone, dry.
			42-45	Same, somewhat coarser grained, possible cobble zone, dry.
45			45-46	Green fine Arkosic Sandstone, very soft zone, dry.
			46-50	Green fine to coarse Arkosic Sandstone (coarser fraction may represent fractured cobbles), dry.

AR300601

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-I Total Depth: 99' Diameter: 14"/10"/6"
Surface Elevation: 103.2' Water Level: Initial: Dry 24-hrs.: 29.8' 1/2/86
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 18.5'/75.0' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/30/85-1/2/86

Sketch Map

Notes: Open borehole 75-99'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50			50-55	Green fine to medium Arkosic Sandstone, dry.
55			55-60	Few cuttings, drilling rate unchanged.
60			60-65	Dark green medium to fine Sandstone, trace to some feldspar.
65			65-70	Dark green medium Sandstone, arkose content variable from a trace to some, some fractured quartz cobbles (conglomerate zone) possibly from a zone above, trace dark clasts.
70			70-75	Same.
75				6" ID steel casing, displacement grouted into place and driven at 75'.
			75-80	Light green medium Arkosic Sandstone, dry.

AR300602

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 3-I | Total Depth: 99' | Diameter: 14"/10"/6"
Surface Elevation: 103.2' | Water Level: Initial: Dry | 24-hrs.: 29.8' 1/2/86
Screen: Dia.: ------ | Length: ------ | Slot Size: ----
Casing: Dia.: 10"/6" ID | Length: 18.5'/75.0' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/30/85-1/2/86

Sketch Map

Notes: Open borehole 75-99'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85	Dark green fine Arkosic Sandstone, dry.
85			85-90	Light green medium Arkosic Sandstone, dry.
90			90-95	Dark green fine Sandstone, dry.
				Well was completed to a depth of 99', Well was dry when drilled, depth to water the day after completion was 29.8'.
95			95-98	Red Shale, soft, dry.
			98-99	Dark green fine Sandstone, firm drilling.
100				TOTAL DEPTH = 99'
				Well Specifications:
				10" casing to 18.5'
				6" casing to 75'
				6" open borehole to 99'

AR300603

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-D Total Depth: 175' Diameter: 14"/10"/6"
Surface Elevation: 101.6' Water Level: Initial: Dry 24-hrs: 58' 12/21/86
Screen: Dia.: ------ Length: ------- Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 18'/123' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 3-D was finished with a protective locking well cap and 1.89' of 6" ID steel riser.
0			0-1.5'	Crushed roadstone (put in place by ERM)
			1.5-4.5'	Dark red brown Silty Sand with some large cobbles and boulders, damp, "Overburden".
5			4.5-8.5'	Light yellowish grey fine Sandstone, some mica, trace silt, dry to damp, "Weathered Bedrock".
10			8.5-12'	Dark red brown fine to medium Sandstone, possible cobble zone, dry.
			12-13'	Dark red brown Silty Sand, trace clay and mica, dry.
			13-15'	Light grey green, some orange Arkosic Sandstone, trace to some mica, dry, "Slightly Weathered Bedrock".
15			16-18'	Light grey fine to medium Sandstone, dry, "unweathered bedrock".
			18-20'	Light greyish red medium to coarse Arkosic Sandstone, dry 10" ID steel casing was driven and grouted into place at 18'.
20			20-24'	Light grey green medium to coarse Arkosic Sandstone, dry.
				6" ID steel casing

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 3-D | Total Depth: 175' | Diameter: 14"/10"/6"
Surface Elevation: 101.6' | Water Level: Initial: Dry | 24-hrs.: 58' 12/21/86
Screen: Dia.: ------ | Length: ------- | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 18'/123' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			24-26'	Light reddish grey medium to coarse Arkosic Sandstone, dry.
25			26-30'	Dark brownish-red coarse Arkosic Sandstone, weathered zone, damp, "water-bearing zone".
30			30-34'	Light reddish grey medium to coarse Arkosic Sandstone, firm.
			34-35'	Soft zone.
35			35-40'	Light grey green coarse Arkosic Sandstone with some quartz and feldspathic cobbles.
40			40-43'	Light grey green coarse Arkosic Sandstone, little to a trace unknown dark green to black clasts, unweathered.
			43-45'	Soft zone.
45			45-50'	Light grey green medium to coarse Sandstone, abundant dark green clasts (pebble-sized).
50				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 3-D
Total Depth: 175'
Diameter: 14"/10"/6"
Surface Elevation: 101.6'
Water Level: Initial: Dry
24-hrs.: 58' 12/21/86
Screen: Dia.: ------
Length: ------
Slot Size: ----
Casing: Dia.: 10"/6" ID
Length: 18'/123'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			50-55	Dark grey green fine to medium Arkosic Sandstone, abundant dark green clasts.
55			55-60	Same.
			58'	Thin soft zone.
60			60-65	Same.
				6" ID steel casing
65			65-70'	Light grey green medium to fine Arkosic Sandstone.
			67-68'	Thin soft zone.
70			70-76'	Same.
			72-74'	Soft weathered zone, no cuttings.
75			75-76'	Thin soft zone.
			76-80'	Same.

AR300606

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-D Total Depth: 175' Diameter: 14"/10"/6"
Surface Elevation: 101.6' Water Level: Initial: Dry 24-hrs.: 58' 12/21/86
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 18'/123' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85	Same (few cuttings coming out of borehole).
85			85-90	Light grey green medium to coarse Arkosic Sandstone.
			86'	Soft zone.
90			90-95	Same, somewhat coarser grained.
95			95-97	Soft zone.
			97-98	Again competent.
			98-100	Hammer again collared up, few cuttings.
100			100-105'	Red brown silty Shale, possible water-bearing zone.

AR300607

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 3-D Total Depth: 175' Diameter: 14"/10"/6"
Surface Elevation: 101.6' Water Level: Initial: Dry 24-hrs: 58' 12/21/86
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 18'/123' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-110'	Reddish brown Shale, soft, appears to yield 5 to 6 gpm.
110			110-115'	Light green coarse grained Arkosic Sandstone (similar to that above shale).
115			115-116'	Possible soft zone - making some water.
			16-120'	Same, 6 gpm out of borehole.
120			20-125'	Same, 6 gpm out of borehole.
			123'	6" ID steel casing, displacement grouted into place and driven at 123'.
125			25-132'	Dark grey green medium to fine Sandstone, trace feldspar, dry.
130				

AR300608

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 3-D | Total Depth: 175' | Diameter: 14"/10"/6"
Surface Elevation: 101.6' | Water Level: Initial: Dry | 24-hrs: 58' 12/21/86
Screen: Dia.: ------ | Length: ------ | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 18'/123' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			132-135'	Same, becoming Arkosic.
135			135-136'	Thin red zone (weathered zone).
			136-145'	Same, becoming finer grained.
140				
			143-145'	Soft zone.
145			145-150'	Dark green, medium to fine Arkosic Sandstone, dry.
150			150-155'	Dark grey green medium to fine Sandstone, trace to some feldspar, dry.
155			155-160'	Dark green fine Arkosic Sandstone, dry.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 3-D
Total Depth: 175'
Diameter: 14"/10"/6"
Surface Elevation: 101.6'
Water Level: Initial: Dry
24-hrs.: 58' 12/21/86
Screen: Dia.: 10"/6" ID
Length: 18'/123'
Slot Size:
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 12/14-12/21/86

Sketch Map

Notes: Open borehole 123-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160			160-165'	Dark green fine grained Sandstone, trace feldspar, dry.
165			165-170'	Same, dry.
170			170-175'	Same, dry.
175				Well completed to a depth of 175'. Well was dry when drilled, depth to water the day after completion was 58'.
				TOTAL DEPTH = 175'
				Well Specifications:
				10" casing to 18'
				6" casing to 123'
				6" open borehole to 175'

AR300610

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 4-S | Total Depth: 62' | Diameter: 14"/10"/6"
Surface Elevation: 76.7' | Water Level: Initial: dry | 24-hrs.: ----
Screen: Dia.: ---- | Length: ---- | Slot Size: ----
Casing: Dia.: 10"/6" ID | Length: 27'/32' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair | Log By: Jane Schiferle | Date Drilled: 3/4/86-3/5/86

Sketch Map

Notes: Open borehole 32-62'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well was finished with a locking well cap and 2.94' of 6" ID steel riser.
0			0-6"	Black Silty Sand, abundant organic matter, trace clay and cinders, damp.
			6"-2'	Dark grey brown Silty Clay, trace to little coarse sand, damp.
			2-5'	Light grey Sandy Silt with clay (exhibits mottling) trace biotite, damp.
5			5-10'	Light grey Sandy Silt with some clay and sandstone fragments, wet.
10			10-15'	Same, becoming more sandy with depth. 10" ID steel casing
15			15-18'	Same.
			18-20	Light brown Silty fine and medium Sand with cobbles of quartz and sandstone, firm, wet.
20			20-27	Light yellowish brown Silty fine to medium Sand with cobbles of quartz and sandstone, firm and wet.

AR300611

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 4-S
Total Depth: 62'
Diameter: 14"/10"/6"
Surface Elevation: 76.7'
Water Level: Initial: dry
24-hrs: ----
Screen: Dia.: ----
Length: ----
Slot Size: ----
Casing: Dia.: 10"/6" ID
Length: 27'/32'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair
Log By: Jane Schiferle
Date Drilled: 3/4/86-3/5/86

Sketch Map

Notes: Open borehole 32-62'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				10" ID steel casing.
25				Cable-tool rig installed 27' of 10" ID steel casing.
			27-30	Dark red brown fine-medium Arkosic Sandstone with biotite.
30			30-35	Grey brown medium to coarse Arkosic Sandstone with biotite, dry.
				6" ID steel casing, displacement grouted into place and driven at 32'.
35			35-40	Red and grey fine to medium Arkosic Sandstone, possible weathered zone, dry.
40			40-45	Dark brownish grey medium Arkosic Sandstone, dry.
45			45-50	Same as above, dry.
50			50-55	Grey medium to coarse Arkosic Sandstone with biotite, dry.

AR300612

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 4-S Total Depth: 62' Diameter: 14"/10"/6"
Surface Elevation: 76.7' Water Level: Initial: dry 24-hrs.: ----
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 27'/32' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Jane Schiferle Date Drilled: 3/4/86-3/5/86

Sketch Map

Notes: Open borehole 32-62'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				6" ID open borehole.
55			55-60'	Same, with some dark grey very fine sandstone and siltstone, dry.
60				Completed well to a depth of 62'. Well was dry when drilled.
65				TOTAL DEPTH = 62'
				Well Specifications:
				10" casing to 27'
				6" casing to 32'
				6" open borehole to 62'

AR300613

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 4-I
Total Depth: 110'
Diameter: 14"/10"/6"
Surface Elevation: 76.8'
Water Level: Initial: >100'
24-hrs.: >100'
Screen: Dia.: ---
Length: ---
Slot Size: ---
Casing: Dia.: 10"/6" ID
Length: 27'/84'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Notes: Open borehole 84-110'
Driller: Dave Blair
Log By: Jane Schiferle
Date Drilled: 2/28-3/3/86

Sketch Map

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 4-I was finished with a locking well cap and 3.12' of 6" ID steel riser.
0				
			0-6"	Black Silty Sand, abundant organic matter, trace clay and cinders, damp.
			6"-2	Dark grey brown Silty Clay, trace to little coarse sand, damp.
5			2-5'	Light grey Sandy Silt with some clay and sandstone fragments, damp.
			5-10'	Light grey Sandy Silt with some clay and sandstone fragments, wet.
10			10-15'	Same, becoming more sandy with depth.
				10" ID steel casing
15			15-18	Same.
			18-20	Light brown Silty fine and medium Sand with cobbles of quartz and sandstone, firm and wet.
20			20-27	Light yellowish brown Silty fine and medium Sand with cobbles of quartz and sandstone, firm and wet.

AR300614

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 4-I | Total Depth: 110' | Diameter: 14"/10"/6"
Surface Elevation: 76.8' | Water Level: Initial: >100' | 24-hrs.: >100'
Screen: Dia.: ------- | Length: ------- | Slot Size: ------
Casing: Dia.: 10"/6" ID | Length: 27'/84' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair | Log By: Jane Schiferle | Date Drilled: 2/28-3/3/86

Sketch Map

Notes: Open borehole 84-110'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				10" ID steel casing
25				Cable tool rig installed 27' of 10" ID steel casing.
			27-35	Dark red fine Sandstone with pebbles and light brown very fine Sandstone, little to a trace of quartz cobbles and dark grey medium sandstone. Borehole producing 2.5 gpm.
30				6" ID steel casing
35			35-40	Dark grey fine to medium Arkosic Sandstone with trace to some chips of red-brown, very fine sandstone. Upon well evacuation, some clay noted in cuttings.
40			40-45	Dark red-brown medium to coarse Arkosic Sandstone. Borehole, producing 2-3 gpm.
45			45-50	Dark red brown medium to coarse Arkosic Sandstone and some fragments of dark brown fine sandstone.
50				Dark grey medium Arkosic Sandstone.

AR300615

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner: | Sketch Map

Location: Upper Merion Twp. | W.O. Number: 272-06

Well Number: 4-I | Total Depth: 110' | Diameter: 14"/10"/6"

Surface Elevation: 76.8' | Water Level: Initial: >100' | 24-hrs.: >100'

Screen: Dia.: ------- | Length: ------- | Slot Size: ------

Casing: Dia.: 10"/6" ID | Length: 27'/84' | Type: Steel

Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer | Notes: Open borehole

Driller: Dave Blair | Log By: Jane Schiferle | Date Drilled: 2/28-3/3/86 | 84-110'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				6" ID steel casing, cement grout.
55			55'	Soft zone.
			55-60	Dark grey medium to coarse Arkosic Sandstone.
				Rig chatter noted
60			60-65	Dark green grey medium to coarse Sandstone and dark grey fine Arkosic Sandstone, consistent drilling, borehole making 2-3 gpm.
65			65-70	Light grey medium to coarse Arkosic Sandstone with biotite and muscovite, trace green Sandstone fragments.
70			70-75	Brownish grey medium to coarse Arkosic Sandstone with biotite.
75			75-80	Dark green fine to medium Arkosic Sandstone with biotite, trace dark brown and red very fine sandy siltstone, borehole now making 7 gpm.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 4-I
Total Depth: 110'
Diameter: 14"/10"/6"
Surface Elevation: 76.8'
Water Level: Initial: >100'
24-hrs.: >100'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 27'/84'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair
Log By: Jane Schiferle
Date Drilled: 2/28-3/3/86

Sketch Map

Open borehole 84-110'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85'	Light green-greyish green fine, medium and coarse Arkosic Sandstone. Borehole now making 10 to 15 gpm.
				6" ID steel casing, displacement grouted into place and driven at 84'.
85			85-90'	Light green fine to medium Arkosic Sandstone with biotite, dry.
90			90-95	Same, dry.
				6" ID open borehole
95			95-100'	Same, dry.
100			100-105'	Green medium Arkosic Sandstone with biotite, dry.

AR300617

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 4-I
Total Depth: 110'
Diameter: 14"/10"/6"
Surface Elevation: 76.8'
Water Level: Initial: >100'
24-hrs.: >100'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 27'/84'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair
Log By: Jane Schiferle
Date Drilled: 2/28-3/3/86

Sketch Map

Notes: Open borehole 84-110'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-110'	Dark green fine to medium Arkosic Sandstone with biotite.
110				Well was completed to a depth of 110'. Well was dry when drilled.
				TOTAL DEPTH = 110'
				Well Specifications:
				10" casing to 27'
				6" casing to 84'
				6" open borehole to 110'

AR300618

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 4-D | Total Depth: 175' | Diameter: 12"/10"/6"
Surface Elevation: 76.7 | Water Level: Initial: Dry | 24-hrs.: 3/3/86-48.5
Screen: Dia.: --- | Length: --- | Slot Size: ---
Casing: Dia.: 10"/6"ID | Length: 27'/133' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair | Log By: Joe P. Ferry/ Jane C. Schiferle | Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 4-D was finished with a locking well cap and 3.02 of 6" ID steel riser.
0			0-6"	Black Silty Sand, abundant organic matter trace clay and cinders, damp.
			6"-2'	Dark grey brown Silty Clay, trace to little coarse sand, damp.
			2-5'	Light grey Sandy Silt with clay (exhibits red mottling) trace biotite, damp.
5			5-10'	Light grey Sandy Silt with some clay and sandstone fragments, wet.
10			10-15'	Same, becoming more sandy with depth
				10" ID steel casing
15			15-18'	Same.
			18-20'	Light brown Silty fine and medium Sand with cobbles of quartz and sandstone, firm and wet.
20			20-27'	Light yellowish brown Silty fine and medium Sand, with cobbles of quartz and sandstone firm and wet.

AR300619

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 4-D Total Depth: 175' Diameter: 12"/10"/6"
Surface Elevation: 76.7 Water Level: Initial: Dry 24-hrs.: 3/3/86-48.5'
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6"ID Length: 27'/133' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Joe P. Ferry/ Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Jane C. Schiferle

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cable tool installed 10" ID steel casing to a depth of 27'
25				
			27-35	Dark red brown medium-coarse Arkosic Sandstone, trace biotite, weathered.
30				
			33'	Thin soft zone.
35			35-37	Soft zone.
			37-40	Dark red brown medium and fine Arkosic (orthoclase) Sandstone, trace to little biotite.
				Borehole making 5gpm.
40			40-45	Dark red brown fine to medium Arkosic (orthoclase) Sandstone, trace biotite, firm consistent drilling.
				6 inch I.D. steel casing
45			45-50	Dark red brown fine to medium Arkosic Sandstone, trace biotite and cobbles (quartz, quartzite).
			48'	Soft zone.

AR300620

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 4-D Total Depth: 175' Diameter: 12"/10"/6"
Surface Elevation: 76.7 Water Level: Initial: Dry 24-hrs.: 3/3/86-48.5'
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6"ID Length: 27'/133' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Joe P. Ferry/ Jane C. Schiferle Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50			50-55'	Dark red grey and brown coarse to medium Arkosic Sandstone, increasing abundance of quartz clasts, orthoclase is slightly weathered.
				52-53 soft zone, possible water bearing zone.
55			55-60'	Same.
			55-56'	Soft zone (borehole making 8 to 10gpm)
				Six inch I.D. steel casing
60			60-65'	Greyish pink medium to coarse Arkosic (orthoclase) Sandstone, some biotite.
			63'	Soft zone
65			65-70'	Dark reddish grey medium to coarse Arkosic (orthoclase) Sandstone with some biotite.
				Cement grout
70			70'	Soft zone.
			70-75'	Grey medium to coarse Arkosic (orthoclase) Sandstone, some biotite, trace green Arkosic sandstone.
75			75-80	Dark grey medium to coarse Arkosic (orthoclase) Sandstone with a trace to little light green sandstone and dark green fine sandstone with some biotite

AR300621

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 4-D | Total Depth: 175' | Diameter: 12"/10"/6"
Surface Elevation: 76.7 | Water Level: Initial: Dry | 24-hrs.: 3/3/86-48.5
Screen: Dia.: --- | Length: --- | Slot Size: ---
Casing: Dia.: 10"/6"ID | Length: 27'/133' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair | Log By: Joe P. Ferry/ Jane C. Schiferle | Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85'	Light greyish green fine to medium Arkosic (orthoclase) Sandstone, some biotite.
85			85-90'	Light grey green medium Arkosic (orthoclase) Sandstone, some biotite.
				Cement grout
90			90-95'	Light green medium Arkosic (orthoclase) Sandstone trace biotite
95			95-100'	Green fine to medium Arkosic (orthoclase) Sandstone and trace quartz cobbles, borehole making 15gpm.
			99'	Thin soft zone.
100			100-105'	Dark green medium Arkosic (orthoclase) Sandstone with some dark green fine sandstone.
				Six inch ID steel casing
105			105-110'	Grey green medium Arkosic (orthoclase) Sandstone with some biotite and a trace dark green sandstone.

AR300622

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 4-D
Total Depth: 175'
Diameter: 12"/10"/6"
Surface Elevation: 76.7
Water Level, Initial: Dry
24-hrs: 3/3/86-48.5'
Screen: Dia.: ---
Length: ---
Slot Size: ---
Casing: Dia.: 10"/6"ID
Length: 27'/133'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair
Log By: Joe P. Ferry/ Jane C. Schiferle
Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
110			110-115'	Medium to dark green fine Arkosic (orthoclase) Sandstone with light grey medium arkosic sandstone with biotite.
			114'	Soft zone.
115			115-120'	Light grey green medium Sandstone, some orthoclase and dark green fine to medium Sandstone and some dark reddish brown very fine sandstone.
120			120-125'	Medium green fine Arkosic (orthoclase) Sandstone with biotite, with some light green medium to coarse arkosic sandstone and a trace green very fine biotitic sandstone. Cement grout.
125			125-130'	Light green fine Sandstone with some dark grey silty shale and light brown fine to medium Arkosic (orthoclase) sandstone with mica.
130			130-135'	Medium to dark green medium to coarse Arkosic (orthoclase) Sandstone, trace mica, also some dark green very fine sand and siltstone.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 4-D Total Depth: 175' Diameter: 12"/10"/6"
Surface Elevation: 76.7 Water Level: Initial: Dry 24-hrs.: 3/3/86-48.5
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6"ID Length: 27'/133' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Joe P. Ferry/ Jane C. Schiferle Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				135' of 6" ID steel casing was displacement grouted and driven into place at 133'.
			135-140'	Same, few cuttings.
140			140-145'	Same.
				6" ID open borehole
145			145-150'	Same.
150			150-155'	Light green medium Arkosic (orthoclase) Sandstone.
155			155-160'	Same, dry.
160			160-165'	Dark green Sandy Siltstone, trace red medium to coarse sandstone, very dry.

AR300624

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 4-D Total Depth: 175' Diameter: 12"/10"/6"
Surface Elevation: 76.7 Water Level: Initial: Dry 24-hrs.: 3/3/86-48.5
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6"ID Length: 27'/133' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Joe P. Ferry/ Jane C. Schiferle Date Drilled: 2/26-2/28/86

Sketch Map

Notes: open borehole 133-175'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
165			165-170'	Dark green medium grained Arkosic (orthoclase) Sandstone with biotite, dry, firm drilling.
170			170-175'	Same.
175				Well was completed to a depth of 175'. Well was dry when drilled.
				TOTAL DEPTH = 175'
				Well Specifications:
				10" casing to 27'
				6" casing to 133'
				6" open borehole to 175'

AR300625

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 5-S | Total Depth: 60' | Diameter: 14"/10"/6"
Surface Elevation: 74.3' | Water Level: Initial: -- | 24-hrs.: Top of casing
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" | Length: 26'/30' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair | Log By: Jane Schiferle | Date Drilled: 3/6/86

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 5-S was finished with a locking protective cap and 5.79' of 6" ID steel riser.
0			0-5'	Dark black Cinders and organic matter, some angular cobble fill, damp, soft.
5			5-10'	Light grey Sandy Silt with some clay, abundant sandstone fragments, wet.
10			10-15'	Same, wet.
15			15-19'	Light brown Silty Sand with quartz and sandstone cobbles, firm and wet.
20			19-25'	Light brownish-red fine Arkosic Sandstone with some cobbles of weathered bedrock, wet.

AR300626

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-S Total Depth: 60' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: --- 24-hrs.: Top of casing
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" Length: 26'/30' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair Log By: Jane Schiferle Date Drilled: 3/6/86

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cable tool installed 27' of 10" ID steel casing to a depth of 26', air rotary description follows.
25			25-30	Light brownish red-grading into brownish green fine Arkosic Sandstone, trace to little biotite, weathered bedrock.
30			30-35	Greenish-grey medium Arkosic (orthoclase) Sandstone, trace biotite, wet.
				36' of 6" ID steel casing was driven to depth of 30', cement grout was then tremie piped into place.
35			35-40	Light green medium Sandstone, some biotite, wet.
40			40-45	Same, borehole making 10-15 gpm.
45			45-50	Light green medium Sandstone, some orthoclase and biotite, trace to some dark green medium Sandstone, wet.
50				

AR300627

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 5-S
Total Depth: 60'
Diameter: 14"/10"/6"
Surface Elevation: 74.3'
Water Level: Initial: ---
24-hrs: Top of casing
Screen: Dia.: ------
Length: ------
Slot Size: -----
Casing: Dia.: 10"/6"
Length: 26'/30'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Dave Blair
Log By: Jane Schiferle
Date Drilled: 3/6/86

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			50-55'	Light and dark green medium Arkosic Sandstone, with trace biotite.
55			55-60'	Light green medium Arkosic Sandstone, trace biotite, wet.
60				Well 5-S was completed to a depth of 60'. Well yield was estimated to be 10 gpm. TOTAL DEPTH = 60' Well Specifications: 10" casing to 26' 6" casing to 30' 6" open borehole to 60'

AR300628

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-I Total Depth: 122' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: <2'. 24-hrs.: flowing
Screen: Dia.: ------- Length: ------- Slot Size: ----
Casing: Dia.: 10"/6" Length: 25'/90' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Jane Schiferle Date Drilled: 3/3-3/5/86

Sketch Map

Notes: Open borehole 90-122'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 5-I was finished with a protective locking well cap and 10.04' of 6" ID steel riser.
0			0-5'	Dark black Cinders and Humus, some angular gravel fill, damp, soft, no odors.
5			5-10'	Light grey Sandy Silt with some clay, abundant sandstone fragments, wet.
10			10-15	Same, wet.
				10" ID steel casing
15			15-19	Light brown Silty Sand with quartz and sandstone cobbles, firm, wet.
			19-26	Light brownish red fine Arkosic Sandstone with some cobbles.
20				Weathered bedrock.

AR300629

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-I Total Depth: 122' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: <2' 24-hrs.: flowing
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" Length: 25'/90' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Jane Schiferle Date Drilled: 3/3-3/5/86

Sketch Map

Notes: Open borehole 90-122'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cable tool installed 25' of 10" ID steel casing, air rotary description follows.
25			26-30'	Light grey, coarse to medium Arkosic Sandstone, some orthoclase clasts, wet.
				6" ID steel casing
30			30-35'	Red brown medium Arkosic Sandstone, trace biotite, wet.
				Cement grout
35			35-40'	Grey brown medium to coarse Arkosic Sandstone (quartz rich), trace biotite.
			36'	Soft zone, making water.
40			40-45'	Medium to dark green, medium Sandstone, cobble-sized quartz clasts, and some dark Arkosic Sandstone, wet.
			41,42, 44'	Soft zones.
45			45-50'	Medium green to dark green, medium to coarse Sandstone with little orthoclase, wet.
				6" ID steel casing
50				

AR300630

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 5-I
Total Depth: 122'
Diameter: 14"/10"/6"
Surface Elevation: 74.3'
Water Level: Initial: <2'
24-hrs.: flowing
Screen: Dia.: ------
Length: -------
Slot Size: -----
Casing: Dia.: 10"/6"
Length: 25'/90'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner
Log By: Jane Schiferle
Date Drilled: 3/3-3/5/86

Sketch Map

Notes: Open borehole 90-122'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			50-55'	Light and dark green medium Arkosic Sandstone, with a trace biotite and a trace dark red shale fragments, consistent drilling.
55			55-60'	Light green medium Arkosic Sandstone (glauconitic), trace biotite, some large cobbles of dark green medium sandstone.
60			60-65'	Medium to light green, medium Arkosic Sandstone, trace biotite, trace large shale clasts.
			61,65'	1' soft zones.
65			65,70'	Light to dark green medium Arkosic (orthoclase) Sandstone, some small grey shale clasts.
			67-70'	Soft zones.
70			70-75'	Light to medium green medium Arkosic (orthoclase) Sandstone, trace to little biotite, fragmented.
			74'	Soft zone.
75			75-80'	Light green medium to coarse Arkosic (orthoclase) Sandstone, little biotite.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 5-I
Total Depth: 122'
Diameter: 14"/10"/6"
Surface Elevation: 74.3'
Water Level: Initial: <2'
24-hrs.: flowing
Screen: Dia.: ------
Length: -------
Slot Size: -----
Casing: Dia.: 10"/6"
Length: 25'/90'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner
Log By: Jane Schiferle
Date Drilled: 3/3-3/5/86

Sketch Map

Notes: Open borehole 90-122'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				6" ID steel casing, cement grout.
80			80-85	Light green medium to coarse Arkosic (orthoclase) Sandstone, some biotite.
85			85'	Soft zone.
			85-90	Medium to light green, medium Arkosic (orthoclase) Sandstone, some biotite, poorly cemented with rounded shale cobbles.
90				92' of 6" ID steel casing was driven to a depth of 90', cement grout was then tremie piped into place around the annulus.
			90-95	Medium green medium Arkosic (orthoclase) Sandstone, trace biotite, with some dark green fine sandstone, damp.
			92,95	Soft zones.
95			95-100'	Light green medium Arkosic Sandstone, trace biotite.
			96-97	Soft zone.
100			100-105'	Light green, medium Arkosic Sandstone, fragmented (poorly cemented), damp.
105				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 5-I | Total Depth: 122' | Diameter: 14"/10"/6"
Surface Elevation: 74.3' | Water Level: Initial: <2' | 24-hrs: flowing
Screen: Dia.: ------ | Length: ------ | Slot Size: ----
Casing: Dia.: 10"/6" | Length: 25'/90' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner | Log By: Jane Schiferle | Date Drilled: 3/3-3/5/86

Sketch Map

Notes: Open borehole 90-122'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			105-110'	Light green, medium Arkosic Sandstone. 6" ID open borehole
110			110-115'	Medium green, medium Sandstone, little orthoclase, some biotite, well cemented, damp to dry.
115			115-122'	Grey green, medium to fine Sandstone, little orthoclase, much biotite.
120				Well completed to a depth of 122', well yield estimated to be less than 1 gpm.
				In 24 hours well was found to be flowing; subsequently, well was plugged.
				TOTAL DEPTH = 122'
				Well Specifications:
				10" casing to 25'
				6" casing to 90'
				6" open borehole to 122'

AR300633

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-D Total Depth: 180' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/156' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry/ Jane Schiferle Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 5-D was finished with a protective locking well cap and 2.89' of 6" ID steel riser.
0			0-5'	Dark black, Cinders and Humus, some angular cobbles (fill material), damp, soft.
5			5-10'	Light grey Sandy Silt with some clay, abundant sandstone fragments, wet.
10			10-15'	Same, wet.
				10" ID steel casing
15			15-19'	Light brown Silty Sand with cobbles (quartz and sandstone), firm, wet.
20			19-25'	Light brownish red fine Arkosic Sandstone with some cobbles of weathered bedrock.

AR300634

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-D Total Depth: 180' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: >100'. 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/156' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry/ Jane Schiferle Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cable tool set 10" casing at 26', air hammer description follows.
25			25-30'	Dark purple brown fine to medium Arkosic Sandstone, slightly weathered, wet.
			29-30'	Soft zone.
30			30-35'	Dark red-brown medium to coarse Arkosic (orthoclase) Sandstone, trace to little biotite, firm drilling, wet.
				6" ID steel casing
35			35-40'	Dark red-brown coarse Arkosic (orthoclase) Sandstone, trace to little biotite with dark yellow green fine-medium sandstone, some orthoclase, trace biotite, firm drilling.
				Soft zones: 39-40', 40.5-41.5'
40			40-45'	Light green medium Sandstone, little to some orthoclase, some biotite, drilling firm and consistent.
45			45-50'	Light green medium grained Sandstone, some orthoclase.
			48-50'	Some thin zones, making a little water (1 gpm?)
50				

AR300635

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-D Total Depth: 180' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/156' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry/ Jane Schiferle Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			50-55	Light green medium Sandstone, some orthoclase and biotite and Dark green medium Sandstone, some orthoclase and biotite.
55			53-54.5'	Soft (possible water-bearing zone).
			55-60	Light green grey coarse Arkosic Sandstone, trace biotite, with some dark green medium to fine biotite sandstone, some orthoclase, driller estimates well making 12 gpm.
60			60-65	Light green medium to coarse Arkosic Sandstone, trace biotite, drilling somewhat easier.
65			65-70	Dark green fine to very fine Sandstone, some biotite, poorly sorted (note biotite grains oriented in a flow direction). 65-68 easier drilling, then firming up.
70			70-75	Dark green medium Arkosic Sandstone, little to a trace cobbles (quartz in cuttings).
			71-72.5'	Soft zone.
75			75-80	Dark green medium to coarse Arkosic Sandstone, trace to little biotite, dry consistent drilling.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-D Total Depth: 180' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/156' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry/ Jane Schiferle Date Drilled: 2/21-3/3/86

Sketch Map

Note: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-85	Light green medium Arkosic Sandstone, trace biotite, dry consistent drilling.
				6" ID steel casing
85			85-90	Light green grey medium Arkosic Sandstone, trace biotite and a trace dark green very fine sandstone.
90			90-95 91'	Light green grey medium Arkosic Sandstone. Rig chatter.
95			95-100'	Dark green fine to medium Arkosic Sandstone with some biotite.
				Cement grout.
100			100-105'	Light green medium Arkosic Sandstone.
				6" ID steel casing.

AR300637

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 5-D | Total Depth: 180' | Diameter: 14"/10"/6"
Surface Elevation: 74.3' | Water Level: Initial: >100' | 24-hrs.: >100'
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" ID | Length: 26'/156' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry/ Jane Schiferle | Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-109'	Light green medium to coarse Arkosic Sandstone, poorly cemented.
			107'	Rig chatter.
			109-114'	Light green medium to fine Arkosic Sandstone, trace biotite.
110			110-113'	Thin soft zone.
			114-119'	Light and dark green fine to medium Arkosic Sandstone, trace to little biotite, drilling somewhat easier.
115				Borehole making 10 gpm (most from above intervals).
			119-124'	Dark grey green fine Sandstone, some to little biotite, trace orthoclase, with light green medium Arkosic Sandstone, trace biotite, soft irregular drilling 120-121'.
120				
			124-126'	Same, with some possible cobble zones, large clasts of quartzite and siltstone, consistent drilling.
125			126-131'	Dark yellow green medium to coarse Arkosic Sandstone and dark green fine sandstone, trace feldspar, some biotite, some red shale cuttings (cobbles broken up), borehole making 5 gpm.
			127-128.5	Soft zone.
130			130-131'	Soft zone.

AR300638

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 5-D Total Depth: 180' Diameter: 14"/10"/6"
Surface Elevation: 74.3' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/156' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry/ Jane Schiferle Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			131-136'	Dark grey green (salt and pepper) fine Sandstone, some biotite, trace orthoclase, some light green coarse Arkosic Sandstone, consistent drilling.
135			136-141'	Light green medium to coarse Arkosic Sandstone with dark green fine sandstone, some biotite.
140			141'	Soft zone.
			141-151'	Light grey green medium to coarse Arkosic Sandstone, trace biotite, poorly cemented.
				Cement grout.
145			144-145'	Erratic drilling.
			148-149'	Soft zone, some dark red shale in cuttings (rounded edges).
150			150-151'	Soft zone.
			151-156'	Light grey green medium to coarse Arkosic Sandstone, trace biotite.
				158' of 6" ID steel casing was driven to a depth of 156', cement grout was then tremie piped into the annulus around the 6" steel casing.
155			156-161'	Light green medium Arkosic (orthoclase) Sandstone, well cemented.

AR300639

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 5-D
Total Depth: 180'
Diameter: 14"/10"/6"
Surface Elevation: 74.3'
Water Level: Initial: >100'
24-hrs.: >100'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 26'/156'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry/ Jane Schiferle
Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160			161-166'	Light green, medium Arkosic (orthoclase) Sandstone, trace biotite, well cemented.
165			166-171'	Dark green medium Arkosic (orthoclase) Sandstone, large biotite clasts in sandstone, dry.
170			171'	Soft zone.
			171-176'	Same.
175			176-180'	Light green medium Arkosic (orthoclase) Sandstone, damp to wet.
				Well was completed to a depth of 180', yield was estimated to be <1 gpm at time of development.
180				TOTAL DEPTH = 180'

AR300640

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 5-D
Total Depth: 180'
Diameter: 14"/10"/6"
Surface Elevation: 74.3'
Water Level: Initial: >100'
24-hrs: >100'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 26'/156'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry/ Jane Schiferle
Date Drilled: 2/21-3/3/86

Sketch Map

Notes: Open borehole 156'-180'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well Specifications:
				10" casing to 26'
				6" casing to 156'
				6" open borehole to 180'

AR300641

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-06
Well Number: 6-S | Total Depth: 50' | Diameter: 14"/10"/6"
Surface Elevation: 76.5' | Water Level: Initial: DTW in | 24-hrs.: 38.50'
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" | Length: 25'/30' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 1/23-1/29/86

Sketch Map

Notes: Open borehole 30 to 50'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 6-S was finished with a protective locking cap and 2.79' of 6" ID steel riser.
0			0-5'	Dark black crushed Cinders (railroad fill), with some limestone cobble fill, dry to damp, soft.
5			5-10	Light brown, Silty Sand, some clay, damp, soft.
10			10-15	Same, some organic matter, possibly from the adjacent marsh and swamp.
15			15-20	Same, increasing sand content, damp, soft.
20			20-25	Brown-red/brown, Silty Clay, trace coarse sand, and some quartz cobbles, damp.

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 6-S
Total Depth: 50'
Diameter: 14"/10"/6"
Surface Elevation: 76.5'
Water Level: Initial: DTW in
24-hrs: 38.50'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6"
Length: 25'/30'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 1/23-1/29/86

Sketch Map

Notes: Open borehole 30 to 50'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25				25' of 10" ID steel casing was driven into bedrock at 25'.
			25-35	Light red-grey, Arkosic Sandstone, wet.
30				33' of 6" steel casing was displacement grouted and driven to a depth of 30'.
35			35-38	Light red-grey, fine to medium Arkosic Sandstone, dry, firm, appears unweathered.
			38-40	Soft zone - Arkosic Sandstone and quartz cobbles.
40			40-45	Same, easier drilling with one zone of more competent bedrock.
				6" ID open borehole.
45			45-46	Light red, Silty Clay, with weathered light red Arkosic Sandstone clasts, damp, soft - possible water-bearing zone, >1 gpm.
			46-50	Dark green, medium Arkosic Sandstone, with some coarse fragments, firm but not hard drilling.
50				

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 6-S
Total Depth: 50'
Diameter: 14"/10"/6"
Surface Elevation: 76.5'
Water Level: Initial: DTW in
24-hrs.: 38.50'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6"
Length: 25'/30'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 1/23-1/29/86

Sketch Map

Notes: Open borehole 30 to 50'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55				Well 6-S was completed to a depth of 50'. Well was developed for 0.5 hour with a possible yield of 1 gpm. TOTAL DEPTH = 50' Well Specifications: 10" casing to 25' 6" casing to 30' 6" open borehole to 50'

Page 3 of 3

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-I Total Depth: 95' Diameter: 14"/10"/6"
Surface Elevation: 76.5' Water Level: Initial: DTW 24-hrs: 5.30, 1/24/86
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/75' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/20-1/22/86

Sketch Map

Notes: Open borehole 75-95'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 6-I was finished with a locking well cap and 2.53' of 6" ID steel riser.
0			0-5'	Dark black crushed Cinders (railroad fill), soft, dry to damp.
5			5-10'	Light red Sandy silt, trace clay and organic matter, soft, dry to damp.
10			10-13'	Same, with little clay, damp.
			13-18'	Light brown Silty Clay, some cobbles, damp.
15				
			18-20'	Same, note air from drilling rigs compressors is surfacing throughout adjacent swamp.
20			20-25'	Dark brown and red brown Silty Sand with sandstone and quartz cobbles, wet, difficult drilling.

AR300645

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 6-I | Total Depth: 95' | Diameter: 14"/10"/6"
Surface Elevation: 76.5' | Water Level: Initial: DTW | 24-hrs: 5.30, 1/24/86
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" ID | Length: 26'/75' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 1/20-1/22/86

Sketch Map

Notes: open borehole 75-95'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25				26' of 10" steel casing was driven into place at 26'.
			25-27	Light red grey medium Arkosic Sandstone, wet, firming up, weathered bedrock.
			27-33	Light red grey and green Arkosic Sandstone, wet.
30				
			33-40	Light red grey fine to medium Arkosic Sandstone, dry.
35				
40			40-48	Light red grey medium to fine Arkosic Sandstone, some larger cobbles, trace biotite, dry.
45				
				6" ID steel casing, cement bentonite grout.
			48-53	Light red grey and tan fine to medium grained Sandstone, some cobbles, wet.
50				

AR300646

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-I Total Depth: 95' Diameter: 14"/10"/6"
Surface Elevation: 76.5' Water Level: Initial: DTW 24-hrs: 5.30, 1/24/86
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 26'/75' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/20-1/22/86

Sketch Map

Note: Open borehole 75-95'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			53-58	Light green medium Arkosic Sandstone, wet firm - (estimated water yield is 5 gpm).
55				
			58-63	Light green medium Arkosic Sandstone, some fractured quartz cobbles (from earlier interval), wet, firm.
60				
			63-67	Same, with some dark green fine to medium Sandstone with trace to some orthoclase, wet, firm.
65				
			66'	Thin weathered zone, light yellow fine Sand, little orthoclase, wet, easier drilling.
			67-73	Light green medium grained Arkosic Sandstone, wet, firm.
70				
			73-75	Dark green medium to fine Sandstone with some orthoclase, trace biotite and black accessory mineral, firm. 78' of 6" ID steel casing was displacment grouted and driven into place at 75'.
75				

AR300647

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 6-I Total Depth: 95' Diameter: 14"/10"/6"

Surface Elevation: 76.5' Water Level: Initial: DTW 24-hrs.: 5.30, 1/24/86

Screen: Dia.: ------ Length: ------ Slot Size: ------

Casing: Dia.: 10"/6" ID Length: 26'/75' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/20-1/22/86

Sketch Map:

Notes: Open borehole 75-95'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			75-80'	Dark and light green medium Arkosic Sandstone (orthoclase content varies from some to little).
80			80-85'	Same.
				6" ID open borehole
85			85-90'	Red Shale, soft, making a little water (maybe 1 gpm).
90			90-94'	Light green medium grained Arkosic Sandstone, firm, dry.
			94'	Thin soft zone, possible water-bearing zone.
95			95'	Same, firming up.
				Well was completed to a depth of 95', a yield of about 1 gpm was estimated during development.
				TOTAL DEPTH = 95'

AR300648

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 6-I Total Depth: 95' Diameter: 14"/10"/6"

Surface Elevation: 76.5' Water Level: Initial: DIW 24-hrs: 5.30, 1/24/86

Screen: Dia.: ------ Length: ------ Slot Size: ----

Casing: Dia.: 10"/6" ID Length: 26'/75' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/20-1/22/86

Sketch Map

Notes: Open borehole 75-95'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well Specifications:
				10" casing to 26'
				6" casing to 75'
				6" open borehole to 95'

AR300649

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 6-D | Total Depth: 173' | Diameter: 14"/10"/6"
Surface Elevation: 76.3' | Water Level: Initial: dry | 24-hrs.: 1/20/86 72'
Screen: Dia.: ------- | Length: ------- | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 26'/115' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 1/10-1/17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 6-D was finished with a protective locking cap and 6.11' of 6" ID steel riser.
0			0-5'	Dark black crushed Cinders (railroad fill), with some limestone cobble fill, dry to damp, soft.
5			5-10'	Light brown Silty Sand, some clay, damp, soft.
10			10-15	Same, some organic matter, possibly from adjacent swamp.
15			15-20	Same, increasing sand content, damp, soft.
20			20-23	Brown - red/brown Silty Clay, trace coarse sand, and some quartz cobbles, damp. 26' of 10" ID steel casing was driven into place at 26'.

AR300650

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"
Surface Elevation: 76.3' Water Level: Initial: dry 24-hr: 1/20/86 72'
Screen: Dia.: ------- Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 26'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-1/17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			23-25'	Red brown Silty Sand alternating with Gravel water-bearing zone present in this interval.
25			25-27'	Light red grey medium to coarse Arkosic Sandstone with assorted gravel, weathered, wet.
			27-29'	Light red grey medium Arkosic Sandstone, wet.
			29-31'	Light red green and grey medium to coarse Arkosic Sandstone, wet - borehole making 1 to 3 gpm.
30			31-39'	Same, some fine grained fraction now present
35				
			37'	Thin, soft zone.
			38'	Soft zone.
			39-44'	Same, borehole not making as much water.
40				Cement bentonite grout.
			43-44'	Soft zone, possible water-bearing zone, estimated to be 1 gpm.
45			44-48'	Light red grey medium to fine Arkosic Sandstone, some larger cobbles, trace biotite, dry.
			48-51'	Soft zone, weathered cuttings, deeper in color and silty, not making any water.
50				

AR300651

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"
Surface Elevation: 76.3' Water Level: Initial: dry 24-hrs.: 1/20/86 72'
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 26'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-1/17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50			51-54'	Same.
			54-59'	Dark and light green coarse to medium Arkosic Sandstone, abundant dark clasts, possibly trace cobbles, damp, hard.
55				
			59-64'	Same.
60				6" ID steel casing.
			64-69	Dark grey green medium to fine Sandstone, trace orthoclase and biotite, hard.
65				Cement bentonite grout.
			69-74	Same, possibly becoming finer grained, again some black clasts.
70			71'	Thin, soft zone.
			74-79	Light grey green medium to fine Arkosic Sandstone.
75				

AR300652

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"

Surface Elevation: 76.3' Water Level: Initial: dry 24-hrs: 1/20/86 72'

Screen: Dia.: ------ Length: ------ Slot Size: ----

Casing: Dia.: 10"/6" ID Length: 26'/115' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-1/17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			79-81'	Dark green fine Arkosic Sandstone.
80			81-86'	Red Shale, easy drilling.
85				
			86-91'	Light green medium Sandstone, trace orthoclase.
				6" ID steel casing.
90				
			91-95	Same.
				Cement bentonite grout.
95			95-99	Same, now an Arkosic Sandstone.
			99-104'	
100				Same.
			104-109'	Light green pink and dark greenish pink Arkosic medium Sandstone.
105				

AR300653

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"

Surface Elevation: 76.3' Water Level: Initial: dry 24-hrs. 1/20/86 72'

Screen: Dia. ------- Length: ------- Slot Size: -----

Casing: Dia. 10"/6" ID Length: 26'/115' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-1/17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			109-114'	Light greenish pink medium to coarse Arkosic Sandstone, firm consistent drilling.
110				115' of 6" ID steel casing was displacement grouted and driven into place at 115'.
			114-115'	Same.
115			115-120'	Light green medium to coarse Arkosic Sandstone a few large quartz clasts, firm hard drilling, dry.
120			120-125'	Light green and dark green medium to fine Arkosic Sandstone with some dark grey very fine sand or siltstone, dry.
				6" ID open borehole.
125			125-130'	Dark green medium to fine Arkosic Sandstone, less dark grey siltstone, dry.
130			130-135'	Light green medium Arkosic Sandstone, dry.
				6" ID open borehole.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"
Surface Elevation: 76.3' Water Level: Initial: dry 24-hrs.: 1/20/86 72'
Screen: Dia.: ------- Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 26'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135			135-136'	Soft zone, borehole allowed to set 15 min., remained dry.
			136-140'	Light green medium to fine Arkosic Sandstone, dry.
140			140-146'	Dark green fine Sandstone, trace to some feldspar, dry, firm.
				6" ID open borehole.
145			146-148'	Same, fine to very fine, with only a trace feldspar.
			148-151'	Dark green fine Sandstone, grading into light green medium grained Arkosic Sandstone, trace mica, dry, soft. Allowed borehole to set 15 min., remained dry.
150			151-156'	Dark green fine to medium Sandstone, trace feldspar, hard steady drilling, dry.
155			156-161'	Light green medium Arkosic Sandstone, firm, dry.

AR300655

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 6-D Total Depth: 173' Diameter: 14"/10"/6"
Surface Elevation: 76.3' Water Level: Initial: dry 24-hrs.: 1/20/86 72'
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 26'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/10-17/86

Sketch Map

Notes: Open borehole 115'-173'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160			161-163'	Dark green medium to fine Arkosic Sandstone and light grey green Arkosic Sandstone, firm, dry.
			163-165'	Dark green fine to medium Arkosic Sandstone, dry, firm.
165			165-168'	Same, with some dark red Arkosic Sandstone, some biotite, firm, dry.
			168-170'	Light green medium Arkosic Sandstone with some coarse quartz grains, firm, dry.
170			170-173'	Dark green fine Sandstone, trace to some biotite, firm, dry.
				Well completed to a depth of 173'. Well was dry when drilled.
175				TOTAL DEPTH = 173'
				Well Specifications:
				10" casing to 26' 6" casing to 115' 6" open borehole to 173'

AR300656

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7-S Total Depth: 72' Diameter: 14"/10"/6"
Surface Elevation: 65.2' Water Level: Initial: ---- 24-hrs.: -----
Screen: Dia.: ----- Length: ----- Slot Size: -----
Casing: Dia.: 10"/6" Length: 21'/30' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/17/86

Sketch Map

Notes: open borehole 30-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 7-S was finished with a protective locking well cap and 2.71 of 6" ID steel riser.
0			0-2'	Dark red-brown, Silty Sand, some coarse cobbles and organic matter, trace clay, wet.
			2-5'	Light red-brown Sandy, round to subround, quartz and weathered sandstone Gravel, with clay and a trace silt, wet.
5			5-10'	Light brown, Sandy Gravel (as above), trace clay and silt, wet.
10			10-15'	Light brown Sand, well to subrounded Gravel, little to some clay, wet.
15			15-21'	Light brown Gravel (weathered sandstone and quartzite), sand, wet.
				Cable tool installed 10" ID steel casing to 21'
20				Air hammer description follows

AR300657

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner: | Sketch Map

Location: Upper Merion Township | W.O. Number: 272-06

Well Number: 7-S | Total Depth: 72' | Diameter: 14"/10"/6"

Surface Elevation: 65.2' | Water Level: Initial: ---- | 24-hrs.: ----

Screen: Dia.: ---- | Length: ---- | Slot Size: ----

Casing: Dia.: 10"/6" | Length: 21'/30' | Type: Steel

Drilling Company: Hawkins | Drilling Method: Cable Tool/Air Hammer | Notes: open borehole 30-72'

Driller: Fred Kushner | Log By: Lori Hoose | Date Drilled: 3/17/86

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			21-30'	Medium tan-grey, medium Arkosic (orthoclase) Sandstone, with biotite, weathered, boring estimated to be producing less than 1 gpm. 33' of 6" ID steel casing was displacement grouted and driven into place at 30'.
30			30-33'	Tan-red, medium Arkosic (orthoclase) Sandstone, little biotite, wet.
			33-35'	Green-grey, medium Arkosic Sandstone with biotite.
35			35-40'	Green-red, medium to fine Sandstone, poorly cemented, wet.
40			40-45'	Dark red, fine Silty Sandstone. 6" ID open borehole
45			45-49'	Same, well yield still estimated to be less than 1 gpm.
50			49-51'	Light red-green, medium Arkosic (orthoclase) Sandstone, wet.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Township W.O. Number: 272-06

Well Number: 7-S Total Depth: 72' Diameter: 14"/10"/6"

Surface Elevation: 65.2' Water Level: Initial: ---- 24-hrs.: ----

Screen: Dia.: ---- Length: ---- Slot Size: ----

Casing: Dia.: 10"/6" Length: 21'/30' Type: Steel

Drilling Company: Hawkins Drilling Method: Cable Tool/Air Hammer

Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/17/86

Sketch Map

Notes: open borehole 30-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			51-55'	Dark to medium green, medium Arkosic Sandstone with biotite, wet.
55			55-60'	Same, wet.
				6" ID open borehole
60			60-65'	Same as above, with some larger quartz, clasts and much biotite.
65			65-68'	Grey-tan, medium Sandstone and quartz gravel, weathered, wet.
			68-72'	Grey-tan, medium to fine Shaley Sandstone, large black clasts (unknown composition) and quartz clasts, wet.
70				Well was completed to a depth of 72'. After 0.5 hour development yield was estimated to be 0.5 gpm.
				TOTAL DEPTH = 72'

AR300659

Environmental Resources Management

Drilling Log

Project Tyson's Site Owner

Location Upper Merion Township W.O. Number 272-06

Well Number 7-S Total Depth 72' Diameter 14"/10"/6"

Surface Elevation 65.2' Water Level: Initial ---- 24-hrs. ----

Screen: Dia. ---- Length ---- Slot Size ----

Casing: Dia. 10"/6" Length 21'/30' Type Steel

Drilling Company Hawkins Drilling Method Cable Tool/Air Hammer

Driller Fred Kushner Log By Lori Hoose Date Drilled 3/17/86

Sketch Map

Notes open borehole 30-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well Specifications:
				10" casing to 21'
				6" casing to 30'
				6" open borehole to 72'

AR300660

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7I Total Depth: 163' Diameter: 14"/10"/6"
Surface Elevation: 65.6' Water Level: Initial: >100' 24-hrs.: ----
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" Length: 21'/143' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 7I was finished with a protective locking well cap and 2.41 of 6" ID steel riser.
0			0-2'	Dark red-brown Silty Sand, some coarse cobbles and organic matter, trace clay, no odors, wet.
			2-5'	Light red-brown Sand, round to subround gravel (quartz weathered sandstone) with clay, trace silt, wet.
5			5-10'	Light brown Sand, well to subrounded gravel, little to some clay, wet.
10			10-15'	Same.
15			15-20'	Light brown, Gravelly (sandstone and quartzite) Sand, wet.
				Cable tool installed 21' of 10" ID steel casing.
20				Air hammer description follows

AR300661

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Township W.O. Number: 272-06

Well Number: 7I Total Depth: 163' Diameter: 14"/10"/6"

Surface Elevation: 65.6' Water Level: Initial: >100' 24-hrs.: ----

Screen: Dia.: ---- Length: ---- Slot Size: ----

Casing: Dia.: 10"/6" Length: 21'/143' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer

Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			24-29'	Pink-grey, medium Arkosic Sandstone, dark green-grey fine grained Sandstone with gravel sized clasts, abundant orthoclase, wet, "Weathered Bedrock".
30			29-34'	Same, wet.
35			34-39'	Pink-grey, Arkosic Sandstone and grey fine Sandstone, wet.
			38-39'	Soft zone.
40			39-44'	Red, fine Sand and Shale, with red-brown, medium sandstone with larger clasts, weathered, wet.
45			44-49'	Red Shale, tan medium Sandstone, wet, boring beginning to make water.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-06
Well Number: 7I | Total Depth: 163' | Diameter: 14"/10"/6"
Surface Elevation: 65.6' | Water Level: Initial: >100' | 24-hrs.: ------
Screen: Dia.: ------ | Length: ------ | Slot Size: ------
Casing: Dia.: 10"/6" | Length: 21'/143' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner | Log By: Lori Hoose | Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50			49-54'	Light grey, medium to fine Arkosic (orthoclase) Sandstone-Siltstone with biotite, wet.
			53-54'	Soft zone.
55			55-59'	Light grey, medium to fine Arkosic (orthoclase) Sandstone-Siltstone with biotite, wet.
60			59-64'	Light yellow-brown, medium Arkosic (orthoclase) Sandstone with biotite, wet.
			64-65'	Soft zone.
65			64-69'	Yellow-grey, medium Arkosic Sandstone with some grey medium sandstone, poorly cemented, wet.
70			69-74'	Light grey, medium Arkosic Sandstone, fragmented, wet.
75			74-79'	Yellow-grey, medium Arkosic Sandstone, some quartz gravel, red shale clasts, poorly cemented, wet.

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Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7I Total Depth: 163' Diameter: 14"/10"/6"
Surface Elevation: 65.6' Water Level: Initial: >100' 24-hrs.: ----
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" Length: 21'/143' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cement grout
80			79-84'	Green-grey, medium sandstone with biotite, some Arkosic Sandstone clasts, wet.
85			84-89'	Brownish-pink, coarse Arkosic Sandstone, with some light grey medium sandstone, abundant orthoclase, wet.
90			89-94'	Pinkish-brown, coarse to medium Arkosic (orthoclase) Sandstone, wet.
				6" ID steel casing
95			94-99'	Light brownish-pink, very coarse sandstone, dominated by quartz (some large clasts of angular milky quartz), some feldspars, wet.
100			100-105'	Dark and light green Sandstone with biotite, wet.

AR300665

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 7I
Total Depth: 163'
Diameter: 14"/10"/6"
Surface Elevation: 65.6'
Water Level: Initial: >100'
24-hrs.: ------
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6"
Length: 21'/143'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner
Log By: Lori Hoose
Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Cement grout
105			105-110'	Dark grey, milky quartz Sandstone, wet.
				6" ID steel casing
110			110-115'	Light green, fine Sandstone, with some light brown fine sandstone, borehole estimated to be producing 25 gpm.
115			115-120'	Very light green-grey, quartz Sandstone, with some biotite, little to trace orthoclase, wet.
120			120-125'	Dark and light green, fine Arkosic Sandstone, wet.
			123'	Dark green, fine Arkosic Sandstone.
125			125-130'	Light green, very fine Sandstone with biotite, poorly cemented, wet.

AR300666

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7I Total Depth: 163' Diameter: 14"/10"/6"
Surface Elevation: 65.6' Water Level: Initial: >100' 24-hrs.: ------
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" Length: 21'/143' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
130			130-135'	Same, with trace orthoclase.
				Borehole estimated to be yielding 25 gpm.
135			135-140'	Light green, fine Arkosic Sandstone with some biotite.
140			140-145'	Light green, fine Arkosic Sandstone with biotite, poorly cemented, wet.
				145' of 6" ID steel casing was displacement grouted and driven into place at 143'.
145			145-147'	Green, fine Sandstone and Siltstone, trace clay, wet.
			147-150'	Dark green, fine to medium Sandstone with some biotite.
150			150-153'	Dark green, very fine Sandstone and red shale, wet.
				6 " ID open borehole.
155			155-160'	Same, wet.

AR300667

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Township W.O. Number: 272-06

Well Number: 7I Total Depth: 163' Diameter: 14"/10"/6"

Surface Elevation: 65.6' Water Level: Initial: >100' 24-hrs.: -----

Screen: Dia.: ----- Length: ----- Slot Size: -----

Casing: Dia.: 10"/6" Length: 21'/143' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Cable Tool/Air Hammer

Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/6-3/9/86

Sketch Map

Notes: Open borehole 143'-163'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160			160-163'	Red shale with light green, very fine sandstone and siltstone, wet.
				Well was completed to a depth of 163'. Well yield was estimated to be less than 1 gpm.
165				TOTAL DEPTH = 163'
				Well Specifications:
				10" casing to 21'
				6" casing to 143'
				6" open borehole to 163'

AR300668

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7-D Total Depth: 214' Diameter: 14"/10"/6"
Surface Elevation: 65.1 Water Level: Initial: Dry 24-hrs.: >100'
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 21'/189' Type: Steel
Drilling Company: Hawkins Well Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 7-D was finished with a protective locking well cap and 2.71' of 6" ID steel riser.
0			0-2'	Dark red-brown Silty Sand; some coarse, round to subround gravel and organic matter, trace clay, wet.
			2-5'	Light red-brown Sandy round to subround Gravel (quartz and weathered sandstone) with clay, trace silt, wet.
5			5-10'	Light brown Sand, well to subround Gravel (quartz and weathered sandstone) with clay, trace silt, wet.
10			10-15'	Light brown Sand, well to subround Gravel, little to some clay, wet.
15			15-21'	Light brown gravelly (weathered sandstone and quartzite) Sand, wet.
20			21-30'	Brownish-green, medium to coarse Arkosic Sandstone, wet. In this interval, water-bearing zones: 3-5 gpm Cable tool installed 21' of 10" ID steel casing

AR300669

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-06
Well Number: 7-D | Total Depth: 214' | Diameter: 14"/10"/6"
Surface Elevation: 65.1 | Water Level: Initial: Dry | 24-hrs.: >100'
Screen: Dia.: - | Length: - | Slot Size: -
Casing: Dia.: 10"/6" | Length: 21'/189' | Type: Steel
Drilling Company: Hawkins Well | Drilling Method: Cable Tool/Air Hammer
Driller: Fred Kushner | Log By: Lori Hoose | Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Air Hammer description follows
25				
30			30-35'	Light brown, medium Sandstone with biotite, some green sandstone, wet.
35			35-40'	Medium green, medium Arkosic Sandstone with biotite, poorly cemented, wet.
				Open borehole estimated to be making 5 gpm.
40			40-45'	Dark brown, fine Sandstone with green sandstone and quartz fragments, possible weathered zone, wet.
45			45-50'	Brown, very fine Sandstone with light green medium Arkosic Sandstone, wet.
50				

AR300670

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 7-D
Total Depth: 214'
Diameter: 14"/10"/6"
Surface Elevation: 65.1
Water Level: Initial: Dry
24-hrs.: >100'
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 21'/189'
Type: Steel
Drilling Company: Hawkins Well
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Lori Hoose
Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			50-55	Medium to dark green, medium Sandstone with biotite, well cemented, with some brown very fine sandstone, firm consistent drilling, wet.
55			55-60	Medium green, fine to medium Arkosic Sandstone with biotite, wet.
				6" ID steel casing.
60			60-65	Medium green, fine to medium Sandstone with biotite, poorly cemented, wet.
				Cement grout
65			65-70	Medium green, fine to medium Arkosic Sandstone with biotite, poorly cemented, wet.
				Borehole estimated to be making 7 gpm.
70			70-75	Medium green, fine to medium Arkosic Sandstone with biotite, little to some dark grey very fine sand or siltstone, wet.
75			75-80	Red and green, medium to coarse Arkosic Sandstone, wet.

AR300671

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7-D Total Depth: 214' Diameter: 14"/10"/6"
Surface Elevation: 65.1 Water Level: Initial: Dry 24-hrs.: >100'
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 21'/189' Type: Steel
Drilling Company: Hawkins Well Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Borehole estimated to be making 15 gpm.
80			80-85'	Medium green, fine to medium Arkosic Sandstone with biotite, wet.
85			85-90'	Grey, green, and brown, medium to coarse Sandstone, rapid drilling--possible fracture zones, wet.
90			90-95'	Pinkish-brown and grey medium Sandstone with biotite, wet.
95			95-100'	Same, wet.
100			100-105'	Light brown, medium Sandstone with biotite, some poorly cemented dark green fine sandstone with biotite, wet.

AR300672

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-06
Well Number: 7-D | Total Depth: 214' | Diameter: 14"/10"/6"
Surface Elevation: 65.1 | Water Level: Initial: Dry | 24-hrs.: >100'
Screen: Dia.: - | Length: - | Slot Size: -
Casing: Dia.: 10"/6" | Length: 21'/189' | Type: Steel
Drilling Company: Hawkins Well | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Lori Hoose | Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				Greyish-green coarse Arkosic Sandstone with biotite, wet.
				Borehole estimated to be making 30 gpm.
110			110-115'	Light greenish-grey, medium to coarse Arkosic Sandstone with biotite, firm drilling, wet.
115			115-120'	Light grey to white, medium to coarse Sandstone, wet.
				6" ID steel casing, cement grout.
120			120-125'	Dark green, very fine Sandstone with biotite, poorly cemented, wet.
125			125-130'	Dark green, fine Sandstone with biotite, poorly cemented, easy drilling, wet.
130			130-135'	Greyish-green, fine Arkosic Sandstone with biotite, wet.

AR300673

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 7-D
Total Depth: 214'
Diameter: 14"/10"/6"
Surface Elevation: 65.1
Water Level: Initial: Dry
24-hrs.: >100'
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 21'/189'
Type: Steel
Drilling Company: Hawkins Well
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Lori Hoose
Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135			135-141'	Light green, medium Arkosic Sandstone with biotite and some brown, very fine, sandstone, wet.
			139-141'	Soft zone.
140			141-145'	Green, very fine Sandstone, some biotite, poorly cemented, wet.
145			145-150'	Light greenish-grey, very fine Arkosic Sandstone with some biotite, poorly cemented, wet.
			148-149'	Soft zone.
150			150-155'	Greyish-green, very fine Sandstone with biotite, appears to be a weathered zone.
155			155-160'	Light green, fine to medium Arkosic Sandstone with biotite, easy drilling, soft zone.

AR300674

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7-D Total Depth: 214' Diameter: 14"/10"/6"
Surface Elevation: 65.1 Water Level: Initial: Dry 24-hrs.: >100'
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 21'/189' Type: Steel
Drilling Company: Hawkins Well Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160			160-165'	Medium green, fine Sandstone with biotite, poorly cemented, very easy drilling, possible weathered zone.
165			165-170'	Dark brown, very fine Sandstone, poorly cemented, some green fine sandstone, wet.
170			170-175'	Red shale and green-red coarse Sandstone.
175			175-180'	Dark red Shale with some green-red coarse sandstone, borehole estimated to be making 40 gpm.
180			180-185'	Light green-grey, fine Sandstone with biotite, and some red shale, wet.
185				

AR300675

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-06
Well Number: 7-D Total Depth: 214' Diameter: 14"/10"/6"
Surface Elevation: 65.1 Water Level: Initial: Dry 24-hrs.: >100'
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 21'/189' Type: Steel
Drilling Company: Hawkins Well Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Lori Hoose Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			185-190'	Dark red, very fine Sandstone and Siltstone, some grey-green fine sandstone with biotite, wet. 189' of 6" ID steel casing was displacement grouted and driven into place at 189'.
190			190-195'	Dark green, very fine Arkosic Sandstone with biotite, dry. 191' Deep red, Siltstone, very dry. 6" ID open borehole.
195			195-200'	Red-brown, very fine Sandstone with mica (very dry).
200			200-202'	Light green, medium Arkosic Sandstone with biotite, firm drilling, dry.
			202-205'	Red shale, dry.
205			205-210'	Red-brown and grey, medium micaceous Sandstone, dry. 6" ID open borehole.
210			210-215'	Green, medium sandstone with biotite, dry.

AR300676

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-06
Well Number: 7-D
Total Depth: 214'
Diameter: 14"/10"/6"
Surface Elevation: 65.1
Water Level: Initial: Dry
24-hrs.: >100'
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 21'/189'
Type: Steel
Drilling Company: Hawkins Well
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Lori Hoose
Date Drilled: 3/12-3/14/86

Sketch Map

Notes: open borehole 189-214'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			214'	Red Shale, dry.
				Well was dry when drilled.
				TOTAL DEPTH = 214'
				Well Specifications:
				10" casing to 21'
				6" casing to 189'
				6" open borehole to 214'

AR300677

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 8-S
Total Depth: 60'
Diameter: 14"/10"/6"
Surface Elevation: 67.7'
Water Level: Initial: approx.5'
24-hrs.: ------
Screen: Dia.: -------
Length: -------
Slot Size: -----
Casing: Dia.: 10"/6" ID
Length: 17'/30'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 1/4-1/6/86

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 8-S was finished with a protecive locking well cap 2.71' of 6" ID steel riser.
0			0-2'	Dark brown Sandy Silt with a trace clay and organic matter, wet, (recent rain).
			2-4'	Dark red brown Silt with some clay and sand, trace organic matter and coarse gravel, damp to wet.
			4-6'	Same, with large cobbles - boulders of quartzite, hard forcing borehole to be out of line (removed by hand).
5			6-8'	Same, firm drilling, some cobbles.
			8-10'	Dark red brown Silty Sand, some coarse gravel, trace clay, firm consistent drilling, dry and damp.
10			10-11'	Weathered Sandstone boulder.
			11-17'	Dark brown Silty Sand and coarse Gravel, wet inconsistent drilling.
15				10" ID steel casing was driven to a depth of 17'.
			17-20'	Dark red brown medium and coarse Arkosic Sandstone, trace biotite, heavily weathered bedrock, damp.
20			20-25'	Dark red brown medium Arkosic Sandstone, some biotite, slightly weathered, wet, borehole making <1 gpm.
			23'	Soft zone.

AR300678

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-S Total Depth: 60' Diameter: 14"/10"/6"
Surface Elevation: 67.7' Water Level: Initial: approx.5' 24-hrs.: ----
Screen: Dia.: ---- Length: ---- Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 17'/30' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/4-1/6/85

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			25-26	Soft zone.
			26-30	Dark brown to black coarse Sandstone, some orthoclase, unweathered to slightly weathered. 33' of 6" ID steel casing was displacement grouted and then driven to a depth of 30'.
30			30-35'	Dark red medium to coarse Arkosic Sandstone, some biotite, several weathered zones, making water.
35			35-40'	Same, making water (5-10 gpm).
			38-40'	Zone making additional water.
40			40-45'	Light grey green medium to fine Arkosic Sandstone, some biotite, wet.
45				6" ID open bore borehole
			47'	2' zone of easy drilling.
			49'	Dark red Arkosic Sandstone, easy drilling weathered.
50			49-53'	Light grey green medium to coarse Arkosic Sandstone

AR300679

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-S Total Depth: 60' Diameter: 14"/10"/6"
Surface Elevation: 67.7' Water Level: Initial: approx.5' 24-hrs: ------
Screen: Dia.: ------ Length: ------ Slot Size: ------
Casing: Dia.: 10"/6" ID Length: 17'/30' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 1/4-1/6/86

Sketch Map

Notes: Open borehole 30-60'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				(orthoclase is weathered) trace to little dark green fine sandstone, with some biotite.
			53-54'	Soft zone.
			54-60'	Same, little fine sandstone, trace dark green fine to medium biotite Arkosic Sandstone.
55				
60				Well was completed to a depth of 60'. Well yield was estimated to be 10 gpm at time of development.
				TOTAL DEPTH = 60'
				Well Specifications:
				10" casing to 17'
				6" casing to 30'
				6" open borehole to 60'

AR300680

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 68.8' Water Level: Initial: --- 24-hrs.: 21' 2/10/86
Screen: Dia.: ------- Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 8-I was finished with a protective locking well cap and 1.95' of 6" ID steel riser.
0			0-2'	Light brown and dark brown Silt, with some organic matter and trace sand, damp.
			2-6'	Light red brown Silty Clay with some medium well rounded gravel (shale and sandstone) firm hard drilling, damp.
5			6-8'	Light red brown Silty Clay and well to subrounded medium and coarse Gravel (shale, sandstone, quartz), firm, damp.
			8-12'	Same, cobbles becoming abundant.
10			12-17.5'	Light reddish brown Silty Clay with medium well rounded gravel, trace cobbles and fine to coarse sand, wet.
15				18' of 10" ID steel casing was driven into place at 17.5'.
			17.5-21'	Dark red brown medium to coarse Arkosic Sandstone, weathered and wet. Borehole making 5-10 gpm, thought to be leaking in around external casing.
20			21-24'	Dark red brown fine to medium Arkosic Sandstone, slightly weathered, wet.

AR300681

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"

Surface Elevation: 68.8' Water Level: Initial: -- 24-hrs.: 21' 2/10/86

Screen: Dia.: ------- Length: ------- Slot Size: -----

Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			24-30'	Dark brownish red medium to coarse biotite-Arkosic Sandstone, some of a coarse fraction (cobbles) composed of quartz and sandstone, firm, wet.
30			30-31'	Same.
			31-32'	Thin soft zone.
			32-37'	Same, coarse grained fraction has increased, some red and green shale in cuttings.
35			37-42	Light green grey (salt and pepper appearance) medium to fine Sandstone, trace biotite, firm, wet.
40			41-42	Soft zone.
			42-48	Light grey green medium to coarse biotite, Arkosic Sandstone, trace deep red orthoclase clasts, firm, wet.
45			48-52'	Light green medium Sandstone, some orthoclase, trace biotite, and red shale, wet, soft at 48', borehole making approximately 10 gpm.
50				

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 68.8' Water Level: Initial: --- 24-hrs.: 21' 2/10/86
Screen: Dia.: ------ Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				6" ID steel casing
			52-54'	Same, light green medium Sandstone, trace feldspar and red shale.
			54-57'	Dark green and light green medium Sandstone, trace feldspar and unknown dark grey-green clasts, firm.
55				
			57-62'	Dark green and some yellow green medium grained Sandstone, some potassium feldspar and slightly weathered clay mineralogy, and a little to a trace biotite, firm.
60				
				Thin soft zone at 58.5 and 59'.
			62-67'	Same, no yellow green sandstone, soft zone 63-64'.
65				
			67-69	Yellow grey green medium Sandstone and dark grey-green medium grained Sandstone, trace to little biotite and orthoclase, poorly cemented, firm drilling.
70			69-71	Same, with some yellow-grey fine to medium Sandstone, little muscovite, firm.
			71-74'	Light grey green medium to fine Arkosic Sandstone, at 74' muscovite content increased, dry.
			74-78'	Same.
75				
				Cement grout.

AR300683

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 68.8' Water Level: Initial: --- 24-hrs: 21' 2/10/86
Screen: Dia.: ------- Length: ------- Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			78-80	Light grey green medium to coarse Arkosic (potassium feldspar) Sandstone, trace orthoclase and biotite, firm,
80				some red and green shale cutting from earlier interval.
			80-81	Soft zone.
			81-84	Dark grey black Siltstone, little mica, with light green medium grained Arkosic Sandstone, trace biotite and a trace dark green fine sandstone, trace orthoclase and
85				biotite, firm.
			84-85	Dark grey black Siltstone, some mica, and light grey medium to coarse Arkosic Sandstone, firm.
			85-90	Same, with decreasing Siltstone content, increasing dark green medium Sandstone, some orthoclase, several thin soft
90				zones, poorly sorted.
			90-95	Light grey green angular medium grained Sandstone, trace to some orthoclase, trace biotite, cobbles likely, firm.
				6" ID steel casing, cement grout.
95			95-100	Same, increasing orthoclase, cobbles composed of fine grained green clasts and quartz clasts. Some dark green fine to medium grained biotitic sandstone; trace feldspar, near end of interval.
100			100-103	Light grey medium to fine Sandstone, some to trace feldspar, trace white clay, poorly cemented.
			103-105	Light green medium to coarse Arkosic Sandstone, trace biotite, also a trace dark green medium Arkosic Sandstone, trace biotite, firm.

AR300684

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 68.8' Water Level: Initial: --- 24-hrs: 21' 2/10/86
Screen: Dia.: ------ Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-107'	Same, percentage of dark green Arkosic Sandstone increasing, very hard drilling.
			107-110'	Light and dark green medium grained Arkosic Sandstone, firm. 115' of 6" ID steel casing was displacement grouted and driven into place at 115'.
110			110'	Thin soft zone.
			110-113'	Dark green fine to medium Arkosic Sandstone, trace black clasts (Unknown composition) with some light green Arkosic Sandstone.
			113-115'	Light green grey medium, coarse Sandstone (quartz rich), trace to some feldspar.
115			115-117'	Light green medium Arkosic Sandstone poorly cemented.
			117-120'	Dark green black fine to medium Sandstone, consistently firm drilling, dry.
120			120-121'	Weathered zone (soft drilling) dark brown cuttings.
			121-124'	Dark and light green medium to fine Arkosic Sandstone, firm. Borehole making 1/2 gpm. 6" ID open borehole.
125			124-127'	Same, increasing Dark green fine Sandstone, one soft zone.
			127-132'	Dark greenish black fine Sandstone, trace mica, comparatively soft drilling (2 times rate).
130				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-I Total Depth: 135' Diameter: 14"/10"/6"
Surface Elevation: 68.8' Water Level: Initial: --- 24-hrs.: 21' 2/10/86
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17.5'/115' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/3-2/9/86

Sketch Map

Notes: Open borehole 115'-135'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			132-135'	Red Shale, soft, damp.
135				Well was completed to a depth of 135', in the red shale (drilling still soft). Well yield was 1/2 gpm at time of development.
				TOTAL DEPTH = 135'
				Well Specifications:
				10" casing to 17.5'
				6" casing to 115'
				6" open borehole to 135'

AR300686

Environmental Resources Management **Drilling Log**

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 8-D
Total Depth: 183'
Diameter: 12"/10"/6"
Surface Elevation: 67.8'
Water Level: Initial: >100'
24-hrs.: >100'
Screen: Dia.: ------
Length: -------
Slot Size: -----
Casing: Dia.: 10"/6" ID
Length: 17'/153'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 8-D was finished with a protective locking well cap and 3.39' of 6" ID steel riser.
0			0-2'	Dark red brown Sandy Silt, with clay, damp.
			2-4'	Dark red brown Silty Clay with some coarse Sand and quartz cobbles, trace mica, damp to dry.
			4-6'	Dark brown Silt with clay and Sand, trace large cobbles, and mica, damp to dry.
5			6-9'	Dark brown Silty Sand and Clay, some large cobbles, damp.
			9-10'	Dark brown Silty fine to coarse Sand and fine gravel with large cobbles, heavy rig chatter, damp to wet.
10			10-13	Same, heavy rig chatter continues.
			13-17	Same, heavy rig chatter continues. 20' length of 10" I.D. steel casing was driven into place at 17'
15			17-18	Dark red medium Arkosic Sandstone, some biotite and coarse quartz, damp, weathered bedrock
20			18-23'	Dark red and dark yellow green coarse and medium Arkosic Sandstone.

AR300687

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-06

Well Number: 8-D Total Depth: 183' Diameter: 12"/10"/6"

Surface Elevation: 67.8' Water Level: Initial: >100' 24-hrs.: >100'

Screen: Dia.: ------- Length: ------- Slot Size: -----

Casing: Dia.: 10"/6" ID Length: 17'/153' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			12-28'	Dark red medium to fine; some coarse Arkosic Sandstone Borehole making >5 gpm
25				6" I.D. steel casing
				Cement bentonite grout
			28-33'	Light red grey poorly sorted medium and coarse Arkosic
30				Sandstone poorly cemented, little to a trace dark green medium Sandstone with biotite and a dark green accessory mineral, trace red shale, firm drilling, wet.
			33-38'	Light red grey medium to coarse Arkosic Sandstone, some cobbles, some to little biotite, well cemented, firm, even
35				drilling.
			38-43'	Light red grey (as above) with dark green fine to medium Sandstone (50/50 mix) some biotite and feldspar, trace
40				large cobbles, well cemented, poorly sorted, drilling easier--somewhat erratic.
			43-48'	Dark green (salt and pepper) medium to coarse Arkosic (plagioclase dominates) Sandstone, some biotite, poorly
45				sorted, well cemented, trace deep red and green biotite Arkosic fine well sorted Sandstone, soft zone at 44', borehole making 5-10 gpm.

AR300688

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-06
Well Number: 8-D | Total Depth: 183' | Diameter: 12"/10"/6"
Surface Elevation: 67.8' | Water Level: Initial: >100' | 24-hrs.: >100'
Screen: Dia.: ------- | Length: ------- | Slot Size: -----
Casing: Dia.: 10"/6" ID | Length: 17'/153' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner | Log By: Joe P. Ferry | Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50				
			53-58	Increasing percentage of dark green Arkosic Sandstone, 75/25 mix.
55				
			58-64'	Dark green medium Sandstone
60				6" ID steel casing
				Cement bentonite grout
			64'	Thin soft zone
65			64-68'	Light red green, medium to coarse Sandstone; some orthoclase feldspar, trace biotite, with trace yellow-green fine biotite Sandstone, trace plagioclase feldspar, trace weathered clay. Water level recovered quickly after rod change.
70			68-73'	Dark green medium Sandstone, some orthoclase feldspar and biotite, poorly sorted with a trace orthoclase gravel, firm drilling.
			73-78'	Dark green and dark yellowish green(50/50 mix) poorly sorted fine to medium Sandstone, some to trace plagioclase feldspar, firm, even drilling.
75				

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-06
Well Number: 8-D
Total Depth: 183'
Diameter: 12"/10"/6"
Surface Elevation: 67.8'
Water Level: Initial: >100'.
24-hrs.: >100'
Screen: Dia.: ------
Length: ------
Slot Size: ------
Casing: Dia.: 10"/6" ID
Length: 17'/153'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner
Log By: Joe P. Ferry
Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			79-81'	Very soft, likely making water.
80			80-85'	Dark gray Siltstone, some biotite and light green gray medium Arkosic Sandstone, trace biotite, firm drilling.
			84-84.5'	Soft zone.
85			85-90'	Dark green and light green coarse Sandstone, some orthoclase and biotite, poorly sorted with some cobbles.
				85-88' Several thin soft zones.
90			90-93	Dark green and medium fine Sandstone, some orthoclase well cemented, some light gray green Sandstone and a trace gray Siltstone.
			93-95	Light grey green medium to coarse Arkosic Sandstone, firm even drilling.
95			95-100'	Light gray green medium to coarse Arkosic Sandstone, trace biotite, little dark green Sandstone.
				95', 97' and 99': Thin soft zones.
100			100-105'	Light gray medium to coarse Arkosic Sandstone, trace biotite which is grading into dark green coarse Arkosic Sandstone, trace biotite, damp.

AR300690

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-D Total Depth: 183' Diameter: 12"/10"/6"
Surface Elevation: 67.8' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: ----
Casing: Dia.: 10"/6" ID Length: 17'/153' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-110'	Same, trace dark green fine Silty Sandstone, some biotite.
110			110-115'	Dark green medium to coarse Arkosic Sandstone some to little biotite, some light red grey very coarse Arkosic Sandstone, trace biotite, well cemented (from open interval above?).
115			115-120'	Light green grey medium Arkosic Sandstone, trace biotite, 116' and 119' thin soft zones.
				Cement bentonite grout
120			120-125'	Light grey green fine to medium Arkosic Sandstone, trace biotite, poorly cemented, easier drilling.
				At 123', some to little dark green Sandstone, some orthoclase, trace seracite, trace biotite.
125			125-130'	Same
130			130-135'	Red shale and dark green and light green medium to coarse Arkosic Sandstone, trace biotite, easier drilling

AR300691

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-D Total Depth: 183' Diameter: 12"/10"/6"
Surface Elevation: 67.8' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------- Length: ------- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17'/153' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135			135-140'	Dark red Siltstone and shale, trace biotite, easy drilling grading into light green medium Arkosic Sandstone some to trace biotite, drilling becoming more consistent.
140			140-145'	Light green medium to coarse Arkosic Sandstone and red Siltstone, trace dark green fine to medium arkosic sandstone.
145			145-150'	Light green medium Arkosic Sandstone, trace biotite with a trace to some red shale and dark green fine to medium arkosic sandstone, firm consistent drilling. (grading into)
150			150-155'	Dark green fine to medium Arkosic Sandstone. Cement bentonite grout 153' of 6" I.D. steel casing was displacement grouted and driven to 153'.
155			155-160'	153-155' - Erratic drilling. Light grey medium to fine Arkosic Sandstone, trace biotite with a trace dark green fine to medium Sandstone, trace quartz cobbles, dry.

AR300692

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-D Total Depth: 183' Diameter: 12"/10"/6"
Surface Elevation: 67.8' Water Level: Initial: >100' 24-hrs.: >100'
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17'/153' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				157-158.5' soft zone.
160			160-165'	Dark gray green fine Sandstone, trace Siltstone.
				6" ID open borehole
165			165-170'	Dark green and red Arkosic Sandstone, clasts of deep red orthoclase.
				165-178 soft zones
170			170-175'	Dark gray and red fine to medium biotite Arkosic Sandstone, orthoclase clasts deep red, few large cobbles, soft easy drilling.
175			175-180'	Dark green fine to medium Arkosic Sandstone, some mica, dry.
				180' thin soft zone
180			180-182'	Dark green and red medium to fine Arkosic Sandstone, Dry.
			182-183'	Soft zone, Weathered Bedrock cuttings (dark red, brown fine Sand and Silt). Well allowed to set one hour. Water had not yet collected in well.
185				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-06
Well Number: 8-D Total Depth: 183' Diameter: 12"/10"/6"
Surface Elevation: 67.8' Water Level: Initial: >100' 24-hrs: >100'
Screen: Dia.: ------ Length: ------ Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 17'/153' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Fred Kushner Log By: Joe P. Ferry Date Drilled: 2/12-2/17/86

Sketch Map

Notes: Open borehole 153-183'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well was completed to a depth of 183'. Well was dry when drilled, twenty-four hours after well completion, the depth to water was greater than 100 feet.
				TOTAL DEPTH = 183'
				Well Specifications:
				10" casing to 17'
				6" casing to 153'
				6" open borehole to 183'

AR300694

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-S Total Depth: 72.00' Diameter: 14"/10"/6"
Surface Elevation: 75.5' Water Level: Initial: 24-hrs.:
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" ID Length: 25'/35' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/21-7/24/86 35-72'

Sketch Map

Notes: Open borehole

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 9-S was finished with a protective locking well cap and 3.96 feet of 6" ID steel riser.
0				
			0-6"	Black cinders and grey angular gravel, damp to wet.
			6"-4'	Light yellow brown and red brown mottled Clay, trace sand, damp.
			4-8"	Brownish red Silty Clay with trace sand and biotite, damp-dry, becoming increasingly damp with depth.
5				
			8-9'	Heavy rig chatter - possible sandstone cobble.
10			8-15'	Brownish red Sandy Clay, some silt, trace mica minerals, damp.
15			15'	Some rig chatter.
			15-18'	Brownish red medium Sand with some clay, little silt, trace-little well rounded sandstone and shale cobbles, damp to wet.
			18-22'	Red brown coarse-fine Sand and coarse-fine Gravel, gravel is well to subrounded quartz, shale, and sandstone, rig chatter, wet.
20				
			22-24'	Same, much rig chatter.

AR300695

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-S Total Depth: 72.00' Diameter: 14"/10"/6"
Surface Elevation: 75.5' Water Level: Initial: 24-hrs.:
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" ID Length: 25'/35' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/21-7/24/86

Sketch Map

Notes: Open borehole 35-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				10" ID steel casing was installed and driven to a depth of 25 feet.
25			24-32'	Dark reddish brown medium to coarse Arkosic Sandstone, little well rounded coarse gravel, wet.
30				Soft zones 30', 32', erratic drilling at 33'.
			32-35'	Dark red brown-grey medium to fine Arkosic Sandstone, trace biotite, damp.
35				35' of 6" ID steel casing was displacement grouted and driven to a depth of 35 feet.
			35-40	Same two soft zones in interval.
40			40-47	Dark red brown medium to coarse Arkosic (orthoclase) Sandstone, little to trace biotite, wet, drilling inconsistent.
45				42', 45-46' soft zones.
			47-52'	Same, trace fine sand, 47.5-50' erratic drilling, well producing less water. 6" ID open borehole.
50				

AR300696

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-S Total Depth: 72.00' Diameter: 14"/10"/6"
Surface Elevation: 75.5' Water Level: Initial: 24-hrs.:
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" ID Length: 25'/35' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/21-7/24/86

Sketch Map

Notes: Open borehole 35-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			52-57'	Dark red grey-brown medium Arkosic (orthoclase) Sandstone with little to trace biotite, consistent drilling.
55				
			57-62'	Dark red grey brown fine-medium Arkosic (deep red orthoclase) Sandstone, some biotite, poorly cemented-thinly bedded, trace quartz and shale cobbles, 58' thin soft zone, follwed by zone of easier drilling.
60				
			62-67'	Dark reddish grey brown fine to medium Arkosic (orthoclase) Sandstone, little biotite, trace quartz cobbles.
65				
				6" ID open borehole.
			67-72'	Dark reddish brown-black Silty Shale, trace biotite, soft with little yellow grey medium to coarse Arkosic sandstone, trace biotite, 69-71' soft drilling, firmed up at 71'.
70				
				Well 9-S was completed to a depth of 72'; well allowed to recharge 15 minutes, 20 feet of recharge measured. Well yield was measured to be 2.5 gpm.
				Total Depth = 72'

AR300697

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-S Total Depth: 72.00' Diameter: 14"/10"/6"

Surface Elevation: 75.5' Water Level: Initial: 24-hrs.:

Screen: Dia.: --- Length: --- Slot Size: ---

Casing: Dia.: 10"/6" ID Length: 25'/35' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/21-7/24/86

Sketch Map

Notes: Open borehole 35-72'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well Specifications:
				10" Casing to 25'
				6" Casing to 35'
				6" Open Borehole to 72"

AR300698

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-I Total Depth: 157.00' Diameter: 14"/10"/6"
Surface Elevation: 75.7' Water Level: Initial: DTW>100 24-hrs.: DTW 124'
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" Length: 24'/117' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/14-7/21/86

Sketch Map:

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 9-I was finished with a protective locking well cap and 3.4 feet of 6" ID steel riser.
0			0-6"	Black Cinders and grey angular Gravel, damp to wet.
			6"-3'	Light yellow brown and red brown mottled Clay with little to trace medium and coarse Sand, dry.
			3-6'	Dark yellow brown Clay with some sand, becoming damp.
5			6-11'	Dark brownish red Sandy Clay, trace rounded gravel, trace biotite or mica minerals, damp.
10			11-15'	Dark reddish brown Coarse Sand with Clay, some medium sand, little to trace fine gravel, trace mica minerals, damp to wet, firm drilling, with rig chatter indicating the presence of larger cobbles.
15			15-20'	Dark red brown Gravelly coarse Sand with some to little clay, trace silt, damp to wet.
20			20-24'	Reddish brown well to subrounded Gravel (shale, quartz, sandstone) and coarse to fine sand with trace clay, becoming wet.

AR300699

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 9-I | Total Depth: 157.00' | Diameter: 14"/10"/6"
Surface Elevation: 75.7' | Water Level: Initial: DTW>100 | 24-hrs.: DTW 124'
Screen: Dia.: --- | Length: --- | Slot Size: ---
Casing: Dia.: 10"/6" | Length: 24'/117' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: Joe P. Ferry | Date Drilled: 7/14-7/21/86

Sketch Map

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				24' of 10" steel casing was driven into place at 24'.
25			25-28'	Dark brownish red fine to medium Arkosic (k) Sandstone, weathered, some well to subrounded pebbles and cobbles, (shale, quartz), wet, some rig chatter at 26'.
			28-32'	Dark red brown coarse Arkosic (k) Sandstone trace biotite slightly weathered, wet, firm but inconsistent drilling, rig chatter (33').
30				Borehole making >5gpm.
			32-37'	Dark red brown fine to medium Arkosic (k) Sandstone, trace biotite, poorly cemented.
35				Soft zone (35-36') maybe making water. Heavy Rig chatter (36'). Hard drilling (37.5-38.5) then easing up.
			37-42'	Dark red brown medium Arkosic (K) Sandstone, little to well rounded quartz gravel, trace biotite, wet.
40				
			42-47'	Dark red brown medium to coarse Arkosic (K) Sandstone trace biotite, trace light green soapstone, wet, well continues to make 5 gpm.
45				Soft zones at (43', 44', 45').
			47-52'	Dark brownish red medium Arkosic (K) Sandstone, trace biotite wet, firm consistent drilling.
50				

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 9-I | Total Depth: 157.00' | Diameter: 14"/10"/6"
Surface Elevation: 75.7' | Water Level: Initial: DTW>100 | 24-hrs.: DTW 124'
Screen: Dia.: --- | Length: --- | Slot Size: ---
Casing: Dia.: 10"/6" | Length: 24'/117' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: Joe P. Ferry | Date Drilled: 7/14-7/21/86

Sketch Map

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well yield decreased slightly.
			52-57'	Reddish brown fine, medium, and coarse Arkosic (k) Sandstone trace biotite, wet.
55				Thin soft zone 55' followed by rig chatter, possible cobble zone.
				Erratic hammer, softer, (56.5-57.5).
			57-62'	Light reddish grey and reddish brown medium Arkosic Sandstone, trace biotite; easier, but firm drilling, wet.
60				
			62-67'	Light greyish red brown medium Arkosic (k) Sandstone, trace biotite, with a trace dark reddish black fine sandstone, wet, firm consistent drilling.
65				1' soft zone (67').
			67-72'	Dark red brown fine to medium Arkosic (k) Sandstone, little to a trace biotite, with some dark brownish black mica as fine sand to siltstone, trace quartz cobbles.
70				Soft zones (70.5)
				Soft zones (71-72') alternating very hard to soft.
			72-77'	Light greyish brown medium Arkosic (k) Sandstone, trace biotite, first green arkosic sandstone cuttings at 75', drilling firm and consistent.
75				

AR300701

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 9-I | Total Depth: 157.00' | Diameter: 14"/10"/6"
Surface Elevation: 75.7' | Water Level: Initial: DTW>100 | 24-hrs.: DTW 124'
Screen: Dia.: --- | Length: --- | Slot Size: ---
Casing: Dia.: 10"/6" | Length: 24'/117' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: Joe P. Ferry | Date Drilled: 7/14-7/21/86

Sketch Map

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80				Rig chatter (80')
			77-83'	Dark purple brown Silty Shale, dark greyish brown medium to coarse Arkosic Sandstone, trace light greenish medium arkosic sandtone, easier drilling.
85				Soft zones, (83.5 [thin])
				Soft zones, (87.5)
			83-88'	Light greyish green and brown medium to coarse Arkosic (same deep orange k-feldspar) Sandstone, trace to little mica (biotite), drilling as described.
90				
			88-93'	Light green and greyish green medium Arkosic Sandstone, trace to little biotite and muscovite, trace grey siltstone (micaceous), wet, 90-91' easier drilling.
			93-98'	Dark green (trace olive-yellow green) medium to fine Sandstone, some biotite, trace muscovite and (k) feldspar, poorly cemented, easier drilling.
95				
				Easier drilling (101-102')
100			98-103'	Dark green medium Sandstone, some biotite, trace K-feldspar, with olvie green medium sandstone, little k-feldspar, trace white clay, wet.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-I Total Depth: 157.00' Diameter: 14"/10"/6"
Surface Elevation: 75.7' Water Level: Initial: DTW>100 24-hrs.: DTW 124'
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" Length: 24'/117' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/14-7/21/86

Sketch Map

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				Easier drilling (104-105')
				Hard drilling (106')
			103-108'	Light yellowish grey green medium to coarse Sandstone, some feldspar-weathered, little biotite, same dark green sandstone (described above).
110			108-113'	Dark yellowish grey coarse to medium Sandstone, with little weathered feldspar and trace biotite, and pebble-sized orthoclase clasts, easier drilling 109-110', 112' soft zone. Cobble zone 113-115'.
115			113-117'	Light grey green medium to fine Sandstone, some to trace orthoclase, trace biotite, drilling becoming consistent. 117' of 6" ID steel casing displacement grouted and driven to a depth of 117'.
			117-122'	Light greenish grey fine to medium Sandstone, some-trace orthoclase, trace biotite.
120				
			122-127'	Same, with a trace bright yellow orange arkosic coarse sandstone, dry, well producing little water, 125-127' soft zone.
125				
			127-132'	Same, becoming coarser (now medium to coarse), no orange clasts, consistent drilling, very dry.
130				

AR300703

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-I Total Depth: 157.00' Diameter: 14"/10"/6"
Surface Elevation: 75.7' Water Level: Initial: DTW>100 24-hrs: DTW 124'
Screen: Dia.: --- Length: --- Slot Size: ---
Casing: Dia.: 10"/6" Length: 24'/117' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/14-7/2/86 117'-157'

Sketch Map

Notes: Open borehole

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			132-137'	Light grey green medium to coarse Arkosic Sandstone, trace biotite, trace quartz cobbles, very dry, 132-134' soft zone weathered cuttings.
135				
			137-142'	Same, fewer quartz clasts, trace to little biotite, very dry, drilling consistent, thin soft zone at 138'.
140				
			142-147'	Same, dry, consistent drilling, at rod change some dampness was noted in cuttings.
145				
			147-152'	Light green fine to medium Arkosic (orthoclase) Sandstone, trace biotite and muscovite, wet consistent drilling.
150				Well yield estimated to be 1/2 gpm to 1 gpm.
			152-157'	Same, with a trace dark green fine Arkosic Sandstone, some biotite, wet consistent drilling.
155				
				Well 9-I was completed to a depth of 157'. Development was completed by adding potable water to well. Well yield was estimmted to be less than 1 gpm.

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 9-I
Total Depth: 157.00'
Diameter: 14"/10"/6"
Surface Elevation: 75.7'
Water Level: Initial: DTW>100
24-hrs: DTW 124'
Screen: Dia.: ---
Length: ---
Slot Size: ---
Casing: Dia.: 10"/6"
Length: 24'/117'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: Joe P. Ferry
Date Drilled: 7/14-7/21/86

Sketch Map

Notes: Open borehole 117'-157'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				TOTAL DEPTH = 157'
				Well Specifications:
				10" casing to 24'
				6" casing to 117'
				6" open borehole to 157'

AR300705

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"

Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map:

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 9-D was finished with a protective locking well cap and 3.76' of 6" ID steel riser.
0				
			0-6"	Grey Gravel, black cinders and organic matter, dry.
			6"-4'	Light brown and orange (mottled) Clay with a trace sand, dense and dry.
			4-11.5'	Reddish brown Clay, dense, dampening with depth.
5				
10				
			11.5-17'	Reddish brown Clay with increasing amounts of medium to coarse sand and medium to fine gravel, damp to wet.
15				
				Water producing zone.
			17-24'	Reddish brown and brown medium to coarse sand and fine to medium Gravel, wet.
20				

AR300706

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"
Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'
Screen: Dia. Length: Slot Size:
Casing: Dia. 10"/6" Length: 24'/188' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Installed 24' of 10" ID steel casing, which was driven into place at 24'.
25			24-30'	Brownish red medium to coarse Arkosic Sandstone, some mica, wet, firm drilling and quartz cobbles.
30			30-35'	Same, fewer quartz clasts.
35			35-41'	Same.
40			41-48'	Same, grain size reducing. Soft zone, (43.5')
45				Soft zone (44-48')
			48-54'	Same, soft zone (47-48')
50				

AR300707

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"

Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			54-59'	Same.
55				Soft zone (55', 56').
				Soft zone (58-62').
			59-64'	Same
60				
			64-69'	Same.
65				
				Soft zone (67.6-68').
			69-74'	Same, trace green sandstone, soft (70.6-71'), borehole making 2.5 to 5 gpm.
70				
			74-80'	Same, abundant quartz clasts.
75				

AR300708

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"
Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Soft zone, 78', 79-81'.
80			80-85'	Same, with increasing shale and trace green sandstone.
85			85-90'	Same, with increasing abundance of green sandstone.
90			90-95'	Light green to grey medium to coarse Arkosic Sandstone, some muscovite, biotite, and other unknown dark clasts. Soft zones, 92 and 93'.
95			95-100'	Becoming greyish in color, poorly cemented, quartz rich. Soft zone, 97 to 98.5'.
100			100-105'	Green sandstone, consistently hard drilling.

AR300709

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"
Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105			105-110'	Becoming yellow, poorly cemented.
110			110-115'	Soft zone, 110'. Same, becoming Orange-yellow (weathered), some quartz clasts, poorly cemented.
115			115-120'	Soft interval, 115 to 117'. Same, increased green sandstone content, feldspar content has decreased.
120			120-125'	Green medium to coarse Sandstone, some feldspar, trace muscovite and quartz, well yielding about 10 gpm, easier drilling 123-125'.
125			125-130'	Same, some yellowish green Sandstone, soft end of interval 130-132'.
130				

AR300710

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"

Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			130-135'	Yellow green Arkosic Sandstone, light green sandstone with quartz clasts and feldspar. Trace white clay, possibly from soft zone 130 to 132 feet.
135			135-140'	Yellow green weathered Arkosic Sandstone with abundant quartz and heavily weathered feldspars. Soft zone, 136-139'.
140			140-145'	Same. Thin soft zone, 143'.
145			145-150'	Soft zones, 145-146.5'. Same. Soft zone, 149'.
150			150-155'	Light yellow green medium to coarse Sandstone, trace to little orthoclase, trace biotite with some dark and light green. Coarse sandstone poorly sorted, with some large quartz pebbles and biotite, wet, consistent drilling. Bottom of interval trace red shales and light green fine biotitic sandstone.
155			155-160'	Light grey green fine, medium, and a trace coarse, Sandstone

AR300711

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"

Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs.: DTW on 7/21/86-92'

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160				with some orthoclase, little to trace biotite, some yellow grey medium and coarse sandstone, weathered orthoclase (clay weathering) trace biotite and trace deep red coarse Arkosic (orthoclase) Sandstone, wet, firm consistent drilling.
			160-165'	Light grey green and light yellow green medium to fine Sandstone with little feldspar and little biotite, trace muscovite, wet, consistent drilling and some pebble sized orthoclase clasts.
165			165-168'	Light grey green fine and medium Arkosic (orthoclase) Sandstone, trace biotite, and muscovite with light grey (green) medium arkosic sandstone and trace quartz cobbles, wet, consistent drilling.
170			168-170'	Red shale (fissile) with some biotite and pebble sized fragments of light grey green arkosic (as above) sandstone and little dark green fine to medium arkosic to subarkosic sandstone, easy drilling.
175			170-175'	Light grey green (as above), with light to dark grey green and light grey green and orange medium arkosic (orthoclase) sandstone, trace to little biotite, wet.
			175-180'	Light and dark green fine to medium Arkosic sandstone, trace biotite, some light grey-orange arkosic sandstone, trace biotite, firm, consistent drilling.
180				Borehole producing approximately 10 gpm during drilling.
			180-188'	Light and dark green medium to fine Arkosic Sandstone, trace biotite and quartz cobbles (185-188').
				Thin sodt zones at 181 and 182'.
185				

AR300712

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"
Surface Elevation: 75.60 Water Level: Initial: DTW>100' 24-hrs: DTW on 7/21/86-92'
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel
Drilling Company: Hawkins Well Drilling Co Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				188' of 6" ID stel casing was displacement grouted and driven into place at 188'.
			188-193'	Dark green fine Arkosic (orthoclase) Sandstone, trace biotite, and light white-grey medium Arkosic (orthoclase) Sandstone.
190				
			193-198'	Light white-grey green, medium to coarse Arkosic (orthoclase) Sandstone, dry, firm drilling.
195				6" open borehole.
			198-203'	Light grey green medium Arkosic (orthoclase) Sandstone, little to a trace greenish grey siltstone-shale (possible water bearing zone) wet, drilling consistent. Thin soft zone, possible water bearing zone <1gpm at 200'.
200				
			203-208'	Light grey green with orange medium and coarse Arkosic (orthoclase, to 40 percent) Sandstone, damp, consistent drilling.
205				
			208-213'	Light grey green medium Arkosic (orthoclase) Sandstone and dark grey green fine to medium Arkosic (orthoclase not as predominant in light grey green arkose) Sandstone, trace biotite, damp, consistent drilling.
210				

AR300713

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 9-D Total Depth: 223' Diameter: 14"/10"/6"

Surface Elevation: 75.60 Water Level: Initial: DTW>100' DTW on 24-Hrs. 7/21/86-92'

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 24'/188' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/7-7/14/86

Sketch Map

Notes: Open borehole 188'-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
215			213-218'	Dark green fine to medium Arkosic (orthoclase) Sandstone, trace biotite, with some light grey green coarse to medium arkosic (orthoclase) sandstone, wet, consistent drilling.
220			218-223'	Dark green fine to medium Arkosic (orthoclase) Sandstone, trace biotite, and muscovite and some light grey green medium to coarse arkosic sandstone, wet. Soft zones, 220-221 feet.
225				Well completed to a depth of 223 feet. Upon development, well yield was estimated to be less than 1 gpm. Potable water added to oil well development.
				TOTAL DEPTH = 223'
				Well Specifications:
				10" casing to 24'
				6" casing to 188'
				6" open borehole to 223'

Environmental Resources Management

Drilling Log

Project: Tyson's Dump Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-S
Total Depth: 55.00'
Diameter: 14"/10"/6"
Surface Elevation: ----
Water Level: Initial: ----
24-hrs.: ----
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 20'/32'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: Joe P. Ferry
Date Drilled: 7/24/86

Sketch Map

Notes: Open borehole 32-55'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 10-S was finished with a protective locking well cap and ___ of 6" ID steel riser.
0			0-.5'	Dark brown Silty Sand, some clay, abundant organic matter, dry.
			.5-3'	Orange-brown Clay with sand, silt, and well-rounded cobbles, hard, dry.
			3-6'	Yellow-orange medium to coarse Sandy Clay with some silt, trace cobbles, damp to dry, firm.
5			6-7'	Reddish-brown Sandy Clay with Arkosic Sandstone cobbles, dry, firm.
			7-8.5'	Light reddish grey Arkosic Sandstone cobble, dry, firm.
10			8.5-9.5'	Dark reddish brown Arkosic Sandstone cobble, weathered, dry
			9.5-15	Dark reddish brown Sandy Gravel with clay, damp.
15			15-18'	Dark reddish brown fine to coarse gravelly clay, with sand, and a trace silt, wet.
			18-20'	Dark purplish red siltstone, weathered, trace biotite, damp.
20			20-35	Dark purplish brown fine to medium Arkosic Sandstone, little biotite, poorly cemented.
				20' of 10" ID steel casing was driven into place at 20'.

Environmental Resources Management

Drilling Log

Project: Tyson's Dump Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-S Total Depth: 55.00' Diameter: 14"/10"/6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: ----- Length: ----- Slot Size: -----
Casing: Dia.: 10"/6" ID Length: 20'/32' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: Joe P. Ferry Date Drilled: 7/24/86

Sketch Map

Notes: Open borehole 32-55'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25			25-30'	Same.
30			30-32'	Grey to black medium to coarse Sandstone, thinly bedded, some biotite with dark reddish brown fine to Arkosic Sandstone, little biotite.
			33-36'	Dark reddish grey fine to medium coarse Arkosic Sandstone, little biotite, some deep red orthoclase clasts, consistent drilling.
35				35' of 6" ID steel casing was displacement grouted and set at 32'.
			36-41'	Light gryeish red medium to coarse Arkosic Sandstone, trace to little biotite, wet, rig chatter 41'.
40				Soft zone 38.5-39.5'.
				Soft interval 40-45'.
			41-46'	Dark reddish brown fine to medium Arkosic (orthoclase deep red) sandstone, little biotite, firm consistent drilling, bore hole yielding at least 5 gpm.
45				Soft 45-46'.
			46-48'	Same, becoming medium to coarse grained.
			48-50'	Dark red and grey shaley siltstone, trace biotite, wet, easy drilling, possible water-bearing interval.
50				Thin soft zone at 51'.

AR300716

Environmental Resources Management

Drilling Log

Project: Tyson's Dump Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-S
Total Depth: 55.00'
Diameter: 14"/10"/6"
Surface Elevation: ----
Water Level: Initial: ----
24-hrs.:
Screen: Dia.:
Length:
Slot Size: ----
Casing: Dia.: 10"/6" ID
Length: 20'/32'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: Joe P. Ferry
Date Drilled: 7/24/86

Sketch Map

Notes: Open borehole 32-55'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			53'	Rig chatter.
55				Well was completed to a depth of 55'. Well yield was 10-20 gpm at time of development.
				Total Depth = 55'
				Well Specifications:
				10" Casing to 20'
				6" Casing to 32'
				6" open borehole to 55'

AR300717

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 10-I Total Depth: 136.5 Diameter: 14"/10"/6"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: ------- Length: -------- Slot Size: -----

Casing: Dia.: 10"/6" ID Length: 27'/97' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 10-I was finished with a protective locking well cap and 3.1' of 6" I.D. steel riser.
0			0-1.5'	Roots, organic material
			1.5-6'	CLAY: Dark brown, silty, micaceous, stiff, dry.
5			6-13'	COBBLES: Reddish brown arkosic sandstone, weathered.
10				11': Damp.
			13-17'	CLAY: Reddish brown, sandy. Abundant pebble-sized clasts of quartz and K-feldspar.
15				15': Wet.
			17-27'	SAND and GRAVEL: Fine to medium grained, wet.
20				

AR300718

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-I Total Depth: 136.5' Diameter: 14"/10"/6"
Surface Elevation: ------ Water Level: Initial: ------ 24-hrs.: ------
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 27'/97' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55				
			58-59'	SILTSTONE: Brown to grey, weathered.
			59-91'	ARKOSIC SANDSTONE: Reddish brown, abundant quartz clasts, trace green Arkosic Sandstone.
60				
65				
70				
75				75': Same, trace dark grey siltstone.

AR300719

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner: Ciba Geigy

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 10-I Total Depth: 136.5' Diameter: 14"/10"/6"

Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____

Screen: Dia. ------ Length ------ Slot Size ----

Casing: Dia. 10"/6" ID Length 27'/97' Type Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25				
				27': Bedrock, installed 27' of 10" ID steel casing and drove into place.
			27-58	ARKOSIC SANDSTONE: Reddish brown, fine to medium grained. abundant quartz clasts, trace green Arkosic Sandstone.
30				31-34.5': Soft zone.
35				
40				
45				
				47-50.5': Soft zone.
50				

AR300720

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-I Total Depth: 136.5' Diameter: 14"/10"/6"
Surface Elevation: ------ Water Level: Initial: ------ 24-hrs.: ----
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 27'/97' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80				81': Thin soft zone.
85				86': Same, becoming light greyish green in color. 87-89': Soft zone.
90			91-136.5'	ARKOSIC SANDSTONE: Light greyish green, abundant quartz clasts.
95				97': Displacement grouted 97' of 6" ID steel casing and drove into place.
100				

AR300721

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 10-I | Total Depth: 136.5' | Diameter: 14"/10"/6"
Surface Elevation: ------ | Water Level: Initial: ------- | 24-hrs.: -----
Screen: Dia.: | Length: | Slot Size:
Casing: Dia.: 10"/6" ID | Length: 27'/97' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
110				110': Same, becoming olive green in color.
115				116': Same, trace green shale.
120				
125				
130				131': Thin soft zone.

AR300722

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-I
Total Depth: 136.5'
Diameter: 14"/10"/6"
Surface Elevation:
Water Level: Initial: ------
24-hrs.:
Screen: Dia.: ------
Length: ------
Slot Size: ----
Casing: Dia.: 10"/6" ID
Length: 27'/97'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/11/86

Sketch Map

Notes: Open borehole 97'-136.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				TOTAL DEPTH: 136.5'
				Well Specifications:
				10" casing to 27'
				6" casing to 97'
				6" open borehole to 136.5'

AR300723

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-10
Well Number: 10-D
Total Depth: 223'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 22'/183'
Type: Steel
Drilling Company: Hawkins Well
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/8/86

Sketch Map

Notes: Open borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 10-D was finished with a protective locking well cap and 2.57' of 6" ID steel riser.
0			0-0.5'	CLAY: Dark brown to black, silty, abundant organic matter.
			0.5-5.5'	CLAY: Light to dark yellowish orange, some sand, trace well-rounded gravel, dry.
5			5.5-8'	SANDY CLAY: Dark reddish brown, quartz and sandstone cobbles.
			8-10'	SAND: Reddish brown, with clay and trace silt.
10			10-16'	SAND: Reddish brown, gravelly, with little clay, damp.
15			16-22'	SAND and GRAVEL: Reddish brown, well-rounded, trace clay, wet.
20				22': Bedrock, installed 22' of 10" ID steel casing and drove into place.

AR300724

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-10
Well Number: 10-D Total Depth: 223' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 22'/183' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			23-42	ARKOSIC SANDSTONE: Light reddish grey, fine to medium grained, micaceous, weathered.
25				24-25': Soft Zone.
30				29-32': Several thin soft zones.
35				37: Same with trace black and greyish green shale.
40				
			42-57	ARKOSIC SANDSTONE: Dark brownish red, fine to coarse grained, micaceous.
				42-43.5': SOFT ZONE.
45				Same, trace dark red shale.
50				

AR300725

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-10
Well Number: 10-D | Total Depth: 223' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: - | Length: - | Slot Size: -
Casing: Dia.: 10"/6" | Length: 22/183' | Type: Steel
Drilling Company: Hawkins Well Drilling | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				51': Same, trace light green Arkosic Sandstone.
55				
			57-62	ARKOSIC SANDSTONE: light reddish brown, medium grained, some light greyish green Arkosic Sandstone, trace mica. 58-59': Soft Zone.
60			62-67	SILTSTONE: Dark reddish grey, coarse quartz clasts, trace dark purple siltstone.
65				
			67-72	SANDSTONE: Dark reddish brown, fine grained, micaceous, weathered. 67.5': Thin soft zone.
70				70': Thin soft zone.
			72-78	ARKOSIC SANDSTONE: Dark red to grey, medium grained, some quartz clasts.
75				

AR300726

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-10
Well Number: 10-D Total Depth: 223' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 22'/183' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			78-79	SILTSTONE: Dark grey, micaceous.
			70-92	ARKOSIC SANDSTONE: Dark red to grey, medium grained,
80				some quartz clasts.
				84': Same with trace brownish yellow fine grained sandstone.
85				
				89': Thin soft zone.
90				
			92-97	ARKOSIC SANDSTONE: Yellow to olive green, fine to medium grained, trace quartz clasts, trace dark grey siltstone.
95				
			97-119'	ARKOSIC SANDSTONE: Green, fine to medium grained, weathered, little quartz clasts.
100				100': Thin layer of green shale.

AR300727

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-10
Well Number: 10-D Total Depth: 223' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 22/183' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
110				111': Thin layer of red shale.
115				
			119-121'	SHALE: Green.
120			121-127'	ARKOSIC SANDSTONE: Olive green, medium grained, some quartz clasts, micaceous.
125			127-147'	ARKOSIC SANDSTONE: Green, fine to medium grained, abundant quartz clasts.
130				

AR300728

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-10
Well Number: 10-D
Total Depth: 223'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 22/183'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				
				138-147': Encountered several thin soft zones.
140				
145			147-151'	ARKOSIC SANDSTONE: Olive green, fine to medium grained, trace quartz clasts, trace green siltstone.
150				
155			157	
			172'	ARKOSIC SANDSTONE: Green, [illegible] weathered.

AR300729

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Township W.O. Number: 272-10
Well Number: 10-D Total Depth: 223' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 10"/6" Length: 22'/183' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160				162': Same, clay content increasing.
165				
170				171': Same, abundant clay.
			172-177'	SANDSTONE: Dark green, fine grained, little quartz clasts, micaceous.
175				
			177-183'	ARKOSIC SANDSTONE: White to light grey, fine grained.
180				181': Thin soft zone.
			183-187'	SHALE: Dark reddish brown, thinly bedded.

AR300730

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Township
W.O. Number: 272-10
Well Number: 10-D
Total Depth: 223'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: -
Length: -
Slot Size: -
Casing: Dia.: 10"/6"
Length: 22'/183'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
185				183': Displacement grouted 183' of 6" ID steel casing and drove into place.
				187': Thin soft zone.
			187-212'	ARKOSIC SANDSTONE: Light greyish green, fine-grained.
190				
195				
200				
205				
210				

AR300731

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Township | W.O. Number: 272-10
Well Number: 10-D | Total Depth: 223' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: - | Length: - | Slot Size: -
Casing: Dia.: 10"/6" | Length: 22'183' | Type: Steel
Drilling Company: Hawkins Well Drilling | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 8/8/86

Sketch Map

Notes: Open Borehole 183-223'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			212-222'	ARKOSIC SANDSTONE: Green, fine to medium grained.
215				
220				
				TOTAL DEPTH = 223'
				Well Specifications:
				10" casing to 22'
				6" casing to 183'
				6" open borehole to 223'

AR300732

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-XD
Total Depth: 307'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 23'/268'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 10-XD was finished with a protective locking well cap and 2.20' of 6" I.D. steel riser.
0			0-1'	Roots, organic material.
			1-3'	CLAY: Reddish brown, damp, stiff.
			3-4'	CLAY: Orangy brown, damp, stiff.
			4-17'	CLAY: Reddish brown with abundant arkosic sandstone cobbles.
5				
10				
15				
			17-23	SAND AND GRAVEL: Reddish brown, with clay, wet.
20				
				21': Gravel becomes coarse.
				23': Bedrock, installed 23' of 10" ID steel casing and

AR300733

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-XD Total Depth: 307' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				drove into place.
25			23-60	ARKOSIC SANDSTONE: Reddish brown, fine to medium grained, micaceous.
30				
				34': Same, with quartz clasts.
35				
				39.5-43': SOFT ZONE.
40				
				42': Same, quartz clasts not present.
45				
50				

AR300734

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-XD Total Depth: 307' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				51': Same, with some dark grey siltstone.
55				56-57': Soft zone.
60			60-72'	ARKOSIC SANDSTONE: Reddish brown and light greyish green in color, fine to medium grained, micaceous. 62-63': Soft zone.
65				65-72': Very soft.
70				
			73-109'	ARKOSIC SANDSTONE: Reddish brown fine to medium grained, abundant quartz clasts, some dark grey siltstone.
75				75-76': Soft zone.

AR300735

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-XD
Total Depth: 307'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 23'/268'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				79-82': Soft zone.
80				
85				
90				90.5-93': Very soft zone.
95				
100				

AR300736

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-XD Total Depth: 307' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
			109-112'	
110				ARKOSIC SANDSTONE: Greyish green, fine to medium grained.
			112-120'	ARKOSIC SANDSTONE: Olive green, fine to medium grained, micaceous, weathered.
115				
120			120-148'	ARKOSIC SANDSTONE: Yellow to light olive green, fine to medium grained, some quartz clasts, trace dark reddish brown siltstone.
125				126-127': Soft zone.
				130': Same, with greyish green fine to medium grained Arkosic Sandstone, micaceous.
130				

AR300737

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-XD Total Depth: 307' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				136': Thin layer of light grey shale.
				138-140': Soft zone.
140				
145				
			148-158'	ARKOSIC SANDSTONE: Dark greyish green, fine grained, and dark greyish green siltstone.
150			151-153'	SHALE: Dark greyish green.
			153-165'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, abundant quartz clasts, trace dark greyish green siltstone.
155				

AR300738

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 10-XD | Total Depth: 307' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: | Length: | Slot Size:
Casing: Dia.: 10"/6" ID | Length: 23'/268' | Type: Steel
Drilling Company: Hawkins Well Drilling | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				158-163': Soft zone.
160				
				164': Thin soft zone.
165			165-175'	ARKOSIC SANDSTONE: Dark green, fine to medium grained. 166-167': Soft zone.
170				
175			175-178'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, little quartz clasts.
			178-181'	ARKOSIC SANDSTONE: Dark green, fine to medium grained, trace dark grey siltstone.
180			181-185'	ARKOSIC SANDSTONE: White to light grey to light greyish green, fine to medium grained.

AR300739

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-XD
Total Depth: 307'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 23'/268'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
185			185-191'	SHALE: Dark reddish brown, thinly bedded.
190			191-200'	ARKOSIC SANDSTONE: Light grey to light greyish green, fine to medium grained.
195				
200			200-208'	ARKOSIC SANDSTONE: White to very light grey, fine to medium grained, micaceous, some grey siltstone.
205				207': Thin layer of green shale.
			208-233'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained, little grey siltstone.
210				

AR300740

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 10-XD Total Depth: 307' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
215				
220				
225				
230				
			233-236'	ARKOSIC SANDSTONE: Dark green, fine to medium grained, some dark greyish green shale, little quartz clasts.
235			236-242'	ARKOSIC SANDSTONE: Light greyish green, fine t- medium grained, micaceous.

AR300741

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-XD
Total Depth: 307'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 23'/268'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
240				
			242-247'	ARKOSIC SANDSTONE: White to tan, fine to medium grained.
245				
			247-252'	ARKOSIC SANDSTONE: Green, fine grained, trace dark reddish brown siltstone.
250				
			252-270'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, trace dark reddish brown siltstone.
255				
260				

AR300742

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 10-XD Total Depth: 307' Diameter: 6"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" ID Length: 23'/268' Type: Steel

Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
265				
				268': Displacement grouted 268' of 6" ID steel casing and drove into place.
270			270-287'	ARKOSIC SANDSTONE: Greyish green, fine grained, trace dark grey siltstone.
275				
280				
285				
			287-290'	ARKOSIC SANDSTONE: Light tan to orangy tan, fine to medium grained, trace dark grey siltstone.
290			290-293'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained, micaceous.

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 10-XD
Total Depth: 307'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 23'/268'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/29/86

Sketch Map

Notes: Open borehole 268'-307'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			293-295'	SHALE: Dark reddish brown, thinly bedded.
295			295-299'	ARKOSIC SANDSTONE: Greyish green, fine grained, micaceous.
300			299-305'	ARKOSIC SANDSTONE: White to tan, fine grained, micaceous.
305			305-307'	SILTSTONE: Dark reddish brown.
				TOTAL DEPTH = 307'
				Well Specifications:
				10" casing to 23'
				6" casing to 268'
				6" open borehole to 307'

AR300744

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-S Total Depth: 84' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia. 10"/6" Length 16.5'/44' Type Steel
Drilling Company Hawkins Well Drilling Drilling Method Air Rotary/Hammer
Driller Carl Perry Log By R. Hoose Date Drilled 8/26/86

Sketch Map

Notes Open borehole 44'-84'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 11-S was finished with a protective locking well cap and and 2.90' of 6" I.D. steel riser.
0			0-1'	Roots, organic material.
			1-9'	CLAY: Orangy brown to dark brown, damp, stiff.
5				7': Same, with abundant sandstone cobbles.
10			9-16'	SAND AND GRAVEL: Fine to coarse, well rounded.
15			16-16.5'	ARKOSIC SANDSTONE: Green and reddish brown, highly weathered. 16.5': Installed 16.5' of 10" ID steel casing and drove into place.
20			16.5-23'	ARKOSIC SANDSTONE: Tannish yellow, fine to medium grained.
			23-46	ARKOSIC SANDSTONE: Olive green, fine to medium grained

AR300765

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-S Total Depth: 84' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 16.5'/44' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/26/86

Sketch Map

Notes: Open borehole 44'-84'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				micaceous, trace quartz clasts, weathered.
25				
30				
35				36': Same, becoming light greyish green.
40				
				43-44': Soft zone.
				44': Displacement grouted 44' of 6" ID steel casing and drove into place.
45			44-46	ARKOSIC SANDSTONE: Greyish green, fine to medium grained, abundant quartz clasts, Dry, Hard.
			46-52	ARKOSIC SANDSTONE: Olive green, fine to medium grained.
				49-50': Soft zone.
50				

AR300746

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-S
Total Depth: 84'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6"
Length: 16.5'/44'
Type: Steel
Drilling Company: Hawkins Well Drilling
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/26/86

Sketch Map

Notes: Open borehole 44'-84'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			52-62'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained.
				54': Wet zone.
55				
60				
			62-84'	ARKOSIC SANDSTONE: Interbeddd layers: light greyish green and dark green in color, fine to medium grained.
65				
70				
75				

AR300747

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-S Total Depth: 84' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 16.5'/44' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/26/86

Sketch Map

Notes: Open borehole 44'-84'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80				TOTAL DEPTH = 84' Well Specifications: 10" casing to 16.5' 6" casing to 44' 6" open borehole to 84'

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 11-S was finished with a protective locking well cap and 288' of ID steel riser.
0			0-1'	Roots, organic material.
			1-4'	CLAY: Orangy brown to dark brown, damp, stiff.
			4-10'	CLAY: Reddish brown, moist, stiff.
5				6': Arkosic Sandstone cobbles
10			10-19'	SAND AND GRAVEL: Fine to coarse, well rounded.
15				
20				19': Installed 19' of 10" ID steel casing and drove into place.
			19-27'	medium grained, trace mica.

AR300749

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25				
			27-28	SHALE: Reddish brown, thinly bedded.
			28-39	ARKOSIC SANDSTONE: Light grey, fine grained.
30				
				34-35': soft zone.
35				
			39-43	ARKOSIC SANDSTONE: Green to greyish green, fine to medium grained, trace mica.
40				40-41': soft zone.
			43-80	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, little quartz clasts, trace mica, trace brownish yellow Arkosic Sandstone.
45				
50				

AR300750

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55				
60				
				62': Same, with trace green shale.
				64': Thin soft zone.
65				
70				
75				

AR300751

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-84'	SHALE: Dark green.
85			84-90'	ARKOSIC SANDSTONE: Light greyish green, fine grained.
90			90-93'	ARKOSIC SANDSTONE: Interbedded layers: light greyish green and dark green in color, fine grained.
			93-98'	SHALE: Dark reddish brown, with some green shale.
95			98-102'	ARKOSIC SANDSTONE: Light greyish green to dark green, fine to coarse grained.
100			102-107'	ARKOSIC SANDSTONE: White to light grey, fine to medium grained, little quartz clasts.

AR300752

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia. 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
			107-110'	ARKOSIC SANDSTONE: Light to dark green, fine to medium grained, with some dark grey siltstone. 109': Displacement grouted 109' of 6" ID steel casing and drove into place.
110			110-111'	SHALE: Green.
			111-122'	ARKOSIC SANDSTONE: Green, fine to medium grained. 115-120': Soft zone.
115				
120				
			122-149'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, little quartz clasts, micaceous.
125				
				128': Wet zone.
130				

AR300753

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-I Total Depth: 149' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 19'/109' Type: Steel
Drilling Company: Hawkins Well Drilling Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/24/86

Sketch Map

Notes: Open Borehole 109-149'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				136': Wet zone.
140				143': Wet zone.
145				TOTAL DEPTH = 149'
				Well Specifications:
				10" casing to 19'
				6" casing to 109'
				6" open borehole to 149'

AR300754

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: 10"/6"
Length: 20'/180'
Slot Size:
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 11-D was finished with a protective locking well cap and 2.53' of 6" I.D. steel riser.
0			0-1'	CLAY: Black, roots, abundant organic matter.
			1-3'	CLAY: Orangy brown, some mica, stiff, dry.
			3-14'	COBBLES: Weathered Arkosic Sandstone in a brownish red clay matrix.
5				
10				
			14-20'	SAND AND GRAVEL: Fine to coarse, well rounded, wet.
15				
20				20': Installed 20' of 10" ID steel casing and drove into place.
			20-27'	ARKOSIC SANDSTONE: Tan to yellow, fine to medium grained, micaceous, with some reddish brown Arkosic Sandstone.

AR300755

Page ___ of ___

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6"
Length: 20'/180'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				24-25': SOFT ZONE.
25				
			27-36'	ARKOSIC SANDSTONE: Olive green, fine to medium grained, trace quartz clasts.
30				
35				
			36-51'	ARKOSIC SANDSTONE: Light green, fine grained, abundant quartz clasts.
40				
45				
50				

AR300756

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-D Total Depth: 220' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 20'/180' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			51-57'	ARKOSIC SANDSTONE: Green, fine to medium grained, some quartz clasts, trace mica.
55				
			57-58'	SILTSTONE: Green, thinly bedded.
			58-88'	ARKOSIC SANDSTONE: Light green, fine to medium grained, trace green siltstone.
60				
				63': Thin Soft Zone.
65				
70				
75				

AR300757

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" Length: 20'/180' Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80				
				84': Same, with some dark green shale, thinly bedded.
85				
			88-92	SILTSTONE: Dark reddish brown.
90				
			92-95	SHALE: Green.
95			95-98	SHALE: Dark reddish brown.
			98-128'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, with some quartz clasts, micaceous.
100				

AR300758

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-D Total Depth: 220' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.
Screen: Dia.: 10"/6" Length: 20'/180' Slot Size: Steel
Casing: Dia.: Length: Type:
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
				107-110': Soft zone.
110				
115				
				117': Same, with some dark grey siltstone.
120				
				123': Same, with trace dark reddish brown and green shale.
125				
			128-141'	ARKOSIC SANDSTONE: Interbedded layers: light greyish green and dark green in color, fine to medium grained.
130				

AR300759

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: 10"/6"
Length: 20'/180'
Slot Size:
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135				
140			141-174'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained.
145				
150				
155				155': Same, with trace dark green siltstone.

AR300760

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 11-D Total Depth: 220' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.
Screen: Dia.: 10"/6" Length: 20'/180' Slot Size:
Casing: Dia.: Length: Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160				
				163-164': Soft zone.
165				Same.
170				
			174-175'	SILTSTONE: Dark green.
175			175-197'	ARKOSIC SANDSTONE: Green, fine to medium grained, abundant quartz clasts, trace mica, trace dark green siltstone.
180				180': Displacement grouted 180' of 6" ID steel casing and drove into place.
185				

AR300761

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: 10"/6"
Length: 20'/180'
Slot Size:
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
190				
195				
			197-208'	SILTSTONE: Dark reddish brown, damp.
200				
205				
			208-215'	ARKOSIC SANDSTONE: Green, fine grained, trace quartz clasts, trace micas, dry.
210				

AR300762

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 11-D
Total Depth: 220'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6"
Length: 20'/180'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 8/20/86

Sketch Map

Notes: Open borehole 180'-220'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
215			215-220'	SILTSTONE: Dark reddish brown.
220				TOTAL DEPTH = 220'
				Well specifications:
225				10" casing to 20' 6" casing to 180' 6" open bore hole to 220'

AR300763

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 12-S Total Depth: 100' Diameter: 6"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 36'/60' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/23/86

Sketch Map

Notes: Open borehole 60'-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 12-S was finished with a protecive locking well cap and 2.63' of 6" I.D. steel riser.
0			0-1'	CLAY: Reddish brown, abundant organic material, dry.
			1-18'	COBBLES: Weathered Arkosic Sandstone, reddish brown and light olive green in color, in reddish brown clay matrix, dry.
5				
10				
15				
			18-24	CLAY: Orangy brown, damp.
20				

AR300764

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 12-S
Total Depth: 100'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6"
Length: 36'/60'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/23/86

Sketch Map

Notes: Open borehole 60'-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			24-42'	SAND AND GRAVEL: Very coarse, well rounded, wet.
25				
30				
35				36': Installed 36' of 10" ID steel casing and drove into place.
40				
			42-48'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained, micaceous, trace reddish brown Arkosic Sandstone.
45				
			48-52'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, trace dark grey shale and siltstone.
50				

Environmental Resources Management

Drilling Log

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 12-S | Total Depth: 100' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: | Length: | Slot Size:
Casing: Dia.: 10"/6" | Length: 36'/60' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 9/23/86

Sketch Map

Notes: Open borehole 60'-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			52-69'	ARKOSIC SANDSTONE: Interbedded layers: light greyish green and dark green in color, fine to medium grained.
55				
60				60': Displacement grouted 60' of 6" ID steel casing and drove into place.
				63': Thin soft zone.
				64': Thin soft zone.
65				
				68': THIN SOFT ZONE.
			69-70'	SILTSTONE: Greyish green, soft, wet.
70			70-78'	ARKOSIC SANDSTONE: Dark green, fine to medium grained.
75				

AR300766

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 12-S
Total Depth: 100'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6"
Length: 36'/60'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/23/86

Sketch Map

Notes: Open borehole 60'-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			78-80'	SILTSTONE: Dark green to dark greyish green.
80			80-83'	ARKOSIC SANDSTONE: Reddish brown, fine to medium grained.
			83-88'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained.
85				
			88-92'	ARKOSIC SANDSTONE: White to tan, fine to medium grained. 88': THIN SOFT ZONE.
90				91': THIN SOFT ZONE.
			92-99'	ARKOSIC SANDSTONE: Dark green, fine to medium grained, micaceous. 94': Thin zone of white to tan arkosic sandstone.
95				
100			99-100'	ARKOSIC SANDSTONE: Light greyish green.
				TOTAL DEPTH = 100'

AR300767

Environmental Resources Management

Drilling Log

Project: Tyson's Site Owner:

Location: Upper Merion Twp. W.O. Number: 272-10

Well Number: 12-S Total Depth: 100' Diameter: 6"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: Length: Slot Size:

Casing: Dia.: 10"/6" Length: 36'/60' Type: Steel

Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer

Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/23/86

Sketch Map

Notes: Open borehole 60'-100'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well specifications:
				10" casing to 36'
				6" casing to 60'
				6" open borehole to 100'

AR300768

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 12-D
Total Depth: 185'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.: 10"/6" ID
Length: 29'/145'
Slot Size:
Casing: Dia.:
Length:
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well 12-D was finished with a protective locking well cap and 2.60' of 6" I.D. steel riser.
0			0-1'	CLAY: Reddish brown, abundant roots and organic material.
			1-18	COBBLES: Weathered reddish brown and light olive green Arkosic Sandstone in a reddish brown clay matrix.
5				
10				
15				
			18-24	CLAY: Orangy brown, with cobbles.
20				

AR300769

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 12-D | Total Depth: 185' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: | Length: | Slot Size:
Casing: Dia.: 10"/6" ID | Length: 29'/145' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoose | Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			24-29	SAND AND GRAVEL: Very coarse, well rounded, wet.
25				
				29': Installed 29' of 10" I.D. steel casing and drove into place.
30			29-33	SHALE: Dark reddish brown and dark reddish brown siltstone.
			33-39	ARKOSIC SANDSTONE: Olive green, fine to medium grained.
35				
			39-50	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, micaceous.
40				
45				
50			50-55	ARKOSIC SANDSTONE: Greyish green.

AR300770

Environmental Resources Management

Drilling Log

Project: Tyson's Site
Owner:
Location: Upper Merion Twp.
W.O. Number: 272-10
Well Number: 12-D
Total Depth: 185'
Diameter: 6"
Surface Elevation:
Water Level: Initial:
24-hrs.:
Screen: Dia.:
Length:
Slot Size:
Casing: Dia.: 10"/6" ID
Length: 29'/145'
Type: Steel
Drilling Company: Hawkins Well Drilling Co.
Drilling Method: Air Rotary/Hammer
Driller: Carl Perry
Log By: R. Hoose
Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55			55-68	ARKOSIC SANDSTONE: Light greyish green.
60				62-64': Soft zone.
65				66-68': Soft zone.
			68-80	ARKOSIC SANDSTONE: Dark green, fine to medium grained.
70				
75				76-78': Soft zone.

AR300771

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 12-D Total Depth: 185' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 29'/145' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-88	ARKOSIC SANDSTONE: Light greyish green.
85				
			88-89	SILTSTONE: Green, thinly bedded.
90			89-102'	ARKOSIC SANDSTONE: Light greyish green, fine to medium grained, micaceous.
95				96': Thin layer of grey shale.
100			102-109'	ARKOSIC SANDSTONE: Dark greyish green, fine to medium grained.

AR300772

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 12-D Total Depth: 185' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 29'/145' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
105				
			109-124'	ARKOSIC SANDSTONE: White to light grey, fine to medium grained.
110				
115				
120				
			124-127'	SILTSTONE: Dark grey to brownish grey.
125				
			127-130'	ARKOSIC SANDSTONE: Dark green, fine grained.
130			130-136'	ARKOSIC SANDSTONE: White to tan, fine grained.

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 12-D Total Depth: 185' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 29'/145' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
135			136-	
			137'	SILTSTONE: Dark grey to brownish grey.
			137-	
			140'	ARKOSIC SANDSTONE: White to tan, fine to medium grained.
140			140-	
			146'	SILTSTONE: Dark reddish brown.
145				145': Displacement grouted 145' of 6" I.D. steel casing and drove into place.
			146-	ARKOSIC SANDSTONE: Greyish green, fine to medium grained,
			150'	micaceous.
150			150-	
			154'	SHALE: Reddish brown.
			154-	
			156'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained.
155			156-	
			157'	SHALE: Reddish brown.
			157-	
			166'	ARKOSIC SANDSTONE: Greyish green.

AR300774

Environmental Resources Management **Drilling Log**

Project: Tyson's Site | Owner:
Location: Upper Merion Twp. | W.O. Number: 272-10
Well Number: 12-D | Total Depth: 185' | Diameter: 6"
Surface Elevation: | Water Level: Initial: | 24-hrs.:
Screen: Dia.: | Length: | Slot Size:
Casing: Dia.: 10"/6" ID | Length: 29'/145' | Type: Steel
Drilling Company: Hawkins Well Drilling Co. | Drilling Method: Air Rotary/Hammer
Driller: Carl Perry | Log By: R. Hoobe | Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
160				
165				
			166-167'	SHALE: Reddish brown.
			167-173'	ARKOSIC SANDSTONE: Reddish greyish brown and greyish green, fine grained, micaceous.
170				
			173-175'	SHALE: Reddish brown.
175			175-178'	SILTSTONE: Reddish brown.
			178-180'	ARKOSIC SANDSTONE: Greyish green, fine to medium grained.
180			180-185'	SILTSTONE: Dark reddish brown, micaceous, very soft.

AR300775

Environmental Resources Management **Drilling Log**

Project: Tyson's Site Owner:
Location: Upper Merion Twp. W.O. Number: 272-10
Well Number: 12-D Total Depth: 185' Diameter: 6"
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: 10"/6" ID Length: 29'/145' Type: Steel
Drilling Company: Hawkins Well Drilling Co. Drilling Method: Air Rotary/Hammer
Driller: Carl Perry Log By: R. Hoose Date Drilled: 9/19/86

Sketch Map

Notes: Open borehole 145'-185'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
185				TOTAL DEPTH = 185'
				Well specifications:
				10" casing to 29'
				6" casing to 145'
				6" open borehole to 185'

AR300776

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 1 OVA READING (PPM)	WELL 2-S OVA READING (PPM)	WELL 2-I OVA READING (PPM)	WELL 3-S OVA READING (PPM)	WELL 3-I OVA READING (PPM)	WELL 3-D OVA READING (PPM)
0 - 5	0	0	0	1.8	0	0
5 - 10	0	0	0	2	0	0
10 - 15	0	0	0	-	0	0
15 - 20	0	0	0	-	0	0
20 - 25	0	72*	0	-	0	5 & 7*
25 - 30	0	72*	0	-	0	200
30 - 35	0	-	0	-	35	-
35 - 40	0	40^ & 22*	0	-	0	10-50
40 - 45	0	8*	0	-	10	10 & 50**
45 - 50	0	-	1	-	5.5*	-
50 - 55	0	1** & 30-40	-	-	45	100
55 - 60	0		-	-	-	40
60 - 65	0		-		-	40
65 - 70	0		-		-	40-50
70 - 75	0		-		-	60
75 - 80	0		-		8	25* &100-150
80 - 85	0		-		1	325
85 - 90	0		-		-	-
90 - 95	0		2		1	95
95 - 100	0		2		0	-
100 - 105			2			100
105 - 110			2			-
110 - 115			0			-
115 - 120			0			-
120 - 125			0			-
125 - 130			0			1
130 - 135			0			-
135 - 140						1
140 - 145						-
145 - 150						1
150 - 155						0
155 - 160						
160 - 165						
165 - 170						
170 - 175						
175 - 180						
180 - 185						
185 - 190						
190 - 195						
195 - 200						
200 - 205						
205 - 210						
210 - 215						
215 - 220						
220 - 225						
225 - 230						
230 - 235						
235 - 240						
240 - 245						
245 - 250						

- Indicates that a reading was not recorded at this depth
^ Spike reading
* Head space from cuttings
** Headspace from water produced while drilling.

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 4-S OVA READING (PPM)	WELL 4-I OVA READING (PPM)	WELL 4-D OVA READING (PPM)	WELL 5-S OVA READING (PPM)	WELL 5-I OVA READING (PPM)	WELL 5-D OVA READING (PPM)
0 - 5	0	0	0	0	0	0
5 - 10	0	0	0	0	0	0
10 - 15	0	0	0	0	0	0
15 - 20	0	0	0	0	0	0
20 - 25	0	0	0	0	0	>20
25 - 30	1	1	1	-	0	50
30 - 35	-	2.5	1	-	55	80
35 - 40	-	1	1	-	-	-
40 - 45	-	1	1	-	200	-
45 - 50	-	-	1	55-60	90	-
50 - 55	-	1-2	1	55-60	60	50-60
55 - 60	-	-	1		-	40-50
60 - 65		-	2		40-50	-
65 - 70		-	2		-	-
70 - 75		-	2		40-45	-
75 - 80		-	-		60	>100
80 - 85		-	-		-	-
85 - 90		-	2.5		-	-
90 - 95		-	3.5		0	-
95 - 100		-	3		0	-
100 - 105		-	3.5		0	-
105 - 110		-	0		0	-
110 - 115			1		0	0
115 - 120			-		0	0
120 - 125			-		0	0
125 - 130			1			-
130 - 135			-			-
135 - 140			-			-
140 - 145			-			-
145 - 150			-			90
150 - 155			-			150 &10-90**
155 - 160			-			-
160 - 165			-			-
165 - 170			-			-
170 - 175			-			-
175 - 180						-
180 - 185						-
185 - 190						
190 - 195						
195 - 200						
200 - 205						
205 - 210						
210 - 215						
215 - 220						
220 - 225						
225 - 230						
230 - 235						
235 - 240						
240 - 245						
245 - 250						

- Indicates that a reading was not recorded at this depth
** Headspace from water produced while drilling

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 6-S OVA READING (PPM)	WELL 6-I OVA READING (PPM)	WELL 6-D OVA READING (PPM)	WELL 7-S OVA READING (PPM)	WELL 7-I OVA READING (PPM)	WELL 7-D OVA READING (PPM)
0 - 5	0	0	-	0	0	0
5 - 10	0	0	-	0	0	0
10 - 15	0	0	-	0	0	0
15 - 20	0	0	-	0	0	0
20 - 25	-	-	6.5-7*	0	0	0
25 - 30	-	-	>1000	-	-	1.5
30 - 35	25	-	40	-	-	-
35 - 40	5	-	60	-	-	-
40 - 45	200	-	10*	-	-	5
45 - 50	-	-	10*	-	-	-
50 - 55		>50	100-200	-	0	5
55 - 60		>50	-	-	-	-
60 - 65		>50	-	-	0	1
65 - 70		>50	-	-	-	-
70 - 75		>50	-	-	4.5	1.5
75 - 80		>50	150		-	-
80 - 85		>50	-		-	3
85 - 90		>50	<100		-	-
90 - 95		>50	-		-	-
95 - 100			-		-	-
100 - 105			700^		-	2
105 - 110			125*		-	-
110 - 115			50		-	5
115 - 120			-		-	-
120 - 125			0		-	4.5
125 - 130			7.5			-
130 - 135			-			3
135 - 140			5*			3
140 - 145			-			6
145 - 150			20*			-
150 - 155			-			-
155 - 160			-			-
160 - 165			-			-
165 - 170			-			-
170 - 175			6-7* & 40**			5.5
175 - 180						-
180 - 185						7.5
185 - 190						-
190 - 195						-
195 - 200						-
200 - 205						-
205 - 210						-
210 - 215						-
215 - 220						-
220 - 225						
225 - 230						
230 - 235						
235 - 240						
240 - 245						
245 - 250						

- Indicates that a reading was not recorded at this depth
^ Spike reading
* Headspace from cuttings
** Headspace from water produced while drilling

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 8-S OVA READING (PPM)	WELL 8-I OVA READING (PPM)	WELL 8-D OVA READING (PPM)	WELL 9-S OVA READING (PPM)	WELL 9-I OVA READING (PPM)	WELL 9-D OVA READING (PPM)
0 - 5	0	0	0	0	0	0
5 - 10	0	0	0	0	0	0
10 - 15	0	0	1	0	0	0
15 - 20	0	0	0	0	0	0
20 - 25	0	0	0	0	0	0
25 - 30	0	0	0	0	0	0
30 - 35	0	-	0	0	0	0
35 - 40	0	-	0	0	0	0
40 - 45	0	-	0	0	0	0
45 - 50	0	-	0	-	0	0
50 - 55	0	-	0	-	0	0
55 - 60	1	-	0	-	0	0
60 - 65		-	0	-	0	0
65 - 70		-	0	-	0	0
70 - 75		-	10	-	0	0
75 - 80		0	10		0	0
80 - 85		-	-		0	0
85 - 90		-	-		0	0
90 - 95		-	20		0	0
95 - 100		-	-		0	0
100 - 105		12	-		0	0
105 - 110		-	-		0	0
110 - 115		-	65		0	0
115 - 120		-	-		0	0
120 - 125		400 &400*	200		0	0
125 - 130		-	600		0	0
130 - 135		-	-		0	0
135 - 140			750		0	0
140 - 145			900		0	0
145 - 150			-		0	-
150 - 155			-		0	-
155 - 160			-		0	-
160 - 165			0			-
165 - 170			-			-
170 - 175			0			-
175 - 180			-			-
180 - 185			-			-
185 - 190						-
190 - 195						-
195 - 200						5-10
200 - 205						8
205 - 210						
210 - 215						-
215 - 220						-
220 - 225						-
225 - 230						-
230 - 235						
235 - 240						
240 - 245						
245 - 250						

- Indicates that a reading was not recorded at this depth
* Headspace from cuttings

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 10-S OVA READING (PPM)	WELL 10 - I OVA READING (PPM)	WELL 10 - D OVA READING (PPM)	WELL 10 - XD OVA READING (PPM)	WELL 11 - S OVA READING (PPM)	WELL 11 - I OVA READING (PPM)	WELL 11 - D OVA READING (PPM)
0 - 5	-	-	0	0	0	-	-
5 - 10	-	-	-	0	3.5	3.5	-
10 - 15	-	-	-	0	-	55	-
15 - 20	-	-	-	0	5	-	10
20 - 25	-	-	-	0.5	7.5	0.5	120
25 - 30	-	0	1	0.2	9	-	0
30 - 35	4	-	-	1.2	-	-	1
35 - 40	1- 3	3.5	-	15	28	20	-
40 - 45	8	3.5	10	12	45	100	15
45 - 50	5	5	-	25	-	320	140
50 - 55	-	12	1	18	28	30	-
55 - 60		20	-	16	-	-	30
60 - 65		16	-	-	38	-	34
65 - 70		175	20	300	-	-	-
70 - 75		20	70 - 100	95	100	150	160
75 - 80		10	-	80	-	-	300
80 - 85		16	-	60	5	82	-
85 - 90		-	-	80		-	20
90 - 95		15	-	170		340	-
95 - 100		-	100	-		-	1000
100 - 105		-	80	-		-	-
105 - 110		-	80	75		4	-
110 - 115		-	80	82		-	-
115 - 120		-	85	64		-	-
120 - 125		-	100	280		8.5	-
125 - 130		-	100	100		-	-
130 - 135		-	100	70		15	-
135 - 140			90	-		16	-
140 - 145			90	60		-	-
145 - 150			-	-		12	1000
150 - 155			100	62			-
155 - 160			100	50			250
160 - 165			80	50			-
165 - 170			95	55			-
170 - 175			90	-			-
175 - 180			95	92			-
180 - 185			-	92			-
185 - 190			3	92			-
190 - 195			4	75			-
195 - 200			-	92			-
200 - 205			2	-			-
205 - 210			-	-			-
210 - 215			-	-			-
215 - 220			-	-			2
220 - 225			0.2	-			
225 - 230				-			
230 - 235				-			
235 - 240				-			
240 - 245				-			
245 - 250				60			
250 - 255				92			
255 - 260				72			
260 - 265				-			
265 - 270				-			
270 - 275				-			
275 - 280				-			
280 - 285				1.6			
285 - 290				92			
290 - 295				94			
295 - 300				45			
300 - 305				-			

- Indicates that a reading was not recorded at this depth.

AR300781

Organic vapor readings obtained during bedrock monitoring well installation November, 1985-October, 1986.

APPROXIMATE DEPTH (FEET)	WELL 12-S OVA READING (PPM)	WELL 12-D OVA READING (PPM)
0 - 5	-	0
5 - 10	-	0
10 - 15	-	-
15 - 20	0.4	0
20 - 25	-	0
25 - 30	-	0.5
30 - 35	0.2	-
35 - 40	0.2	0
40 - 45	-	0
45 - 50	-	-
50 - 55	-	0
55 - 60	-	0
60 - 65	-	0
65 - 70	0	-
70 - 75	0.1	0
75 - 80	-	0
80 - 85	0	0
85 - 90	-	0
90 - 95	-	0
95 - 100	0	0
100 - 105		0.2
105 - 110		0
110 - 115		0
115 - 120		0.2
120 - 125		0
125 - 130		0.5
130 - 135		0
135 - 140		-
140 - 145		0
145 - 150		-
150 - 155		-
155 - 160		-
160 - 165		-
165 - 170		-
170 - 175		-
175 - 180		-
180 - 185		-
185 - 190		
190 - 195		
195 - 200		
200 - 205		

- Indicates that a reading was not recorded at this depth

Environmental Resources Management **Drilling Log**

Project: CIBA-GEIGY - Tyson's Owner:

Location: Upper Merion Twp. W.O. Number: 272-11-01

Well Number: SB-1 Total Depth: 57.8' Diameter: 4"

Surface Elevation: 108.2' Water Level: Initial: - 24-hrs.: 24.5'

Screen: Dia.: - Length: - Slot Size: -

Casing: Dia.: 4" Length: 26' Type: Steel

Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring

Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 2/25/87-

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	2/27/87 Description/Soil Classification (Color, Texture, Structures)
0				Reddish brown sandy SILT (0-4')
				Reddish brown clayey SILT with SAND (4-5'). Spoon sample at 5'
5				Red grading to brown grey clayey silty SAND (5-8').
				Blows=6-31-23-6.
				Perched water at 6'
				Brown sandy clayey SILT (8')
				Dark brown wet SAND (9')
10				Spoon sample at 10' Blows=6-2-21-7
				Reddish brown damp silty coarse SAND (10-12')
				Dark brown sandy SILT with cobbles (12-15')
15				Spoon sample at 15'. Blows=4-5-6-5. Dark brown clayey, sandy SILT grading to a reddish brown wet silty SAND with angular cobbles (15-17')
				Dark brown clayey, gravelly, sandy SILT (17-20')
20				Spoon sample at 20'. Blows=11-9-14-12
				Reddish brown coarse wet SAND (20-21.5')
				Weathered greenish-red coarse arkosic SANDSTONE (21.5-22.0')
				Dark brown silty SAND (22-25')
25				

AR300783

Environmental Resources Management **Drilling Log**

Project CIBA-GEIGY - Tyson's Owner

Location Upper Merion Twp. W.O. Number 272-11-01

Well Number SB-1 Total Depth 57.8' Diameter 4"

Surface Elevation 108.2' Water Level: Initial - 24-hrs. 24.5'

Screen: Dia. - Length - Slot Size -

Casing: Dia. 4" Length 26' Type Steel

Drilling Company PA Drilling Drilling Method hollow stem auger/coring

Driller Bryan Adams Log By J.Schiferle Date Drilled 2/25/87-

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	2/27/87 Description/Soil Classification (Color, Texture, Structures)
25				Refusal with spoon at 25'. Red and green weathered SANDSTONE (25-26')
				Set 4" steel casing at 26'
				Light green medium coarse SANDSTONE with clasts of quartz; (26-26.4') with fractures at 26.4'. Medium-dark green coarse arkosic SANDSTONE (26.4-29') Dark green soft arkosic stained SANDSTONE with quartz rich clasts (29-29.8')
30				Medium to dark green med-coarse SANDSTONE (29.8-33.2'). Yellowish brown medium-coarse fractured arkosic SANDSTONE (33.2-35.2')
35				Green/red/brown SILT with sand; mottled/soft (35.2-35.5'). Red and green (crumbled) SILT/CLAYSTONE (35.5-36.2'), Soft. Light green SILT with sand and clay, soft (36.2-36.8') Yellowish green medium to coarse SANDSTONE, fractured, stained (36.8-37.1') Light green SILT with sand and clay (37.1-37.3') Green coarse arkosic SANDSTONE with quartz pebbles and vertical fractures (37.3-37.8') Medium green coarse arkosic SANDSTONE with quartz clasts (37.8-38.3') Dark green coarse arkosic SANDSTONE with abundant pebbles (composed of quartz and orthoclase), vertical fracture zone (38.3-40.4'). Soft zone approximately 40', possible clay or silt zone.
40				

AR300784

Environmental Resources Management **Drilling Log**

Project CIBA-GEIGY - Tyson's Owner

Location Upper Merion Twp. W.O. Number 272-11-01

Well Number SB-1 Total Depth 57.8' Diameter 4"

Surface Elevation 108.2' Water Level: Initial - 24-hrs. 24.5'

Screen: Dia. - Length - Slot Size -

Casing: Dia. 4" Length 26' Type Steel

Drilling Company PA Drilling Drilling Method hollow stem auger/coring

Driller Bryan Adams Log By J.Schiferle Date Drilled 2/25/87-

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	2/27/87 Description/Soil Classification (Color, Texture, Structures)
				Yellowish green coarse arkosic SANDSTONE with clasts of orthoclase and quartz, fractured (44.7-47.8')
45				
				Greyish/green/coarse arkosic SANDSTONE, becoming coarser with depth (47.8-49.2')
50				Dark green MUDSTONE, thin lenses of silt, soft to very soft (50.2-50.5)
				Greyish green coarse arkosic SANDSTONE, quartz clasts dominate fractured (50.5-56.5'). Fracture stained dark and red (rust colored)
55				Grey green coarse conglomeratic SANDSTONE (quartz clasts dominate), obvious iron staining (56.5-57.8')
				Hole reamed with 4" roller bit.
60				
				Well Specifications:
				Total Depth = 57.8'
				4" steel casing to 26'. Open borehole to 57.8'.

AR300785

Environmental Resources Management

Drilling Log

Project: CIBA-GEIGY - Tyson's Owner:

Location: Upper Merion Twp. W.O. Number: 272-11-01

Well Number: SB-2 Total Depth: 40' Diameter: 4"

Surface Elevation: 107.6' Water Level: Initial: - 24-hrs.: 24'

Screen: Dia.: - Length: - Slot Size: -

Casing: Dia.: 4" Length: 10.8' Type: Steel

Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring

Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 3/2/87 -

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	3/3/87 Description/Soil Classification (Color, Texture, Structures)
0				Dark reddish brown silty fine SAND with some gravel (1-3')
				Brown silty fine SAND with abundant angular gravel (3-5')
5				Reddish brown coarse SAND (with abundant K-FELDSPAR) with angular white gravel (5-6')
				Reddish brown sandy SILT with angular/subangular gravel consisting of light green arkosic sandstone (6-7')
				Red/brown SILT with clay and sand (7-10'), dry
10				Refusal with spoon at 10'. Set 4" steel casing at 10.8'. Water at 11'.
				Grey/brown coarse arkosic SANDSTONE with biotite (fractured, weathered and stained (10.8-11.4'). Weathered light green coarse arkosic SANDSTONE (fractured at 12.4'), (11.4-12.8'). Coarse green arkosic SANDSTONE with gravel consisting of quartz (12.8-13.3'). Fractured coarse green SANDSTONE with fibers/roots? present (13.3-13.9')
15				Vertically fractured light green coarse SANDSTONE (13.9-16.1'). An iridescent shine observed at 16.1'. Light green coarse arkosic SANDSTONE; stained along vertical fractures, quartz pebbles present (16.1-17.5'). Highly weathered/fractured quartz; some staining (17.5-17.8'). Highly weathered/fractured red/brown coarse SANDSTONE mixed with red soft CLAY (17.8-18'). Highly weathered very coarse green SANDSTONE with multiple fractures and lenses of red
20				SILTSTONE at 19.6' (18-20.4').

AR300706

Environmental Resources Management **Drilling Log**

Project: CIBA-GEIGY - Tyson's Owner:
Location: Upper Merion Twp. W.O. Number: 272-11-01
Well Number: SB-2 Total Depth: 40' Diameter: 4"
Surface Elevation: 107.6' Water Level: Initial: - 24-hrs.: 24'
Screen: Dia.: - Length: - Slot Size: -
Casing: Dia.: 4" Length: 10.8' Type: Steel
Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring
Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 3/2/87 - 3/3/87

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
20				Brown coarse SANDSTONE with a reddish brown horizontal CLAY seam a 20.8' (20.4-20.9') Dark green coarse SANDSTONE (stained vertical fractures) (20.9-24.4')
				Light brown/grey SANDSTONE (24.4-25.7').
25				Highly weathered/fractured coarse green SANDSTONE with quartz gravel (25.7-26.5'). Horizontally fractured dark green SANDSTONE (26.5-30')
30				Pink and green arkosic SANDSTONE (30-31'). Highly weathered and fractured brown SANDSTONE with horizontal clay pockets (31-31.7'). Dark green arkosic SANDSTONE with stained vertical fractures (31.7-34'). Green/brown arkosic SANDSTONE (stained and weathered at 36')
35				with quartz pebbles (34-37').
				Highly fractured green arkosic SANDSTONE with quartz and K-FELDSPAR rich gravel (37-39'). Brown coarse SANDSTONE with abundant quartz gravel; fractured (39-39.8')
40				Light green, K-FELDSPAR and biotite-rich, coarse, soft SANDSTONE; weathered (39.8-40.0'). Hole reamed with 4" roller bit.
				Well Specifications: Total Depth = 40'. 4" steel casing to 10.8'. Open borehole to 40'.

AR300787

Environmental Resources Management

Drilling Log

Project: CIBA-GEIGY - Tyson's Owner:

Location: Upper Merion Twp. W.O. Number: 272-11-01

Well Number: SB-3 Boring Total Depth: 42' Diameter: 4"

Surface Elevation: 108.0' Water Level: Initial: - 24-hrs.: -

Screen: Dia.: - Length: - Slot Size: -

Casing: Dia.: - Length: - Type: -

Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring

Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 3/2/87 -

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	3/3/87 Description/Soil Classification (Color, Texture, Structures)
0				Reddish brown silty fine SAND (moist) (0-5')
5				Dark brown silty SAND (5-7')
				Black SILT/fine SAND (7-9') very dark but did not appear to be "sludge". (moist)
10				Black SILT/fine SAND-wet (9-10'). Spoon at 10'. Blows=2,2,7, 13. Black sandy SILT (10-12'). Black sandy & clayey SILT, wet (12-13'). At 13' a thin lense of reddish SAND. Black sandy clayey SILT, moist-not wet (13-16')
15				Black silty & clayey, SAND, some gravel (moist) (16-20')
				Water at 20'.
20				Spoon at 20'. Blows-13-21-31-33. Reddish brown silty SAND, wet (20-21'). Weathered bedrock/reddish & green coarse SAND-STONE (21-22'). Augered 1.5'. Weathered reddish green coarse SANDSTONE (22.0 - 24.3'). Reddish coarse SANDSTONE rich in biotite (24.3-24.6').

AR300788

Environmental Resources Management

Drilling Log

Project: CIBA-GEIGY - Tyson's Owner:

Location: Upper Merion Twp. W.O. Number: 272-11-01

Well Number: SB-3 Boring Total Depth: 42' Diameter: 4"

Surface Elevation: 108.0' Water Level: Initial: - 24-hrs.: -

Screen: Dia.: - Length: - Slot Size: -

Casing: Dia.: - Length: - Type: -

Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring

Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 3/2/87 -

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	3/3/87 Description/Soil Classification (Color, Texture, Structures)
25				Clay seam w/broken red/green coarse SANDSTONE (24.6-24.7')
				Brown/green coarse SANDSTONE w/qtz gravel. (24.7-25.1') Clay seam 25.1-25.2'. Grey/green vertically fractured SANDSTONE (25.2-26.1')
				Dark green arkosic SANDSTONE w/rounded gravel (26.1-26.9')
				Light green/grey coarse SANDSTONE w/cobbles (26.9-28')
				Horizontal clay seam w/weathered SANDSTONE (28-29.3')
30				Brown/green arkosic SANDSTONE, rust color stain (29.3-30.2').
				Heavily fractured brown green fine SANDSTONE (30.2-30.4')
				Grey/brown coarse weathered arkosic SANDSTONE. Fracture at 30.4', weathered & stained (30.4-31.3').
				Grey/brown arkosic SANDSTONE (31.3-32.5')
				Green/red SANDSTONE w/clasts (32.5-33.3')
				Weathered green arkosic SANDSTONE (33.3-33.6')
				Reddish/green loose soft SANDSTONE (33.6-33.8')
35				Grey/green/brown arkosic SANDSTONE. Some small quartz pebbles - vertical fractures (33.8-35.2')
				Dark green/grey coarse SANDSTONE horizontal CLAY seam at 37.6' and 39.2' (35.2-39.5').
40				Coarse green to dark green arkosic SANDSTONE w/cobbles & vertical fractures (39.5-40.8') (soft zone at 40.8')
				Green coarse SANDSTONE with cobbles (40.8-41.5')

Environmental Resources Management

Drilling Log

Project: CIBA-GEIGY - Tyson's Owner:

Location: Upper Merion Twp. W.O. Number: 272-11-01

Well Number: SB-3 Boring Total Depth: 42' Diameter: 4"

Surface Elevation: 108.0' Water Level: Initial: - 24-hrs.: -

Screen: Dia.: - Length: - Slot Size: -

Casing: Dia.: - Length: - Type: -

Drilling Company: PA Drilling Drilling Method: hollow stem auger/coring

Driller: Bryan Adams Log By: J.Schiferle Date Drilled: 3/2/87 - 3/3/87

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Dark green arkosic SANDSTONE with abundant cobbles. Fracturing (horizontal) and black staining present (41.5-42.0')
				Boring Specifications:
				Augered to 22'
				Cored to 42.0'
				Open hole grouted.

AR300790