EPA Region 5 Records Ctr.
237842

PHOTO	2
ROLL/PICTURE	1/19
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING S,OIL IN WEST OVERFLOW
BY	ALLEN
DATE/TIME	8/27/87;1048
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	1
ROLL/PICTURE	1/16
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING SOUTH ALONG WESTERN OVERFLOW
BY	ALLEN
DATE/TIME	8/27/87;1041
FILM	35mm,NO ATTACHMENTS, 200 ASA

PHOTO	5
ROLL/PICTURE	2/3
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING S AT MOWING ON LAGOON 4
BY	ALLEN
DATE/TIME	8/29/87;1429
FILM	35mm, NO ATTACHMENTS, 200 ASA

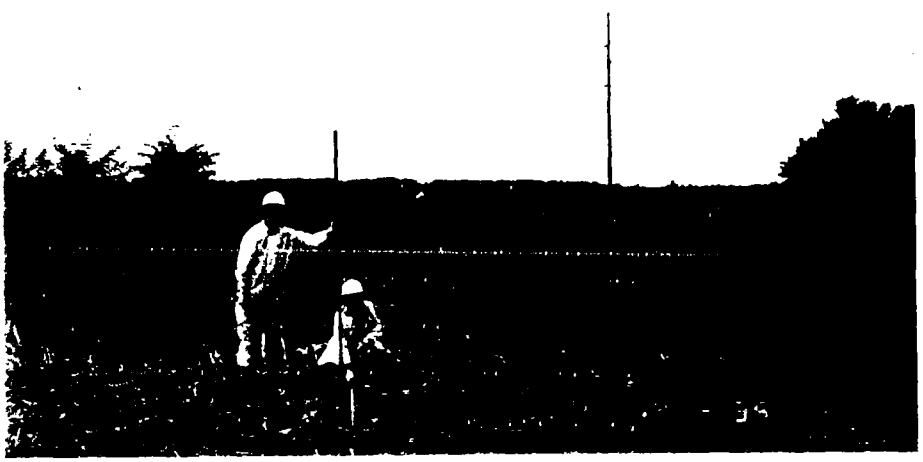

PHOTO	6
ROLL/PICTURE	2/6
SITE	GREINERS LAGOON
DESCRIPTION	TATS SURVEYING SAMPLE LOCATIONS
BY	BAKER
DATE/TIME	8/30/87;1435
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	3
ROLL/PICTURE	1/20
SITE	GREINERS LAGOON
DESCRIPTION	HEIGTH OF BRUSH,LAGOON 4
BY	ALLEN
DATE/TIME	8/27/87;1104
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	4
ROLL/PICTURE	1/24
SITE	GREINERS LAGOON
DESCRIPTION	MOWING ALONG LAGOON 4
BY	ALLEN
DATE/TIME	8/28/87;1424
FILM	35mm, NO ATTACHMENTS, 200 ASA

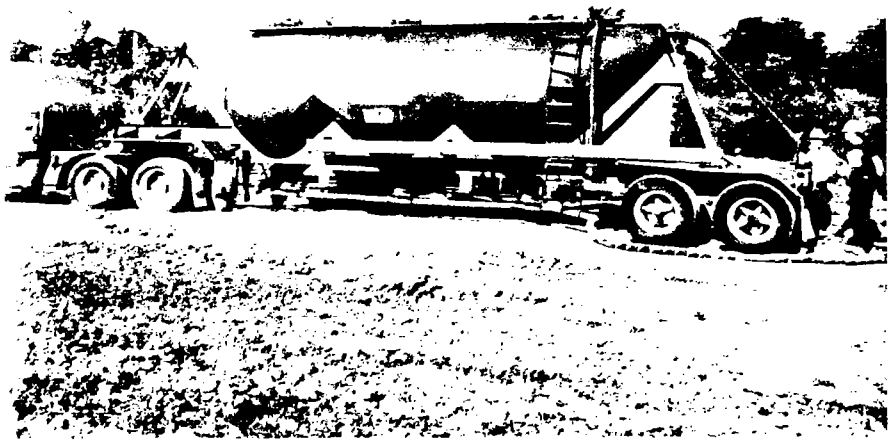

PHOTO	9
ROLL/PICTURE	2/12
SITE	GREINERS LAGOON
DESCRIPTION	CALGON TRUCK UNLOADING CARBON
BY	ALLEN
DATE/TIME	9/1/87;0935
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	10
ROLL/PICTURE	2/14
SITE	GREINERS LAGOON
DESCRIPTION	WATER DELIVERY FOR UNLOADING CARBON
BY	HOLLINGSWORTH
DATE/TIME	9/1/87;1058
FILM	35mm, NO ATTACHMENTS, 200 ASA

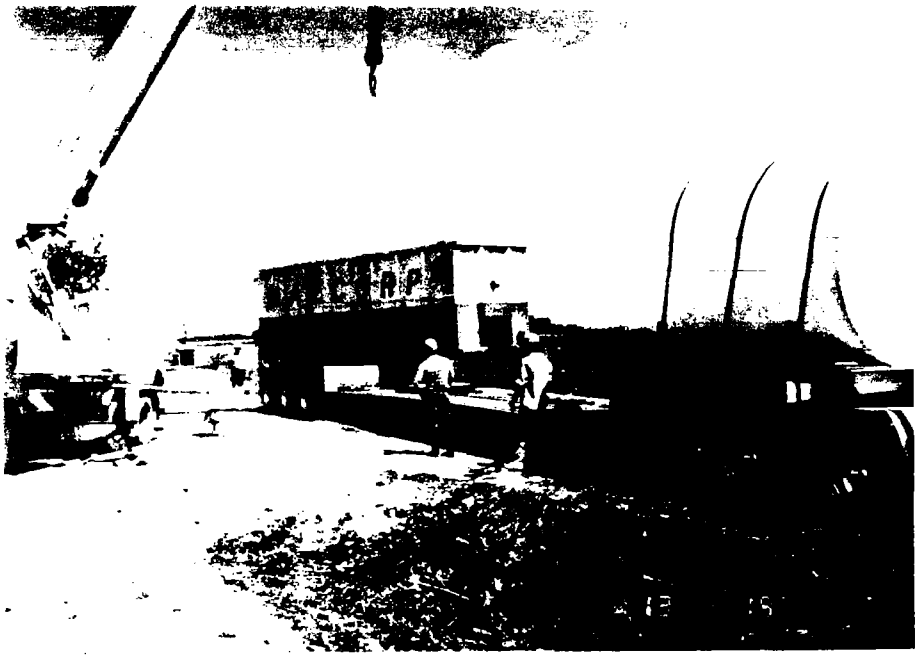

PHOTO	7
ROLL/PICTURE	2/10
SITE	GREINERS LAGOON
DESCRIPTION	UNLOADING TREATMENT EQUIPMENT
BY	BAKER
DATE/TIME	8/31/87;1319
FILM	35mm, NO ATTACHMENTS, 200 ASA

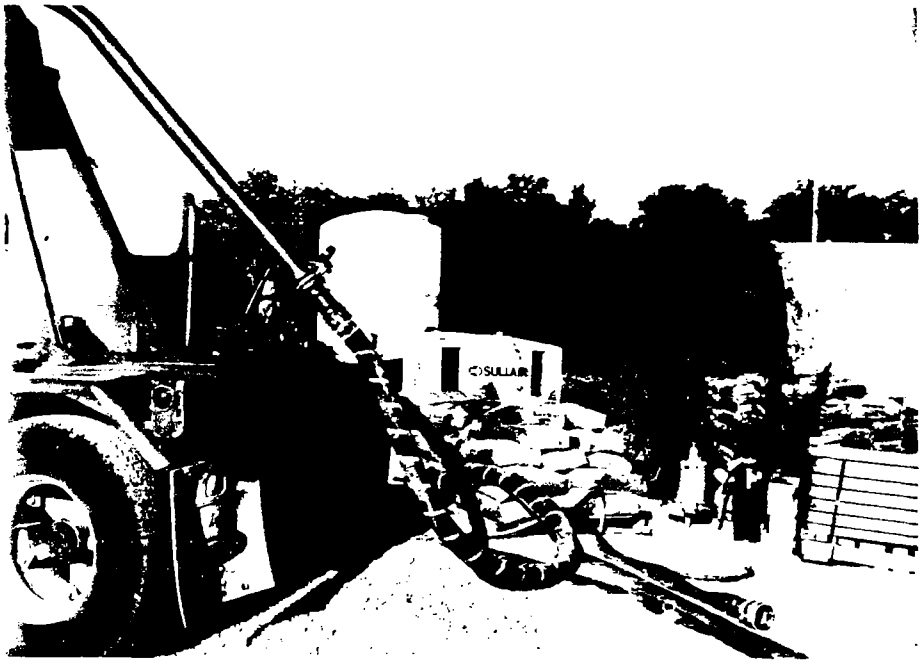

PHOTO	8
ROLL/PICTURE	2/11
SITE	GREINERS LAGOON
DESCRIPTION	BLOWING CARBON INTO CARBON CELL
BY	ALLEN
DATE/TIME	9/1/87;0912
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	13
ROLL/PICTURE	2/23
SITE	GREINERS LAGOON
DESCRIPTION	OIL SLUDGE ALONG ROAD NEAR TTMT AREA
BY	ALLEN
DATE/TIME	9/2/87;1548
FILM	35mm, NO ATTACHMENTS, 200 ASA

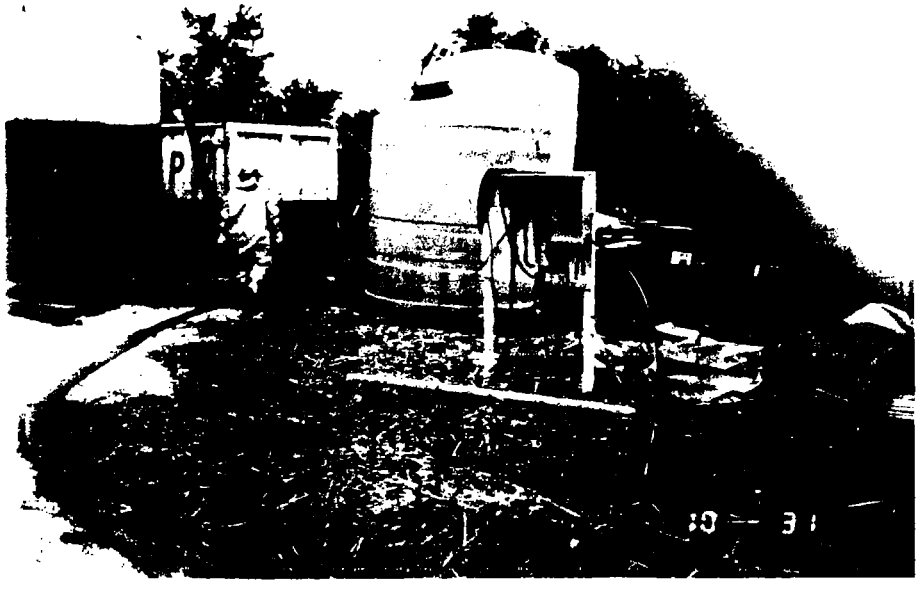

PHOTO	14
ROLL/PICTURE	3/1
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING WEST INTO TREATMENT AREA
BY	ALLEN
DATE/TIME	9/9/87;1031
FILM	35MM, NO ATTACHMENTS, 200 ASA

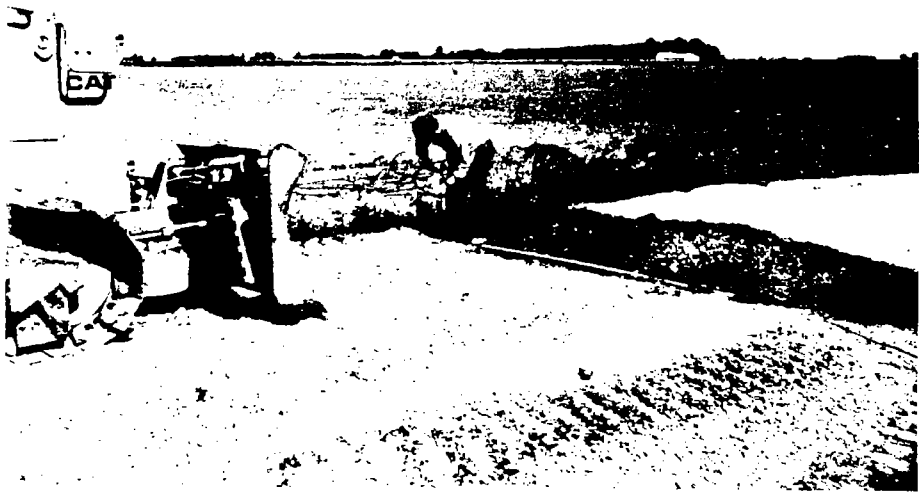

PHOTO	11
ROLL/PICTURE	2/15
SITE	GREINERS LAGOON
DESCRIPTION	LAYING PHONE LINE UNDER ROAD
BY	BAKER
DATE/TIME	9/1/87;1301
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	12
ROLL/PICTURE	2/20
SITE	GREINERS LAGOON
DESCRIPTION	TRASH PUMP AT LAGOON
BY	ALLEN
DATE/TIME	9/2/87;1406
FILM	35mm, NO ATTACHMENTS, 200 ASA

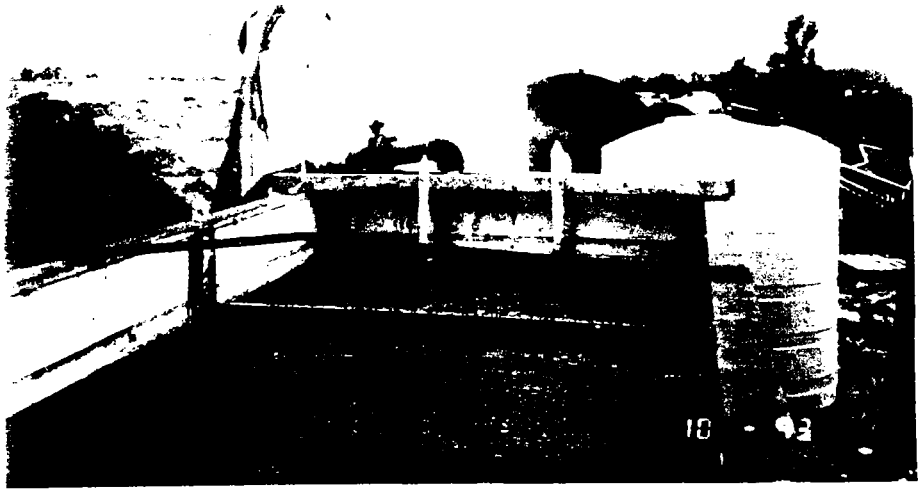

PHOTO 17
ROLL/PICTURE 3/5
SITE GREINERS LAGOON
DESCRIPTION LOOKING NORTH ACROSS CLARIFIER AND TTMT AREA

BY ALLEN
DATE/TIME 9/9/87;1043
FILM 35MM, NO ATTACHMENTS, 200 ASA

PHOTO 18
ROLL/PICTURE 3/14
SITE GREINERS LAGOON
DESCRIPTION UNKNOWN DEAD ANIMAL IN LAGOON, SW END

BY ALLEN
DATE/TIME 9/9/87;1124
FILM 35mm, NO ATTACHMENTS, 200 ASA

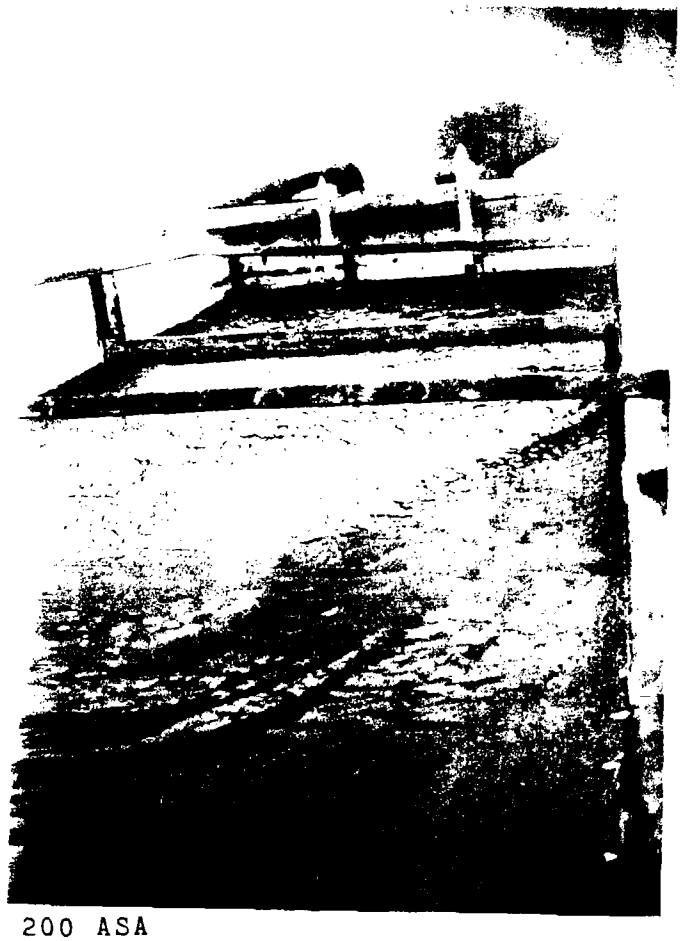

PHOTO 15
ROLL/PICTURE 3/2
SITE GREINERS LAGOON
DESCRIPTION OIL FLOC ON CLARIFIER

BY ALLEN
DATE/TIME 9/9/87;1038
FILM 35mm, NO ATTACHMENTS, 200 ASA

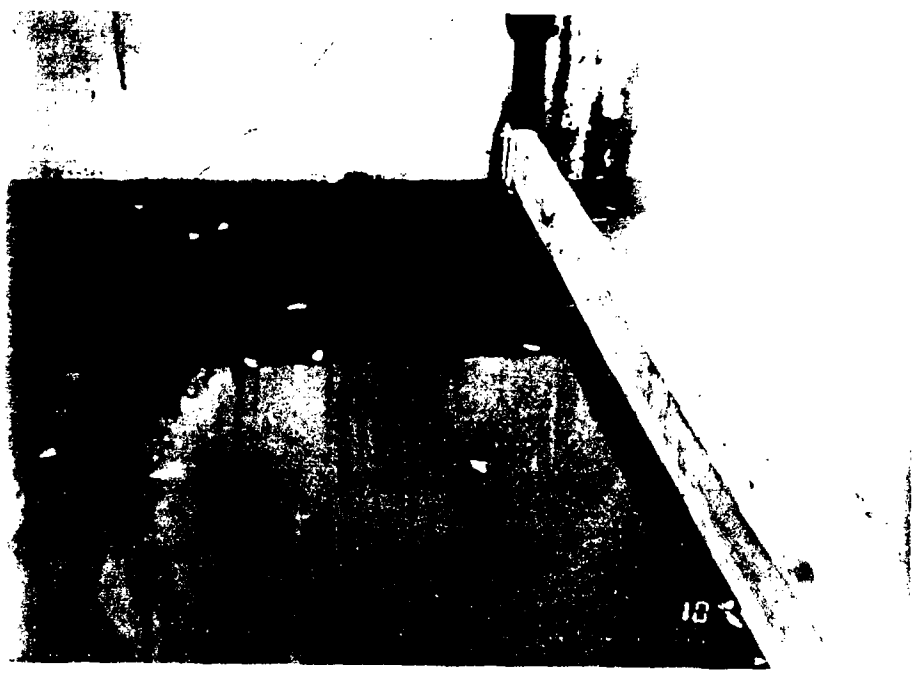

PHOTO 16
ROLL/PICTURE 3/3
SITE GREINERS ALGOON
DESCRIPTION EFFLUENT FROM CLARIFIER. RED COLOR

BY ALLEN
DATE/TIME 9/9/87;1039
FILM 35mm, NO ATTACHMENTS, 200 ASA

PHOTO	21
ROLL/PICTURE	3/21
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING SE AT WESTERN OVERFLOW AREA FROM
BY	ALLEN
DATE/TIME	9/9/87;1859
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	22
ROLL/PICTURE	3/22
SITE	GREINERS LAGOON
DESCRIPTION	OILY DEAD BLUE HERRON AT W BERM
BY	ALLEN
DATE/TIME	9/9/87;1906
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	19
ROLL/PICTURE	3/15
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NE ACROSS LAGOON AT INLET AREA
BY	ALLEN
DATE/TIME	9/9/87;1124
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	20
ROLL/PICTURE	3/19
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW ACROSS FIELD AT TTMT SYSTEM
BY	ALLEN
DATE/TIME	9/9/87;1625
FILM	35MM, NO ATTACHMENTS, 200 ASA

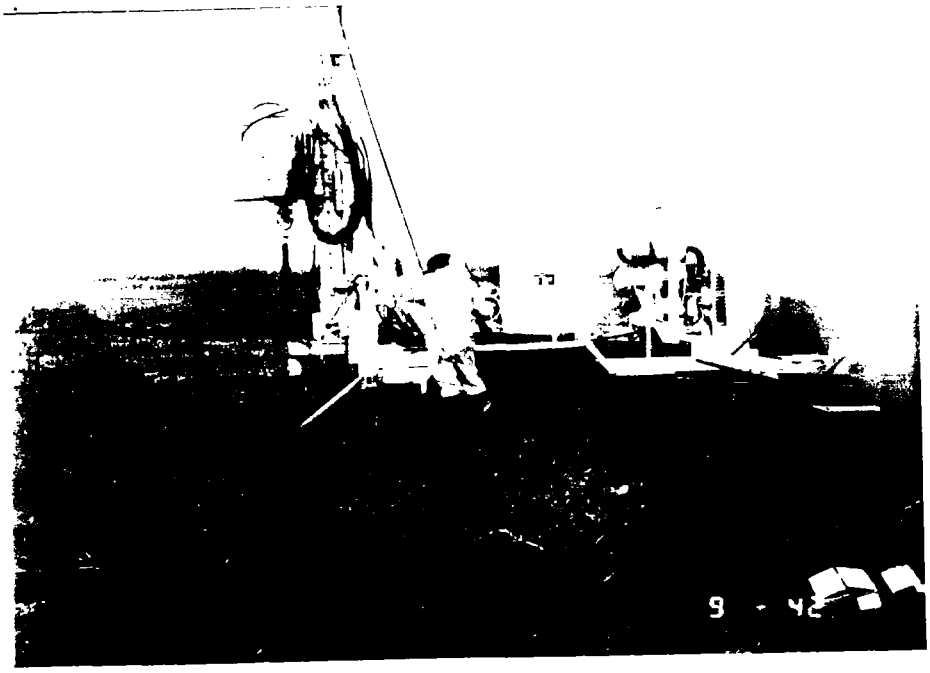

PHOTO	25
ROLL/PICTURE	4/11A
SITE	GREINERS LAGOON
DESCRIPTION	DRILLING HOLE #1, SE CORNER LAGOON4
BY	ALLEN
DATE/TIME	9/11/87;0942
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	26
ROLL/PICTURE	4/14A
SITE	GREINERS LAGOON
DESCRIPTION	DRILLING HOLE 6 ON LAGOON 4
BY	ALLEN
DATE/TIME	9/12/87;1238
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	23
ROLL/PICTURE	4/2A
SITE	GREINERS LAGOON
DESCRIPTION	FOAMING ON POLY SUMP. NOTE:BROWN EFFLUENT
BY	ALLEN
DATE/TIME	9/10/87;1047
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	24
ROLL/PICTURE	4/8A
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING WESTWARD INTO TREATMENT AREA, NIGHT
BY	BAKER
DATE/TIME	9/10/87;0003
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	29
ROLL/PICTURE	4/21A
SITE	GREINERS LAGOON
DESCRIPTION	LOKKING NW AT TREATMENT AREA FROM FIELD.
BY	ALLEN
DATE/TIME	9/14/87;1618
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	30
ROLL/PICTURE	5/14
SITE	GREINERS LAGOON
DESCRIPTION	SE CORNER LAGOON 3. NOTE FREEBOARD GAINED.
BY	ALLEN
DATE/TIME	9/16/87;1141
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	27
ROLL/PICTURE	4/16A
SITE	GREINERS LAGOON
DESCRIPTION	DRILLING HOLE 11 ON LAGOON 1&2
BY	ALLEN
DATE/TIME	9/13/87;1113
FILM	35mm, NO ATTACHMENTS, 200 ASA

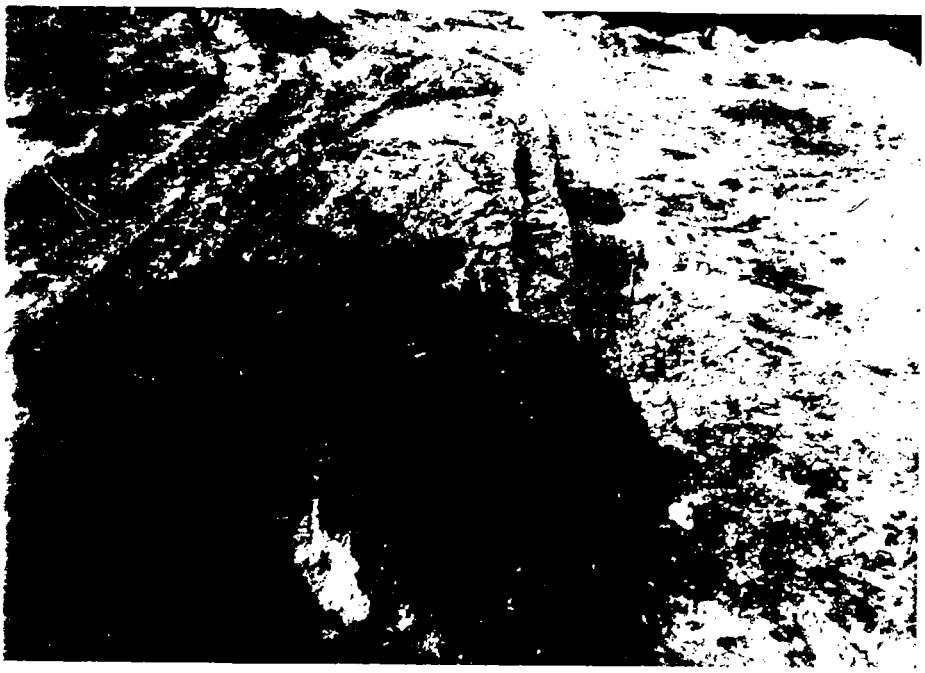

PHOTO	28
ROLL/PICTURE	4/19A
SITE	GREINERS LAGOON
DESCRIPTION	SLUDGE FROM DRILL HOLE 11.
BY	ALLEN
DATE/TIME	9/14/87;1030
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	33
ROLL/PICTURE	5/11
SITE	GREINERS ALGOON
DESCRIPTION	GEEN OOZE BEING PUMPED OUT OF CLARIFIER
BY	ALLEN
DATE/TIME	9/16/87;1139
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	34
ROLL/PICTURE	5/18
SITE	GREINERS LAGOON
DESCRIPTION	INSIDE OF SAND FILTER NOTE GREEN TINGE BEFORE SCRAPING
BY	ALLEN
DATE/TIME	9/17/87;0948
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	32
ROLL/PICTURE	5/9
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING WEST ACROSS N EDGE LAGOON 3.
BY	ALLEN
DATE/TIME	9/16/87;1136
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	31
ROLL/PICTURE	5/6
SITE	GREINERS ALGOON
DESCRIPTION	USING SLUDGE JUDGE IN CLARIFIER. ~3FEET.
BY	ALLEN
DATE/TIME	9/16/87;1133
FILM	35mm, NO ATTACHMENTS, 200 ASA

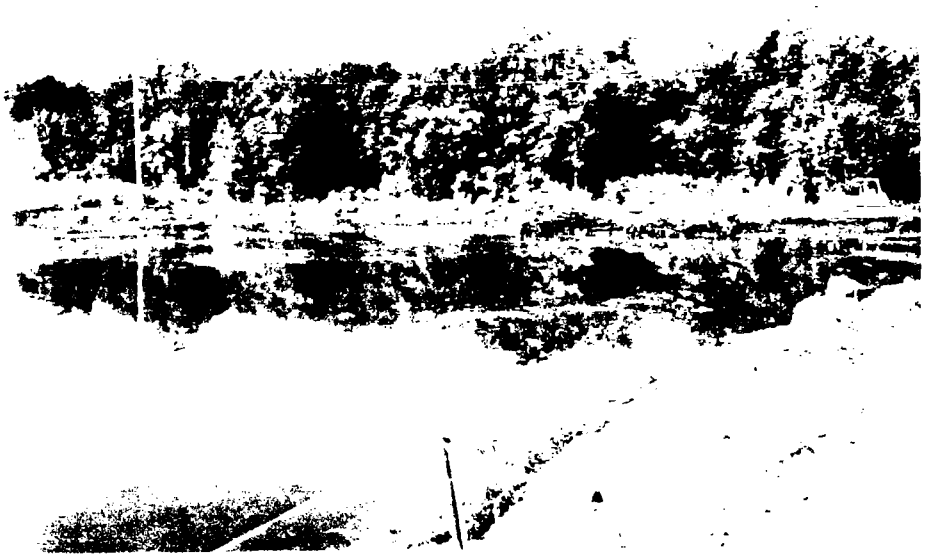

PHOTO	37
ROLL/PICTURE	6/5
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING WEST ACROSS LAGOON 3 AT WESTERN AREA BEING CONSOLIDATED.
BY	ALLEN
DATE/TIME	9/23/87;1143
FILM	35mm, NO ATTACHMENTS, 200 ASA

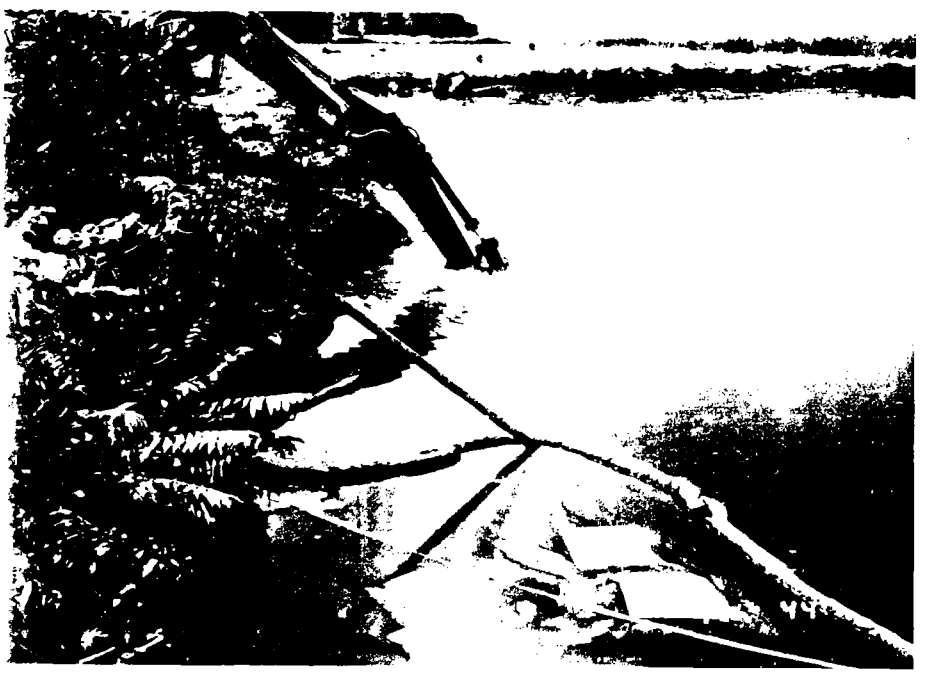

PHOTO	38
ROLL/PICTURE	6/7
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING SOUTH AT TRACKHOE DIGGING SUMP FOR WATER TREATMENT
BY	ALLEN
DATE/TIME	9/23/87;1144
FILM	35mm, NO ATTACHMENTS, 200 ASA

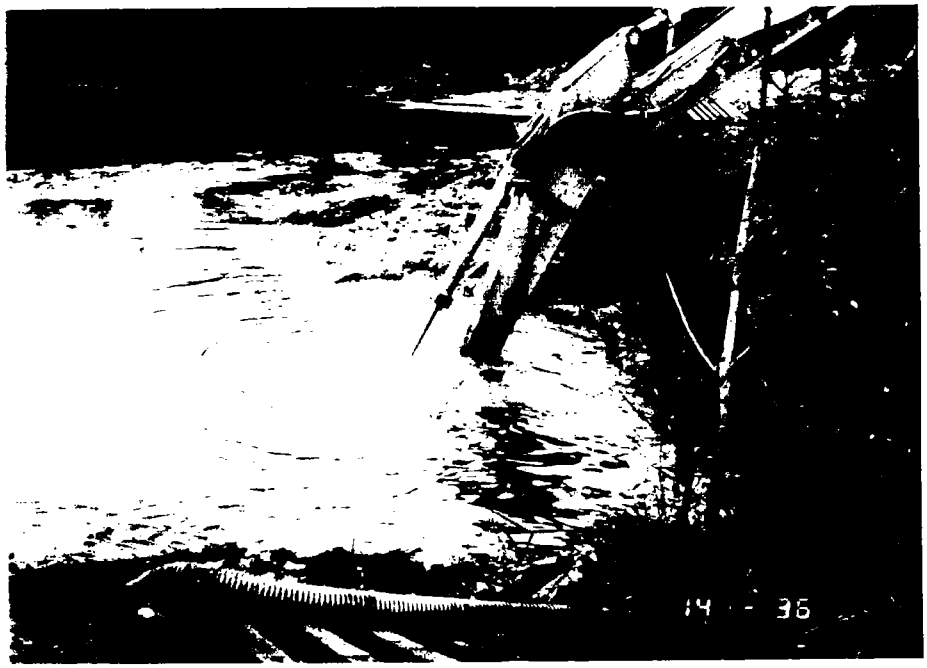

PHOTO	35
ROLL/PICTURE	5/21
SITE	GREINERS LAGOON
DESCRIPTION	DIGGING SUMP IN NE CORNER OF LAGOON
BY	ALLEN
DATE/TIME	9/18/87;1436
FILM	35mm, NO ATTACHMENTS, 200 ASA

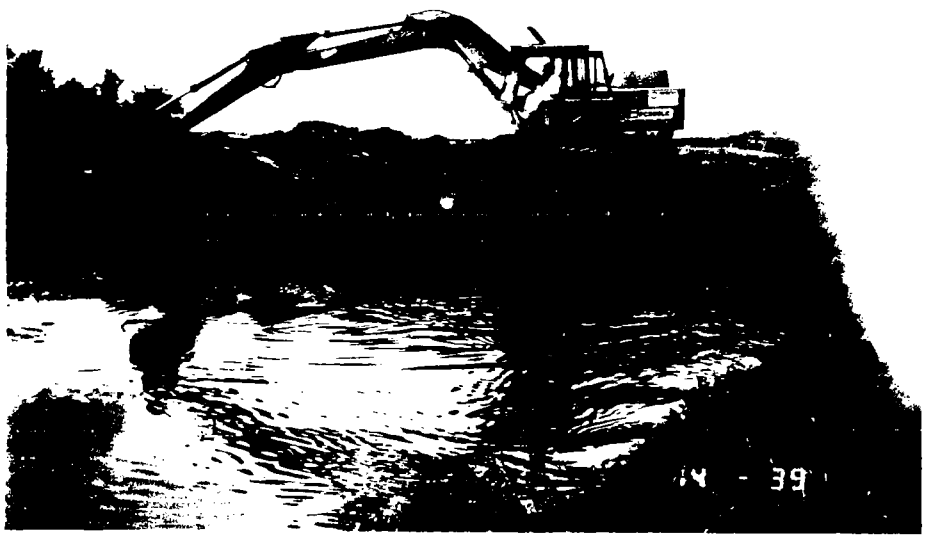

PHOTO	36
ROLL/PICTURE	5/22
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW AT TRACKHOE DIGGING SUMP AND TRENCH.
BY	ALLEN
DATE/TIME	9/23/87;1139
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	41
ROLL/PICTURE	6/15
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW ACROSS LAGOON. TANKS IN
BY	ALLEN
DATE/TIME	6/23/87;1154
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	39
ROLL/PICTURE	6/9
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NE AT NW CORNER OF LAGOON AFTER SOME CONSOLIDATION
BY	ALLEN
DATE/TIME	9/23/87;1149
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	40
ROLL/PICTURE	6/13
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NORTH ALONG WESTERN AREA OF
BY	ALLEN
DATE/TIME	9/23/87;1152
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	43
ROLL/PICTURE	6/19
SITE	GREINERS LAGOON
DESCRIPTION	D8 MOVING SOIL FROM WESTERN OVERFLOW INTO LAGOON
BY	ALLEN
DATE/TIME	9/24/87;1053
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	44
ROLL/PICTURE	6/20
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NORTH ACROSS WESTERN OVERFLOW AT MATERIAL BEING MOVED INTO LAGOON
BY	ALLEN
DATE/TIME	9/24/87;1104
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	42
ROLL/PICTURE	6/16
SITE	GREINERS LAGOON
DESCRIPTION	MUCK,SLUDGE AND MATERIAL IN LAGOON
BY	ALLEN
DATE/TIME	6/23/87;1156
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	47
ROLL/PICTURE	7/10
SITE	GRINERS LAGOON
DESCRIPTION	LOOKING NORTH AT CONSOLIDATION OF LAGOON
BY	BAKER
DATE/TIME	9/24/87;1502
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	48
ROLL/PICTURE	7/19
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING N ACROSS WEST EDGE OF LAGOON AFTER CONSOLIDATION
BY	BAKER
DATE/TIME	9/26/87;1214
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	45
ROLL/PICTURE	7/2
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW AT CONSLOIDATION OF WEST BANK
BY	BAKER
DATE/TIME	9/24/87;1323
FILM	35mm, NO ATTACHMENTS, 200 ASA

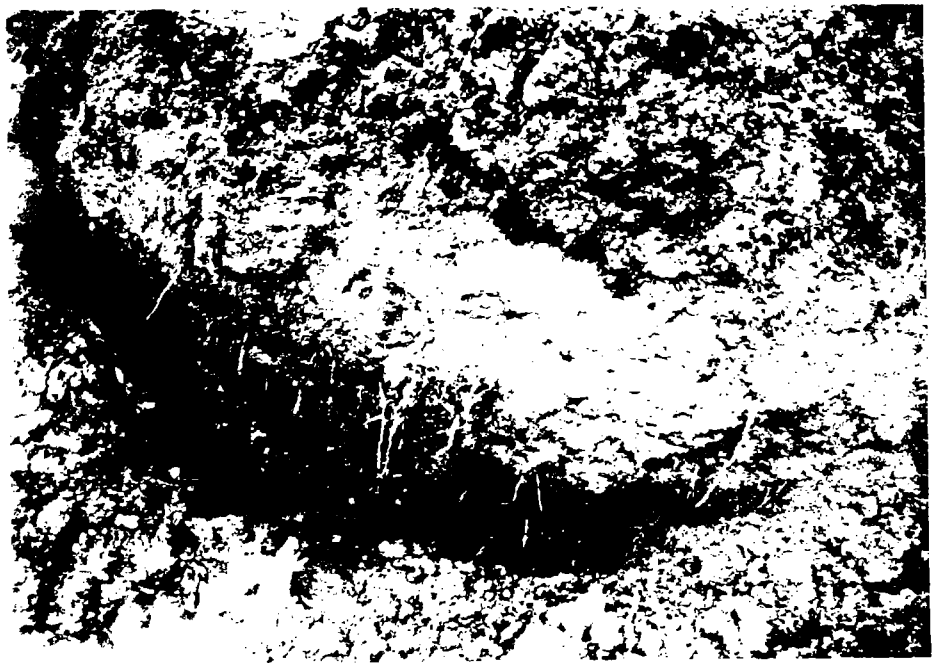

PHOTO	46
ROLL/PICTURE	7/5
SITE	GREINERS LAGOON
DESCRIPTION	SOIL PROFILE W/ YELLOW CLAY, GREY SILTY CLAY, AND SNDY AQUIFER UNDERLYING.
BY	BAKER
DATE/TIME	9/24/87;1327
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	51
ROLL/PICTURE	7/32
SITE	GREINERS LAGOON
DESCRIPTION	INSIDE CLARIFIER AFTER DECON
BY	ALLEN
DATE/TIME	9/28/87;0941
FILM	35mm, NO ATTACHMENTS, 200 ASA

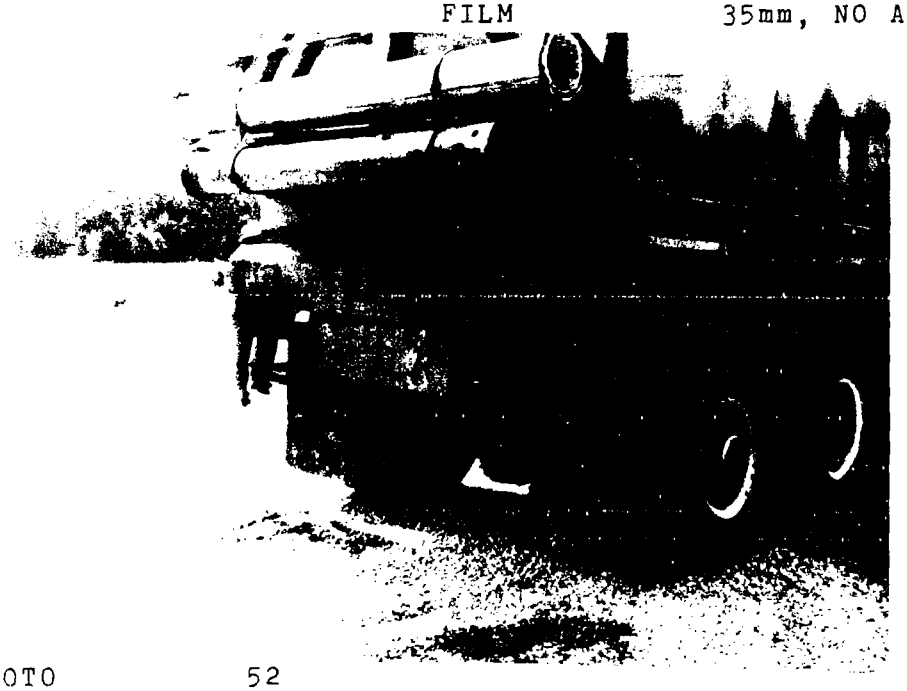

PHOTO	52
ROLL/PICTURE	8/1
SITE	GREINERS LAGOON
DESCRIPTION	VAC UNIT RENTED FROM EMC LEAKING FROM REAR SEAL
BY	ALLEN
DATE/TIME	9/28/87;1302
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	49
ROLL/PICTURE	7/20
SITE	GREINERS ALGOON
DESCRIPTION	PAINT SLUDGE PUMPING OUT OF THE CENTER OF LAGOON 1,2- HOLE 13
BY	BAKER
DATE/TIME	9/26/87;1232
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	50
ROLL/PICTURE	7/28
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW AT LAGOON SOLIDIFICATION WITH ONSITE SOILS
BY	ALLEN
DATE/TIME	9/28/87;0924
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	55
ROLL/PICTURE	8/10
SITE	GREINERS LAGOON
DESCRIPTION	SOLIDIFICATION PROCESS ON WESTERN EDGE
BY	ALLEN
DATE/TIME	9/29/87;0931
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	56
ROLL/PICTURE	8/12
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW AT SOLIDIFICATION PROCESS
BY	ALLEN
DATE/TIME	9/29/87;0940
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	53
ROLL/PICTURE	8/3
SITE	GREINERS LAGOON
DESCRIPTION	TREATMENT AREA, CARBON SPILLED OUT OF CELL
BY	ALLEN
DATE/TIME	9/28/87;1303
FILM	35MM, NO ATTACHMENTS, 200 ASA

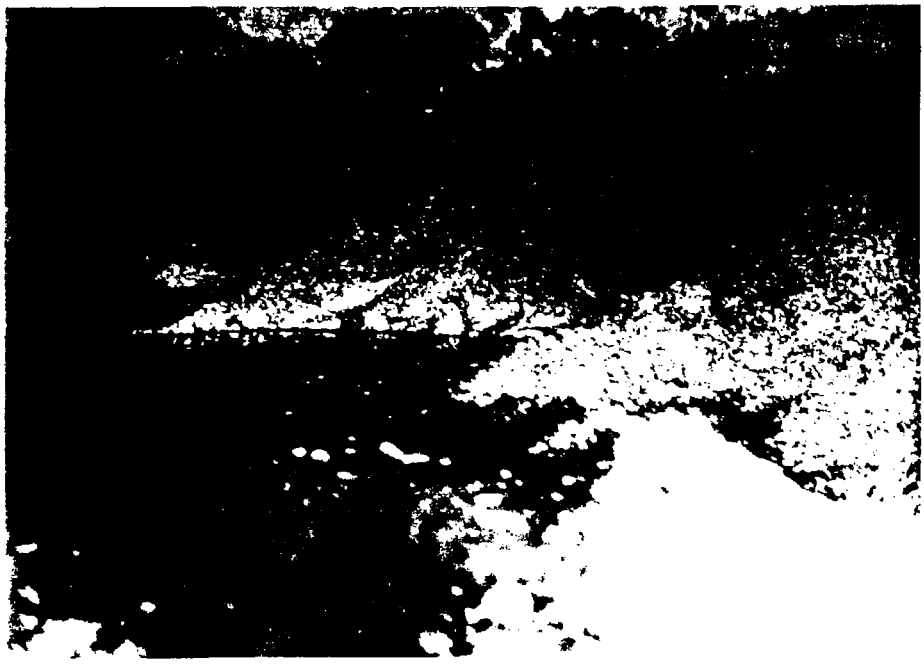

PHOTO	54
ROLL/PICTURE	8/7
SITE	GREINERS LAGOON
DESCRIPTION	INSIDE SAND FILTER DURING VAC PROCESS SITE
BY	ALLEN
DATE/TIME	9/29/87;0925
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	59
ROLL/PICTURE	9/2
SITE	GREINERS LAGOON
DESCRIPTION	LOADING H20 TREATMENT EQUIPMENT FOR DEMOB
BY	ALLEN
DATE/TIME	10-1-87;1013
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	60
ROLL/PICTURE	9/4
SITE	GREINERS LAGOON
DESCRIPTION	SOLIDIFICATION BEGINNING ON LAGOON WITH LIME.
BY	ALLEN
DATE/TIME	10/1/87;1111
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	57
ROLL/PICTURE	8/13
SITE	GREINERS LAGOON
DESCRIPTION	EMPTYING AND DECONNING VAC UNIT
BY	ALLEN
DATE/TIME	9/29/87;1231
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	58
ROLL/PICTURE	8/23
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NORTH AT SOIL CLEARING WEST OF TANKS
BY	ALLEN
DATE/TIME	9/30/87;1109
FILM	35MM, NO ATTACHMENTS, 200 ASA

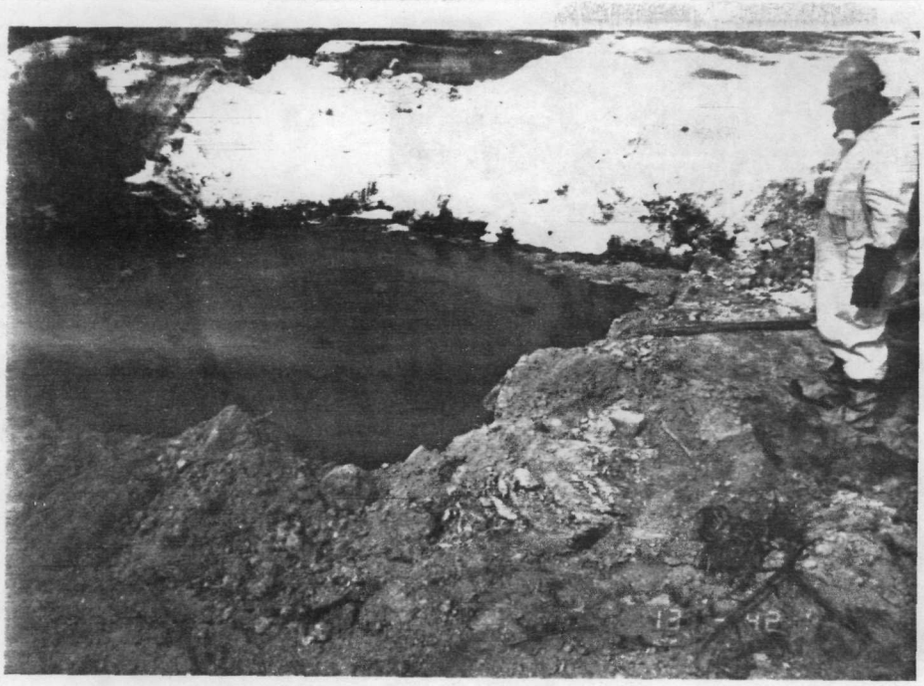

PHOTO	63
ROLL/PICTURE	9/13
SITE	GREINERS LAGOON
DESCRIPTION	OIL BEING PUMPED OUT OF TANKS INTO A PIT FOR SOLIDIFICATION
BY	BAKER
DATE/TIME	10/2/87;1342
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	64
ROLL/PICTURE	9/18
SITE	GREINERS LAGOON
DESCRIPTION	PUMPING OIL OUT OF TANKS INTO A PIT FOR SOLIDIFICATION
BY	BAKER
DATE/TIME	10/2/87;1344
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	61
ROLL/PICTURE	9/9
SITE	GREINERS LAGOON
DESCRIPTION	SOLIDIFYING OIL, SLUDGE AND WATER FROM LAGOON
BY	ALLEN
DATE/TIME	10/1/87;1158
FILM	35mm, NO ATTACHMENTS, 200 ASA

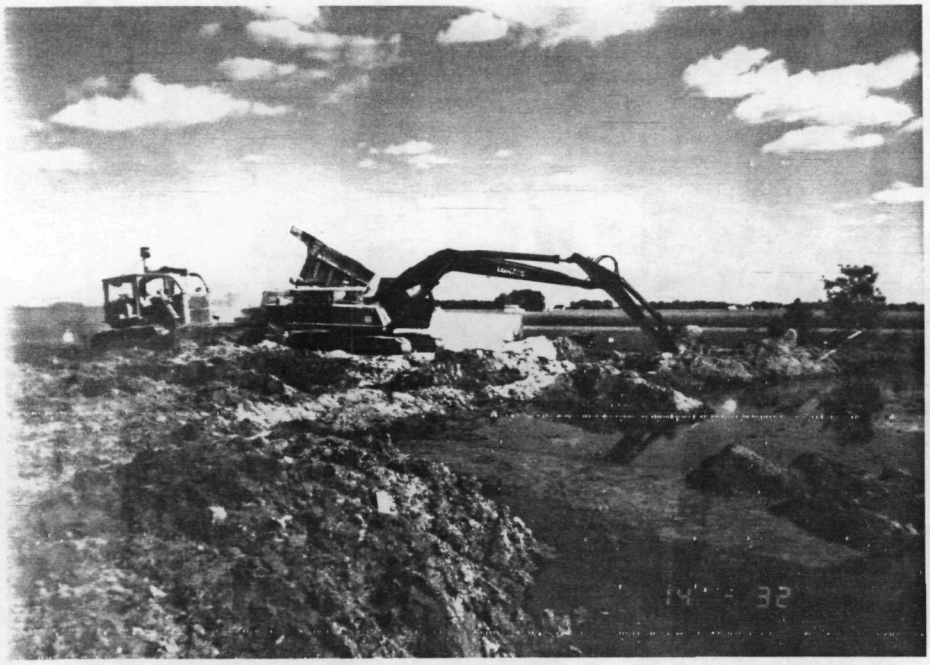

PHOTO	62
ROLL/PICTURE	9/10
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NE ACROSS LAGOON AT SOLIDIFICATION AND TRUCK DELIVERING LIME.
BY	ALLEN
DATE/TIME	10/1/87;1432
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	66
ROLL/PICTURE	9/23
SITE	GREINERS LAGOON
DESCRIPTION	SAMPLE TRENCH DUG IN AREA OF SAMPLE 10 LOOKING NW FROM LAGOON 4 AREA.
BY	BURK
DATE/TIME	10/6/87;1110
FILM	35mm, NO ATTACHMENTS, 200 ASA

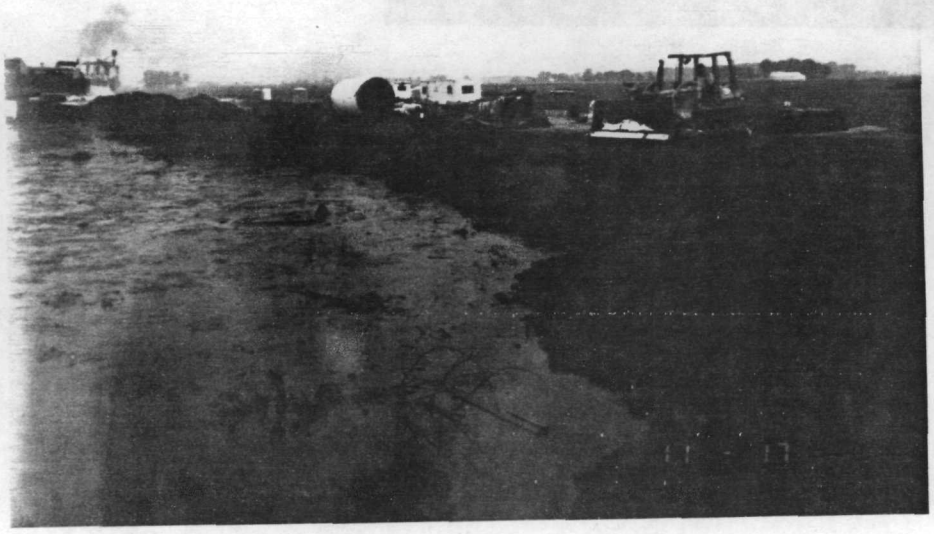

PHOTO	67
ROLL/PICTURE	9/25
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING N ALONG EAST EDGE OF LAGOON 3. BANKS BEING PUSHED INWARDS.
BY	ALLEN
DATE/TIME	10/6/87;1117
FILM	35mm, NO ATTACHMENTS, 200 ASA

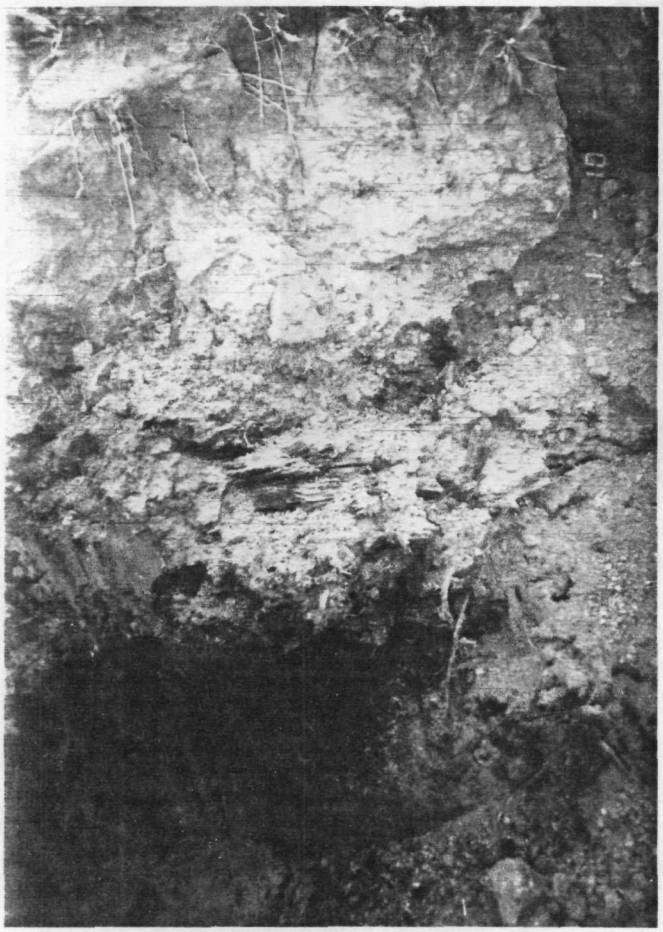

PHOTO	65
ROLL/PICTURE	9/21
SITE	GREINERS LAGOON
DESCRIPTION	SAMPLE TRENCH DUG AT SURFACE SOIL SAMPLE 10. NOTE STRATIFICATION
BY	BURK
DATE/TIME	10/6/87;1110
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	70
ROLL/PICTURE	10/3
SITE	GREINERS LAGOON
DESCRIPTION	SOLIDIFICATION PIT. LIME AND DIRT BEING MIXED WITH OIL
BY	ALLEN
DATE/TIME	10/7/87;1602
FILM	35MM, NO ATTACHMENTS, 200 ASA

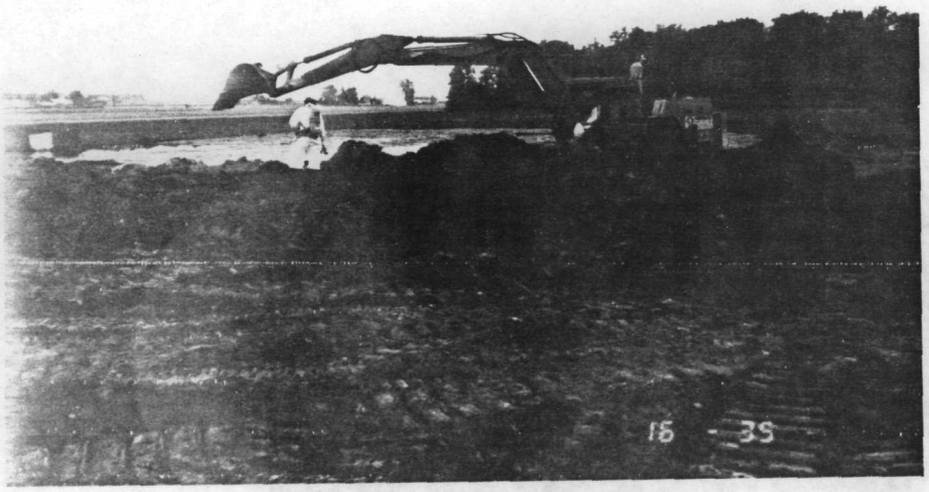

PHOTO	71
ROLL/PICTURE	10/8
SITE	GREINERS ALGOON
DESCRIPTION	KAMATSU SOLIDIFYING MATERIAL. TAT PROVIDING AIR MONITORING.
BY	BURK
DATE/TIME	10/19/87;1635
FILM	35mm, NO ATTACHMENTS, 200 ASA

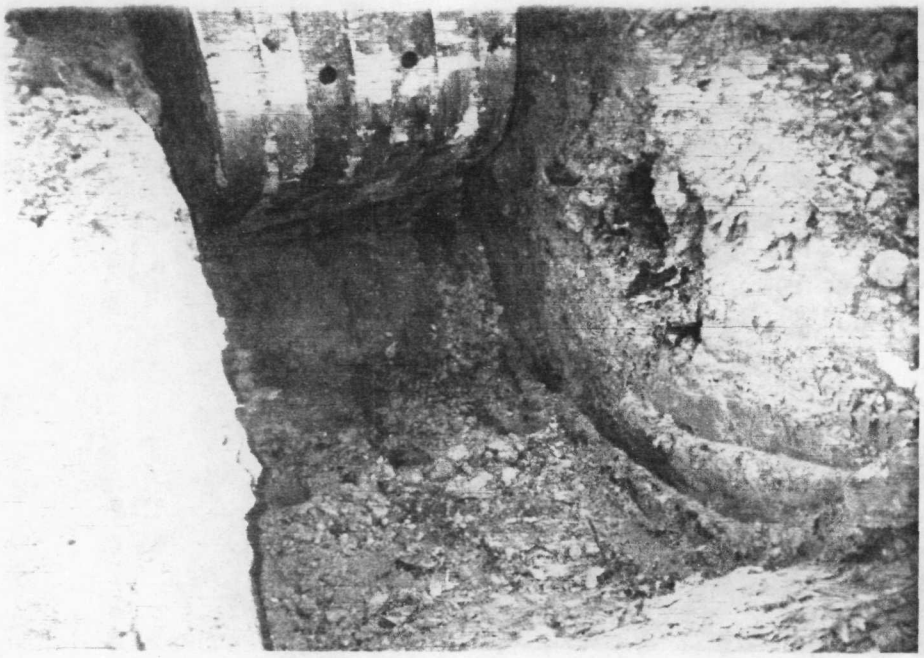

PHOTO	68
ROLL/PICTURE	9/28
SITE	GREINERS LAGOON
DESCRIPTION	SAMPLE TRENCH BEING DUG NEAR HOLE 8. NOTE STRATIFICATION
BY	ALLEN
DATE/TIME	10/6/87;1123
FILM	35MM, NO ATTACHMENTS, 200 ASA

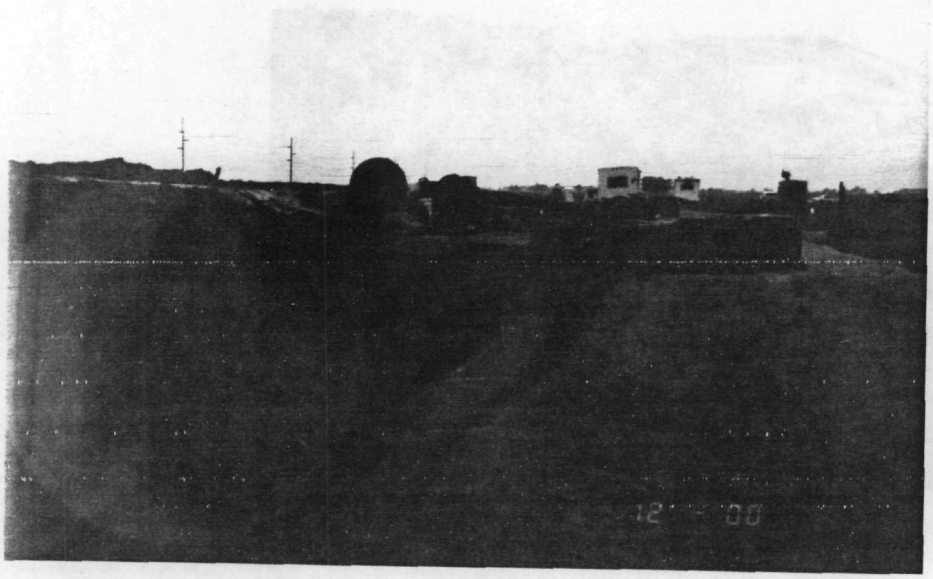

PHOTO	69
ROLL/PICTURE	9/35
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING N AT TREATMENT AREA BEING CLEARED. LAGOON 3 BEING SOLIDIFIED WITH MATERIAL.
BY	ALLEN
DATE/TIME	10/6/87;1200
FILM	35mm,NO ATTACHMENTS, 200 ASA

PHOTO 74
ROLL/PICTURE 10/21
SITE GREINERS LAGOON
DESCRIPTION LORAIN ADDING LIME TO SOLIDIFICATION PIT.
BY ALLEN
DATE/TIME 10/21/87;1502
FILM 35mm, NO ATTACHMENTS, 200 ASA

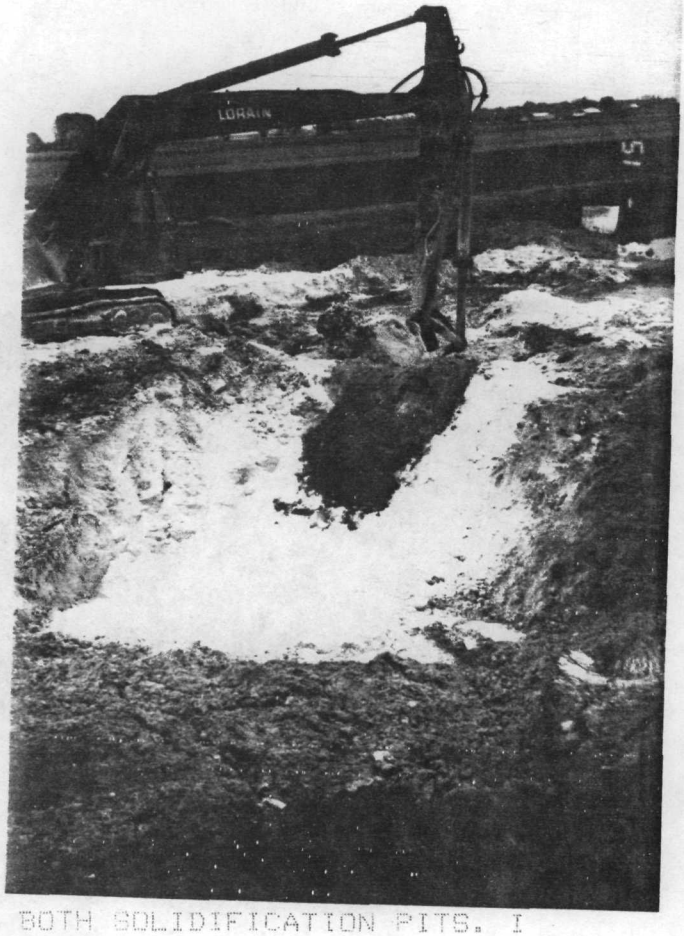

PHOTO 75
ROLL/PICTURE 10/22
SITE GREINERS LAGOON
DESCRIPTION LOOKING SE ACROSS BOTH SOLIDIFICATION PITS. I
FOREGROUND IS KAMATSU PIT.
BY ALLEN
DATE/TIME 10/21/87;1515
FILM 35mm, NO ATTACHMENTS, 200 ASA

PHOTO	72
ROLL/PICTURE	10/10
SITE	GREINERS LAGOON
DESCRIPTION	OIL BREACH ON SW CORNER OF LAGOON 3.
BY	ALLEN
DATE/TIME	10/19/87;1647
FILM	35mm, NO ATTACHMENTS, 200 ASA

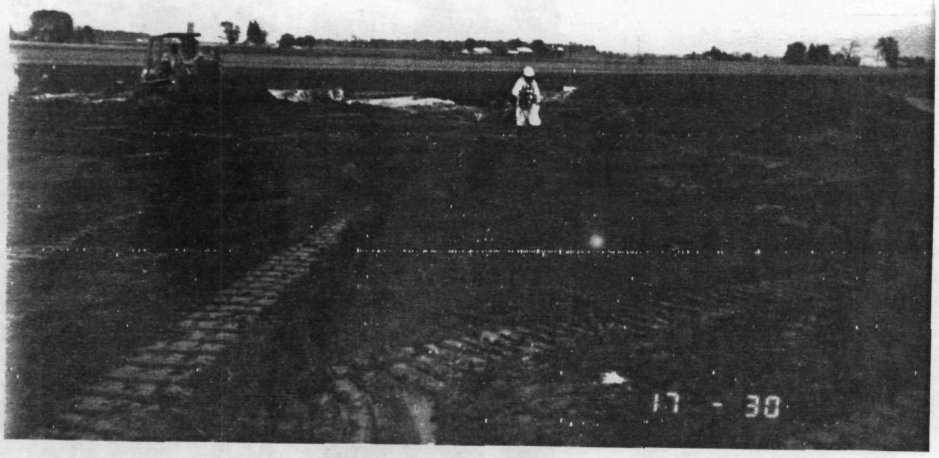

PHOTO	73
ROLL/PICTURE	10/17
SITE	GREINERS ALGOON
DESCRIPTION	LOOKING NE ACROSS LAGOON 1&2. AIR MONITORING WITH OVA.
BY	BURK
DATE/TIME	10/20/87;1730
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO 78
ROLL/PICTURE 11/4
SITE GREINERS LAGOON
DESCRIPTION SAMPLING IN TEST PIT __ON LAGOON 4
BY BURK
DATE/TIME 10/16/87;1548
FILM 35mm, NO ATTACHMENTS, 200 ASA

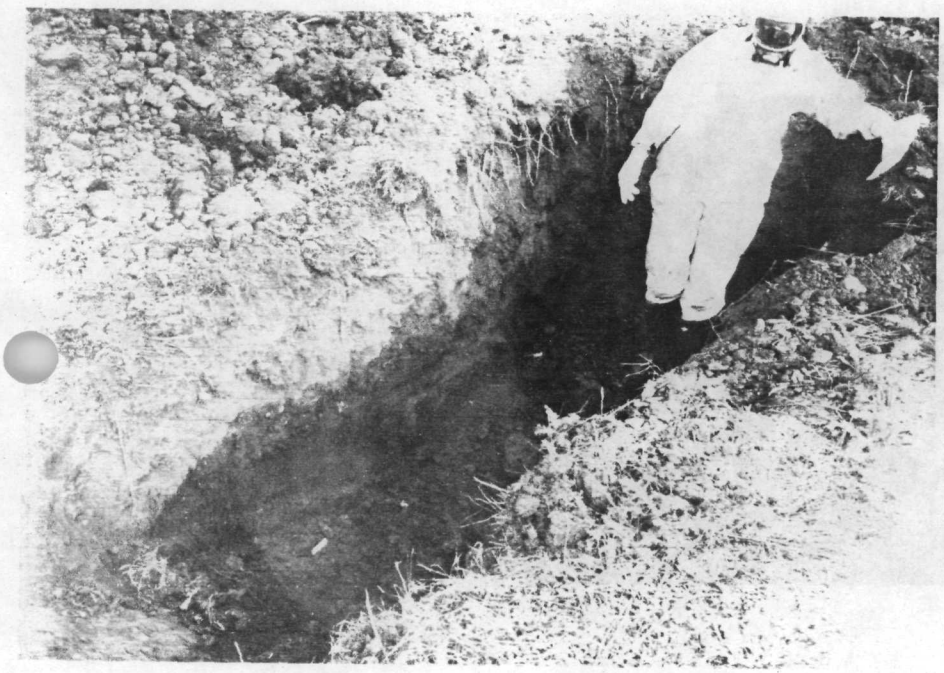

PHOTO 79
ROLL/PICTURE 11/5
SITE GREINERS LAGOON
DESCRIPTION SAMPLING IN TEST PIT___ ON LAGOON 4
BY BURK
DATE/TIME 10/26/87;1606
FILM 35mm, NO ATTACHMENTS, 200 ASA

PHOTO	76
ROLL/PICTURE	10/21/87;1522
SITE	GREINERS LAGOON
DESCRIPTION	OIL LEAKING OUT OF NW CORNER OF LAGOON 2 AND PONDING AT THE BOTTOM OF THE SLOPE.
BY	ALLEN
DATE/TIME	10/21/87;1522
FILM	35MM, NO ATTACHMENTS, 200 ASA

PHOTO	77
ROLL/PICTURE	11/3
SITE	GREINERS LAGOON
DESCRIPTION	TRACKHOE DIGGING SLUDGE ON SOUTH END OF LAGOON FOR SAMPLING
BY	ALLEN
DATE/TIME	10/26/87;1525
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	82
ROLL/PICTURE	11/17
SITE	GREINERS LAGOON
DESCRIPTION	TANK CUTTING. LOWER HALF OF WHITE TANK HAS BEEN REMOVED
BY	ALLEN
DATE/TIME	10/28/87;1332
FILM	35mm, NO ATTACHMENTS, 200 ASA

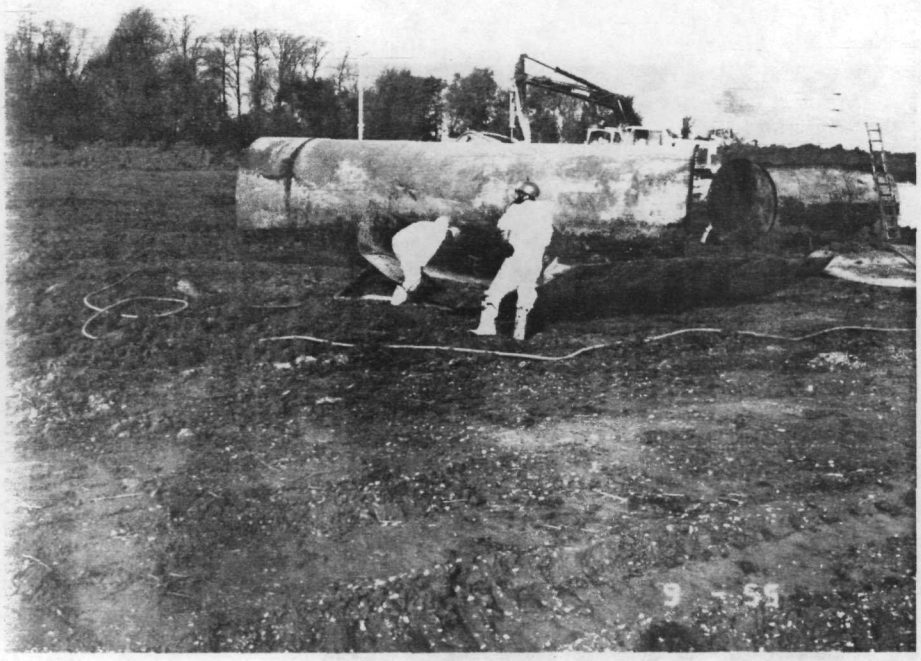

PHOTO	83
ROLL/PICTURE	11/21
SITE	GREINERS LAGOON
DESCRIPTION	CUTTING FLAT SHEET OF ONE TANK AND END AND OFF OF ANOTHER
BY	ALLEN
DATE/TIME	10/29/87;0955
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	80
ROLL/PICTURE	11/9
SITE	GREINERS LAGOON
DESCRIPTION	BEGINNING OF TANK CUTTING OPERATIONS WITH HYDRAULIC CUTTERS
BY	ALLEN
DATE/TIME	10/28/87;1044
FILM	35mm, NO ATTACHMENTS, 200 ASA

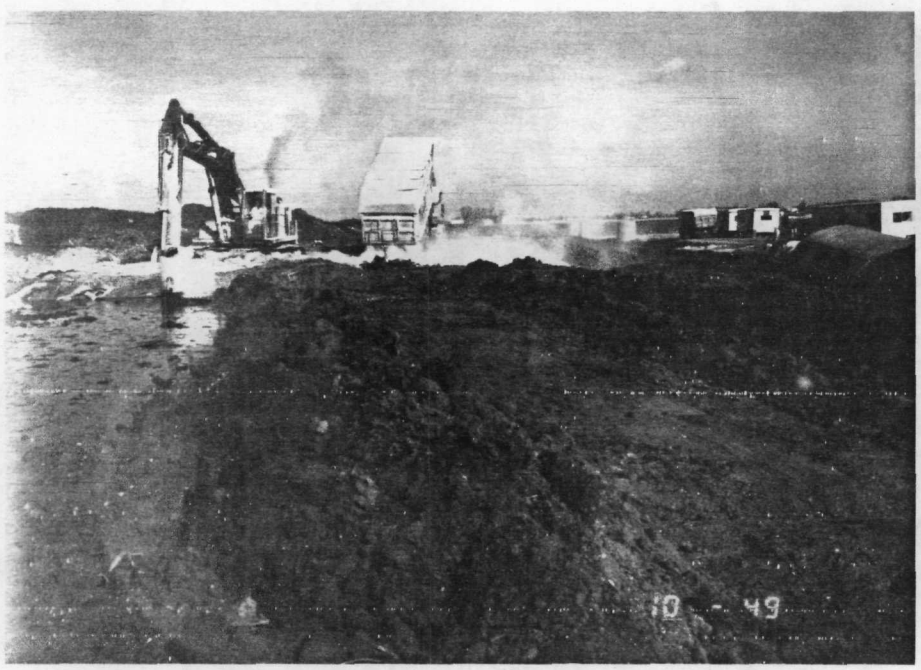

PHOTO	81
ROLL/PICTURE	11/10
SITE	GREINERS LAGOON
DESCRIPTION	SOLIDIFICATION AND UNLOADING LIME
BY	ALLEN
DATE/TIME	10/28/87;1049
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	86
ROLL/PICTURE	11/33
SITE	GREINERS LAGOON
DESCRIPTION	COMPLETING CUTTING OPERATIONS.
BY	ALLEN
DATE/TIME	10/29/87;1621
FILM	35mm, NO ATTACHMENTS, 200 ASA

PHOTO	87
ROLL/PICTURE	12/3A
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING SOUTH AT ROADWAY BEING SCRAPED
BY	BAKER
DATE/TIME	11/5/87;1641
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO 84
ROLL/PICTURE 11/23
SITE GREINERS LAGOON
DESCRIPTION PERSONNEL USING HYDRAULIC CUTTERS TO CUT ONSITE TANKS
BY ALLEN
DATE/TIME 10/29/87; ~~1137~~ 0955
FILM 35mm, NO ATTACHMENTS, 200 ASA

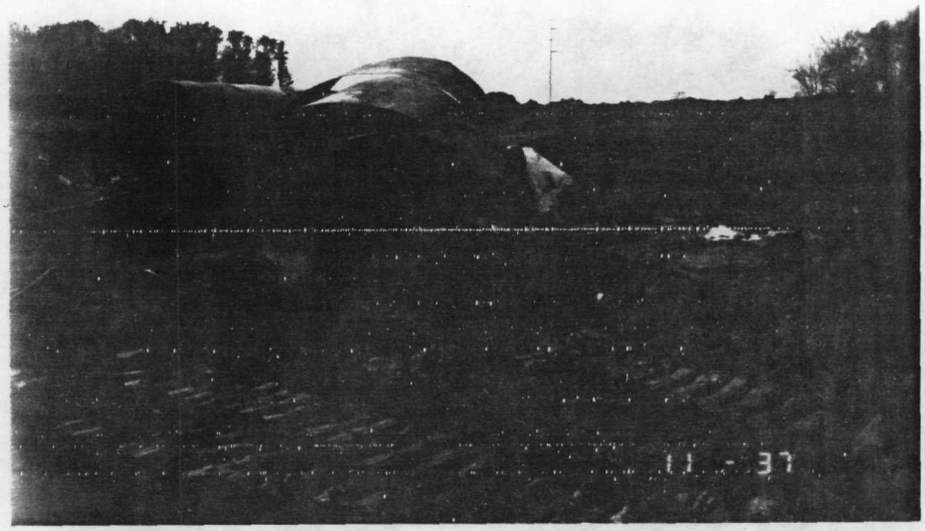

PHOTO 85
ROLL/PICTURE 11/25
SITE GREINERS LAGOON
DESCRIPTION CUTTING TANKS
BY ALLEN
DATE/TIME 10/29/87; 1137
FILM 35mm, NO ATTACHMENTS, 200 ASA

PHOTO 90
ROLL/PICTURE 12/15A
SITE GREINERS LAGOON
DESCRIPTION WIDETRACK MOVING MATERIAL NORTHWARD INTO LAGOON 3
BY ALLEN EB
DATE/TIME 11/11/87;1345
FILM 35mm, NO ATTACHMENTS, 100 ASA

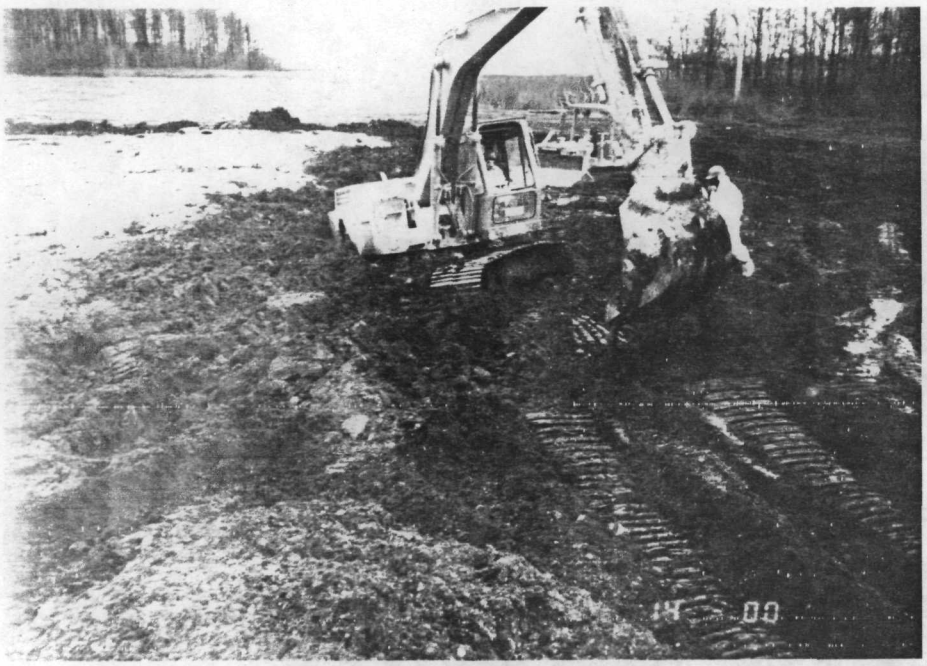

PHOTO 91
ROLL/PICTURE 12/19A
SITE GREINERS LAGOON
DESCRIPTION TRACKHOE HAVING JUST GOTTEN STUCK ON NW OF LAGOON 3
BY ALLEN EB
DATE/TIME 11/11/87;1400
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO	88
ROLL/PICTURE	12/5A
SITE	GREINERS LAGOON
DESCRIPTION	LOOKING NW AT SOLIDIFICATION PROCESS
BY	BAKER
DATE/TIME	11/7/87;1023
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO	99
ROLL/PICTURE	12/13A
SITE	GREINERS LAGOON
DESCRIPTION	TRACKHOE MOVING SLUDGE TO SOLIDIFICATION PROCESS
BY	ALLEN
DATE/TIME	11/11/87;1342
FILM	35mm, NO ATTACHMENTS, 100 ASA

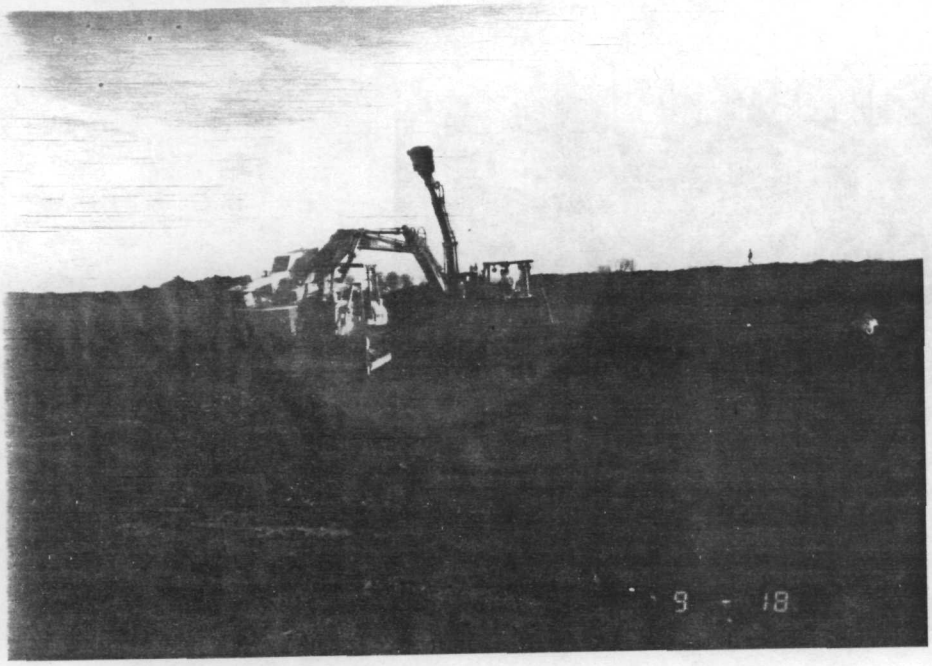

PHOTO 94
ROLL/PICTURE 12/27A
SITE GREINERS LAGOON

DESCRIPTION LOOKING EAST AT EQUIPMENT EXTRACTING TRACKHOE FROM LAGOON
BY ALLEN
DATE/TIME 11/12/87;0918
FILM 35mm, NO ATTACHMENTS, 100 ASA

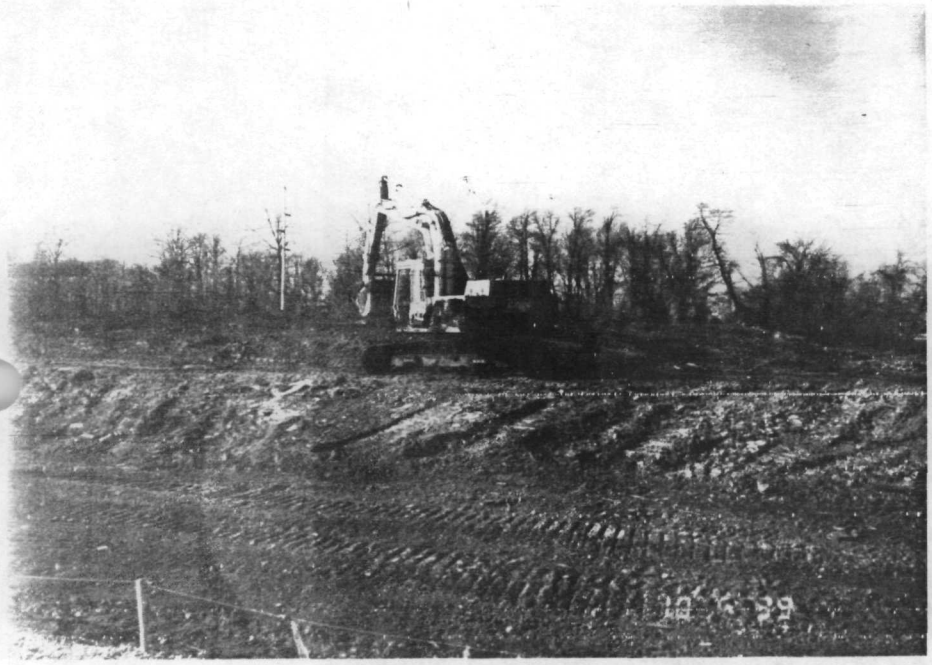

PHOTO 95
ROLL/PICTURE 12/28A
SITE GREINERS LAGOON
DESCRIPTION NOTE LEVEL OF SLUDGE ON TRACKHOE. THAT MARKS AREA THE TRACKHOE WAS EQUIPPED UP TO.
BY ALLEN
DATE/TIME 11/12/87;1000
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO 92
ROLL/PICTURE 12/20A

SITE GREINERS LAGOON

DESCRIPTION LOOKING WEST ACROSS LAGOON AT TRACKHOE AND ANGLE AT WHICH IT IS STUCK

BY ALLEN
DATE/TIME 11/11/87;1410
FILM 35mm, NO ATTACHMENTS, 100 ASA

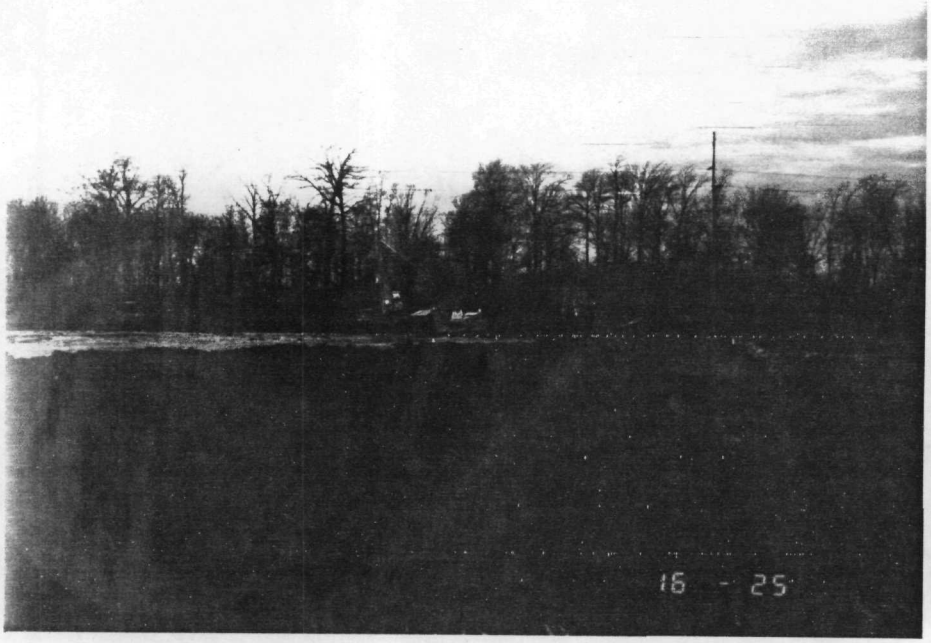

PHOTO 93
ROLL/PICTURE 12/23A
SITE GREINERS LAGOON

DESCRIPTION LOOKING WESTWARD ACROSS LAGOON AT ALL EQUIPME PERSONNEL TRYING TO REMOVE TRACKHOE FROM LAGO

BY ALLEN
DATE/TIME 11/11/87;1625
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO	98
ROLL/PICTURE	13/7
SITE	GREINERS LAGOON
DESCRIPTION	VEIW OF REMAING SLUDGE, LOOKING SOUTHWEST
BY	ALLEN
DATE/TIME	11/20/87;1015
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO 96
ROLL/PICTURE 12/34A
SITE GREINERS LAGOON
DESCRIPTION LOOKING NORTH AT AREA REMOVED AND DECON ZONE
BY BAKER BWB
DATE/TIME 11/17/87;1313
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO 97
ROLL/PICTURE 13/4
SITE GREINERS LAGOON
DESCRIPTION WIDE-TRACK DOZER PUSHING IN SIDES OF LAGOON
BY ALLEN
DATE/TIME 11/20/87;0920
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO	100
ROLL/PICTURE	13/11
SITE	GREINERS LAGOON
DESCRIPTION	TRACKHOE MIXING LIME WITH SLUDGE FOR SOLIDIFICATION
BY	ALLEN
DATE/TIME	11/20/87;1024
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO	99
ROLL/PICTURE	13/8
SITE	GREINERS LAGOON
DESCRIPTION	TRENCH BEING DUG FOR SOLIDIFICATION OF SLUDGE
BY	ALLEN
DATE/TIME	11/20/87;1015
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO	103
ROLL/PICTURE	14/5
SITE	GREINERS LAGOON
DESCRIPTION	BOTH DOZERS STUCK IN LAGOON SLUDGE/FILL
BY	ALLEN
DATE/TIME	11/22/87;1341
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO	104
ROLL/PICTURE	14/7
SITE	GREINERS LAGOON
DESCRIPTION	DRAINAGE OF SLUDGE INTO SOLIDIFYING TRENCH
BY	ALLEN
DATE/TIME	11/22/87;1420
FILM	35mm, NO ATTACHMENTS, 100 ASA

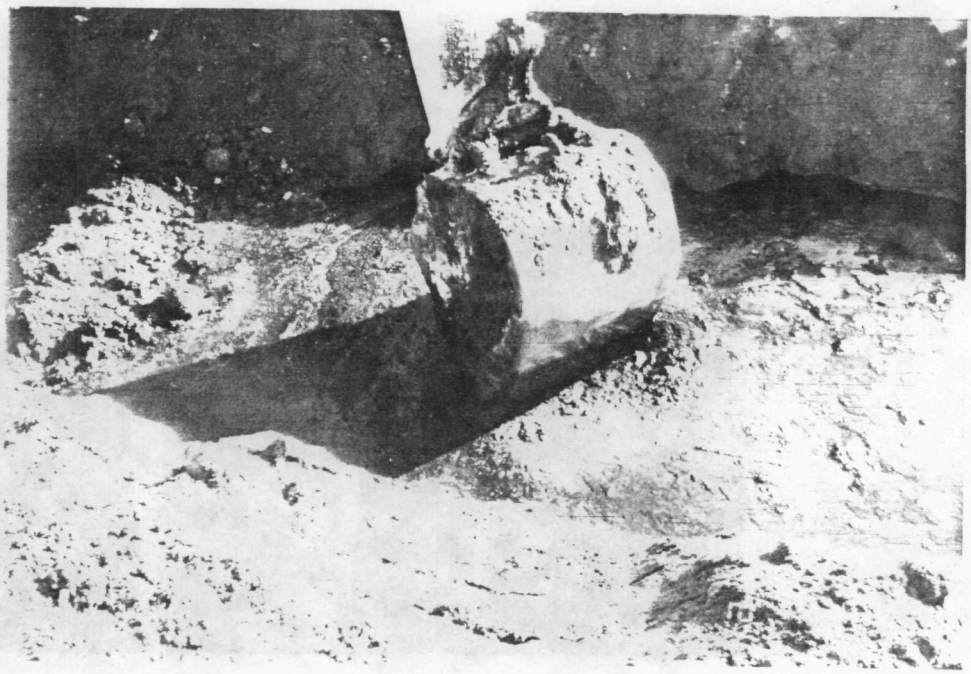

PHOTO 101
ROLL/PICTURE 13/21
SITE GREINERS LAGOON
DESCRIPTION LIME BEING MIXED IN ALONG SLUDGE FILLED TRENCH
BY ALLEN
DATE/TIME 11/21/878;1435
FILM 35mm, NO ATTACHMENTS, 100 ASA

PHOTO 102
ROLL/PICTURE 13/22
SITE GREINERS LAGOON
DESCRIPTION DECONING TRACKS OF DOZER
BY ALLEN
DATE/TIME 11/21/87;1451
FILM 35mm, NO ATTACHMENTS, 100 ASA

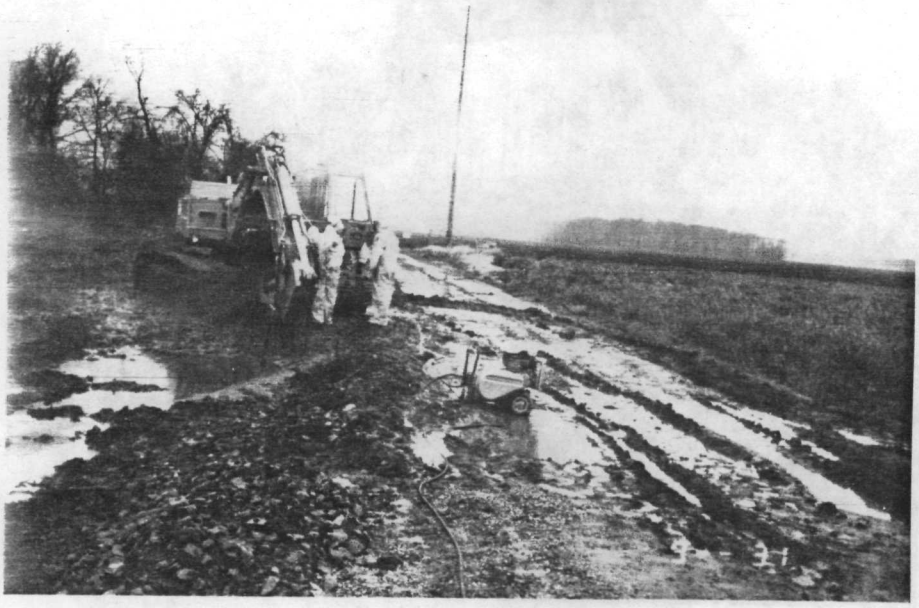

PHOTO	107
ROLL/PICTURE	14/21
SITE	GREINERS LAGOON
DESCRIPTION	DECONING TRACKHOE WITH POWER WASHER
BY	ALLEN
DATE/TIME	11/24/87;0931
FILM	35mm, NO ATTACHMENTS, 100 ASA

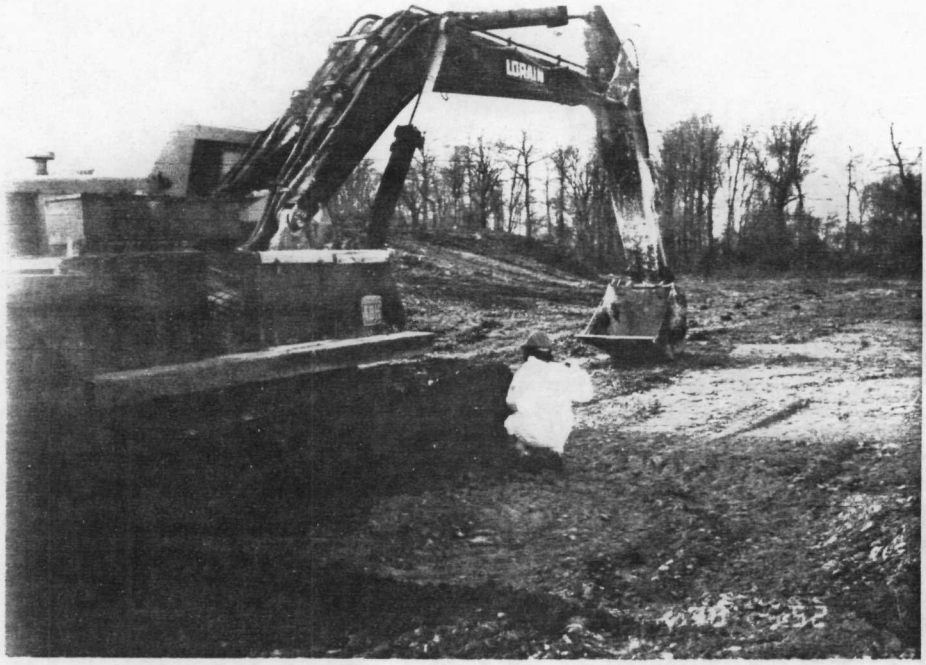

PHOTO	105
ROLL/PICTURE	14/11
SITE	GREINERS LAGOON
DESCRIPTION	GROSS DECON OF TRACKHOE
BY	ALLEN
DATE/TIME	11/24/87;1052
FILM	35mm, NO ATTACHMENTS, 100 ASA

PHOTO	106
ROLL/PICTURE	14/17
SITE	GREINERS LAGOON
DESCRIPTION	DECONING OF TRACKHOE UNDERCARRIAGE
BY	ALLEN
DATE/TIME	11/24/87;1612
FILM	35mm, NO ATTACHMENTS, 100 ASA

W

W

LV

INTEROFFICE MEMORANDUM

TO: Phil Newton, Todd Kenning, Jim Miller, Carl Emlund, Jeff Clark, Chris Rice
FROM: Karl Yost
SUBJECT: ISV Preparations at Greiner Lagoon
DATE: October 14, 1987

STARTED LIME - 10-1-87
STARTED - DIRT + BEET DIRT - 10-25-87

RECIEVED ON 10-22-87

I am concerned with the total amount of lime planned to be used at the Greiner's site for sludge solidification for two reasons:

A) Approximately 200 trucks @ 20 tons/truck = 4,000 tons of excess material to be vitrified

4,000 tons @ approximately $450/ton = $1.8 million increase in ISV costs

B) Dilution factor by material addition may render material characteristically non-hazardous. This may be the desired effect in the long run.

I recommend that we explore centrifuge or belt filter press technology for site specific application to dewater and reduce the waste volume. Both technologies are immediately available through subcontractors at costs of $.10-.40/gallon depending upon sludge characteristics.

ISV has also been demonstrated on material up to 70 percent (by weight) moisture. Energy requirements are negligible in driving of water when compared to thermodynamics of melting soil. Therefore, cost increase would be insignificant.

If our review is favorable, I believe we had better approach the agency with our findings before any additional lime is added.

jks

CONVERSATION RECORD

TIME: 1120

DATE: 1-6-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Dennis Wesolowski	CRL	312 886-1971

SUBJECT: Analytical review of Greiners data

SUMMARY

* Pat Scherilla - organic data review coordinator for Superfund.

Ken Shu

talk with Curtis for priority for review

Informed him that memo has been sent
- Would take 2 weeks for review
- Suggest that I wait for reply from CRL

Verbal results followed by report.

1325 - Will have to go thru Ken Schu to prioritize review.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	1-6-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

50271-101 ☆GPO : 1984 O - 461-275 (317) **CONVERSATION RECORD** OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

CONVERSATION RECORD

TIME: 1515 | DATE: 11-16-87

TYPE: ☐ VISIT ☐ CONFERENCE ☐ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Phil / Chris Rice	MAECORP	312 957-7600

ROUTING

NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon

SUMMARY

- Will be sending out radios - suppose to be.
- Will be looking into availability of operators and try to make swap at site.

Informed Mr. Newton of problem concerned about.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	11-16-87

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1140

DATE: 10-26-87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bill Pennington	~~ADMAC~~	(313) 326-4210

SUBJECT: Greiner's - Tank Cutting

ROUTING	
NAME/SYMBOL	INT

SUMMARY

5½ gal/min 12 → 20"/min can cut

- good availability no more than 2 days work.

$3,800/day total.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	EB	10-26-87

ACTION TAKEN

SIGNATURE	TITLE	DATE

page 2

CONVERSATION RECORD

TIME

DATE

TYPE

☐ VISIT ☐ CONFERENCE ☐ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:

ROUTING	
NAME/SYMBOL	INT

SUBJECT

SUMMARY time due to drilling being completed before then and H_2O treatment should be at least half completed by then. However I would get back to her if I did want a visit

*

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	9.9.87

ACTION TAKEN

SIGNATURE	TITLE	DATE

W

CONVERSATION RECORD

TIME: 1510 | DATE: 7-18-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Bowdens	Region ✓	886-6236

SUBJECT: Greiners

ROUTING	
NAME/SYMBOL	INT

SUMMARY

Cost of L.F. } off-site
" " Incineration }
" " ISV → $250/yd. } Wants cost comparison!

- Go out to site w/ them. - Luberzol
- State still looking at options for final site remediation

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	7-18-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1545 | DATE: 7-14-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Peg Andrews	ORC.	886-6827

ROUTING

NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon

SUMMARY

Final solution for site - I.S.V. - some plan stated ? if not I.S.V.

Time constraints - 1 year exemption - cover the agency's butt against PRP's for time frame & statement of final solution.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	7-14-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1330

DATE: 7-12-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Peg Andrews	ORC	312 886-6827

SUBJECT: Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY

- Explained about Luberyol's wanting to make a site visit - She will call them. Gave her Luberyols' # (216) 943-1200 Dave Cowen
- Cost recovery second response - would like to start - Administrative Record.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	7-12-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME	DATE
1205	5-16-88

TYPE

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☒ INCOMING
☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Elise Allen	TAT	

ROUTING	
NAME/SYMBOL	INT

SUBJECT

Greiners Lagoon

SUMMARY

Not as much water - real soogy

A&B Lab

All samples collected - Ann Pacheck (TAT) will had deliver samples to lab.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB/	5-16-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1542

DATE: 5-16-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Peg Andrew	ORC	(312) 886-6827

SUBJECT: Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY

Wants to know if PRP can implement IS√

* Wants to know results from Water samples.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-16-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 0945

DATE: 5-17-88

TYPE

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☒ INCOMING

☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Joel Hershal	Office of Technology Assessment - Congress	202 228-6361

SUBJECT: Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY

Wanted info on ISN.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME	DATE
1020	5-26-88

TYPE

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☐ INCOMING
☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Bowden	EPA - DPO	312 886-6236

SUBJECT

Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY

5-10-88 Additional money from contingency tacked on to project ceiling

Informed him site would be moving on Tues. 5-31-88

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-26-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1120

DATE: 5-9-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Chris Rice	MAECORP	(312) 7600

ROUTING	
NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon - Water Samples.

SUMMARY

Gave parameters - 24, 48, 72 hr G

PCB's — HSL metal
O&G — TSS
TL Phenols — TDS
VOA — MBAS
NH_3 — DO
pH

QA/QC package.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-9-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME	DATE
1355	5-6-88

TYPE

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
	EPA Region V	353-9351

SUBJECT Greiners Lagoon - Special Analitical

ROUTING	
NAME/SYMBOL	INT

SUMMARY

3 water samples @ ~ $800.00 - discharge parameters.

PCB	HSL metals
O&G	TSS
TL Phenols	TDS
VOA	MBAS
NH_3	DO
pH	

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-6-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1335

DATE: 5-6-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Sally Matz	Weston - TAT	(312) 993-1067

ROUTING	
NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon - Special Analytical Project

SUMMARY

There is some money left ~ $30,000.00

Maybe able to sample Mon. 5-9-88

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-6-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1613

DATE: 3-31-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
David Cowen	Luberzo	(216) 943-1200 X-3733

SUBJECT: Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY

Tues or Weds of next week

or Mon or Tues of the next week

~ 1000 - on site

* Call back in about ½ hour.

- Called 4-1-88 No answer
- Will call Monday.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1112

DATE: 4-14-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Dave Newtson	OEPA	(419) 352-8461

ROUTING	
NAME/SYMBOL	INT

SUBJECT: Greenery Lagoon

SUMMARY: Wants info on site - gave him general background

Call when we go back out - would like to visit site

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	4-14-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME 1655 | DATE 4-27-88

TYPE ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
David Cowhen	Lubernol	

SUBJECT Greiners Lagoon

ROUTING	
NAME/SYMBOL	INT

SUMMARY Concerned about site.

- New debris on-site?

Teresa Foga → told him to call me.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	4-27-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

50271-101 ☆GPO : 1984 O - 461-275 (317) CONVERSATION RECORD OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

CONVERSATION RECORD

TIME: 1155 | DATE: 5-4-88

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE
☐ INCOMING
☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Dave Knutsen	OEPA	419 352-8461

SUBJECT: ARARS - ISV

ROUTING	
NAME/SYMBOL	INT

SUMMARY

We are actively persuing the use of the ISV.

Is continuing to work on numbers - got info from Battell on process.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-4-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1037 | DATE: 5-4-88

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Bowden	EPA - Region V	886-6236

SUBJECT: Greiners Lagoon

SUMMARY

finish site - clean soil over contaminated soil.

OEPA - keep going w/ ARAR's → maybe used at Pristine Site.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	5-4-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

1445

3-1-88

Mary Hay ORC 353-~~886~~-2076

Re: Greiners Lagoon

Gave her the lawyers name - she will call him and if needs my help will call me back

MEMORANDUM OF CALL Previous editions usable

TO: Jo Burk

☑ YOU WERE CALLED BY ☐ YOU WERE VISITED BY—

Mark Norman

OF (Organization) Atty in Cincin

☑ PLEASE PHONE ▶ ☐ FTS ☐ AUTOVON

513-421-8777

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☐ WISHES AN APPOINTMENT

MESSAGE

Re Greiners Lagoon

RECEIVED BY [signature] DATE 3/1 TIME 8:50

63-110 NSN 7540-00-634-4018 STANDARD FORM 63 (Rev. 8-81)
Prescribed by GSA
FPMR (41 CFR) 101—11.6

CONVERSATION RECORD

TIME: 1325 | DATE: 2-10-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Dave Knutsen	OEPA	(419) 352-8461

SUBJECT: Greiners Lagoon -

SUMMARY: ARAS being developed in their office

Questions

Water quantity generated / time period

- metal liberation during burn process

- Went over basics of ISV process and plans for site. → left in Phase I and for future.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	2-10-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

50271-101 ☆GPO : 1984 O - 461-275 (317) CONVERSATION RECORD OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

50271-101 ☆GPO : 1984 O - 461-275 (317) CONVERSATION RECORD OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

497-9338

CONVERSATION RECORD

TIME: 1335

DATE: 2-1-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Pat Chirilla	CRL	353-2313

SUBJECT: Gruiners' PCB data

ROUTING	
NAME/SYMBOL	INT

SUMMARY

- Need copies of standards 1254 1260 run w/ samples

- Looks like they missed some positives.

- Get ahold of Wadsworth to get standard info send directly to Pat.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	2-1-88

TION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1355 | DATE: 2-3-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Claudia Schofer	Wadsworth	216 497-9396

ROUTING	
NAME/SYMBOL	INT

SUBJECT: Greiners PCB data

SUMMARY

- Dr. Stevens will be putting a package together for standards information on data
- Should be completed this week
- Claudia will then mail to me.

ACTION REQUIRED

Send package to CRL when recieved.

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	2-3-88

TION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 0845

DATE: 2-2-88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Claudia Schaffer	Wadsworth	(516) 497-9338

SUBJECT: Greiners analytical - standards

ROUTING	
NAME/SYMBOL	INT

SUMMARY

Requested standards information on two packages - gave her the reporting dates and lot numbers

- request chromatographs for standards

- said she will pull file and call me back on what she finds - will then mail package to me!

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	2-2-88

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1430

DATE: 1-13-88

PE

☐ VISIT ☐ CONFERENCE ☒ TELEPHONE

☒ INCOMING

☐ OUTGOING

cation of Visit/Conference:

ME OF PERSON(S) CONTACTED OR IN CONTACT TH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Chuck Elley	CRL	

ROUTING

NAME/SYMBOL	INT

IBJECT Analytical Review - Greiners Lagoon

UMMARY

- Will except data for review
- Will take 5 days to complete - after recieving
- Send to Attn: Pat Chisella

ION REQUIRED

AME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	1-13-88

TION TAKEN

IGNATURE	TITLE	DATE

0271-101 ☆GPO : 1984 O - 461-275 (317) CONVERSATION RECORD OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

Ed Burk

INTEROFFICE MEMORANDUM

TO: Distribution*
FROM: Karl Yost
SUBJECT: Treatment Status at OH-523 (Greiner's Lagoon)
DATE: August 31, 1987 (typed September 11, 1987)

On Friday, August 28, 1987, I mobilized to Fremont, Ohio, to accommodate the EPA request of having Technical Service expertise at Greiner's Lagoon on August 29, 1987, 07:00.

The purpose of the trip was to determine treatment needs for design, setup and operation of a treatment system for Lagoon #3 aqueous materials. These determinations are based upon site characteristics, respective stream analytical data available to date and MAECORP's available equipment.

Samples pulled from the lagoon were not representative of target material from previous sampling by TAT or myself on August 29, 1987. All samples were collected by grab techniques under the oily layer from the lagoon berm. Due to safety considerations expressed by the OSC (E. Burk), lagoon profile samples would not be attainable (i.e., no boat access).

Data reviewed by Karl Yost from TAT and OSC files were dated October, 1986, and did not include all parameters requiring treatment and monitoring as per NPDES Discharge Limitations for Warm Water Habitat Criteria, State of Ohio.

In a previous conference call between Bob Bowden (EPA), Ed Burk (EPA) and Todd Kenning (MAECORP), MAECORP committed to a treatment system mobilization, setup and operation by Monday, August 31, 1987, as based upon OSC discussions with Calgon. The system design consisted of a pretreatment filter, Klensorb and granular activated carbon. Karl Yost's trip also was to confirm or modify the system as needed.

The sample pulled by Karl Yost on August 29, 1987, was utilized to conduct crude but enlightening treatability tests for determining system selection. This sample was brown/tan in color and contained a high loading of solids, both vegetative, sludge and fines.

Karl Yost indicated to Ed Burk (OSC) that unless the solids were addressed, GAC would not be an effective approach even with prefiltration. Solid loading would bind the media filter and foul carbon preventing complete absorption of organics as required.

Karl Yost checked with TAT and the OSC's (Ed Burk and Pam Hollingsworth) to see if any sodium hydroxide was available on site for chemical treatment applications.

Why weren't needed materials available for on site bench testing by MAECORP?

Karl Yost purchased "DRANO" (1.7% sodium hydroxide), coffee filters and Bar-B-Que charcoal to conduct these tests.

Upon pH adjustment to the raw sample (pH 12.5-14.0), a distinct solid phase developed, floating at the top of the sample. The remaining liquids were fairly clear with some discoloration similar to weak tea. The non-solid phase was filtered through the coffee filters to remove visible flocculated solids effectively. Since pore size was unknown, the results could only suggest comparison to full scale multi-media filter processing.

Filtrate was then passed through crushed charcoal that had not been properly activated (insufficient time). The final treated water was still discolored, however, noticeable hydrocarbon odor was not present.

Based upon the crude treatability results, a treatment system was designed and presented to the OSC. Comment by KY - system designed was what was needed to treat water on site.

As previously committed by MAECORP, a treatment system comprised of a multi-media filter and GAC cell could be operational by Monday evening (August 31, 1987). However, in view of the proposed system changes to accommodate solids, Monday was not a realistic date.

The OSC requested MAECORP to commit to the following:

1. If a system was mobilized, it must meet NPDES permit requirements.
2. It must be capable of maintaining 90 gpm throughput
3. It must be cost-effective.

Karl Yost informed the OSC that communication with home office would be required to check on component availability so that another system could be designed for the project with available equipment input.

The discussions led to the following components for system configuration.

1. Lagoon to system feed pump
2. [redacted] tank for pH adjustment
3. Chemical feed pump for caustic addition
4. Submersible pump for clarifier feed
5. Clarifier with wire box and baffle boards
6. Clarifier discharge poly sump for pH adjustment
7. Chemical feed pump for sulfuric and addition
8. Sump pump to feed filter and absorption train
9. Poly tank for filter backwash
10. Multi-media cell
11. GAC cell
12. Hose, fittings, power

Sump vs. tallet.

Karl Yost also calculated, based upon available data from TAT, that approximately 800 ppm of organics need to be removed across the system. This corresponded to a 67,000 pound consumption of GAC based upon a 10% by weight spending factor.

Karl Yost also indicated that a good majority of the organics may possibly be removed with the solids and that the carbon requirement may drop to 10K-12K # GAC.

Karl Yost also provided a general equipment cost summary based upon major components ERCS daily rates (approximately $700/day).

Information also provided to OSC included:

70 gpm max average

- 70 gpm system flow based upon clarifier design of 75-85 pgm maximum.
- Use of Klensorb 100 is unknown and may be required to remove O&G to maximize carbon life.
- Sand filter will require scheduled backflushing on a shift basis. 2-3 times total for project.

After discussion with Karl Yost, Carl Emlund, TAT (?) and OSC, the following items were mutually agreed upon prior to OSC consent to mobilize:

1. Complete system setup by Thursday, September 4, 1987, at time of crew demobilization. Ready to turn system on and treat at 0001 on September 8, 1987.

2. Mobilization would be minimized regarding missing parts and components.

3. MAECORP would put forth best efforts to complete setup and start treatment prior to Thursday, September 4, 1987.

4. System will work so that discharge will meet NPDES Discharge for Warm Water Habitat Criteria, State of Ohio (Duplicate Commercial Oil limits) based upon data currently available for review.

Carl, coffee filters, trans, Bar-B-Que charcoal? who's crude?

A ballpark price ~~of~~ $75,000-$100,000 would be required to treat water on site as crudely calculated by Ed Burk.

Karl Yost also requested sample to return to Glenwood for further treatability study. Karl Yost indicated that if GC's were up and running, MAECORP would conduct simple extraction on raw and treated samples. Chromatograms would be looked at to see if peaks were removed by treatment.

Samples given to [illegible] took on commercial [illegible] plane. No answer [illegible]

*Distribution:
J. Miller
P. Newton
T. Kenning
C. Emlund
J. Clark
E. Burk

- 10.8 days to treat water

CONVERSATION RECORD

TIME: 1150

DATE: 9/9/87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Peters	Wadsworth Lab.	

ROUTING

NAME/SYMBOL	INT

SUBJECT: VOC

SUMMARY

- Everything < 5 ppb
- Request for 1ppb detection limit, so will rerun tests.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Pamela H. Hollingsworth	Pamela H. Hollingsworth	9/9/87

ACTION TAKEN

SIGNATURE	TITLE	DATE

page 1

CONVERSATION RECORD

TIME: 1340

DATE: 9-9-87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Tami Renkowski	TAT	(312) 993-1067

ROUTING

NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon - Safety Visit

SUMMARY

- Informed her of situation - emphasising that I was specifically interested in protocal for drill, water treatment and review of S.S.P.
- She stated that a visit could be conducted ASAP. - I stated that I was concerned due to drilling operations to start on Friday. - She would try to schedual for 9-10 or 9-11.

1510

- Called back - can't due visit until 9-12 or 9-13 propibly 9-13. I requested at a min. that proceedures be sent out w/ TAT coming to site to help w/ drilling. Stated that that could be done w/ no problem.

1620

- Called back - stated that a visit could not be done until 9-14!

I did not feel it would be appropriet at that

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1140

DATE: 10-5-87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Pauline	Enforcement	

SUBJECT: Greiners Lagoon

ROUTING

NAME/SYMBOL	INT

SUMMARY

from Lubrizol → schedual for site visits

9th | 16th Not on site | 19th | 23rd | 26th

- informed Pauline the days & times we would be on-site. She will inform the Lubrizol rep so that they can make arangements for site visits

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	10-5-87

ACTION TAKEN

SIGNATURE	TITLE	DATE

WESTON

Pamela Hollingsworth
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Ronald W. Schrack
Company Eem-midwest, Inc.
Address 2000 W. Henderson Rd.
Columbus, Ohio 43220
Phone (614) 451-8406

Date 9/11/87
Time 0910 (AM)/PM

☐ Originator Placed Call
☑ Originator Received Call
W.O. NO.

Subject Lubrizol Consultants (Eem) on site observation.

Notes: Mr. Schrack wanted to know what safety gear he needed for his next visit.

I told him all he would need for gear, and also about the letter from his Company stating he had the required training, fit testing and medical monitoring.

He said he planned to be out next Wed. I said fine as long as he had his projected schedule for Phase I to me before then.

He asked about taking a video camera into the hot zone — wrapping it in plastic for decon. After conferring w/ Ed Buck I later phoned Mr. Schrack and told him the video camera would be allowed only outside the hot zone for safety/decon. reasons.

I gave Mr. Schrack a number where Ed Buck can be reached. He also asked a few questions about the water treatment (i.e. when it started, how many gallons we were treating, etc.)

☐ **File**
☐ **Tickle File** / /
☐ **Follow-Up By:**
☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials P.H.H.

RFW 110-4-83

WESTON

Pamela H Hollingsworth
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Pauline Le Blanc
Company EPA Enforcement
Address
Phone (312) 886-7278

Date 9/10/87
Time 1615 AM/PM

☐ Originator Placed Call
☑ Originator Received Call
W.O. NO.

Subject

Notes: Told Pauline that per my conversation with Ed Burk, to our knowledge Level D does not require medical monitoring. She will check with other Health & Safety officer to clarify.

She told Lubrizol that EEM would need to produce their projected schedule for site visits verbally initially, then in writing. They must have the schedule to Pauline, who will relay it to us, at least 48 hours before their next visit. Pauline said it would probably be a week before they came out again.

☐ **File**
☐ **Tickle File** / /
☐ **Follow-Up By:**
☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials P.H.H.

RFW 110-4-83

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

ASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY

DEPT _____ DATE _____

Freddie Walker 10/20/87 1125

- wants a map of sampling locations
- wants write up of how samples homogenized

- OSC talked to Mr Walker. QA/QC of sample collection procedures is not his responsibility and the OSC informed him of that. Mr Walker was also informed that sample collection met all QA/QC requirements.
- Problem is in lab & Freddie's job is to find the problem.

RFW 10-05-003 A-5/85

WESTON

MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY _____

DEPT _____ DATE _____

Freddie Walker to Elise 10/20/87 1035

89, 90: homogenized in field

85 : 1 sample ~~placed~~ pulled from backhoe bucket (into 1 gallon container) + poured into separate jars

- wanted to know if I changed gloves between samples

- Knows that there is a problem but not sure where + he thinks that Wadsworth is the problem but QA/QC doesn't show it.

- Told him that we had custody of almost all samples.

ED
10/20/87
1035

REV 10-05-003 A-5 85

CONVERSATION RECORD

TIME	DATE
0900	9/10/87

TYPE

☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Pauline Le Blanc	Enforcement EPA Chicago	(312) 886-7278

SUBJECT

ERM - Lubrizol Consultants On Site Observation

SUMMARY

Told Pauline I received a call from David Cowan from Lubrizol asking about problems w/ ERM's visit yesterday. I told her I didn't want to talk to him and tie up site phone lines with their business. She'll call him.

- ERM personnel will need written statement from their corporate office that their personnel have had the required 40 hr. training and medical monitoring (incl. fit testing).

- Cameras will be allowed during Phase I only.

- We need a projected schedule of the days & frequency of their visits for the remaining 4 weeks of phase I - to be

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Pamela H. Hollingsworth	Pamela H. Hollingsworth	9/10/87

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME	DATE

TYPE ☐ VISIT ☐ CONFERENCE ☐ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:

ROUTING	
NAME/SYMBOL	INT

SUBJECT

SUMMARY

established and received before their next visit.

— They will have to provide all their own protective equipment. They will be told when they arrive on site where they can stand and what safety equipment will be required where. Site entries will be made only with the appropriate gear, in the presence of an EPA rep. at EPA's convenience.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE

ACTION TAKEN

SIGNATURE	TITLE	DATE

MEMORANDUM OF CALL

Previous editions usable

TO:

☐ YOU WERE CALLED BY– ☐ YOU WERE VISITED BY–

David Cowan

OF (Organization)

Lubrizol

☐ PLEASE PHONE ▶ ☐ FTS ☐ AUTOVON

(216) 943-4200 ext. 3733

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☐ WISHES AN APPOINTMENT

MESSAGE

Re: Problems w/ Site Visit of ERM Personnel

RECEIVED BY	DATE	TIME

63-110 NSN 7540-00-634-4018 STANDARD FORM 63 (Rev. 8-81)
★U.S. GPO: 1988—481-347/46080 Prescribed by GSA
FPMR (41 CFR) 101—11.6

CONVERSATION RECORD

TIME	DATE
1625	9/9/87

TYPE
☐ VISIT ☐ CONFERENCE ☒ TELEPHONE
☒ INCOMING
☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Pauline LeBlanc	Enforcement EPA Chicago	(312) 886-7278

ROUTING	
NAME/SYMBOL	INT

SUBJECT

ERM - Lubrizol Consultants
On Site Observation

SUMMARY

- Need to provide certification of training and fit testing. Need safety equipment.
- Need to supply all own equipment
- Don't go out of our way to accomodate

In office after 0745 (CDT)
Talk to Ed & Call back tomorrow.

Don't call Contractor

Told Pauline of problems w/ ERM personnel
- Unannounced visit.
- No safety equipment (i.e. steel-toed boots, hard hats, safety glasses)
- Using (or "trying out") copy machine.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Pamela H. Hollingsworth	Pamela H. Hollingsworth	9/9/87

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME: 1410

DATE: 9-1-87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Manson	OEPA	419 352-8461

ROUTING

NAME/SYMBOL	INT

SUBJECT: Paul Brook - Greiners Lagoon

SUMMARY

- Ohio H_2O quality standards -

pH — volitals
* flow → PCB's
oil grease — metals

Bioassay

Has no problem w/ what we are doing.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	ECB	9-1-87

ACTION TAKEN

SIGNATURE	TITLE	DATE

CONVERSATION RECORD

TIME	DATE
1007	9-2-87

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Bob Manson	OEPA	419

ROUTING	
NAME/SYMBOL	INT

SUBJECT: Greiners Lagoon

SUMMARY

No shallow aquifers in area

NW corner of lagoon #4
sides ~ 6' middle ~ 2'-3' deep.

No problems w/ recharge in lagoons

Get w/ OEPA for final site restoration
Forestry Program - Boy Scouts

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
		9-2-87

ACTION TAKEN

SIGNATURE	TITLE	DATE

5HR-11/ERS

SEP 25 1987

Mr. Roger Hannahs
Ohio Environmental Protection Agency
P.O. Box 1049
1800 Watermark Drive
Columbus, Ohio 43266-0149

Dear Mr. Hannahs:

The United States Environmental Protection Agency (U.S. EPA) is considering the application of in situ vitrification at the Greiners Lagoon site near Fremont, Ohio. In situ vitrification is a process that destroys organic materials and immobilizes inorganic materials by using an electric charge to melt the material and surrounding soils and allowing them to cool forming a glass or obsidian-like material. The obsidian is an extremely stable and strong material that can be left in the ground. The technology was developed by Battelle Institute for the Department of Energy to stabilize radioactive wastes. It has been demonstrated full scale several times for radioactive materials and at the pilot scale for polychlorinated biphenyl (PCB) compounds and other organics. Greiners Lagoon, however, would be the first full scale application of the technology on non-radioactive organic wastes. Enclosed is a paper which provides a detailed description of the technology.

There are two waste streams produced, the heated off gas produced during the burn and the scrubber water from the gas treatment system. We have enclosed a discussion of the off gas treatment system which provides mass flow and temperature information. Information on contaminants is included in the description of the technology.

The only other discharge consists of approximately 2,000 liters of water from the scrubber system. This amount is discharged once per setting (or once per week). It contains particulates, primarily silica. The pH is maintained between 7 and 11 by use of Na OH. It could also contain very low concentrations of PCB or other primary contaminants on the site. It will most probably be dischargeable as a non-regulated waste but if necessary it can be treated with a small carbon filter.

OCT 5 1987

This project is being undertaken as a removal action under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) as amended by Superfund Amendment and Reauthorization Act (SARA). Although permits are not required for removal actions, it is the Agency's policy to comply with all applicable or relevant and appropriate requirements (ARARS). These include location, chemical and action specific requirements. ARARS, as stated in Section 121 of SARA, are interpreted as laws or regulations which have been promulgated and are currently enforced. Therefore, State advisories, interim guidances, or similar non-binding guidelines are not considered ARARS.

Since this technology has not been previously used by the U.S. EPA on a full scale we have undertaken a study of regulatory issues that may apply. We have enclosed a copy of that study for your information. This study also includes a list of potentially applicable Ohio regulations which you may find useful. We do not guarantee that this list is complete.

It is our objective to implement this project before the end of Fiscal Year 1988. Since the fabrication and procurement of the equipment will require 6 to 9 months after the contract is awarded we are on a fairly tight time schedule. We would appreciate it if you could identify state ARARS in the near future. We are looking forward to working with you and your staff on this project.

Sincerely,

Mary Gade, Acting Chief
Emergency & Remedial Response Branch

Enclosure

cc: E. Burke
B. Hamm

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

SEP 28 1987
RECEIVED

REPLY TO THE ATTENTION OF:

5HR-11/ERS

SEP 21 1987

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1800 Watermark Drive
Columbus, Ohio 43266-0149

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Sincerely,

Basil G. Constantelos, Director
Waste Management Division

Enclosure

September 25, 1987

MAECORP Incorporated
Greiners Lagoon
213 County Road 181
Fremont, OH 43420

Attention: Mr. Edward Burk

Dear Mr. Burk:

Enclosed is the analytical data for one water and twenty-two soil samples collected from the Greiners Lagoon.

The samples were sent to Wadsworth/Alert Laboratories for PCB's, total phenols, oil and grease, MBAS and pH analysis.

Sincerely,

MAECORP INCORPORATED

Freddie Walker

Freddie Walker
QA/QC Coordinator

FW/sk
Enclosure

cc: Carl Emlund

The News Messenger 9-16-87

Ball of glass:

New process eyed for Greiner ponds

By JOYCE HUNTLEY
Staff writer

The Greiner lagoons cleanup will be used to demonstrate a hot new technology for treating contaminants, said Sandusky County Health Commissioner Kenneth Kerik.

The new technology being used by the U.S. Environmental Protection Agency is called In-situ Vitrification (ISV), Kerik said. It is a treatment process that uses high temperatures to convert soil to a glass or crystalline-like product.

"The beauty of this technology," Kerik said, "is that there is no transportation of contaminated materials that could cause problems somewhere else."

The process heats the soil to temperatures exceeding 2,000 degrees centigrade by inserting electrodes into the area. As the soil is heated, a hood traps all gases emitted by the burning, Kerik explained.

The gases are treated to remove any contaminants then released into the environment.

The soil, when cooled, will look like a huge lump of glass, he said.

The technology was developed by the Department of Energy in 1980 primarily for dealing with contaminated wastes. It has been used in the past to effectively treat dioxins and PCBs, he explained.

The Greiner ponds, located in Ballville Township off Sandusky County Road 181, were built in the early 1950s to hold industrial waste oils. The cleanup of the site has been discussed for almost two decades, but little was done until this summer's heavy rains threatened to cause the ponds to overflow.

The U.S. EPA began cleaning up the site Sept. 1, and is expected to be on the scene for a month. The cost for the work is $443,400.

The Greiner lagoons project will be the largest field testing the new process will receive, Kerik said. But work will not begin until next summer after the initial cleanup is completed.

Most of the equipment will be brought here as well as the personnel, but Kerik said he thinks the hood will have to be constructed at the site. No state funds are involved in this project. The money comes from the U.S. EPA's Superfund.

Ball of glass:

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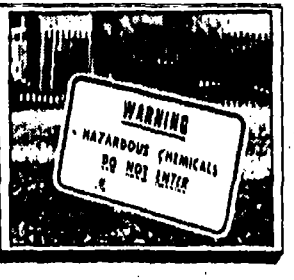
UPDATE — Inside

Who will pay for cleanup?

— Page A-3



Dangers of exercise

— Page A-6

Swedes clash at U.S. Open

— Page B-1

The News-Messenger

Fremont, Ohio, Friday, September 11, 1987 A Gannett Newspaper

Copyright © 1987

News Messenger 9/11/87

EPA will seek repayment for oil cleanup

Original owners may be billed

By JOYCE HUNTLEY
Staff writer

If your company generated any of the waste oils being cleaned up at a Ballville Township site, you might eventually get a bill from the U.S. Environmental Protection Agency.

Cleanup efforts at the Greiner lagoons is expected to lead to some action for reimbursement of the cleanup, according to Bill Reynolds of the U.S. Environmental Protection Agency regional office in Chicago.

The Greiner oil ponds, located off Sandusky County Road 181, are owned by Gary Greiner, who has maintained that he should not be responsible for the cleanup of the site. Greiner has contended that the waste oils were dumped into the ponds before he owned the property and are therefore not his responsibility.

According to Reynolds, the EPA is entitled to seek reimbursement for the cleanup if an agreement cannot be negotiated with the owner of the property.

Under EPA Superfund laws, the agency can negotiate before the cleanup with the property owner to exact some form of payment, or negotiations can take place during the cleanup, Reynolds said. If no agreement is reached, he explained, then the EPA can take court action for reimbursement.

In addition, if the agency cannot collect from the property owner, then the agency can trace those responsible for the waste and try to collect from them. Therefore, the agency will try to find out who was responsible for dumping at Greiner's and hold them responsible for the cleanup, Reynolds said.

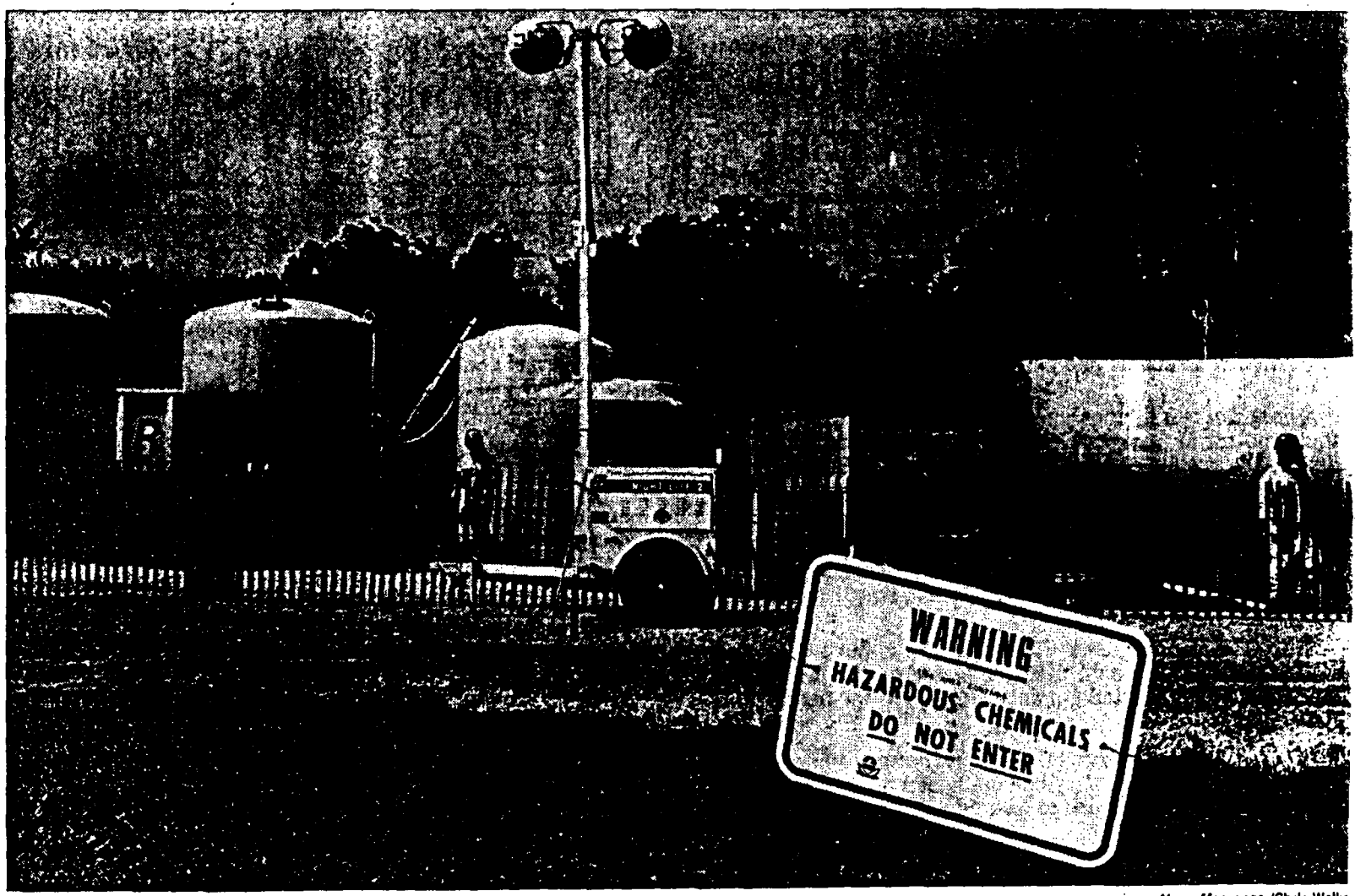
Since the Greiner cleanup is being funded by the Superfund at a cost of $443,400 these laws are applicable in this instance, he said.

Reynolds would not comment on any possible negotiations with Greiner.

The current cleanup efforts involve pumping the contaminated water into holding tanks that the EPA has erected on site, said Reynolds. The water is then treated to solidify the oil, which is then separated and put into a different tank. Both the water and the oils are then treated to make them environmentally safe. The last step, Reynolds explained, is to release the treated materials into the environment.

He said he was not sure if th water at Greiner's will be re leased into the ground or throug the Fremont water treatment fa cility.

Samples taken from the co taminated water will be sent t laboratories in the area to b tested.

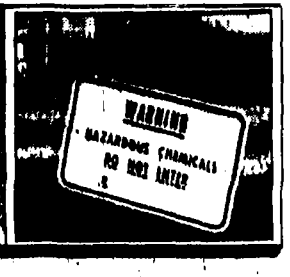


News-Messenger/Chris Walke

THE U.S. Environmental Protection Agency has posted this warning sign as cleanup work continues at the Greiner oil ponds.

Who will for cleanup?

— Page A-3



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— Page A-6

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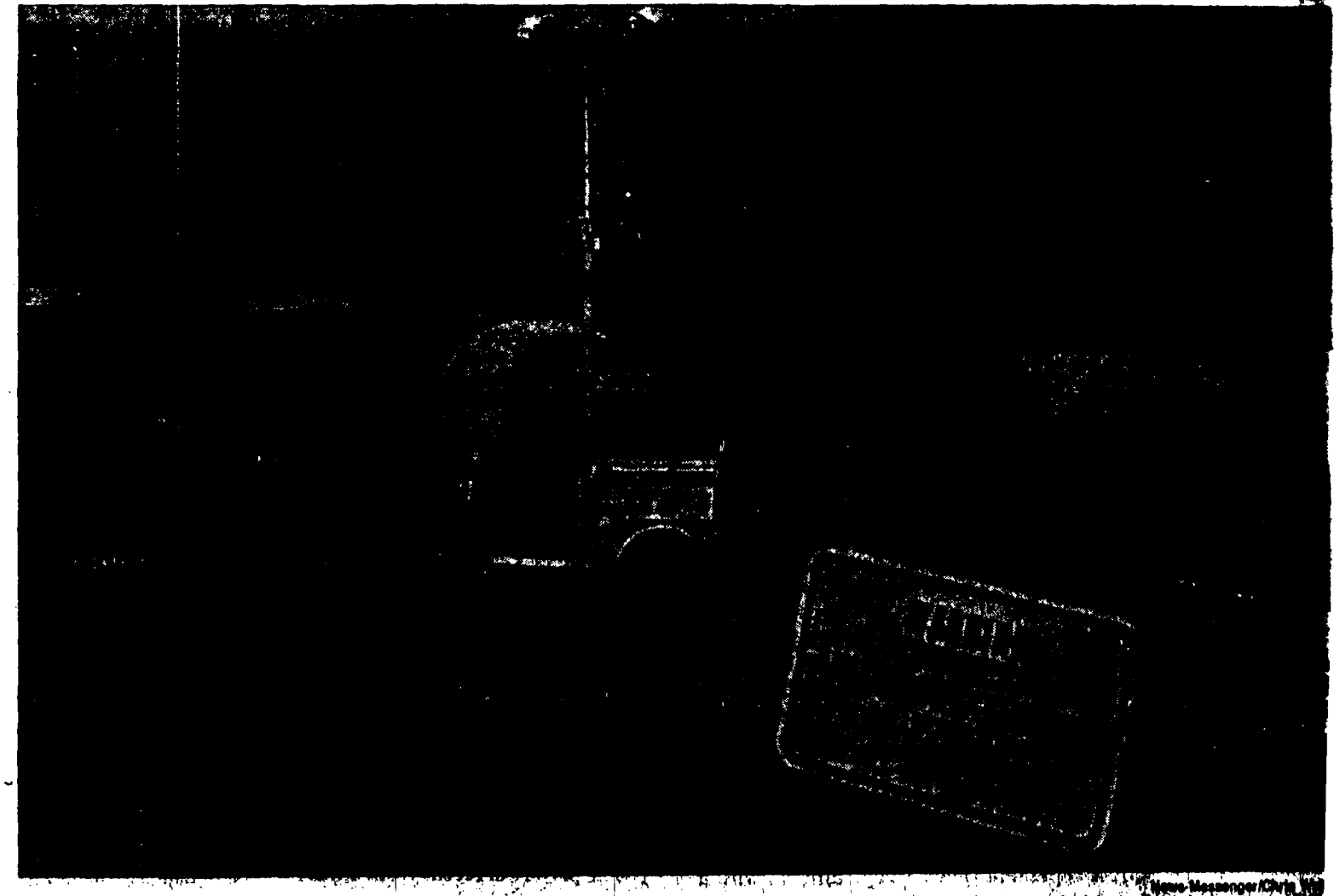

News-Messenger/Chris [illegible]

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EPA cleaning Greiner oil ponds

News-Messenger/Chris Walker

WORKERS PREPARE filtration tanks to purify the water being pumped from PCB-contaminated ponds in Ballville Township Tuesday afternoon. The EPA is cleaning up the ponds.

By JOYCE HUNTLEY
Staff writer

The U.S. Environmental Protection Agency tackled a decades-old problem Tuesay, beginning cleanup operations at the Greiner oil ponds in Ballville Township.

According to Sandusky County Health Commissioner Ken Kerik, he was notified Monday afternoon that EPA workers would be at the site Tuesday to begin the clean up operations.

"It was a complete surprise," Kerik said. "It has been several years since any activity concerning the ponds has taken place."

The health board declared the Greiner oil ponds a public nuisance in 1970. Some Ballville Township residents had petitioned the health board in 1968 to do something about the ponds.

The ponds, located on Sandusky County Road 181 six miles south of Fremont, were dug in the early 1950s to hold industrial waste oil. The oil is believed to contain small quantities of PCBs, or polychlorinated biphenyls, a suspected cancer-causing agent.

The Ohio EPA filed a lawsuit

See PONDS, Page A-2

statement was a signa
President Corazon Ac
that disenchantment f
government policy is
spread within the 15
member armed forces
that unless changes
made, last week's cou
tempt will not be the las
Some sources, speakin
condition of anonymity,
changes must include
dismissal of some of
president's trusted advi
including Executive S
tary Joker Arroyo.

Meanwhile, coup le
Col. Gregorio "Gringo"
nasan and his five chief
tenants remained at
and enjoyed consider
sympathy among senio
listed and junior of
ranks.

Ramos has argued
more than a year tha
can influence the pres
on behalf of the military
gain concessions more
tively than those who
coups to pressure her.

His effectiveness in
ing the armed forces b
the president will deper
his success in deliverin
such goals as higher
better equipment a
tougher policy against
munist rebels.

Strike reaction mild

must go through the application. In other business:

News Messenger 9-2-87

Ponds

Continued From A-1

against the owner of the property, Gary Greiner, to force him to clean up the ponds, but that cleanup never followed. Greiner was fined $1,000, but according to Kerik, Greiner never paid the fine.

Kerik said the U.S. EPA has awarded two contracts to have the ponds cleaned up. Two contracts are necessary because the cleanup effort will have to be done in two stages, he said.

First, the liquid portion of the ponds, which contains mostly rain water will be drained off and taken to Fremont's waste water treatment plant. There it will be filtered and treated.

Second, the remaining sludge resulting from the oil will either be capped — covered with clay and dirt — or it will be hauled away.

The entire cleanup effort will take about four weeks, Kerik said.

What made the U.S. EPA decide to provide the cleanup funds is unclear, Kerik said. Kerik said he did not know where the money was coming from.

Officials from the Ohio EPA also said they did not know, and federal EPA officials did not return phone calls.

Kerik said he knew at one time an effort was made to place the Greiner cleanup on the U.S. EPA's Superfund list, but then it was given such a low priority that it did not seem possible there would be any money available.

The federal agency started a cleanup effort several years ago when the ponds overflowed because of heavy rains in the area. Kerik said the U.S. EPA built a dike then and used dirt from the former Northern Ohio Sugar Co. to fill in one of the ponds.

Oils containing PCBs were skimmed off the top of the ponds then and stored in a 3,000-gallon storage tank on the property, Kerik explained.

EPA cleaning Greiner oil ponds

News-Messenger/Chris Walker

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See PONDS, Page A-2

must go through the application. In other business:

News Messenger 9-2-87

Ponds

Continued From A-1

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DATE:7-15-88
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.POWERS, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
M.ELAM-ATTN P.ANDREWS, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN D.BALLOTTI,CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
ACTING CHIEF,OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:EIGHTEEN AND FINAL SITE:50 D.O.:7360-05-022

1.SITUATION:
A.SITE WORK COMPLETED FOR THE PHASE I SITE STABILIATION. LAGOON CLOSURE, SITE GRADING AND RESTORATION FINISHED. EVALUATION OF ANALYTICAL AND SITE CONDITIONS TO CONTINUE FOR FINAL REMEDIATION OPTION.

2.ACTIONS TAKEN:
A.SITE POSTED WITH WARNING SIGNS ON PERIMETER OF STAGING AREA.

3.PLANS:
A.COMPLETE SITE PAPERWORK AND COST DOCUMENTATION.
B.CONTINUE PERIODIC MONITORING OF SITE CONDITIONS.
C.COMPLETE OSC REPORT.

4.RECOMMENDATIONS:
A.NONE.

5.STATUS:
A.CASE CLOSED.
B.ESTIMATED COST TO DATE

	BUDGETED	7-15-88	TO DATE
ERCS	$519,250.00	0.00	505,694.20
TAT	66,000.00	0.00	59,750.00
EPA (DIRECT)	30,300.00	0.00	26,309.00
EPA (INDIRECT)	58,210.00	0.00	52,289.00
TOTAL	$673,760.00	0.00	644,042.20

ENDIT

DATE:6-10-88
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.POWERS, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
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K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
ACTING CHIEF,OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:SEVENTEEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, CLEAR TEMPERATURE IN MID 90's.
   B. SITE WORK COMPLETED FOR THE PHASE I SITE STABILIATION. LAGOON CLOSURE, SITE GRADING AND RESTORATION FINISHED. EVALUATION OF ANALYTICAL AND SITE CONDITIONS TO CONTINUE FOR FINAL REMEDIATION OPTION.
2. ACTIONS TAKEN:
   A. DEMOBED ALL CONTRACTOR PERSONNEL.
   B. DECONED AND DEMOBED ALL EQUIPMENT.
   C. WARNING SIGNS POSTED ON PERIMETER OF WASTE STAGING AREA.
3. PLANS:
   A. COMPLETE SITE PAPERWORK AND COST DOCUMENTATION.
   B. CONTINUE PERIODIC MONITORING OF SITE CONDITIONS.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	6-09-88	TO DATE
ERCS	$519,250.00	4,525.06	505,694.20
TAT	66,000.00	622.25	59,750.00
EPA (DIRECT)	30,300.00	360.00	26,309.00
EPA (INDIRECT)	58,210.00	612.00	52,289.00
TOTAL	$673,760.00	6,119.31	644,042.20

ENDIT

DATE:6-01-88
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELD-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.POWERS, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
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D.BRUCE-ATTN D.BALLOTTI,CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
ACTING CHIEF,OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:SIXTEEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, CLEAR TEMPERATURE IN MID 90's.
   B. MOBILIZATION OF WORK CREW AND EQUIPMENT FOR COMPLETION OF SITE STABILIZATION ACTION.
   C. SAMPLES RESUBMITTED FOR PCB ANALYSIS, DUE TO UNUSABLE DATA RECIEVED FROM LAB ON FIRST SAMPLING ROUND.
2. ACTIONS TAKEN:
   A. MODILIZED 2 OPERATORS, RM, PCS AND 1 CLEAN TECH. EQUIPMENT MOBED; 2 DOZERS, TRAILER AND VEHICALS.
   B. BEGAN DIRT DELIVERY FOR BACKFILLING SITE.
   C. REMAINING CONTINGENCY ADDED TO ERCS BUDGET.
3. PLANS:
   A. CONTINUE BACKFILLING EXCAVATED AREAS WITH CLEAN FILL DIRT.
   B. GRADE SITE SO THAT ANY WATER IS CONTROLLED FOR PROPER RUN-OFF.
   C. PACK SIDES OF STAGING AREA WITH CLAY.
   D. SEED SITE TO COMPLETE STABILIZATION.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	5-31-88	TO DATE
ERCS	$513,250.00	1,564.35	464,340.39
TAT	66,000.00	491.50	49,845.06
EPA (DIRECT)	30,300.00	150.00	23,294.00
EPA (INDIRECT)	58,210.00	255.00	47,164.00
TOTAL	$673,760.00	2,460.85	584,644.05

ENDIT

REGION 05

RM-RS3/EPA /RA
CASE OFFICER: HAMM
OSC: [redacted]

GREINERS LAGOON
FREMONT
OH

NPL: N
SITE ID: 50
UPDATE: 11/23/87

KEY DATES

APPROVAL DATE	START DATE	12 MONTH APPROVAL	$2M APPROVAL	COMPLETION DATE	DURATION
6/13/81	6/13/81	/ /	/ /	9/24/81	104
RESTARTS					
12/ 7/81	12/21/81	1/12/82	/ /	6/18/82	180
5/20/86	5/21/86	/ /	/ /	7/ 1/86	42
8/ 7/87	8/31/87	/ /	/ /	/ /	

FINANCIAL SUMMARY

TOTAL CEILING	CLEANUP CONTRACTOR CEILING	CLEANUP CONTRACTOR OBLIGATIONS
$ 930,147	$ 597,138	$ 582,243

ACTIVITY SUMMARY

INCIDENT CATEGORY: INACTIVE WASTE MANAGEMENT FACILITY
OFF-SITE DISPOSAL: N SCOPE OF ACTION:

1

INCIDENT DESCRIPTION: Ponds, created in 1959, used to dispose of waste oil, overflowed 6/81 due to heavy rains. Seepage from ponds first noted in 1973. RESTART 3: This action is to dewater the lagoons, to regrade the area to prevent further accumulation of contaminated water and to prepare the sludges for final disposal. Staging of materials will be completed to facilitate ISV process.

MATERIALS: PCB-contaminated waste oil.

THREATS: Groundwater and soil contamination; surface water contamination; direct contact.

ACTIONS: Immediate removal approved 06/81 by USCG who undertook the action. FY82 restart action approved to dispose of trees and debris and to cap lagoon. Pumped 12,000 gallons of sludge from lagoon 4 to lagoon 3. Lagoon 4, which contained PCB-contaminated oils, completely covered, graded, and seeded. RS2- Sandbagged breach in dike to contain lagoons. Installed pipe dam in ditch downstream of contaminated oil. Removed oil from ditch and dewatered lagoon. Case pends.

INCIDENT DESCRIPTION: Ponds, created in 1959, used to dispose o waste oil, overflowed 6/81 due to heavy rains. Seepage from pon first noted in 1973. RESTART 3: This action is to dewater the lagoons, to regrade the area to prevent further accumulation of contaminated water and to prepare the sludges for final disposal Staging of materials will be completed to facilitate ISV process

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REGION 05 CONTACT:

~~Commercial Oil~~

Grieneis

DATE:12-11-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V. (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
ACTING CHIEF,OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:FIFTEEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; OVERCAST, TEMPERATURE IN MID 40's.
   B. SITE STABILIZATION COMPLETE FOR TEMPARARY DEMOB.
   C. EQUIPMENT DECON AND DEMOB COMPLETE.
2. ACTIONS TAKEN:
   B. REMAINING EQUIPMENT DECONED AND DEMOBED FOR TEMPARARY SITE DEMOB.
   C. WORK CREW DEMOBED.
3. PLANS:
   A. REMOB EQUIPMENT AND PERSONNEL FOR SITE COMPLETION WHEN CONDITIONS ARE SUITABLE.
   B. FINALIZE ALL SITE COST DOCUMENTATION PAPERWORK.
   C. CONTINUE STUDY FOR BEST CONFIGURATION FOR MATERIAL STAGING.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	12-8-87	TO DATE
ERCS	$493,000.00	1,809.45	434,979.13
TAT	66,000.00	416.70	48,520.16
EPA (DIRECT)	30,300.00	300.00	23,544.00
EPA (INDIRECT)	58,210.00	610.00	45,689.00
TOTAL	$647,510.00	3,136.15	551,732.29

ENDIT

DATE:12-8-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V. (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
ACTING CHIEF,OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:FOURTEEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER: OVERCAST, RAIN, TEMPERATURE IN MID 40's.
   B. DUE TO WEATHER AND SITE CONDITIONS (WET AND SLOPPY), SITE IS TO BE DEMOBED UNTIL CONDITIONS IMPROVE SO AS TO BETTER FACILITATE SITE WORK.
   C. PLANING TO REMOB AFTER FREEZE SO THAT EQUIPMENT WILL BE ABLE TO TRACK ACCROSS SOILS.
2. ACTIONS TAKEN:
   A. SITE SHUT DOWN FOR 10 DAYS OVER THANKSGIVING HOLIDAY, WORK RESUMED ON-SITE AT 1000 HOURS ON 12-7-87.
   B. BEGAN EQUIPMENT DECON FOR TEMPARARY SITE DEMOB.
   C. FINALIZED SLUDGE SOLIDIFICATION AND SITE STABILIZATION.
3. PLANS:
   A. CONTINUE EQUIPMENT DECON AND DEMOBILIZATION.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. COMPLETE SOIL STAGING FOR TEMPARARY SITE STABILIZATION.
   D. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	12-7-87	TO DATE
ERCS	$493,000.00	4,774.26	433,169.68
TAT	66,000.00	352.76	48,103.46
EPA (DIRECT)	30,300.00	240.00	23,224.00
EPA (INDIRECT)	58,210.00	488.00	45,079.00
TOTAL	$647,510.00	5,855.02	548,596.14

ENDIT

DATE:11-17-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9578)
J.GRANO-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9565)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:THIRTEEN SITE:50 D.O.:7360-05-028

1. SITUATION:
   A. WEATHER; OVERCAST, TEMPERATURE IN MID 40'S, CHANCE OF RAIN.
   B. HAVE REQUESTED THAT PAECORP REPLACE EMC SUBCONTRACTED OPERATORS WITH THIER OWN PEOPLE. REQUEST DUE TO INCREASED COST OF EMC OPERATORS.
   C. WORK PROGRESSING SLOWELY.
   D. SMALLER TRACK HOE STUCK IN LAGOON. LOST A DAY OF WORK AS A RESULT OF HAVING TO UTILIZE OTHER EQUIPMENT TO PULL TRACK HOE OUT.
2. ACTIONS TAKEN:
   A. SITE SHUT DOWN AT 1100 HOURS ON 11-13-87 FOR THE WEEKEND. WORK TO RESUME AT 1200 HOURS ON 11-16-87.
3. PLANS:
   A. CONTINUE LEVEL "B" PPE UTILIZATION FOR ON-SITE WORK.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE SOIL STAGING.
   D. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   E. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	11-17-87	TO DATE
ERCS	$403,000.00	6,296.74	373,401.26
TAT	66,000.00	360.75	44,514.64
EPA (DIRECT)	[illegible]	00.00	19,574.00
EPA (INDIRECT)	58,[illegible]	00.00	39,772.00
TOTAL	$557,510.00	6,657.49	477,261.90

ENDIT

DATE:11-2-87
FROM:EDWARD C. BURK, JR., OSC. ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
R.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN W.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9513)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:ELEVEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, PARTLY CLOUDY, TEMPERATURE IN MID 40's.
   B. SITE WAS SECURED AND CREW SENT HOME FOR THE WEEKEND. WORK HAULTED AT 1100 HOURS ON 10-30-87. WORK TO RESUME AT 1200 HOURS ON 11-3-87.
2. ACTIONS TAKEN:
   A. HYDROLIC EQUIPMENT MOBILIZED FOR CUTTING ON-SITE CONTAMINATED TANKS INTO SECTIONS. WAS SUBCONTRACTED DUE TO MAECORP'S INABILITY TO PERFORM TASK.
   B. SAMPLES SENT TO GULF COAST LAB FOR PCB ANALYSIS. RESULTS EXPECTED IN 10 DAYS.
3. PLANS:
   A. CONTINUE LEVEL "B" PPE UTILIZATION FOR ON-SITE WORK.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE SOIL STAGING.
   D. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   E. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. APPROVE CEILING INCREASE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	10-29-87	TO DATE
ERCS	$318,000.00	10,632.30	295,115.60
TAT	56,000.00	416.70	39,384.19
EPA (DIRECT)	24,000.00	300.00	16,544.00
EPA (INDIRECT)	45,400.00	610.00	33,611.00
TOTAL	$430,350.00	11,959.00	384,654.79

ENDIT

DATE:10-27-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V. (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI., IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
R.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:TEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER: PARTLY CLOUDY, TEMPERATURE IN MID 30's.
   B. DUE TO INCREASED TIME AND COST FOR ON-SITE WORK OPERATION A CEILING INCREASE REQUEST HAS BEEN SUBMITTED.
   C. ARE 3 EMC UNION OPERATORS ON-SITE, DUE TO MAECORPS INABILITY TO PROVIDE QUALIFIED OPERATORS.
2. ACTIONS TAKEN:
   A. BEGAN AND COMPLETED RESAMPLING OF SITE FOR CHARACTERIZATION.
   B. ANALYTICAL ARRANGEMENTS FINALIZED.
   C. DEMOBED LABORER.
3. PLANS:
   A. CONTINUE LEVEL "B" PPE UTILIZATION FOR ON-SITE WORK.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE SOIL STAGING.
   D. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   E. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. APPROVE CEILING INCREASE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	10-26-87	TO DATE
ERCS	$318,000.00	3,779.03	270,781.81
TA[illegible]	56,000.00	416.70	38,086.13
EPA (DIRECT)	24,000.00	300.00	15,944.00
EPA (INDIRECT)	45,400.00	610.00	32,391.[illegible]0
TOTAL	$430,350.00	5,105.73	357,202.94

ENDIT

DATE:10-21-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:NINE SITE:50 D.O.:7360-05-022

1.SITUATION:
A.WEATHER; PARTLY CLOUDY, TEMPERATURE IN MID 30's.
B.INVESTIGATION OF CONFLICTING ANALYTICAL REVIELED CROSS CONTAMINATION IN LAB. PROBLEM OCCURED IN SAMPLE EXTRACTION. ALL DATA FROM THAT LAB HAS BEEN DECLARED INVALID.
C.DUE TO INVALID ANALYTICAL, PAST DATA AND PRESTENT DATA WILL HAVE TO BE REVIEWED FOR THE DEVELOPMENT OF A NEW SAMPLING PROGRAM FOR SITE CHARACTERIZATION.
2.ACTIONS TAKEN:
A.BEGAN SOLIDIFICATION PROCESS OF SLUDGE.
B.BEGAN DEVELOPMENT AND IMPLIMENTATION OF NEW SAMPLING PROGRAM.
3.PLANS:
A.CONTINUE LEVEL "B" PPE UTILIZATION FOR ON-SITE WORK.
B.CONTINUE SITE SAFETY MEETINGS.
C.CONTINUE SOIL STAGING.
D.CONTINUE LAGOON SLUDGE SOLIDIFICATION.
E.CONTINUE AIR MONITORING PROGRAM.
4.RECOMMENDATIONS:
A.NONE.
5.STATUS:
A.CASE OPEN.
B.ESTIMATED COST TO DATE

	BUDGETED	10-20-87	TO DATE
ERCS	$318,000.00	4,293.31	239,872.53
TAT	56,000.00	416.70	36,052.63
EPA (DIRECT)	24,000.00	300.00	14,444.00
EPA (INDIRECT)	45,400.00	610.00	29,341.00
TOTAL	$430,350.00	5,620.01	319,710.16

ENDIT

DATE:10-8-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:EIGHT SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, PARTLY CLOUDY, TEMPERATURE IN MID 40's.
   B. MILD REACTION OCCURING WITH SLUDGE AND SOLIDIFICATION AGENT. NON-EXOTHERMIC, HOWEVER ORGANIC VAPOR EMMINATING FROM SLUDGE AT LEVELS UP TO 250 ppm. NO OFF-SITE MIGRATION OF ORGANIC VAPORS DETECTED VIA AIR MONITORING PROGRAM. SITE WORK HAULTED UNTIL PROBLEM IS SOLVED.
   C. AT PRESENT TIME PROBLEM APPEARS TO BE WITH THE KILN DUST (SOLIDIFICATION AGENT). VENDOR SENT A DIFFERENT GRADE OF LIME TO SITE ON THE LAST COUPLE OF LOADS.
2. ACTIONS TAKEN:
   A. SITE WORK SHUT DOWN AT 1600 HOURS ON 10-7-87.
   B. DISCONTINUED USE OF SOLIDIFICATION AGENT FOR TREATMENT OF SLUDGE UNTIL PROBLEM SOLVED.
   C. WORK CREW DEMOBED FOR SHUT DOWN PERIOD.
3. PLANS:
   A. SET-UP LEVEL "B" PPE FOR ON-SITE WORK.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE SOIL STAGING.
   D. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   E. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	10-7-87	TO DATE
ERCS	$318,000.00	2,783.09	216,798.69
TAT	56,000.00	416.70	34,638.71
EPA (DIRECT)	24,000.00	300.00	13,364.00
EPA (INDIRECT)	45,400.00	610.00	27,145.00
TOTAL	$430,350.00	4,109.79	291,946.40

ENDIT

DATE:10-5-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:SEVEN SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, PARTLY CLOUDY, HIGH WINDS TEMPERATURE IN MID 70's.
   B. INCREASED TAT, EPA DIRECT AND INDIRECT BUDGETS WITH CONTINGENCY MONEY ALLOCATED FOR PROJECT. INCREASE NEEDED DUE TO EXTENTED TIME NEEDED TO COMPLETE PROJECT.
2. ACTIONS TAKEN:
   A. WORK BEGAN ON-SITE AT 0900 HOURS.
   B. CONTINUED USE OF SOLIDIFICATION AGENT FOR TREATMENT OF SLUDGE.
3. PLANS:
   A. CONTINUE SITE SAFETY MEETINGS.
   B. CONTINUE SOIL STAGING.
   C. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   D. CONTINUE AIR MONITORING PROGRAM.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	10-4-87	TO DATE
ERCS	$318,000.00	602.24	199,190.11
TAT	56,000.00	0.00	33,388.61
EPA (DIRECT)	24,000.00	0.00	12,464.00
EPA (INDIRECT)	45,400.00	0.00	25,315.00
TOTAL	$430,350.00	602.24	270,357.72

ENDIT

DATE:10-2-87
FROM:EDWARD C. BURK, JR., OSC, ERU, REGION V. (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT:GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:SIX SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; SUNNY, TEMPERATURE IN MID 70's.
   B. WATER TREATMENT COMPLETE. ESTIMATED 606,000 GALLONS OF LAGOON WATER TREATED FOR DISCHARGE. TREATMENT OF WATER REQUIRED MORE TIME AND MONEY THAN ORIGINALLY ESTIMATED. SYSTEM DID NOT PERFORM AS REQUIRED.
   C. CONFLICTING ANALYTICAL RESULTS ON PCB SAMPLES. SPLIT SAMPLE SENT TO WADSWORTH LAB REPORTED AT NON-DETECTABLE, THERMOANALYTICAL REPORTED AT 23 PPM. WILL NEED TO CONFIRM ALL PREVIOUS ANALYTICAL.
2. ACTIONS TAKEN:
   A. WATER TREATMENT SYSTEM DEMOBED.
   B. ADDITIONAL TRACKHOE MOBILIZED FOR LAGOON SLUDGE SOLIDIFICATION.
   C. ALL MATERIAL ON-SITE USED UP FOR SOLIDIFICATION. BEGAN USING SOLIDIFICATION AGENT FOR SLUDGE TREATMENT
   D. CREW PUT ON STAND-BY FOR THE WEEKEND.
3. PLANS:
   A. CONTINUE SITE SAFETY MEETINGS.
   B. CONTINUE SOIL STAGING.
   C. CONTINUE LAGOON SLUDGE SOLIDIFICATION.
   D. CONTINUE AIR MONITORING PROGRAM.
   E. FINALIZE SOIL SAMPLE CONFERMATION REGARDING ANALYTICAL.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	10-1-87	TO DATE
ERCS	$318,650.00	13,596.33	191,838.57
TAT	36,000.00	833.40	32,623.24
EPA (DIRECT)	12,000.00	300.00	12,164.00
EPA (INDIRECT)	24,400.00	610.00	24,705.00
TOTAL	$391,050.00	15,339.73	261,330.81

ENDIT

To: ERU/REG.V (EPA9577)
From: G.REGAN (EPA9538) Delivered: Wed 16-Sep-87 14:38 EDT Sys 163 (6
Subject: GREINER'S LAGOON FROM N. LONGO TO BUCKLEY, BURK, HOLLINGSWORTH
Mail Id: IPM-163-870916-131780780

--More--

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

DATE: September 14, 1987

FROM: Nicholas J. Longo, On-Scene Coordinator
Western Response Unit

TO: Michael Strimbu, Chief
Western Response Unit

SUBJECT: Drilling Safety at Greiner's Lagoon Removal, Fremont, Ohio

On September 11, 1987 at 0630 I met OSC Pam Hollingsworth and TATMs Billy Giles and Elise Allen at the Greiner's Lagoon removal site to introduce them to drilling rig operations at hazardous waste sites. At approximately 0715 a drilling team from Keck Environmental Services arrived on-site with a trailer mounted rig manufactured by Gus Pech. The driller and his assistant read the site safety plan and told me they had both been to a 40 hour hazardous waste training course at HAZCO.

I assisted TATM Giles during the first day and a half of drilling until he became comfortable overseeing the work himself in Level :. Giles has previous work experience around drill rigs.

After completing the first two borings, the driller began to decon the two augers that had drill bits attached. During this time the steam cleaner used for decon started on fire. The crew immediately extinguished the fire using a fire extinguisher on the truck. I advised OSC Hollingsworth to negotiate any charges for the rest of the day since the drilling operations were down due to faulty equipment. A new steam cleaner was to be brought on site by 0800 the following day.

During the course of the days activities, I authorized the use of water inside the augers to prevent the PCB sludge encountered from heaving into the augers. This was necessary to obtain a representative sample of the sludge at different depths. OSC Ed Burk was also contacted. After an explanation of why this was necessary, he concurred. I also explained that it would be necessary to use a bentonite slurry if the water did not work. I suggested to TATM Allen that she obtain a sample of the water that was provided by another MAECORP subcontractor to cover the project.

At 1500 I departed the site. I returned at 0715 September 12, 1987 to ensure that the steam cleaner was replaced and operations started again. I commented to the TATs that the drillers seemed o be moving slow and to speed them up after the first hole of .he day was drilled. I also told them the decon operations would go alot slower due to having less water pressure on the rented steam cleaner. I departed the site at 0915.

R. BUCKLEY E-MAIL EPA 9577
P. HOLLINGSWORTH "
E. BURK

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY _____

DEPT _____ DATE _____

Polrep #5

Dollhopf

Date 9-23-87

Weather: Sunny, cool, mid-60's

Situation:

1) Lagoon #3 dewatering nearly completed
2) Lagoon 3 sludges being consolidated ~~to~~ toward east side of site - expect to complete by 9-26-87
3) ~~Additional~~ Arrangements in progress for additional analytical work on ore samples
4) OEPA coming out to collect discharge samples

Actions:

1) Cleanup crew remobed on 9-22-87 @ 1200 hrs
2) H_2O discharge resumed @ 1300 hrs 9-22-87.
3) Eastward consolidation of lagoon 3 sludges began @ 1300 hrs 9-23-87.
4) OSC requested that RWI move additional D-8 dozer to expedite sludge consolidation

RFW 10-05-003/A-5/85

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY _____

DEPT _____ DATE _____

~~5~~)

Plans

1) complete H_2O treatment by 9-25-87.

2) complete consolidation of Lagoon 3 sludge by 9-26-87.

3) demob H_2O treatment system by 9-29-87.

4) continue with ~~[illegible]~~ prep of site soils & wastes for optimal ISV configuration.

Recommendations

none

Costs from IOL thru 9-20-87

RFW 10-05-003/A-5/85

DATE: 9-17-87
FROM: PAMELA H. HOLLINGSWORTH, OSC, ERU, REGION V, (EPA9577)

TO: T. FIELDS-ATTN B. HAMM, USEPA, WASH. D.C. (EPA5511)
B. BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R. BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J. GRAND-ATTN B. REYNOLDS, OFC. PUB. AFF., CHICAGO, IL (EPA9512)
M. ELAM-ATTN M. HAY, OFC. REG. CNSL., CHICAGO, IL (EPA9525)
D. BRUCE-ATTN P. LaBLANK, CERCLA ENFORCEMENT, CHI., IL (EPA9572)
J. HERRMANN, USEPA, OFC. RES. AND DEV. CINCINNATI, OH (EPA8313)
K. SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B. MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT: GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP: FOUR SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; OVERCAST, RAINY, TEMPERATURE IN MID 70's.
   B. TO DATE TREATED 530,770 GALLONS OF LAGOON WATER. AVERAGE FLOW RATE = 51 gpm. TREATMENT SYSTEM DOWN UNTIL LAGOON WATER IS CONSOLIDATED BY USE OF TRENCHING SYSTEM AND SUMP.
2. ACTIONS TAKEN:
   A. SITE SAFETY PLAN FINALIZED.
   B. COMPLETED CLEARING SITE.
   C. LEVEL "C" DRILLING COMPLETED 9-13-87. 14 DEPTH SAMPLE LOCATIONS COMPLETED. SAMPLE RESULTS EXPECTED 9-18-87.
   D. CONTINUING ATMOSPHERIC MONITORING.
   E. PHASE 1 OF EXTENT OF CONTAMINATION STUDY FOR SOILS COMPLETED.
   F. INITIATED CONTAMINATED SOIL STAGING AND CLEAN SOIL RELOCATION.
   G. CONSULTANT FROM BATTELLE NORTHWEST ON-SITE 9-15-87 FOR DIRECTION ON PROPER SOIL STAGING REQUIREMENTS TO FACILITATE FINAL DISPOSAL/TREATMENT.
3. PLANS:
   A. COMPLETE WATER TREATMENT.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE SOIL STAGING.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	9-16-87	TO DATE
ERCS	$365,650.00	9,515.78	108,610.64
TAT	41,350.00	1,035.30	21,106.18
EPA (DIRECT)	12,000.00	600.00	8,160.00
EPA (INDIRECT)	24,400.00	1,220.00	16,592.00
TOTAL	$443,400.00	12,371.08	154,468.82

ENDIT

DATE: 9-11-87
FROM: PAMELA H. HOLLINGSWORTH, OSC, ERU, REGION V. (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI., IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT: GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP: THREE SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; OVERCAST, RAINY, TEMPERATURE IN LOW 70's.
   B. WORK RESUMED AT 1200 HOURS ON 9-8-87 .
   C. WATER TREATMENT SYSTEM IN OPERATION 24 HOURS PER DAY.
2. ACTIONS TAKEN:
   A. BEGAN AND CONTINUING SITE SAFETY MAEETINGS.
   B. CONTINUING CLEARING SITE.
   C. RECEIVED PRELIMINARY WATER SAMPLE RESULTS. HAVING MET OHIO DISCHARGE STANDARD FOR WARM WATER HABITATS, INITIATED WATER TREATMENT AND DISCHARGE ON 9-9-87.
   D. CONTINUING ATMOSPHERIC MONITORING.
   E. CONTINUING EXTENT OF CONTAMINATION STUDY. PRELIMINARY SURFACE SOIL SAMPLE RESULTS RECEIVED. ONLY 5 OUT OF 49 SAMPLES HAD LEVELS GREATER THAN 1 PPM DETECTION. THE HIGHEST AT 10 PPM. LEVEL C DRILLERS ON SITE 9-11-87 FOR SUBSURFACE INVESTIGATION.
3. PLANS:
   A. FINALIZE SITE SAFETY PLAN.
   B. CONTINUE SITE SAFETY MEETINGS.
   C. CONTINUE CLEARING SITE.
   D. CONTINUE WATER TREATMENTS.
   E. CONTINUE ATMOSPHERIC MONITORING AND EXTENT OF CONTAMINATION STUDY. LEVEL C DRILLING EXPECTED TO CONTINUE THRU 9-13-87.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE

	BUDGETED	9-9-87	TO DATE
ERCS	$365,650.00	3,415.00	38,381.00
TAT	41,350.00	857.00	11,791.00
EPA (DIRECT)	12,000.00	315.00	5,130.00
EPA (INDIRECT)	24,400.00	640.00	10,431.00
TOTAL	$443,400.00	5,660.80	25,100.00

ENDIT

DATE: 9-3-87
FROM: PAMELA H. HOLLINGSWORTH, OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI.,IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT: GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:TWO SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. WEATHER; OVERCAST, PARTLY SUNNY. HIGH IN LOW TO MID 70's.
   B. SITE SECURED AT 1200 HOURS ON 9-3-87 FOR HOLIDAY WEEKEND. WORK TO RESUME AT 1200 HOURS ON 9-8-87.
2. ACTIONS TAKEN:
   A. PRELIMINARY SITE SAFETY PLAN IMPLEMENTED.
   B. SUPPORT ZONE CONSTRUCTED.
   C. CONTAMINATION REDUCTION ZONE CONSTRUCTED. SITE CONTROLS ESTABLISHED.
   D. WATER TREATMENT SYSTEM CONSTRUCTED AND OPERATING FOR ADJUSTMENTS AND PRELIMINARY SAMPLING. SAMPLE ANALYSIS RESULTS EXPECTED 9-8-87.
   E. CLEARING OF SITE CONTINUES.
   F. CONDUCTED ATMOSPHERIC MONITORING. INITIATED EXTENT OF CONTAMINATION STUDY.
3. PLANS:
   A. FINALIZE SITE SAFETY PLAN.
   B. BEGIN AND CONTINUE DAILY SITE SAFETY MEETINGS.
   C. CONTINUE EXTENT OF CONTAMINATION STUDY AND ATMOSPHERIC MONITORING.
   D. CONTINUE CLEARING SITE.
   E. UPON MEETING OHIO DISCHARGE STANDARDS FOR WARM WATER HABITATS, TREAT AND DISCHARGE LAGOON WATER.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE, (9-2-87).

	BUDGETED	9-2-87	TO DATE
ERCS	$365,650.00	4,000.00	18,000.00
TAT	41,350.00	750.00	8,000.00
EPA (DIRECT)	12,000.00	300.00	3,000.00
EPA (INDIRECT)	24,400.00	610.00	6,100.00
TOTAL	$443,400.00	5,660.80	25,100.00

ENDIT

DATE: 8-29-87
FROM: EDWARD C. BURK, JR., OSC, ERU, REGION V, (EPA9577)

TO: T.FIELDS-ATTN B.HAMM, USEPA, WASH.D.C. (EPA5511)
B.BOWDEN, USEPA, EMERG. RESPONSE SEC., CHICAGO, IL (EPA9538)
R.BUCKLEY, USEPA, ERU, GROSSE ILE, MI (EPA9576)
J.GRAND-ATTN B.REYNOLDS, OFC.PUB.AFF., CHICAGO, IL (EPA9512)
M.ELAM-ATTN M.HAY, OFC.REG.CNSL., CHICAGO, IL (EPA9525)
D.BRUCE-ATTN P.LaBLANK, CERCLA ENFORCEMENT, CHI., IL (EPA9572)
J.HERRMANN, USEPA, OFC.RES.AND DEV. CINCINNATI, OH (EPA8313)
K.SHULTZ, OHIO EPA EMERGENCY RESPONSE, COLUMBUS, OH (EPX4454)
B.MANSON, OHIO EPA, N.W.D.O., BOWLING GREEN, OH (US MAIL)

SUBJECT: GREINERS LAGOON SITE, BALLVILLE TOWNSHIP, OHIO.
POLREP:ONE SITE:50 D.O.:7360-05-022

1. SITUATION:
   A. THE GREINERS LAGOON SITE IS APPROXIMATELY 10 ACRES IN SIZE. IN THE 1950's THE SITE BEGAN OPERATION WHICH CONSISTED OF ACCEPTING DIFFERENT TYPES OF WASTE OILS. DURING SAMPLING PROGRAMS CONDUCTED BY THE OHIO EPA AND U.S. EPA THE LAGOONS WERE FOUND TO BE CONTAMINATED WITH POLYCHLORINATED BIPHENYLS.
   B. THE SITE ORIGINALLY WAS MADE UP OF 4 OPEN LAGOONS. PRESENTLY LAGOONS 1 AND 2 HAVE BEEN FILLED IN, LAGOON 4 HAS BEEN FILLED IN AND CAPPED, AND LAGOON 3 REMAINS OPEN.
   B. ATTENTION WAS FIRST BROUGHT TO THE SITE WHEN RESIDENTS IN THE AREA BEGAN COMPLAINING OF THE ODER EMANATING FROM THE LAGOONS.
   C. SEVERAL ACTION HAVE TAKEN PLACE AT THE GREINERS SITE IN THE PAST WHICH HAVE BEEN FINANCED BY THE OHIO EPA, U.S. EPA AND BY RESPONSIBLE PARTIES.
   D. DUE TO CONTINUED PROBLEMS (e.g. LAGOON 3 OVER FLOWING) THE U.S. EPA, FOLLOWING THE RESPONSE FROM IDENTIFIED PRP's, MOBILIZED THE ERCS CONTRACTOR ON 8-26-87 TO BEGIN SITE REMEDIATION WORK.
2. ACTIONS TAKEN:
   A. PLACEMENT OF STONE FOR DECONTAMINATION/REDUCTION ZONE, SUPPORT ZONE AND ACCESS ROAD.
   B. MOBILIZATION OF OFFICE TRAILER, RESPONSE MANAGER AND PCS.
   C. MOBILIZATION OF D-4 DOZER AND OPERATOR FOR SUPPORT ZONE PREP.
3. PLANS:
   A. BEGIN CONSTRUCTION OF DETAILED SITE MAP (TO SCALE) FOR LOCATION OF SAMPLE POINTS AND SOIL STAGING AREAS.
   B. BEGIN ARRANGEMENTS FOR WATER TREATMENT SYSTEM FOR THE DEWATERING OF LAGOON #3.
   C. BEGIN SET-UP OF SUPPORT ZONE INCLUDING THE MOBILIZATION OF A DECON TRAILER AND CONSTRUCTION OF A DECON LINE.
   D. BEGIN EXTENT OF CONTAMINATION STUDY.
4. RECOMMENDATIONS:
   A. NONE.
5. STATUS:
   A. CASE OPEN.
   B. ESTIMATED COST TO DATE, (4-11-87).

	BUDGETED	4-11-87	TO DATE
ERCS	$365,650.00	3,000.00	3,000.00
TAT	41,350.00	1,000.00	2,000.00

EPA (DIRECT)	12,000.00	300.00	1,000.00
EPA (INDIRECT)	24,400.00	610.00	1,300.00
TOTAL	$443,400.00	4,910.80	7,300.00

ENDIT

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EMERGENCY ACTION PLAN

FOR

GREINER'S LAGOON
FREMONT, OHIO

Prepared For:

U.S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois

CONTRACT NO. 68-95-0017

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1.0 SITE HISTORY AND GENERAL INFORMATION

Greiner's Lagoon is in Sandusky County five miles south of Fremont, Ohio, in the north-central part of the state. The site is located on County Road 181 about 1/2 mile west of Tiffin Road in Ballville Township (Figures 1 and 2). Originally developed by Mr. Terry Little in 1954, the facility used four on-site lagoons to store waste oil collected from nearby industry. The oil was then used to control dust on unpaved roads. A letter from the community, sent to Mr. Little in 1960, complained of odors emanating from the lagoon and of animals being killed or trapped by the oil. The estimated 400 animals affected included ducks, squirrels, pheasants and cranes. In response to the complaints from the community, the Ohio Environmental Protection Agency (OEPA) ordered Mr. Little to cease dumping oil into the four lagoons in 1970.

In 1972, Mr. Little traded the property to Beatrice and Edgil Collins in return for well drilling services. The Collins then sold the property to Mr. Nobel Caseman in 1973. During Mr. Caseman's period of ownership, a lawsuit was filed by members of the community against the original owner, Mr. Terry Little. By order of the Stark County Court of Common Pleas, Mr. Little was required to take measures to prevent any release of oil from the site. In response, Mr. Little constructed dike systems around the four lagoons.

In the latter part of 1973, Mr. Caseman sold the property to Mr. Gary Greiner, the present owner. From 1973 until the late part of 1974, Mr. Greiner used the site for disposal of demolition debris. In June of 1973, after heavy rainfalls, the lagoons overflowed into adjoining farm land. Due to the odors emanating from the site and contamination of adjacent soils from the overflow, the OEPA, in November of 1974, ordered Mr. Greiner to clean up the site. Because Mr. Greiner failed to comply with the order, the case was referred to the Attorney General who filed a suit in the Sandusky Court of Common Pleas in 1975. A judgment was handed down in September, 1980, ordering Mr. Greiner to clean up the site by January 15, 1981. Mr. Greiner did not comply with the order so he was sued by the State County Court for noncompliance and fined $1,000.00. This fine remains unpaid. The case is presently being pursued by the U.S. Environmental Protection Agency (U.S. EPA) and the OEPA.

On June 16, 1981, heavy rains caused the lagoons to overflow once again. Oil contaminated with polychlorinated biphenyls (PCBs) was released onto the adjoining farm land and into a nearby drainage ditch. Some of the contaminated oil flowed

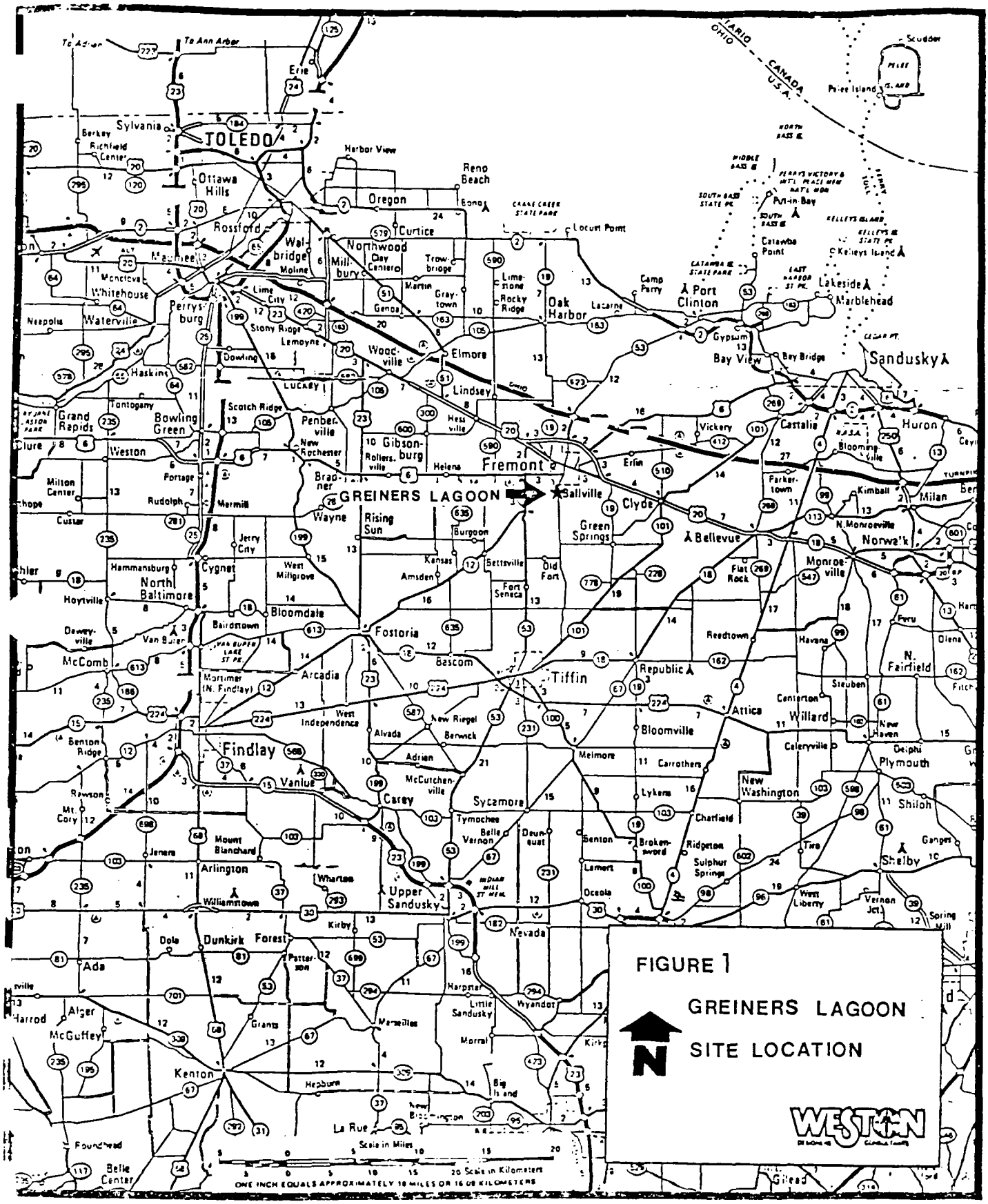


FIGURE 1

GREINERS LAGOON

SITE LOCATION

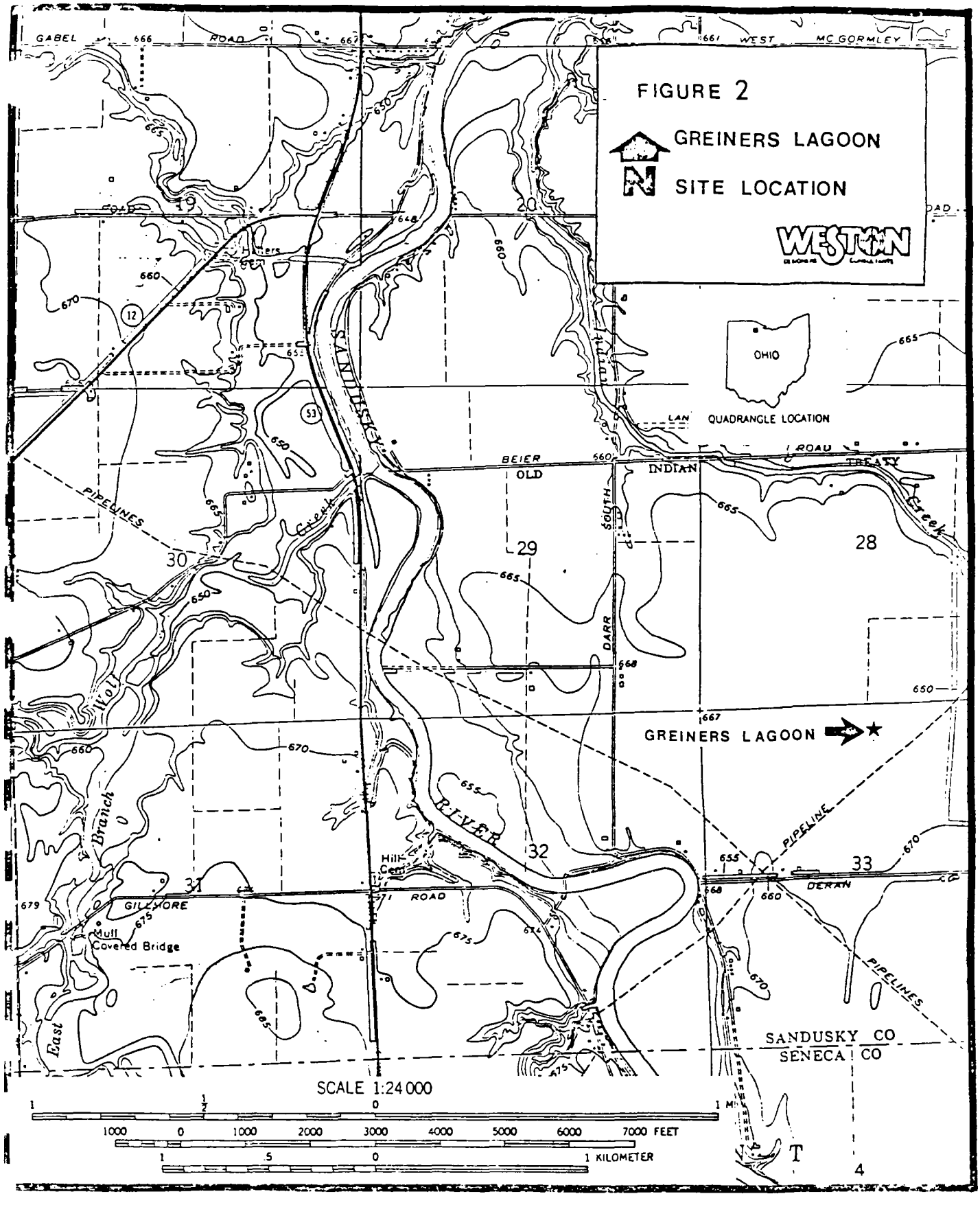


FIGURE 2
GREINERS LAGOON
SITE LOCATION
WESTON
OHIO
QUADRANGLE LOCATION
GREINERS LAGOON
GABEL ROAD
WEST MC GORMLEY
BEIER ROAD
OLD INDIAN TREATY
PIPELINES
SANDUSKY RIVER
DARR SOUTH
Wolf Creek
East Branch
GILLMORE ROAD
DERAN
Mull Covered Bridge
Hill Cem
SANDUSKY CO
SENECA CO
SCALE 1:24 000
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

into Indian Creek via the drainage ditch and eventually to the Sandusky River. On June 17, 1981, the U.S. EPA used Federal Water Pollution Control Act Part 311(k) funds ($6,700.00) to reinforce the dikes around the lagoons. A dike was also built to contain the previous spill in the low area around the lagoons.

In July of 1981, the OEPA funded a cleanup action. During this action, surface oil was collected from the lagoons and stored on site in two 6,000 gallon tanks. Liquid from Lagoons #3 and #4 were siphoned off and passed through a carbon contact unit that was constructed on site in a 20,000 gallon tank. Effluent from the carbon unit was discharged to the nearby drainage ditch. Lagoon #4 was dewatered and partially filled with dirt. Closure and grading of this lagoon was completed in June 1982, as a CERCLA-funded immediate removal. Other actions undertaken as part of this $198,000 cleanup included the capping of Lagoon #4 and the partial dewatering of Lagoon #3.

At present, Lagoons #1 and #2 have been filled in and Lagoon #3 has been partially filled in. Some of the fill material and transportation is being supplied by local industry. This most recent effort to mitigate conditions at the site was coordinated and monitored by the OEPA.

2.0 SITE ASSESSMENT

2.1 Site Descripton

The Greiner's Lagoon facility covers an area of ten acres. It is in a rural setting bordered directly to the south and west by wooded area. The remainder of the site is bordered by farm land. The area slopes gradually to the northwest. There are no barriers around the site or posted signs that restrict access or warn of the site's potential dangers.

Of the four on-site lagoons, Lagoon #4 is the largest and is situated farthest to the south (Figure 3). This lagoon has been filled in, capped with clay, covered with top soil, graded and seeded. Close examination of the vegetation revealed sparse groupings of plants that appeared to be growing poorly.

Lagoon #3, which is directly north of Lagoon #4, measures approximately 150 x 150 feet and is the second largest impoundment on the site. It has been partially filled in with dirt supplied by local sugar beet farmers. An average of nine dump truck loads were being put on site per day at the time of the inspection. This lagoon still contains about two feet of water with two to three inches of oil over 75% of the water's surface.

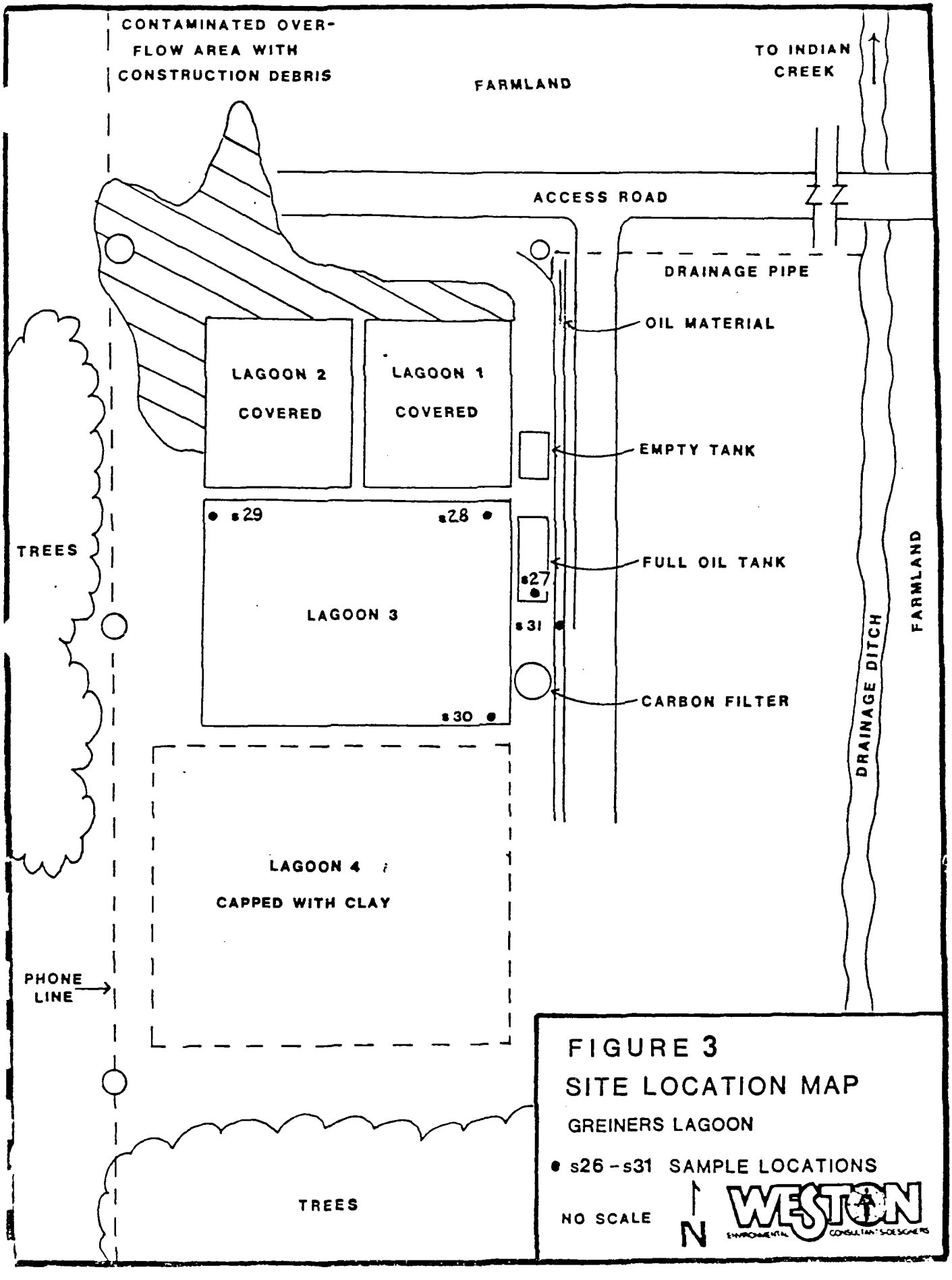


FIGURE 3
SITE LOCATION MAP
GREINERS LAGOON
● s26 - s31 SAMPLE LOCATIONS

Lagoons #1 and #2 are north of Lagoon #3 and are the smallest impoundments on the site, each being approximately 65 x 65 feet. They are completely filled in as a result of the local cleanup effort. However, oil has been observed at the surface of the fill material. One explanation for the upward migration of oil is that the fill material used to cover these lagoons contained cinders and similar nonabsorbent materials, thereby displacing rather than solidifying the liquid wastes in the lagoons.

There are three on-site tanks including one 20,000 gallon vertical tank that was used as a carbon contact filter, and two horizontal tanks, having a combined capacity of 12,000 gallons, that were used as holding tanks. The amount and make-up of material in the vertical tank is unknown since the tank's manways were inaccessible. The larger of the two horizontal tanks (approximately 8,000 gallons) was full of waste oil and the smaller tank (approximately 4,000 gallons) was empty during the TAT's inspection.

Directly to the east of the tanks is a six inch outlet pipe that empties into a drain which leads to a drainage ditch approximately 1,000 feet to the east of the site. This ditch flows into Indian Creek which is a tributary of the Sandusky River, the drinking water source for the city of Fremont (population 21,000). Fremont's raw water intake in the Sandusky River is six miles downstream from Greiner's Lagoon.

Residents in the immediate vicinity of the site rely on ground water for their potable water. The area is covered with a thin layer of glacial till underlain by interbedded clays. The bedrock, a shallow creviced limestone bed, is an aquifer supplying the only source of drinking water for the area. Wells which produce up to 100 gallons per minute have been drilled to depths as shallow as thirty-eight feet. The nearest private well is within 1/2 mile of the facility and the nearest municipal well is three miles from the site.

TAT observed several on- and off-site areas where soils were stained with oil. The areas included approximately 200 square feet around the tanks, 10 square feet around the drain that leads to the drainage ditch, and 600 square feet within the drainage ditch.

2.2 Summary of Existing Analytical Data

Waste and environmental samples from Greiner's Lagoon were collected and analyzed by personnel from the Ohio Department of Public Health (ODPH), the OEPA and the U.S. EPA. These sampling efforts were undertaken between the years 1970 and 1982.

In May of 1970, the ODPH sampled the drainage ditch next to the lagoon area. Analysis of water samples collected immediately downstream from the facility's field tile were found to contain elevated levels of iron and manganese as compared to those samples collected approximately one-quarter mile downstream from the facility. Iron and manganese were detected near the facility at concentrations of 8.9 and 3.9 ppm, respectively.

The OEPA sampled liquids in each of the four lagoons in April of 1975. The samples were analyzed for pH, chemical oxygen demand (COD), nitrogen, phosphorus, sulfate, chloride, iron, chromium, nickel, zinc and phenols. Phenol was detected in Lagoon #1 at 2.7 ppm. These compounds were detected at lower levels in each of the other lagoons.

Lagoons #1 and #2 were sampled for a second time by the OEPA in May, 1977. In addition, water samples from two field tiles were collected. One tile discharge was chosen because it appeared to be contaminated while the other was chosen because it was releasing an oily liquid resembling leachate. All samples were analyzed for selected inorganic constituents including copper, iron, lead and zinc. Zinc levels had increased slightly over 1975 levels in Lagoon #2, as well as in the contaminated field tile water sample, at 0.46 ppm, 1.2 ppm and 0.05 ppm respectively. Copper was below detectable levels in all samples.

A third sample collection effort was undertaken by the OEPA in October, 1980. Analysis of liquid and sludge samples from Lagoons #2, #3 and #4 revealed the presence of Aroclor 1254 in all samples. The highest level (16.9 ppm) was detected in the liquids collected from Lagoon #2. Aroclor 1016 was also detected in Lagoon #2 liquids at a concentration of 15.2 ppm. Sludge samples in Lagoons #3 and #4 contained levels of Arochlor 1016 at 11.6 ppm and Arochlor 1254 at 11.8 ppm, respectively. Inorganic analyses of the lagoon sludges revealed cadmium (2.3 ppm), chromium (16.9-37.8 ppm), copper (23.1-28.9 ppm), lead (110-181 ppm), nickel (5.6-15.4 ppm) and zinc (418-686 ppm). All liquid samples collected from the three lagoons contained phenols. The sample with the greatest concentration of phenol (25.6 ppm) was taken from Lagoon #2.

The U.S. EPA conducted a metals fate assessment study of the Greiner's Lagoon area in May 1981. Samples were collected upstream and downstream of the site as well as from the drainage ditch next to the site. The results of the analysis indicate that the highest concentrations of aluminum, iron, barium, cobalt, chromium, copper, lithium, manganese, and nickel were detected in the adjacent drainage ditch. Contaminants were found at decreased levels downstream of the site, while no significant levels of contaminants were found upstream.

PCB analysis by the OEPA in August 1981 indicated that levels of PCBs (e.g., Aroclor 1248) range from <1 ppm (Lagoon #4) to 97.3 ppm (Lagoon #1) in oil samples, and from <1 ppm (Lagoons #3 and #4) to 287 ppm (Lagoon #2) in the sludge samples. PCBs were also detected in soils located in the lagoon overflow area at approximately 64 ppm, and in an adjacent corn field at 0.25 ppm at 6 cm. It should be noted that samples collected by the Field Investigation Team (FIT) that same month showed approximately 20 ppm PCBs in soils near the point of overflow. PCBs were not detected by FIT in the adjacent farm field.

U.S. EPA sampling for metals in November 1981, in the offsite spill location area, revealed the presence of aluminum, barium, cadmium, copper, iron, manganese, nickel, lead, zinc, and arsenic at relatively high concentrations when compared to background levels.

The TAT collected tree bark and sludge samples from six locations within Lagoon #4 in February 1982. PCB concentrations detected in these samples ranged from 31 ppm to 57 ppm. Lagoon #4 sludges were resampled in April 1982 to check PCB levels and the maximum concentration was found to be 20.1 ppm.

In June 1982, the OEPA collected samples for PCB analysis. Sludge samples were collected from Lagoons #1, #2 and #3. Oil samples were also collected from Lagoon #2 and the two horizontal tanks on site. At that time PCBs were not detected in any of the samples collected from the site.

Based on the previously discussed inconclusive and highly variable sample results, the U.S. EPA determined that additional sampling would be required to adequately assess site conditions vis-a-vis a potential CERCLA-funded emergency action.

2.3 Summary of TAT Sample Collection Activities and Analytical Results

In this section are the analytical results from the on-site sampling effort conducted by the TAT on August 23, 1984, at the Greiner's Lagoon site. The sample locations are shown in Figure 3. The type of analysis, the laboratories utilized and the time period taken for analysis for each group of samples is presented in Table 1. A summary of inorganic water sample results, inorganic oil and sludge sample results (Task 1 and 2 metals), inorganic leachate metal results (EP Toxicity), organic water sample results, and organic oil and sludge sample results are presented in Tables 2, 3, 4, 5, and 6, respectively.

The inorganic U.S. EPA Task 1 and 2 metals water analysis results, received from Wadsworth Testing Laboratory, Canton, Ohio, revealed that barium, cadmium, chromium, and lead exceeded the primary safe drinking water values by a factor of 9, 3, 3, and 52, respectively, while iron, manganese, and zinc exceeded the secondary safe drinking water values by as much as a factor of 36 in the case of iron. Compounds such as aluminum, arsenic, barium, chromium, iron, and zinc were found in concentrations which far exceeded their Threshold Limit Values (TLVs).

The data received from U.S. Testing, Hoboken, New Jersey, for inorganic water analysis is notable. Due to "inconsistent burn," the reading averages were considered too high by the Central Regional Laboratory (CRL) and it was suggested that the data for aluminum, iron, and silver not be used. Also, the raw data received from Encotech, Ann Arbor, Michigan, is preliminary due to its unreviewed status. These data are of questionable utility as: 1) the detection limits were high; and, 2) the polychlorinated biphenyl (PCB) data are not quantitative because standards and quantitation methods were inadequate. Therefore, a second sampling effort by the TAT was arranged for further PCB analysis.

On December 26, 1984, the TAT was tasked to collect the additional samples from the Greiner's Lagoon facility. On December 27, 1984, the TAT collected the samples, duplicating the sample sites utilized in the previous sampling effort conducted by the TAT on August 23, 1984, to ensure consistency (sample locations shown in Figure 4).

These samples were taken to Wadsworth Testing Laboratories, Inc., Canton, Ohio, for PCB analysis on December 28, 1984. The results were received on January 3, 1985, and are presented in the report contained in Attachment E. At least two PCB Aroclors were detected, Aroclor 1248 and Aroclor 1254, in each of the samples. PCB concentrations in samples S-32, S-33, S-34, S-35 and S-36 were reported to be 250 mg/kg, 46 mg/kg, 60 mg/kg, 23 mg/kg and 130 mg/kg, respectively. Analysis showed the samples to be highly degraded; however, results reported by the Wadsworth Testing Laboratory are reliable due to the laboratory's quality control procedures.

2.4 Threats to Human Health and the Environment

This section addresses how the compounds found on site, combined with other factors such as unrestricted site access, soil characteristics and land uses, present a significant risk of harm to human health and the environment. Also, the discussion reviews the three major threats posed by the site.

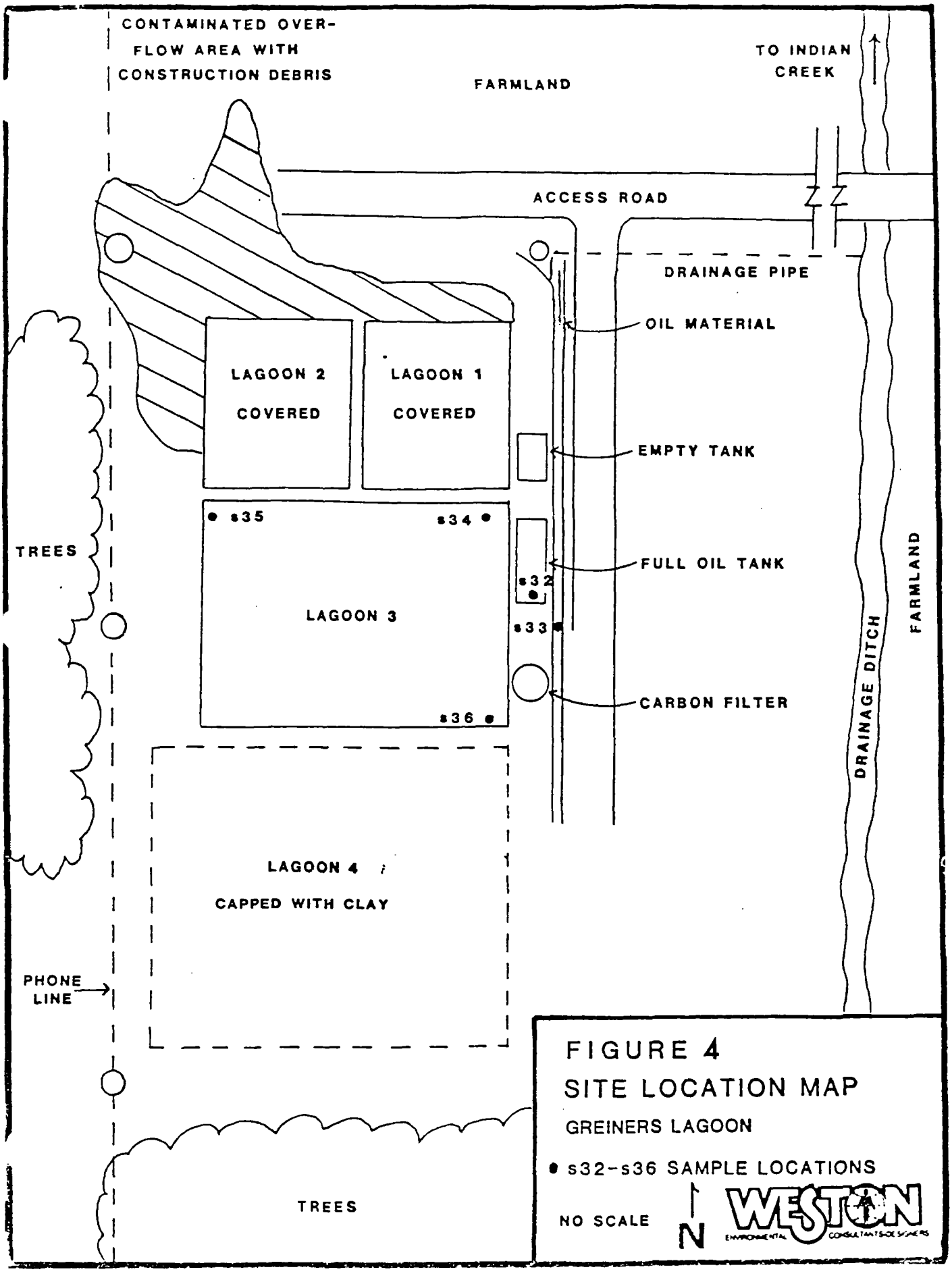


FIGURE 4
SITE LOCATION MAP
GREINERS LAGOON
● s32-s36 SAMPLE LOCATIONS
NO SCALE

In order of magnitude the threats are: 1) direct human exposure to contaminated waste material and soils; 2) direct human contact with or ingestion of contaminated surface and ground water; and 3) potential adverse impacts to wildlife posed by conditions at the site.

Due to the unrestricted nature of the site grounds, there exists a potential for direct human contact with hazardous material detected on the site. Contaminated oil, water and sludge contained in the lagoons, on site tanks and off-site soils, sediments and water pose a significant threat to those who may inadvertently come into contact with the material. Several of the substances detected on the site may be readily absorbed by the skin upon contact. These substances include pentachlorophenol, phenol, PCBs and toluene. The first three of these materials are known teratogens and/or carcinogens via dermal, oral and additional routes of exposure. Other potential effects of exposure include liver, kidney and spleen damage; mental disturbances; paresthesia; collapse; coma and death.

In addition to the potential for direct human exposure through dermal routes, the potential exists for exposure to the substances on site through oral and inhalation routes. All of the substances found on the site could be inadvertently ingested if not removed from the hands prior to eating, smoking, or natural hand-to-mouth contact. Several of the organic substances found on site are volatile (e.g. ethylbenzene, methylene chloride and toluene) and, thus, would readily be inhaled by unprotected individuals in the site vicinity. It should be noted that methylene chloride is an experimental carcinogen, and is in use experimentally to cause the formation of neoplasms. Other symptoms of exposure to the volatile organic substance include dizziness, erythemia, and narcosis.

Toxic materials which were detected in Lagoon #4 oil and sludge samples at concentrations approaching or exceeding Threshold Limit Values (TLVs) established for each include: arsenic, barium, cadmium, chromium, copper, lead, nickel, PCBs, and silver. Arsenic, iron, manganese, and PCBs were also detected in the off-site lagoon overflow area at concentrations exceeding their TLVs. In addition, PCBs were found at high levels in Lagoons #2 and #3 sludge samples, as well as in a farm field adjacent to the facility. All of the PCB levels detected both on site and off site due to lagoon overflows exceed Immediately Dangerous to Life and Health values (IDLH). The potential exists for human exposure to each of the above-mentioned materials through inhalation of air-borne particulate matter at or near the site. Even those substances detected in the fill and capping material on

Lagoon #4 may yet pose a threat to unwary individuals. Lagoon #4 sludges may have seeped to the surface during filling operations similar to the situation occurring in Lagoons #1 and #2. Areas presently void of vegetation, which were observed on the cap of Lagoon #4, would tend to indicate that sludges did seep to the surface. Contaminated soil particles from these barren areas could become air-borne once the soils have dried during the summer months. Of the substances detected in soil samples at concentrations exceeding their TLVs, arsenic, cadmium, nickel, and PCBs are known teratogens and/or carcinogens, while copper is a suspected mutagen and lead is a suspected carcinogen and teratogen. Other health effects associated with the substances include pulmonary edema, histologic fibrosis of the lungs, gingival lead line, cyanosis, emphysema, paralysis and death.

The second threat posed by the conditions at the Greiner's Lagoon facility is that of surface and ground water contamination. The drinking water intake serving the City of Fremont, Ohio (population 21,000), and adjoining areas is located six miles downstream from the facility. Contamination of surface water with substances including aluminum, barium, chromium, cobalt, copper, iron, lead, lithium, manganese, nickel, PCBs, vanadium, yttrium, and zinc has been documented both in the immediate vicinity and further downstream from the site. Contamination of area surface water may be attributed to the recurring overflows. One such incident occurred in June 1981 when heavy rainfall caused the lagoons to overflow and contaminants made their way into Indian Creek, which empties into the Sandusky River. As noted previously, the Sandusky River is the drinking water source for Fremont, Ohio. No sampling of the river or area surface water at that time was conducted.

Table 2 presents a comparison of Federal Safe Drinking Water Act primary and secondary standards for various substances to concentrations detected in surface waters near the Greiner's Lagoon site. The lead concentrations detected in off-site surface waters exceeded primary standards by a factor of ten, while concentrations of iron and manganese exceeded secondary standards by a factor of six and sixteen, respectively. Health effects not previously mentioned which are associated with the substances detected in near-site surface waters include: diffuse modular fibrosis, toxicity to the central nervous system, red blood cell destruction, anti-coagulation blood effects, liver damage, bronchitis, and Parkinson's disease.

The potential for contamination of ground water in the immediate vicinity of the Greiner's Lagoon facility is of

concern. The lagoons have no liners; therefore, migration of contaminants to the water table is possible. The top layer of the soil is made of glacial till which, in general, is loosely packed and very porous. The following layers are interbedded clays that may vary in porosity. The next layer is a creviced limestone layer which is the only aquifer in the area. This limestone bed is the only source of ground water in the area. Local drinking water wells are as shallow as thirty-eight feet and can produce up to 100 gallons per minute. No other source of potable water is known to be used by residents in the immediate vicinity of the facility. At this time, no sampling of area ground water is known to have been conducted.

A third threat is to wild life. As substantiated in Section 1.0 of this report, nonmigratory bird kills have occurred as a result of exposure to the substances contained in the facility's lagoons. It has been documented that prior to death, these birds suffered from symptoms including stupefaction and convulsions.

Table 7 lists acute toxicity data for several of the substances detected on the site. Substances including arsenic, copper, iron and zinc are highly toxic to rats and mice via intraperitoneal routes of exposure. Additionally, phenanthrene, phenol and 1,2,4-trichlorobenzene are moderately toxic to these species via oral and dermal routes. This data would indicate a threat posed to wildlife which inhabit the immediate area, as well as areas downstream from the lagoons.

3.0 RECOMMENDATIONS

The emergency action presented in this plan are divided into three basic phases. Each phase is designed to remove or lessen direct human exposure, threats to surface and ground water, and the threat to wildlife at the Greiner's Lagoon site. The first phase is the basic removal plan which includes:

- Provide for site security;
- Sample, remove, and dispose of waste oil and water;
- Stabilize sludge;
- Clean and remove tank;
- Fill Lagoon #3 and cap all lagoons;
- Cover with top soil, grade, and seed.

The second and third phases will be additions to Phase 1. The addition presented by the second phase is:

- Sample, remove, and dispose of on-site sludge

TABLE 7

SUMMARY OF SUBSTANCES IDENTIFIED AND SOME ASSOCIATED CRITICAL CHARACTERISTICS

GREINER'S LAGOON, FREMONT, OHIO

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Aluminum	Overflow Area Drainage Ditch	1.7-2.1 ppm 11 ppm	10 mg/m^3 (9 ppm)			o Inhalation of finely divided aluminum powder has been reported as a cause of pulmonary fibrosis.
Arsenic	Overflow Area Lagoon 4 Soil	1.9-2.4 ppb 20.1 ppb	0.2 mg/m^3 (0.016 ppb)		Intramuscular LD_{LO}(rat)= 25 mg/kg	o A known carcinogen. Poisonous.
Barium	Lagoon 4 Soil Drainage Ditch Overflow Area	56.3 ppm 49 ppb 27-30 ppb	0.5 mg/m^3 (0.09 ppm)	(44.49 ppm)		Soluble barium compounds are poisonous. Exposure symptoms include severe abdominal pain, muscle spasms, paralysis, cyanosis and death.
Butyl benzyl phthalate	Tank Liquid	34 ppm			Intraperitoneal LD_{50}(mouse)= 3160 mg/kg	o Moderately toxic intraperitoneal routes. Low toxicity via additional routes.
Cadmium	Lagoon 4 Soil Overflow Area	0.96 ppm 1.2-2.2 ppb	0.05 mg/m^3 (1 ppm)	40 mg/m^3 (8.7 ppm)		o A known carcinogen and teratogen. o Exposure symptoms include pulmonary edema, emphysema, proteinuria and anemia.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Chromium	Lagoon 4 Soil Drainage Ditch	18.8 ppm 9.3 ppb	0.5 mg/m^3 (0.24 ppm)			o Inhalation of chromium compounds is known to cause histologic fibrosis of the lungs.
Cobalt	Drainage Ditch	6.8 ppb	0.1 mg/M^3 (4 ppb)	20 mg/m^3 (830 ppb)		o An experimental carcinogen. o Exposure symptoms include decreased pulmonary function, diffuse nodular fibrosis and respiratory hypersensitivity.
Copper	Lagoon 4 Soil Drainage Ditch Overflow Area	47 ppm 14 ppb 6.8-10 ppb	1 mg/m^3 (0.38 ppm)		Intraperitoneal LD_{50} (mouse)= 3.5 mg/kg	o A suspected mutagen.
Di-n-butyl phthalate	Tank Liquid Lagoon 3 Water	15 ppm Trace	5 mg/m^3 (0.44 ppm)	9300 mg/m^3 (817 ppm)		o Exposure symptoms irritated nasal and upper respiratory passages, stomach irritation and light sensitivity.
Di-n-octyl phthalate	Tank Liquid Lagoon 3 Water	110 ppm 20 ppm			Oral LD_{50} (rat)= 31,000 mg/kg	o An experimental teratogen on a chronic basis.
Ethyl benzene	Lagoon 3 Water	33 ppm	100 ppm	2000 ppm	Inhalation LD_{50} (rabbit)= 5000 mg/kg	o Exposure symptoms include dizziness, irritation of the nose and throat, congestion of the chest and erythema and inflammation of the skin

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Bis(2-ethyl hexyl) phthalate	Tank Liquid Lagoon 3 Water	500 ppm 260 ppm			Oral LD_{50} (rat)= 31,000 mg/kg	o Experimental teratogen on a chronic basis.
Iron	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid Drainage Ditch Clean Field Tile Contaminated Field Tile	350-400 ppb 290-310 ppbb 70 ppb 220 ppb 17 ppm 30 ppb 480 ppb	1 mg/m^3 (0.43 ppm)		Intraperitoneal LD_{50} (mouse) 26 mg/kg	o A suspected lung, liver connective tissue and reticulo-endothelial tissue carcinogen. o Exposure symptoms (iron dust) include conjunctivitis, chloroiditis, retinitis and siderosis of tissue if iron remains in these tissues.
Lead	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 4 Soil Contaminated Field Tile Overflow Area	46 ppb 120 ppb 19.1 ppm 5 ppm 8.1-13 ppb	0.05 mg/m^3 (0.06 ppm)		Oral LD_{50} (guinea pig)= 1330 mg/kg	o Suspected carcinogen and teratogen. o Exposure symptoms include abdominal pain, gingival lead line and wrist paralysis.
Lithium	Lagoon 4 Soil Drainage Ditch	17.9 ppm 13 ppb				o An experimental teratogen. o Lithium compounds have caused prostration, kidney damage, anorexia, coma and death. The lithium ion is toxic to the CNS.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Manganese	Drainage Ditch Overflow Area	330-790 ppb 48-220 ppb	$5 mg/m^3$ (ceiling) (220 ppb)	10,000 ppm	Inhal TC_{LO} (humans)= $11 mg/m^3$	o A known mutagen and suspected carcinogen. o Exposure symptoms include Parkinson's disease, asthenia and mental problems.
Methylene chloride	Tank Liquid Lagoon 3 Liquid	130 ppb 21 ppb	100 ppm	5,000 ppm	Oral LDPV50PV (rat)= 2136	o An experimental carcinogen. Experimentally causes the formation of neoplasms. o Induces narcosis at high concentrations.
2-methyl naphthalene	Tank Liquid	Trace				o Suspected carcinogen of the bladder. o Limited animal experimentation suggests high toxicity.
Nickel	Lagoon 4 Soil Drainage Ditch Overflow Area	19.1 ppm 16 ppb 7.0-7.3 ppb	$1 mg/m^3$ (o.41)			o A known carcinogen of the lungs and and nasal cavities. o Experimentally causes the formation of neoplasms. o Exposure symptoms include sensitization dermatitis, pneumonitis and allergic asthma.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Pentachloro-phenol	Unknown	Trace	0.5 mg/m^3 (skin) (0.045 ppb)			o A known teratogen and suspected carcinogen. o Absorbed through the skin. o Exposure symptoms include liver and kidney damage, collapse and CNS depression.
Penanthrene	Tank Liquid Lagoon 3 Liquid	Trace Trace			Oral LD_{50} (mice)= 700 mg/kg	o A known carcinogen. o A skin photo-sensitizer.
Phenol	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid	27 ppm 1.9 ppm 106 ppb 82 ppb	5 ppm (skin)	100 ppm	Dermal LD_{50} (rat)=669 mg/kg	o An experimental and co-carcinogen via dermal routes (absorbed through the skin). o Absorption through the skin may lead to death within 30 minutes. o Exposure symptoms include kidney, liver and spleen damage;edema of the lungs; collapse; mental disturbances; and gangrene.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Polychlor-inated biphenyls	Lagoon 1 Oil Lagoon 2 Oil Lagoon 2 Sludge Lagoon 3 Oil Lagoon 3 Sludge Lagoon 4 Oil Lagoon 4 Sludge Overflow Area Cornfield	97.3 ppm 28.7-32 ppm 1-287 ppm 0.01-81.1 ppm <1-19.2 ppm 0.02 ppm 17.8-57 20-640 ppm 0.25 ppm	1 mg/m^3 (skin) (0.1 ppm)	10 mg/m^3 (1 ppm)		o A known carcinogen via oral routes. o Absorbed through the skin. o Persistent and ecologically damaging. o Exposure symptoms include chloracne, acute atrophy of the liver, jaundice, coma and death. o Emits highly toxic fumes when heated to decomposition.
Silver	Lagoon 4 Soil	0.5	0.1 mg/m^3 (0.022 ppm) Soluble cmpds: 0.01 mg/m^3 (0.002 ppm)			o Experimentally causes the formation of neoplasms via the implantation route. o Exposure symptoms include permanently blue-gray eyes, nasal septum, throat and skin; ulceration; deposition of silver in various organs.
Toluene	Tanks Liquids Lagoon 3 Water	14 ppm 170 ppm	200 ppm		LD_{50} (rat)= 1640 mg/kg	o May contain highly toxic benzene impurities. Moderately toxic otherwise. Exposure symptoms include

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Toluene(cont'd)						include confusion, paresthesia and photophobia. o Flammable. o Emits toxic vapors when heated.
1,2,4-trichlorobenzene	Lagoon 3 Water	Trace	5 ppm		Oral LD_{50} (mice)= 766 mg/kg	o Toxic by ingestion and inhalation.
Vanadium	Drainage Ditch	18 ppb	as V_2O_5: 0.05 mg/m^3 (24 ppb)			o Vanadium compounds lead to exposure symptoms including polycythemia, red blood cell destruction, emaciation, albuminuria, hematuria, hemoptysis, acute pulmonary edema, greenish-black discoloration of the tongue, bronchitis, tremors and radiographic reticulation.
Yttrium	Drainage Ditch	8.9 ppb	1 mg/m^3 (0.27 ppb)			o May have an anticoagulant effect on the blood. o Possible liver damage.
Zinc	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid Lagoon 4 Soil Drainage Ditch	390-450 ppb 320-430 ppb 90 ppb 80 ppb 97.7 ppb 5 ppb			Intraperitoneal LD_{50} (mice)= 15 mg/kg	o Dust is flammable.

The final additions presented by the third phase are:

- o Sample, remove, and dispose of contaminated soils in Lagoons #1 and #2.
- o Fill in Lagoons #1 and #2.

Phase #1

Figure 5 presents an estimated period of performance for each of the activities contained in Phase #1. It is estimated that this immediate removal will require seven weeks to complete.

3.1 Site Security

Due to the rural setting of the site, eight warning signs will be posted around the facility during cleanup.

3.2 Sample, Remove, and Dispose of Waste Oil and Water

This Emergency Action Plan will be initiated with the removal of nondrummed waste oil from the site. Oil contaminated with PCBs will be collected from the lagoon and one of the on-site tanks and bulked. Oil in the lagoon will be collected using a portable air blower to consolidate material in a small area, and then collected utilizing a vacuum truck for bulking and transferring to tankers. The oil in the on-site tank will be collected by again using the vacuum truck. Incineration of the oil has been selected as the disposal because: 1) the oil is unrecoverable due to its contaminants, and, 2) it is a completely destructive disposal technique, leaving no potential for future threats. Prior to collection and incineration of the oil, composite samples of the material will be collected for disposal analysis. These analyses should determine percent of contaminated components, water content, viscosity, percent dissolved, suspended solids, BTU value per pound, flash point, specific gravity, and pH. All sample analyses will be subcontracted services. Disposal authorization should be sought immediately following receipt of the sample results.

The estimated amount of oil and other materials on site is based on a survey conducted by the TAT on August 23, 1984. The estimated 14,000 gallons of PCB-contaminated oil included 13,000 gallons contained in on-site tanks; an additional 1,000 gallons is located in Lagoon #3. Three loads of nondrummed oil will, therefore, be collected and shipped to an incinerator for disposal.

After the oil has been removed from Lagoon #3, treatment of the on-site water can commence. The on-site water will be treated utilizing the Calgon skid-mounted Series II System. The Series II System has two in-series filters with the first made up of cleansorb and the second of activated carbon. A sample of the discharge will be taken for analysis to determine if the treated water should go to a water treatment plant, or if it can be discharged off site into Indian Creek north of the site. Approximately 300,000 gallons of water would be treated, and the process would take four days.

3.3 Stabilize Sludge

On-site sludge will be stabilized by adding fly ash. A ratio of one part ash to four parts sludge will be followed. Therefore, an estimated 400 yards of fly ash will be required. The purchase and transportation of the fly ash will be subcontracted. A front-end loader with a backhoe and a bulldozer will be used to mix the ash into the sludge for stabilization. An estimated 1,600 yards of sludge will be required to stabilize and will require ten working days to complete.

3.4 Remove and Clean Tanks

A detergent or mineral spirits rinse will be utilized in cleaning the three on-site tanks. The tank will then be cut up for transportation to the local scrap yard for sale and partial cost recovery. Approximately five working days will needed to clean and cut three on-site tanks.

3.5 Fill Lagoon #3 and Cap All Lagoons

The soil required to backfill Lagoon #3 has been donated by local industry; thus, the only cost will be that of transporting the material to the site. The transportation will be subcontracted, and, at the time of this report, the local contractor quoted $1.25/loaded mile. Lagoons #1, #2 and #3 will then be capped with a highly impermeable clay material. The estimated cost of the clay is $9.00/ton delivered, with 2,850 tons required. Rough grading will be done by a bladed sheeps-foot roller. The task of filling lagoon #3 and capping the lagoons will take five working days.

3.6 Cover with Top Soil, Grade and Seed

The topsoil cover will be contracted and cost will be $12.00/ton delivered, with an estimated 1,450 tons required. A bulldozer will be used for the rough grading of the top soil. The final grading and seeding will be subcontracted at an estimated cost of $.10/square foot. This will prevent any ponding of water and eliminate erosion. Five working days will be required to complete the final stabilization steps.

It is also suggested that the Greiner's Lagoon site be re-evaluated according to the Hazardous Ranking System (HRS). If the HRS score is such that the site is placed on the National Priorities List (NPL), it would qualify for remedial action. Monitoring wells could be placed around the lagoons to check for and to monitor any contamination of the ground water.

3.7 Phase #2

Phase #2 is presented as an addition to the base cleanup action (Phase #1). Figure 6 presents an estimated performance period for each of the activities contained in Phase #2. It is estimated that this Immediate Removal will require nine weeks to complete.

After the sludge has been solidified, a composite sample will be collected and analyzed for the parameters mentioned in Section 3.2. The sludge will then be bulked in lined truck beds using a front-end loader. Approximately 2,000 tons of PCB-contaminated sludge will be transported to an approved landfill. The transportation will be subcontracted and the cost will be $3.25/loaded mile. The cost of landfilling the sludge is $140/ton, total landfill cost being approximately $280,000. The sampling, removal, and disposal of the sludge will take an estimated ten working days.

3.8 Phase #3

Phase #3 will also be presented showing the additions to the previous cleanup phases (Phases #1 and #2). Figure 7 presents an estimated performance period for each of the activities contained in Phase #3. It is estimated that this Immediate Removal will require 12 weeks to complete. After all the sludge has been removed from the site, the material in Lagoons #1 and #2 will be sampled for disposal authorization. The soil will be treated in the same manner as the sludge since the soil is also PCB contaminated. The material will be removed and loaded into lined truck beds using a front-end loader. Approximately 2,000 yards of PCB-contaminated soil will be transported and landfilled. The transportation will be subcontracted and will cost $3.25/loaded mile. The disposal cost for the soils will be $140/ton to landfill. The lagoons will then be backfilled with soil donated by local industry. The cost for transportation of the soil dirt will be approximately $3.00/loaded mile. This addition to Option #2 will take 15 working days to complete. The total time for this emergency removal is 12 weeks.

4.0 IMMEDIATE REMOVAL COST

4.1 Site Security

Material

Item	Amount
8 Warning signs @ $50/ea	$400.00
Section 4.1 Subtotal	$400.00

4.2 Sample, Remove and Dispose of Waste Oil and Water

Labor

Item	Days	Amount
1 Response Manager @ $55.10/hr	7	$3,085.60
1 Foreman, Level 3, @ $35.30/hr	7	1,976.80
1 Equipment operator, Level 2, @ $29.20/hr	7	$1,635.20
2 Cleanup technicians, Level 2, @ $24.30/hr	7	2,721.60
5 Per diems @ $63/day	7	2,205.00

Equipment

Item	Days	Amount
1 Office trailer @ $973/mo	2 mo	$1,946.00
1 Decon trailer @ $3,090/mo	2 mo	6,180.00
1 Response van @ $1,635/mo	2 mo	3,270.00
1 Passenger van @ $824/mo	2 mo	1,648.00
1 Passenger car @ $715/mo	2 mo	1,430.00
1 Vacuum truck, 3,500 gal, @ $1,190/wk	7	1,190.00

Equipment (Continued)

Item	Days	Amount
1 4" pump, vacuum pressure w/suction & discharge hoses @ $649/wk	7	649.00
1 Air blower @ $190/wk	7	190.00
1 Portable toilet @ $85/mo	2 mo	170.00
4 Personnel protection, Level C @ $59/day	7	1,652.00

Disposal

Item	Amount
Disposal authorization sampling of oil and carbon material @ $900/analysis	$1,800.00
Disposal of 14,000 gallons of nondrummed oil bulked, removed and disposed	
Transportation (PCB oil) subcontracted @ $840/load x 3 loads	2,520.00
Incineration of PCB oil @ $.23/lb	28,980.00
Disposal of 3,000 lb of PCB-contaminated carbon	
Transportation of carbon, subcontracted @ $3.25/loaded mi x 850 mi	2,762.50
Landfill of carbon	280.00
Section 4.2. Subtotal	$66,291.70

4.3 Stabilize Sludge

Labor

Item	Days	Amount
1 Repsonse Manager @ $55.10/hr	10	$4,408.00
1 Foreman, Level 3, @ $35.30/hr	10	2,824.00

Labor

Item	Days	Amount
1 Equipment Operator, Level 2, @ $29.20/hr	10	2,336.00
2 Cleanup technicians, Level 2 @ $24.30/hr	10	3,888.00
5 Per diems @ $63/day	10	3,150.00

Equipment

Item	Days	Amount
1 Front-end loader w/backhoe @ $1125/wk	14	$2,250.00
1 Bulldozer @ $1800/wk	14	3,600.00
4 Level C protection @ $59/day	10	2,360.00

Materials

Item	Amount
800 tons fly ash @ $5/ton delivered	$4,000.00
Section 4.3 Subtotal	$28,816.00

4.4 Clean and Remove Tanks

Labor

Item	Days	Amount
1 Response Manager @ $55.10/hr	5	$2,204.00
1 Foreman, Level 2, @ $35.30/hr	5	1,412.00
2 Welders @ $33.10/hr	5	2,648.00
2 Cleanup technicians, Level 2, @ $21/hr	5	1,680.00
5 Per diems @ $63/day	5	1,575.00

Equipment

Item	Days	Amount
1 Front-end loader w/backhoe @ $1158/wk	7	$1,158.00
2 Welders' trucks @ $662/wk	7	1,324.00
1 Stem jenny @ $294/wk	7	294.00
5 Level C protection @ $59/day	1	295.00
	Section 4.4 Subtotal	$12,590.00

4.5 Fill Lagoon #3 and Cap All Lagoons

Labor

Item	Days	Amount
1 Repsonse Manager @ $55.10/hr	5	$2,204.00
1 Foreman, Level 3, @ $35.30/hr	5	1,412.00
1 Equipment operator, Level 2, @ $29.20/hr	5	$1,168.00
2 Cleanup technicians, Level 2, @ $24.30/hr	5	1,944.00
5 Per diems @ $63/day	5	1,575.00

Equipment

Item	Days	Amount
4 Level C protection @ $59/day	5	$1,180.00
1 Bladed sheeps foot roller @ $2090/wk	1 wk	2,090.00
1 Front-end loader w/backhoe @ $1158/wk	1 wk	1,158.00

Material

Item	Amount
Fill dirt	Donated by local industry
2,850 tons clay @ $9/ton	25,650.00

Transportation

Item	Amount
295 loads fill dirt @ $1.25/loaded mi x 4 mi	1,475.00
Section 4.5 Subtotal	$40,106.00

4.6 Cover with Top Soil, Grade and Seed

Labor

Item	Days	Amount
1 Response Manager @ $55.10/hr	5	$2,204.00
1 Foreman, Level 3, @ $35.30/hr	5	$1,412.00
1 Equipment operator, Level 2, @ $24.30/hr	5	972.00
3 Per diems @ $63/day	5	945.00

Equipment and Material

Item	Days	Amount
1 Front-end loader crawler 4.5 yd @ $418/day	2	$836.00
1,450 tons top soil @ $12/ton		17,400.00
Final grading and seeding 77,000 sq ft @ $.10/sq ft		7,700.00
	Section 4.6 Subtotal	$31,469.00

4.7 Phase 2

Labor

Item	Days	Amount
1 Response Manager @ $55.10/hr	10	$ 4,408.00
1 Foreman, Level 3, @ $35.30/hr	10	2,824.00
1 Equipment Operator, Level 2, @ $29.20/hr	10	2,336.00
2 Cleanup technicians, Level 2, @ $24.30/hr	10	3,888.00
5 Per diesm @ $63/day	10	3,150.00

Equipment

Item	Days	Amount
1 Front-end loader with backhoe @ $1158/wk	2 wks	$2,316.00
1 Bulldozer @ $1800/wk	2 wks	3,600.00
4 Level C protection units @ $59/day	10	2,360.00

Transportation and Disposal

Item	Amount
2 Samples of sludge for disposal parameters @ $900/sample	$1,800.00
Transportation @ $3.00/loaded mile x 100 trips @ 210 mi/trip	63,000.00
Disposal @ $140/ton x 2,000 tons	280,000.00
Section 4.7 Subtotal	$369,682.00

4.8 Phase #3

Labor

Item	Days	Amount
1 Response Manager @ $55.10/hr	15	$6,612.00

Labor (continued)

Item	Days	Amount
1 Foreman, Level 2, @ $35.30/hr	15	4,236.00
2 Equipment operators, Level 2, @ $29.20/hr	15	7,008.00
2 Cleanup technicians, Level 2, @ $24.30/hr	15	5,832.00
6 Per diems @ $63/day	15	5,670.00

Equipment

Item	Days	Amount
1 Front-end loader with backhoe @ $1158/wk	3 wks	$3,474.00
1 Bulldozer @ $1800/wk	3 wks	5,400.00
1 Front-end loader @ $1874/wk	3 wks	5,622.00
5 Level C protection units @ $59/day	15	4,425.00

Transportation and Disposal

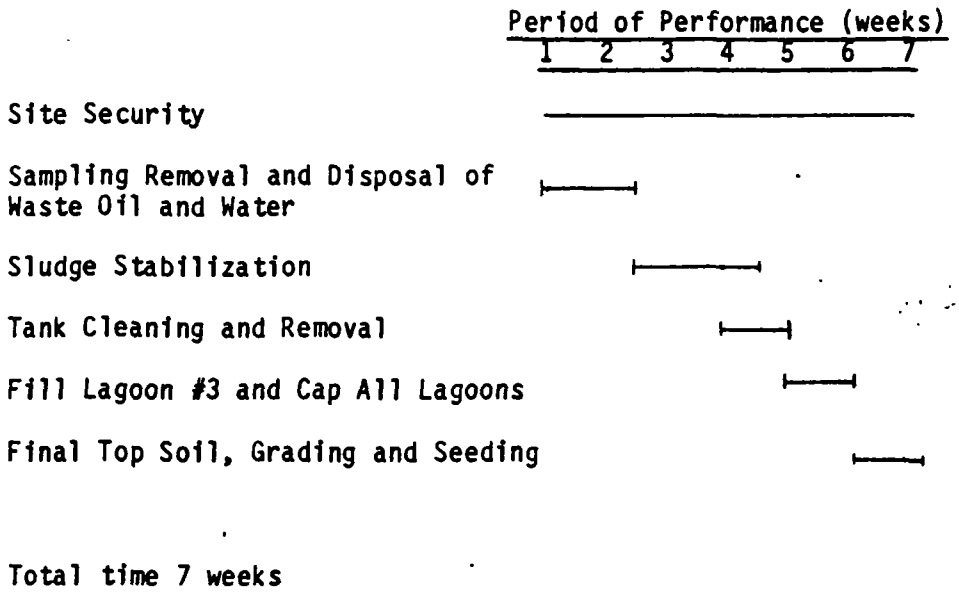
Item	Amount
2 Sample sludge for disposal parameters @ $900/sample	$1,800.00
Transportation @ $3.00/loaded mile x 100 trips @ 210 mi/trip	63,000.00
Disposal @ $140/ton	280,000.00
Section 4.8 Subtotal	$393,079.00

4.9 Summary Tabulation of Estimated Costs

1.	Site security	$ 400.00
2.	Sample, remove, and dispose of waste, oil, and water	66,291.70
3.	Sludge stabilization	28,816.00
4.	Tank cleaning and removal	12,590.00
5.	Fill lagoon #3 and cap all lagoons	40,106.00
6.	Final top soil, grading and seeding	31,469.00
7.	Technical Assistance Team	36,000.00
8.	U.S. EPA	15,000.00
	Phase 1	$230,672.70
9.	Phase 2	369,682.00
	Phases 1 and 2	$600,382.00
10.	Phase 3	393,079.00
	Total Project Cost	$993,479.00 or say $994,000.00

FIGURE 5

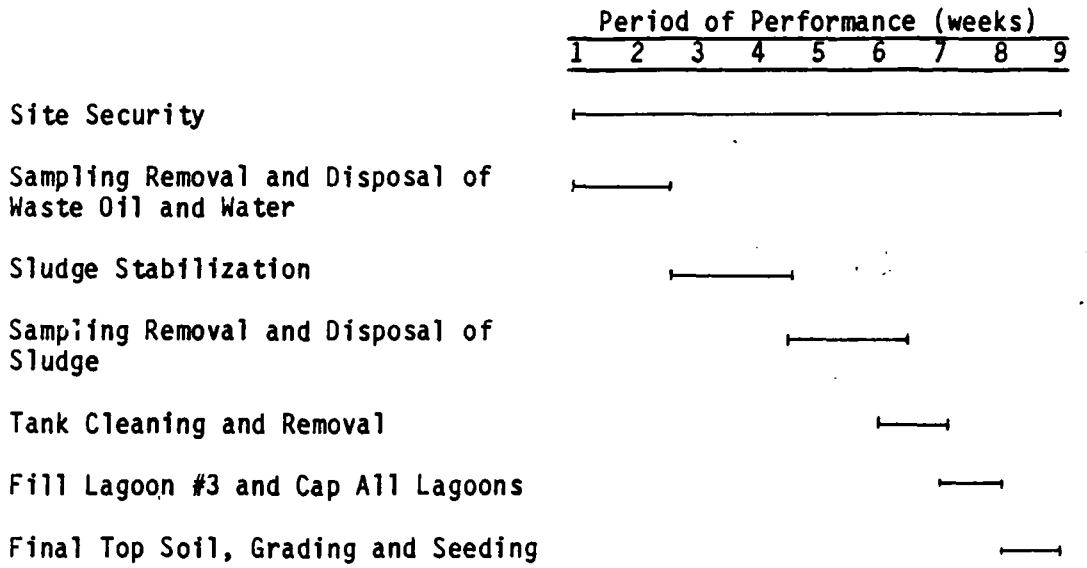
PROJECTED SCHEDULE FOR THE GREINER'S LAGOON
IMMEDIATE REMOVAL ACTION IN BALLVILLE TOWNSHIP, OHIO
PHASE #1



Total time 7 weeks

FIGURE 6

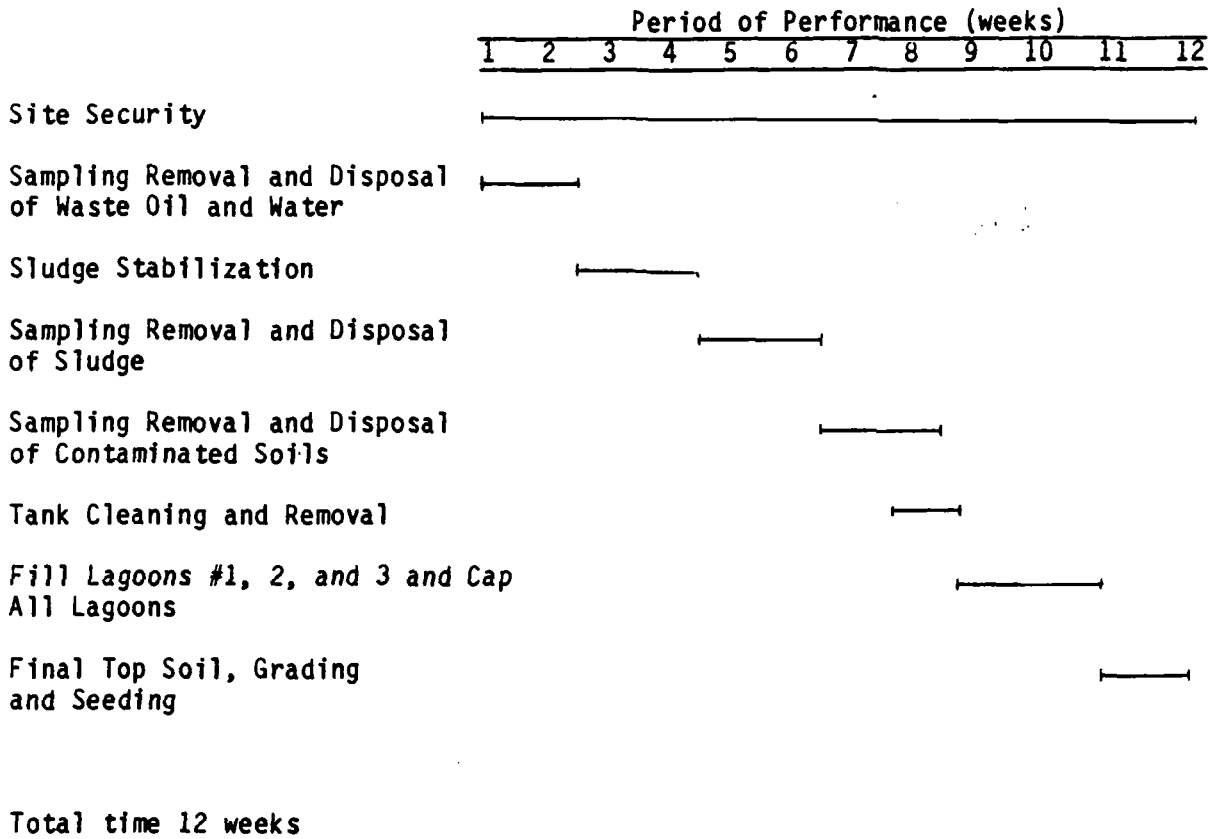
PROJECTED SCHEDULE FOR THE GREINER'S LAGOON
IMMEDIATE REMOVAL ACTION IN BALLVILLE TOWNSHIP, OHIO
PHASE #2



Total time 9 weeks

FIGURE 7

PROJECTED SCHEDULE FOR THE GREINER'S LAGOON
IMMEDIATE REMOVAL ACTION IN BALLVILLE TOWNSHIP, OHIO
PHASE #3



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APR 1
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EPA

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666 West Dundee Road, Northbrook, IL 60062 • (312) 498-9094

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-6669

Mr. Briand C. Wu, Deputy Project Officer
Waste Management Division
Emergency Response Section
U.S. Environmental Protection Agency
11th Floor
230 S. Dearborn Street
Chicago, IL 60604

August 21, 1986

TAT-05-F-01068

Reference: Site Assessment at Greiner's Lagoon
Ballville, Ohio
TDD# 5-8605-04

Dear Mr. Wu:

The Greiner's Lagoon facility is located in Sandusky County, five miles south of Fremont, Ohio. The site is situated on County Road 181 about one-half mile west of Tiffin Road in Ballville Township (Figure 1). Originally developed by Mr. Terry Little in 1954, the facility used four on-site lagoons to store waste oil collected from nearby industry. The oil was then used to control dust on unpaved roads.

Between 1972 and 1983, site ownership of the Greiners Lagoon facility changed three times, terminating with the purchase by the current owner, Mr. Gary Greiner. During this period, Mr. Little constructed diking around the four lagoons pursuant to an order by the Stack County Court of Common Pleas. In June 1973, the lagoons breached this diking, resulting in an Ohio Environment Protection Agency (OEPA) order for site cleanup. This order was never acted upon by the responsible party. In June 1981, the lagoons again overflowed, on this occasion, PCB contaminated oil was released to the Sandusky River. This prompted expenditure of federal funding (311 funds) by the U.S. EPA for dike reinforcement. The following month, OEPA funded a partial cleanup of the lagoons; CERCLA funding was ultimately expended in June 1982 towards the effort. A site inspection by the TAT in August 1984 revealed:

- Lagoon 4 dewatered, filled and capped;
- Lagoon 3 partially filled with dirt, with about two feet of water and two to three inches over 75% of the water surface;

- Lagoons 2 and 1 filled with oil seeping through the fill material.

In response to a report that Lagoon #3 at the facility had breached and was overflowing, On-Scene Coordinator (OSC) Peter Neithercut, U.S. Environmental Protection Agency (U.S. EPA) and members of the Region V, Technical Assistance Team (TAT) conducted a site investigation of the subject site. During a site visit on May 20, 1986, site conditions were assessed, samples collected of soil, water and oil materials, investigative activities documented and immediate mitigative actions outlined. The following report is a detailed account of the events and actions taken during the site investigation.

At 1020 hours on May 20, 1986, OSC Neithercut and TAT members Dave Hartman and Edward Burk met at the Greiner's Lagoon site. At that time Messrs. Neithercut, Hartman and Burk donned Level C protective gear to conduct a detailed site survey. During the survey the retention wall to Lagoon #3 was observed to be breached on the western bank (Figure 2). Oil and water were flowing from the lagoon into a low lying area to the west and northwest of the lagoon (to Figure 3). TAT members collected samples of oil, soil and water for subsequent PCB and metal analysis. Analytical parameters were chosen for verification of PCB contamination and to aid in selection of a treatment method for possible dewatering activities. Table 1 and Figure 4 summarize the sample locations, sample matrix and analytical results. Throughout the site survey TAT conducted continuous air monitoring utilizing an HNU photoionization detector, calibrated to isobutalene. Over-background readings ranged from <1 ppm to 4 ppm near the open lagoon.

During the site survey the oil/water was observed to be flowing from the west bank of Lagoon #3 into the low lying marsh area to the west, and then north, following the established drainage pattern of the area. A drainage tile, which ultimately drained into Indian Creek, was located at the northeast corner of the site (Attachment A). At the time of the inspection, the oil/water material was migrating towards this drainage tile. Also observed were freshly cut trees and brush, assumed to have been cut by utility company personnel to clear the power line right-of-way. The proximity of the power lines, adjacent to the open

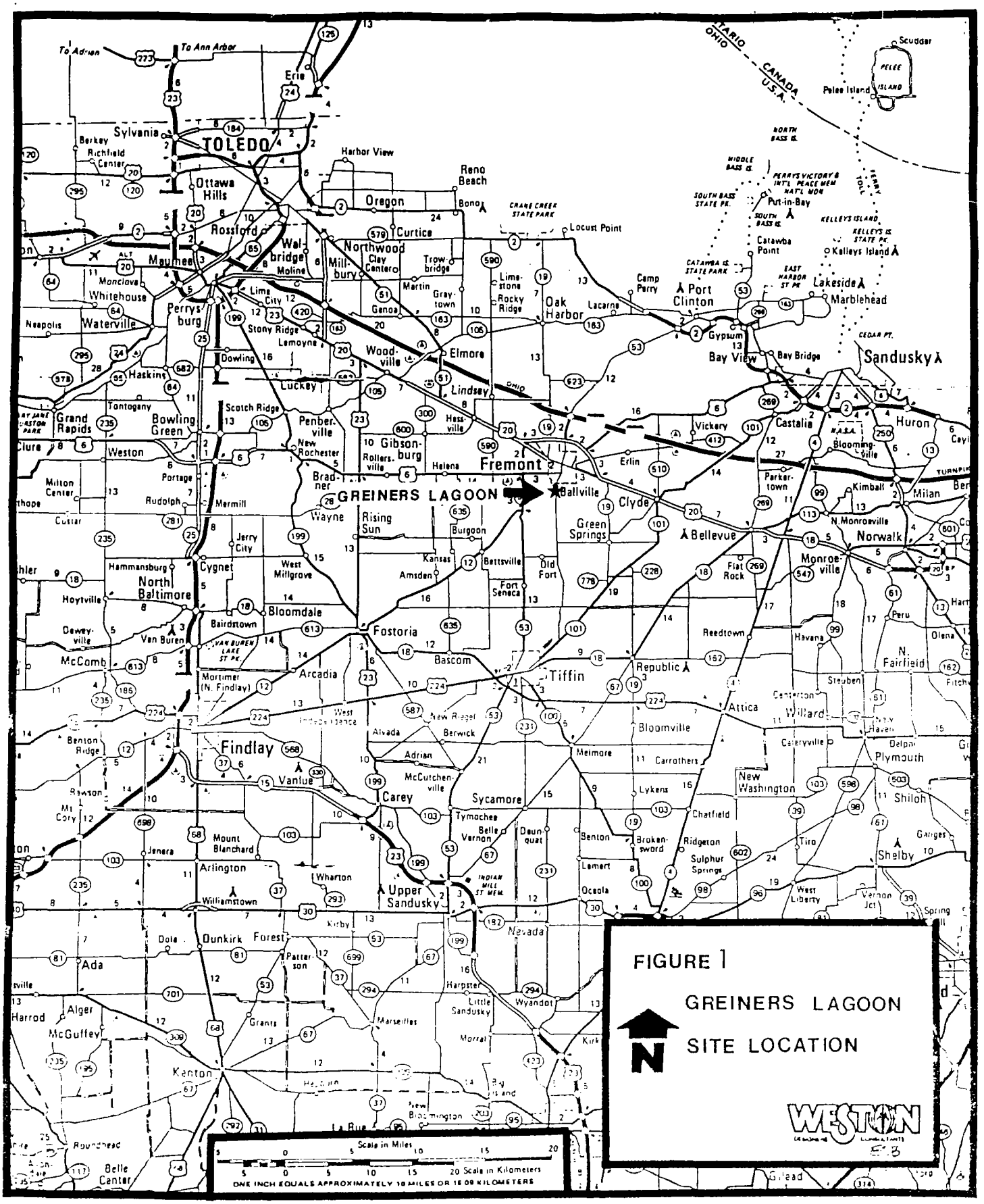


FIGURE 1

GREINERS LAGOON

SITE LOCATION

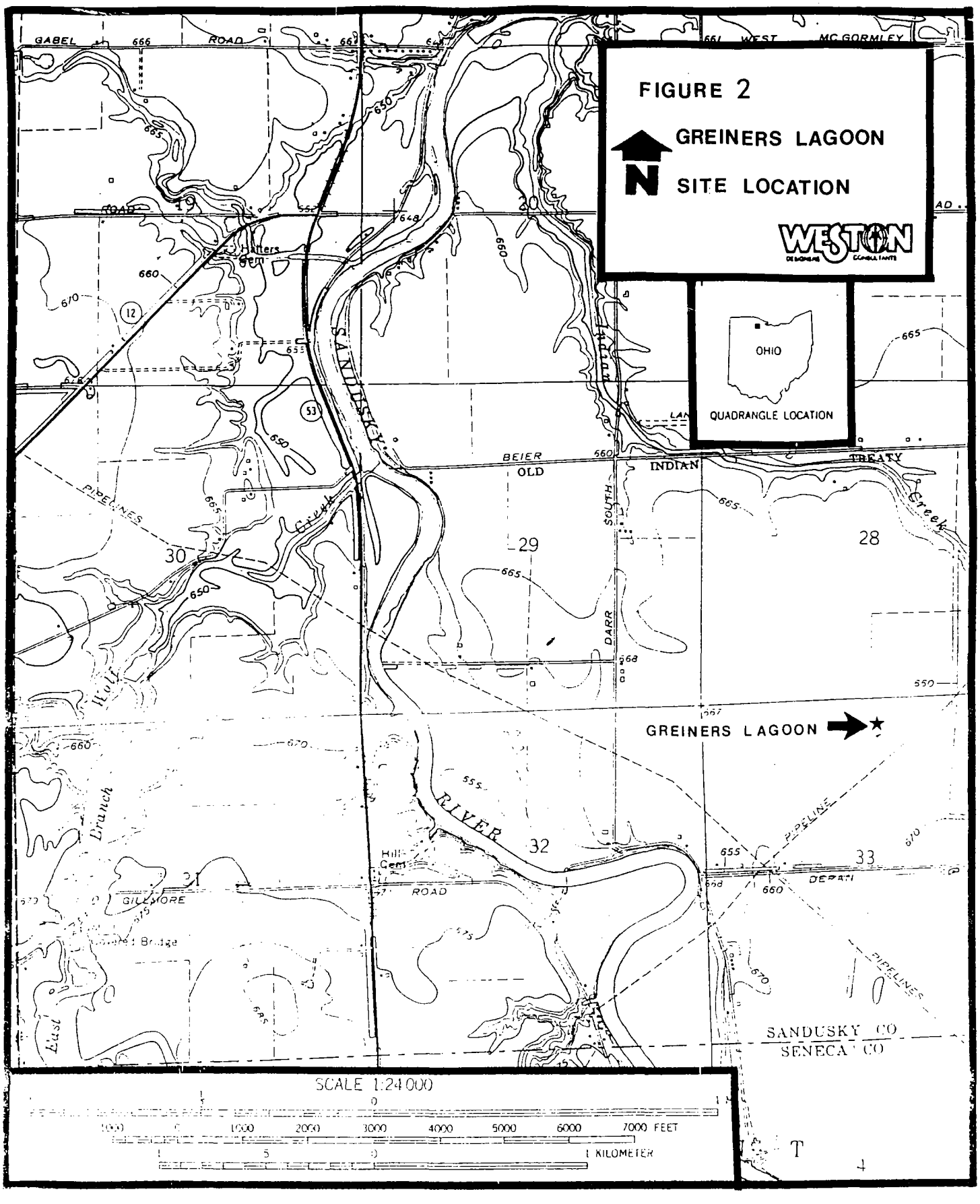


FIGURE 2
GREINERS LAGOON
N
SITE LOCATION
WESTON
OHIO
QUADRANGLE LOCATION
GREINERS LAGOON
GABEL ROAD
WEST MC GORMLEY
SANDUSKY RIVER
BEIER
OLD INDIAN TREATY
PIPELINES
DARR SOUTH
Creek
Wolf Branch
East
GILLMORE ROAD
Hill Cem
Covered Bridge
DERAN
PIPELINE
SANDUSKY CO
SENECA CO
SCALE 1:24 000
7000 FEET
1 KILOMETER

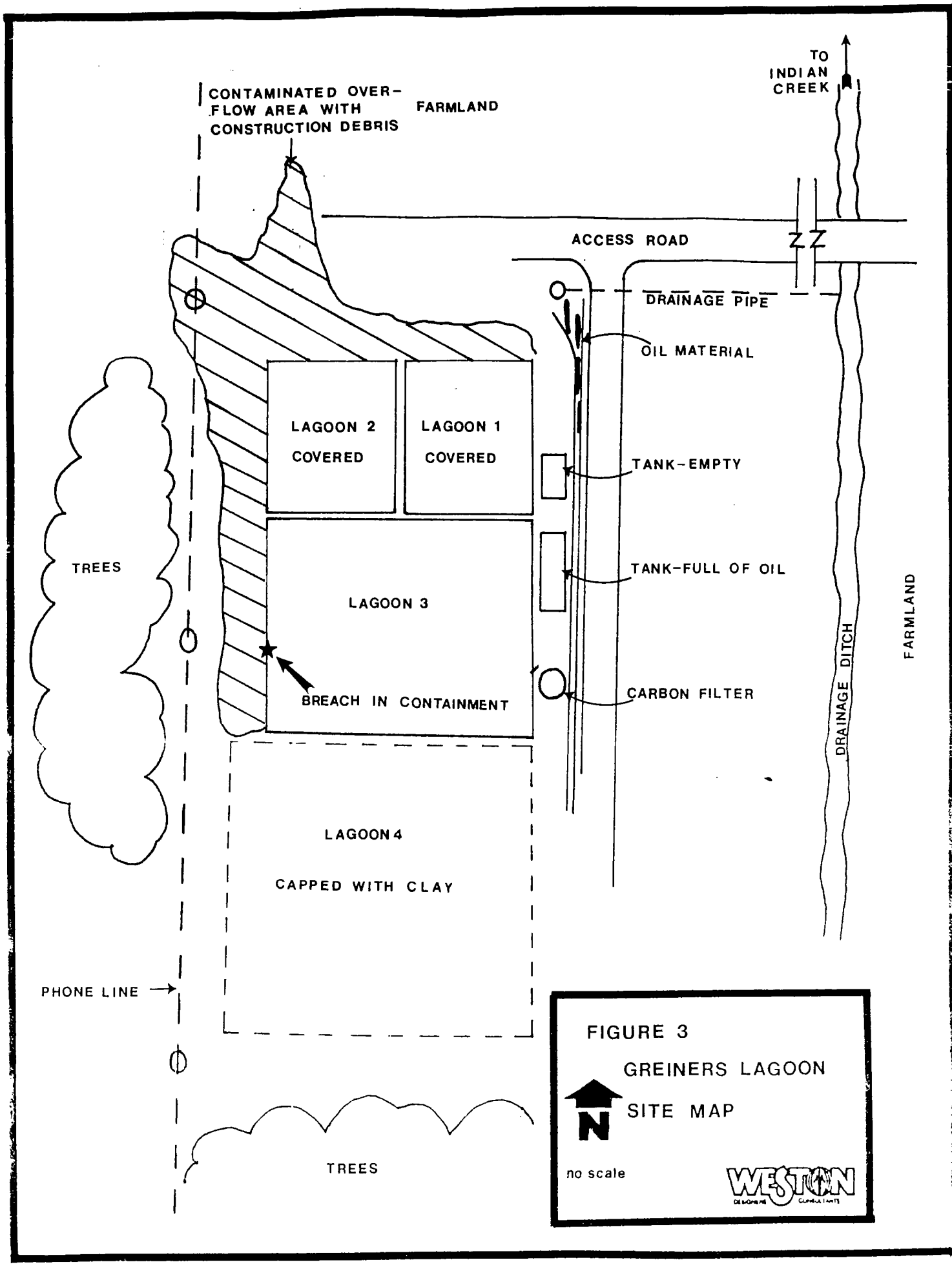


FIGURE 3
GREINERS LAGOON
SITE MAP

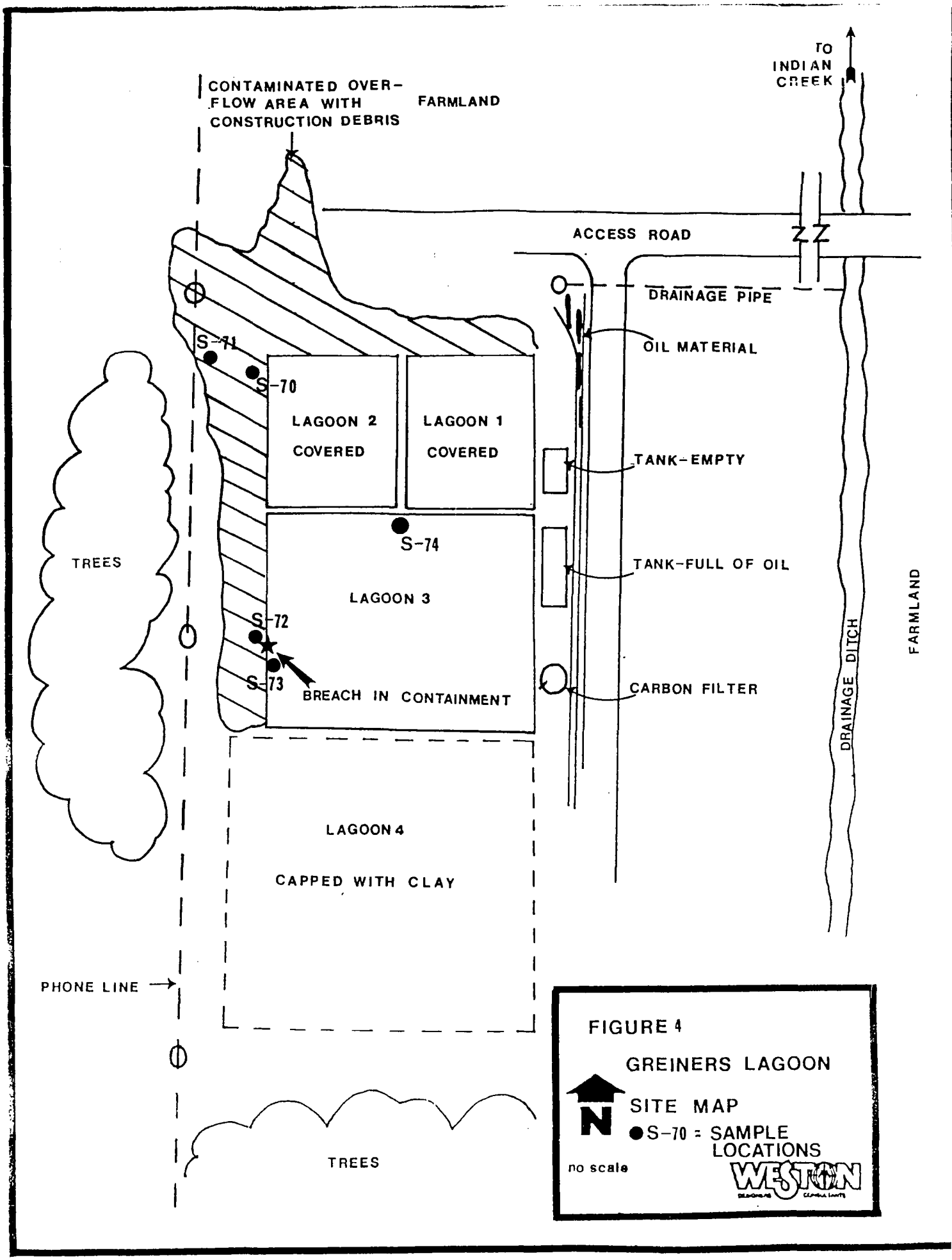


FIGURE 4

GREINERS LAGOON

SITE MAP

●S-70 = SAMPLE LOCATIONS

lagoon and in the overflow area, prompted concern of possible exposure to the utility company's line crew.

Upon completion of the site survey OSC Neithercut and the TAT reviewed the site conditions, where upon the TAT recommended the following immediate mitigative actions: 1. build up the west retention wall with sand bags or equivalent; 2. installation of an underflow dam on the north side of the site to eliminate any possibility of off-site migration of contaminated oil; and, 3. dewater Lagoon #3 utilizing a portable activated carbon unit with a mixed-matrix prefilter.

Due to the site conditions and the projected weather forecast of thunderstorms, OSC Neithercut made the decision to initiate an emergency action under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and as stated in the National Contingency Plan (NCP). At approximately 1400 hours, emergency funds were appropriated by the Region V, U.S. EPA headquarters, and the Emergency Response Cleanup Services (ERCS) contractor mobilized. Emergency measures to be conducted were the build up of the western bank of Lagoon #3 to add freeboard to the lagoon, and the installation of an underflow dam on the north side of the site to stop off-site migration of material.

If you have any further questions regarding this matter, please contact our office.

Very truly yours,

ROY F. WESTON, INC.

Edward C. Burk, Jr.

Edward C. Burk, Jr. SDS
Environmental Geologist

Scott D. Springer
Technical Assistance Team
Leader, Region V

ECB:db

TABLE 1

SUMMARY OF SAMPLE LOCATIONS AND IDENTIFIED COMPOUNDS
GREINER'S LAGOON, BALLVILLE, OHIO

May 20, 1986

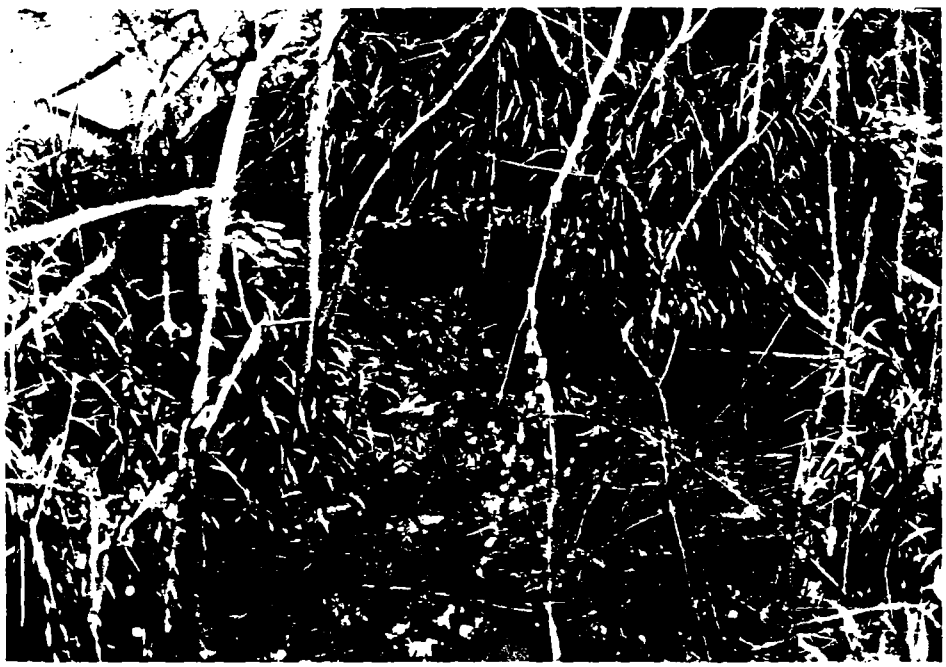
STATION NUMBER	MATRIX	SAMPLE LOCATION	COMPOUNDS IDENTIFIED	CONCENTRATION (ppm)
S-70	Oil	N.W. corner of site overflow area	PCB	160
			Arsenic	0.32
			Cadmium	3.2
			Chromium	47
			Copper	7.2
			Nickel	2.4
			Lead	63
			Zinc	190
S-71	Soil	N.W. corner of site overflow area	PCB	31
			Arsenic	2.0
			Beryllium	0.17
			Cadmium	4.3
			Chromium	36
			Copper	16
			Mercury	0.22
			Nickel	7.0
			Lead	91
			Selenium	0.14
			Zinc	320
S-72	Sludge	Breached area on west side of Lagoon #3	PCB	110
			Arsenic	0.39
			Cadmium	4.4
			Chromium	51
			Copper	17
			Mercury	0.20
			Nickel	9.9
			Lead	130
			Antimony	2.1
			Zinc	320

TABLE 1 (continued)

STATION NUMBER	MATRIX	SAMPLE LOCATION	COMPOUNDS IDENTIFIED	CONCENTRTION (ppm)
S-73	Oil	Lagoon #3	PCB	49
			Arsenic	0.57
			Cadmium	4.6
			Chromium	55
			Copper	19
			Mercury	0.16
			Nickel	14
			Antimony	13
			Zinc	380
			Lead	180
S-74	Water	Lagoon #3	2-Pentene, 4-methyl	.031
			Aluminum	0.27
			Barium	0.32
			Calcium	72
			Chromium	0.03
			Copper	0.02
			Iron	0.51
			Mercury	0.005
			Manganese	0.10
			Nickel	0.10
			Lead	0.06
			Zinc	0.11
			Potassium	19
			Sodium	230
			Magnesium	65
			TOTAL DISSOLVED SOLIDS	6,500

ATTACHMENT A

PHOTOGRAPHS OF GREINER'S LAGOON
BALLVILLE, OHIO
MAY 20, 1986



PHOTOGRAPH #3
Greiner's Lagoon, Ballville, Ohio. Breached area on west bank of Lagoon #3. Note stained path from migrating oil.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

PHOTOGRAPH #4
Greiner's Lagoon, Ballville, Ohio. Sample location S-72. Oil stained soil in overflow area of Lagoon #3.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

PHOTOGRAPH #1
Greiner's Lagoon, Ballville, Ohio. Oil and water in overflow area at the northwest corner of the site. Note pocket of oil contained in the center of the tire. Sample location S-70.

Photograher: Dave Hartman, Date: 5-20-86, Time: 1030-1145

PHOTOGRAPH #2
Greiner's Lagoon, Ballville, Ohio. Oil stained soil and vegetation in overflow area at the northwest corner of the site. Sample location S-71.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

PHOTOGRAPH #5

Greiner's Lagoon, Ballville, Ohio. Low lying area to the west of Lagoon #3. Water and oil present is the result of the break in retaining wall to the lagoon. View looking south.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

Greiner's La[illegible] Ohio. Freshly cut trees and brush adjacent to Lagoon #3. Assumed to have been cut by power utility crew.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

PHOTOGRAPH #7

Greiner's Lagoon,Ballville,Ohio. Drainage tile at northeast corne of site. Drain accepts run-off from site which flows into Indian Creek.

Photographer: Dave Hartman, Date: 5-20-86, Time: 1030-1145

Buckley 12B

Contract No. 68-01-6669

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ASSISTANCE TEAM

SITE ASSESSMENT

FOR

GREINER'S LAGOON
FREMONT, OHIO

Region - V

ROY F. WESTON, INC.
Spill Prevention & Emergency Response Division
In Association with Jacobs Engineering Group Inc. Tetra Tech Inc.
and ICF Incorporated

WESTON
DESIGNERS CONSULTANTS

SITE ASSESSMENT

FOR

GREINER'S LAGOON
FREMONT, OHIO

Prepared For:

U.S. Environmental Protection Agency
Region V
536 S. Clark Street
Chicago, Illinois

CONTRACT NO. 68-95-0017

TAT-05-F-00456

TDD# 5-8410-32

Prepared by:

WESTON-SPER
Technical Assistance Team
Region V

November 1984

1.0 SITE HISTORY AND GENERAL INFORMATION

Greiner's Lagoon is in Sandusky County five miles south of Fremont, Ohio in the north central part of the state. The site is located on County Road 181 about 1/2 mile west of Tiffin Road in Ballville Township (Figures 1 and 2). Originally developed by Mr. Terry Little in 1954, the facility used four on site lagoons to store waste oil collected from nearby industry. The oil was then used to control dust on unpaved roads. A letter from the community, sent to Mr. Little in 1960, complained of odors emanating from the lagoon and of animals being killed or trapped by the oil. The estimated 400 animals affected included ducks, squirrels, pheasants and cranes. In response to the complaints from the community, the Ohio Environmental Protection Agency (OEPA) ordered Mr. Little to stop dumping oil into the four lagoons in 1970.

In 1972, Mr. Little traded the property to Beatrice and Edgil Collins in return for well drilling services. The Collins' then sold the property to Mr. Nobel Caseman in 1973. During Mr. Caseman's period of ownership, a lawsuit was filed by members of the community against the original owner, Mr. Terry Little. By order of the Stark County Court of Common Pleas, Mr. Little was required to take measures to prevent any release of oil from the site. In response, Mr. Little constructed dike systems around the four lagoons.

In the latter part of 1973, Mr. Caseman sold the property to Mr. Gary Greiner, the present owner. From 1973 until the late part of 1974, Mr. Greiner used the site for disposal of demolition debris. In June of 1973, after heavy rain falls, the lagoons overflowed into adjoining farm land. Due to the odors eminating from the site and contamination of adjacent soils from the overflow, the OEPA, in November of 1974, ordered Mr. Greiner to clean up the site. Because Mr. Greiner failed to comply with the order, the case was referred to the Attorney General who filed a suit in the Sandusky Court of Common Pleas in 1975. A judgement was handed down in September, 1980, ordering Mr. Greiner to clean up the site by January 15, 1981. Mr. Greiner did not comply with the order so he was sued by the State County Court for non-compliance and fined $1,000.00. This fine remains unpaid today. The case is presently being pursued by the U.S. Environmental Protection Agency (U.S. EPA) and the OEPA.

On 16 June 1981, heavy rains caused the lagoons to over flow once again. Oil contaminated with polychlorinated biphenyls (PCBs) was released onto the adjoining farm land and into a nearby drainage ditch. Some of the contaminated oil flowed into Indian Creek via the drainage ditch and eventually to the Sandusky River. On June 17, 1981, the U.S. EPA used Federal Water Pollution Control Act Part 311(k) funds ($6,700.00) to

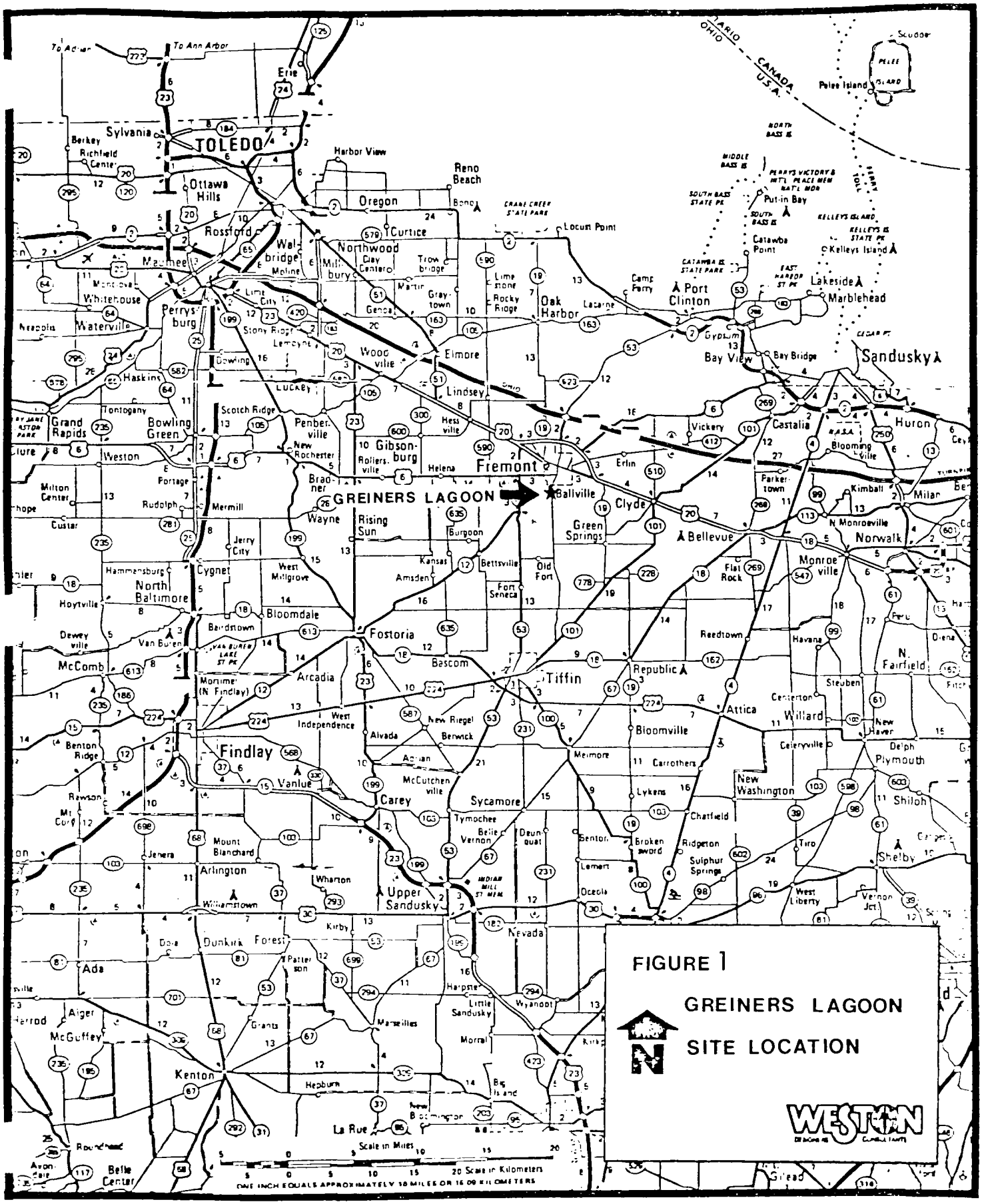


FIGURE 1

GREINERS LAGOON

SITE LOCATION

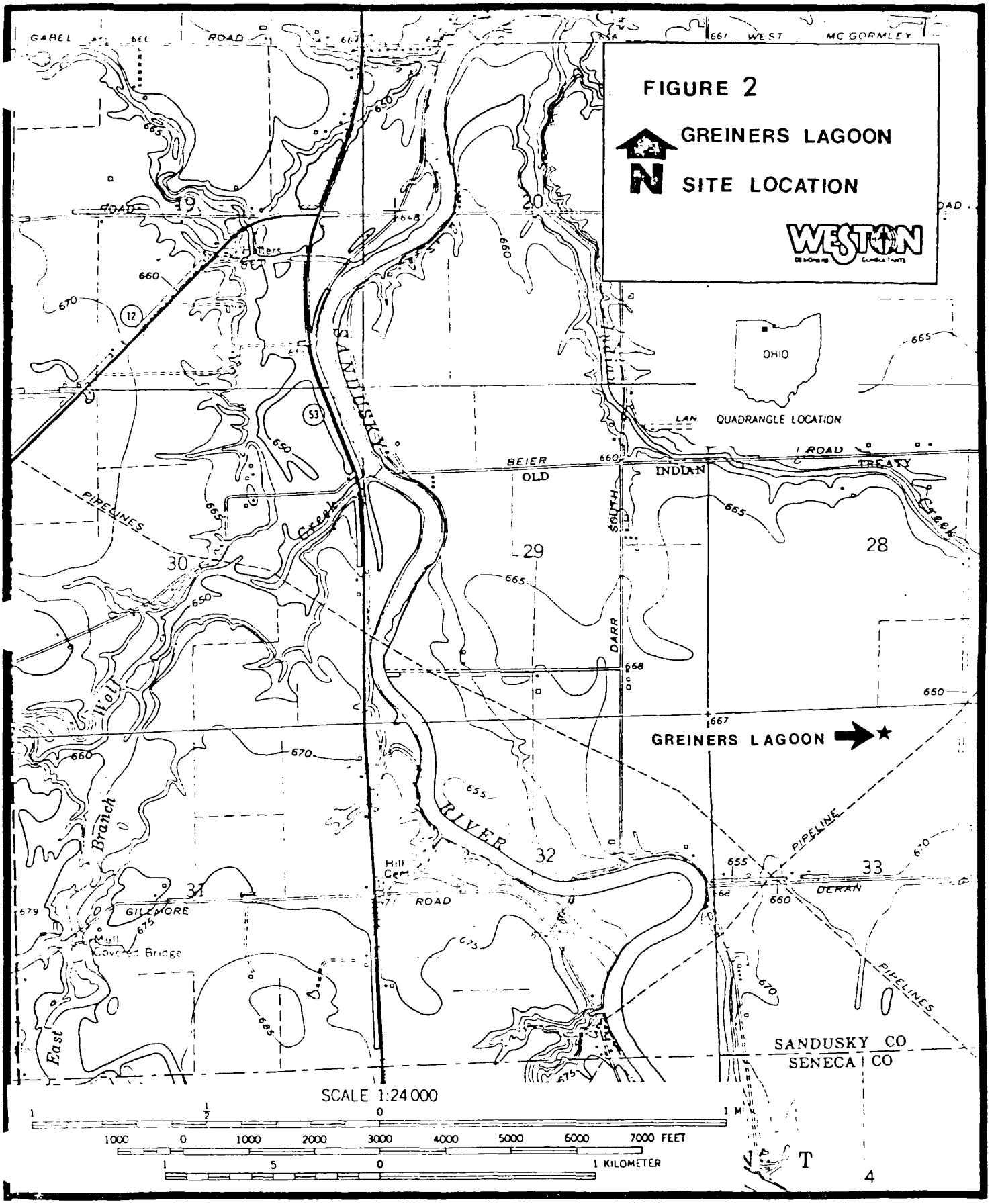


FIGURE 2
GREINERS LAGOON
SITE LOCATION
WESTON
OHIO
QUADRANGLE LOCATION
GREINERS LAGOON
SANDUSKY
RIVER
BEIER
OLD
INDIAN
TREATY
ROAD
DARR
SOUTH
PIPELINES
PIPELINE
GILLMORE
ROAD
DERAN
Hill Cem
Mull Covered Bridge
East
Branch
Wolf
Creek
SANDUSKY CO
SENECA CO
SCALE 1:24 000
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
OH	

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R BARRIER WALLS CONSTRUCTED 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 X S CAPPING COVERING 02 DATE June 12, 1982 03 AGENCY U.S.EPA Superfund
04 DESCRIPTION Fill in of Lagoon #4 and cap with clay.

01 ☐ T [illegible] 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ U [illegible] 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ V BOTTOM SEALED 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ W GAS CONTROL 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ X [illegible] CONTROL 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ [illegible] 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z AREA EVACUATED 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 X 1 ACCESS TO SITE RESTRICTED 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION Gate across dirt road leading to site. Left open and easily gotten around. Area is not marked in any way.

01 ☐ 2 POPULATION RELOCATED 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 X 3 [illegible] 02 DATE July '81 03 AGENCY OEPA
04 DESCRIPTION Surface oil from lagoons were collected and stored on site in 2-6,000 gal. tanks. The liquid was then siphoned off and put through a carbon contact unit on site in a 20,000 gal. tank. Effluent from carbon unit was discharged in drainage ditch.

III. SOURCES OF INFORMATION

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE OH	02 SITE NUMBER

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION X YES ☐ NO

02 DESCRIPTION OF FEDERAL STATE LOCAL REGULATORY ENFORCEMENT ACTION

In 1974 Gary Greiner was ordered to clean-up the site by the Ohio EPA. Mr. Greiner took no action so, a suit was filed against him in 1975. A judgment ordering him to clean-up the site was handed down in September 1980. He had until January 15, 1981 to clean the site up. Since Mr. Greiner did not comply with the order he was sued and fined $1,000.00 for noncompliance. This was to be used for the clean-up.

On June 17, 1981 the U.S. EPA used 311K funds to construct and reinforce dikes. This was a result of an overflow of Lagoon #1 on June 14. The overflow went onto adjacent agricultural fields. The dike was the previous spill in a low lying area outside the lagoons.

On June 12, 1982 the clean-up and capping of Lagoon #4 was completed by the U.S. EPA. Superfund emergency response money was used. At this time Lagoons #1 and #2 have been filled in but not capped. The filling in of Lagoon #3 is under way.

Further information, contact: Mr. Pierre Talbot (prosecuting lawyer)
U.S. EPA Region V-Chicago
312/353-2072

[illegible] OF INFORMATION [illegible]

Same

ATTACHMENT B

POTENTIAL HAZARDOUS WASTE SITE

PRELIMINARY ASSESSMENT

EPA FORM 2070-12

Preliminary Assessment

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: OH
02 SITE NUMBER:

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Greiner's Lagoon

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Tiffin Road

03 CITY: Fremont

04 STATE: OH | 05 ZIP CODE: 43420 | 06 COUNTY: Sandusky | 07 COUNTY CODE: 143 | 08 CONG. DIST.: 5

09 COORDINATES: LATITUDE 83° 08' 22 8" | LONGITUDE 041° 16' 09 4"

From Exit #6 of the Ohio Turnpike take State Rt. 53 south to Beier Road. Turn left on Beier and go east to Tiffin Road. Turn right on Tiffin (heading south) to Township Road 181. The lagoons are on the west end Township Road 181.

III. OWNER/OPERATOR

01 OWNER: Mr. Gary Greiner

02 STREET (Business, mailing, residential):

03 CITY:

04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER ( )

07 OPERATOR (If known and different from owner):

08 STREET (Business, mailing, residential):

09 CITY:

10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER ( )

13 TYPE OF OWNERSHIP (Check one):
[X] A. PRIVATE [ ] B. FEDERAL [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL
[ ] F. OTHER [ ] G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply):
[ ] A. RCRA 3001 DATE RECEIVED ___/___/___ (MONTH DAY YEAR) [ ] B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED ___/___/___ (MONTH DAY YEAR) [ ] C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON-SITE INSPECTION
[X] YES DATE 8 / 10 / 84 (MONTH DAY YEAR)
[ ] NO

BY (Check all that apply):
[X] A. EPA [X] B. EPA CONTRACTOR [ ] C. STATE [ ] D. OTHER CONTRACTOR
[ ] E. LOCAL HEALTH OFFICIAL [ ] F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): Roy F. Weston

02 SITE STATUS (Check one):
[ ] A. ACTIVE [X] B. INACTIVE [ ] C. UNKNOWN

03 YEARS OF OPERATION: 1954 (BEGINNING YEAR) | 1981 (ENDING YEAR) [ ] UNKNOWN

04 DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS (PRESENT, KNOWN OR ALLEGED):

PCB-contaminated oil, water and sludge. Various heavy metals, phenols.

05 POTENTIAL HAZARD TO HUMAN HEALTH, ENVIRONMENT AND DESTRUCTION:

Contamination of drinking water of Fremont, Ohio via drainage ditch to Indian Creek to the Sandusky River. Possible Flora & Fauna contamination. (High agricultural area).

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one; if applicable, check a box to the right to indicate that site is a priority for inspection under Superfund):
[X] A. HIGH [ ] B. MEDIUM [ ] C. LOW [ ] D. NONE

VI. INFORMATION AVAILABLE FROM

01 CONTACT: Joe Fredle

02 AGENCY: U.S. EPA

03 TELEPHONE NUMBER: (216) 835-5200

04 PERSON RESPONSIBLE FOR ASSESSMENT: Elaine Rosenburg

05 AGENCY: TAT

06 ORGANIZATION: Roy F. Weston

07 TELEPHONE NUMBER: (216) 356-2130

08 DATE: 8 / 10 / 84

(Rev. 9-21-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

IDENTIFICATION
01 STATE: OH
02 SITE NUMBER:

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (check all that apply)

X A SOLID
B POWDER, FINES
X C SLUDGE
X D OTHER
X E SLURRY
X F LIQUID
X G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS
CUBIC YARDS 10,595
NO OF DRUMS 0

03 WASTE CHARACTERISTICS (check all that apply)

X A TOXIC
B CORROSIVE
C RADIOACTIVE
X D PERSISTENT
E SOLUBLE
F INFECTIOUS
G FLAMMABLE
H IGNITABLE
I HIGHLY VOLATILE
J EXPLOSIVE
K REACTIVE
L INCOMPATIBLE
M NOT APPLICABLE

III. WASTE TYPE

SLU	SLUDGE	500	CY	
OLW	OIL/WATER	19,000	Gal	
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	2,000,000	Gal	Lagoon Liquid
IOC	INORGANIC CHEMICALS	unknown		Lagoon Liquid
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		Lagoon Liquid

IV. HAZARDOUS SUBSTANCES (see appendix for additional hazardous substances)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OLW	Ethyl Benzene	100-41-4	Lagoon	33	ug/l
OLW	Phenol	108-95-2	"	2700	"
SLW	Polychlorinated Biphenyls	1336-36-3	"	287	"
OLW	Toluene	108-88-3	"	170	"
OLW	Sulfate		"	272	"
OLW	Chloride		"	140	"
MES	Iron (total)		" and Soil	400	"
MES	Zinc (total)		" and Soil	450	"
MES	Lead (total)		" and Soil	120	"

FDS	Arsenic	7440-38-2	FDS	Nickel	7440-02-0
FDS	Cadmium	7440-43-9	FDS	Toluene	108-88-3
FDS	Chromium	7440-47-3	FDS	Phosphorus	7723-14-0
FDS	Mercury	7439-97-6	FDS		

VI. SOURCES OF INFORMATION (cite specific references, e.g., state files, sample analysis, reports)

Emergency Action Plan for Greiner's Lagoon, Fremont, Ohio. TAT-05-F-00108.
OSC report U.S. EPA, Greiner's Lagoon, Fremont, Ohio.
Files on Greiner's Lagoon. OEPA N.W.D.O. Bowling Green, Ohio.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) X POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

Lagoons have no liners, therefore the PCB contaminated oil may leech through the thin topsoil into the creviced limestone bedrock. This limestone is shallow and is the aquifer where all local wells originate.

X [illegible] 21,000 — [illegible] 8/10/84) X POTENTIAL [illegible]

Overflow of lagoons during periods of heavy rain has released contaminants into a drainage ditch that leads to Indian Creek which is a tributary of the Sandusky River.

01 X C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE 8/10/84) X POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

Gas vapor given off by oil waste.
PCB air born on dust particulate matter.

01 ☐ D. FIRE EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 X E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE 8/10/84) X POTENTIAL [illegible]
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

Danger of dermal contact. Oil waste & sludges are exposed. Area is not contained or marked in any way.

01 X F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE 8/10/84) X POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED 10 Acres — 04 NARRATIVE DESCRIPTION

Run over of lagoons on to adjoining agricultural fields. Also stressed vegetation on top of capped lagoon #4. Oozing up of material through soil cover on lagoons #1 and #2.

01 X [illegible] 21,000 — [illegible] X POTENTIAL [illegible]

Overflow of lagoons have gone into the adjoining drainage ditch which goes into Indian Creek. This creek feeds into the Sandusky River which is the drinking water supply for Fremont. Also leeching of contaminants into the shallow limestone aquifer to contaminate local wells.

X [illegible] 8/10/84) X [illegible]
[illegible] POTENTIALLY AFFECTED [illegible]

Workers exposed to vapors released (PCBs and oil waste). Also possible dermal contamination if come in contact. PCBs on dust particles.
Workers are those hauling dirt in to cover site.

01 X [illegible] — 02 [illegible] X POTENTIAL [illegible]
[illegible] POTENTIALLY AFFECTED [illegible]

Possible contamination (Inhalation & dermal) to workers in adjoining agricultural fields.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X DAMAGE TO FLORA — 02 OBSERVED (DATE _____) — X POTENTIAL — ALLEGED

04 NARRATIVE DESCRIPTION

Site surrounded by agricultural fields. PCBs of 0-.25 ppm have been detected at depths of 6 cm. in the adjoining fields. Also possible contamination of aquatic fauna due to migration into Indian Creek.

X [illegible] — X POTENTIAL — ALLEGED

Overflow from the lagoons could potentially contaminate the aquatic fauna of the Indian Creek and Sandusky River.

X [illegible] — X POTENTIAL — ALLEGED

Contamination of the aquatic fauna would result in contamination of the food chain. Also through absorbtion into agricultural crops in adjoining fields.

01 X MAGNETABLE CONTAINMENT OF WASTES — 02 OBSERVED (DATE 16 June 1981) — X POTENTIAL — ALLEGED

03 POPULATION POTENTIALLY AFFECTED 21,000 — 04 NARRATIVE DESCRIPTION

Extensive rainfall caused lagoons to overflow. Oil could enter Indian Creek via the drainage ditch and eventually discharge into the Sandusky River, which is the source of drinking water for the City of Fremont.

X [illegible] — X POTENTIAL — ALLEGED

Lagoon overflow could contaminate the surrounding agricultural fields with PCBs as well as heavy metals. Also overflow into the drainage ditch to Indian Creek and the Sandusky River.

01 CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 OBSERVED (DATE _____) — POTENTIAL — ALLEGED

04 NARRATIVE DESCRIPTION

[illegible] — POTENTIAL — ALLEGED

[illegible]

[illegible] AFFECTED: 21,000

[illegible]

Emergency Action Plan for Greiner's Lagoon, Fremont, Ohio TAT-05-F-00108.
OSC report U.S. EPA, Greiner's Lagoon, Fremont, Ohio.
Files on Greiner's Lagoon. OEPA office N.W.D.O. Bowling Green, Ohio.

ATTACHMENT C

HAZARD RANKING SYSTEM WORKSHEETS

SCORING THE GREINER'S LAGOON SITE

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 (2) 3	2	4	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1	3	3	
Physical State	0 1 2 (3)	1	3	3	
	Total Route Characteristics Score		12	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 (8)	1	8	8	
	Total Waste Characteristics Score		26	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 (32) 35 40	1	32	40	
	Total Targets Score		41	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			38376	57,330	
7 Divide line 6 by 57,330 and multiply by 100		S_{gw} =	66.9		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	45	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
1-yr. 24-hr. Rainfall	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score				15	
3 Containment	0 1 2 3	1		3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	8	8	
Total Waste Characteristics Score			26	26	
5 Targets					4.5
Surface Water Use	0 1 2 3	3	6	9	
Distance to a Sensitive Environment	0 1 2 3	2	0	6	
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			6	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			7020	64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} =	10.9		

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	**Assigned Value (Circle One)**	**Multi-plier**	**Score**	**Max. Score**	**Ref. (Section)**
1 **Observed Release**	0 45	1	O	45	5.1
Date and Location:					
Sampling Protocol:					
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100		S_a = O			

FIGURE 9
AIR ROUTE WORK SHEET

BILLING CODE 6560-50-C

DISTANCE TO POPULATION FROM HAZARDOUS SUBSTANCE

Population	0–¼ miles	0–1 mile	0–½ mile	0–¾ mile
0	0	0	0	0
1 to 100	9	12	15	18
101 to 1,000	12	15	18	21
1,001 to 3,000	15	18	21	24
3,001 to 10,000	18	21	24	27
More than 10,000	21	24	27	30

Distance to sensitive environment is an indicator of the likelihood that a region that contains important biological resources or that is a fragile natural setting would suffer serious damage if hazardous substances were to be released from the facility. Assign a value from Table 10.

Land use indicates the nature and level of human activity in the vicinity of a facility. Assign highest applicable value from Table 13.

fire marshall has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments or there is a demonstrated fire and explosion threat based on field observations (e.g., combustible gas indicator readings). Document the threat.

segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

7.2 *Waste Characteristics: Direct evidence* of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 0.

TABLE 13.—VALUES FOR LAND USE (AIR ROUTE)

Assigned value =	0	1	2	3
Distance to Commercial-Industrial	> 1 mile	½ to 1 mile	¼ to ½ mile	< ¼ mile.
Distance to National/State Parks, Forests, Wildlife Reserves, and Residential Areas.	> 2 miles	1 to 2 miles	½ to 1 mile	< ½ mile.
Distance to Agricultural Lands (in Production within 5 years):				
Ag land	> 1 mile	½ to 1 mile	¼ to ½ mile	< ¼ mile.
Prime Ag Land [1]	> 2 miles	1 to 2 miles	½ to 1 mile	< ½ mile.
Distance to Historic/Landmark Sites (National Register of Historic Places and National Natural Landmarks).				Within view of site or if site is subject to significant impacts.

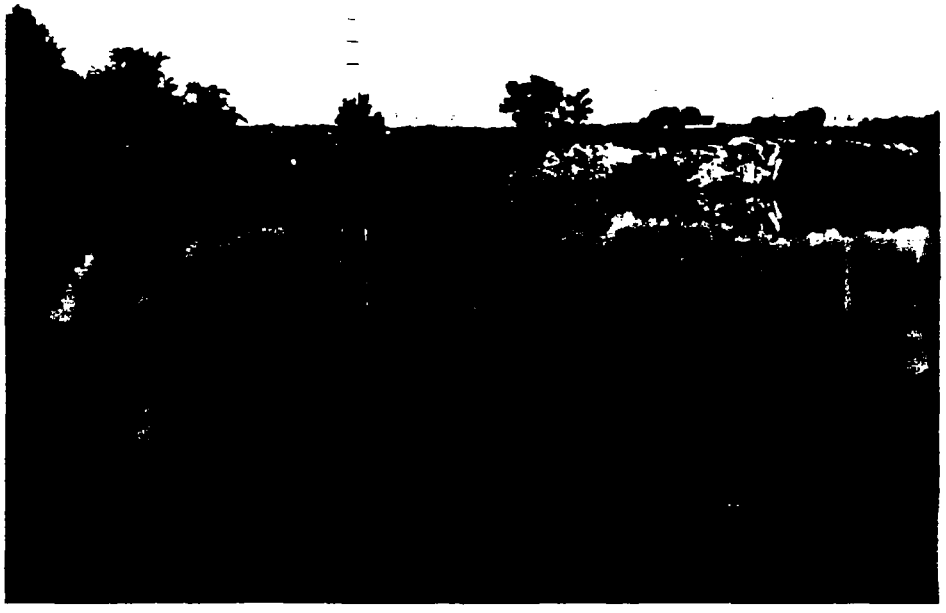
[1] Defined in the Code of Federal Regulations, 7 CFR 657.5, 1981.

	S	S^2
Groundwater Route Score (S_{gw})	66.9	4475.61
Surface Water Route Score (S_{sw})	10.9	118.81
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		4994.42
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		67.78
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		39.2

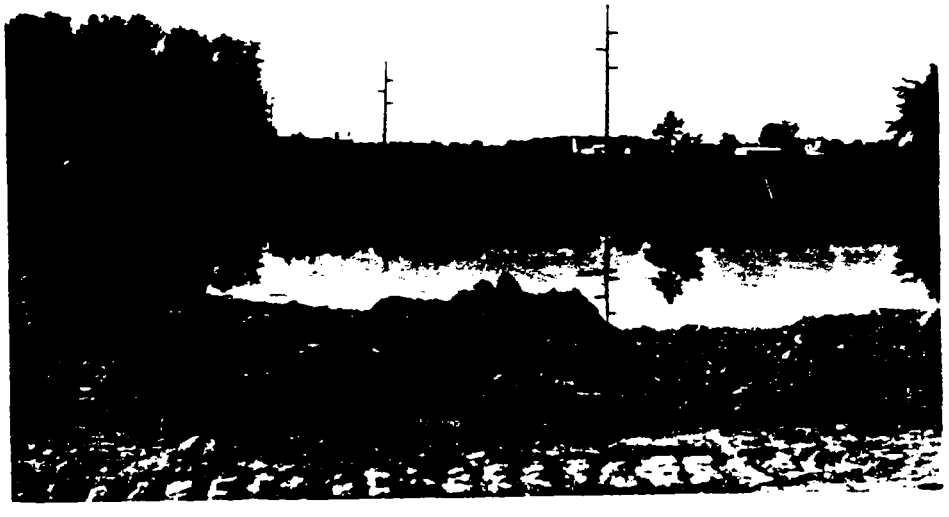
FIGURE 10
WORKSHEET FOR COMPUTING S_M

ATTACHMENT D

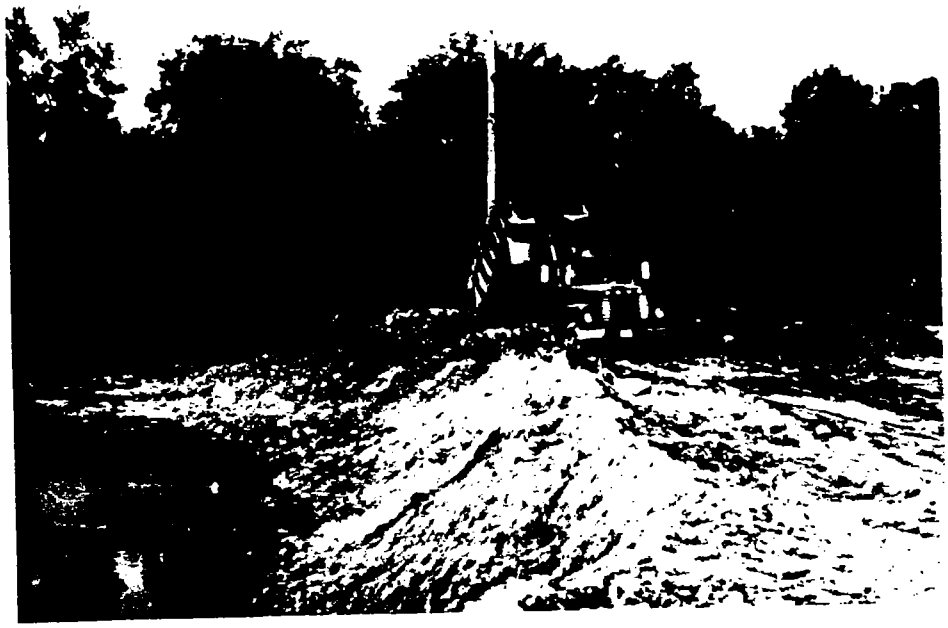
PHOTOGRAPHS OF THE GREINER'S LAGOON
SITE TAKEN ON SEPTEMBER 14, 1984



1. Greiner's Lagoon, Ballville Township, Ohio. Lagoon #3 looking north. 8/14/84



2. Greiner's Lagoon. Lagoon #3 looking southwest. 8/14/84



5. Greiner's Lagoon. Truck dumping fill material into lagoon #3. 8/14/84

6. Greiner's Lagoon. Oil waste material ozzing up through fill dirt on top of lagoon #2. 8/14/84

7. Greiner's Lagoon. Oil waste material ozzing up through fill dirt on top of lagoon #1. 8/14/84

8. Greiner's Lagoon. Oil liquid setting on top of fill material. Lagoons #1 and #2.

9. Greiner's Lagoon. Holding tanks near northeast corner of site. Small tank is empty, large tank is full of oil waste. 8/14/84

10. Greiner's Lagoon. Drainage ditch directly east of site; shows sludge material. 8/14/84

11. Greiner's Lagoon. Drain at northeast corner that empties in drainage ditch that leads to Indian Creek. Drainage ditch and pipe from site empty into this drain. 8/14/84

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER
Greiner's Lagoon	Township Road 181, West of Tiffin Road

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
Fremont	OH	43420	Sandusky	143	5

09 COORDINATES: LATITUDE 8 3°08' 22.8" LONGITUDE 0 4 1°16' 09.4"

10 TYPE OF OWNERSHIP (Check one): [X] A. PRIVATE [ ] B. FEDERAL [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL [ ] F. OTHER [ ] G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEAR OF OPERATION
8 10 84 (MONTH DAY YEAR)	[ ] ACTIVE [X] INACTIVE	1954 (YEAR) | 1981 (YEAR) UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply):

[X] A. EPA [X] B. EPA CONTRACTOR Roy F. Weston, Inc. (Name of firm) [ ] C. MUNICIPAL [ ] D. MUNICIPAL CONTRACTOR _____ (Name of firm)

[ ] E. STATE [ ] F. STATE CONTRACTOR _____ (Name of firm) [ ] G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Joe Fredle	OSC	U.S. EPA	(216) 845-5200

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Elaine Rosenburg	Environmental Scientist	TAT	(216) 356-2130
Joel Larkin	Environmental Scientist	TAT	(216) 356-2130
Edward Burk	Environmental Scientist	TAT	(216) 356-2130
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
			( )
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
[ ] PERMISSION [ ] WARRANT		

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Joe Fredle	U.S. EPA - Westlake, OH	(216) 835-5200
Ed Burk	TAT - Rocky River, OH	(216) 356-2130

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Edward Burk	TAT	Roy F. Weston	216/356-2130	8 / 21 / 84 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: OH
02 SITE NUMBER:

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
X A SOLID
B POWDER, FINES
X C SLUDGE
X D SLURRY
X E LIQUID
X F GAS
G OTHER

02 WASTE QUANTITY AT SITE
TONS
CUBIC YARDS 10,595
NO. OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)
X A TOXIC
B CORROSIVE
C RADIOACTIVE
X D PERSISTENT
E SOLUBLE
F INFECTIOUS
G FLAMMABLE
H IGNITABLE
I HIGHLY VOLATILE
J EXPLOSIVE
K REACTIVE
L INCOMPATIBLE
M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	NAME	QUANTITY	UNIT	COMMENTS
SLU	SLUDGE	500	CY	
OW	OIL WASTE	19,000	Gal	
SOL	SOLVENTS			
PSD	PESTICIDES			
OOC	OTHER ORGANIC CHEMICALS	2,000,000	Gal	Lagoon Liquid
IOC	INORGANIC CHEMICALS	unknown		Lagoon Liquid
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		Lagoon Liquid

IV. HAZARDOUS SUBSTANCES

CATEGORY	SUBSTANCE NAME	CAS NUMBER	CONFIRMATION METHOD	CONCENTRATION	MEASURE OF CONCENTRATION
OLW	Ethyl Benzene	100-41-4	Lagoon	33	ug/l
OLW	Phenol	108-95-2	"	2700	"
SLU	Polychlorinated Biphenyls	1336-36-3	"	287	"
OLW	Toluene	108-88-3	"	170	"
OLW	Sulfate		"	272	"
OLW	Chloride		"	140	"
MES	Iron (total)		" and soil	400	"
MES	Zinc (total)		" and soil	450	"
MES	Lead (total)		" and soil	120	"

CATEGORY	SUBSTANCE NAME	CAS NUMBER	CATEGORY	SUBSTANCE NAME	CAS NUMBER
FDS	Arsenic	7440-38-2	FDS	Nickel	7440-02-0
FDS	Cadmium	7440-43-9	FDS	Toluene	108-88-3
FDS	Chromium	7440-47-3	FDS	Phosphorus	7723-14-0
FDS	Mercury	7439-97-6			

VI. SOURCES OF INFORMATION

Emergency Action Plan for Greiner's Lagoon, Fremont, Ohio. TAT-05-F-00108
OSC Report U.S. EPA, Greiner's Lagoon, Fremont, Ohio.
Files on Greiner's Lagoon, OEPA, N.W.D.O. Bowling Green, Ohio.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A GROUNDWATER CONTAMINATION — 02 OBSERVED (DATE _____) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Lagoons have no liners, therefore the PCB contaminated oil may leech through the thin top soil to the creviced limestone bedrock. This limestone is shallow as is the aquifer where all local wells originate.

01 X B [illegible] 21,000 — 02 [illegible] DATE [illegible] — X POTENTIAL — ALLEGED

Overflow of lagoons during periods of heavy rain has released contaminants into a drainage ditch that leads to Indian Creek which is a tributary of the Sandusky River.

01 X C CONTAMINATION OF AIR — 02 OBSERVED (DATE _____) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Vapor given off by oil waste and air born PCBs on dust particles.

01 D FIRE EXPLOSIVE CONDITIONS — 02 OBSERVED (DATE _____) — POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

01 X E DIRECT CONTACT — 02 OBSERVED (DATE _____) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Danger of dermal contact. Oil waste and sludges are exposed. Area is not contained or marked in any way.

01 X F CONTAMINATION OF SOIL — 02 X OBSERVED (DATE 8/14/84) — X POTENTIAL — ALLEGED
03 AREA POTENTIALLY AFFECTED 10 (Acres) — 04 NARRATIVE DESCRIPTION

Run over of lagoons into adjoining agricultural fields. Also stressed vegetation on top of capped lagoon #4. Oozing of contaminated material up through soil cover on lagoons #1 and #2.

01 [illegible] 21,000 — 02 [illegible] DATE [illegible] — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED — 04 NARRATIVE DESCRIPTION

Overflow of lagoons have gone into the adjoining drainage ditch which goes into Indian Creek. This creek feeds into the Sandusky River which is the drinking water supply for Fremont. Also leeching into limestone aquifer may contaminate local wells.

01 X [illegible] — 02 [illegible] DATE [illegible] — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Workers exposed to oil vapors and airborn PCBs on dust. Also possible dermal contamination if contact made.
Workers are those hauling dirt in to cover site.

01 X I POPULATION [illegible] INJURY — 02 [illegible] DATE [illegible] — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED — 04 NARRATIVE DESCRIPTION

Possible contamination (Inhalation & dermal) to workers in adjoining agricultural fields.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 X J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE 8/14/84) X POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Site surrounded by agricultural fields, PCBs have been detected (.25 ppm) at depths 6cm. in adjoining fields. Also possible contamination of aquatic fauna due to migration into Indian Creek. Stressed vegetation on Lagoon #4.

01 X K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE) X POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Overflow from the lagoons could contaminate aquatic fauna of Indian Creek and the Sandusky River.

01 X L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE) X POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Contamination of aquatic fauna would result in contamination of the food chain. Also, through absorbtion into the agricultural crops in adjoining fields, by direct absorbtion-not by root uptake. (tomatoes that lay in adjoining fields).

01 X M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE 16 June'81) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED 21,000 — 04 NARRATIVE DESCRIPTION

Extensive rainfall caused lagoons to overflow. Oil could enter Indian Creek via the drainage ditch and eventually discharge into the Sandusky River, which is the source of drinking water for the City of Fremont.

01 X N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE) X POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Lagoon overflow could contaminate the surrounding agricultural fields with PCBs as well as heavy metals. Also overflow into drainage ditch to Indian Creek and the Sandusky River.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 21,000

IV. COMMENTS

V. SOURCES OF INFORMATION

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
OH	

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				
☐ B UIC				
☐ C AIR				
☐ D RCRA				
☐ E RCRA INTERIM STATUS				
☐ F SPCC PLAN				
☐ G STATE (Specify)				
☐ H LOCAL (Specify)				
☐ I OTHER (Specify)				
☒ J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A SURFACE IMPOUNDMENT	2,000,000	Gal
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☒ D TANK, ABOVE GROUND	12,000	Gal
☐ E TANK, BELOW GROUND		
☐ F LANDFILL		
☐ G LAND FARM		
☐ H OPEN DUMP		
☐ I OTHER (Specify)		

04 TREATMENT (Check all that apply)	05 OTHER
☐ A INCENERATION	☐ A BUILDINGS ON SITE
☐ B UNDERGROUND INJECTION	
☐ C CHEMICAL/PHYSICAL	
☐ D BIOLOGICAL	
☐ E WASTE OIL PROCESSING	06 AREA OF SITE
☐ F SOLVENT RECOVERY	10
☐ G OTHER RECYCLING/RECOVERY	
☒ H OTHER Carbon Filter	

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A ADEQUATE, SECURE ☐ B MODERATE ☒ C INADEQUATE, POOR ☐ D INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKES, LINERS, BARRIERS, ETC.

Lagoons have no liners. Dikes are built up, but heavy rain could cause overflow. Material being used for fill contains cinders and other rubble material. Liquid is oozing up through fill material. Due to material not being absorbent and displacing sludge rather than absorbing it.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☒ YES ☐ NO

02 COMMENTS

Rural area, but is not closed off or marked in any way.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A ☒	B ☒	A ☒	B ☐	C ☐	A 6 (mi)
NON-COMMUNITY	C ☐	D ☒	D ☒	E ☐	F ☐	B 1/4 (mi)

III. GROUNDWATER

A. [illegible] DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION C. [illegible] IRRIGATION D. NOT USED, UNPOTABLE

01 POPULATION SERVED BY GROUND WATER ~ 3,000

02 DISTANCE TO NEAREST DRINKING WATER WELL 1/4 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
88 (ft)	NW	75 (ft)	100 gpm XXX (gpd)	☒ YES ☐ NO

09 DESCRIPTION OF WELLS (including, storage, depth, production, relative population served, etc.)

Private wells all around area. Closest well ~ ¼ mi. from site. Private wells serve about 350 people. Ground water wells for the city of Green Springs are located about 3/4 of a mile from the site. Town is 3 mi. from site. Population of Green Springs ~ 1,000.

10. FLOOD AREA

☐ YES ☒ NO — COMMENTS

11. SPECIAL AREA

☒ YES ☐ NO — COMMENTS Drainage ditch that leads to a file drain which empties into Indian Creek. Overflow has occurred in the past.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
Indian Creek	☒	¼
Sandusky River	☒	3

V. ECOLOGY AND PROPERTY INFORMATION

01 PERSONS WITHIN

A. WITHIN ½ MILE OF SITE	B. WITHIN 2 MILES OF SITE	C. WITHIN 4 MILES OF SITE	02 DISTANCE TO NEAREST HABITATION
350	2,000	10,000	¼

03 NUMBER OF HOUSES WITHIN ½ MILE OF SITE: 500

04 DISTANCE TO NEAREST HOUSE: ¼ (mi)

05 DESCRIPTION OF WITHIN ½ MILE OF SITE (Include type, density, and distribution of residences, industry, and agriculture)

Immediate area is rural, agricultural, sparsly populated.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A $10^{-6} - 10^{-8}$ cm/sec ☐ B $10^{-4} - 10^{-6}$ cm/sec ☐ C $10^{-4} - 10^{-3}$ cm/sec ☐ D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

75 (ft)	½ (ft)		
32 (in)	3 (in)		N.W.

07 FLOOD POTENTIAL

SITE IS IN ____ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE OTHER

A ____ (mi) B ____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

____ (mi)

ENDANGERED SPECIES ____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL	NATIONAL/STATE PARKS, FORESTS OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME FARMLAND	AGRICULTURAL LANDS ALL LAND
A 3 (mi)	B ⅓ (mi)	C 20 ft. (mi)	D ____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Area is relatively flat agricultural fields. Lagoons are raised up about 5 ft. from surrounding area with poorly built dikes surrounding them. Lagoon #4 has been capped. Lagoons #1 and #2 have been filled and #3 is in the process of being filled. There are wooded areas to the west and south. Agricultural fields surround the site.

VII. SOURCES OF INFORMATION

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER	2	West Coast Tech. Service/IT Corp & U.S.Testing	10/1/84
WASTE	2	Lab to be set-up.	-
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER (sludge)	3	Lab to be set-up.	-

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
HNU	No reading above background.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF TAT Region V Cleveland Satellite office
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Sandusky County Groundwater Resources. Fremont West Quadrangle.

V. OTHER FIELD DATA COLLECTED (Attach additional sheets if necessary)

Well logs of private wells within 1 mile of facility.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
OH	

II. CURRENT OWNER(S)

01 NAME: Gary Greiner		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME: Noble Caseman		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME: Beatrice & Edgar Collins		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME: Terry Little		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 1459 Dickenson		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY: Fremont	06 STATE: OH	07 ZIP CODE: 43430	05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE

V. ADDITIONAL INFORMATION (If necessary, use a separate sheet of paper)

Same

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
OH	

II. CURRENT OPERATOR *(Provide if different from owner)*

01 NAME	02 D+B NUMBER
Gary Greiner	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY *(If applicable)*

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

[illegible] OPERATOR(S)

01 NAME	02 D+B NUMBER
Terry Little	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
1459 Dickenson	

05 CITY	06 STATE	07 ZIP CODE
Fremont	OH	43430

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
	Terry Little

01 NAME	02 D+B NUMBER
Jack Little	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
1788 Danbury	

05 CITY	06 STATE	07 ZIP CODE
Clermont	CA	91711

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
	Terry Little

[illegible] OPERATORS' PARENT COMPANIES

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

[illegible]TION

[illegible] 81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. ADDITIONAL GENERATOR INFORMATION (Use this space to continue any information from Parts 1 through 8.)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: OH
02 SITE NUMBER:

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ C. [illegible] — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ D. [illegible] — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION No removal of contaminated soil was done. Area of concern is NW corner where overflow occurred onto farm land.

01 ☐ F. WASTE REPACKAGED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 X H. ON SITE BURIAL — 02 DATE ____ — 03 AGENCY OEPA approved
04 DESCRIPTION Lagoons #1 and #2 are filled in with earthen material. Priuit Industry supplied Lagoon #3 is in the process of being filled in. Lagoon #4 has been filled and capped.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ L. [illegible] — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ M. [illegible] WASTE TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ N. [illegible] — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 X O. EMERGENCY [illegible] SUPPLY WATER PROVISION — 02 DATE June 17,1981 — 03 AGENCY U.S.EPA 311K
04 DESCRIPTION Dikes built to contain overflow during heavy rain on the NW part of site.

01 ☐ P. [illegible] — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ Q. [illegible] CUTOFF WALL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

2.3 Summary of TAT Sampling Activities Conducted on August 23, 1984.

On August 23, 1984, members of the Region V TAT collected samples at the Greiner's Lagoon waste site. The purpose of this sampling effort was to provide reliable data to the U.S. EPA, thus permitting an accurate assessment of site conditions.

A total of six sample locations were selected by U.S. EPA and TAT personnel (Figure 4). Samples obtained from the tank were collected using a small siphon pump. Samples collected at stations S26, S27, S28 and S31 were grab samples and samples collected at stations S29 and S30 were sludge composite samples.

Oil and sludge samples are to be analyzed for inorganic and organic constituents. Three sludge samples are to be subjected to the Extraction Procedure (EP) and analyzed for the appropriate metal contituents. The water samples obtained from the drainage ditch are to be analyzed for priority pollutants and Task 1 & 2 metals.

The water samples, to be tested for organic priority pollutants, were sent to West Coast Technical Service/IT Corp. in Cerritos, California, on August 23, 1984. Similar water samples, to be tested for Task 1 & 2 metals, were sent to U.S. Testing in Hoboken, New Jersey, also on August 23, 1984. Oil and sludge samples to be tested for priority pollutants were sent to Encotech in Ann Arbor, Michigan on September 6, 1984. The remainder of oil and sludge samples to be tested for inorganic Task 1 & 2 metals and EP Toxicity were taken to Wadsworth Testing Laboratory in Canton, Ohio, on October 22, 1984.

Pending completion of analysis and receipt of all results, a report discussing the findings of the TAT sampling effort will be submitted. Results for all of the analyses are expected by the second week in November, 1984.

3.0 NATURE OF THREAT

Table 1 lists those substances that were identified through all sampling efforts conducted at the Greiner's Lagoon facility. The table also presents the respective concentrations of each compound found in the sampled media and information about each compound as it relates to the properties which make it hazardous. This section addresses how the compounds found on site, combined with other factors such as unrestricted site access, soil characteristics and land uses, present a significant risk of harm to human health and the environment. Also

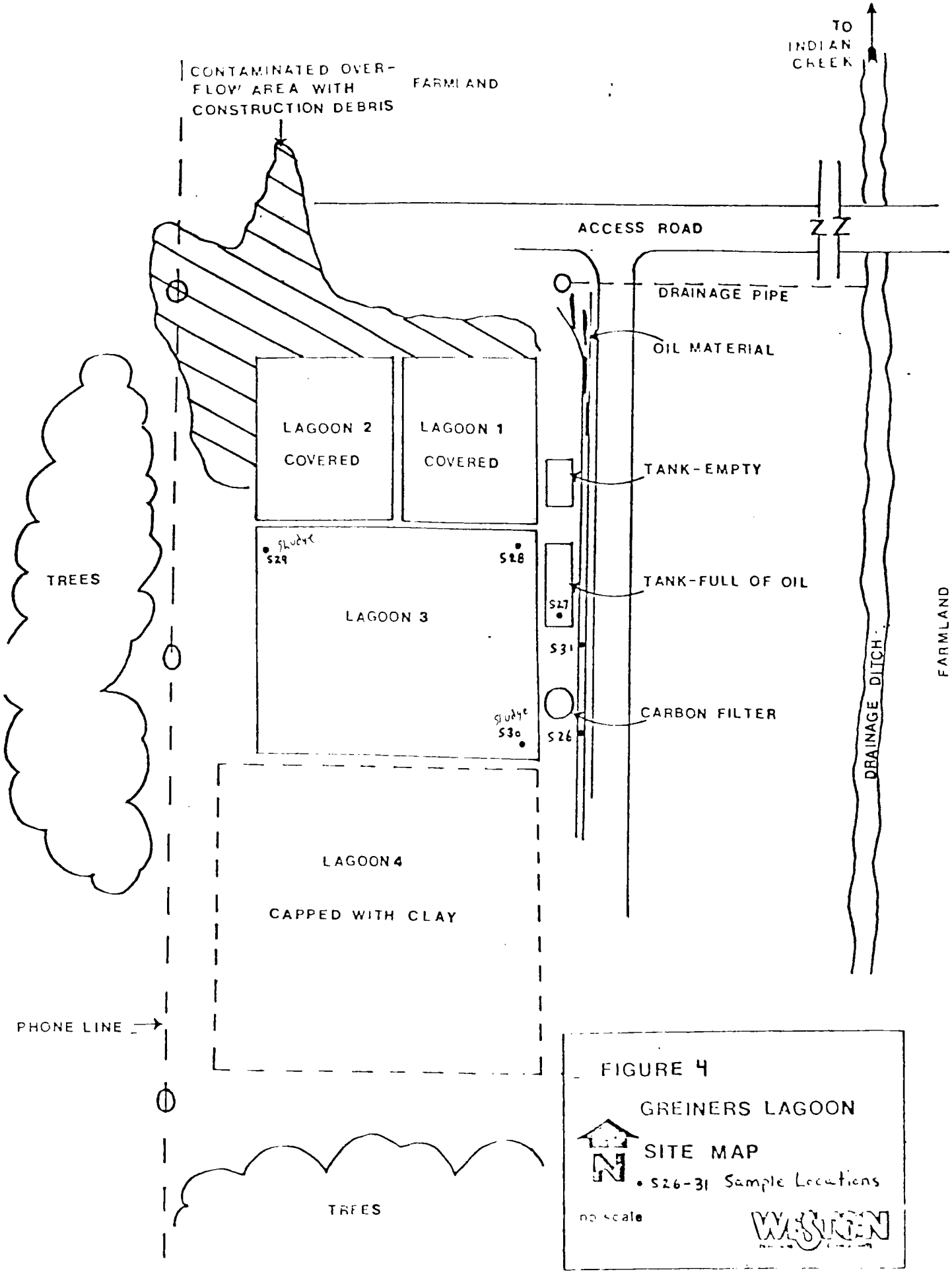


FIGURE 4

GREINERS LAGOON

SITE MAP

• S26-31 Sample Locations

LE 1

SUMMARY OF SUBSTANCES IDENTIFIED AND SOME ASSOCIATED CRITICAL CHARACTERISTICS

GREINER'S LAGOON, FREMONT, OHIO

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATIONS	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Aluminum	Overflow Area Drainage Ditch	1.7-2.1 ppm 11 ppm	10 mg/m^3 (9 ppm)			o Inhalation of finely divided aluminum powder has been reported as a cause of pulmonary fibrosis
Arsenic	Overflow Area Lagoon 4 Soil	1.9-2.4 ppb 20.1 ppb	0.2 mg/m^3 (0.016 ppb)		Intramuscular LD_{LO}(rat)= 25 mg/kg	o A known carcinogen. o Poisonous.
Barium	Lagoon 4 Soil Drainage Ditch Overflow Area	56.3 ppm 49 ppb 27-30 ppb	0.5 mg/m^3 (0.09 ppm)	250 mg/m^3 (44.49 ppm)		o Soluble barium compounds are poisonous. Exposure symptoms include severe abdominal pain, muscle spasms, paralysis, cyanosis and death.
Butyl benzyl phthalate	Tank Liquid	34 ppm			Intraperitoneal LD_{50}(mouse)= 3160 mg/kg	o Moderately toxic via intraperitoneal routes. Low toxicity via additional routes.
Cadmium	Lagoon 4 Soil Overflow Area	0.96 ppm 1.2-2.2 ppb	0.05 mg/m^3 (1 ppm)	40 mg/m^3 (8.7 ppm)		o A known carcinogen and teratogen. o Exposure symptoms include pulmonary edema, emphysema, proteinuria and anemia.
Chromium	Lagoon 4 Soil Drainage Ditch	18.8 ppm 9.3 ppb	0.5 mg/m^3 (0.24 ppm)			o Inhalation of chromium compounds is known to cause histologic fibrosis of the lungs.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHOLD LIMIT VA	IDLH	ACUTE TOXICITY DATA	COMMEN
Cobalt	Drainage Ditch	6.8 ppb	0.1 mg/m^3 (4 ppb)	20 mg/m^3 (830 ppb)		o An experimental carcinogen. o Exposure symptoms include decreased pulmonary function, diffuse nodular fibrosis and respiratory hypersensitivity.
Copper	Lagoon 4 Soil Drainage Ditch Overflow Area	47 ppm 14 ppb 6.8-10 ppb	1 mg/m^3 (0.38 ppm)		Intraperitoneal LD_{50}(mouse)= 3.5 mg/kg	o A suspected mutagen.
Di-n-butyl phthalate	Tank Liquid Lagoon 3 Water	15 ppm Trace	5 mg/m^3 (0.44 ppm)	9300 mg/m^3 (817 ppm)		o Exposure symptoms include irritated nasal and upper respiratory passages, stomach irritation and light sensitivity.
Di-n-octyl phthalate	Tank Liquid Lagoon 3 Water	110 ppm 20 ppm			Oral LD_{50}(rat)= 31,000 mg/kg	o An experimental teratogen on a chronic basis.
Ethyl benzene	Lagoon 3 Water	33 ppm	100 ppm	2000 ppm	Inhalation LD_{50}(rabbit)= 5000 mg/kg	o Exposure symptoms include dizziness, irritation of the nose and throat, congestion of the chest and erythema and inflammation of the skin.
Bis(2-ethyl hexyl) phthalate	Tank Liquid Lagoon 3 Water	500 ppm 260 ppm			Oral LD_{50}(rat)= 31,000 mg/kg	o Experimental teratogen on a chronic basis.
Iron	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid Drainage Ditch Clean Field Tile Contaminated Field Tile	350-400 ppb 290-310 ppb 70 ppb 220 ppb 17 ppm 30 ppb 480 ppb	1 mg/m^3 (0.43 ppm)		Intraperitoneal LD_{50}(mouse) 26 mg/kg	o A suspected lung, liver connective tissue and reticuloendothelial tissue carcinogen. o Exposure sympstoms (iron dust) include conjunctivitis, chloroiditis, retinitis and siderosis

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Iron (con't)	Downstream Overflow Area	160-890 ppb 660-970 ppb				o of tissue if iron remains in these tissues.
Lead	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 4 Soil Contaminated Field Tile Overflow Area	46 ppb 120 ppb 19.1 ppm 5 ppm 8.1-13 ppb	0.05 mg/m^3 (0.06 ppm)		Oral LD_{50}(guinea pig)=1330 mg/kg	o Suspected carcinogen and teratogen. o Exposure symptoms include abdominal pain, gingival lead line and wrist paralysis.
Lithium	Lagoon 4 Soil Drainage Ditch	17.9 ppm 13 ppb				o An experimental teratogen. o Lithium compounds have caused prostration, kidney damage, anorexia, coma and death. The lithium ion is toxic to the CNS.
Manganese	Drainage Ditch Overflow Area	330-790 ppb 48-220 ppb	5mg/m^3(ceiling) (220 ppb)	10,000 ppm	Inhal TC_{LO} (humans)= 11 mg/m^3	o A known mutagen and suspected carcinogen. o Exposure symptoms include Parkinson's disease, asthenia and mental problems.
Methylene chloride	Tank Liquid Lagoon 3 Liquid	130 ppb 21 ppb	100 ppm	5,000 ppm	Oral LD_{50}(rat)= 2136 mg/kg	o An experimental carcinogen. Experimentally cuases the formation of neoplasms. o Induces narcosis at high concentrations.
2-methyl naphthalene	Tank Liquid	Trace				o Suspected carcinogen of the bladder. o Limited animal experimentation suggests high toxicity
Nickel	Lagoon 4 Soil Drainage Ditch	19.1 ppm 16 ppb	1 mg/m^3 (0.41 ppm)			o A known carcinogen of the lungs and nasal cavities.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHOLD LIMIT VALUE	IDLH	ACUTE TOXICITY DATA	COMMENTS
Nickel (con't)	Overflow Area	7.0-7.3 ppb				o Experimentally causes the formation of neoplasms. o Exposure symptoms include sensitization dermatitis, pneumonitis and allergic asthma.
Pentachloro-phenol	Unknown	Trace	0.5 mg/m^3 (skin) (0.045 ppb)			o A known teratogen and suspected carcinogen. o Absorbed through the skin. o Exposure symptoms include liver and kidney damage, collapse and CNS depression.
Phenanthrene	Tank Liquid Lagoon 3 Liquid	Trace Trace			Oral LD_{50} (mice) = 700 mg/kg	o A known carcinogen. o A skin photo-sensitizer.
Phenol	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid	27 ppm 1.9 ppm 106 ppb 82 ppb	5 ppm (skin)	100 ppm	Dermal LD_{50} (rat) = 669 mg/kg	o An experimental and co-carcinogen via dermal routes (absorbed through the skin). o Absorption through the skin may lead to death within 30 minutes. o Exposure symptoms include kidney, liver and spleen damage; edema of the lungs; collapse; mental disturbances; and gangrene.
Polychlor-inated biphenyls	Lagoon 1 Oil Lagoon 2 Oil Lagoon 2 Sludge Lagoon 3 Oil Lagoon 3 Sludge Lagoon 4 Oil Lagoon 4 Sludge Overflow Area Cornfield	97.3 ppm 28.7-32 ppm 1-287 ppm 0.01-81.1 ppm $<$1-19.2 ppm 0.02 ppm 17.8-57 ppm 20-640 ppm 0.25 ppm	1 mg/m^3 (skin) (0.1 ppm)	10 mg/m^3 (1 ppm)		o A known carcinogen via oral routes. o Absorbed through the skin. o Persistent and ecologically damaging. o Exposure symptoms include chloracne, acute atrophy of the liver, jaundice, coma and death.

SUBSTANCE	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHO LIMIT VA	IDLH	ACUTE TOXICITY DATA	COMME
Polychlor- (con't) inated biphenyle						o Emits highly toxic fumes when heated to decomposition.
Silver	Lagoon 4 Soil	0.5 ppm	0.1 mg/m^3 (0.022 ppm) Soluble cmpds: 0.01 mg/m^3 (0.002 ppm)			o Experimentally causes the formation of neoplasms via the implantation route. o Exposure symptoms include permanently blue-gray eyes, nasal septum, throat and skin; ulceration; depositio of silver in various organs
Toluene	Tanks Liquids Lagoon 3 Water	14 ppm 170 ppm	200 ppm(skin)		LD_{50}(rat)= 1640 mg/kg	o May contain highly toxic benzene impurities. Moderately toxic otherwise. Exposure symptoms include confusion, paresthesia and photophobia. o Flammable. o Emits toxic vapors when heated.
1,2,4-tri-chloro-benzene	Lagoon 3 Water	Trace	5 ppm		Oral LD_{50}(mice)= 766 mg/kg	o Toxic by ingestion and inhalation.
Vanadium	Drainage Ditch	18 ppb	as V_2O_5: 0.05 mg/m^3 (24 ppb)			o Vanadium compounds lead to exposure symptoms including polycythemia, red blood cel destruction, emaciation, albuminuria, hematuria, hemoptysis, acute pulmonary edema, greenish-black discoloration of the tongue, bronchitis, tremors and radiographic reticulation.

CHEMICAL	SAMPLE MEDIA	SAMPLE CONCENTRATION	THRESHO LIMIT VA	IDLH	ACUTE TOXICITY DATA	COMMI
Yttrium	Drainage Ditch	8.9 ppb	1 mg/m^3 (0.27 ppb)			o May have an anti-coagulant effect on the blood. o Possible liver damage.
Zinc	Lagoon 1 Liquid Lagoon 2 Liquid Lagoon 3 Liquid Lagoon 4 Liquid Lagoon 4 Soil Drainage Ditch	390-450 ppb 320-430 ppb 90 ppb 80 ppb 97.7 ppb 5 ppb			Intraperitoneal LD_{50}(mice)= 15 mg/kg	o Dust is flammable.

the discussion reviews the three major threats posed by the site. In order of magnitude the threats are direct human exposure to contaminated waste material and soils, direct human contact with or ingestion of contaminated surface and ground water and lastly, potential adverse impacts to wild life posed by conditions at the site.

Due to the unrestricted nature of the site grounds, there exists a potential for direct human contact with hazardous material detected on the site. Contaminated oil, water and sludge contained in the lagoons, on site tanks and off site soils, sediments and water pose a significant threat to persons who may inadvertently come into contact with the material. Several of the substances detected on the site may be readily absorbed upon contact with the skin. These substances include pentachlorophenol, phenol, PCB's and toluene. The first three of these materials are known teratogens and/or carcinogens via dermal, oral and additional routes of exposure. Other potential effects of exposure include liver, kidney and spleen damage; mental disturbances; paresthesia; collapse; coma and death.

In addition to the potential for direct human exposure through dermal routes, the potential exists for exposure to the substances on site through oral and inhalation routes. All of the substances found on the site could be inadvertantly ingested if not removed from the hands prior to eating, smoking or natural hand to mouth contact. Several of the organic substances found on the site are volatile (i.e. ethylbenzene, methylene chloride and toluene) and thus would readily be inhaled by unprotected individuals in the site vicinity. It should be noted that methylene chloride is an experimental carcinogen, and also in use experimentally to cause the formation of neoplasms. Other symptoms of exposure to the volatile organic substance include dizziness, erythema and narcosis.

Toxic materials which were detected in lagoon #4 oil and sludge samples at concentrations approaching or exceeding Threshold Limit Values (TLV's) established for each include; arsenic, barium, cadmium, chromium, copper, lead, nickel, PCB's and silver. Arsenic, iron, manganese and PCB's were also detected in the off site lagoon over flow area at concentrations exceeding their TLV's. In addition, PCB's were found at high levels in lagoons #2 and #3 sludge samples, as well as in an agricultrual field adjacent to the facility. All of the PCB levels detectd both on site and off site due to lagoon overflows, exceed Immediately Dangerous to Life and Health Values (IDLH). The potential exists for human exposure to each of the above mentioned materials through inhalation of

air-born particulate matter at or near the site. Even those substances detected in the fill and capping material on lagoon #4 may yet pose a threat to unwary individuals. Lagoon #4 sludges may have seeped to the surface during filling operations similar to the situation occurring in Lagoons #1 and #2. Areas observed on the cap of lagoon #4 which are presently void of vegetation would tend to indicate that sludges did seep to the surface. Contaminated soil particles from these barren areas could become air-born once the soils have become dried during the summer months. Of the substances detected in soil samples at concentrations exceeding their TLVs, arsenic, cadmium, nickel and PCBs are known teratogens and/or carcinogens, while copper is a suspected mutagen and lead is a suspected carcinogen and teratogen. Other health effects associated with the substances include pulmonary edema, histologic fibrosis of the lungs, gingival lead line, cyanosis, emphysema, paralysis and death.

The second threat posed by the conditions at the Greiner's Lagoon facility is that of surface and ground water contamination. The drinking water intake serving the city of Fremont, Ohio, and adjoining areas (population 21,000) is located six miles downstream from the facility. Contamination of surface water with substances including aluminum, barium, chromium, cobalt, copper, iron, lead, lithium, manganese, nickel, PCB's, vanadium, yttrium and zinc has been documented both in the immediate vicinity and further downstream from the site. Contamination of area surface water may be attributed to the recurring over flows. One such incident occurred in June, 1981, when heavy rainfall caused the lagoons to over flow and contaminants made their way into Indian Creek, which empties into the Sandusky River. As noted previously, the Sandusky River is the drinking water source for Fremont, Ohio. No sampling of the river or area surface water at that time was conducted.

Table 2 presents a comparison of Federal Safe Drinking Water Act primary and secondary standards for various substances to concentrations detected in surface waters near the Greiner's Lagoon site. The lead concentrations detected in off site surface waters exceeded primary standards by a factor of ten, while concentrations of iron and manganese exceeded secondary standards by a factor of six and sixteen, respectively. Health effects not previously mentioned which are associated with the substances detected in near-site surface waters include diffuse modular fibrosis, toxicity to the central nervous system, red blood cell destruction, anti-coagulation blood effects, liver damage, bronchitis and Parkinson's Disease.

TABLE 2

A COMPARISON OF SAFE DRINKING WATER

ACT STANDARDS TO CONCENTRATIONS OF SUBSTANCES DETECTED IN SURFACE WATERS

SUBSTANCE	SAFE DRINKING WATER ACT STANDARDS (ppb) PRIM.[1]	SEC.[2]	CONCENTRATIONS DETECTED IN NEAR-SITE SURFACE WATERS (ppb)
Barium	1000		49
Chromium	50		9.3
Copper	1000		14
Iron		300	160 - 1700
Lead	50		500
Manganese		50	330 - 790
Zinc		5000	5

[1] Address health considerations.

[2] Address aesthetic qualities.

The potential for contamination of ground water in the immediate vicinity of the Greiner's Lagoon facility is a factor of great concern. The lagoons have no liners, therefore migration of contaminants to the water table is possible. The top layer of the soil is made of of glacial till which in general is loosely packed and very porous. The next layers are interbedded clays that may vary in porosity. The next layer is a creviced limestone layer that is the main aquifer in the area. This limestone bed is the only source of ground water in the area. Local drinking water wells are as shallow as thirty-eight feet and can produce up to 100 gallons per minute. No other source of potable water is known to be in use by residents in the immediate vicinity of the facility. At this time no sampling of area ground water is known to have been conducted.

A third threat posed by the conditions at the Greiner's Lagoon facility is the threat to wild life. As substantiated in Section 1.0 of this report, non-migratory bird kills have occurred as a result of exposure to the substances contained in the facility's lagoons. It has been documented that prior to death these birds have suffered from symptoms including stupefaction and convulsions.

Table #1 lists acute toxicity data for several of the substances detected on the site. Substances including arsenic, copper, iron and zinc are highly toxic to rats and mice via intraperitoneal routes of exposure. Additionally, phenanthrene, phenol and 1,2,4-trichlorobenzene are moderately toxic to these species via oral and dermal routes. This data would indicate a threat is posed to various forms of wild life which inhabit the immediate area, as well as downstream from the lagoons.

4.0 RECOMMENDED ACTIONS

Based on background information and the site assessment, it is apparent that the Greiner's Lagoon site presents significant threats to human health and the environment. Though the area is rural, signs should be posted to warn people of the dangers of dermal contact and inhalation. Dikes should be properly constructed to assure that overflow could not occur again. A ground water monitoring system should be installed to detect the migration of contaminants down to the shallow water table.

If the results of the recent TAT sampling (Aug. 23, 1984) reveal high levels of PCBs or other hazardous materials, an Emergency Action Plan should be developed for a CERCLA-funded immediate removal.

Currently, an attempt to obtain a clean up commitment from potentially responsible parties (PRPs) should take place. If an emergency removal does not take place, the lagoons should continue to be filled in, as they are now, to help eliminate the threat to human health and the environment. The fill material should be monitored to assure the proper soil type is being used. The lagoons should be capped with clay followed by the proper stabilization techniques (e.g. grading, seeding). The site should also be re-evaluated using the Hazard Ranking System (HRS), to check for possible placement on the National Priorities List.

ATTACHMENT A

SITE INSPECTION REPORT

EPA FORM 2070-13

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Site Inspection Report

reinforce the dikes around the lagoons. Also a dike was built to contain the previous spill in the low area around the lagoons.

In July of 1981, the OEPA funded a clean up action. During this action surface oil was collected from the lagoons and stored on site in two 6,000 gallon tanks. Liquid from lagoons #3 and #4 were siphoned off and passed through a carbon contact unit that was constructed on site in a 20,000 gallon tank. Effluent from the carbon unit was discharged to the nearby drainage ditch. Lagoon #4 was dewatered and partially filled with dirt. Closure and grading of this lagoon was completed in June 1982, as a CERCLA funded immediate removal. Other actions under taken as part of this $198,000 clean up included the capping of lagoon #4 and the partial dewatering of lagoon #3.

At present, lagoons #1 and #2 have been filled in and lagoon #3 has been partially filled in. Some of the fill material and transportation is being supplied by local industry. This most recent effort to mitigate conditions at the site was coordinated and monitored by the OEPA.

On August 23, 1984, the site was visited by the Technical Assistance Team (TAT) for further sampling and investigation. The remainder of this report presents information on the physical features of the site, past analytical data, the sampling methodology employed by TAT during the recent sampling effort and the threat posed to human health by the materials identified on the site. The report also presents recommendations developed to reduce or eliminate the dangers posed by site conditions. As requested by the U.S. EPA the TAT completed: 1. A site inspection report (EPA Form 2070-13); 2. A preliminary assessment report (EPA Form 2070-12), and; 3. All work sheets for scoring the Greiner's Lagoon site according to the Hazard Ranking System. These three summary assessments of the site are contained in Attachments A, B and C, respectively.

2.0 SITE ASSESSMENT

2.1 Site Descripton

The Greiner's Lagoon facility covers an area of ten acres. It is in a rural setting bordered directly to the south and west by wooded area. The remainder of the site is bordered by farm land. The area has a very gradual northwest slope. There are no barriers around the site nor posted signs that restrict access or warn of the site's potential dangers.

Of the four on-site lagoons, lagoon #4 is the largest and is situated farthest to the south (Figure 3). This lagoon has

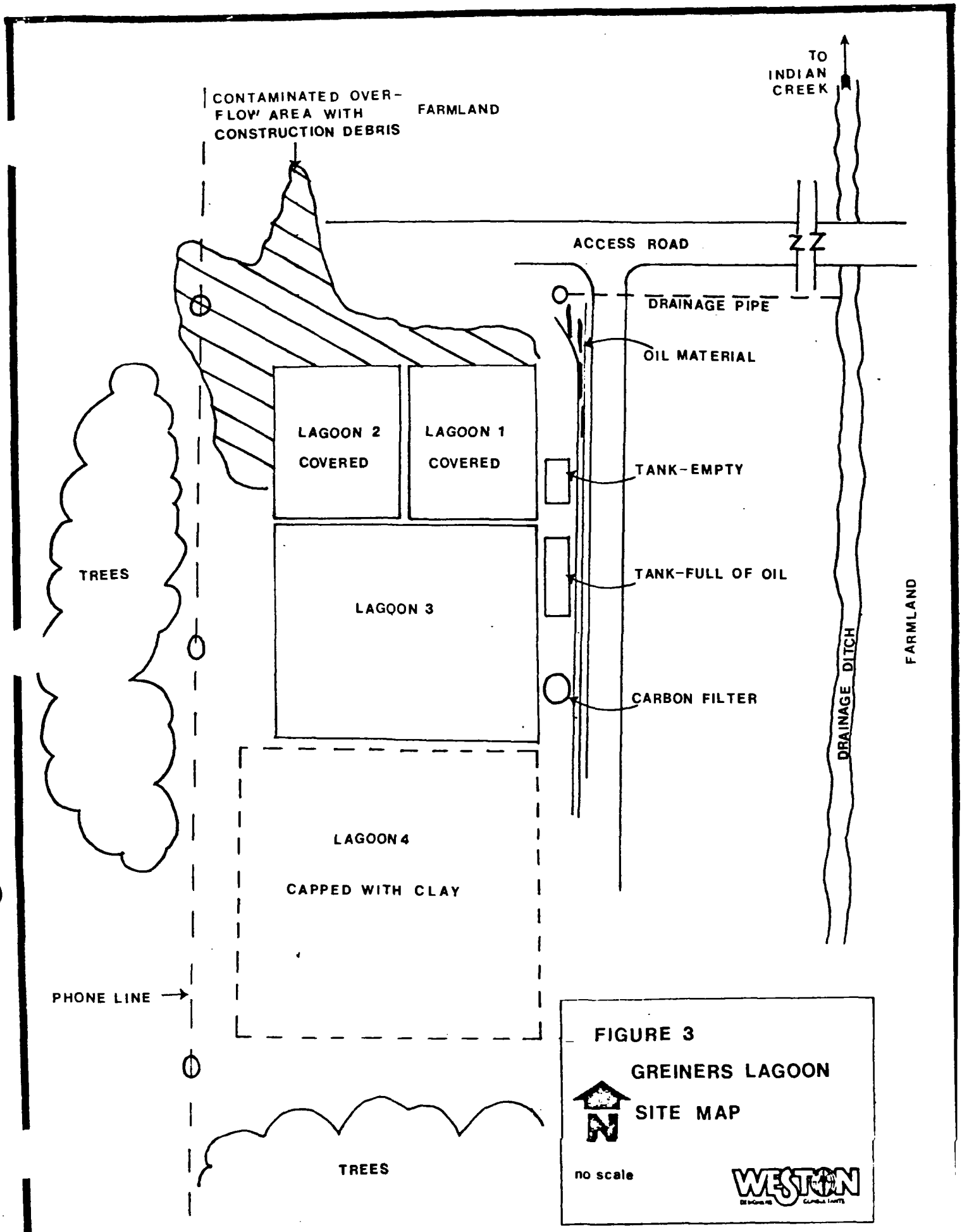


FIGURE 3
GREINERS LAGOON
SITE MAP

been filled in, capped with clay, covered with top soil, graded and then seeded. Close examination of the vegetation revealed sparse groupings of plants that appeared to be growing poorly.

Lagoon #3, which is directly north of lagoon #4, measures approximately 150 x 150 feet and is the second largest impoundment on the site. It has been partially filled in with dirt supplied by local sugar beet farmers. An average of nine dump truck loads were being put on site per day at the time of the inspection. This lagoon still contains about two feet of water with two to three inches of oil over 75% of the waters surface. Site conditions during the inspection are depicted in the photographs contained in Attachment D.

Lagoons #1 and #2 are north of lagoon #3 and are the smallest impoundments on the site, each being approximately 65 x 65 feet. They are completely filled in as a result of the local cleanup effort. However, oil has been observed at the surface of the fill material (photographs in Attachment D). One explanation for the upward migration of oil is that the fill material used to cover these lagoons contained cinders and similar non-absorbent materials, thereby displacing rather than solidifying the liquid wastes in the lagoons.

There are three on site tanks including one 20,000 gallon vertical tank that was used as a carbon contact filter, and two horizontal tanks having a combined capacity of 12,000 gallons, that were used as holding tanks. The amount and makeup of material in the vertical tank is unknown since the tank manways were inaccessible. The larger of the two horizontal tanks (approximately 8,000 gallons) was full of waste oil and the smaller tank (approximately 4,000 gallons) was empty during TATs inspection.

Directly to the east of the tanks is a six inch outlet pipe that empties into a drain that leads to a drainage ditch approximately 1,000 feet to the east of the site. This ditch flows into Indian Creek which is a tributary of the Sandusky River, the drinking water source for the city of Fremont (population 21,000). Fremont's raw water intake in the Sandusky River is six miles downstream from Greiner's Lagoon.

Residents in the immediate vicinity of the site rely on ground water for their potable water. The area is covered with a thin layer of glacial till underlain by interbedded clays. The bedrock, a shallow creviced limestone bed, is an aquifer supplying the only source of drinking water for the area. Wells have been drilled as shallow as thirty-eight feet which produce up to 100 gallons per minute. The nearest private well is within 1/2 mile of the facility and the nearest municipal well is three miles from the site.

TAT observed several on and off site areas where soils were stained with oil. The areas include approximately 200 square feet around the tanks, 10 square feet around the drain that leaks to the drainage ditch and 600 square feet within the drainage ditch.

2.2 Summary of Existing Analytical Data

Waste and environmental samples from Greiner's Lagoon were collected and analyzed by personnel from the Ohio Department of Health, the OEPA and the U.S. EPA. These sampling efforts were undertaken between the years 1970 and 1982.

In May of 1970, the Ohio Department of Health sampled the drainage ditch running along side the lagoon area. Analysis of water samples collected immediately down stream from the facilities field tile were found to contain elevated levels of iron and manganese as compared to those samples collected approximately one-quarter mile down stream from the facility. Iron and manganese were detected near the facility at concentrations of 8.9 and 3.9 ppm, respectively.

The OEPA sampled liquids in each of the four lagoons in April of 1975. The samples were analyzed for pH, chemical oxygen demand (COD), nitrogen, phosphorus, sulfate, chloride, iron, chromium, nickel, zinc and phenols. Phenol was detected in lagoon #1 at 2.7 ppm. These compounds were detected at lower levels in each of the other lagoons.

Lagoons #1 and #2 were sampled for a second time by the OEPA in May, 1977. In addition, water samples from two field tiles were collected. One tile discharge was chosen as it appeared to be contaminated while the other was chosen because it was releasing an oily liquid resembling leachate. All samples were analyzed for selected inorganic constituents including copper, iron, lead and zinc. Zinc levels had increased slightly over 1975 levels in lagoon #2, as well as in the contaminated field tile water sample, at 0.46 ppm, 1.2 ppm and 0.05 ppm respectively. Copper was below detectable levels in all samples.

A third sample collection effort was undertaken by the OEPA in October, 1980. Analysis of liquid and sludge samples from lagoon #2, #3 and #4 revealed the presence of Aroclor 1254 in all samples. The highest level (16.9 ppm) was detected in the liquids collected from lagoon #2. Aroclor 1016 was also detected in lagoon #2 liquids at a concentration of 15.2 ppm. Sludge samples in lagoons #3 and #4 contained levels of Arochlor 1016 at 11.6 ppm and Arochlor 1254 at 11.8 ppm, respectively. Inorganic analyses of the lagoon sludges revealed

#2 - 16.9
#2 15.2
#3 11.6
11.8

cadmium (2.3 ppm), chromium (16.9-37.8 ppm), copper (23.1-28.9 ppm), lead (110-181 ppm), nickel (5.6-15.4 ppm) and zinc (418-686 ppm). All liquid samples collected from the three lagoons contained phenols. The sample with the greatest concentration of phenol (25.6 ppm), was taken from lagoon #2.

The U.S. EPA conducted a metals fate assessment study of the Greiner's Lagoon area in May, 1981. Samples were collected from up stream and down stream as well as from the drainage ditch running along side of the site. The results of the analysis indicate that the highest concentrations of aluminum, iron, barium, cobalt, chromium, copper, lithium, manganese and nickel were detected in the adjacent drainage ditch. Contaminants were found at decreased levels down stream of the site, while no significant levels of contaminants were found up stream.

PCB analysis by the OEPA in August, 1981, indicated that levels of PCBs (e.g. Aroclor 1248) range from <1 ppm (lagoon #4) to 97.3 ppm (lagoon #1) in oil samples, and from <1 ppm (lagoons #3 and #4) to 287 ppm (lagoon #2) in the sludge samples. PCBs were also detected in soils located in the lagoon over flow area at approximately 64 ppm, and in an adjacent corn field at 0.25 ppm at 6 cm. It should be noted that samples collected by the Field Investigation Team (FIT) that same month showed approximately 20 ppm PCBs in soils near the point of over flow. PCBs were not detected by FIT in the adjacent agricultural field.

<1
97.3
<1
287
0.25
64
20

U.S. EPA sampling for metals in November, 1981, in the off site spill location area revealed the presence of aluminum, barium, cadmium, copper, iron, manganese, nickel, lead, zinc and arsenic at relatively high concentrations when compared to background levels.

The TAT collected tree bark and sludge samples from six locations within lagoon #4 in February, 1982. PCB concentrations detected in these samples ranged from 31 ppm to 57 ppm. Lagoon #4 sludges were resampled in April, 1982, to check PCB levels and the maximum concentration was found to be 20.1 ppm.

31 - 57
20.1

In June, 1982, the OEPA collected samples for PCB analysis. Sludge samples were collected from lagoons #1, #2 and #3. Oil samples were also collected from lagoon #2 and the two horizontal tanks on site. At that time PCBs were not detected in any of the samples collected from the site.

<1

Based on the previously discussed, inconclusive and highly variable sample results, the U.S. EPA determined that additional sampling would be required to adequately assess site conditions vis-a-vis a potential CERCLA-funded emergency action.

Buckley

Contract No. 68-01-6669

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

Spill Response Section

Region - V

ROY F. WESTON, INC.

Spill Prevention & Emergency Response Division

In Association with Jacobs Engineering Group Inc. Tetra Tech Inc.

and ICF Incorporated

WESTON

DESIGNERS CONSULTANTS

WESTON • SPER
Suite 107, Suburban West Building
20800 Center Ridge Road, Rocky River, OH 44116 • (216) 356-2130

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-6669

Mr. Robert J. Bowden, Chief
Spill Response Section
U.S. Environmental Protection Agency
536 South Clark Street
Chicago, Illinois 60605

17 December 1984

DRAFT

TAT-15-F-00096

Re: TDD# 5-8410-32, Summary of Sample Results for Greiner's Lagoon, Ballville Township, Ohio.

Dear Mr. Bowden:

Enclosed is a summary of the analytical data resulting from the on-site sampling effort conducted by the Technical Assistance Team (TAT) on 23 August 1984 at the Greiner's Lagoon site. The sample locations are shown on Figure 1. The type of analyses, the laboratories utilized and the time period taken for analysis for each group of samples is presented in Table 1. A summary of the inorganic water sample results, inorganic oil and sludge sample results (Task 1 & 2 metals), inorganic leachate metal results (EP Toxicity), organic water sample results and organic oil and sludge sample results are presented in Tables 2,3,4,5 and 6, respectively. The raw data received from the respective labs are enclosed in Attachments A,B,C and D.

Raw data received from Encotech is preliminary due to its unreviewed status. These data are of questionable utility as: 1. The detection limits were high (see Attachment A); and 2. The polychlorinated biphenyl (PCB) data are not quantitative because standards and quantitation methods were inadequate. The data received from U.S. Testing for inorganic water analysis are also notable. Due to "inconsistent burn" the reading averages were too high for the Central Regional Laboratory and it was suggested that the data for aluminum, iron and silver not be used.

Very truly yours,

Edward C. Burk, Jr.

Edward C. Burk, Jr.
Environmental Scientist

DRAFT

Kurt S. Stimpson
Technical Assistance Team
Leader, Region V

KSS/ECB/sb
Enclosures

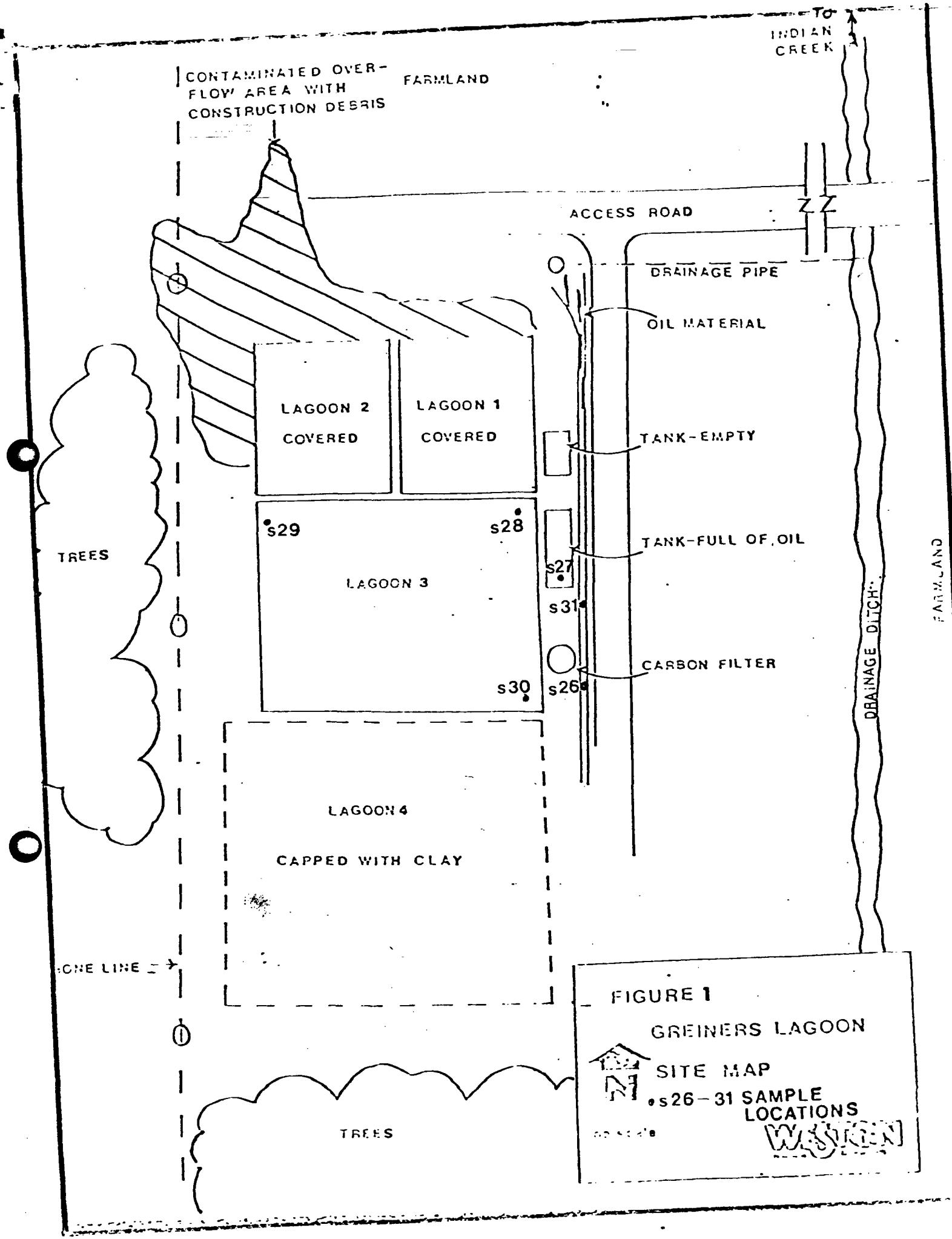


FIGURE 1

GREINERS LAGOON

SITE MAP

• s26 – 31 SAMPLE LOCATIONS

TABLE 1

SUMMARY OF SAMPLE ANALYSIS

GREINERS LAGOON, BALLVILLE TWP., OHIO

LABORATORY	DATE SENT	DATE RECEIVED	ANALYSIS
1. West Coast Technical Service/IT Corp. 17605 Fabrica Way, Suite D Cerritos, CA 90701	8-23-84	10-8-84	Organic Scan-Priority Pollutants (water sample)
2. U.S. Testing 1415 Park Avenue Hoboken, New Jersey 07030	8-23-84	10-31-84	Inorganic-Task 1 & 2 metals (water sample)
3. Encotech 3965 Research Park Dr. Ann Arbor, MI 48104	9-6-84	12-11-84	Organic Scan-Priority Pollutants (oil and sludge samples)
4. Wadsworth Testing Laboratory P.O. Box 208 Canton, OH 44701	10-22-84	11-13-84	Inorganic-Task 1 & 2 metals, EP Tox (oil and sludge samples)

TABLE 2

INORGANIC RESULTS ON WATER SAMPLES IN COMPARISON TO SAFE DRINKING WATER ACT VALUES, GREINER LAGOON, BALLVILLE TWP., OHIO

PARAMETER	CONCENTRATIONS FOUND ON SITE (ug/l)	PRIMARY (ug/l)	SECONDARY (ug/l)
Aluminum	4380		
Antimony	49		
Arsenic	40	50	
Barium	9360	1000	
Beryllium	6		
Cadmium	34	10	
Calcium	NR		
Chromium	153	50	
Cobalt	<50		
Copper	1060	1000	
Iron	11000		300
Lead	2600	50	
Magnesium	NR		
Manganese	630		50
Mercury	<0.2	2	
Nickel	141		
Potassium	NR		
Selenium	<2	10	
Silver	<10	50	
Sodium	NR		
Thallium	<10		
Tin	<20		
Vanadium	<200		
Zinc	8130		5000

TABLE 3

RESULTS OF INORGANIC ANALYSIS - EPA TASK 1 & 2 TOTAL METALS (mg/kg)

GREINER'S LAGOON, BALLVILLE TWP., OHIO

PARAMETER	SAMPLE LOCATIONS S-27	S-28	S-29	S-30	S-31			
Aluminum	200	80	650	600	2900			
Antimony	<10	<10	<10	<10	<10			
Arsenic	0.45	0.12	0.78	0.44	3.5			
Barium	170	150	500	250	400			
Beryllium	<0.25	<0.25	<0.25	<0.25	<0.25			
Cadmium	4.8	2.3	6.8	1.0	12			
Chromium	130	33	23	14	58			
Cobalt	<1.0	<1.0	9.0	9.0	5.5			
Copper	43	38	20	17	260			
Iron	750	240	1100	1000	7000			
Lead	160	140	83	40	480			
Manganese	48	35	68	68	180			
Mercury	<0.05	<0.05	<0.05	<0.05	0.50			
Nickel	12	9.0	4.8	4.5	30			
Selenium	0.10	0.25	0.14	<0.05	0.12			
Silver	<0.25	<0.25	<0.25	<0.25	<0.25			
Tin	<100	<100	<100	<100	<100			
Vanadium	<10	<10	<10	<10	<10			
Zinc	390	260	140	75	2100			

TABLE 4

RESULTS OF INORGANIC ANALYSIS - LEACHATE METALS, (EP Tox) (mg/l)

GREINER'S LAGOON, BALLVILLE TWP., OHIO

PARAMETER	SAMLE LOCATIONS S-29	S-30	S-31					
Arsenic	0.007	0.005	0.01					
Barium	<1.0	< 1.0	1.1					
Cadmium	<0.01	< 0.01	< 0.01					
Chromium	<0.02	< 0.02	< 0.02					
Hexavalent Chromium	<0.02	< 0.02	< 0.02					
Mercury	<0.005	< 0.005	< 0.005					
Lead	0.11	0.12	< 0.05					
Selenium	<0.005	< 0.005	< 0.005					
Silver	<0.01	< 0.01	< 0.01					

TABLE 5

RESULTS FROM ORGANIC ANALYSIS OF ON SITE WATER (ug/l)

GREINER'S LAGOON, BALLVILLE TWP., OHIO

		SAMPLE IDENTIFICATION/LOCATION
		S-26
-Priority Pollutant Hazardous Substances)		
67-64-1	acetone	10.u
78-93-3	2-butanone	10.u
75-15-0	carbondisulfide	1.u
519-78-6	2-hexanone	1.u
108-10-1	4-methyl-2-pentanone	1.u
100-42-5	styrene	1.u
108-05-4	vinyl acetate	1.u
95-47-6	o-xylene	1.u
	PESTICIDES	
CAS#		
309-00-2	aldrin	3.u
60-57-1	dieldrin	3.u
57-74-9	chlordane	3.u
50-29-3	4,4'-DDT	3.u
72-55-9	4,4'-DDE	3.u
72-54-8	4,4'-DDD	3.u
115-29-7	endosulfan I	3.u
115-29-7	endosulfan II	3.u
1031-07-8	endosulfan sulfate	3.u
72-20-8	endrin	3.u
7421-43-4	endrin aldehyde	3.u
76-44-8	heptachlor	3.u
1024-57-3	heptachlor epoxide	3.u
319-84-6	BHC-Alpha	3.u
319-85-7	BHC-beta	3.u
319-86-8	BHC-Delta	3.u
58-89-9	BHC-Gamma	3.u
53469-21-9	PCB-1242	3.u
11097-69-7	PCB-1254	26
11104-28-2	PCB-1221	3.u
11141-16-5	PCB-1232	3.u
12672-29-6	PCB-1248	3.u
11096-82-5	PCB-1260	3.u
12674-11-2	PCB-1016	3.u
8001-35-2	toxaphene	3.u
	DIOXINS	
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

u - Analyzed for but not detected (reported value is detection limit - DL)

A - Detected below quantitation limit (quantitation limit is 10 x DL)

TABLE 5 (cont'd)

		SAMPLE IDENTIFICATION/LOCATION																			
		S-26																			
BASE/NEUTRAL COMPOUNDS																					
TM#	CAS#																				
(50)	50-32-8	benzo(a)pyrene																			
(40)	205-99-2	benzo(b)fluoranthene																			
(50)	207-08-9	benzo(k)fluoranthene																			
(60)	218-01-9	chrysene																			
(70)	208-96-8	acenaphthylene																			
(80)	120-12-7	anthracene																			
(90)	191-24-2	benzo(ghi)perylene																			
(00)	86-73-7	fluorene																			
(10)	85-01-8	phenanthrene																			
(20)	53-70-3	dibenzo(a,h)anthracene																			
(30)	193-39-5	indeno(1,2,3-cd)pyrene																			
(40)	129-00-0	pyrene																			
(Non-Priority Pollutant Hazardous Substances)																					
	62-53-3	aniline																			
	100-51-6	benzyl alcohol																			
	106-47-8	4-chloroaniline																			
	132-64-9	dibenzofuran																			
	91-57-6	2-methylnaphthalene																			
	88-74-4	2-nitroaniline																			
	99-09-2	3-nitroaniline																			
	100-01-6	4-nitroaniline																			
VOLATILES																					
TM#	CAS#																				
(2V)	107-02-8	acrolein	10.U																		
(3V)	107-13-1	acrylonitrile	10.U																		
(4V)	71-43-2	benzene	1.U																		
(6V)	56-23-5	carbon tetrachloride	1.U																		
(7V)	108-90-7	chlorobenzene	1.U																		
(8V)	107-06-2	1,2-dichloroethane	1.U																		
(9V)	71-55-6	1,1,1-trichloroethane	4.A																		
(1V)	75-34-3	1,1-dichloroethane	1.U																		
(2V)	79-00-5	1,1,2-trichloroethane	1.U																		
(3V)	79-34-5	1,1,2,2-tetrachloroethane	1.U																		
(4V)	75-00-3	chloroethane	1.U																		
(5V)	110-75-8	2-chloroethylvinyl ether	10.U																		
(6V)	67-66-3	chloroform	1.U																		
(9V)	75-35-4	1,1-dichloroethene	1.U																		
(0V)	156-60-5	1,2-trans-dichloroethene	1.U																		
(2V)	78-87-5	1,2-dichloropropane	1.U																		
(3V)	10061-02-6	trans-1,3-dichloropropene	1.U																		
	10061-01-05	cis,1,3-dichloropropene	1.U																		
(1V)	100-41-4	ethylbenzene	1.U																		
(4V)	75-09-2	methylene chloride	9.A																		
(5V)	74-87-3	chloromethane	1.U																		
(6V)	74-83-9	bromomethane	1.U																		
(7V)	75-25-2	bromoform	1.U																		
(8V)	75-27-4	bromodichloromethane	1.U																		
(9V)	75-69-4	fluorotrichloromethane	1.U																		
(1V)	124-48-1	chlorodibromomethane	1.U																		
(5V)	127-18-4	tetrachloroethene	1.U																		
(6V)	108-88-3	toluene	1.U																		
(7V)	79-01-6	trichloroethene	2.A																		
(8V)	75-01-4	vinyl chloride	1.U																		

TABLE 6

RESULTS OF ORGANIC ANALYSIS (µg/kg)

GREINER'S LAGOON, BALLVILLE TWP., OHIO

		SAMPLE IDENTIFICATION/LOCATION				
ACID COMPOUNDS						
T/	CAS/	S-27	S-28	S-29	S-30	S-31
21(A)	88-06-2	2,4,6-trichlorophenol				
22(A)	59-50-7	p-chloro-m-cresol				
24(A)	95-57-8	2-chlorophenol				
31(A)	120-83-2	2,4-dichlorophenol				
34(A)	105-67-9	2,4-dimethylphenol				
37(A)	88-75-5	2-nitrophenol				
38(A)	100-02-7	4-nitrophenol				
39(A)	51-28-5	2,4-dinitrophenol				
40(A)	534-52-1	4,6-dinitro-2-methylphenol				
44(A)	87-86-5	pentachlorophenol				
48(A)	108-95-2	phenol				
(Non-Priority Pollutant Hazardous Substances)						
	65-85-0	benzoic acid				
	95-48-7	2-methylphenol				
	108-39-4	4-methylphenol				
	95-95-4	2,4,5-trichlorophenol				
BASE-NEUTRAL COMPOUNDS						
1(B)	83-32-9	acenaphthene				
5(B)	92-87-5	benzidine				
8(B)	120-82-1	1,2,4-trichlorobenzene				
9(B)	118-74-1	hexachlorobenzene				
10(B)	67-72-1	hexachloroethane				
11(B)	111-44-4	bis(2-chloroethyl)ether				
20(B)	91-58-7	2-chloronaphthalene				
25(B)	95-50-1	1,2-dichlorobenzene				
26(B)	541-73-1	1,3-dichlorobenzene				
27(B)	106-46-7	1,4-dichlorobenzene				
28(B)	91-94-1	3,3'-dichlorobenzidine				
35(B)	121-14-2	2,4-dinitrotoluene				
36(B)	606-20-2	2,6-dinitrotoluene				
		1,2-diphenylhydrazine				
37(B)	122-66-7	(as azobenzene)				
38(B)	206-44-0	fluoranthene				
40(B)	7005-72-3	4-chlorophenyl phenylether				
41(B)	101-55-3	4-bromophenyl phenyl ether				
42(B)	32690-93-0	bis(2-chloroisopropyl)ether				
43(B)	111-91-1	bis(2-chloroethoxy)methane				
44(B)	87-68-3	hexachlorobutadiene				
45(B)	77-47-4	hexachlorocyclopentadiene				
46(B)	78-59-1	isophorone				
50(B)	91-20-3	naphthalene				
51(B)	98-95-3	nitrobenzene				
52(B)	86-30-6	N-nitrosodiphenylamine				
53(B)	621-64-7	N-nitrosodi-n-propylamine				
54(B)	117-81-7	bis(2-ethylhexyl)phthalate		76000		3600000
55(B)	85-68-7	butyl benzyl phthalate				
56(B)	84-74-2	di-n-butyl phthalate	2700000	620000	410000	
57(B)	117-84-0	di-n-octyl phthalate	3200000	700000	180000	360000 440000
58(B)	84-66-2	diethyl phthalate			62000	
59(B)	131-11-3	dimethyl phthalate				
60(B)	206-44-0	benzo(a)anthracene				

TABLE 6 (cont'd)

Priority Pollutant Hazardous Substances)		SAMPLE IDENTIFICATION/LOCATION				
		S-27	S-28	S-29	S-30	S-31
67-64-1	acetone	6100		3600	1600	12000
78-93-3	2-butanone	20000	3800	8700	6000	40000
75-15-0	carbondisulfide X		500	61		
591-78-6	2-hexanone					
108-10-1	4-methyl-2-pentanone	1400	27000	3900	150	3800
100-42-5	styrene					
108-05-4	vinyl acetate					
95-47-6	o-xylene X	1100	10000	2700	900	21000
	PESTICIDES					
CAS#						
309-00-2	aldrin					
60-57-1	dieldrin					
57-74-9	chlordane					
50-29-3	4,4'-DDT					
72-55-9	4,4'-DDE					
72-54-8	4,4'-DDD					
115-29-7	endosulfan I					
115-29-7	endosulfan II					
1031-07-8	endosulfan sulfate					
72-20-8	endrin					
7421-93-4	endrin aldehyde					
76-44-8	heptachlor					
1024-57-3	heptachlor epoxide					
319-84-6	BHC-Alpha					
319-85-7	BHC-Beta					
319-86-8	BHC-Delta					
58-89-9	BHC-Gamma					
53469-21-9	PCB-1242	30000				
11097-69-1	PCB-1254	83000	43000	3000	2200	5900
11104-28-2	PCB-1221					
11141-16-5	PCB-1232	70000				
12672-29-6	PCB-1248	40000	6000	2700	2700	12000
11096-82-5	PCB-1260	24000				860
12674-11-2	PCB-1016					
8001-35-2	toxaphene					
	DIOXINS					
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin					

30	43	3	2.2	5.9
83	6	2.7	2.7	12
70	49	5.7	4.9	.9
40				18.8
24				
247				

TABLE 6 (cont'd)

			SAMPLE IDENTIFICATION/LOCATION				
		BASE/NEUTRAL COMPOUNDS	S-27	S-28	S-29	S-30	S-31
PPI	CAS#						
(330)	50-32-8	benzo(a)pyrene					
(341)	205-99-2	benzo(b)fluoranthene					
(340)	207-08-9	benzo(k)fluoranthene					
(326)	218-01-9	chrysene					
(331)	208-96-8	acenaphthylene					
(319)	120-12-7	anthracene					
(390)	191-24-2	benzo(ghi)perylene					
(320)	86-73-7	fluorene					
(318)	85-01-8	phenanthrene	160000				
(322)	53-70-3	dibenzo(a,h)anthracene					
(390)	193-39-5	indeno(1,2,3-cd)pyrene					
(848)	129-00-0	pyrene					
		(Non-Priority Pollutant Hazardous Substances)					
	62-53-3	aniline					
	100-51-6	benzyl alcohol					
	106-47-8	4-chloroaniline					
	132-64-9	dibenzofuran					
	91-57-6	2-methylnaphthalene					
	88-74-4	2-nitroaniline					
	99-09-2	3-nitroaniline					
	100-01-6	4-nitroaniline					
		VOLATILES					
	CAS#						
	107-02-8	acrolein					
	107-13-1	acrylonitrile					
	71-43-2	benzene			200		
	56-23-5	carbon tetrachloride					
	108-90-7	chlorobenzene					
	107-06-2	1,2-dichloroethane					
	71-55-6	1,1,1-trichloroethane					
	75-34-3	1,1-dichloroethane					
	79-00-5	1,1,2-trichloroethane					
	79-34-5	1,1,2,2-tetrachloroethane					
	75-00-3	chloroethane					
	110-75-8	2-chloroethylvinyl ether					
	67-66-3	chloroform					
	75-35-4	1,1-dichloroethene					
	156-60-5	1,2-trans-dichloroethene					
	78-87-5	1,2-dichloropropane					
	[illegible]-02-6	trans-1,3-dichloropropene					
	[illegible]-03	cis,1,3-dichloropropene					
	[illegible]-4	ethylbenzene *			600	200	3700
	[illegible]-7	methylene chloride	980		180	170	
	[illegible]-3	chloromethane					
	[illegible]-9	bromomethane					
	[illegible]-2	bromoform					
	[illegible]-4	bromodichloromethane					
	[illegible]-4	fluorotrichloromethane					
	[illegible]-1	chlorodibromomethane					
	[illegible]-4	tetrachloroethene *	1300	2600	470	720	11000
	[illegible]-3	toluene	740	3800	2000	890	
	[illegible]-6	trichloroethene					
	75-01-4	vinyl chloride					

ATTACHMENT A

ORGANIC SAMPLE RESULTS FROM ENVIRONMENTAL

CONTROL TECHNOLOGY CORPORATION (ENCOTECH)

GREINER'S LAGOON, BALLVILLE TWP., OHIO

TAT REC'D 12/11/84 (GD)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 12/10/84

SUBJECT: Review of Region V CLP Data
Received for Review on 12/10/84

FROM: Curtis Ross, Director (5SCRL) Chuck Ellis
Central Regional Laboratory

TO: Data User: EDO

We have reviewed the data for the following case(s).

SITE NAME: Animal's Lagoon SMO Case No. 3186SAS1292

EPA Data Set No. ED0654 No. of Samples: 5 D.U./Activity Numbers Y905 1C41D50

CRL No. 84CY05S28 To 84CY05S29

SMO Traffic No. E3150 to E3147

CLP Laboratory: Encotech Hrs. Required for Review:

Following are our findings.

"Preliminary" - due to unreviewed data". Final review will be within the next two weeks.

PCB data not quantitative because standards and quantitation methods were not adequate - GW 12/12/84 -

( ) Data are acceptable for use.
( ) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Dr. Alfred Haeberer/Joan Fisk/Gary Ward, EPA Support Services
Ross K. Robeson, EMSL-Las Vegas
Don Trees, CLP/Sample Management Office

EPA FORM 1320-6 (REV 3-76)

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: TOXIC SUBSTANCES

BRANCH EDO/TAT SAMPLING DATE 8-23-84 LAB ARRIVAL DATE 9-7-84 DUE DATE 10-7-84

BER 8212 DATASET NUMBER 654 STUDY Greiner's lagoon PRIORITY _____ CONTRACTOR Encotech

(5)

LOG BER	SAMPLE DESCRIPTION	ACID-BASE NEUTRAL CPDS. PRIORITY POLLUTANTS MG/KG (OIL) TOX95678	ACID-BASE NEUTRAL CPDS. ORGANIC SCAN MG/KG (OIL) TOX95776	ACID-BASE NEUTRAL CPDS. PRIORITY POLLUTANTS UG/M3 TOX95656	ACID-BASE NEUTRAL CPDS. ORGANIC SCAN UG/M3 TOX95756
4CY05					
S28	Lagoon #3 oil E3150	✓			
S27	Large tank oil E3146	✓			
S31	Ditch oil sludge E3149	✓			
S30	Lagoon #3 sludge E3148	✓			
S29	Lagoon #3 sludge E3147	✓			

REGION V, U.S. ENVIRONMENTAL PROTECTION AGENCY
ESD/Central Regional Laboratory

DATA TRACKING - FORM I

CRL Data Set No. EDO 654 ERRIS No. _____

SMO Case No. 31965HS 1292 Site Name: Weimer's Lagoon

Name of Laboratory: Ericotech Data User: EDO

No. of Samples: 5 Date Samples Received: 12/10/84

1. Have chain-of-custody records been received? YES ✓ NO ___
2. Have Traffic reports been received? YES ✓ NO ___
3. If no, are Traffic report numbers written on the chain-of-custody record? YES ___ NO ___
4. If no, which Traffic report numbers are missing?

5. Are basic data forms in? YES ✓ NO ___
6. Number of samples claimed: 5 Number of samples received: 5
7. Checked by: Marsha Phillips Date: 12/10/84
8. Received by Contract Project Management Section: _____ Date: _____
9. Review Started: _____ Reviewer Signature: _____
10. Total time spent on review: _____ Date review completed: _____
11. Copied (xeroxed) by: _____ Date: _____
12. Transmitted by: _____ Date: _____
13. Mailed to Data User by: _____ Date: _____
14. REMARKS:

ENVIRONMENTAL
CONTROL
TECHNOLOGY
CORPORATION

3985 RESEARCH PARK DRIVE
ANN ARBOR, MICHIGAN 48104
313/761-1389

December 07, 1984

RECEIVED
DEC 10 1984
US EPA
536 S. CLARK STREET
CHICAGO, ILLINOIS 60605
LAB.

Sample Management Office
P.O. Box 818
300 N. Lee
Suite 200
Alexandria, VA 22313

RE: Case 3186/SAS 1242-E

Enclosed are the deliverables package and sample summary data package for SAS 1242-E. Copies of the deliverables package are also being forwarded to Region V, and EMSL-Las Vegas.

If you have any questions, please feel free to contact me.

Very truly yours,
ENVIRONMENTAL CONTROL TECHNOLOGY CORPORATION

Michael J. Jaeger

Michael J. Jaeger
GC/MS Group Leader

MJ/jb

#75100
Enclosure:
cc: Region V
EMSL-Las Vegas

ENVIRONMENTAL
CONTROL
TECHNOLOGY
CORPORATION

SECTION I
Narrative

Case 3186/SAS 1242-E was received on September 07, 1984 and was analyzed for organic Priority Pollutants under Contract #68-01-6764. Five oil samples and two matrix spikes were analyzed as medium level samples. The oils were prepared for both pesticide and BNA (GC/MS semi-volatile) analyses by first diluting aliquots of each oil in hexane. Following serial elution on a florisil clean-up column, pesticide fractions were analyzed according to the standard contract method. The BNA fractions were also run through florisil micro-columns in a somewhat successful attempt to separate the compounds if interest from their oil matrix. Our decision to analyze the BNA's in this unorthodox fashion seems to be supported by the respectable percent recovery values we obtained for both surrogate and matrix spike compounds. As may be expected, detection limits for these oil samples were in the ppm range: VOA detection limits ranged from 0.1 to 2.5 mg/kg; pesticide detection limits ran from <0.1 to 50 mg/kg depending upon dilution factors; and BNA detection limits of around 50 mg/kg were typical.

All of the oil samples in this case were found to contain measurable quantities of Hazardous Substance List Compounds. In fact, HSL compounds were detected in every fraction (VOA, BNA, and PCB/pesticide of every sample. Various volatile HSL compounds were present in the oils at levels ranging from 10-80 mg/kg. At least two PCB aroclors (1248 and 1254) were present in each oil, at concentrations ranging from 5-100 mg/kg total PCB. BNA fraction HSL's were pretty much limited to various phthalates, which were present at concentrations as high as 2500 mg/kg. At least 20 tentatively identified compounds were detected in each sample, at estimated concentrations as high as 5000 mg/kg.

REGEIVED
DEC 10 1994
US EPA CENTRALIZED ANAL LAB.
536 S. CLARK STREET
CHICAGO, ILLINOIS 60605

Section IV

Standards Packet

Standard cros-reference

the following VOAs were run with VOA calibration standards 20VOA1005, 100VOA1005, 200VOA1005 on October 5, 1984:

E3146
E3147
E3148
E3148MS
E3148MSD
E3149
E3150

For BNAs, standards & samples matched-up as follows:

Original calibration	cal. check	sample	date run
20BNA1109 100BNA1109 200BNA1109	100BNA1113	E3146 E3147 E3148 E3149 E3150	11/13/84
20BNA1127 100BNA1127 200BNA1127	100BNA1128	E3147MS E3147MSD	11/28/84

SECTION III

Sample Data Packet

...ENTAL PROTECTION AGENCY ...
...S, Alexandria, Virginia 22313 - 703/557-2490

Sample Number: E3146

ORGANICS ANALYSIS DATA SHEET

84CY05S27

...ry Name: ENCOTEC
...ple ID No: E3146VOA
...Matrix: SOIL
...lease Authorized By:

Case No: 3186
QC Report No:
Contract No.: 68-01-6764
Date Sample Received: 9/7/84

VOLATILES

...ENTRATION: LOW MEDIUM HIGH (circle one)
... EXTRACTED/PREPARED:
... ANALYZED: 10/5/84
...ENT MOISTURE: N/A
...C./DILUTION FACTOR: 1:125

CAS #		ug/l or ug/kg (circle one)
107-02-8	acrolein	12500U
107-13-1	acrylonitrile	12500U
71-43-2	benzene	330 K
56-23-5	carbon tetrachloride	625U
108-90-7	chlorobenzene	625U
107-06-2	1,2-dichloroethane	625U
71-55-6	1,1,1-trichloroethane	625U
75-34-3	1,1-dichloroethane	625U
79-00-5	1,1,2-trichloroethane	1250U
79-34-5	1,1,2,2-tetrachloroethane	1250U
75-00-3	chloroethane	1250U
110-75-8	2-chloroethylvinyl ether	1250U
67-66-3	chloroform	625U
75-35-4	1,1-dichloroethene	625U
156-60-5	trans-1,2-dichloroethene	625U
78-87-5	1,2-dichloropropane	1250U
10061-02-6	trans-1,3-dichloropropene	625U
10061-01-05	cis-1,3-dichloropropene	625U
100-41-4	ethylbenzene	625U
75-09-2	methylene chloride	980
74-87-3	chloromethane	1250U
74-83-9	bromomethane	1250U
75-25-2	bromoform	1250U
75-27-4	bromodichloromethane	625U
75-69-4	fluorotrichloromethane	—
75-71-8	dichlorodifluoromethane	—
124-48-1	chlorodibromomethane	625U
127-18-4	tetrachloroethene	1300
108-88-3	toluene	740
79-01-6	trichloroethene	625U
75-01-4	vinyl chloride	1250U
67-64-1	acetone	6100
78-93-3	2-butanone	20,000
75-15-0	carbondisulfide	125U
519-78-6	2-hexanone	625U
108-10-1	4-methyl-2-pentanone	1400
100-42-5	styrene	625U

PESTICIDES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: MJ ~~N/A~~ 11/18/84
DATE ANALYZED: MJ ~~N/A~~ 12/5/84
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:200

PP #	CAS #		ug/l or ug/kg (circle one)
(89P)	309-00-2	aldrin	300 U
(90P)	60-57-1	dieldrin	300 U
(91P)	57-74-9	chlordane	7000 U
(92P)	50-29-3	4,4'-DDT	5000 U ~~300 U~~ MJ 12/6/84
(93P)	72-55-9	4,4'-DDE	300 U
(94P)	72-54-8	4,4'-DDD	300 U
(95P)	115-29-7	α-endosulfan	720 U
(96P)	115-29-7	β-endosulfan	700 U
(97P)	1031-07-8	endosulfan sulfate	2000 U
(98P)	72-20-8	endrin	500 U
(99P)	7421-93-4	endrin aldehyde	1000 U ~~400 U~~ MJ 12/6
(100P)	76-44-8	heptachlor	400 U
(101P)	1024-57-3	heptachlor epoxide	260 U
(102P)	319-84-6	α-BHC	2000 U
(103P)	319-85-7	β-BHC	500 U
(104P)	319-86-8	δ-BHC	220 U
(105P)	58-89-9	γ-BHC (lindane)	220 U
(106P)	53469-21-9	PCB-1242	39000
(107P)	11097-69-1	PCB-1254	83,000
(108P)	11104-28-2	PCB-1221	70,000 U
(109P)	11141-16-5	PCB-1232	70,000
(110P)	12672-29-6	PCB-1248	40,000
(111P)	11096-82-5	PCB-1260	24,000
(112P)	12674-11-2	PCB-1016	30,000 U
(113P)	8001-35-2	toxaphene	60,000 U

DIOXINS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: N/A
DATE ANALYZED: N/A
PERCENT MOISTURE:
CONC./DILUTION FACTOR:

PP #	CAS #		ug/l or ug/kg (circle one)
(129S)	1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

E3146

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Lab Sample ID No: E3146BNA
Sample Matrix: OILY SOIL
Data Release Authorized By:

Case No: 3186
QC Report No:
Contract No: 68-01-6761
Date Sample Received: 9/7/84

SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW (MEDIUM) HIGH (circle one)
DATE EXTRACTED/PREPARED: 11/8/84
DATE ANALYZED: 11/13/84
PERCENT MOISTURE: N/A

PP #	CAS #		ug/l (circle one)
[illegible])	88-06-2	2,4,6-trichlorophenol	47,000U
(22A)	59-50-7	p-chloro-m-cresol	47,000U
(24A)	95-57-8	2-chlorophenol	47,000U
(31A)	120-83-2	2,4-dichlorophenol	47,000U
(34A)	105-67-9	2,4-dimethylphenol	47,000U
(37A)	88-75-5	2-nitrophenol	94,000U
(38A)	100-02-7	4-nitrophenol	240,000U
(39A)	51-28-5	2,4-dinitrophenol	240,000U
(60A)	534-52-1	4,6-dinitro-2-methylphenol	94,000U
(64A)	87-86-5	pentachlorophenol	47,000U
(65A)	108-95-2	phenol	47,000U
	65-85-0	benzoic acid	470,000U
	95-48-7	2-methylphenol	94,000U
	108-39-4	4-methylphenol	94,000U
	95-95-4	2,4,5-trichlorophenol	470,000U
(1B)	83-32-9	acenaphthene	190,000U
[illegible])	92-87-5	benzidine	47,000U
[illegible]B)	120-82-1	1,2,4-trichlorobenzene	47,000U
(5B)	118-74-1	hexachlorobenzene	47,000U
(12B)	67-72-1	hexachloroethane	47,000U
(18B)	111-44-4	bis(2-chloroethyl)ether	94,000U
(20B)	91-58-7	2-chloronaphthalene	94,000U
(25B)	95-50-1	1,2-dichlorobenzene	94,000U
(26B)	541-73-1	1,3-dichlorobenzene	94,000U
(27B)	106-46-7	1,4-dichlorobenzene	47,000U
(28B)	91-94-1	3,3'-dichlorobenzidine	47,000U
(35B)	121-14-2	2,4-dinitrotoluene	94,000U
(36B)	606-20-2	2,6-dinitrotoluene	94,000U
(37B)	122-66-7	1,2-diphenylhydrazine	94,000U
(39B)	206-44-0	fluoranthene	47,000U
(40B)	7005-72-3	4-chlorophenyl phenyl ether	47,000U
(41B)	101-55-3	4-bromophenyl phenyl ether	47,000U
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	94,000U
(43B)	111-91-1	bis (2-chloroethoxy) methane	94,000U

PP #	CAS #		ug/l (circle one)
(52B)	87-68-3	hexachlorobutadiene	47,000U
(53B)	77-47-4	hexachlorocyclopentadiene	47,000U
(54B)	78-59-1	isophorone	47,000U
(55B)	91-20-3	naphthalene	18,000K
(56B)	98-95-3	nitrobenzene	47,000U
(62B)	86-30-6	N-nitrosodiphenylamine	47,000U
(63B)	621-64-7	N-nitrosodipropylamine	47,000U
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	47,000U
(67B)	85-68-7	benzyl butyl phthalate	47,000U
(68B)	84-74-2	di-n-butyl phthalate	870,000
(69B)	117-84-0	di-n-octyl phthalate	390,000
(70B)	84-66-2	diethyl phthalate	47,000U
(71B)	131-11-3	dimethyl phthalate	47,000U
(72B)	56-55-3	benzo(a)anthracene	94,000U
(73B)	50-32-8	benzo(a)pyrene	94,000U
(74B)	205-99-2	benzo(b)fluoranthene	94,000U
(75B)	207-08-9	benzo(k)fluoranthene	94,000U
(76B)	218-01-9	chrysene	47,000U
(77B)	208-96-8	acenaphthylene	47,000U
(78B)	120-12-7	anthracene	47,000U
(79B)	191-24-2	benzo(ghi)perylene	94,000U
(80B)	86-73-7	fluorene	47,000U
(81B)	85-01-8	phenanthrene	160,000
(82B)	53-70-3	dibenzo(a,h)anthracene	94,000U
(83B)	193-39-5	Indeno(1,2,3-cd)pyrene	94,000U
(84B)	129-00-0	pyrene	47,000U
	62-53-3	aniline	94,000U
	100-51-6	benzyl alcohol	94,000U
	106-47-8	4-chloroaniline	240,000U
	132-64-9	dibenzofuran	47,000U
	91-57-6	2-methylnaphthalene	94,000U
	88-74-4	2-nitroaniline	470,000U
	99-09-2	3-nitroaniline	470,000U
	100-01-6	4-nitroaniline	470,000U

ORGANICS ANALYSIS DATA SHEET - Page 3

Sample Number: E3146

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine (Specify ____)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN	VOA	72	—	2000
2.	104-76-7	2-ETHYL-1-HEXANOL	VOA	618	94%	2000
3.						
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6/82

FORM II (continued)

ORGANICS ANALYSIS DATA SHEET - Page 3

Sample Number: E3146

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routines: (Specify: EIT)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN ALKANE	BNA	873	—	430,000
2.	N/A	UNKNOWN ALKANE		979	—	750,000
3.	55445-07-3	2-methyl-6-propyl decane		1043	952	220,000
4.	N/A	UNKNOWN ALKANE		1081	—	500,000
5.	N/A	UNKNOWN		1124	—	200,000
6.	N/A	UNKNOWN		1170	—	500,000
7.	N/A	UNKNOWN		1221	—	200,000
8.	N/A	UNKNOWN		1268	—	700,000
9.	N/A	UNKNOWN ALKANE		1356	—	600,000
10.	N/A	UNKNOWN ALKANE		1440	—	500,000
11.	N/A	UNKNOWN		1521	—	500,000
12.	N/A	UNKNOWN		1569	—	300,000
13.	N/A	UNKNOWN		1598	—	300,000
14.	N/A	UNKNOWN		1770	—	600,000
15.	N/A	UNKNOWN		1914	—	600,000
16.	N/A	UNKNOWN PHTHALATE		1964	—	1,200,000
17.	N/A	UNKNOWN		2018	—	4,100,000
18.	N/A	UNKNOWN		2071	—	1,800,000
19.	N/A	UNKNOWN		2130	—	3,200,000
20.	N/A	UNKNOWN		2229	—	3,200,000
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FORM II (continued)

E3150

ORGANICS ANALYSIS DATA SHEET

...tory Name:	ENCOTEC	Case No:	3186 84CY05S28
...mple ID No:	E3150VOA	QC Report No:	
...e Matrix:	SOIL	Contract No:	68-01-6764
Release Authorized By:		Date Sample Received:	

VOLATILES

...NCENTRATION: LOW MEDIUM HIGH (circle one)
...TE EXTRACTED/PREPARED:
...TE ANALYZED: 10/5/84
...CENT MOISTURE: N/A
...NC./DILUTION FACTOR: 1:500

PESTICIDES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: ~~N/A~~ 11/18/84
DATE ANALYZED: ~~N/A~~ 12/6/84
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:50

#	CAS #		ug/l or ug/kg (circle one)
	107-02-8	acrolein	50000U
	107-13-1	acrylonitrile	50000U
	71-43-2	benzene	2100K
	56-23-5	carbon tetrachloride	2500U
	108-90-7	chlorobenzene	2500U
	107-06-2	1,2-dichloroethane	2500U
	71-55-6	1,1,1-trichloroethane	2500U
	75-34-3	1,1-dichloroethane	2500U
	79-00-5	1,1,2-trichloroethane	5000U
	79-34-5	1,1,2,2-tetrachloroethane	5000U
	75-00-3	chloroethane	5000U
	110-75-8	2-chloroethylvinyl ether	5000U
	67-66-3	chloroform	2500U
	75-35-4	1,1-dichloroethene	2500U
	156-60-5	trans-1,2-dichloroethene	2500U
	78-87-5	1,2-dichloropropane	5000U
	10061-02-6	trans-1,3-dichloropropene	2500U
	10061-01-05	cis-1,3-dichloropropene	2500U
	100-41-4	ethylbenzene	2500U
	75-09-2	methylene chloride	1900K
	74-87-3	chloromethane	5000U
	74-83-9	bromomethane	5000U
	75-25-2	bromoform	5000U
	75-27-4	bromodichloromethane	2500U
	75-69-4	fluorotrichloromethane	—
	75-71-8	dichlorodifluoromethane	—
	124-48-1	chlorodibromomethane	2500U
	127-18-4	tetrachloroethene	2600
	108-88-3	toluene	38000
	79-01-6	trichloroethene	2500U
	75-01-4	vinyl chloride	5000U
	67-64-1	acetone	1700K
	78-93-3	2-butanone	3800
	75-15-0	carbondisulfide	500
	519-78-6	2-hexanone	2500U
	108-10-1	4-methyl-2-pentanone	27000
	100-42-5	styrene	2500U
	108-05-4	vinyl acetate	2500U
	1330-20-7	total xylenes	10000

PP #	CAS #		ug/l or ug/kg (circle one)
(89P)	309-00-2	aldrin	60U
(90P)	60-57-1	dieldrin	200U
(91P)	57-74-9	chlordane	1500U
(92P)	50-29-3	4,4'-DDT	1000U
(93P)	72-55-9	4,4'-DDE	80U
(94P)	72-54-8	4,4'-DDD	290U
(95P)	115-29-7	α-endosulfan	50U
(96P)	115-29-7	β-endosulfan	600U
(97P)	1031-07-8	endosulfan sulfate	2000U
(98P)	72-20-8	endrin	300U
(99P)	7421-93-4	endrin aldehyde	1000U
(100P)	76-44-8	heptachlor	100U
(101P)	1024-57-3	heptachlor epoxide	50U
(102P)	319-84-6	α-BHC	40U
(103P)	319-85-7	β-BHC	600U
(104P)	319-86-8	δ-BHC	100U
(105P)	58-89-9	γ-BHC (lindane)	50U
(106P)	53469-21-9	PCB-1242	5100U
(107P)	11097-69-1	PCB-1254	43,000
(108P)	11104-28-2	PCB-1221	15,000U
(109P)	11141-16-5	PCB-1232	10,000U
(110P)	12672-29-6	PCB-1248	6000 ~~6000U~~
(111P)	11096-82-5	PCB-1260	15,000U
(112P)	12674-11-2	PCB-1016	7,000U
(113P)	8001-35-2	toxaphene	13000U

DIOXINS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: N/A
DATE ANALYZED: N/A
PERCENT MOISTURE:
CONC./DILUTION FACTOR:

PP #	CAS #		ug/l or ug/kg (circle one)
(129B)	1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

December 1983

E3150

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Lab Sample ID No: E3150BNA
Sample Matrix: OILY SOIL
Data Release Authorized By:

Case No: 3186
QC Report No:
Contract No.: 68-01-6764
Date Sample Received: 9/7/84

SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: 11/9/84
DATE ANALYZED: 11/13/84
PERCENT MOISTURE: N/A

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	47,000u
(22A)	59-50-7	p-chloro-m-cresol	47,000u
(24A)	95-57-8	2- chlorophenol	47,000u
(31A)	120-83-2	2,4-dichlorophenol	47,000u
(34A)	105-67-9	2,4-dimethylphenol	47,000u
(37A)	88-75-5	2- nitrophenol	94,000u
(38A)	100-02-7	4-nitrophenol	240,000u
(39A)	51-28-5	2,4-dinitrophenol	240,000u
(60A)	534-52-1	4,6-dinitro-2-methylphenol	94,000u
(64A)	87-86-5	pentachlorophenol	47,000u
(65A)	108-95-2	phenol	47,000u
	65-85-0	benzoic acid	470,000u
	95-48-7	2-methylphenol	24,000u
	108-39-4	4-methylphenol	24,000u
	95-95-4	2,4,5-trichlorophenol	470,000u
(1B)	83-32-9	acenaphthene	190,000u
(5B)	92-87-5	benzidine	47,000u
(8B)	120-82-1	1,2,4-trichlorobenzene	47,000u
(9B)	118-74-1	hexachlorobenzene	47,000u
(12B)	67-72-1	hexachloroethane	47,000u
(18B)	111-44-4	bis(2-chloroethyl)ether	47,000u
(20B)	91-58-7	2-chloronaphthalene	94,000u
(25B)	95-50-1	1,2-dichlorobenzene	94,000u
(26B)	541-73-1	1,3-dichlorobenzene	94,000u
(27B)	106-46-7	1,4-dichlorobenzene	94,000u
(28B)	91-94-1	3,3'-dichlorobenzidine	47,000u
(35B)	121-14-2	2,4-dinitrotoluene 94,000u	47,000u w.r
(36B)	606-20-2	2,6-dinitrotoluene 94,000u	47,000u w.r
(37B)	122-66-7	1,2-diphenylhydrazine 94,000u	
(39B)	206-44-0	fluoranthene	47,000u
(40B)	7005-72-3	4-chlorophenyl phenyl ether	47,000u
(41B)	101-55-3	4-bromophenyl phenyl ether	47,000u
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	94,000u
(43B)	111-91-1	bis (2-chloroethoxy) methane	94,000u

PP #	CAS #		ug/l or ug/kg (circle one)
(52B)	87-68-3	hexachlorobutadiene	47,000u
(53B)	77-47-4	hexachlorocyclopentadiene	47,000u
(54B)	78-59-1	isophorone	47,000u
(55B)	91-20-3	naphthalene	47,000u
(56B)	98-95-3	nitrobenzene	47,000u
(62B)	86-30-6	N-nitrosodiphenylamine	47,000u
(63B)	621-64-7	N-nitrosodipropylamine	47,000u
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	2,500,000
(67B)	85-68-7	benzyl butyl phthalate	47,000K
(68B)	84-74-2	di-n-butyl phthalate	52,000
(69B)	117-84-0	di-n-octyl phthalate	700,000
(70B)	84-66-2	diethyl phthalate	37,000K
(71B)	131-11-3	dimethyl phthalate	47,000u
(72B)	56-55-3	benzo(a)anthracene	94,000u
(73B)	50-32-8	benzo(a)pyrene	94,000u
(74B)	205-99-2	benzo(b)fluoranthene	94,000u
(75B)	207-08-9	benzo(k)fluoranthene	94,000u
(76B)	218-01-9	chrysene	47,000u
(77B)	208-96-8	acenaphthylene	47,000u
(78B)	120-12-7	anthracene	47,000u
(79B)	191-24-2	benzo(ghi)perylene	94,000u
(80B)	86-73-7	fluorene	47,000u
(81B)	85-01-8	phenanthrene 8,100K	
(82B)	53-70-3	dibenzo(a,h)anthracene	94,000u
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	94,000u
(84B)	129-00-0	pyrene	47,000u
	62-53-3	aniline	24,000u
	100-51-6	benzyl alcohol	94,000u
	106-47-8	4-chloroaniline	240,000
	132-64-9	dibenzofuran	47,000u
	91-57-6	2-methylnaphthalene	94,000u
	88-74-4	2-nitroaniline	470,000
	99-09-2	3-nitroaniline	470,000
	100-01-6	4-nitroaniline	470,000

Sample Number E2150

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: _____)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN	VOA	402	—	9200
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Sample Number: E3150

Laboratory Name: ENCUTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: FIT)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN	BNA	1169	—	150,000
2.	N/A	UNKNOWN		1260	—	180,000
3.	N/A	UNKNOWN		1347	—	230,000
4.	N/A	UNKNOWN		1354	—	130,000
5.	N/A	UNKNOWN ALKANE		1430	—	400,00
6.	N/A	UNKNOWN ALKANE		1509	—	400,00
7.	N/A	UNKNOWN ALKANE		1586	—	300,00
8.	N/A	UNKNOWN		1638	—	100,00
9.	N/A	UNKNOWN ALKANE		1659	—	200,00
10.	N/A	UNKNOWN ALKANE		1685	—	300,00
11.	N/A	UNKNOWN		1740	—	200,00
12.	N/A	UNKNOWN		1763	—	200,00
13.	N/A	UNKNOWN		1796	—	100,000
14.	N/A	UNKNOWN ALKANE		1860	—	200,00
15.	N/A	UNKNOWN		1891	—	1,000,00
16.	N/A	UNKNOWN		1900	—	3,000,00
17.	N/A	UNKNOWN		2057	—	100,000
18.	N/A	UNKNOWN		2118	—	700,00
19.	N/A	UNKNOWN		2219	—	400,00
20.	N/A	UNKNOWN		1981	—	100,00
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FORM II (continued)

E3147
84C105S29

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Sample ID No: E3147VOA
Sample Matrix: SOIL
Release Authorized By:

Case No: 3186
QC Report No:
Contract No: 68-01-6764
Date Sample Received: 9/7/84

VOLATILES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED:
DATE ANALYZED: 10/5/84
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:25

CAS #		ug/l or ug/kg (circle one)
107-02-8	acrolein	2500 U
107-13-1	acrylonitrile	2500 U
71-43-2	benzene	200
56-23-5	carbon tetrachloride	125 U
108-90-7	chlorobenzene	125 U
107-06-2	1,2-dichloroethane	125 U
71-55-6	1,1,1-trichloroethane	125 U
75-34-3	1,1-dichloroethane	125 U
79-00-5	1,1,2-trichloroethane	250 U
79-34-5	1,1,2,2-tetrachloroethane	250 U
75-00-3	chloroethane	250 U
110-75-8	2-chloroethylvinyl ether	250 U
67-66-3	chloroform	125 U
75-35-4	1,1-dichloroethene	125 U
156-60-5	trans-1,2-dichloroethene	125 U
78-87-5	1,2-dichloropropane	250 U
10061-02-6	trans-1,3-dichloropropene	125 U
10061-01-05	cis-1,3-dichloropropene	125 U
100-41-4	ethylbenzene	600
75-09-2	methylene chloride	180
74-87-3	chloromethane	250 U
74-83-9	bromomethane	250 U
75-25-2	bromoform	250 U
75-27-4	bromodichloromethane	125 U
75-69-4	fluorotrichloromethane	—
75-71-8	dichlorodifluoromethane	—
124-48-1	chlorodibromomethane	125 U
127-18-4	tetrachloroethene	470
108-88-3	toluene	2000
79-01-6	trichloroethene	61 K
75-01-4	vinyl chloride	250 U
67-64-1	acetone D.S. 11/21	125 U 3600
78-93-3	2-butanone	8700
75-15-0	carbondisulfide	61
591-78-6	2-hexanone	125 U
108-10-1	4-methyl-2-pentanone	3900
100-42-5	styrene	125 U
108-05-4	vinyl acetate	125 U
1330-20-7	total xylenes	2700

PESTICIDES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: ~~N/A~~ 11/15/84
DATE ANALYZED: 11/24/84 ~~N/A~~
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:10

FP #	CAS #		ug/l or ug/kg (circle one)
(89P)	309-00-2	aldrin	10 U
(90P)	60-57-1	dieldrin	14 U
(91P)	57-74-9	chlordane	120 U
(92P)	50-29-3	4,4'-DDT	30 U
(93P)	72-55-9	4,4'-DDE	14 U
(94P)	72-54-8	4,4'-DDD	20 U
(95P)	115-29-7	α-endosulfan	10 U
(96P)	115-29-7	β-endosulfan	8 U
(97P)	1031-07-8	endosulfan sulfate	100 U
(98P)	72-20-8	endrin	23 U
(99P)	7421-93-4	endrin aldehyde	30 U
(100P)	76-44-8	heptachlor	10 U
(101P)	1024-57-3	heptachlor epoxide	10 U
(102P)	319-84-6	α-BHC	3 U
(103P)	319-85-7	β-BHC	40 U
(104P)	319-86-8	δ-BHC	10 U
(105P)	58-89-9	γ-BHC (lindane)	5 U
(106P)	53469-21-9	PCB-1242	950 U
(107P)	11097-69-1	PCB-1254	3000
(108P)	11104-28-2	PCB-1221	300 U
(109P)	11141-16-5	PCB-1232	1800 U
(110P)	12672-29-6	PCB-1248	2700
(111P)	11096-82-5	PCB-1260	300 U
(112P)	12674-11-2	PCB-1016	800 U
(113P)	8001-35-2	toxaphene	1300 U

DIOXINS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: N/A
DATE ANALYZED: N/A
PERCENT MOISTURE:
CONC./DILUTION FACTOR:

FP #	CAS #		ug/l or ug/kg (circle one)
(129B)	1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

E3147

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Lab Sample ID No: E3147BNA
Sample Matrix: OILY SOIL
Data Release Authorized By:

Case No: 3186
QC Report No:
Contract No.: 68-01-6764
Date Sample Received: 9/7/84

SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW (MEDIUM) HIGH (circle one)
DATE EXTRACTED/PREPARED: 11/8/84
DATE ANALYZED: 11/13/84
PERCENT MOISTURE: N/A

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6-trichlorophenol	40,000 u
(22A)	59-50-7	p-chloro-m-cresol	40,000 u
(24A)	95-57-8	2-chlorophenol	40,000 u
(31A)	120-83-2	2,4-dichlorophenol	40,000 u
(34A)	105-67-9	2,4-dimethylphenol	40,000 u
(37A)	88-75-5	2-nitrophenol	80,000 u
(38A)	100-02-7	4-nitrophenol	200,000 u
(39A)	51-28-5	2,4-dinitrophenol	200,000 u
(60A)	534-52-1	4,6-dinitro-2-methylphenol	80,000 u
(64A)	87-86-5	pentachlorophenol	40,000 u
(65A)	108-95-2	phenol	40,000 u
	65-85-0	benzoic acid	400,000 u
	95-48-7	2-methylphenol	20,000 u
	108-39-4	4-methylphenol	20,000 u
	95-95-4	2,4,5-trichlorophenol	400,000 u
(1B)	83-32-9	acenaphthene	20,000 u
(2B)	92-87-5	benzidine	160,000 u
(3B)	120-82-1	1,2,4-trichlorobenzene	40,000 u
(9B)	118-74-1	hexachlorobenzene	40,000 u
(12B)	67-72-1	hexachloroethane	40,000 u
(18B)	111-44-4	bis(2-chloroethyl)ether	40,000 u
(20B)	91-58-7	2-chloronaphthalene	40,000 u
(25B)	95-50-1	1,2-dichlorobenzene	40,000 u
(26B)	541-73-1	1,3-dichlorobenzene	40,000 u
(27B)	106-46-7	1,4-dichlorobenzene	40,000 u
(28B)	91-94-1	3,3'-dichlorobenzidine	80,000 u
(35B)	121-14-2	2,4-dinitrotoluene	80,000 u
(36B)	606-20-2	2,6-dinitrotoluene	80,000 u
(37B)	122-66-7	1,2-diphenylhydrazine	80,000 u
(39B)	206-44-0	fluoranthene	40,000 u
(40B)	7005-72-3	4-chlorophenyl phenyl ether	40,000 u
(41B)	101-55-3	4-bromophenyl phenyl ether	40,000 u
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	80,000 u
(43B)	111-91-1	bis (2-chloroethoxy) methane	80,000 u

PP #	CAS #		ug/l or ug/kg (circle one)
(52B)	87-68-3	hexachlorobutadiene	40,000 u
(53B)	77-47-4	hexachlorocyclopentadiene	40,000 u
(54B)	78-59-1	isophorone	40,000 u
(55B)	91-20-3	naphthalene	40,000 u
(56B)	98-95-3	nitrobenzene	40,000 u
(62B)	86-30-6	N-nitrosodiphenylamine	40,000
(63B)	621-64-7	N-nitrosodipropylamine	40,000
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	76,000
(67B)	85-68-7	benzyl butyl phthalate	28,000 K
(68B)	84-74-2	di-n-butyl phthalate	20,000 K
(69B)	117-84-0	di-n-octyl phthalate	410,000
(70B)	84-66-2	diethyl phthalate	48,000
(71B)	131-11-3	dimethyl phthalate	80,000 u
(72B)	56-55-3	benzo(a)anthracene	80,000 u
(73B)	50-32-8	benzo(a)pyrene	80,000 u
(74B)	205-99-2	benzo(b)fluoranthene	80,000 u
(75B)	207-08-9	benzo(k)fluoranthene	40,000 u
(76B)	218-01-9	chrysene	40,000 u
(77B)	208-96-8	acenaphthylene	40,000 u
(78B)	120-12-7	anthracene	80,000 u
(79B)	191-24-2	benzo(ghi)perylene	40,000 u
(80B)	86-73-7	fluorene	40,000 u
(81B)	85-01-8	phenanthrene	5,000 K
(82B)	53-70-3	dibenzo(a,h)anthracene	80,000 u
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	80,000 u
(84B)	129-00-0	pyrene	40,000 u
	62-53-3	aniline	80,000 u
	100-51-6	benzyl alcohol	80,000 u
	106-47-8	4-chloroaniline	200,000 u
	132-64-9	dibenzofuran	40,000 u
	91-57-6	2-methylnaphthalene	80,000 u
	88-74-4	2-nitroaniline	400,000 u
	99-09-2	3-nitroaniline	400,000 u
	100-01-6	4-nitroaniline	400,000

Sample Number: E3147

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: ____)	Estimated Concentration (ug/L or ug/g)
1.	N/A	UNKNOWN	VOA	42	—	3000
2.	N/A	UNKNOWN	VOA	7-93	—	460
3.	108-11-2	4-METHYL-2-PENTANOL	VOA	407	91G	510
4.	80-56-8	α-PINENE	VOA	494		310
5.	N/A	UNKNOWN	VOA	67-0	—	490
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FORM II (continued)

ORGANICS ANALYSIS DATA SHEET - Page 3

Sample Number: E3147

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: FIT)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN ALKANE	BNA	1074	—	73,000
2.	N/A	UNKNOWN	BNA	1170	—	150,000
3.	N/A	UNKNOWN	BNA	1261	—	110,000
4.	N/A	UNKNOWN	BNA	1348	—	120,000
5.	N/A	UNKNOWN	BNA	1356	—	76,000
6.	N/A	UNKNOWN	BNA	1431	—	200,000
7.	N/A	UNKNOWN	BNA	1511	—	200,000
8.	N/A	UNKNOWN ALKANE	BNA	1587	—	300,000
9.	N/A	UNKNOWN	BNA	1659	—	100,000
10.	N/A	UNKNOWN	BNA	1685	—	200,000
11.	N/A	UNKNOWN	BNA	1740	—	100,000
12.	N/A	UNKNOWN	BNA	1809	—	100,000
13.	N/A	UNKNOWN ALKANE	BNA	1861	—	100,000
14.	N/A	UNKNOWN	BNA	1899	—	4,000,000
15.	N/A	UNKNOWN	BNA	1956	—	200,000
16.	N/A	UNKNOWN PHTHALATE	BNA	2010	—	500,000
17.	N/A	UNKNOWN PHTHALATE	BNA	2118	—	600,000
18.	N/A	UNKNOWN	BNA	2221	—	400,000
19.	54833-48-6	2,6,10,15-TETRA METHYL HEXATRIACONTANE	BNA	1568	940	84,000
20.	N/A	UNKNOWN	BNA	1754	—	100,000
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FORM II (continued)

E3148

ORGANICS ANALYSIS DATA SHEET

84C/05530

Laboratory Name: ENCOTEC
Sample ID No: E3148 VOA
Sample Matrix: SOIL
Release Authorized By:

Case No: 3186
QC Report No:
Contract No: 68-01-6764
Date Sample Received: 9/7/84

VOLATILES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED:
DATE ANALYZED: 10/5/84
PERCENT MOISTURE:
CONC./DILUTION FACTOR: 1:25

CAS #		ug/l or ug/kg (circle one)
107-02-8	acrolein	2500 U
107-13-1	acrylonitrile	2500 U
71-43-2	benzene	70 K
56-23-5	carbon tetrachloride	125 U
108-90-7	chlorobenzene	125 U
107-06-2	1,2-dichloroethane	125 U
71-55-6	1,1,1-trichloroethane	125 U
75-34-3	1,1-dichloroethane	125 U
79-00-5	1,1,2-trichloroethane	250 U
79-34-5	1,1,2,2-tetrachloroethane	250 U
75-00-3	chloroethane	250 U
110-75-8	2-chloroethylvinyl ether	250 U
67-66-3	chloroform	125 U
75-35-4	1,1-dichloroethene	125 U
156-60-5	trans-1,2-dichloroethene	125 U
78-87-5	1,2-dichloropropane	250 U
10061-02-6	trans-1,3-dichloropropene	125 U
10061-01-05	cis-1,3-dichloropropene	125 U
100-41-4	ethylbenzene	200
75-09-2	methylene chloride	170
74-87-3	chloromethane	250 U
74-83-9	bromomethane	250 U
75-25-2	bromoform	250 U
75-27-4	bromodichloromethane	125 U
75-69-4	fluorotrichloromethane	—
75-71-8	dichlorodifluoromethane	—
124-48-1	chlorodibromomethane	125 U
127-18-4	tetrachloroethene	720
108-88-3	toluene	890
79-01-6	trichloroethene	26 K
75-01-4	vinyl chloride	250 U
67-64-1	acetone	1600
78-93-3	2-butanone	6000
75-15-0	carbondisulfide	25 U
591-78-6	2-hexanone	125 U
108-10-1	4-methyl-2-pentanone	150
100-42-5	styrene	125 U
108-05-4	vinyl acetate	125 U
1330-20-7	total xylenes	900

PESTICIDES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: ~~N/A~~ 11/15/84
DATE ANALYZED: ~~N/A~~ 11/24/84
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:10

PP #	CAS #		ug/l or ug/kg (circle one)
(89P)	309-00-2	aldrin	7 U
(90P)	60-57-1	dieldrin	10 U
(91P)	57-74-9	chlordane	130 U
(92P)	50-29-3	4,4'-DDT	40 U
(93P)	72-55-9	4,4'-DDE	10 U
(94P)	72-54-8	4,4'-DDD	20 U
(95P)	115-29-7	α-endosulfan	6 U
(96P)	115-29-7	β-endosulfan	8 U
(97P)	1031-07-8	endosulfan sulfate	100 U
(98P)	72-20-8	endrin	20 U
(99P)	7421-93-4	endrin aldehyde	10 U
(100P)	76-44-8	heptachlor	8 U
(101P)	1024-57-3	heptachlor epoxide	6 U
(102P)	319-84-6	α-BHC	4 U
(103P)	319-85-7	β-BHC	40 U
(104P)	319-86-8	δ-BHC	10 U
(105P)	58-89-9	γ-BHC (lindane)	6 U
(106P)	53469-21-9	PCB-1242	1000 U
(107P)	11097-69-1	PCB-1254	2200 ~~3200 U~~ MJ
(108P)	11104-28-2	PCB-1221	340 U
(109P)	11141-16-5	PCB-1232	1900 U
(110P)	12672-29-6	PCB-1248	2700
(111P)	11096-82-5	PCB-1260	340 U
(112P)	12674-11-2	PCB-1016	800 U
(113P)	8001-35-2	toxaphene	1400 U

DIOXINS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: N/A
DATE ANALYZED: N/A
PERCENT MOISTURE:
CONC./DILUTION FACTOR:

PP #	CAS #		ug/l or ug/kg (circle one)
(129B)	1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

E3148

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Case No: 3186
Lab Sample ID No: E3148BNA
QC Report No:
Sample Matrix: OILY SOIL
Contract No.: 68-01-6764
Data Release Authorized By:
Date Sample Received: 9/7/84

SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: 11/8/84
DATE ANALYZED: 11/13/84
PERCENT MOISTURE: NA

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	29,000 U
(22A)	59-50-7	p-chloro-m-cresol	29,000 U
(24A)	95-57-8	2- chlorophenol	29,000 U
(31A)	120-83-2	2,4-dichlorophenol	29,000 U
(34A)	105-67-9	2,4-dimethylphenol	29,000 U
(37A)	88-75-5	2- nitrophenol	58,000 U
(38A)	100-02-7	4-nitrophenol	140,000 U
(39A)	51-28-5	2,4-dinitrophenol	140,000 U
(60A)	534-52-1	4,6-dinitro-2-methylphenol	58,000 U
(64A)	87-86-5	pentachlorophenol	29,000 U
(65A)	108-95-2	phenol	29,000 U
	65-85-0	benzoic acid	290,000 U
	95-48-7	2-methylphenol	14,000 U
	108-39-4	4-methylphenol	14,000 U
	95-95-4	2,4,5-trichlorophenol	290,000 U
(1B)	83-32-9	acenaphthene	29,000 U
(5B)	92-87-5	benzidine	120,000 U
(8B)	120-82-1	1,2,4-trichlorobenzene	29,000 U
(9B)	118-74-1	hexachlorobenzene	29,000 U
(12B)	67-72-1	hexachloroethane	29,000 U
(18B)	111-44-4	bis(2-chloroethyl)ether	29,000 U
(20B)	91-58-7	2-chloronaphthalene	29,000 U
(25B)	95-50-1	1,2-dichlorobenzene	29,000 U
(26B)	541-73-1	1,3-dichlorobenzene	29,000 U
(27B)	106-46-7	1,4-dichlorobenzene	29,000 U
(28B)	91-94-1	3,3'-dichlorobenzidine	58,000 U
(35B)	121-14-2	2,4-dinitrotoluene	58,000 U
(36B)	606-20-2	2,6-dinitrotoluene	58,000 U
(37B)	122-66-7	1,2-diphenylhydrazine	58,000 U
(39B)	206-44-0	fluoranthene	29,000 U
(40B)	7005-72-3	4-chlorophenyl phenyl ether	29,000 U
(41B)	101-55-3	4-bromophenyl phenyl ether	29,000 U
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	58,000 U
(43B)	111-91-1	bis (2-chloroethoxy) methane	58,000 U

PP #	CAS #		ug/l or ug/kg (circle one)
(52B)	87-68-3	hexachlorobutadiene	29,000
(53B)	77-47-4	hexachlorocyclopentadiene	29,000
(54B)	78-59-1	isophorone	29,000
(55B)	91-20-3	naphthalene	29,000
(56B)	98-95-3	nitrobenzene	29,000
(62B)	86-30-6	N-nitrosodiphenylamine	29,000
(63B)	621-64-7	N-nitrosodipropylamine	29,000
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	29,000
(67B)	85-68-7	benzyl butyl phthalate	31,000 K
(68B)	84-74-2	di-n-butyl phthalate	17,000 K
(69B)	117-84-0	di-n-octyl phthalate	360,000
(70B)	84-66-2	diethyl phthalate	62,000
(71B)	131-11-3	dimethyl phthalate	290000 U
(72B)	56-55-3	benzo(a)anthracene	58,000 U
(73B)	50-32-8	benzo(a)pyrene	58,000 U
(74B)	205-99-2	benzo(b)fluoranthene	58,000
(75B)	207-08-9	benzo(k)fluoranthene	58,000
(76B)	218-01-9	chrysene	29,000
(77B)	208-96-8	acenaphthylene	29,000
(78B)	120-12-7	anthracene	29,000
(79B)	191-24-2	benzo(ghi)perylene	58,000
(80B)	86-73-7	fluorene	29,000
(81B)	85-01-8	phenanthrene	4,000 K
(82B)	53-70-3	dibenzo(a,h)anthracene	58,000
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	58,000
(84B)	129-00-0	pyrene	29,000
	62-53-3	aniline	14,000
	100-51-6	benzyl alcohol	58,000
	106-47-8	4-chloroaniline	140,000
	132-64-9	dibenzofuran	29,000
	91-57-6	2-methylnaphthalene	58,000
	88-74-4	2-nitroaniline	290,000
	99-09-2	3-nitroaniline	290,000
	100-01-6	4-nitroaniline	290,000

ORGANICS ANALYSIS DATA SHEET - Page 3

Sample Number: E3148

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify:)	Estimated Concentration (ug/L or ug/kg)
1.	N/A	UNKNOWN	VOA	33	—	2.3[illegible]
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FORM II (continued)

ORGANICS ANALYSIS DATA SHEET - Page 3

Sample Number: E3148

Laboratory Name: ENCOTEC Case No: 3186

SDG Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: —)	Estimated Concentration (ug/L or ug/g)
1.	N/A	UNKNOWN	BNA	1168	—	100,000
2.	N/A	UNKNOWN	BNA	1259	—	100,000
3.	N/A	UNKNOWN ALKANE	BNA	1346	—	100,000
4.	N/A	UNKNOWN	BNA	1429	—	200,000
5.	N/A	UNKNOWN ALKANE	BNA	1509	—	200,000
6.	N/A	UNKNOWN	BNA	1565	—	70,000
7.	N/A	UNKNOWN ALKANE	BNA	1585	—	200,000
8.	N/A	UNKNOWN	BNA	1637	—	90,000
9.	N/A	UNKNOWN	BNA	1658	—	100,000
10.	N/A	UNKNOWN	BNA	1684	—	200,000
11.	N/A	UNKNOWN	BNA	1728	—	90,000
12.	N/A	UNKNOWN	BNA	1739	—	100,000
13.	N/A	UNKNOWN	BNA	1753	—	90,000
14.	N/A	UNKNOWN	BNA	1763	—	100,000
15.	N/A	UNKNOWN ALKANE	BNA	1859	—	100,000
16.	N/A	UNKNOWN	BNA	1898	—	2,000,000
17.	N/A	UNKNOWN	BNA	1980	—	200,000
18.	N/A	UNKNOWN	BNA	2009	—	300,000
19.	N/A	UNKNOWN	BNA	2219	—	300,000
20.	N/A	UNKNOWN	BNA	2117	—	500,000
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FORM II (continued)

Box 818, Alexandria, Virginia 22313 - 703/557-2490

E3149

ORGANICS ANALYSIS DATA SHEET

84CY05S31

31

Laboratory Name: ENCOTEC
Sample ID No: E3149VOA
Sample Matrix: SOIL
Release Authorized By:

Case No: 3186
QC Report No:
Contract No: 68-01-6764
Date Sample Received: 9/7/84

VOLATILES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED:
DATE ANALYZED: 10/5/84
PERCENT MOISTURE:
CONC./DILUTION FACTOR: 1:500

CAS #		ug/l or ug/kg (circle one)
107-02-8	acrolein	50000U
107-13-1	acrylonitrile	50000U
71-43-2	benzene	540K
56-23-5	carbon tetrachloride	2500U
108-90-7	chlorobenzene	2500U
107-06-2	1,2-dichloroethane	2500U
71-55-6	1,1,1-trichloroethane	2500U
75-34-3	1,1-dichloroethane	2500U
79-00-5	1,1,2-trichloroethane	5000U
79-34-5	1,1,2,2-tetrachloroethane	5000U
75-00-3	chloroethane	5000U
110-75-8	2-chloroethylvinyl ether	5000U
67-66-3	chloroform	2500U
75-35-4	1,1-dichloroethene	2500U
156-60-5	trans-1,2-dichloroethene	2500U
78-87-5	1,2-dichloropropane	5000U
10061-02-6	trans-1,3-dichloropropene	2500U
10061-01-05	cis-1,3-dichloropropene	2500U
100-41-4	ethylbenzene	3700
75-09-2	methylene chloride	2100K
74-87-3	chloromethane	5000U
74-83-9	bromomethane	5000U
75-25-2	bromoform	5000U
75-27-4	bromodichloromethane	2500U
75-69-4	fluorotrichloromethane	—
75-71-8	dichlorodifluoromethane	—
124-48-1	chlorodibromomethane	2500U
127-18-4	tetrachloroethene	2400K
108-88-3	toluene	11000
79-01-6	trichloroethene	2500U
75-01-4	vinyl chloride	5000U
67-64-1	acetone	12000
78-93-3	2-butanone	40000
75-15-0	carbondisulfide	500U
591-78-6	2-hexanone	2500U
108-10-1	4-methyl-2-pentanone	3900
100-42-5	styrene	2500U
108-05-4	vinyl acetate	2500U
1330-20-7	total xylenes	21000

PESTICIDES

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: ~~N/A~~ 11/15/84
DATE ANALYZED: ~~N/A~~ 11/24/84
PERCENT MOISTURE: N/A
CONC./DILUTION FACTOR: 1:10

PP #	CAS #		ug/l or ug/kg (circle one)
(89P)	309-00-2	aldrin	7U
(90P)	60-57-1	dieldrin	60U
(91P)	57-74-9	chlordane	770U
(92P)	50-29-3	4,4'-DDT	300U
(93P)	72-55-9	4,4'-DDE	60U
(94P)	72-54-8	4,4'-DDD	70U
(95P)	115-29-7	α-endosulfan	60U
(96P)	115-29-7	β-endosulfan	100U
(97P)	1031-07-8	endosulfan sulfate	600U
(98P)	72-20-8	endrin	100U
(99P)	7421-93-4	endrin aldehyde	200U
(100P)	76-44-8	heptachlor	8U
(101P)	1024-57-3	heptachlor epoxide	50U
(102P)	319-84-6	α-BHC	40U
(103P)	319-85-7	β-BHC	100U
(104P)	319-86-8	δ-BHC	50U
(105P)	58-89-9	γ-BHC (lindane)	6U
(106P)	53469-21-9	PCB-1242	3600U
(107P)	11097-69-1	PCB-1254	5900
(108P)	11104-28-2	PCB-1221	3000U
(109P)	11141-16-5	PCB-1232	3500U
(110P)	12672-29-6	PCB-1248	12000
(111P)	11096-82-5	PCB-1260	860
(112P)	12674-11-2	PCB-1016	300U
(113P)	8001-35-2	toxaphene	4800U

DIOXINS

CONCENTRATION: LOW MEDIUM HIGH (circle one)
DATE EXTRACTED/PREPARED: N/A
DATE ANALYZED: N/A
PERCENT MOISTURE:
CONC./DILUTION FACTOR:

PP #	CAS #		ug/l or ug/kg (circle one)
(129B)	1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	

E3149

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: ENCOTEC
Case No: 3186
Lab Sample ID No:
QC Report No:
Sample Matrix: OIL/SOIL
Contract No.: 68-01-6764
Data Release Authorized By:
Date Sample Received: 9/7/84

SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW (MEDIUM) HIGH (circle one)
DATE EXTRACTED/PREPARED: 11/8/84
DATE ANALYZED: 11/13/84
PERCENT MOISTURE: N/A

PP #	CAS #		µg/l (circle one)
(1A)	88-06-2	2,4,6-trichlorophenol	44,000 U
(7A)	59-50-7	p-chloro-m-cresol	44,000 U
(24A)	95-57-8	2-chlorophenol	44,000 U
(31A)	120-83-2	2,4-dichlorophenol	44,000 U
(34A)	105-67-9	2,4-dimethylphenol	44,000 U
(37A)	88-75-5	2-nitrophenol	88,000 U
(38A)	100-02-7	4-nitrophenol	220,000 U
(39A)	51-28-5	2,4-dinitrophenol	220,000 U
(60A)	534-52-1	4,6-dinitro-2-methylphenol	88,000 U
(64A)	87-86-5	pentachlorophenol	44,000 U
(65A)	108-95-2	phenol	44,000 U
	65-85-0	benzoic acid	440,000 U
	95-48-7	2-methylphenol	22,000 U
	108-39-4	4-methylphenol	22,000 U
	95-95-4	2,4,5-trichlorophenol	440,000 U
(1B)	83-32-9	acenaphthene	44,000 U
(5B)	92-87-5	benzidine	180,000 U
(6B)	120-82-1	1,2,4-trichlorobenzene	44,000 U
(9B)	118-74-1	hexachlorobenzene	44,000 U
(12B)	67-72-1	hexachloroethane	44,000 U
(13B)	111-44-4	bis(2-chloroethyl)ether	44,000 U
(20B)	91-58-7	2-chloronaphthalene	44,000 U
(25B)	95-50-1	1,2-dichlorobenzene	44,000 U
(26B)	541-73-1	1,3-dichlorobenzene	44,000 U
(27B)	106-46-7	1,4-dichlorobenzene	44,000 U
(28B)	91-94-1	3,3'-dichlorobenzidine	88,000 U
(35B)	121-14-2	2,4-dinitrotoluene	88,000 U
(36B)	606-20-2	2,6-dinitrotoluene	88,000 U
(37B)	122-66-7	1,2-diphenylhydrazine	88,000 U
(39B)	206-44-0	fluoranthene	44,000 U
(40B)	7005-72-3	4-chlorophenyl phenyl ether	44,000 U
(41B)	101-55-3	4-bromophenyl phenyl ether	44,000 U
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	88,000 U
(43B)	111-91-1	bis (2-chloroethoxy) methane	88,000 U

PP #	CAS #		µg/l (circle)
(52B)	87-68-3	hexachlorobutadiene	44,000 U
(53B)	77-47-4	hexachlorocyclopentadiene	44,000 U
(54B)	78-59-1	isophorone	44,000 U
(55B)	91-20-3	naphthalene	44,000 U
(56B)	98-95-3	nitrobenzene	44,000 U
(62B)	86-30-6	N-nitrosodiphenylamine	44,000 U
(63B)	621-64-7	N-nitrosodipropylamine	44,000 U
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	3,600,000
(67B)	85-68-7	benzyl butyl phthalate	44,000 U
(68B)	84-74-2	di-n-butyl phthalate	30000 K
(69B)	117-84-0	di-n-octyl phthalate	440,000
(70B)	84-66-2	diethyl phthalate	44,000 U
(71B)	131-11-3	dimethyl phthalate	44,000 U
(72B)	56-55-3	benzo(a)anthracene	88,000 U
(73B)	50-32-8	benzo(a)pyrene	88,000 U
(74B)	205-99-2	benzo(b)fluoranthene	88,000 U
(75B)	207-08-9	benzo(k)fluoranthene	88,000 U
(76B)	218-01-9	chrysene	44,000 U
(77B)	208-96-8	acenaphthylene	44,000 U
(78B)	120-12-7	anthracene	44,000 U
(79B)	191-24-2	benzo(ghi)perylene	88,000 U
(80B)	86-73-7	fluorene	44,000 U
(81B)	85-01-8	phenanthrene	32,000 K
(82B)	53-70-3	dibenzo(a,h)anthracene	88,000 U
(83B)	193-39-5	Indeno(1,2,3-cd)pyrene	88,000 U
(84B)	129-00-0	pyrene	44,000 U
	62-53-3	aniline	22,000 U
	100-51-6	benzyl alcohol	88,000 U
	106-47-8	4-chloroaniline	220,000 U
	132-64-9	dibenzofuran	44,000 U
	91-57-6	2-methylnaphthalene	88,000 U
	88-74-4	2-nitroaniline	440,000 U
	99-09-2	3-nitroaniline	440,000 U
	100-01-6	4-nitroaniline	440,000 U

Sample Number: E3149

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: ____)	Estimated Concentration (ug/L or ug/g)
1.	N/A	UNKNOWN	VOA	372	—	9100
2.	N/A	UNKNOWN	VOA	411	—	6300
3.	80-56-8	α-PINENE	VOA	494		78000
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FORM II (continued)

E3149

Laboratory Name: ENCOTEC Case No: 3186

QC Report No:

D. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Reaction (Specify _____)	Estimated Concentration (ug/L or ug/g)
1.	N/A	UNKNOWN ALKANE	BNA	975	—	100,000
2.	N/A	UNKNOWN	BNA	1075	—	200,000
3.	N/A	UNKNOWN	BNA	1171	—	300,000
4.	N/A	UNKNOWN	BNA	1262	—	300,000
5.	N/A	UNKNOWN	BNA	1344	—	200,000
6.	N/A	UNKNOWN ALKANE	BNA	1427	—	200,000
7.	N/A	UNKNOWN ALKANE	BNA	1432	—	300,000
8.	N/A	UNKNOWN ALKANE	BNA	1512	—	200,000
9.	N/A	UNKNOWN ALKANE	BNA	1570	—	200,000
10.	N/A	UNKNOWN ALKANE	BNA	1588	—	500,000
11.	N/A	UNKNOWN	BNA	1688	—	600,000
12.	N/A	UNKNOWN	BNA	1706	—	500,000
13.	N/A	UNKNOWN ALKANE	BNA	1863	—	100,000
14.	N/A	UNKNOWN	BNA	1905	—	5,000,000
15.	N/A	UNKNOWN	BNA	1922	—	600,000
16.	N/A	UNKNOWN	BNA	1953	—	900,000
17.	N/A	UNKNOWN	BNA	2013	—	2,000,000
18.	N/A	UNKNOWN	BNA	2121	—	2,000,000
19.	N/A	UNKNOWN	BNA	2221	—	2,000,000
20.	N/A	UNKNOWN AROMATIC	BNA	1116	—	100,000
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FORM II (continued)

ATTACHMENT B

INORGANIC SAMPLE RESULTS FROM U.S. TESTING

GREINER'S LAGOON, BALLVILLE TWP., OHIO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE 10/31/84

SUBJECT Review of Region V CLP Data
Received for Review on 10/25/84

FROM Curtis Ross, Director Chuck E Illy
Central Regional Laboratory

TO Data User: FAT (Geoff Wolkin).

We have reviewed the data for the following case(s).

SITE NAME Grievous Lagoon SMO Case No. 3186

EPA Data Set No. SF654 No. of Samples 1 D.U./Activity Numbers Y905 1C4D 50

CRL No. 84CY05526

SMO Traffic No. ME 4582

Contract Laboratory: U.S. Testing Hours Required for Review: 2

Following are our findings.

Contractural:

1. Both preparation blanks for Ag read 10 ppb. but are reported <10 ppb.
2. Both preparation blanks were run before analysis of any samples in a large batch with no intermittent blanks on AA and ICAP.
3. Contractor had problems with meeting CRL for Al in initial calibration, resolving it by using only one value. The average and other two readings are crossed out. Al data may be biased.

Technical:

1. The Ag spike caused problems blamed on "inconsistent burn." Only 2 readings were used for averaging.
2. Final calibration standard for Fe was blamed on "inconsistent burn" when readings averaged too high for CRL.
3. Suggest don't use Ag, Al + Fe data. Mr. Bruczynski hung up on trying to obtain information. 10-31-84 DM

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Dr. Alfred Haeberer/Joan Fisk/Gary Ward, EPA Support Services
Ross K. Robeson, EMSL-Las Vegas
Robert Pritchard, CLP/SMO

EPA FORM 1320-6 (REV 3-78)

C.C. Joe Fredle.

84CY055 26

EPA Sample No.
ME 4582

Date 10/24/84

EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

INORGANIC ANALYSIS DATA SHEET

LAB NAME U.S. TESTING CASE NO. 3186

LAB SAMPLE ID. NO. 76154-1 QC REPORT NO.

Matrix MED WATER

Elements Identified and Measured

ug/L or mg/kg (Circle One)

1.	Aluminum	4380	P	13.	Magnesium	NR	
2.	Antimony	49	F	14.	Manganese	630	P
3.	Arsenic	40	F	15.	Mercury	<0.2	
4.	Barium	9360	P	16.	Nickel	141	P
5.	Beryllium	6	P	17.	Potassium	NR	
6.	Cadmium	34	F	18.	Selenium	<2	F
7.	Calcium	NR		19.	Silver	<10	P
8.	Chromium	153	P	20.	Sodium	NR	
9.	Cobalt	<50	P	21.	Thallium	<10	F
10.	Copper	1060	P	22.	Tin	<20	F
11.	Iron	11000	P	23.	Vanadium	<200	P
12.	Lead	2600	F	24.	Zinc	8130	P

Cyanide _____ Percent Solids NR

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager Frank Bergquist

ATTACHMENT C

ORGANIC SAMPLE RESULTS FROM WEST

COAST TECHNICAL SERVICE/IT CORP.

GREINER'S LAGOON, BALLVILLE TWP., OHIO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE 10/5/84

rec'd 10/8/84 (JW)

SUBJECT Review of Region V CLP Data Received for Review on 10/2/84

FROM Curtis Ross, Director Chuck Elly
Central Regional Laboratory

TO Data User: EDO-TAT-CDO

We have reviewed the data for the following case(s).

SITE NAME Greiners Lagoon SMO Case No. 3186

EPA Data Set No. SF654 No. of Samples 1 D.U./Activity Numbers Y905, C42D50

CRL No. 84CY05 S26

SMO Traffic No. E 3143

Contract Laboratory: WCTS/ITC Hours Required for Review: 1½

Following are our findings. BLANKS: VOA methylene chloride 3 ug/l. Pesticide none. Surrogate: Dibutylchlorendate low in E 3143, have OK in blank and the spikes. Spikes - all OK, for PESTICIDE FRACTION 2 spikes were in distilled water AS PER AGREEMENT SINCE ALL OF THE SMALL SAMPLE VOLUME WAS USED FOR PEST/PCB. INSTRUMENT TUNE - OK CALIBRATIONS - ALL - OK.

10/5/84
DJW.

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Dr. Alfred Haeberer/Joan Fisk/Gary Ward, EPA Support Services
Ross K. Robeson, EMSL-Las Vegas
Robert Pritchard, CLP/SMO

EPA FORM 1320-6 (REV 3-73)

Case #/SAS #: 3168 Laboratory: IT / WCTS Sample #: E3143
Date Rec'd: 8-25-84 Contract #: 6582 % Moisture: NA
Data Release Authorized by: [signature]

Organics Analysis Data Sheet

Pesticides
Level/Matrix: low water
QC Report #: 6582-241
Spl->Extract: 300 ml → 10 ml (and 1/10 Dil)
Lab Std ID: 671-185
Lab ID: 670-184
Date Extracted: 9-10-84
Date Analyzed: 9-20-84
Circle Units: ug/Kg, ug/L

89P	aldrin	3U
90P	dieldrin	
91P	chlordane	
92P	4,4'-DDT	
93P	4,4'-DDE	
94P	4,4'-DDD	
95P	alpha-endosulfan	
96P	beta-endosulfan	
97P	endosulfan sulfate	
98P	endrin	
99P	endrin aldehyde	
100P	heptachlor	
101P	heptachlor epoxide	
102P	alpha-BHC	
103P	beta-BHC	
104P	gamma-BHC	
105P	delta-BHC	
106P	PCB-1242	3U
107P	PCB-1254	26
108P	PCB-1221	3U
109P	PCB-1232	
110P	PCB-1248	
111P	PCB-1260	
112P	PCB-1016	
113P	toxaphene	

Dioxin
Level/Matrix:
QC Report #:
Spl->Extract:
Lab Std ID:
Lab ID: No Sample
Date Extracted:
Date Analyzed:
Circle Units: ug/Kg, ug/L

129B	2,3,7,8-tetrachloro-dibenzo-p-dioxin	NA

U - Analyzed for but not detected (Reported Value is Detection Limit-DL)
A - Detected below Quantitation Limit (Quantitation Limit-QL is 10 x DL) (Reported Value is Approximate, Between DL and QL)
NA - Not Analyzed
NR - Not Reported

** - Detected below GC/MS DL
C - Confirmed by GC/MS-GC Quantitation
N - Not Confirmed by GC/MS-GC/MS DL

Surrogate Spike Recoveries

Circle Units: ug/Kg, ug/L

Lab ID	Fraction	Compound	Conc. Sample	Conc. Spiked	% Recovery
1945-5	Pest.	Dibutyl Chlorendate	4.07	16.7	24 *
No Sample	TCDD	1,2,3,4-TCDD	NA	NA	NA

* - Asterisked Values are outside QC Limits.
\# - _____ Recoveries due to Dilution.
S - _____ Recoveries due to Matrix Effects.

NA - Not Analyzed
NR - Not Reported
NS - Not Spiked

QUALITY CONTROL REPORT
MATRIX SPIKE (MS AND MSD)
% RECOVERY AND RPD SUMMARY
LABORATORY: IT/WCTS

CASE #/SAS #: 3186
LEVEL: LOW
MATRIX: WATER
Q.C. REPORT #: 6582-241

SAMPLE #: E3143
CONTRACT #: 6582
UNITS: UG/L

VOLATILE COMPOUNDS

COMPOUND	CONC SAMPLE	CONC SPIKED	CONC MS	% REC MS	CONC MSD	% REC MSD	RPD
DICHLOROETHYLENE	1.U	25.	22.	88	23.	92	-4
TRICHLOROETHYLENE	2.A	25.	22.	80	23.	84	-5
BENZENE	1.U	25.	22.	88	23.	92	-4
TOLUENE	1.U	25.	21.	84	19.	76	10
CHLOROBENZENE	1.U	25.	21.	84	21.	84	0
DICHLOROETHENE-D4	49.	50.	49.	98	49.	98	0
TOLUENE-D8	43.	50.	53.	106	46.	92	14
BROMOFLUOROBENZENE	46.	50.	58.	116	54.	108	7

* - ASTERISKED VALUES ARE OUTSIDE QC LIMITS

RPD=(MS-MSD)/((MS+MSD)/2)*100

RECOVERY: VOA'S 0 OUT OF 16 OUTSIDE QC LIMITS

RPD: VOA'S 0 OUT OF 8 OUTSIDE QC LIMITS

QUALITY CONTROL REPORT
MATRIX SPIKE (MS AND MSD)
SUMMARY OF UNSPIKED HSL'S
LABORATORY: IT/WCTS

CASE #/SAS #:	3186	SAMPLE #:	E3143
LEVEL:	LOW	CONTRACT #:	6582
MATRIX:	WATER	UNITS:	UG/L
Q.C. REPORT #:	6582-241		

VOLATILE COMPOUNDS

COMPOUND	CONC SAMPLE	CONC MS	CONC MSD	RPD
METHYLENE CHLORIDE	9.A	18.	20.	-11
1,1,1-TRICHLOROETHANE	4.A	4.A	3.A	29
2-BUTANONE	10.U	10.U	10.A	200

* - ASTERISKED VALUES ARE OUTSIDE QC LIMITS
RPD=(MS-MSD)/((MS+MSD)/2)*100

NOTE: THIS FORM LISTS ONLY HSL COMPOUNDS.

SAS #: 3186 LABORATORY: IT/WCTS SAMPLE #: E3143
REC'D: 08/28/84 CONTRACT #: 6582 % MOISTURE: NA
RELEASE AUTHORIZED BY: 84CY05526

ORGANICS ANALYSIS DATA SHEET
VOLATILE COMPOUNDS

LEVEL:	LOW
MATRIX:	WATER
QC REPORT #:	6582-241
SPL-->EXTRACT:	5ML
STANDARD ID:	VOA781
SENSITIVITY ID:	BFD605
LABORATORY ID:	30580N3
DATE ANALYZED:	09/04/84
UNITS:	UG/L

PP #	CAS #		CONC
2V	107-02-8	ACROLEIN	10. U
3V	107-13-1	ACRYLONITRILE	10. U
4V	71-43-2	BENZENE	1. U
6V	56-23-5	CARBON TETRACHLORIDE	1. U
7V	108-90-7	CHLOROBENZENE	1. U
10V	107-06-2	1,2-DICHLOROETHANE	1. U
11V	71-55-6	1,1,1-TRICHLOROETHANE	4. A
13V	75-34-3	1,1-DICHLOROETHANE	1. U
14V	79-00-5	1,1,2-TRICHLOROETHANE	1. U
15V	79-34-5	1,1,2,2-TETRACHLOROETHANE	1. U
16V	75-00-3	CHLOROETHANE	1. U
17V	542-88-1	BIS(CHLOROMETHYL)ETHER	1. U
19V	110-75-8	2-CHLOROETHYLVINYL ETHER	10. U
23V	67-66-3	CHLOROFORM	1. U
29V	75-35-4	1,1-DICHLOROETHENE	1. U
30V	156-60-5	TRANS-1,2-DICHLOROETHENE	1. U
32V	78-87-5	1,2-DICHLOROPROPANE	1. U
33VT	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1. U
33VC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1. U
38V	100-41-4	ETHYLBENZENE	1. U
44V	75-09-2	METHYLENE CHLORIDE	9. A
45V	74-87-3	CHLOROMETHANE	1. U
46V	74-83-9	BROMOMETHANE	1. U
47V	75-25-2	BROMOFORM	1. U
48V	75-27-4	BROMODICHLOROMETHANE	1. U
49V	75-69-4	TRICHLOROFLUOROMETHANE	1. U
50V	75-71-8	DICHLORODIFLUOROMETHANE	1. U
51V	124-48-1	CHLORODIBROMOMETHANE	1. U
85V	127-18-4	TETRACHLOROETHENE	1. U
86V	108-88-3	TOLUENE	1. U
87V	79-01-6	TRICHLOROETHENE	2. A
88V	75-01-4	VINYL CHLORIDE	1. U
	67-64-1	ACETONE	10. U
	78-93-3	2-BUTANONE	10. U
	75-15-0	CARBON DISULFIDE	1. U
	519-78-6	2-HEXANONE	1. U
	108-10-1	4-METHYL-2-PENTANONE	1. U
	100-42-5	STYRENE	1. U
	108-05-4	VINYL ACETATE	1. U
	95-47-6	TOTAL XYLENES	1. U

U - ANALYZED FOR BUT NOT DETECTED (REPORTED VALUE IS DETECTION LIMIT - DL)
A - DETECTED BELOW QUANTITATION LIMIT (QUANTITATION LIMIT IS 10 X DL)

CAS #: 3186 LABORATORY: IT/WCTS SAMPLE #: E3143
RC'D: 08/28/84 CONTRACT #: 6582 % MOISTURE: NA
RELEASE AUTHORIZED BY: [signature]

ORGANICS ANALYSIS DATA SHEET
VOLATILE COMPOUNDS

SURROGATE SPIKE RECOVERIES

UNITS: UG/L

LAB ID	COMPOUND	CONC SAMPLE	CONC SPIKED	% RECOVERY
	1,2-DICHLOROETHANE-D4	49.	50.	98
30580N3	TOLUENE-D8	43.	50.	86
	4-BROMOFLUOROBENZENE	46.	50.	92

* - ASTERISKED VALUES ARE OUTSIDE QC LIMITS NS - NOT SPIKED
\# - _____ RECOVERIES DUE TO DILUTION
$ - _____ RECOVERIES DUE TO MATRIX EFFECTS

TENTATIVELY IDENTIFIED COMPOUNDS

	CONC(J)	CAS #	COMPOUND NAME	SCAN #	FIT
1	30	75-18-3	methyl sulfide	94	.979
2	100	—	Unknown	326	none
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

J - CONC. QUANTITATED USING PEAK HEIGHT, ASSUMING A RESPONSE FACTOR OF 1.

ATTACHMENT D

INORGANIC SAMPLE RESULTS FROM WADSWORTH TESTING

GREINER'S LAGOON, BALLVILLE TWP., OHIO

GREINER'S LAGOON
EPA TASK 1 & 2 TOTAL METALS
REPORT SHEET

Sample Identification: Large Horizontal Tank - Oil

Aluminum	200	mg/kg
Antimony	<10	mg/kg
Arsenic	0.45	mg/kg
Barium	170	mg/kg
Beryllium	<0.25	mg/kg
Cadmium	4.8	mg/kg
Chromium	130	mg/kg
Cobalt	<1.0	mg/kg
Copper	43	mg/kg
Iron	750	mg/kg
Lead	160	mg/kg
Manganese	48	mg/kg
Mercury	<0.05	mg/kg
Nickel	12	mg/kg
Selenium	0.10	mg/kg
Silver	<0.25	mg/kg
Tin.	<100	mg/kg
Vanadium	<10	mg/kg
Zinc	390	mg/kg

GREINER'S LAGOON
EPA TASK 1 & 2 TOTAL METALS AND LEACHATE METALS
REPORT SHEET

Sample Identification: Drainage Ditch Sludge

Total Metals		
Aluminum	2900	mg/kg
Antimony	<10	mg/kg
Arsenic	3.5	mg/kg
Barium	400	mg/kg
Beryllium	<0.25	mg/kg
Cadmium	12	mg/kg
Chromium	58	mg/kg
Cobalt	5.5	mg/kg
Copper	260	mg/kg
Iron	7000	mg/kg
Lead	480	mg/kg
Manganese	180	mg/kg
Mercury	0.50	mg/kg
Nickel	30	mg/kg
Selenium	0.12	mg/kg
Silver	<0.25	mg/kg
Tin	<100	mg/kg
Vanadium	<10	mg/kg
Zinc	2100	mg/kg

Leachate Metals *		
Arsenic	0.01	mg/L
Barium	1.1	mg/L
Cadmium	<0.01	mg/L
Chromium	<0.02	mg/L
Hexavalent chromium	<0.02	mg/L
Mercury	<0.005	mg/L
Lead	<0.05	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

*Leachate testing in accordance with Federal Register Vol. 45, #98 May 19, 1980

GREINER'S LAGOON
EPA TASK 1 & 2 TOTAL METALS AND LEACHATE METALS
REPORT SHEET

Sample Identification: Lagoon Oil Sludge - SE

Total Metals

Aluminum	600	mg/kg
Antimony	<10	mg/kg
Arsenic	0.44	mg/kg
Barium	250	mg/kg
Beryllium	<0.25	mg/kg
Cadmium	1.0	mg/kg
Chromium	14	mg/kg
Cobalt	9.0	mg/kg
Copper	17	mg/kg
Iron	1000	mg/kg
Lead	40	mg/kg
Manganese	68	mg/kg
Mercury	<0.05	mg/kg
Nickel	4.5	mg/kg
Selenium	<0.05	mg/kg
Silver	<0.25	mg/kg
Tin	<100	mg/kg
Vanadium	<10	mg/kg
Zinc	75	mg/kg

Leachate Metals *

Arsenic	0.005	mg/L
Barium	<1.0	mg/L
Cadmium	<0.01	mg/L
Chromium	<0.02	mg/L
Hexavalent chromium	<0.02	mg/L
Mercury	<0.005	mg/L
Lead	0.12	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

*Leachate testing in accordance with Federal Register Vol. 45, #98 May 19, 1980

GREINER'S LAGOON
EPA TASK 1 & 2 TOTAL METALS AND LEACHATE METALS
REPORT SHEET

Sample Identification: Lagoon Oil Sludge - NW

Total Metals		
Aluminum	650	mg/kg
Antimony	<10	mg/kg
Arsenic	0.78	mg/kg
Barium	500	mg/kg
Beryllium	<0.25	mg/kg
Cadmium	6.8	mg/kg
Chromium	23	mg/kg
Cobalt	9.0	mg/kg
Copper	20	mg/kg
Iron	1100	mg/kg
Lead	83	mg/kg
Manganese	68	mg/kg
Mercury	<0.05	mg/kg
Nickel	4.8	mg/kg
Selenium	0.14	mg/kg
Silver	<0.25	mg/kg
Tin	<100	mg/kg
Vanadium	<10	mg/kg
Zinc	140	mg/kg

Leachate Metals *		
Arsenic	0.007	mg/L
Barium	<1.0	mg/L
Cadmium	<0.01	mg/L
Chromium	<0.02	mg/L
Hexavalent chromium	<0.02	mg/L
Mercury	<0.005	mg/L
Lead	0.11	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

*Leachate testing in accordance with Federal Register Vol. 45, #98 May 19, 1980

GREINER'S LAGOON
EPA TASK 1 & 2 TOTAL METALS
REPORT SHEET

Sample Identification: Lagoon Oil

Aluminum	80	mg/kg
Antimony	<10	mg/kg
Arsenic	0.12	mg/kg
Barium	150	mg/kg
Beryllium	<0.25	mg/kg
Cadmium	2.3	mg/kg
Chromium	33	mg/kg
Cobalt	<1.0	mg/kg
Copper	38	mg/kg
Iron	240	mg/kg
Lead	140	mg/kg
Manganese	35	mg/kg
Mercury	<0.05	mg/kg
Nickel	9.0	mg/kg
Selenium	0.25	mg/kg
Silver	<0.25	mg/kg
Tin	<100	mg/kg
Vanadium	<10	mg/kg
Zinc	260	mg/kg

ALERT
ANALYTICAL LABORATORIES AND ENVIRONMENTAL RESPONSE TEAM
P.O. Box 208 CANTON, OHIO 44701 □ 24-Hour ALERT LINE (216) 454-3304

QUALITY CONTROL

ALERT
ANALYTICAL LABORATORIES AND ENVIRONMENTAL RESPONSE TEAM
P.O. Box 208 CANTON, OHIO 44701 ☐ 24-Hour ALERT LINE (216) 454-8304

LABORATORY QUALITY ASSURANCE

ALERT Inc. and its parent firm, Wadsworth Testing Laboratories, Inc. utilize only USEPA approved equipment and procedures. The quality assurance procedures recommended in these USEPA analytical methods and the "Handbook for Analytical Control in Water and Wastewater Laboratories" EPA-600/4-79-019, are the basis for ALERT Inc's laboratory quality assurance program. ALERT's laboratory quality assurance program requires laboratory chain-of-custody documentation, continual instrument performance specifications, mandatory standardization schedules in combination with regular calibration checks, and routine surveillance and documentation of accepatable analytical precision and accuracy through systematic inclusion of quality control samples into all laboratory analyses.

SAMPLING

All sampling is performed in accordance with USEPA or accepted concensus methodologies. Samples are permanently labeled, recorded in the Field Sample Log, and appropriately preserved for transport to the laboratory. Chain-of-Custody forms and sample seals are utilized as necessary. Sample duplicates and field blanks are routinely collected for inclusion into the Analytical Quality Assurance Program.

ANALYSIS

A Quality Assurance Supervisor implements an Analytical Quality Assurance Program designed to ensure and document meaningful analytical results.

Documentation

All sample chain-of-custody, preparation, extraction, and pertinent analytical instrumental information is recorded in bound, consecutively numbered analytical log books or computer data systems.

Field Sample Log - Documents all pertinent field data for each sample.

Lab Sample Logs - Documents the date, time, description, preparation and extraction of all samples submitted to the laboratory for analysis.

Instrument Log - One for each analytical instrument to record the nature of the sample, raw data, and pertinent analytical parameters necessary to assist the analyst in evaluating the sample results and instrument performance.

Sample Result Log - Documents results of all sample analyses.

Q.A. Data Log - Documents all data generated by the Analytical Quality Assurance Program.

Instrument Performance

All analytical instrument performance specifications are maintained in accordance with specified EPA method criteria. All GC/MS units are monitored every eight (8) hours to ensure that instrument response on decafluorotriphenylphoshine (DFTPP) is within EPA specifications. Three (3) point priority pollutant calibration curves are created for quantification purposes and are verified at least once every eight (8) hours. In addition, internal standards

are added to all GC/MS samples to ensure consistent quantification. Calibration curves are also constructed and routinely verified for each batch (up to 20 samples) of non-GC/MS samples.

Analytical Precision and Accuracy

Surrogate spikes are added to GC/MS samples to monitor acceptable constituent recoveries. In addition, the quality control samples listed below are systematically inserted into the laboratory analyses to routinely assess and document acceptable analytical precision and accuracy.

Method Blanks - A "clean" matrix is passed through the entire analytical system to detect any possible interferences.

Duplicate Samples - Duplicate sample analyses yield actual analytical precision data.

Matrix Spikes - Samples are quantitatively "Spiked" with analyte to yield actual analytical accuracy data.

Blind Standard Spikes - The Quality Assurance Supervisor prepares surrogate standards for analysis by the laboratory to establish actual analyte recovery data.

These quality control samples comprise 10% of all laboratory analyses. All surrogate recovery, precision, and accuracy must meet EPA method specifications to approve the analyses.

APPROVALS

ALERT Inc. / Wadsworth Testing Laboratories, Inc. maintains Ohio Dept. of Health laboratory certification for the analysis of drinking water and has been inspected and approved for work on "Superfund" hazardous material clean-up projects by the U.S. Army Corps of Engineers.

TAT special project money

Water quality std. (PCB)

TAT samplingⁿ — Wadsworth testing lab.

ODH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 11-5-87

SUBJECT: Monthly Sample Report for Oct. '87 (month)

FROM: OSC Edward C. Burk, (ERU)/WRU (circle one)
Emergency Response Section

TO: Chuck Elly, Chief
Contract Project Management Section (5SCRL)

SITE NAME	DATE SAMPLED	# OF SAMPLES	MATRIX	PARAMETERS REQUESTED	LAB	PURPOSE
Greiners Lagoon	10-6	2	sludge	PCB's	Wadsworth	Extent of Contamina
	10-6	2	sludge	PCB's	Gulf Coast	Extent of Contamina
	10-26	16	1 oil 3 sludge 12 soil	PCB's	Gulf Coast	Extent of Contamina

cc: J. van Bosse, 5HR-11

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Monthly ERCS Sample Report for September (month)

FROM: OSC • Ed Burke, (ERI)/WRII (circle one)
Emergency Response Section

TO: Chuck Elly, Chief
Contract Project Management Section (5SCRL)

SITE NAME	DATE SAMPLED	# OF SAMPLES	MATRIX	PARAMETERS REQUESTED	LAB	PURPOSE
Greiners Lagoon:	8/30	22	Soil	PCBs	wads.	Extent
	9/2	12	Soil	PCBs	wads	Extent
	9/3	15	Soil	PCBs	wads	extent
	9/11	4	Soil	"	"	"
	9/12	16	Soil	"	"	"
	9/13	13	Soil	"	"	"
	9/23	1	Soil	"	"	"
	9/23	3	Soil	ABN/ HSC metals	ERG	extent
	9/3	1	H_2O	*	wads	water Quality Check
	9/16	1	H_2O	*	"	"
	9/23	1	H_2O	*	"	"

3 PCBs, Oil & Grease, total phenols, Volatiles (601/602), NH_3, HSC metals
cc: J. van Bosse, 5HR-11 TSS, TDS, MBAS, pH, DO

EPA FORM 1320-8 (REV. 3-76)

* PCBs, Oil & Grease, total phenols, MBAS, pH

1

CO

3745-1 WATER QUALITY STANDARDS

3745-1-01 Purpose and applicability.
3745-1-02 Definitions.
3745-1-03 Analytical methods.
3745-1-04 Standards applicable to all waters.
3745-1-05 Antidegradation policy.
3745-1-06 Mixing zones.
3745-1-07 Water use designations.
3745-1-08 Classification of waters.
3745-1-09 Low flow streams.
3745-1-10 Conditions for exceptions.
3745-1-11 Lake Erie standards.
3745-1-12 Ohio River standards.
3745-1-13 Lower Cuyahoga River.
3745-1-14 Mahoning River Basin.
3745-1-15 Fields Brook.

3745-1-01 Purpose and applicability.

(A) It is the purpose of these water quality standards to establish minimum water quality requirements for all surface waters of the State, thereby protecting public health and welfare; and to provide for the enhancement, improvement and maintenance of water quality to serve the purposes of the United States Public Law 92-500 and all Federal and State of Ohio Laws and regulations adopted thereunder.

(B) These water quality standards will apply to all surface waters of the State except where they are exceeded due to natural conditions alone. This shall in no way preclude the abatement of man-induced non-point source pollution.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-02 Definitions.

Technical words used in Chapter 3745-1 of the Ohio Administrative Code shall be defined as listed below.

(A) "Ambient water temperature" is the spatial (longitudinal lateral and vertical) and temporal water temperature structure that is actually measured before a specific waste heat discharge, and is outside the influence of any thermal mixing zone.

(B) "Application factor" is a numerical value applied to the LC_{50} or other bioassay test end point. It provides the concentration of an effluent or toxic substance that would be safe for aquatic organisms in the waters of the State.

(C) "Average temperature" represents the arithmetic mean of multiple, equally spaced, daily average temperatures over a consecutive 15 or 30 day period.

(D) "Coldwater fish" are those species of fish that thrive in relatively cold water. These species include, but are not limited to Salmon and Trout (Salmonidae), Sculpins (Cottidae), and certain Minnow (Cyprinidae) species.

(E) "Confluence" is the point where two or more bodies of water flow together.

(F) "Daily average" temperature is the arithmetic mean of multiple, equally spaced, temperature measurements to be taken at least once per hour during a 24-hour day.

(G) "Degradation" is a lowering of the existing water quality in the surface waters of the state as a result of the activities of man, due to physical changes, chemical, biological or thermal discharges from both point and non-point sources.

(H) "Designated use" is a use of the surface waters of the state, established by the Water Quality Standards, Chapter 3745-1 of the Ohio Administrative Code.

(I) "Director" is the Director of the Ohio Environmental Protection Agency.

(J) "Discharge" is the addition of any pollutant to the waters of the state from a point source.

(K) "Dynamic bioassay" is a determination of the biological effect of a substance, factor or condition employing living organisms or cells as the indicator in a continuous flow-through system.

(L) "Endangered species" are those aquatic species of the state's biota which are threatened with statewide extinction, as listed in Rule 1501:31-23-01 of the Ohio Administrative Code.

(M) "Estuary" is the section of a Lake Erie tributary at the mouth where tributary and Lake Erie waters mix. This area is characterized by flow reversals, seiche influences and is generally located between the farthest downstream riffle of the tributary and Lake Erie proper. All tributaries of estuaries shall be considered estuaries below the Lake Erie mean high water level.

(N) "Fecal coliform" is the portion of the coliform group which is present in the intestinal tract of warm-blooded animals, and is usually evidence of the presence of human or animal wastes.

(O) "Geometric mean" is the Nth root of the product of N quantities.

(P) "Headwaters" is the source or beginning of a stream.

(Q) "LC_{50}" is the concentration of a test material in a suitable dilutant at which 50 per cent of the exposed organisms die in a specified period of exposure. "LC_{50}" is often used interchangably with "Median tolerance limit" (TLm), which measures the concentration at which 50 per cent organisms survive.

(R) "Long-term avoidance" is the permanent or prolonged avoidance by a species population of an area or habitat that was formerly inhabited by that species population, but is absent or significantly reduced in density and biomass as a result of permanent limiting or unfavorable environmental conditions.

(S) "Maximum daily temperature" is the highest arithmetic mean of temperatures observed for any two consecutive hours during a 24-hour day, or during the operating day if the waste heat discharge flow is of a shorter duration than two hours in a 24-hour day.

(T) "Micrograms per gram (ug/g)" is the micrograms of substance per gram of weight.

(U) "Micrograms per liter (ug/l)" is the micrograms of substance per liter of solution, and is 1/1000 of a milligram per liter.

(V) "Milligrams per liter (mg/l)" is the milligrams of substance per liter of solution, and is equivalent to parts per million, assuming unit density.

(W) "Mine drainage" is surface or groundwater flowing through or from mines and mine sites. It is usually characterized by concentrations of acidity or alkalinity, various heavy metals, sulfates, and dissolved solids.

(X) "Mixing zone" is an area of a water body contiguous to a treated or untreated wastewater discharge of quality characteristics different from those of the receiving water. The discharge is in transit and progressively diluted from the source to the receiving system. The mixing zone should be considered as a place where wastewater and receiving water mix and not as a place where wastes are treated.

(Y) "Natural conditions" are those conditions that are measured outside the influence of man's activities.

(Z) "Non-persistent toxicant" is a toxic substance with a half-life less than eight weeks, that is readily degraded in an aquatic system, and does not have a tendency to accumulate in organisms.

(AA) "Non-point source" is any source of pollutants other than those defined as point sources.

(BB) "Nuisance" is a condition which interferes with the designated uses of the surface waters of the state.

(CC) "Nursery areas" are regions in a water body where young or newly hatched organisms occur in relatively higher abundance than surrounding areas.

(DD) "Persistent toxicant" is one which either (a) by itself or as its toxic transformation product, has a half-life for degradation under natural environmental conditions of more than eight weeks, or (b) by itself or as its toxic transformation product, upon entering surface waters may biomagnify through successive trophic levels in the biota of the receiving stream.

(EE) "Point source" is any discernible, confined or discrete conveyance from which a pollutant is or may be discharged to the surface waters of the state.

(FF) "Pollutant" is sewage, industrial waste or other waste as defined by section 6111.01(B) thru (D) of the Ohio Revised Code.

(GG) "Receiving waters" are the surface waters of the state into which point and non-point sources flow.

(HH) "Recreation season" is the period from 1 May to 15 October.

(II) "Representative aquatic species" are those organisms, either natural or introduced, which presently exist or have existed in the surface waters of the state prior to July 1, 1977; with the exception of those banned species outlined in Rule 1501: 31-19-01 of the Ohio Administrative Code. In addition, it will include any species that are legally introduced into the surface waters of the state. Specifically included are those species which:

1) represent the full range of response to environmental conditions from sensitive through tolerant;

2) are commercially or recreationally valuable;

3) are representative of each community trophic level;

4) are threatened, rare, or endangered;

5) are critical to the structure and function of the ecosystem;

6) dominate the community in terms of density and biomass;

7) are potentially capable of becoming localized nuisance species, or;

8) are representative of the ecological and physiological requirements of species determined in 1-7, but which themselves may not be representative.

(JJ) "Spawning areas" are regions in a water body, such as reefs and marshes where fish or other aquatic organisms spawn or breed in relatively higher abundance than surrounding areas.

(KK) "Standard" is a definitive numerical value or narrative statement promulgated by the Ohio EPA to maintain and protect the designated uses of the waters of the state.

(LL) "Static bioassay" is a determination of the biological effect of a substance, factor or condition employing living organisms or cells as the indicator. In a static system, test organisms remain in the same test medium for the duration of the test.

(MM) "Surface waters of the state" or watercourses are all streams, publicly-owned lakes and reservoirs, ponds, marshes or other waterways which are situated wholly or partially within the boundaries of the state, except those private waters which do not combine or effect a junction with natural surface waters. Waters defined as sewerage system, treatment works or disposal system in section 6111.01 of the Ohio Revised Code are not included.

(NN) "Thermal mixing zone" is a region of a water body into which waste heat is discharged that is of a different temperature structure than the receiving water body, and within which the average and maximum daily temperatures do not apply, except as prescribed by these rules.

(OO) "Toxic substances" are any liquid, gaseous or solid substances present in such concentrations that can kill, injure or impair life-cycle functions of any organisms.

(PP) "Tributary" is a smaller stream flowing into a larger body of water.

(QQ) "Warmwater fish" are those species of fish that inhabit relatively warm water. These species include, but are not limited to Black Bass and Sunfish (Centrarchidae), and Shad (Clupeidae).

(RR) "Waste heat discharge" is a point source discharge through which excess heat is rejected into the surface waters of the state.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-03 Analytical methods.

(A) All methods of analysis used in applying any of the criteria in these regulations shall be in accord with those pre-

scribed in 40 CFR, Part 136, as amended, "Test Procedures for the Analysis of Pollutants."

(B) All methods of sample collection and preservation used in applying any of the criteria in these regulations shall be in accord with "Manual of Sampling Analytical and Reporting Procedures for Wastewater," State of Ohio Environmental Protection Agency, May, 1976; and "Guidelines for Water Samples Submitted to the Environmental Laboratories of the Ohio Department of Health Laboratories," Ohio Department of Health, May, 1976; or any subsequent revisions.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-04 Standards applicable to all waters.

The following general water quality standards shall apply to all surface waters of the State including mixing zones. To every extent practical and possible as determined by the Director, these waters shall be:

(A) Free from suspended solids or other substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life.

(B) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation;

(C) Free from materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance;

(D) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone;

(E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-05 Antidegradation policy.

(A) Existing instream water uses as defined in Rule 3745-1-08 of the Ohio Administrative Code shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing designated uses is allowable.

(B) Waters in which existing water quality is better than the prescribed standards and exceeds those levels necessary to support propagation of fish, shellfish, wildlife and recreation in and on the water shall be maintained and protected. However, the Director of OEPA may, after compliance with the public notice and intergovernmental coordination requirements of any applicable statutes and regulations, and after due consideration of such technical, economic, social and other criteria as the applicable statues and regulations set forth, choose to allow lower water quality. Degradation of water quality shall not interfere with or become injurious to existing or planned uses, and the Director shall require that the most effective waste treatment available under existing technology be employed by all new point sources, and that feasible management or regulatory programs pursuant to Section 208 of Public Law 92-500 be applied to non-point sources.

(C) The waters indicated below shall be designated as State and National Resource Waters. These will include all National, State and Metropolitan park systems, wildlife refuges and preserves, wild, scenic and recreational rivers, publicly owned lakes and reservoirs and waters of exceptional recreational or ecological significance (e.g., waters which provide a habitat for identified threatened or endangered species) as determined by the Director of OEPA. Present ambient water quality will be maintained for all substances determined to be toxic or to interfere with any designated use as determined by the Director of OEPA. All other substances shall be limited to the standards associated with each designated use, as outlined in Rules 3745-1-07 and -08 of the Ohio Administrative Code. Areas that do not meet general water quality standards as defined in Rules 3745-1-07 and -08 of the Ohio Administrative Code shall not be degraded as stated above for all such classified areas.

The following is a partial list of State and National Resource Waters:

(The county designates the lowest downstream point of the segment.)

Alum Creek — Headwaters to Alum Creek Reservoir (Delaware County)

Bald Eagle Run — Headwaters to confluence with Muskingum River (Morgan County)

Baylor Run — Headwaters to confluence with Eagle Creek (Brown County)

Beaver Creek and Tributaries — Headwaters to Rt. 23 South of Piketon (Pike County)

Beetle Creek — Headwaters to confluence with Eagle Creek (Brown County)

Big Creek—Boundaries of Cleveland Metro Park (Cuyahoga County)

Big Darby Creek and all Tributaries — Headwaters to confluence with Scioto River (Pickaway County)

Big Walnut Creek — Delaware-Morrow County line to Hoover Reservoir (Delaware County)

Black Fork — Charles Mill Reservoir to confluence with Mohican River (Ashland County)

Black River — Park boundaries in Elyria (Lorain County)

Brush Creek — River Mile 0.5 to confluence with Ludlow Creek (Miami County)

Buck Creek — Confluence with Plum Run to confluence with Mad River (Clark County)

Buckeye Creek and Tributaries — Headwaters to confluence with Little Salt Creek (Jackson County)

Bullskin Creek — Clermont-Brown County Line to confluence with the Ohio River (Clermont County)

Caesar Creek and Tributaries — Confluence with Anderson Fork to confluence with Little Miami River (Warren County)

Cedar Bog — (Clark County)

Chagrin River and all Tributaries — Headwaters to confluence with Lake Erie (Lake County)

Chippewa Creek — Rt. 82 to confluence with Cuyahoga River (Cuyahoga County)

Clear Creek — Headwaters to confluence with Hocking River (Hocking County)

Clear Fork Mohican River and Pine Run — Clear Fork Reservoir to confluence with Mohican River (Ashland County)

Cornick Run and Tributaries — Headwaters to confluence with Ohio River (Brown County)

Cowan Creek and Tributaries — Headwaters to downstream Cowan Lake State Park boundaries (Clinton County)

Cuyahoga River — Bath Road in Northhampton to Rockside Road in Valley View (Cuyahoga County)

Cuyahoga River — North Main Street in Akron to Edison Dam (Summit County)

Dry Fork — Miami Whitewater Forest Boundaries (Hamilton County)

Eagle Creek and all Tributaries — Headwaters to confluence with Indian Lick (Brown County)

Eagle Creek and Tributaries — Headwaters to Parkman Road (Portage County)

East Branch Rocky River — Headwaters to downstream boundary of Hinckley Reservation (Medina County)

East Branch Rocky River — Upstream boundaries of Rocky River Reservation to confluence with West Branch (Cuyahoga County)

East Fork Little Miami and all Tributaries — Williamsburg to Batavia (Clermont County)

East Fork Whiteoak Creek — Confluence with Middle Run to confluence with North Fork (Brown County)

Euclid Creek — Rt. 20 to Anderson Road in Euclid (Cuyahoga County)

Forked Run — Headwaters to Forked Run Reservoir (Meigs County)

Fourmile Creek and Tributaries — Headwaters to confluence with Hocking River (Athens County)

scribed in 40 CFR, Part 136, as amended, "Test Procedures for the Analysis of Pollutants."

(B) All methods of sample collection and preservation used in applying any of the criteria in these regulations shall be in accord with "Manual of Sampling Analytical and Reporting Procedures for Wastewater," State of Ohio Environmental Protection Agency, May, 1976; and "Guidelines for Water Samples Submitted to the Environmental Laboratories of the Ohio Department of Health Laboratories," Ohio Department of Health, May, 1976; or any subsequent revisions.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-04 Standards applicable to all waters.

The following general water quality standards shall apply to all surface waters of the State including mixing zones. To every extent practical and possible as determined by the Director, these waters shall be:

(A) Free from suspended solids or other substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life.

(B) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation;

(C) Free from materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance;

(D) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone;

(E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-05 Antidegradation policy.

(A) Existing instream water uses as defined in Rule 3745-1-08 of the Ohio Administrative Code shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing designated uses is allowable.

(B) Waters in which existing water quality is better than the prescribed standards and exceeds those levels necessary to support propagation of fish, shellfish, wildlife and recreation in and on the water shall be maintained and protected. However, the Director of OEPA may, after compliance with the public notice and intergovernmental coordination requirements of any applicable statutes and regulations, and after due consideration of such technical, economic, social and other criteria as the applicable statues and regulations set forth, choose to allow lower water quality. Degradation of water quality shall not interfere with or become injurious to existing or planned uses, and the Director shall require that the most effective waste treatment available under existing technology be employed by all new point sources, and that feasible management or regulatory programs pursuant to Section 208 of Public Law 92-500 be applied to non-point sources.

(C) The waters indicated below shall be designated as State and National Resource Waters. These will include all National, State and Metropolitan park systems, wildlife refuges and preserves, wild, scenic and recreational rivers, publicly owned lakes and reservoirs and waters of exceptional recreational or ecological significance (e.g., waters which provide a habitat for identified threatened or endangered species) as determined by the Director of OEPA. Present ambient water quality will be maintained for all substances determined to be toxic or to interfere with any designated use as determined by the Director of OEPA. All other substances shall be limited to the standards associated with each designated use, as outlined in Rules 3745-1-07 and -08 of the Ohio Administrative Code. Areas that do not meet general water quality standards as defined in Rules 3745-1-07 and -08 of the Ohio Administrative Code shall not be degraded as stated above for all such classified areas.

Turkey Creek — Headwaters to Dennis (Scioto County)

Twin Creek — Confluence with Lesley Run to S.R. 725 (Montgomery County)

Unity Creek — Headwaters to confluence with Whiteoak Creek (Brown County)

Vermilion River — Mill Hollow-Bacon Woods Park Boundaries (Lorain County)

Walhonding River — Confluence with Killbuck Creek to confluence with Tuscarawas River (Coshocton County)

Walnut Creek and tributaries — Headwaters to Baltimore (Fairfield County)

Wellington Creek — Findley State Forest boundaries (Lorain County)

West Branch Black River — Rt. 20 to Parsons Road (Lorain County)

West Fork Little Beaver Creek — ¼ mile downstream from U-Camp Road (T.R. 914) to confluence with Middle Fork (Columbiana County)

West Fork Mill Creek and tributary — Headwaters to Winton Lake (Hamilton County)

Whiteoak Creek — Headwaters to Georgetown (Brown County)

Wolf Creek and tributaries — Headwaters to confluence with Muskingum River (Washington County)

Yellow Springs Creek — Headwaters to confluence with Little Miami River (Greene County)

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-06 Mixing zones.

(A) NON-THERMAL

(1) Except as subsequent provisions of Division (A) of this Rule establish different limits, no mixing zone shall:

(a) Interdict the migratory routes or interfere with natural movements, survival, reproduction, growth, or increase the vulnerability to predation of any representative aquatic species;

(b) Include spawning or nursery areas of any representative aquatic species;

(c) Include a public water supply intake;

(d) Include any bathing area where bath houses and/or lifeguards are provided;

(e) Constitute more than one-half of the width of the receiving watercourse nor constitute more than one-third of the area of any cross-section of the receiving watercourse;

(f) Constitute more than one-fifth of the area of any cross-section of the mouth of a receiving watercourse (the mouth constituting that area of the stream from the confluence upstream for a distance five times the width of the stream at the confluence);

(g) Extend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge.

(2) The Director may waive the requirements of Sections (A)(1)(e), (f) and (g) of this rule whenever a discharger provides:

(a) information defining the actual boundaries (where the Water Quality Standards are met) of the mixing zone in question; and

(b) information and data proving no violation of Sections (A)(1)(a), (b), (c) and (d) of this rule by the mixing zone in question.

(3) For watercourses classified as Coldwater Habitat and Exceptional Warmwater Habitat in Rule 3745-1-08 of the Ohio Administrative Code the standards set forth in Sections (A)(1)(a) through (d) of this rule shall apply, and in addition no mixing zone shall:

(a) constitute more than one-third of the width of the receiving watercourse nor constitute more than one-fifth of the area of any cross-section of the receiving watercourse or,

(b) extend downstream at any time a distance more than three times the

width of the receiving watercourse at the point of discharge.

(4) At least 90 per cent of the volume of the mixing zone shall not exceed at any time the 24 to 96 hour median tolerance limit (TLm) or LC_{50} for any representative aquatic species, as determined from existing scientific literature or the 96 hour median tolerance limit (TLm) or LC_{50} for any representative aquatic species, as determined by static bioassays for persistent toxicants and dynamic bioassays for non-persistent toxicants in accordance with methods described in "Standard Methods for the Examination of Water and Wastewater," 14th Edition, 1975, published by the American Public Health Association, American Water Works Association and the Water Pollution Control Federation.

(5) For lakes and reservoirs except Lake Erie classified as State and National Resource Water in Rule 3745-1-05 of the *Ohio Administrative Code, no mixing zone* shall be permitted.

(6) For all streams classified as Seasonal Warmwater Habitat in Rule 3745-1-08 of the Ohio Administrative Code, the mixing zone criteria in Division (A) (1) through (5) of this rule will not apply.

(B) THERMAL

(1) A thermal mixing zone to permit dilution and cooling of a waste heat discharge shall be considered a region in which organism response to temperature is time-dependent. Exposure to temperatures in a thermal mixing zone shall not cause an irreversible response which results in deleterious effects to the wildlife and aquatic life representative of the receiving waters. The daily average temperature in a thermal mixing zone at the point nearest to the discharge that is accessible to the resident aquatic organisms shall not exceed the temperatures in Table 1 at the corresponding ambient temperature. At ambient temperatures of 59F(15.0C) and above, the daily average temperature in a thermal mixing zone will be determined on a case-by-case basis.

(2) Thermal mixing zone size limitations shall be established by the Director pursuant to Section (B)(1) of this rule on a case-by-case basis for all point source discharges subject to permit.

(3) Except as Sections (B)(1) and (B)(2) of this rule establish different limitations, no thermal mixing zone shall:

(a) interdict the migratory routes or interfere with natural movements, survival, reproduction, growth, or increase the vulnerability to predation of any representative aquatic species;

(b) interfere with or prevent the recovery of an aquatic community or species population that could reasonably be expected as previously limiting water quality conditions improve;

(c) include a public water supply intake, or;

(d) include any bathing area where bath houses and/or life guards are provided.

(4) For all watercourses classified as Coldwater Habitat and Exceptional Warmwater Habitat in Rule 3745-1-08 of the Ohio Administrative Code, thermal mixing zones will not be permitted.

(5) For lakes and reservoirs, except Lake Erie, classified as State and National Resource Water in Rule 3745-1-05 of the Ohio Administrative Code, no thermal mixing zone shall be permitted.

(6) For all streams classified as Seasonal Warmwater Habitat in Rule 3745-1-08 of the Ohio Administrative Code, the mixing zone criteria in Division (B) (1) through (3) of this rule will not apply.

(7) Discharges of closed-cycle cooling blowdown with a flow of less than five per cent of the seven-day once-in-ten-year low-flow of the receiving water body will be exempt from Division (B) (1) through (3) of this rule.

Table 1: Daily average temperatures of thermal mixing zones at corresponding ambient temperatures as required in Section (B)(1) of this rule. Shown as degrees Fahrenheit and (Celsius).

Ambient-°F (°C)	Daily average Temperature-°F (°C)
32(0)	50(10.0)
33(0.6)	50(10.0)
34(1.1)	50(10.0)
35(1.7)	51(10.6)
36(2.2)	52(11.1)
37(2.8)	54(12.2)
38(3.3)	55(12.8)
39(3.9)	57(13.9)
40(4.4)	58(14.4)
41(5.0)	60(15.6)
42(5.6)	62(16.7)
43(6.1)	63(17.2)
44(6.7)	65(18.3)
45(7.2)	66(18.9)
46(7.8)	68(20.0)
47(8.3)	70(21.1)
48(8.9)	71(21.7)
49(9.4)	73(22.8)
50(10.0)	75(23.9)
51(10.6)	76(24.4)
52(11.1)	78(25.6)
53(11.7)	79(26.1)
54(12.2)	81(27.2)
55(12.8)	83(28.3)
56(13.3)	85(29.4)
57(13.9)	86(30.0)
58(14.4)	88(31.1)

59(15) and above - daily average limit will be determined on a case-by-case basis pursuant to Rule 3745-1-06(B)(1) and (2).

(Adopted December 30, 1977; Effective February 14, 1978)

3745-1-07 Water use designations.

(A) **Warmwater habitat**

These are waters capable of supporting reproducing populations of fish, normally referred to as warmwater species, and associated vertebrate and invertebrate, organisms and plants on an annual basis. These standards will apply outside the mixing zone.

All values are expressed as total concentration and milligrams per liter unless specified otherwise. Concentrations are not to be exceeded unless noted differently.

(1) **Ammonia** — not to exceed the concentration of ammonia as N for corresponding pH and temperature as indicated in Table 2. These values are based on 0.05 mg/l unionized ammonia, and under no circumstances shall the ammonia-N concentration exceed 13 mg/l.

(2) **Beryllium** - 1.100 mg/l

(3) **Cadmium** - 0.012 mg/l

(4) **Chlorine** (total residual) - 0.002 mg/l

(5) **Chromium** - 0.100 mg/l

(6) **Copper** - not to exceed the concentrations in Table 3 based on total hardness. These values are based on 0.1 x 96 hour LC_{50}.

(7) **Cyanide** - 0.025 mg/l

(8) **Dissolved Oxygen** - not less than 5.0 mg/l during at least 16 hours of any 24-hour period. It may be less than 5 mg/l for a period not to exceed 8 hours within any 24-hour period, but at no time shall the oxygen content be less than 4.0 mg/l.

(9) **Dissolved Solids** - may exceed one but not both of the following:

(a) 1500 mg/l (Equivalent 25°C specific conductance values is 2400 micromhos/cm) or

(b) 150 mg/l attributable to human activities (Equivalent 25°C specific conductance value is 240 micromhos/cm).

(10) **Iron** - 1.000 mg/l

(11) **Lead** - 0.030 mg/l

(12) **MBAS** (Foaming Agents) - 0.500 mg/l

(13) **Mercury** - not to exceed 0.0005 mg/g (wet weight) in any whole sample of a representative aquatic organism or 0.00005 mg/l as a monthly average concentration in water or 0.0002 mg/l at any time.

(14) **Nickel** - not to exceed 0.01 x 96 hour LC_{50} of any representative aquatic species.

(15) **Oil and Grease** - surface waters shall be free from floating oils and shall at no time produce a visible sheen or color film. Levels of oils or petrochemi-

cals in the sediment or on the banks of a watercourse which cause deleterious effects to the biota will not be permitted. At no time will chlorofluorocarbon extractable materials in water exceed 5 mg/l.

(16) **Pesticides** - not to exceed the concentrations in Table 4.

(17) **pH** - 6.5 to 9.0

(18) **Phenolic compounds** - 0.010 mg/l

(19) **Phosphorus** - total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in a violation of the water quality standards set forth in Chapter 3745-1 of the Ohio Administrative Code. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the Ohio Environmental Protection Agency shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by Ohio EPA in accordance with the International Joint Commission (US-Canada agreement).

(20) **Phthalate esters** - 0.003 mg/l

(21) **Polychlorinated biphenyls** (PCB's) - not to exceed 0.000001 mg/l at any time in a water sample, or 0.01 mg/g (wet weight) in any whole sample of any representative aquatic organism.

(22) **Selenium** - not to exceed 0.01 x 96 hour LC_{50} of any representative aquatic species.

(23) **Silver** - not to exceed 0.01 x 96 hour LC_{50} of any representative aquatic species.

(24) **Zinc** - not to exceed the concentrations in Table 3 based on total hardness. These values are based on 0.01 x 96 hour LC_{50}.

(25) **Toxic Substances**

(a) All pollutants or combinations of pollutants shall not exceed, at any time, one-tenth of the 96 hour median tolerance limit (TLm) or LC_{50} for any representative aquatic species. However, more stringent application factors shall be imposed where justified by "Quality Criteria for Water," US Environmental Protection Agency, 1976; "Water Quality Criteria 1972," National Academy of Sciences and National Academy of Engineering, 1973; or other scientifically based publications.

(b) Pollutants or combinations of pollutants which are known to be persistent toxicants in the aquatic environment shall not exceed, at any time, an application factor of one one-hundredth applied to the 96 hour TLm or LC_{50}.

(c) Any criteria established for a water course or segment by this regulation shall supersede less stringent criteria established in Rule 3745-1-07 of the Ohio Administrative Code after appropriate public hearings as required by Section 6111.041 of the Ohio Revised Code.

(d) The median tolerance limit (TLm) or LC_{50} shall be determined by static or dynamic bioassays performed in accordance with methods outlined in "Standard Methods for the Examination of Water and Wastewater," Fourteenth Edition, American Public Health Association, American Water Works Association and the Water Pollution Control Federation, 1975; or performed in accordance with procedures outlined in *Methods of Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians*, USEPA 660/3-75-009. Tests will be conducted using actual effluent, receiving water and representative species of aquatic life whenever possible.

(26) **Temperature**

(a) There shall be no water temperature changes as a result of human activity that cause mortality, long-term avoidance, exclusion from habitat, or adversely affect the reproductive success of representative aquatic species, unless caused by natural conditions.

(b) At no time shall water tempera-

ture exceed a monthly or bi-weekly average, or at any time exceed the daily maximum temperature as indicated in Table 5b through 5j. The average and daily maximum temperature standard shall apply and be measured outside of a thermal mixing zone at any point on a thermal mixing zone boundary as such is defined in Rule 3745-1-06(B)(1) and (2) of the Ohio Administrative Code.

(B) **Exceptional warmwater habitat**

These are waters capable of supporting exceptional or unusual populations of fish, normally referred to as warmwater species, and associated vertebrate and invertebrate organisms and plants on an annual basis. These would include waters of exceptional chemical quality that are capable of supporting sensitive species of fish and other aquatic organisms. Waters supporting Salmonid migration and waters having a high diversity of aquatic organisms should be included. These standards will apply outside the mixing zone.

All values are expressed as total concentration and milligrams per liter unless specified otherwise. Concentrations are not to be exceeded unless noted differently.

(1) **Ammonia** - 0.5 x the indicated concentrations of Ammonia-N found in Table 2. These values are based on 0.025 mg/l un-ionized ammonia, and under no circumstances shall Ammonia-N concentrations exceed 6.5 mg/l.

(2) **Beryllium** - 1.100 mg/l

(3) **Cadium** - 0.0012 mg/l

(4) **Chlorine** (Total Residual) - 0.002 mg/l

(5) **Chromium** - 0.050 mg/l

(6) **Copper** - 0.005 mg/l

(7) (a) **Cyanide** - 0.025 mg/l

(b) **Cyanide** (Amenable to Chlorination) - 0.005 mg/l

(8) **Dissolved Oxygen** - 6 mg/l as a minimum at all times.

(9) **Dissolved Solids** - may exceed one but not both of the following:

(a) 1500 mg/l (Equivalent 25°C specific conductance values is 2400 micromhos/cm).

(b) 150 mg/l attributable to human activities (Equivalent 25°C specific conductance value is 240 micromhos/cm).

(10) **Iron** - 1.000 mg/l

(11) **Lead** - 0.030 mg/l

(12) **MBAS** (Foaming Agents) - 0.500 mg/l

(13) **Mercury** - not to exceed 0.0005 mg/g (wet weight) in any whole sample of a representative aquatic organism or 0.00005 mg/l as a monthly average concentration in water or 0.0002 mg/l at any time.

(14) **Nickel** - 0.025 mg/l

(15) **Oil and Grease** - surface waters shall be free from floating oils and shall at no time produce a visible sheen or color film. Levels of oils or petrochemicals in the sediment or on the banks of a watercourse which cause deleterious effects to the biota will not be permitted. At no time will chlorofluorocarbon extractable materials in water exceed 5 mg/l.

(16) **Pesticides** - not to exceed the concentrations in Table 4.

(17) **pH** - 6.5-9.0, with no change within that range attributable to man-induced conditions.

(18) **Phenolic compounds** - 0.001 mg/l

(19) **Phosphorus** - total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in a violation of the water quality standards set forth in Chapter 3745-1 of the Ohio Administrative Code. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the Ohio Environmental Protection Agency shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by Ohio EPA in accordance with the International Joint Commission (US-Canada agreement).

TABLE 2

Concentration of Ammonia-N which contain an un-ionized ammonia concentration of 0.05 mg/l NH_3. Corresponding pH and temperatures having no Ammonia-N concentrations listed shall have such values interpolated from the closest appropriate column exhibiting such values. However, at no time shall the total ammonia concentration be more than 13 mg/l.

Temp. (°C) \ pH	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3
5									12.7	10.1	8.0	6.4	5.1	4.1	3.2	2.6	2.1	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2
6									11.7	9.3	7.4	5.9	4.7	3.7	3.2	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3	
7									10.8	8.6	6.8	5.4	4.4	3.4	2.8	2.2	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3	
8								12.6	10.0	8.0	6.3	5.0	4.0	3.2	2.6	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2	
9								11.6	9.2	7.3	5.8	4.7	3.7	3.0	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3		
10								10.7	8.5	6.8	5.4	4.3	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3		
11							12.5	9.9	7.9	6.3	5.0	4.0	3.2	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2		
12							11.6	9.2	7.3	5.8	4.6	3.7	2.9	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3			
13							10.7	8.5	6.8	5.4	4.3	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3			
14						12.5	9.9	7.9	6.3	5.0	4.0	3.2	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2			
15						11.6	9.2	7.3	5.8	4.6	3.7	2.9	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3				
16						10.7	8.5	6.8	5.4	4.3	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.4	0.4	0.3	0.2				
17					12.5	10.0	7.9	6.3	5.0	4.0	3.2	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.6	0.4	0.4	0.3	0.2				
18					11.6	9.3	7.4	5.8	4.7	3.7	3.0	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3					
19					10.8	8.6	6.8	5.4	4.4	3.4	2.8	2.2	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3					
20				12.6	10.0	8.0	6.4	5.1	4.0	3.2	2.6	2.1	1.6	1.3	1.1	0.8	0.7	0.6	0.4	0.4	0.3	0.2					
21				11.8	9.4	7.4	5.9	4.7	3.8	3.0	2.4	1.9	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3						
22				10.9	8.7	6.9	5.5	4.4	3.5	2.8	2.2	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3						
23			12.8	10.2	8.1	6.4	5.1	4.1	3.2	2.6	2.1	1.7	1.3	1.1	0.8	0.7	0.6	0.4	0.4	0.3	0.2						
24			11.9	9.5	7.5	6.0	4.8	3.8	3.0	2.4	1.9	1.5	1.2	0.9	0.8	0.6	0.5	0.4	0.4	0.3							
25			11.1	8.8	7.0	5.6	4.5	3.6	2.8	2.3	1.8	1.4	1.2	0.9	0.8	0.6	0.5	0.4	0.3	0.3							
26			10.3	8.2	6.6	5.2	4.2	3.3	2.6	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3							
27		12.2	9.7	7.7	6.1	4.8	3.9	3.1	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2							
28		11.3	9.0	7.2	5.7	4.6	3.6	2.9	2.3	1.8	1.5	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.3								
29		10.6	8.4	6.7	5.3	4.2	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3								
30	12.4	9.9	7.9	6.3	5.0	4.0	3.2	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.2								

TABLE 3

Concentration of Total Copper and Zinc based on Total Hardness

Hardness (mg/l as $CaCO_3$)	Copper (mg/l)	Zinc (mg/l)
0 - 80	0.005	0.040
81 - 120	0.010	0.055
121 - 160	0.015	0.070
161 - 180	0.020	0.095
181 - 200	0.025	0.115
201 - 220	0.030	0.130
221 - 240	0.040	0.150
241 - 260	0.050	0.175
261 - 280	0.060	0.205
281 - 300	0.075	0.235
301 - 320	0.085	0.275
321 - 340	0.115	0.320
341 and above	0.145	0.365

TABLE 4

Permissible Concentrations of Pesticides (micrograms per liter)

Pesticide	Public Water Supply ug/l	Warm Water Habitat ug/l
*Aldrin	1.0	0.01
Benzene Hexachloride		0.1
Chlordane	3.0	0.01
Chlorophenoxy herbicides		
2,4-D	100.0	
2,4,5-TP (Silvex)	10.0	
Ciodrin		0.1
Coumaphos		0.001
Dalapon		110.0
*DDT	50.0	0.001
Demeton		0.1
Diazinon		0.009
Dicamba		200.0
Dichlorvos		0.001
*Dieldrin	1.0	0.005
Diquat		0.5
Dursban		0.001
Endosulfan		0.003
Endrin	0.2	0.002
Guthion		0.005
*Heptachlor	0.1	0.001
Heptachlor Epoxide	0.1	
Lindane	4.0	0.01

Pesticide	Public Water Supply ug/l	Warm Water Habitat ug/l*
Malathion		0.1
Methoxychlor	100.0	0.005
Mirex		0.001
Naled		0.004
Parathion		0.008
Phosphamidon		0.03
Simazine		10.0
TEPP		0.4
Toxaphene	5.0	0.005

*Banned

TABLE 5

Temperature

Table 5b: General Ohio River Basin—Includes all waters of the state within the boundaries of the Ohio River basin, excluding those water bodies or water body segments as designated in Table 5c through 5f, and Table 5a. Shown as degrees Fahrenheit and (Celsius).

	Jan. 1-31	Feb. 1-29	Mar. 1-15	Mar. 16-31	Apr. 1-15	Apr. 16-30	May 1-15	May 16-31	June 1-15
Average:	47 (8.3)	47 (8.3)	51 (10.0)	54 (12.2)	59 (15.0)	65 (18.3)	67 (19.4)	70 (21.1)	74 (23.3)
Daily Maximum:	52 (11.1)	52 (11.1)	56 (13.3)	59 (15.0)	65 (18.3)	70 (21.1)	73 (22.8)	76 (24.4)	80 (26.7)

	June 16-31	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-15	Oct. 16-31	Nov. 1-30	Dec. 1-31
Average:	82 (27.8)	82 (27.8)	82 (27.8)	82 (27.8)	73 (22.8)	71 (21.7)	65 (18.3)	60 (15.6)	47 (8.3)
Daily Maximum:	85 (29.4)	85 (29.4)	85 (29.4)	85 (29.4)	78 (25.6)	76 (24.4)	70 (21.1)	65 (18.3)	52 (11.1)

Table 5c: Lower Great Miami River—Steele Dam in Dayton (River Mile 81.3) to the confluence with the Ohio River. Shown as degrees Fahrenheit and (Celsius).

	Jan. 1-31	Feb. 1-29	Mar. 1-15	Mar. 16-31	Apr. 1-15	Apr. 16-30	May 1-15	May 16-31	June 1-15
Average:	49 (9.4)	49 (9.4)	53 (11.9)	56 (13.3)	59 (15.0)	65 (18.3)	67 (19.4)	70 (21.1)	75 (23.9)
Daily Maximum:	54 (12.2)	54 (12.2)	58 (14.4)	61 (16.1)	68 (20.0)	74 (23.3)	77 (25.0)	79 (26.1)	83 (28.3)

DD

D.D

Greiberg Site Visit 8/29/87

3" Diaphragm / Trash / Sub (?)	20
Poly TANK	108.13
Chem Feed pump	18.34
Clarifier	105.86
Poly sump 850 gallon	~~[illegible]~~ 4.47
Chem Feed Pump	18.34
SF	135.68
Poly TANK	108.13
GAC	135.68
3" Sub (Freebine - TLB	22.57
2 - 3" Sub	2 × 11.48
2" Hose	700.16
	~~688.66~~

Daily rate

700.16 / day

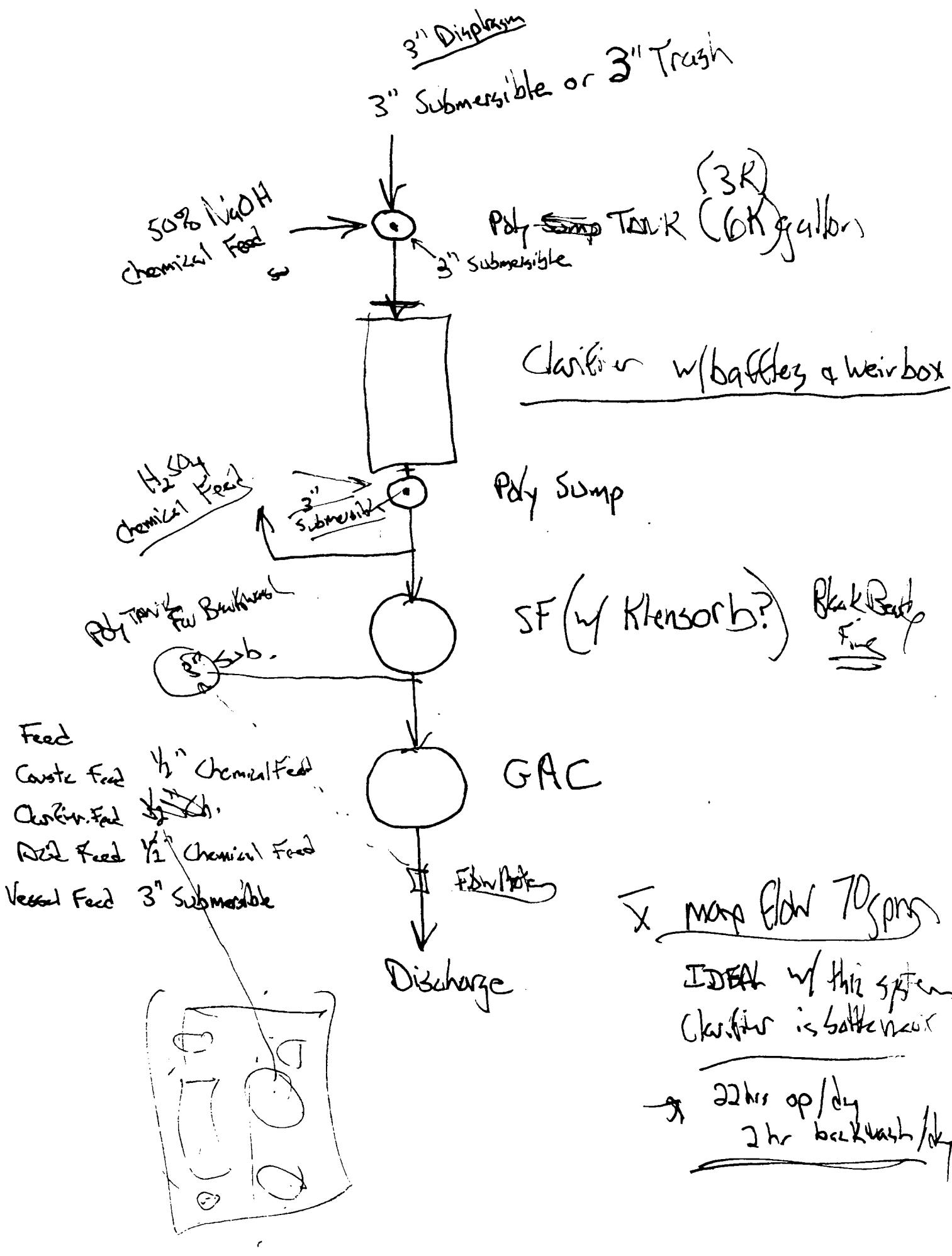
To EB - OSC estimate only

Others w/ off price

- Generator
- Extension Cords NC
- Valves & Fittings
- Electrician Parts & Sampling
- Chemicals
- Under for clarifier NC ODL
- Flow Meter

Recieved 10-19-87 EB

11


3" Diaphragm
3" Submersible or 3" Trash
50% NaOH Chemical Feed
Poly ~~Sump~~ Tank (3K) (6K) gallon
3" Submersible
Clarifier w/baffles & weirbox
H_2SO_4 Chemical Feed
3" Submersible
Poly Sump
Poly Tank for Backwash
3" Sub.
SF (w/ Kleensorb?)
Black Beauty Fine
Feed
Caustic Feed ½" Chemical Feed
Clarifier Feed ½" Sub.
Acid Feed ½" Chemical Feed
Vessel Feed 3" Submersible
GAC
Flow Meter
Discharge
X max flow 70gpm
IDEAL w/ this system
Clarifier is baffle weir
22 hrs op/day
2 hr backwash/day

Org ppm in Lagoon #3 H_2O (TAT DATA)

old

	ppm
phthalate	20
E-Benz	33
phthalate	260
phenol	.106
Tol	170
PCB	.015
O&G	60
	543 ppm
COD	700

600 ppm Orgs + 30% 780 ⇒ 800 ppm organics

$$\left(800\ \frac{mg}{l}\right)\left(\frac{3.785\ l}{gallon}\right)\left(\frac{1\ g}{1000\ mg}\right)\left(\frac{1\ lb}{454\ g}\right)\left(\frac{70\ gallons}{min}\right)\left(\frac{60\ min}{hr}\right)\left(\frac{22\ hr}{day}\right)$$

⇒ 616 #/day (operational)

70 gpm × 60 × 22 = 92,400 gpd 10.8 days

(10.8 days)(616 #/day) = 6700 # Orgs / 1MM gallon project

GAC removes ≈ 10% orgs by weight

$$\frac{6700}{.10} = 67{,}000\ \#\ GAC$$

Assume 100% removal

Same Exercise w/ 10% removal by w

640 ppm	= 53K # GAC
100 ppm	= 8320 # GAC
400 ppm	= 33K # GAC
300 ppm	= 25K # GAC
150 ppm	12500 # GAC

GAC Retention 10K # / 3000 gallons

90 gpm	33 min
80	37 "
70	43 "
60	50 "

4200 gallons/hr 100,800 gal/day/day

Total ppm organics = ≈ 800 ppm

$$\left(800 \frac{mg}{\ell}\right)\left(\cancel{\frac{3.785\ \ell}{gal}}\right)$$

$$\left(800 \frac{mg}{\ell}\right)\left(\frac{3.785\ \ell}{gallon}\right)\left(\frac{1g}{1000mg}\right)\left(\frac{1lb}{454g}\right) = \frac{.006\ \#\ organics}{gallon}$$

$$\left(.006 \frac{\#}{gallon}\right)\left(4200 \frac{gal}{hr}\right) = 25.2\ \#\ orgs/hr \quad 252\ \#\ orgs/day$$

8% by weight

10,000 # GAC × .8 = 800 #

$$\frac{\left(\frac{252\ \#\ orgs}{day}\right)}{.08\ \#GAC/\#\ orgs} \quad 3150\ \#/day$$

252 × 10 days = 2520 # organics / project

800 #

690 ppm COD

D/H -

WATER TREATMENT

+ ANTILICAL +

(1) - HOW MANY PEOPLE TO OPERATE -

(2) - WHAT TO DO WITH SPENT CARBON - (SAMPLE)
(ON SITE)

(3) - WHAT CALGON PROVIDES - (FLOW & RETENTION)
?

(4) - ELECTRIC - NO PROBLEM -

(5) - TIME PERIOD (FOR SET UP / FINNISH) - 5 TREATMENT
1 DAY SET
1 TER DOWN

(6) - HOW FAR PUMP FROM LAGOON TO PUMP -
100 FT.

(7) - HOW FAR TO DISCHARGE FROM TREATMENT -
300 FT.

(8) - FLOW RATE - 90

(9) - WHAT TO DO WITH SOLIDS IN WATER -
ON SITE

(10) - HOW TO PUMP (TYPE OF PUMP / DEEP (LAGOON)) - ?
800, TO MILLON GALS 4 FT. 150 FT

150 FT
4

(11) - NAME OF CALGON REP -
+?+

(12) - CONTACT AT OHIO EPA FOR DISCHARGE
LIMITATIONS +?+ N.P.DES. DISCHARGE
CRITIRIA FOR WARM WATER
HABITAT

Water Treatment Costs

(1)

		personnel		perdiem (inc ODC)		hotel (inc ODC)	
		hr	total	date	++1	date	++1
8	25						
	26						
	27						
	28						
	29	1/ 277.30	277.30	1/ 17.70	17.70	1/ 70.74	70.74
	30	0/ —	1019.74	— —	70	—	70.74
	31	3/ 742.44	1019.74	3/ 53.10	70.80	2/ 105.47	176.21
9	1	3/ 668.48	1688.22	3/ 53.10	123.90	2/ 105.47	281.68
	2	3/ 455.40	2143.62	3/ 53.10	177.—	2/ 105.47	387.15
	3	4/ 914.72	3058.34	—		—	
	4	—		—		—	
	5	—		—		—	
	6	—		—		—	
	7	—		—		—	
	8	5/ 1009.46	4067.80	5/ 88.50	266.50	3/ 158.20	545.35
	9	5/ 1219.46	5287.26	5/ 88.50	354.—	3/ 158.20	703.55
	10	5/ 1242.66	6529.92	5/ 88.50	442.50	3/ 158.20	861.75
	11	5/ 1126.96	7656.88	5/ 88.50	531.—	3/ 158.20	1019.95
	12	5/ 1208.30	8865.18	5/ 88.50	619.50	3/ 158.20	1178.15
	13	6/ 1621.96	10,487.14	6/ 106.20	726.70	3/ 158.20	1336.35
	14	5/ 1242.66	11,729.80	5/ 88.50	814.20	3/ 158.20	1494.55
	15	5/ 1242.66	12,972.46	5/ 88.50	902.70	3/ 158.20	1652.75
	16	5/ 882.93	13,855.39	5/ 88.50	991.20	3/ 158.20	1810.95
	17	6/ 952.12	14,807.51	4/ 70.80	1062.—	3/ 158.20	1969.15
	18	4/ 627.59	15,435.10	3/ 53.10	1115.10	2/ 105.47	2074.62
	19	3/ 309.60	15,744.70	— —		— —	
	20	— —		— —		— —	
	21	— —		— —		— —	
	22	5/ 1188.67	16,933.37	5/ 88.50	1203.60	3/ 134.07	2208.69
	23	5/ 898.97	17,832.34	5/ 88.50	1292.10	3/ 134.07	2342.76
	24	5/ 835.74	18,668.08	3/ 53.10	1345.20	2/ 105.47	2448.23
	25	3/ 668.48	19,336.56	3/ 53.10	1398.30	2/ 105.47	2553.70
	26	3/ 739.60	20076.16	3/ 53.10	1451.40	2/ 105.47	2659.17
	27	3/ 739.60	20815.76	3/ 53.10	1504.50	2/ 105.47	2764.64
	28	3/ 668.48	21484.24	3/ 53.10	1557.60	2/ 105.47	2870.11
	29	3/ 675.79	22160.03	3/ 53.10	1610.70	2/ 105.47	2975.58
	30	3/ 292.83	22452.86	3/ 53.10	1663.80	2/ 105.47	3081.05
10	1	3/ 325.35	22778.21	3/ 53.10	1716.90	2/ 105.47	3186.52
	2						
	3						

executive no. 1508

Water Treatment Costs

②

		1	2	3 *	4	5	6
		Equipment		Subcont. Eq (mini van included)			
		daily		$ daily	$ + OPC	total	
8	25						
	26						
	27						
	28						
	29						
	30						
	31						
9	1						
	2						
*	3	610.41	610.41				
	4	610.41	1220.82	79.–	93.22	93.22	
	5	610.41	1831.23	79.–	93.22	186.44	
	6	610.41	2441.64	79.–	93.22	279.66	
	7	488.32	2929.96	79.–	93.22	372.88	
	8	—	2929.96	233.–	274.94	647.82	
	9	—	2929.96	233.–	274.94	922.76	
	10	610.41	3540.37	233.–	274.94	1197.70	
	11	610.41	4150.78	233.–	274.94	1472.64	
	12	610.41	4761.16	233.–	274.94	1747.58	
	13	610.41	5371.60	275.–	324.50	2072.08	
	14	488.32	5859.92	233.–	274.94	2347.02	
	15	—	5859.92	233.–	274.94	2621.96	
	16	—	5859.92	275.–	324.50	2946.46	
	17	610.41	6470.33	233.–	274.94	3221.40	
	18	610.41	7080.74	233.–	274.94	3496.34	
	19	610.41	7691.15	233.–	274.94	3771.28	
	20	610.41	8301.56	233.–	274.94	4046.22	
	21	488.32	8789.88	233.–	274.94	4321.16	
	22	—	8789.88	233.–	274.94	4596.10	
	23	—	8789.88	233.–	274.94	4871.04	
	24	610.41	9400.29	233.–	274.94	5145.96	
	25	610.41	10,010.70	233.–	274.94	5420.92	
	26	610.41	10,621.11	50.–	59.–	5479.92	
	27	610.41	11231.52	50.–	59.–	5538.92	
	28	488.35	11719.87	50.–	59.–	5597.92	
	29	—	11719.87	129.–	152.22	5750.14	
	30	—	11719.87	50.–	59.–	5809.14	
10	1	—	11719.87	50	59.–	5868.14	
	2						
	3	*includes: mini van, 3" trash pump, discharge + suction hose,					
	4	floodlights, hose (d+s), dia. pump + hoses					

Water Treatment Costs

		1	2		3	4	5	6
		hevel C	PVC Gloves .89 ea		yellow tyvek 5.14 ea		Booties .22/pr	
8	25							
	26							
	27							
	28							
	29	1/2 89 2 89	1	1	—		1	1
	30	2/—	—		—		—	1
	31	3/—	—		—		6	7
9	1	2/5 68 8 52	—		—		13	20
	2	3/8.52 17 04	3	4	—		13	33
	3	3/8 52 25 56	—		—		6	39
	4	—	—		—		—	39
	5	—	—		—		—	39
	6	—	—		—		—	39
	7	—	—		—		—	39
	8	2/5 68 31 24	—		—		5	44
	9	4/11.36 42 60	—		12	12	16	60
	10	5/14.20 56 80	—		21	33	21	81
	11	5/14.20 71 —	—		18	51	23	104
	12	5/14.2 85 20	—		19	70	18	122
	13	5/14.2 99 40	—		2	72	22	144
	14	5/14.20 113 60	—		—	72	22	166
	15	5/14.20 127 80	2	6	9	81	25	191
	16	5/14.20 142 —	—		10	91	15	206
	17	5/14.20 156 20	—		13	104	13	219
	18	3/8 52 164 72	—		9	113	10	229
	19	—	—		—	113	—	229
	20	—	—		—	113	—	229
	21	—	—		—	113	—	229
	22	5/14.20 178 92	1/ 7	6 23	10	123	10	239
	23	5/14.20 192 12	—		12	135	22	261
	24	3/8 52 201 64	—		13	148	14	275
	25	3/8 52 210 16	—		12	160	12	287
	26	3/8 52 218 68	—		12	172	884 08	12 299	65 78
	27	3/8 52 227 20	—		12	184		13 312 —
	28	3/8 52 235 72	—		13	197	$1012 58	12 324	$71 28
	29	3/8 52 244 24	—		13	210		13 337
	30	3/8 52 252 76	—		6	216		7 344
10	1	3/8 52 261 28	—	6 23	4	220	1130 80	4 348	75 56
	2							
	3							
	4							

executive no. 1508

INITIALS DATE

PREPARED BY

APPROVED BY

		1 Dust Filter .64/pr	2	3 Cartridge 3.77/pr	4	5 Sample Gloves pr	6 (.073/pr)
8	25						
	26						
	27						
	28						
	29	—		1	1	4	4
	30	—		—	1	—	4
	31	—		2	3	4	8
9	1	—		2	5	82	90
	2	—		2	7	30	120
	3	—		4	11	12	132
	4	—		—	11	—	132
	5	—		—	11	—	132
	6	—		—	11	—	132
	7	—		—	11	—	132
	8	—		3	14	58	190
	9	—		4	18	79	269
	10	2	2	5	23	95	364
	11	1	3	5	28	32	396
	12	—		6	34	89	485
	13	3	6	4	38	94	579
	14	8	14	8	46	145	724
	15	7	21	9	55	148	872
	16	1	22	2	57	131	1003
	17	3	25	3	60	76	1079
	18.	3	28	3	63	19	1098
	19	—	28	—	63	—	1098
	20	—	28	—	63	—	1098
	21	3	31	3	63	19	1098
	22	5	36	5	68	71	1169
	23	3	39	5	73	44	1213
	24	4	43	4	77	126	1339
	25	5/	48	4	81	74	1413
	26	4/	52	33.28	4	85	320.45	77 pr	1490	108.75
	27	5/	57		4/	89		26	1516	
	28	3/	60	38.40	3/	92	346.84	27	1543	112.64
	29	6/	66		6/	98		27	1570	
	30	3/	69		3/	101		14	1584	
10	31	3/	72	46.08	3/	104	392.08	18	1602	116.95
	2									
	3									
	4									

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- White tyvek
- PVC Suits
- Rebars

3a

	WT (2.14ea)	PVC (20.75ea)	ROD
9/16	7	—	—
9/14	22	1	—
9/13	—	3	—
9/12	—	—	—
9/10	4	—	—
9/2	13	2	
9/1	15	6	
	61 $130.54	$124.50	

Equipment Planned/Authorized

1. Passenger Sedan (rental) -
2. Passenger Van (rental) -
3. Decon Trailer - 1
4. Office Trailer (rental) - 1
5. Crew Trailer (rental) - 1
6. Water Treatment System - 1
7. Clean Water Poly Tank - 1
8. Generator (rental) - 1
9. Portable Lighting Sets (rental) - 2

Comments

Contractor Signature

Date

Water Treatment System

Materials

		1	2	3	4	5	6
8	25						
	26						
	27						
	28						
	29						
	30						
	31	Fence 280.52	Sand 500.—				
9	1	Carbon 11,000.—	Caustic 650.—	Acid 225.—			
	2	tolls 5.65					
	3	—					
	4	—					
	5	—					
	6	—					
	7	—					
	8	Spotlight 29.13	Na lights 95.39	toll 1.90	toll 4.15	Voyager Gas 17.—	
	9	Gas 19.01					
	10	—					
	11	—					
	12	—					
	13	Gas 4.70					
	14	Gas-Ne 12.—					
	15	KY Gas 9.73	KY tolls 2.40	KY Gas 12.50	KY Gas 18.—	KY Gas 9.50	Acid 225.—
	16	Ice 2.—	sand 25.20	sand 36.75	pump gas 6.60		
	17	pump gas 15.—					
	18						
	19						
	20						
	21						
	22	Toll 1.90	Toll 4.15	gas 15.—	gas 10.—		
	23	Ice 3.—					
	24	earth 8.65	Stone 89.94	Stone 80.83			
	25	gas 18.35					
	26	—					
	27	gas 6.—					
	28						
	29						
	30						
10	1						
	2						
	3						
	4						

executive no. 1506

INITIALS DATE

PREPARED BY

APPROVED BY

		1	2	3	4	5 daily total w/o DC	6 total
1	8 25						
2	0 26						
3	27						
4	28						
5	29						
6	30						
7	31					921.01	921.01
8	9 1					14012.50	14,933.51
9	2						
10	3						
11	4						
12	5						
13	6						
14	7						
15	8					168.23	15,101.75
16	9					22.43	15,124.18
17	10						
18	11						
19	12						
20	13					5.55	15,129.72
21	14					14.16	15,143.88
22	15	Caustic 650.	Pump 140.44			1259.76	16,403.64
23	16					83.25	16,486.89
24	17					17.70	16,504.59
25	18						
26	19						
27	20						
28	21						
29	22					36.64	16,541.23
30	23					3.54	16,544.77
31	24					205.82	16,750.58
32	25					21.54	16,772.12
33	26						
34	27					7.08	16,779.20
35	28						
36	29						
37	30						
38	10 1						
39	2						
40	3						
	4						

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(5)

Water Treatment System

Subcontracted

		1	2	3	4	5	6
8	25						
	26						
	27						
	28						
	29						
	30						
	31	Crane 247.50	mob 1092 –	Air comp. 65 –	chain saw 25 –	Gen. 34 –	air hose 12 –
9	1	Bobcat 125 –	Del. 79.90				
	2	—					—
	3	—					
	4	—					—
	5	—					—
	6	—					—
	7	—					—
	8	—					—
	9	—					—
	10	—					—
	11	—					
	12	—					
	13	—					
	14	—					
	15	H_2O smp 800 –	KY Air 35 –	KY car 127.30	KY Air 44 –		
	16	sand dep 157.40					
	17						
	18						
	19						
	20						
	21						
	22						
	23	H_2O smp 800 –					
	24						
	25						
	26	H_2O smp (624)	H_2O (624)	3" pump (315)	discharge hose (180)	suction hose (216)	lights (504)
	27						
	28	vac trk 800 –					
	29	" 680 –					
	30						
10	1	Press 1092	Bob cat 75	Crane 398.05			
	2						
	3						
	4						

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		1	2	3	4	5	6
						daily total w/ODC	total
8	25						
	26						
	27						
	28						
	29						
	30						
	31					1741.09	1741.09
9	1					241.79	1982.87
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15					1187.43	3170.30
	16					186.73	3356.04
	17						
	18						
	19						
	20						
	21						
	22						
	23					944.–	4300.04
	24						
	25						
	26	50' dur (60)	50' suc (60)			(3047.94)	1252.10
	27						
	28					949.–	2196.10
	29					802.40	2998.50
	30						
10	1					1847.23	4845.73
	2						
	3						
	4						

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