Joe R. Nichols

County Engineer - Water Dept.

St. Charles County

M-K FERGUSON
WSSRAP LIBRARY
FILE NO. HG-48

QUARTERLY REPORT

ST. CHARLES COUNTY WELL FIELD

MONITORING PROJECT

GRANT NO. DE-FG05-89OR21864

SUPERSEDED

Prepared by: Stanley Remington
January, February and March, 1995

QUARTERLY REPORT

201 North Second Street • Suite 429 • Saint Charles, Missouri 63301-2874
314-949-7305 • Fax 314-949-7307

MONTHLY REPORT

JANUARY 1995

BY

Stanley M. Remington

Consulting Hydrologist

I. CHEMICAL ANALYSES

The results of the sampling from well PW-4 have been received and are appended. This well was tested for pesticides, herbicides, atrazine, PCB's as well as the usual chemical parameters, i.e., nitroaromatics, gross alpha and beta, and total uranium. This well is located within a few hundred feet of the Missouri River where most of its recharge comes from. I wanted to see if any pesticides and herbicides from the river were present as was the case in the Mississippi River near Quincy, Illinois. None were found in the well water, which means that this is not a problem at the Weldon Spring well site. I will discontinue the sampling for these parameters except on a yearly basis. This well was sampled on December 16, 1994.

On January 18 the treated water at the Chemical Site was sampled by the DOE and analyzed by me at ATAS. The results showed that all of the parameters tested for were well below the NPDES limits. This batch was discharged into the Missouri River about a week later. The results are appended.

Enclosed is the Quarterly Site and Quarry Water Treatment Plant Effluent Data Summary - Fourth Quarter 1994. This was received from the DOE on January 17, 1995.

Also received was the Quarterly Environmental Data Summary - Fourth Quarter 1994 from the testing of all of DOE's observation wells, the St. Charles County Production and observation wells analyzed by the Department of Energy. It also includes the Weldon Spring Quarry, Waste Management Units, Springs, Surface Water and Air Monitoring. The first nine pages are appended showing where the samples were taken. The results of all these analyses are with me and at the Department of Energy for anyone who would be interested in them.

II. CONTRACT

I have requested an extension of my present contract with St. Charles County for another year. My present contract is due to expire on March 31, 1995. All of the conditions were the same except the total amount of the Contract was reduced to $55,000.00 to coincide with the DOE's grant figure. This is not a problem since I have never reached this figure in the past six years of my contract extensions.

III. FUTURE PLANS

I will sample two production wells in February, 1995. These will be the yearly analyses which include extensive

additions to the usual parameters analyzed. This will be coordinated with the Department of Energy. I will also begin writing my yearly report called for in my contract. This is due on March 31, 1995.

IV. MISCELLANEOUS

Appended is the results from the Department of Natural Resources, State of Missouri from their sampling of the Plant Effluent at the Weldon Spring Treatment Plant of St. Charles County. They tested for Nitrates and Nitrite-Nitrate. Both parameters were well below the NPDES limits.

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

January 17, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #11910.01
Weldon Spring

Dear Mr. Remington:

Enclosed is the analytical report for the sample received in our laboratory on December 16, 1994.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeffrey A. Carr
Project Manager

Enclosures

JAC/dms

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001X(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : 11910.01
DATE SUBMITTED: 12-16-94
DATE EXTRACTED: 12-20-94
DATE ANALYZED : 01-05-95
METHOD REF. : SW846-8080, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-4

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCBs	REPORTING LIMIT	RESULTS
ALPHA-BHC	0.003	ND
GAMMA-BHC(LINDANE)	0.004	ND
BETA-BHC	0.006	ND
DELTA-BHC	0.009	ND
HEPTACHLOR	0.003	ND
ALDRIN	0.004	ND
HEPTACHLOR EPOXIDE	0.083	ND
ENDOSULFAN I	0.014	ND
4,4-DDE	0.004	ND
DIELDRIN	0.002	ND
ENDRIN	0.006	ND
4,4-DDD	0.011	ND
ENDOSULFAN II	0.004	ND
4,4-DDT	0.012	ND
ENDRIN ALDEHYDE	0.023	ND
ENDOSULFAN SULFATE	0.066	ND
METHOXYCHLOR	0.180	ND
CHLORDANE (TECHNICAL)	0.014	ND
TOXAPHENE	0.240	ND
AROCHLOR-1016	1.00	ND
AROCHLOR-1221	1.00	ND
AROCHLOR-1232	1.00	ND
AROCHLOR-1242	1.00	ND
AROCHLOR-1248	1.00	ND
AROCHLOR-1254	1.00	ND
AROCHLOR-1260	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150) 54 %
TETRACHLORO-M-XYLENE(30-150) 87 %

[illegible] = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001X(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 12-16-94
DATE EXTRACTED: 12-20-94
DATE ANALYZED : 01-05-95
METHOD REF. : SW846-8080, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCBs	REPORTING LIMIT	RESULTS
ALPHA-BHC	0.003	ND
GAMMA-BHC(LINDANE)	0.004	ND
BETA-BHC	0.006	ND
DELTA-BHC	0.009	ND
HEPTACHLOR	0.003	ND
ALDRIN	0.004	ND
HEPTACHLOR EPOXIDE	0.083	ND
ENDOSULFAN I	0.014	ND
4,4-DDE	0.004	ND
DIELDRIN	0.002	ND
ENDRIN	0.006	ND
4,4-DDD	0.011	ND
ENDOSULFAN II	0.004	ND
4,4-DDT	0.012	ND
ENDRIN ALDEHYDE	0.023	ND
ENDOSULFAN SULFATE	0.066	ND
METHOXYCHLOR	0.180	ND
CHLORDANE (TECHNICAL)	0.014	ND
TOXAPHENE	0.240	ND
AROCHLOR-1016	1.00	ND
AROCHLOR-1221	1.00	ND
AROCHLOR-1232	1.00	ND
AROCHLOR-1242	1.00	ND
AROCHLOR-1248	1.00	ND
AROCHLOR-1254	1.00	ND
AROCHLOR-1260	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	42 %
TETRACHLORO-M-XYLENE(30-150)	66 %

= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

METHOD : EPA 8080
EXTRACTION DATE : 12-20-94
ANALYSIS DATE : 01-05-95

REPORT DATE: 01-17-95

SPIKE/SPIKE DUPLICATE RESULTS

COMPOUND	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	SPIKE CONC. (ug/L)	PERCENT RECOVERY
GAMMA-BHC	0.200	ND	0.149	75 %
HEPTACLOR	0.200	ND	0.153	77 %
ALDRIN	0.200	ND	0.135	68 %
DIELDRIN	0.500	ND	0.416	83 %
ENDRIN	0.500	ND	0.471	94 %
4,4-DDT	0.500	ND	0.412	82 %

	SPIKE DUP. CONC. (ug/L)	PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
GAMMA-BHC	0.176	88 %	16 %
HEPTACHLOR	0.180	90 %	16 %
ALDRIN	0.156	78 %	14 %
DIELDRIN	0.465	93 %	11 %
ENDRIN	0.543	109 %	15 %
4,4-DDT	0.479	96 %	16 %

ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001X(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : 11910.01
DATE SUBMITTED: 12-16-94
DATE ANALYZED : 12-21-94
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-4

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	10.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	7.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
2NT	12.0	ND
4NT	8.0	ND
3NT	7.9	ND

= NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001X(216)

DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 12-16-94
DATE ANALYZED : 12-20-94
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	10.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	7.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
2NT	12.0	ND
4NT	8.0	ND
3NT	7.9	ND

= NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001X(216)

DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : LABORATORY CONTROL SAMPLE
DATE SUBMITTED: 12-16-94
DATE ANALYZED : 12-20-94
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : LABORATORY CONTROL SAMPLE

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	SPIKE ADDED(ug/L)	AMT. FOUND SMPL.(ug/L)	AMT. FOUND LCS(ug/L)	PERCENT RECOVERY	QC LIMIT RECOVERY
HMX	1600	ND	1499	94 %	46-151
RDX	1300	ND	1381	106 %	72-129
3,5-TNB	900	ND	894	99 %	74-118
TETRYL	1650	ND	1605	97 %	58-120
1,3-DNB	475	ND	493	104 %	79-132
TNT	750	ND	762	102 %	61-145
NITROBENZENE	850	ND	870	102 %	68-135
2,6 DNT	1150	ND	1238	108 %	77-125
2,4 DNT	700	ND	679	97 %	70-134
2NT	1450	ND	1612	111 %	73-131
4NT	1000	ND	1139	114 %	73-116
3NT	950	ND	1058	111 %	71-127

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001A(216)

DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : 11910.01
DATE SUBMITTED : 12-16-94
DATE EXTRACTED : 12-21-94
DATE ANALYZED : 12-21-94
METHOD REF. : EPA 505
PROJECT : WELDEON SPRING
SAMPLE ID : PW-4

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

COMPOUND	REPORTING LIMIT	RESULTS
ATRAZINE	2.40	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	78 %
TETRACHLORO-M-XYLENE(30-150)	60 %

= NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001A(216)

DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED : 12-16-94
DATE EXTRACTED : 12-21-94
DATE ANALYZED : 12-21-94
METHOD REF. : EPA 505
PROJECT : WELDEON SPRING
SAMPLE ID : MEHTOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

COMPOUND	REPORTING LIMIT	RESULTS
ATRAZINE	2.40	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	104 %
TETRACHLORO-M-XYLENE(30-150)	88 %

= NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001A(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : SPIKE BLANK/SPIKE BLANK DUPLICATE
DATE SUBMITTED: 12-16-94
DATE EXTRACTED: 12-21-94
DATE ANALYZED : 12-21-94
PROJECT : WELDON SPRING
SAMPLE ID : SPIKE BLANK/SPIKE BLANK DUPLICATE

PCB SPIKE BLANK/SPIKE BLANK DUPLICATE RESULTS

	SPIKE ADDED (ug/L)	AMT. FOUND BLK (ug/L)	AMT. FOUND SB (ug/L)	SB PERCENT RECOVERY
ATRAZINE	28.6	ND	19.2	67 %

	AMT. FOUND SBD (ug/L)	PERCENT RECOVERY	PERCENT DIFFERENCE
ATRAZINE	21.8	76 %	13 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001R(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS EPISODE : 11910.01
DATE SUBMITTED: 12-16-94
DATE ANALYZED : 01-09-95
PROJECT : WELDON SPRING

CLIENT ID	ATAS ID	UNITS	RADIONUCLIDE	RESULT
PW-4	11910.01	pCi/L	GROSS ALPHA	7 +/- 3*
PW-4	11910.01	pCi/L	GROSS BETA	6 +/- 3*
PW-4	11910.01	mg/L	TOTAL URANIUM	<0.005

* VARIABILITY OF THE RADIOACTIVE DISINTEGRATION PROCESS (COUNTING ERROR) AT THE 95% CONFIDENCE LEVEL, 1.96σ.
i/L= PICOCURIES PER LITER
mg/L = PARTS PER MILLION(PPM)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-00

LIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001H(216)

DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : 11910.01
DATE SUBMITTED: 12-16-94
DATE EXTRACTED: 12-20-94
DATE ANALYZED : 12-31-94
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-4

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4-D	1.60	ND
2,4-DB	5.00	ND
2,4,5-T	0.60	ND
2,4,5-TP (SILVEX)	0.60	ND
DALAPON	1.25	ND
DICAMBA	0.80	ND
DICHLOROPROP	2.40	ND
DINOSEB	0.60	ND
MCPA	500	ND
MCPP	500	ND

QA/QC SURROGATE RECOVERIES

DCAA (41-126%) 106 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-00

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1191001H(216)
DATE : 01-17-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 12-16-94
DATE EXTRACTED: 12-20-94
DATE ANALYZED : 12-30-94
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4-D	1.60	ND
2,4-DB	5.00	ND
2,4,5-T	0.60	ND
2,4,5-TP (SILVEX)	0.60	ND
DALAPON	1.25	ND
DICAMBA	0.80	ND
DICHLOROPROP	2.40	ND
DINOSEB	0.60	ND
MCPA	500	ND
MCPP	500	ND

QA/QC SURROGATE RECOVERIES

DCAA (41-126%) 113 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

LABORATORY QUALITY CONTROL SEQUENCE

METHOD : EPA 8150 REPORT DATE: 01-17-95
QA SEQUENCE NO. : LABORATORY CONTROL SPIKE
EXTRACTION DATE : 12-20-94
ANALYSIS DATE : 12-31-94

HERBICIDE LABORATORY CONTROL SPIKE RECOVERY FORM

COMPOUND	SPIKE ADDED (ug/L)	AMOUNT FOUND (ug/L)	AMOUNT FOUND CONC. (ug/L)	PERCENT RECOVERY
DALAPON	5.00	ND	2.15	43 %
DICAMBA	3.20	ND	3.31	103 %
CPP	2000	ND	1870	94 %
MCPA	2000	ND	1920	96 %
DICHLOROPROP	9.60	ND	11.8	123 %
2,4-D	6.40	ND	7.35	115 %
2,4,5-TP (SILVEX)	2.40	ND	2.34	98 %
2,4,5-T	2.40	ND	2.20	92 %
2,4-DB	10.0	ND	8.62	86 %
DINOSEB	2.40	ND	2.23	93 %

ATA

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

___ OF ___

CHAIN OF CUSTODY RECORD

PROJ. NO.

ATAS CLIENT NAME: STAN REMINGTON

FORM COMPLETED BY: SMR

LOCATION: WELDON SPRING

ANALYSIS

LM 12/17/94 ID2-#L-BA 2A2

SAMPLE ID	DATE	TIME	MATRIX	GRAB	COMP	PRES	NO. OF CONTAINERS	TOTAL U	GROSS α	GROSS β	NITROS	HERB	PEST	ATRAZINE	TSS					REMARKS	LAB NO.
PW-4	12/16/94			X				X	X	X	X	X	X	X							11910.01
TREATMENT PLANT	"				X										X						

Please [illegible] Turnaround [illegible]

In # Of W[illegible]

5 | 10 | 15

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
[signature]	12/16/94 11:10	[signature] 14°C	12-16-94 11:11				

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

January 25, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #12095.01
WSSRAP

Dear Mr. Remington:

Enclosed is the analytical report for the sample received in our laboratory on January 18, 1995.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeff Carr

Jeffrey A. Carr
Project Manager

Enclosures

JAC/dms

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1209501R(216)

DATE : 01-25-95

SAMPLE MATRIX : WATER
ATAS EPISODE : #12095
DATE SUBMITTED: 01-18-95
DATE ANALYZED : 01-24-95
PROJECT : WSSRAP

CLIENT ID	ATAS ID	UNITS	RADIONUCLIDE	RESULT
NP-EPS2-011895-C	12095.01	pCi/L	GROSS ALPHA	4 +/- 3
NP-EPS2-011895-C	12095.01	pCi/L	GROSS BETA	10 +/- 4
NP-EPS2-011895-C	12095.01	mg/L	TOTAL URANIUM	<0.005

* VARIABILITY OF THE RADIOACTIVE DISINTERGRATION PROCESS (COUNTING ERROR) AT THE 95% CONFIDENCE LEVEL, 1.96σ.
Ci/L= PICOCURIES PER LITER
g/L = PARTS PER MILLION(PPM)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1209501EX(216)

DATE : 01-25-95

SAMPLE MATRIX : WATER
ATAS # : 12095.01
DATE SUBMITTED: 01-18-95
DATE EXTRACTED: 01-19-95
DATE ANALYZED : 01-23-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WSSRAP
SAMPLE ID : NP-EPS2-011895-C

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
2,6 DNT	0.0111	ND
2,4 DNT	0.0222	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	74 %
TETRACHLORO-M-XYLENE(30-150)	92 %

ND= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: BK0125EX(216)
DATE : 01-25-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 01-18-95
DATE EXTRACTED: 01-19-95
DATE ANALYZED : 01-23-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WSSRAP
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
2,6 DNT	0.010	ND
2,4 DNT	0.020	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	73 %
TETRACHLORO-M-XYLENE(30-150)	84 %

ND= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0C

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: QC1130EX(212)

DATE : 01-25-95

SAMPLE MATRIX : WATER
ATAS # : LABORATORY CONTROL SAMPLE
DATE SUBMITTED: 01-18-95
DATE EXTRACTED: 01-19-95
DATE ANALYZED : 01-23-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WSSRAP
SAMPLE ID : LABORATORY CONTROL SAMPLE

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	SPIKE ADDED(ug/L)	AMT. FOUND SMPL.(ug/L)	AMT. FOUND SB(ug/L)	PERCENT RECOVERY
2,6 DNT	0.250	0	0.263	105 %
2,4 DNT	0.250	0	0.245	98 %

	AMT. FOUND SBD (ug/L)	PERCENT RECOVERY	PERCENT DIFFERENCE
2,6 DNT	0.184	102 %	3 %
2,4 DNT	0.217	87 %	12 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-00

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1209501M(216
DATE : 01-25-95

SAMPLE MATRIX : WATER
ATAS # : 12095.01
DATE SUBMITTED: 01-18-95
PROJECT : WSSRAP
SAMPLE ID : #NP - EPS2 - 011895 - C

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	10.0	ug/L	ND	01-20-95	SW 6010
CHROMIUM	1.0	ug/L	ND	01-20-95	SW 6010
LEAD	3.0	ug/L	ND	01-20-95	SW 6010
MANGANESE	1.0	ug/L	ND	01-20-95	SW 6010
MERCURY	0.15	ug/L	ND	01-20-95	SW 7470
SELENIUM	5.0	ug/L	ND	01-20-95	SW 6010

ug/L = PARTS PER BILLION(PPB)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-008

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1209501M(216

DATE : 01-25-95

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	01-20-95	ARSENIC	<10.0	ug/L
METHOD BLANK	01-20-95	CHROMIUM	<1.0	ug/L
METHOD BLANK	01-20-95	LEAD	<3.0	ug/L
METHOD BLANK	01-20-95	MANGANESE	<1.0	ug/L
METHOD BLANK	01-20-95	MERCURY	<0.15	ug/L
METHOD BLANK	01-20-95	SELENIUM	<5.0	ug/L
BLANK SPIKE	01-20-95	ARSENIC	103 %	RECOVERY
BLANK SPIKE	01-20-95	CHROMIUM	102 %	RECOVERY
BLANK SPIKE	01-20-95	LEAD	98 %	RECOVERY
BLANK SPIKE	01-20-95	MANGANESE	101 %	RECOVERY
BLANK SPIKE	01-20-95	MERCURY	101 %	RECOVERY
BLANK SPIKE	01-20-95	SELENIUM	103 %	RECOVERY

E RO NT. AM CH USTY / HOT TIC OR.

WELDON SPRING SITE REMED ACTION PROJECT (WSSRAP)
7295 HIGHWAY 94 SOUTH, ST. CHARLES, MO 63304
TELEPHONE (314) 441-8086 TELEX (314) 447-0803

Validation Documentation ☐

ES&H 4.1.2.1, Rev.6, Effective 11/93

WSSRAP Contact:
Phone Number:
Request Number:

Lab/P.O. #: St. Charles
Requisitioner:
Dept/Cost Code:
Turnaround Time: ☐ Standard ☐ Accelerated ☐ Priority ☐ Urgent ☐ Emergency

#	Sample ID	QC	Date Sampled	Matrix	Cont.	Preserv.	Parameters	LM 1-18-95 GA-AL-IF2	Arch. (Y/N)
1	NP-EPS2-011895-C		1/18/95	WATER	1-1L	HNO_3	As, Cr, Hg, Mn, Se, Pb	12095.01	N
	↓		↓	↓	1-1L	ICE	2,4-DNT	↓	↓
					1-1L	H_2SO_4	NO_3 *		
					1-GALLON	HNO_3	U, Gross α, β		
							* ATAS unable to report due to HNO_3 preservative RCM 1/25/95		

Sampler's Signature: E. Denison
Checked By: Stephen M. Lancaster
Technical Reviewer:

Relinquished By	Received By	Date	Time	Reason for Transfer	Seal Intact? (Y/N)	Cooler Temp
E. Denison	S. Lancaster	1/18/95	1307			
S. Lancaster	Charlton Manuelyn	1/18/95	1406			

AUTHORIZATION

MK-F Procurement Date ES&H Date Site Shipping Officer Date

Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
7295 Highway 94 South
St. Charles, Missouri 63304

January 17, 1995

Distribution:

QUARTERLY SITE AND QUARRY WATER TREATMENT PLANT EFFLUENT DATA SUMMARY -- FOURTH QUARTER 1994

Enclosed please find the subject effluent data summary sheets for the batches of water treated and discharged during the fourth quarter of 1994. Eight batches (S#039 through S#046) and three batches (Q#025 and Q#027) have been treated and discharged from the site and quarry water treatment plants, respectively

If you have any questions, please call me or Bruce Ballew at (314)441-8978.

Sincerely,

Stephen H. McCracken
Project Manager
Weldon Spring Site
Remedial Action Project

Enclosure:
As stated

cc w/o enclosure:
Karen Marcus, MDNR
Martha Windsor/Geri Kountzman, MDNR

Distribution List:

Larry Erickson
Division of Environmental Quality
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, Missouri 65102

Dan Wall
Remedial Project Manager
U.S. Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

Stanley Remington
Consulting Hydrologist
919 Broadmoor Lane
St. Charles, Missouri 63301

Wayne Black
St. Louis County Health Department
111 S. Meremac
2nd Floor
Clayton, Missouri 63105

Conn Roden
St. Louis County Health Department
111 S. Meremac
2nd Floor
Clayton, Missouri 63105

Terry Gloriod
Vice President for Production
St. Louis County Water Department
535 North New Ballas
St. Louis, Missouri 63141

Dave Visintainer
City of St. Louis Water Division
Chain of Rocks Plant
10450 Riverview Drive
St. Louis, Missouri 63137

SUMMARY OF SWTP (BATCH 039) ANALYTICAL RESULTS

10/13/94 0730

From all parties receiving samples on 10/05/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	8.00 mg/l	<5.0 mg/l	NA	NA	NA
TSS	50 / 30	3.00 mg/l	<1.0 mg/l	NA	NA	NA
ARSENIC	0.1	<0.004 mg/l	<0.010 mg/l	NA	NA	0.00181 mg/l
CHROMIUM	0.1	<0.005 mg/l	<0.010 mg/l	NA	NA	0.00049 mg/l
LEAD	0.1	<0.00170 mg/l	<0.0025 mg/l	NA	NA	<0.001 mg/l
MANGANESE	0.1	<0.003 mg/l	<0.020 mg/l	NA	NA	0.06339 mg/l
MERCURY	0.004	<0.00010 mg/l	<0.0002 mg/l	NA	NA	<0.0001 mg/l
SELENIUM	0.02	0.00309 mg/l	<0.005 mg/l	NA	NA	0.00215 mg/l
CYANIDE, AMENABLE	0.0075	<0.004 mg/l	<0.005 mg/l	NA	NA	<0.0009 mg/l
2,4-DNT	0.22 ug/l	<0.019 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	2.86 mg/l	1.91 mg/l	NA	NA	1.9 mg/l
NITRATE + NITRITE AS N	20	0.0685 mg/l	<0.05 mg/l	NA	NA	0.52 mg/l
SULFATE	500	209 mg/l	200 mg/l	NA	NA	241.1 mg/l
CHLORIDE	*	256 mg/l	260 mg/l	NA	NA	180.15 mg/l
GROSS ALPHA	*	-1.00 ±2.40 pCi/l	2.6 ±1.1 pCi/l	NA	NA	1.9 ±1.1 pCi/l
GROSS BETA	*	7.20 ±4.20 pCi/l	9.8 ±0.9 pCi/l	NA	NA	9.6 ±1.9 pCi/l
URANIUM, TOTAL	**	0.44 ±0.05 pCi/l	0.3 ±0.2 pCi/l	NA	NA	
RADIUM-226	*	0.38 ±0.36 pCi/l	0.3 ±0.1 pCi/l	NA	NA	
RADIUM-228	*	2.20 ±1.40 pCi/l	<1.0 pCi/l	NA	NA	
THORIUM-230	*	<0.19 pCi/l	0.2 ±0.1 pCi/l	NA	NA	NA
THORIUM-232	*	<0.19 pCi/l	<0.1 pCi/l	NA	NA	NA
pH (Std. Units)	6 - 9	6.91		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<0.19 ug/l	<5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already sampled this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 040) ANALYTICAL RESULTS

10/25/94 01430

From all parties receiving samples on 10/17/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	18.0 mg/l		NA	NA	NA
TSS	50 / 30	<2.00 mg/l		NA	NA	NA
ARSENIC	0.1	<0.004 mg/l	<0.025 mg/l	NA		0.00194 mg/l
CHROMIUM	0.1	<0.005 mg/l		NA		0.00087 mg/l
LEAD	0.1	<0.00170 mg/l		NA		<0.001 mg/l
MANGANESE	0.1	<0.003 mg/l	<0.020 mg/l	NA		0.00285 mg/l
MERCURY	0.004	0.00010 mg/l		NA		<0.0001 mg/l
SELENIUM	0.02	<0.003 mg/l		NA		0.00329 mg/l
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	<0.0009 mg/l
2,4-DNT	0.22 ug/l	<0.022 ug/l	<0.025 ug/l	NA		<0.032 ug/l
FLUORIDE	4.0	1.94 mg/l		NA	NA	2.184 mg/l
NITRATE + NITRITE AS N	20	0.553 mg/l	<0.09 mg/l	NA		<0.044 mg/l
SULFATE	500	364 mg/l		NA	NA	363.15 mg/l
CHLORIDE	*	170 mg/l		NA	NA	278.4 mg/l
GROSS ALPHA	*	2.59 pCi/l	4.6 ±2.6 pCi/l	NA	6 ±4 pCi/l	
GROSS BETA	*	4.64 pCi/l	16.0 ±2.8 pCi/l	NA	4± 5 pCi/l	11.0 ±2.0 pCi/l
URANIUM, TOTAL	**	1.22 pCi/l	0.8 ±0.1 pCi/l	NA	<3.4 pCi/l	
RADIUM-225	*	***		NA	NA	
RADIUM-228	*	***		NA	NA	
THORIUM-230	*	***		NA	NA	NA
THORIUM-232	*	***		NA	NA	NA
pH (Std. Units)	6 – 9	7.66		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<0.19 ug/l	<3.0 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already sampled this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 041) ANALYTICAL RESULTS

11/4/94 01330

From all parties receiving samples on 10/31/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	10.0 mg/l		NA	NA	NA
TSS	50 / 30	3.0 mg/l		NA	NA	NA
ARSENIC	0.1	<0.004 mg/l	<0.025 mg/l	NA	NA	0.00100 mg/l
CHROMIUM	0.1	<0.009 mg/l		NA	NA	0.00068 mg/l
LEAD	0.1	<0.00170 mg/l		NA	NA	<0.001 mg/l
MANGANESE	0.1	<0.006 mg/l	<0.010 mg/l	NA	NA	0.00208 mg/l
MERCURY	0.004	<0.00010 mg/l		NA	NA	<0.0001 mg/l
SELENIUM	0.02	0.00695 mg/l		NA	NA	0.00100 mg/l
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.022 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	2.44 mg/l		NA	NA	<0.05 mg/l
NITRATE + NITRITE AS N	20	0.158 mg/l	<0.05 mg/l	NA	NA	0.16 mg/l
SULFATE	500	270 mg/l		NA	NA	284.05 mg/l
CHLORIDE	*	163 mg/l		NA	NA	157.2 mg/l
GROSS ALPHA	*	2.00 ±3.00 pCi/l	1.7 ±1.5 pCi/l	NA	NA	3.2 ±1.3 pCi/l
GROSS BETA	*	14.2 ±4.90 pCi/l	13.6 ±1.1 pCi/l	NA	NA	10.5 ±1.1 pCi/l
URANIUM, TOTAL	**	1.14 ±0.11 pCi/l	0.8 ±0.09 pCi/l	NA	NA	<1.0 pCi/l
RADIUM-226	*	***		NA	NA	
RADIUM-228	*	***		NA	NA	
THORIUM-230	*	***		NA	NA	NA
THORIUM-232	*	***		NA	NA	NA
pH (Std. Units)	6 - 9	6.42		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<0.25 ug/l	<0.5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already sampled this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 042) ANALYTICAL RESULTS

11/14/94 1530

From all parties receiving samples on 11/8/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	14.0 mg/l		NA	NA	NA
TSS	50 / 30	11 mg/l		NA	NA	NA
ARSENIC	0.1	0.0075 mg/l	<0.020 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
LEAD	0.1	0.001 mg/l		NA	NA	
MANGANESE	0.1	0.004 mg/l		NA	NA	
MERCURY	0.004	<0.0002 mg/l		NA	NA	
SELENIUM	0.02	0.0026 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	<0.232 ug/l
FLUORIDE	4.0	2.1 mg/l		NA	NA	[illegible] mg/l
NITRATE + NITRITE AS N	20	0.14 mg/l	.12 mg/l	NA	NA	<0.022 mg/l
SULFATE	500	240 mg/l		NA	NA	358.4 mg/l
CHLORIDE	*	200 mg/l		NA	NA	143.4 mg/l
GROSS ALPHA	*	1.0 ±2.8 pCi/l	1.4 ±2.9 pCi/l	NA	NA	2.9 ±1.3 pCi/l
GROSS BETA	*	14.1 ±3.6 pCi/l	10.8 ±3.8 pCi/l	NA	NA	
URANIUM, TOTAL	**	1.3 ±0.069 pCi/l	0.8 ±0.09 pCi/l	NA	NA	1.3 ±0.3 pCi/l
RADIUM-226	*	Due 11/16/94***		NA	NA	
RADIUM-228	*	Due 11/16/94***		NA	NA	
THORIUM-230	*	Due 11/16/94***		NA	NA	NA
THORIUM-232	*	Due 11/16/94***		NA	NA	NA
pH (Std. Units)	6 – 9	6.56		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<1.0 ug/l	<0.5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 043) ANALYTICAL RESULTS

11/23/94 1030

From all parties receiving samples on 11/17/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<10.0 mg/l		NA	NA	NA
TSS	50 / 30	<5.0 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
LEAD	0.1	<0.002 mg/l		NA	NA	
MANGANESE	0.1	0.0047 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.0002 mg/l		NA	NA	
SELENIUM	0.02	0.0049 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.026 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	2.0 mg/l		NA	NA	2.5 mg/l
NITRATE + NITRITE AS N	20	0.24 mg/l	<0.22 mg/l	NA	NA	<0.1 mg/l
SULFATE	500	250 mg/l		NA	NA	237.5 mg/l
CHLORIDE	*	260 mg/l		NA	NA	251.2 mg/l
GROSS ALPHA	*	0.7±2.7 pCi/l	2.1 ±2.8 pCi/l	NA	NA	2.4 ±1.2 pCi/l
GROSS BETA	*	8.6 ±4.2 pCi/l	11.0 ±1.0 pCi/l	NA	NA	9.0 ±1.1 pCi/l
URANIUM, TOTAL	**	0.479 ±0.026 pCi/l	0.6 ±0.1 pCi/l	NA	NA	<1.0 pCi/l
RADIUM-226	*	***		NA	NA	
RADIUM-228	*	***		NA	NA	
THORIUM-230	*	***		NA	NA	NA
THORIUM-232	*	***		NA	NA	NA
pH (Std. Units)	6 – 9	6.27		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<1.0 ug/l	<2.0 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already analyzed this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 044) ANALYTICAL RESULTS

1/16/95 1030

From all parties receiving samples on 11/29/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<5.0 mg/l		NA	NA	NA
TSS	50 / 30	2.00 mg/l		NA	NA	NA
ARSENIC	0.1	<0.004 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	0.00224 mg/l		NA	NA	
LEAD	0.1	<0.00170 mg/l		NA	NA	
MANGANESE	0.1	<0.004 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.0001 mg/l		NA	NA	
SELENIUM	0.02	0.00321 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.022 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	2.28 mg/l		NA	NA	1.92 mg/l
NITRATE + NITRITE AS N	20	0.368 mg/l	0.26 mg/l	NA	NA	0.23 mg/l
SULFATE	500	339 mg/l		NA	NA	302.8 mg/l
CHLORIDE	*	179 mg/l		NA	NA	229.7 mg/l
GROSS ALPHA	*	2.31 pCi/l		NA	NA	1.3 ±0.9 pCi/l
GROSS BETA	*	5.00 pCi/l		NA	NA	8.2 ±1.1 pCi/l
URANIUM, TOTAL	**	<0.677 mg/l		NA	NA	<1.0 pCi/l
RADIUM-226	*	<1 pCi/l		NA	NA	
RADIUM-228	*	<5 pCi/l		NA	NA	
THORIUM-230	*	<1 pCi/l		NA	NA	NA
THORIUM-232	*	<1 pCi/l		NA	NA	NA
pH (Std. Units)	6 – 9	7.1		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<1.0 ug/l	<0.5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already analyzed this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 045) ANALYTICAL RESULTS

1/16/95 0930

From all parties receiving samples on 12/08/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<10.0 mg/l		NA	NA	NA
TSS	50 / 30	<5 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.003 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
LEAD	0.1	<0.010 mg/l		NA	NA	
MANGANESE	0.1	0.002 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.0002 mg/l		NA	NA	
SELENIUM	0.02	<0.003 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	1.7 mg/l		NA	NA	1.89 mg/l
NITRATE + NITRITE AS N	20	0.22 mg/l	<0.25 mg/l	NA	NA	2.9 mg/l
SULFATE	500	340 mg/l		NA	NA	361.6 mg/l
CHLORIDE	*	190 mg/l		NA	NA	180.9 mg/l
GROSS ALPHA	*	0.5 ±2.9 pCi/l	0.5 ±2.9 pCi/l	NA	NA	2.5 ±1.3 pCi/l
GROSS BETA	*	9.1 ±3.6 pCi/l	9.4 ±1.8 pCi/l	NA	NA	8.6 ±1.1 pCi/l
URANIUM, TOTAL	**	0.292 ±0.016 pCi/l	0.2 ±0.07 pCi/l	NA	NA	<1.0 pCi/l
RADIUM-226	*	***		NA	NA	
RADIUM-228	*	***		NA	NA	
THORIUM-230	*	***		NA	NA	NA
THORIUM-232	*	***		NA	NA	NA
pH (Std. Units)	6 - 9	6.25		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<1.0 ug/l	<0.5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already analyzed this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 046) ANALYTICAL RESULTS

12/22/94 1730

From all parties receiving samples on 12/19/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<20.0 mg/l		NA	NA	NA
TSS	50 / 30	<12.0 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
LEAD	0.1	<0.002 mg/l		NA	NA	
MANGANESE	0.1	0.0013 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	0.00061 mg/l		NA	NA	
SELENIUM	0.02	<0.003 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	
FLUORIDE	4.0	1.5 mg/l		NA	NA	
NITRATE + NITRITE AS N	20	0.34 mg/l	<0.37 mg/l	NA	NA	
SULFATE	500	250 mg/l		NA	NA	
CHLORIDE	*	140 mg/l		NA	NA	
GROSS ALPHA	*	1.4 ±2.5 pCi/l	2.4 ±2.0 pCi/l	NA	NA	1.3 ±0.9 pCi/l
GROSS BETA	*	7.9 ±3.3 pCi/l	10.0 ±1.8 pCi/l	NA	NA	7.4 ±1.0 pCi/l
URANIUM, TOTAL	**	0.190 ±0.011 pCi/l	0.2 ±0.07 pCi/l	NA	NA	<1.0 pCi/l
RADIUM-226	*	***		NA	NA	
RADIUM-228	*	***		NA	NA	
THORIUM-230	*	***		NA	NA	NA
THORIUM-232	*	***		NA	NA	NA
pH (Std. Units)	6 - 9	6.88		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<0.88 ug/l	<0.5 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already analyzed this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF SWTP (BATCH 047) ANALYTICAL RESULTS

1/16/95 0830

From all parties receiving samples on 12/26/94

PARAMETER	NPDES LIMITS (mg/l) Unless noted	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<20.0 mg/l		NA	NA	NA
TSS	50 / 30	<12.0 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
LEAD	0.1	<0.002 mg/l		NA	NA	
MANGANESE	0.1	0.0014 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.00020 mg/l		NA	NA	
SELENIUM	0.02	0.003 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	
FLUORIDE	4.0	2.0 mg/l		NA	NA	
NITRATE + NITRITE AS N	20	0.41 mg/l	<0.62 mg/l	NA	NA	
SULFATE	500	230 mg/l		NA	NA	
CHLORIDE	*	100 mg/l		NA	NA	
GROSS ALPHA	*	1.9 ±2.3 pCi/l		NA	NA	3.1 ±1.3 pCi/l
GROSS BETA	*	7.9 ±2.5 pCi/l		NA	NA	8.6 ±1.6 pCi/l
URANIUM, TOTAL	**	1.903 ±0.10 pCi/l		NA	NA	<1.0 pCi/l
RADIUM-226	*	0.2 ±0.5 pCi/l		NA	NA	
RADIUM-228	*	6.7 ±5.0 pCi/l		NA	NA	
THORIUM-230	*	0.0 ±0.5 pCi/l		NA	NA	NA
THORIUM-232	*	0.0 ±0.5 pCi/l		NA	NA	NA
pH (Std. Units)	6 - 9	7.29		NA	NA	
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA		NA	NA	NA
2. VOA	*	NA		NA	NA	NA
3. PCBs	*	<0.80 ug/l	<1.0 ug/l	NA	NA	NA

* = Monitoring Parameter

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Monitoring parameter once per month. Already analyzed this month.

NA = Not Analyzed

= Data received after batch was discharged

SUMMARY OF QWTP (BATCH 025) ANALYTICAL RESULTS

10/31/94 0740

FROM ALL AGENCIES RECEIVING SAMPLES ON 10/20/94

PARAMETER	NPDES LIMITS (mg/l)	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	5.00 mg/l		NA	NA	NA
TSS	50 / 30	2.00 mg/l		NA	NA	NA
ARSENIC	0.1	<0.004 mg/l	<0.010 mg/l	NA	NA	<0.001 mg/l
CHROMIUM	0.1	<0.009 mg/l		NA	NA	<0.0001 mg/l
COPPER	1	<0.012 mg/l		NA	NA	<0.001 mg/l
LEAD	0.1	<0.00170 mg/l		NA	NA	<0.001 mg/l
MANGANESE	0.1	0.0170 mg/l	<0.020 mg/l	NA	NA	0.0171 mg/l
MERCURY	0.004	<0.00010 mg/l		NA	NA	<0.0001 mg/l
SELENIUM	0.02	0.00625 mg/l		NA	NA	0.00175 mg/l
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	<0.0002 mg/l
2,4-DNT	0.22 ug/l	<0.022 ug/l	<0.023 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	<0.03 mg/l		NA	NA	<0.02 mg/l
NITRATE+NITRITE AS N	*	<0.10 mg/l	<0.01 mg/l	NA	NA	<0.1 mg/l
SULFATE	500	330 mg/l		NA	NA	349.65 mg/l
CHLORIDE	*	273 mg/l		NA	NA	272.7 mg/l
GROSS ALPHA	*	2.1 ±5.8 pCi/l	2.9 ±2.4 pCi/l	NA	NA	3.2 ±1.6 pCi/l
GROSS BETA	*	11 ±5 pCi/l	13.4 ±2.3 pCi/l	NA	NA	10.1 ±2.5 pCi/l
URANIUM, TOTAL	**	2.5 pCi/l	0.8 ±0.1 pCi/l	NA	NA	2.8 ±0.4 pCi/l
RADIUM-226	*	<1.0 pCi/l		NA	NA	NA
RADIUM-228	*	<5.0 pCi/l		NA	NA	NA
THORIUM-230	*	<1.0 pCi/l		NA	NA	NA
THORIUM-232	*	<1.0 pCi/l		NA	NA	NA
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA	NA	NA	NA	NA
2. VOA	*	NA	NA	NA	NA	NA
3. PCBs	*	NA	NA	NA	NA	NA
4. PESTICIDES	*	NA				
5. METALS / OTHERS	*					
pH	6.0 – 9.0 S.U.	6.52	NA	NA	NA	NA

* =MONITORING ONLY, NO PERMIT DISCHARGE LIMITS

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Parameter required once/month.

NA = Not analyzed by agency.

= Data received after batch was discharged

SUMMARY OF QWTP (BATCH 026) ANALYTICAL RESULTS

1/16/95 1040

FROM ALL AGENCIES RECEIVING SAMPLES ON 11/21/94

PARAMETER	NPDES LIMITS (mg/l)	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<10.0 mg/l		NA	NA	NA
TSS	50 / 30	<5.0 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
COPPER ***	1	<0.003 pCi/l		NA	NA	
LEAD	0.1	<0.002 pCi/l		NA	NA	
MANGANESE	0.1	0.016 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.0002 mg/l		NA	NA	
SELENIUM	0.02	<0.003 mg/l		NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	0.14 mg/l		NA	NA	1.69 mg/l
NITRATE+NITRITE AS N	*	<0.1 mg/l	<0.011 mg/l	NA	NA	0.34 mg/l
SULFATE	500	250 mg/l		NA	NA	240.7 mg/l
CHLORIDE	*	220 mg/l		NA	NA	299.8 mg/l
GROSS ALPHA	*	4.9 ±4.0 pCi/l	2.2 ±1.7 pCi/l	NA	NA	1.3 ±1.0 pCi/l
GROSS BETA	*	10 ±3.6 pCi/l	11.3 ±1.7 pCi/l	NA	NA	8.9 ±1.1 pCi/l
URANIUM, TOTAL	**	1.984 ±0.10 pCi/l	0.3 ±0.08 pCi/l	NA	NA	1.8 ±0.3 pCi/l
RADIUM-226 ***	*	0.0±0.2 pCi/l		NA	NA	NA
RADIUM-228 ***	*	0.5 ±0.6 pCi/l		NA	NA	NA
THORIUM-230 ***	*	0.0 ±0.5 pCi/l		NA	NA	NA
THORIUM-232 ***	*	0.0 ±0.7 pCi/l		NA	NA	NA
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	NA	NA	NA	NA	NA
2. VOA	*	NA	NA	NA	NA	NA
3. PCBs	*	NA	NA	NA	NA	NA
4. PESTICIDES	*	NA				
5. METALS / OTHERS	*					
pH	6.0 - 9.0 S.U.	8.21	NA	NA	NA	NA

* =MONITORING ONLY, NO PERMIT DISCHARGE LIMITS

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Parameter required once/month.

NA = Not analyzed by agency.

= Data received after batch was discharged

SUMMARY OF QWTP (BATCH 027) ANALYTICAL RESULTS

12/16/94 1040

FROM ALL AGENCIES RECEIVING SAMPLES ON 12/13/94

PARAMETER	NPDES LIMITS (mg/l)	PMC DATA RESULTS	MoDNR DATA RESULTS	EPA DATA RESULTS	ST. CHARLES COUNTY DATA RESULTS	ST. LOUIS COUNTY H & W DATA RESULTS
COD	90 / 60	<20.0 mg/l		NA	NA	NA
TSS	50 / 30	<12 mg/l		NA	NA	NA
ARSENIC	0.1	<0.003 mg/l	<0.005 mg/l	NA	NA	
CHROMIUM	0.1	<0.003 mg/l		NA	NA	
COPPER ***	1	<0.003 mg/l		NA	NA	
LEAD	0.1	<0.002 mg/l		NA	NA	
MANGANESE	0.1	0.0149 mg/l	<0.020 mg/l	NA	NA	
MERCURY	0.004	<0.0002 mg/l	<0.0002 mg/l	NA	NA	
SELENIUM	0.02	0.0034 mg/l	<0.005 mg/l	NA	NA	
CYANIDE, AMENABLE	0.0075	<0.004 mg/l		NA	NA	
2,4-DNT	0.22 ug/l	<0.20 ug/l	<0.025 ug/l	NA	NA	<0.032 ug/l
FLUORIDE	4.0	0.18 mg/l		NA	NA	<0.02 mg/l
NITRATE+NITRITE AS N	*	<0.05 mg/l	<0.011 mg/l	NA	NA	0.51 mg/l
SULFATE	500	300 mg/l		NA	NA	299.85 mg/l
CHLORIDE	*	200 mg/l		NA	NA	178.8 mg/l
GROSS ALPHA	*	3.5 ±3.7 pCi/l		NA	NA	2.0 ±1.1 pCi/l
GROSS BETA	*	14.6 ±3.4 pCi/l		NA	NA	13.0 ±1.1 pCi/l
URANIUM, TOTAL	**	2.30 ±0.12 pCi/l		NA	NA	3.3 ±0.5 pCi/l
RADIUM-226 ***	*	<1.0 pCi/l		NA	NA	NA
RADIUM-228 ***	*	<5.0 pCi/l		NA	NA	NA
THORIUM-230 ***	*	<0.046 pCi/l		NA	NA	NA
THORIUM-232 ***	*	<0.059 pCi/l		NA	NA	NA
PRIORITY POLLUTANTS	(SEE BELOW)					
1. SEMI-VOA	*	1 Detect (Note 1)	NA	NA	NA	NA
2. VOA	*	1 Detect (Note 2)	1 Detect (Note 3)	NA	NA	NA
3. PCBs	*	<0.80 ug/l	<0.5 ug/l	NA	NA	NA
4. PESTICIDES	*	<5 ug/l	<0.5 ug/l			
5. METALS / OTHERS	*					
pH	6.0 – 9.0 S.U.	7.0	NA	NA	NA	NA

* =MONITORING ONLY, NO PERMIT DISCHARGE LIMITS

** = Design Value of 30 pCi / l; Not to Exceed 100 pCi / l

*** = Parameter required once/month.

Note 1: 2.3 ug/l Di-n-butylphthalate

Note 2: 12 ug/l Acetone

Note 3: 6 ug/l benzene

NA = Not analyzed by agency.

= Data received after batch was discharged

APPENDIX D
Second Quarter Summary Sheet

This text briefly summarizes laboratory results received and verified during Fourth Quarter 1994. Data received during Fourth Quarter 1994 can be found in this appendix following this text. Due to the amount of data from previous quarters being received and verified at the Weldon Spring Site Remedial Action Project, very little fourth quarter data are reported in this summary. Most of the data presented are from Second and Third Quarters 1994, which were verified during fourth quarter.

GROUNDWATER

WELDON SPRING CHEMICAL PLANT/RAFFINATE PITS

Nitroaromatics: Nitroaromatic results were available for the following locations (sampling period is shown in parenthesis[1]):

GW-2003 (S294)	GW-2044 (Q294)	GW-3026 (Q394)
GW-3027 (Q394)	GW-4001 (S294)	

The nitroaromatic results remained within historic ranges.

Radiological: Results for total uranium were available for the following locations:

GW-2023 (S194)	GW-2024 (S194)	GW-2030 (Q294)	GW-2033 (Q294)
GW-2034 (Q294)	GW-2044 (Q294)	GW-3003 (Q294)	GW-3026 (Q394)
GW-3027 (Q394)	GW-4001 (S294)	GW-4007 (S294)	GW-4009 (S194)
GW-4010 (S194)(S294)	GW-4011 (S194)	GW-4012 (S194)	GW-4013 (S194)
GW-4014 (S194)	GW-4019 (S194)	GW-4020 (Q294)(Q394)	GW-4022 (S194)
GW-4023 (S294)			

The uranium results remained within historic ranges.

Geochemical/anions: Geochemical/anions were available for the following locations:

GW-2001 (S294)	GW-2002 (S294)	GW-2003 (S294)	GW-2004 (S294)
GW-2008 (S294)	GW-2021 (S294)	GW-2023 (S194)	GW-2024 (S194)
GW-2025 (S294)	GW-2034 (Q394)	GW-3019 (S194)	GW-3024 (Q194)(Q294)
GW-3025 (Q194)(Q294)	GW-3026 (Q394)	GW-3027 (Q394)	GW-4009 (S194)

---

[1] Locations are sampled on a semiannual (S), quarterly (Q), bimonthly (B), and/or monthly (XX) basis. The last set of digits in an identification number denotes when the sample was collected. For example, -Q294 was collected during Second Quarter 1994; -O594 was collected May 1994; and B694 during the sixth bimonthly period (November/December).

GW-4010 (S194)	GW-4011 (S194)	GW-4012 (S194)	GW-4013 (S194)
GW-4014 (S194)	GW-4019 (S194)	GW-4020 (S194)	GW-4022 (S194)

Geochemical and anion results remained within historic ranges, with the exception of chromium and beryllium.

First, a new chromium high of 252 μg/l was reported for GW-4020. These values are thought to be analytical artifacts; however, investigation could not confirm this hypothesis. The previous high chromium for this location was 26.5 μg/l.

Second, beryllium highs of 5.2 μg/l, 5.6 μg/l, and 8.1 μg/l were reported for GW-2002, GW-3024, and GW-3025, respectively. These values are also thought to be analytical artifacts; however, investigation could not confirm this hypothesis. Beryllium values at each of these locations have historically been <1.0 μg/l. Subsequent measurements at GW-3024 and GW-3025 have been <1.0 μg/l.

WELDON SPRING QUARRY

Nitroaromatics: The nitroaromatic results were available for the following locations:

GW-1002 (0294, 0694, 0794, and 0894)	GW-1004 (0294, 0694, 0794, and 0894)	GW-1005 (0294, 0694, 0794, and 0894)
GW-1006 (B194, B394, and B494)	GW-1007 (B394 and B494)	GW-1008 (B394 and B494)
GW-1009 (B394 and B494)	GW-1010 (Q394)	GW-1011 (Q394)
GW-1012 (090894)	GW-1013 (B194)	GW-1014 (B194)
GW-1015 (B194)	GW-1016 (B194)	GW-1017 (B494)
GW-1018 (B494)	GW-1021 (B494)	GW-1022 (B494)
GW-1023 (B494)	GW-1024 (Q194 and Q394)	GW-1026 (Q394)
GW-1027 (B494)	GW-1028 (Q394)	GW-1029 (B394, B494, and B594)
GW-1030 (061794 and B494)	GW-1031 (B394 and B494)	GW-1032 (B394 and B494)
GW-1034 (Q294 and Q394)	GW-1038 Q394)	GW-1039 (Q394)
GW-PW02 (Q294 and Q394)	GW-PW04 (Q294 and Q394)	GW-PW05 (Q294 and Q394)
GW-PW06 (Q294 and Q394)	GW-PW07 (Q294 and Q394)	GW-PW08 (Q294 and Q394)
GW-PW09 (062294, Q294, and Q394)	GW-RMW1 (Q194 and Q294)	GW-RMW2 (Q194 and Q294)
GW-RMW3 (Q194 and Q294)	GW-RMW4 (Q194 and Q294)	GW-FINW (Q294 and Q394)
GW-RAWW (Q294 and Q394)		

Locations south of the Femme Osage Slough, the St. Charles County monitoring wells and production wells, and the treated and untreated waters from the St. Charles County Treatment Plant exhibited no detectable concentrations. Locations around the quarry and north of the slough were within historic ranges. Detectable levels of nitrobenzene were reported at GW-1002, GW-1004, and GW-1006 during February. It has been concluded that these values

are artificial, based on historical data indicating that no detectable levels have been identified and subsequent data has not reported any detectable concentrations at these or any adjacent locations.

Radiological: Total uranium data were available for the following locations:

GW-1002 (0794)	GW-1004 (0794)	GW-1006 (B394, B494, and B594)
GW-1007 (B394 and B494)	GW-1008 (B394 and B494)	GW-1009 (B394 and B494)
GW-1010 (Q294)	GW-1011 (Q294)	GW-1012 (Q294)
GW-1013 (B394 and B494)	GW-1014 (B394 and B494)	GW-1015 (B394 and B494)
GW-1016 (B394 and B494)	GW-1017 (B394, B494 and B594)	GW-1018 (B394)
GW-1019 (B394)	GW-1020 (B394)	GW-1021 (B394 and B494)
GW-1022 (B394 and B494)	GW-1023 (B394, B494, and B594)	GW-1024 (Q294 and Q394)
GW-1026 (Q294)	GW-1027 (B294 and B394)	GW-1028 (Q194)
GW-1029 (B394, B494, and B594)	GW-1030 (B494)	GW-1031 (B394)
GW-1032 (B194 and B394)	GW-1033 (B394 and B494)	GW-1038 (Q294)
GW-1039 (Q294)	GW-PW02 (Q294)	GW-PW04 (Q294)
GW-PW05 (Q194 and Q294)	GW-PW06 (Q194 and Q294)	GW-PW07 (Q194 and Q294)
GW-PW08 (Q194 and Q294)	GW-PW09 (062294 and Q294)	GW-RMW1 (Q294)
GW-RMW2 (Q294)	GW-RMW3 (Q294)	GW-RMW4 (Q294)
GW-FINW (Q194 and Q294)	GW-RAWW (Q194 and Q294)	

The results for all of these locations except GW-1002 and GW-1020 are within historic ranges. A value of 5.45 pCi/l was reported for GW-1002 during July. The average for this location is 2.5 pCi/l with an historic high of 4.61 pCi/l. It has been considered that this value is representative of natural variation at this location. A value of 4.3 pCi/l was reported for GW-1020 during the third bimonthly period. The average for this location is 1.0 pCi/l with an historic high of 3.8 pCi/l during 1993. Results at this location will be closely watched for any signs of upward trends.

Results for Ra-226, Ra-228, and isotopic thorium were available for the following locations:

GW-1002 (0794)	GW-1004 (0794)	GW-1006 (B494 and B594)
GW-1007 (B494)	GW-1008 (B494)	GW-1009 (B494)
GW-1013 (B494)	GW-1014 (B494)	GW-1017 (B494)
GW-1021 (B494)	GW-1023 (B494)	GW-1024 (Q394)
GW-1028 (Q194)	GW-1033 (B494)	GW-PW05 (Q194)
GW-PW06 (Q194)	GW-PW07 (Q194)	GW-PW08 (Q194)
GW-FINW (Q194)	GW-RAWW (Q194)	

The results for Ra-226 and Ra-228 at all of these locations except GW-1024 are within historic ranges. A level of 1.13 pCi/l for Ra-226 was reported for GW-1024 during the third quarter. The average for this location is 0.65 pCi/l with an historic high of 0.78 pCi/l. The range in values for the Missouri River is 0.38 pCi/l to 1.02 pCi/l. It has been concluded that this value

is a result of natural variation of radium levels in the alluvial groundwater, but subsequent data from this location will be watched for any signs of upward trends.

The isotopic thorium results at all of these locations except GW-1006 were within historic levels. A value of 4.72 pCi/l for Th-228 was reported during the fifth bimonthly period. Elevated Ra-226, Ra-228, and isotopic thorium data have been observed at this location since June 1994. It is hypothesized that GW-1006 is situated so that it intercepts groundwater from the alluvium/bedrock contact. Fracture flow is the expected transport mechanism from the quarry and is being monitored by this location. Operational data has shown an increase in the levels of radium and thorium, which is likely due to disturbance of bulk wastes in the quarry.

Isotopic thorium data for GW-FINW, GW-PW05, GW-PW06, GW-PW07, GW-PW08, and GW-RAWW were analyzed by an off-site contract laboratory that was experiencing analytical problems regarding isotopic thorium analyses. These values are artificially biased based on evidence of laboratory method blanks indicating isotopic thorium activity. This problem is a continuation of the data problems that were identified in last quarter's report. These locations were reanalyzed, and the results for these locations were within historic ranges for each isotope. The problem regarding the analysis of isotopic thorium by the off-site laboratory was the use by the laboratory of an excessive amount of Th-229 as a tracer. Tracers are used to assess the chemical yield by the laboratory. Use of excessive Th-229 can cause "bleed over" into the Th-228 and Th-230 peaks that are used by the laboratory to determine the activity of the isotopes. The positive Th-232 activity, as well as the positive Th-228 and Th-230 activity, are likely the result of less than optimum sample preparation causing poor chemical yield. The values of activity, error, and minimum detectable activity (MDA) vary inversely with the chemical yield. This problem has been corrected by changing the preparation technique to a method that should improve the counting efficiency and the resolution of the alpha spectra. The laboratory is also examining a procedure for changing the amount of tracer (Th-229) that will be added to the samples for the determination of chemical yield.

Gross alpha and gross beta data were available for the following locations:

GW-1002 (0794)	GW-1004 (0794)	GW-1008 (B494)
GW-1009 (B494)	GW-1013 (B494)	GW-1014 (B494)
GW-1017 (B394, B494, and B594)	GW-1018 (B394)	GW-1019 (B394)
GW-1020 (B394)	GW-1021 (B394 and B494)	GW-1022 (B394)
GW-1023 (B394, B494, and B594)	GW-1024 (Q294 and Q394)	GW-1028 (Q194)
GW-1033 (B394 and B494)	GW-PW02 (Q294)	GW-PW04 (Q294)
GW-PW05 (Q194 and Q294)	GW-PW06 (Q194 and Q294)	GW-PW07 (Q194 and Q294)
GW-PW08 (Q194 and Q294)	GW-PW09 (062294 and Q294)	GW-RMW1 (Q194)

GW-RMW2 (Q294)	GW-RMW3 (Q294)	GW-RMW4 (Q294)
GW-FINW (Q194 and Q294)	GW-RAWW (Q194 and Q294)	

Results for all of these locations except GW-1033 were within historic ranges. A value of 19.0 pCi/l was reported for gross beta. The average for this location is 7.2 pCi/l with an historic high of 9.0 pCi/l in 1993. Total uranium and gross alpha levels at this location were within historic ranges. It is speculated that this value for gross beta, is artificially biased based on laboratory QC data. This location is sampled bimonthly for gross beta, and this gross beta value will be compared to subsequent data to evaluate the presence of an upward trend.

Anions: Sulfate data were available for the following locations:

GW-1002 (0794 and 0894)	GW-1004 (0894)	GW-1006 (B394)
GW-1007 (B394)	GW-1008 (B394 and B494)	GW-1009 (B394 and B494)
GW-1010 (Q294 and Q394)	GW-1011 (Q294 and Q394)	GW-1012 (090894 and Q294)
GW-1013 (B394 and B494)	GW-1014 (B494)	GW-1015 (B394 and B494)
GW-1016 (B394 and B494)	GW-1017 (B394, B494, and B594)	GW-1018 (B394 and B494)
GW-1019 (B394 and B494)	GW-1020 (B394 and B494)	GW-1021 (B394 and B494)
GW-1022 (B394 and B494)	GW-1023 (B394, B494, and B594)	GW-1024 (Q294 and Q394)
GW-1026 (Q294 and Q394)	GW-1028 (Q194 and Q394)	GW-1029 (B594)
GW-1032 (B394)	GW-1033 (B394 and B494)	GW-1038 (Q294)
GW-1039 (Q294)	GW-PW02 (Q294)	GW-PW05 (Q194)
GW-PW06 (Q194)	GW-PW07 (Q194)	GW-PW08 (Q194)
GW-PW09 (Q294)	GW-RMW1 (Q294)	GW-RMW2 (Q294)
GW-RMW3 (Q294)	GW-RMW4 (Q294)	GW-FINW (Q194)
GW-RAWW (Q194)		

The results for sulfate were within historic ranges for these locations.

The remainder of the data in this appendix is geochemical data that will be used to further characterize the groundwater quality and contaminant transport mechanisms in the vicinity of the quarry and the well field.

WASTE MANAGEMENT UNITS

Quarry Water Treatment Plant Equalization Pond:

Nitroaromatic compound results were available for the following locations:

GW-1035 (Q394)	GW-1036 (Q394)	GW-1037 (Q394)
GW-1040 (Q394)	GW-1041 (Q394)	

No detectable concentrations were reported for these locations.

Total uranium and isotopic uranium results were available for the following locations:

GW-1035 (Q294)	GW-1036 (Q294)	GW-1037 (Q294)
GW-1040 (Q294)	GW-1041 (Q294)	

Detection monitoring wells GW-1036 and GW-1040 exhibited elevated total uranium levels (19.4 pCi/l and 8.76 pCi/l, respectively) for the second quarter. The remainder of the locations were within baseline.

Results for inorganic anions (chloride, sulfate, and nitrate) and metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) were available for the following locations:

GW-1035 (Q294)	GW-1036 (Q294)	GW-1037 (Q294)
GW-1040 (Q294)	GW-1041 (Q294)	

The results for theses locations were within baseline for all anions and metals.

Site Water Treatment Plant Equalization Basin/Temporary Storage Area:

Nitroaromatic compound results were available for the following locations:

GW-2035 (Q394)	GW-2036 (Q394)	GW-2037 (Q394)
GW-2038 (Q394)	GW-2039 (Q394)	GW-2040 (Q394)
GW-2041 (Q394)	GW-2042 (Q394)	GW-2043 (Q394)

Total uranium results were available for the following locations:

GW-2036 (Q394)	GW-2037 (Q294)(Q394)	GW-2038 (Q294)(Q394)
GW-2040 (Q294)(Q394)	GW-2042 (Q294)(Q394)	GW-2043 (Q394)

Geochemical/anion results were available for the following locations:

GW-2035 (Q194)	GW-2036 (Q394)	GW-2037 (Q294)(Q394)
GW-2038 (Q294)(Q394)	GW-2040 (Q294)(Q394)	GW-2042 (Q294)(Q394)
GW-2043 (Q394)		

All nitroaromatic, uranium, geochemical, and anion data for these locations remained within historic ranges..

SPRINGS

Total uranium data were available for spring locations SP-5402 (Q294), SP-5406 (Q294), SP-6301 (Q394), and SP-6306 (Q394). All uranium results were within historic ranges.

Metals and/or geochemical data were available for spring locations SP-5402 (Q294), SP-5406 (Q294), and SP-6301 (Q394). All data were within expected ranges.

Nitroaromatic data were available for SP-6301 (Q394) and were also within historic ranges.

SURFACE WATER

WELDON SPRING CHEMICAL PLANT/RAFFINATE PITS

Total uranium data were available for surface water locations SW-2002 (S294), SW-2004 (S294), SW-2012 (S194), and SW-2016 (S194). The result of 7.79 pCi/l for SW-2016 (S194) on April 15, 1994, was slightly above the historic high for that location. It is believed that this elevated uranium concentration is likely a result of storm water at Outfall NP-0002 containing higher than normal uranium concentrations (as high as 880 pCi/l in January 1994). The cause of the elevated levels at NP-0002 was discovered, and the water was diverted for treatment. Results of subsequent analyses have shown a decline in the uranium concentration at NP-0002 to levels within the historic range.

All other surface water results were within historic ranges.

WELDON SPRING QUARRY

Nitroaromatic compound results were available for SW-1003 (B394), SW-1004 (B394), and SW-1005 (B394). No detectable concentrations were detected in the Femme Osage Slough during the third bimonthly period.

Total uranium results were available for the following locations:

SW-1001 (Q294) SW-1002 (Q294) SW-1003 (B394)

SW-1004 (B394)	SW-1005 (B394)	SW-1007 (Q294)
SW-1009 (Q294)	SW-1010 (Q294)	SW-1014 (Q294)

The results for the Little Femme Osage Creek and the Femme Osage Creek were within background for total uranium. Levels in the Femme Osage Slough were within historic levels during this period.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Data received and verified during the fourth quarter included NPDES-regulated discharges at storm water outfalls NP-0001 through NP-0005, NP-0007 (site water treatment plant outfall), and NP-1001 (quarry water treatment plant outfall). No permit limits were exceeded during this period.

Analysis of storm water sampled at NP-0005 on September 26, 1994, showed a uranium concentration of 1040 pCi/l, an elevated value when compared to historic data. The source of the elevated value was traced to an area that had partially discharged to Outfall NP-0001. When Outfall NP-0001 was removed, this water was entirely diverted to Outfall NP-0005, causing uranium concentrations to increase. The PMC has blocked storm sewers and placed a soil cap over the upstream area. It appears, as evidenced by recent declines in uranium concentrations at NP-0005, that this strategy has been successful. Monitoring will continue and additional actions will be taken to reduce uranium levels further, if necessary.

Sources upstream of NPDES-permitted outfalls were periodically monitored in accordance with the *Environmental Monitoring Plan*[1] to detect changes in contaminant concentrations in waters leading to permitted outfalls. Results of this monitoring have been within historic ranges.

Radiological parameters were monitored in the Missouri River water at Locations SW-1011, SW-1015, and SW-1016, in conjunction with site and quarry water treatment plant discharges. This requirement was eliminated from the permits on their reissuance during 1994.

AIR MONITORING

---

1 MK-Ferguson Company and Jacobs Engineering Group. *Environmental Monitoring Plan*, Rev. 1. DOE/OR/21548-103. Prepared for the U.S. Department of Energy, Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project. St. Charles, MO. February 1990.§

Radon: All Third Quarter 1994 radon concentrations were within the typical expected range. Radon concentrations measured by two alpha track detectors at each monitoring location were averaged together to arrive at the values presented in the monitoring data section of this report. Each value was subsequently compared to the U.S. Department of Energy derived concentration guideline (DCG) for radon of 3 pCi/l to obtain the "Percent of Guideline" value. Fourth Quarter 1994 results are unavailable at this time, but will be presented next quarter.

Gamma Radiation: Gamma radiation results for Third Quarter 1994 were within normal historic ranges for all monitoring locations. Fourth Quarter 1994 results will be presented next quarter.

Air Particulates: Fourth Quarter 1994 low volume radioactive air particulate concentrations and standard deviations for each monitoring location can be found in the air monitoring data section of this report. Quarterly average concentrations for each location were calculated by averaging results of weekly air particulate analyses, including results below the instrument's lower limit of detection. The standard deviation for each location was calculated similarly. As a result of statistical hypothesis testing, it was concluded that air particulate concentrations at all monitoring stations were not significantly different from measured background concentrations.

Asbestos: During Fourth Quarter 1994, all asbestos monitoring results were below the environmental action level (less than 0.01 fibers/cc).

DATE: 1/03/95 FOR THE MONTH OF: DEC./ 94

METER READINGS

ACCOUNT #	METER	TO: 12/29/94	FROM: 12/01/94	USAGED
MISSOURI CITIES BOOSTER STATION				
	ULTRA SONIC #1	+: 270023	-: 151911	=:
	ULTRA SONIC #2	+: 714454	-: 650970	=:
	TOTALIZER	+: 4712851	-: 4528342	=: 184509000

METERS BEFORE MISSOURI CITIES BOOSTER STATION

		TO: 11/28/94	FROM: 10/25/94	USAGED
04-50-1328350	1. FH ANNEX 4"	+: 1126	-: 1126	=:
04-50-1328500	2. MO STATE BHED	+: 176	-: 176	=:
04-50-1330000	3. DOE LAB LARGE	+: 385	-: 385	=:
	SMALL	+: 10330	-: 9801	=: 529000
04-50-1330401	4. DOE FIRE LINE	+: 15678	-: 15283	=: 395000
04-50-1330701	5. DOE TRAILERS	+: 82	-: 82	=:
04-50-1330100	6. DOE 8" #1 LARGE	+: 5850	-: 5850	=:
	SMALL	+: 6060	-: 6045	=: 15000
04-50-1330200	7. DOE 8" #2 LARGE	+: 1933	-: 1933	=:
	SMALL	+: 2435	-: 2430	=: 5000
04-50-1320200	8. DOE 3"	+: 2893	-: 2893	=:
04-50-1328550	9. FH SCHOOL	+: 12474	-: 12474	=:
			TOTAL	=: 944000

MISSOURI CITIES TOTAL =: 185453000

WATER DIST. #2 24" LINE

	TO: 1/03/95	FROM: 12/01/94	USAGED
24" EAST	+: 201747	-: 201747	=:
24" WEST	+: 919302	-: 885875	=: 33427000
BYPASS	+: 2340	-: 2340	=:
	WATER DIST. #2 TOTAL		=: 33427000
NEW MELLE	+: 243739	-: 238100	=: 5639000

DATE: 01/03/95

ST. CHARLES COUNTY WATER DEPARTMENT

MONTHLY WATER USAGE REPORT

MONTH OF: DECEMBER

PLANT PRODUCTION	250984000	8.10	3592855000	9.84
PLANT USE	20176000	0.60	183843000	0.50
DELIVERED TO SYSTEM	230808000	7.50	3409012000	9.34
MISSOURI CITIES WATER	185453000	5.90	2639739000	7.23
WATER DISTRICT #2 24" LINE	33427000	1.10	546782000	1.49
WATER DIST. #2 NEW MELLE	5639000	0.20	62948000	0.17
NATIONAL GUARD AREA	146000	0	167000	
TOTAL METER SALES	224665000	7.20	3249636000	8.90
UNMETERED AND UNACCOUNTED	6143000	0.20	159277000	0.44

INVENTORY OF CHEMICALS

	LIME	CHLORINE
PREV. BALANCE	+: 261963	+: 9606
RECEIVED	+: 341460	+: 16000
TOTAL	=: 603423	=: 25606
USED	-: 367693	-: 16190
BALANCE	=: 235730	=: 9416
POUNDS PER 1000 GALLONS	=: 1.47	=: 0.06
PARTS PER MILLION	=: 176	=: 7.67
AVG. POUNDS PER DAY	=: 11861	=: 522
POUNDS USED YEAR TO DATE	=: 5190415	=: 250330

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-H798

Reported to: TERRY TIMMONS
Affiliation: FDW

Date: 12/27/94
Project Code: 3404/3000

Sample Description:
ST CHARLES CO CT-WELDON SPRING, PLANT EFFLUENT
MO6079507

Collected by: WILLIAM PARSONS
Affiliation: MISC

Date: 11/14/94

PARAMETERS	RESULTS
NITRATE	<= .05 mg/L
NITRITE-NITRATE	.05 mg/L

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

James H. Long, Director
Environmental Services Program
Division of Environmental Quality

RECYCLED PAPER

MONTHLY REPORT

FEBRUARY 1995

BY

Stanley M. Remington

Consulting Hydrologist

I. CHEMICAL ANALYSES

The analyses from well number PW-8 sampled on January 13, 1995 were received and are appended. All of the parameters were either non-detect or were well below the NPDES limits.

The results from the St. Louis County Department of Health for the analyses of gross alpha and gross beta from both raw and finished (treated) water from the treatment plant were received and are appended. These were for the periods of 11/1/94 - 11/30/94 and 12/1/94 - 12/31/94. The treated waters showed a slightly less concentration than the raw waters for gross alpha and beta.

The City of St. Louis Department of Public Utilities, Water Division analyzed for Total Organic Carbons (TOC) on January 11, 1995. The results are appended. These show a low content of TOCs and are well within the safety range for drinking water standards.

Wells numbered PW-2 and PW-3 were sampled on February 15, 1995. The results are not yet in. These tests are the yearly tests which includes many parameters not normally tested.

One sample from the chemical plant site was obtained on

February 24, 1995. These results have not yet been received.

II. CONTRACT

My contract with St. Charles County has been renewed for another year by the St. Charles County Counsel on February 28, 1995. My Sixth Ammended Contract will run through March 31, 1996. It is in the amount of $55,000.

III. MEETINGS

I attended the Weldon Spring Site Remedial Action Project Status Update Meeting held at the Holiday Inn Hotel in St. Peters on February 21, 1995. This was a public meeting wherein the Department of Energy presented a Status Update/Slide Presentation on (1) Building Dismantlement Complete, 1994 (2) Quarry Bulk Waster Removal Progress (3) Waste Treatment/Pilot Plant (4) Work Scheduled for 1995 and (5) Consideration of Consolidating Army Waste at WSSRAP.

There were about 50 people in attendance and a few public comments were made. It was interesting to note that the public is satisfied with the operations of the DOE at the Weldon Spring Site. This is a noticeable change from three

and four years ago.

IV. FUTURE PLANS

I will sample well number PW-9 around mid March, 1995.

I will submit an end-of-contract report by March 31, 1995.

This is a requirement of my contract.

V. MISCELLANEOUS

Enclosed is the St. Charles County Water Department's Monthly Water Usage Report for the month of January 1995.

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

February 2, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #12066.01
Weldon Spring

Dear Mr. Remington:

Enclosed is the analytical report for the sample received in our laboratory on January 13, 1995.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeffrey A. Carr
Project Manager

Enclosures

JAC/dms

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

:LIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1206601R(216)

DATE : 02-02-95

SAMPLE MATRIX : WATER
ATAS EPISODE : #12066
DATE SUBMITTED: 01-13-95
PROJECT : WELDON SPRING

RESULTS REPORTED IN pCi/L

:LIENT ID	ATAS ID	RADIONUCLIDE	RESULT
PW-8	12066.01	GROSS ALPHA	2 +/- 3
PW-8	12066.01	GROSS BETA	7 +/- 3
PW-8	12066.01	URANIUM	0.005

* ;IABILITY OF THE RADIOACTIVE DISINTERGRATION PROCESS (COUNTING ERROR) AT THE 95%
.NFIDENCE LEVEL, 1.96σ.
Ci/L= PICOCURIES PER LITER

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1206601EX(216)

DATE : 02-02-95

SAMPLE MATRIX : WATER
ATAS # : 12066.01
DATE SUBMITTED: 01-13-95
DATE EXTRACTED: 01-18-95
DATE ANALYZED : 01-18-95
PROJECT : WELDON SPRING
SAMPLE ID : PW-8

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	QUANTITATION LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	44.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	10.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
o-NITROTOLUENE	12.0	ND
p-NITROTOLUENE	8.5	ND
m-NITROTOLUENE	7.9	ND

ND NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1206601EX(216)
DATE : 02-02-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 01-13-95
DATE EXTRACTED: 01-17-95
DATE ANALYZED : 01-18-95
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	QUANTITATION LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	44.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	10.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
o-NITROTOLUENE	12.0	ND
p-NITROTOLUENE	8.5	ND
m-NITROTOLUENE	7.9	ND

ND NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1206601EX(216)

DATE : 02-02-95

SAMPLE MATRIX : WATER
ATAS # : LABORATORY CONTROL SAMPLE
DATE SUBMITTED: 01-13-95
DATE EXTRACTED: 01-17-95
DATE ANALYZED : 01-17-95
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : LABORATORY CONTROL SAMPLE

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

OMPOUND	SPIKE ADDED(ug/L)	AMT. FOUND SMPL.(ug/L)	AMT. FOUND LCS(ug/L)	PERCENT RECOVERY
M	1596	0	1400	88 %
	1293	0	1180	91 %
1,3,5-TNB	896	0	835	93 %
TETRYL	1130	0	1470	89 %
,3-DNB	484	0	418	88 %
TNT	850	0	694	93 %
NITROBENZENE	975	0	717	84 %
,6 DNT	1150	0	992	86 %
,4 DNT	700	0	579	83 %
o-NITROTOLUENE	1474	0	1320	91 %
-NITROTOLUENE	1040	0	865	87 %
-NITROTOLUENE	961	0	802	84 %

ATAS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

CHAIN OF CUSTODY RECORD

___OF___

PROJ. NO.

ATAS CLIENT NAME: STAN REMINGTON

FORM COMPLETED BY: [signature]

LOCATION: WELDON SPRING

ANALYSIS

WD 1-13-95 BA-ACCUL

SAMPLE ID	DATE	TIME	MATRIX	GRAB	COMP	PRES	NO. OF CONTAINERS	TOTAL U	GROSS α	GROSS β	NITRATE	TSS	REMARKS	LAB NO.
PW-8	1/13/95	0900		X				X	X	X	X			12066.01
TREATMENT PLANT	1/12				X							X		

Please Indicate Turnaround Time In # Of Work Days

5 | 10 | 15 | other

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
[signature]	1/13/95 10:25	[signature] 1-13-95 1029 13°C					

St. Louis County
Department of Health

January 31, 1995

Kenneth V. Miller
Bureau of Radiological Health
Missouri Department of Health
Jefferson City, MO 65102

Dear Mr. Miller:

The level of Gross Alpha and Gross Beta in the commercial samples from St. Charles County Court, Weldon Springs, Treatment Plant are as follows:

DATE: [11/01-94/11/30/94]	GROSS ALPHA	GROSS BETA	MDL(pCi/L)
Raw Water	3.1 ± 1.4	6.1 ± 1.1	1.0
Finished Water	3.7 ± 1.5	5.2 ± 1.0	1.0
[12/01-94/12/31/94]			
Raw Water	2.6 ± 1.0	5.0 ± 1.0	1.0
Finished	< 1.0	3.7 ± 1.0	1.0

Sincerely,

Wayne E. Black (y)
Wayne E. Black, Ph.D.
Laboratory Director

pc - Dept. of Natural Resources - WSP - Jefferson City
Dept. of Natural Resources - WSP - St. Louis
Mr. Thomas W. Aaron, St. Charles County Court, Weldon Springs
% St. Charles County Water

WEB:y

Buzz Westfall
County Executive

Alpha Fowler Bryan, M.D.
Director

111 S. Meramec Avenue
Clayton, Missouri 63105

Phone: (314) 854-6000
Fax: (314) 854-6435
TDD: (314) 854-6446

An equal opportunity employer

City of Saint Louis
DEPARTMENT OF PUBLIC UTILITIES
— WATER DIVISION —

FREEMAN R. BOSLEY, JR.
MAYOR

Supply and Purifying Section
Chain of Rocks — Water Treatment Plant
10450 Riverview Drive
St. Louis, Missouri 63137
(314) 868-5640
Fax: (314) 868-3197

American Water Works Association MEMBER

DAVID A. VISINTAINER, P.E.
DIRECTOR OF PUBLIC UTILITIES

February 01, 1995

Mr. Thomas W. Aaron
St. Charles County Water Department
1635 South Highway 94
Defiance, MO 63341

RE: Results of TOC Analyses

Dear Tom:

At our visit to your well field and plant on January 11, 1995, three samples were collected for subsequent laboratory testing for Total Organic Carbon analysis. The results of those tests were as follows:

LOCATION	TOC (mg/L)
1. Pump test well 15 minutes after start of test	2.21
2. Plant influent water	2.92
3. Plant finished water	1.41

Thank you again for letting us pay a visit and observe the pump test. I hope this data can be of use to you.

Sincerely,

David A. Visintainer
KMC

David A. Visintainer, P.E.
Director of Public Utilities

cc: File

DATE: 2/1/95

ST. CHARLES COUNTY WATER DEPARTMENT

MONTHLY WATER USAGE REPORT

MONTH OF: JANUARY 1995

	MONTHLY USAGE	MGD AVG	
PLANT PRODUCTION	256051000	8.250	000
PLANT USE	8331000	0	000
DELIVERED TO SYSTEM	247736000	7.280	000
MISSOURI CITIES WATER	215793000	6.960	000
WATER DISTRICT #2 24" LINE	29134000	0.940	000
WATER DIST. #2 NEW MELLE	4028000	0.130	000
NATIONAL GUARD AREA	19000	0	000
TOTAL METER SALES	248974000	8.030	000
UNMETERED AND UNACCOUNTED	000	0	000

INVENTORY OF CHEMICALS

	LIME	CHLORINE
PREV. BALANCE	+ 235730	+ 9416
RECEIVED	+ 343020	+ 16000
TOTAL	= 578750	= 25416
USED	- 311568	- 15890
BALANCE	= 267182	= 9526
POUNDS PER 1000 GALLONS	= 1.217	= 0.062
PARTS PER MILLION	= 150	= 7.65
AVG. POUNDS PER DAY	= 10051	= 513
POUNDS USED YEAR TO DATE	= 311568	= 15890

DATE: 2/1/95 FOR THE MONTH OF: JANUARY 1995

METER READINGS

ACCOUNT #	METER	TO: 1/31/95	FROM: 12/29/94	USAGED
MISSOURI CITIES BOOSTER STATION				
	ULTRA SONIC #1	+: 404196	-: 270023	=:
	ULTRA SONIC #2	+: 791113	-: 714454	=:
	TOTALIZER	+: 4926486	-: 4712851	=: 213635000

METERS BEFORE MISSOURI CITIES BOOSTER STATION

		TO: 12/28/94	FROM: 11/28/94	USAGED
04-50-1328350	1. FH ANNEX 4"	+: 1172	-: 1126	=: 46000
04-50-1328500	2. MO STATE SHED	+: 183	-: 176	=: 7000
04-50-1330000	3. DOE LAB LARGE	+: 400	-: 385	=: 15000
	SMALL	+: 10744	-: 10330	=: 414000
04-50-1330401	4. DOE FIRE LINE	+: 16104	-: 15678	=: 426000
04-50-1330701	5. DOE TRAILERS	+: 82	-: 82	=:
04-50-1330100	6. DOE 8" #1 LARGE	+: 6042	-: 5850	=: 192000
	SMALL	+: 6065	-: 6060	=: 5000
04-50-1330200	7. DOE 8" #2 LARGE	+: 1962	-: 1933	=: 29000
	SMALL	+: 2440	-: 2435	=: 5000
04-50-1320200	8. DOE 3"	+: 3734	-: 2893	=: 841000
04-50-1328550	9. FH SCHOOL	+: 12652	-: 12474	=: 178000
			TOTAL	=: 2158000

MISSOURI CITIES TOTAL =: 215793000

WATER DIST. #2 24" LINE

	TO: 2/1/95	FROM: 1/3/95	USAGED
24" EAST	+: 201747	-: 201747	=:
24" WEST	+: 948436	-: 919302	=: 29134000
BYPASS	+: 2340	-: 2340	=:

WATER DIST. #2 TOTAL =:

NEW MELLE	+: 247767	-: 243739	=: 4028000

MONTHLY REPORT

MARCH 1995

BY

Stanley M. Remington

Consulting Hydrologist

I. CHEMICAL ANALYSES

The results of the sampling for wells PW-2 and PW-3 have been received and are appended. These are samples that are taken yearly and include several parameters not normally tested for. These samples were taken on February 15, 1995. There were no indications of any increases of hazardous parameters since a year ago. In fact most of the hazardous chemicals tested for were non-detect.

A treated sample from the chemical plant site was taken on February 24, 1995. The results are appended. Again no unusual results were obtained. A reading of 30 +/-5 was noted for gross beta, which is slightly high, but this is believed to be in error since it was much higher than readings from the DOE and DNR analyses taken at the same time. Samples taken since then from the same source have not shown this high of a reading and are in the normal background ranges.

A treated sample from the treated water from the quarry was taken on March 9, 1995. The results are appended. All the chemical results are normal and considerably below NPDES limits.

Well number PW-4 was sampled on March 16, 1995. The test

results have not yet been received. Only total uranium, gross alpha and beta, and the nitroaromatics were tested.

II. FUTURE PLANS

I will sample well number PW-5 during mid-April for total uranium, gross alpha and beta, and nitroaromatics.

III. MISCELLANEOUS

Appended is my annual report required under my contract. This report covers my financial and other activities performed for the period from April 1, 1994 through March 31, 1995.

Appended are the results received from the St. Louis Department of Health from commercial samples taken by them from the St. Charles Water Treatment Plant for gross alpha and beta on raw and treated water from 1/1/95 - 1/31/95.

Appended is the St. Charles County Water Department's Monthly Water Usage Report.

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 21, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #12313.01-#12313.02
WELDON SPRING

Dear Mr. Remington:

Enclosed are the analytical reports for the samples received in our laboratory on February 15, 1995.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeffrey A. Carr
Project Manager

Enclosures

JAC/dms

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301M(219)

DATE : 03-20-95

SAMPLE MATRIX : WATER
ATAS # : 12313.01
DATE SUBMITTED: 02-15-95
PROJECT : WELDON SPRING
SAMPLE ID : PW-2

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			INORGANICS		
INORGANIC CHLORIDE	0.2	mg/L	17.4	02-16-95	EPA 300.0
FLUORIDE	0.2	mg/L	0.4	02-16-95	EPA 300.0
NITRATE	0.2	mg/L	ND	02-16-95	EPA 300.0
SULFATE	0.2	mg/L	95.6	02-16-95	EPA 300.0
			METALS		
ARSENIC	10.0	ug/L	ND	02-22-95	SW 6010
BARIUM	1.0	ug/L	329	02-22-95	SW 6010
CADMIUM	1.0	ug/L	ND	02-22-95	SW 6010
LEAD	3.0	ug/L	ND	02-22-95	SW 6010
MERCURY	0.15	ug/L	ND	02-17-95	SW 7470

ug/L = PARTS PER BILLION(PPB)
mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301M(219)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : 12313.02
DATE SUBMITTED: 02-15-95
PROJECT : WELDON SPRING
SAMPLE ID : PW-3

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			INORGANICS		
INORGANIC CHLORIDE	0.2	mg/L	19.8	02-16-95	EPA 300.0
FLUORIDE	0.2	mg/L	0.5	02-16-95	EPA 300.0
NITRATE	0.2	mg/L	ND	02-16-95	EPA 300.0
SULFATE	0.2	mg/L	107	02-16-95	EPA 300.0
			METALS		
ARSENIC	10.0	ug/L	ND	02-22-95	SW 6010
BARIUM	1.0	ug/L	344	02-22-95	SW 6010
CADMIUM	1.0	ug/L	ND	02-22-95	SW 6010
LEAD	3.0	ug/L	ND	02-22-95	SW 6010
MERCURY	0.15	ug/L	ND	02-17-95	SW 7470

ug/L = PARTS PER BILLION(PPB)
mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301M(219)

DATE : 03-08-95

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	02-22-95	ARSENIC	<10.0	ug/L
METHOD BLANK	02-22-95	BARIUM	<1.0	ug/L
METHOD BLANK	02-22-95	CADMIUM	<1.0	ug/L
METHOD BLANK	02-22-95	LEAD	<3.0	ug/L
METHOD BLANK	02-17-95	MERCURY	<0.15	ug/L
METHOD BLANK	02-16-95	FLUORIDE	<0.2	mg/L
METHOD BLANK	02-16-95	CHLORIDE	<0.2	mg/L
METHOD BLANK	02-16-95	NITRATE	<0.2	mg/L
METHOD BLANK	02-16-95	SULFATE	<0.2	mg/L
BLANK SPIKE	02-22-95	ARSENIC	103 %	RECOVERY
BLANK SPIKE	02-22-95	BARIUM	106 %	RECOVERY
BLANK SPIKE	02-22-95	CADMIUM	99 %	RECOVERY
BLANK SPIKE	02-22-95	LEAD	97 %	RECOVERY
LANK SPIKE	02-17-95	MERCURY	103 %	RECOVERY
BLANK SPIKE	02-16-95	FLUORIDE	96 %	RECOVERY
BLANK SPIKE	02-16-95	CHLORIDE	95 %	RECOVERY
BLANK SPIKE	02-16-95	NITRATE	95 %	RECOVERY
BLANK SPIKE	02-16-95	SULFATE	94 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301P(219)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : 12313.01
DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 02-16-95
DATE ANALYZED : 02-23-95
METHOD REF. : SW846-8080, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-2

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
ALPHA-BHC	0.003	ND
GAMMA-BHC(LINDANE)	0.004	ND
BETA-BHC	0.006	ND
DELTA-BHC	0.009	ND
HEPTACHLOR	0.003	ND
ALDRIN	0.004	ND
HEPTACHLOR EPOXIDE	0.083	ND
ENDOSULFAN I	0.014	ND
4,4-DDE	0.004	ND
DIELDRIN	0.002	ND
ENDRIN	0.006	ND
4,4-DDD	0.011	ND
ENDOSULFAN II	0.004	ND
4,4-DDT	0.012	ND
ENDRIN ALDEHYDE	0.023	ND
ENDOSULFAN SULFATE	0.066	ND
METHOXYCHLOR	0.180	ND
CHLORDANE (TECH.)	0.014	ND
TOXAPHENE	0.240	ND
AROCHLOR-1016	1.00	ND
AROCHLOR-1221	1.00	ND
AROCHLOR-1232	1.00	ND
AROCHLOR-1242	1.00	ND
AROCHLOR-1248	1.00	ND
AROCHLOR-1254	1.00	ND
AROCHLOR-1260	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL	65 %
TETRACHLORO-M-XYLENE	80 %

ND NOT DETECTED ABOVE REPORTING LIMIT
- ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301P(219)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : 12313.02
DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 02-16-95
DATE ANALYZED : 02-23-95
METHOD REF. : SW846-8080, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-3

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
ALPHA-BHC	0.003	ND
GAMMA-BHC(LINDANE)	0.004	ND
BETA-BHC	0.006	ND
DELTA-BHC	0.009	ND
HEPTACHLOR	0.003	ND
ALDRIN	0.004	ND
HEPTACHLOR EPOXIDE	0.083	ND
ENDOSULFAN I	0.014	ND
4,4-DDE	0.004	ND
DIELDRIN	0.002	ND
ENDRIN	0.006	ND
4,4-DDD	0.011	ND
ENDOSULFAN II	0.004	ND
4,4-DDT	0.012	ND
ENDRIN ALDEHYDE	0.023	ND
ENDOSULFAN SULFATE	0.066	ND
METHOXYCHLOR	0.180	ND
CHLORDANE (TECH.)	0.014	ND
TOXAPHENE	0.240	ND
AROCHLOR-1016	1.00	ND
AROCHLOR-1221	1.00	ND
AROCHLOR-1232	1.00	ND
AROCHLOR-1242	1.00	ND
AROCHLOR-1248	1.00	ND
AROCHLOR-1254	1.00	ND
AROCHLOR-1260	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL	43 %
TETRACHLORO-M-XYLENE	79 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
* = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301P(219)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 02-16-95
DATE ANALYZED : 02-23-95
METHOD REF. : SW846-8080, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
ALPHA-BHC	0.003	ND
GAMMA-BHC(LINDANE)	0.004	ND
BETA-BHC	0.006	ND
DELTA-BHC	0.009	ND
HEPTACHLOR	0.003	ND
ALDRIN	0.004	ND
HEPTACHLOR EPOXIDE	0.083	ND
ENDOSULFAN I	0.014	ND
4,4-DDE	0.004	ND
DIELDRIN	0.002	ND
ENDRIN	0.006	ND
4,4-DDD	0.011	ND
ENDOSULFAN II	0.004	ND
4,4-DDT	0.012	ND
ENDRIN ALDEHYDE	0.023	ND
ENDOSULFAN SULFATE	0.066	ND
METHOXYCHLOR	0.180	ND
CHLORDANE (TECH.)	0.014	ND
TOXAPHENE	0.240	ND
AROCHLOR-1016	1.00	ND
AROCHLOR-1221	1.00	ND
AROCHLOR-1232	1.00	ND
AROCHLOR-1242	1.00	ND
AROCHLOR-1248	1.00	ND
AROCHLOR-1254	1.00	ND
AROCHLOR-1260	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL	70 %
TETRACHLORO-M-XYLENE	69 %

ND : NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

METHOD : EPA 8080
DATE EXTRACTED : 02-16-95
DATE ANALYZED : 02-23-95

REPORT DATE: 03-08-95

SPIKE/SPIKE DUPLICATE RESULTS

COMPOUND (ug/L)	SPIKE CONC. (ug/L)	SAMPLE CONC. CONC. (ug/L)	SPIKE DUP. CONC. (ug/L)	PERCENT RECOVERY
GAMMA-BHC	0.2	ND	0.153	77 %
HEPTACLOR	0.2	ND	0.158	79 %
ALDRIN	0.2	ND	0.149	75 %
DIELDRIN	0.5	ND	0.393	79 %
ENDRIN	0.5	ND	0.395	79 %
4,4-DDT	0.5	ND	0.463	93 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301S(222)

DATE : 03-21-95

SAMPLE MATRIX: WATER
ATAS # : 12313.01
PROJECT : WELDON SPRING
SAMPLE ID : PW-2

DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 03-07-95
DATE ANALYZED : 03-08-95
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	R.L. LIMIT	RESULTS (ug/L)	SEMIVOLATILE	R.L. LIMIT	RESULTS (ug/L)
PHENOL	10	ND	ACENAPHTHENE	10	ND
BIS(2-CHLOROETHYL)ETHER	10	ND	2,4-DINITROPHENOL	50	ND
2-CHLOROPHENOL	10	ND	4-NITROPHENOL	50	ND
1,3-DICHLOROBENZENE	10	ND	DIBENZOFURAN	10	ND
1,4-DICHLOROBENZENE	10	ND	2,4-DINITROTOLUENE	10	ND
BENZYL ALCOHOL	10	ND	2,6-DINITROTOLUENE	10	ND
1,2-DICHLOROBENZENE	10	ND	DIETHYLPHTHALATE	10	ND
2-METHYLPHENOL	10	ND	4-CHLOROPHENYL-PHENYLETHER	10	ND
BIS(2-CHLOROISOPROPYL)ETHER	10	ND	FLUORENE	10	ND
4-METHYLPHENOL	10	ND	4-NITROANILINE	50	ND
N-NITROSO-DI-n-PROPYLAMINE	10	ND	4,6-DINITRO 2-METHYLPHENOL	50	ND
HEXACHLOROETHANE	10	ND	N-NITROSODIPHENYLAMINE	10	ND
[illegible]OBENZENE	10	ND	4-BROMOPHENYL-PHENYLETHER	10	ND
[illegible]HORONE	10	ND	HEXACHLOROBENZENE	10	ND
2-NITROPHENOL	10	ND	PENTACHLOROPHENOL	50	ND
2,4-DIMETHYLPHENOL	10	ND	PHENANTERENE	10	ND
BENZOIC ACID	50	ND	ANTHRACENE	10	ND
BIS(2-CHLOROETHOXY)METHANE	10	ND	DI-N-BUTYLPHTHALATE	10	ND
2,4-DICHLOROPHENOL	10	ND	FLUORANTHENE	10	ND
1,2,4-TRICHLOROBENZENE	10	ND	PYRENE	10	ND
NAPHTHALENE	10	ND	BUTYLBENZYLPHTHALATE	10	ND
4-CHLOROANILINE	10	ND	3,3-DICHLOROBENZIDINE	20	ND
HEXACHLOROBUTADIENE	10	ND	BENZO(A)ANTHRACENE	10	ND
4-CHLORO-3-METHYLPHENOL	10	ND	BIS(2-ETHYLHEXYL)PHTHALATE	10	ND
2-METHYLNAPHTHALENE	10	ND	CHRYSENE	10	ND
HEXACHLOROCYCLOPENTADIENE	10	ND	DI-N-OCTYL PHTHALATE	10	ND
2,4,6-TRICHLOROPHENOL	10	ND	BENZO(b)FLUORANTHENE	10	ND
2,4,5-TRICHLOROPHENOL	50	ND	BENZO(k)FLUORANTHENE	10	ND
2-CHLORONAPHTHALENE	10	ND	BENZO(a)PYRENE	10	ND
2-NITROANILINE	50	ND	INDENO(1,2,3-CD)PYRENE	10	ND
DIMETHYLPHTHALATE	10	ND	DIBENZO(A,H)ANTHRACENE	10	ND
ACENAPHTHYLENE	10	ND	BENZO(G,H,I)PERYLENE	10	ND
3-NITROANILINE	50	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	98 %	2-FLUOROBIPHENYL(43-116)	93 %
TERPHENYL-d14(33-141)	114 %	PHENOL-d5(10-94)	52 %
2-FLUOROPHENOL(21-100)	66 %	2,4,6-TRIBROMOPHENOL(10-123)	* 225 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
= ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 12313015(222)

DATE : 03-21-95

SAMPLE MATRIX: WATER
ATAS # : 12313.02
PROJECT : WELDON SPRING
SAMPLE ID : PW-3

DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 03-07-95
DATE ANALYZED : 03-08-95
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	R.L. LIMIT	RESULTS (ug/L)	SEMIVOLATILE	R.L. LIMIT	RESULTS (ug/L)
PHENOL	10	ND	ACENAPHTHENE	10	ND
BIS(2-CHLOROETHYL)ETHER	10	ND	2,4-DINITROPHENOL	50	ND
2-CHLOROPHENOL	10	ND	4-NITROPHENOL	50	ND
1,3-DICHLOROBENZENE	10	ND	DIBENZOFURAN	10	ND
1,4-DICHLOROBENZENE	10	ND	2,4-DINITROTOLUENE	10	ND
BENZYL ALCOHOL	10	ND	2,6-DINITROTOLUENE	10	ND
1,2-DICHLOROBENZENE	10	ND	DIETHYLPHTHALATE	10	ND
2-METHYLPHENOL	10	ND	4-CHLOROPHENYL-PHENYLETHER	10	ND
BIS(2-CHLOROISOPROPYL)ETHER	10	ND	FLUORENE	10	ND
4-METHYLPHENOL	10	ND	4-NITROANILINE	50	ND
N-NITROSO-DI-n-PROPYLAMINE	10	ND	4,6-DINITRO 2-METHYLPHENOL	50	ND
HEXACHLOROETHANE	10	ND	N-NITROSODIPHENYLAMINE	10	ND
NITROBENZENE	10	ND	4-BROMOPHENYL-PHENYLETHER	10	ND
ISOPHORONE	10	ND	HEXACHLOROBENZENE	10	ND
2-NITROPHENOL	10	ND	PENTACHLOROPHENOL	50	ND
2,4-DIMETHYLPHENOL	10	ND	PHENANTHRENE	10	ND
BENZOIC ACID	50	ND	ANTHRACENE	10	ND
BIS(2-CHLOROETHOXY)METHANE	10	ND	DI-N-BUTYLPHTHALATE	10	ND
2,4-DICHLOROPHENOL	10	ND	FLUORANTHENE	10	ND
1,2,4-TRICHLOROBENZENE	10	ND	PYRENE	10	ND
NAPHTHALENE	10	ND	BUTYLBENZYLPHTHALATE	10	ND
4-CHLOROANILINE	10	ND	3,3-DICHLOROBENZIDINE	20	ND
HEXACHLOROBUTADIENE	10	ND	BENZO(A)ANTHRACENE	10	ND
4-CHLORO-3-METHYLPHENOL	10	ND	BIS(2-ETHYLHEXYL)PHTHALATE	10	ND
2-METHYLNAPHTHALENE	10	ND	CHRYSENE	10	ND
HEXACHLOROCYCLOPENTADIENE	10	ND	DI-N-OCTYL PHTHALATE	10	ND
2,4,6-TRICHLOROPHENOL	10	ND	BENZO(b)FLUORANTHENE	10	ND
2,4,5-TRICHLOROPHENOL	50	ND	BENZO(k)FLUORANTHENE	10	ND
2-CHLORONAPHTHALENE	10	ND	BENZO(a)PYRENE	10	ND
2-NITROANILINE	50	ND	INDENO(1,2,3-CD)PYRENE	10	ND
DIMETHYLPHTHALATE	10	ND	DIBENZO(A,H)ANTHRACENE	10	ND
ACENAPHTHYLENE	10	ND	BENZO(G,H,I)PERYLENE	10	ND
3-NITROANILINE	50	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	101 %	2-FLUOROBIPHENYL(43-116)	100 %
TERPHENYL-d14(33-141)	136 %	PHENOL-d5(10-94)	51 %
2-FLUOROPHENOL(21-100)	51 %	2,4,6-TRIBROMOPHENOL(10-123)	* 245 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301S(222)

DATE : 03-21-95

SAMPLE MATRIX: WATER
ATAS # : METHOD BLANK
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

DATE SUBMITTED: 02-15-95
DATE EXTRACTED: 03-07-95
DATE ANALYZED : 03-08-95
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	R.L. LIMIT	RESULTS (ug/L)	SEMIVOLATILE	R.L. LIMIT	RESULTS (ug/L)
PHENOL	10	ND	ACENAPHTHENE	10	ND
BIS(2-CHLOROETHYL)ETHER	10	ND	2,4-DINITROPHENOL	50	ND
2-CHLOROPHENOL	10	ND	4-NITROPHENOL	50	ND
1,3-DICHLOROBENZENE	10	ND	DIBENZOFURAN	10	ND
1,4-DICHLOROBENZENE	10	ND	2,4-DINITROTOLUENE	10	ND
BENZYL ALCOHOL	10	ND	2,6-DINITROTOLUENE	10	ND
1,2-DICHLOROBENZENE	10	ND	DIETHYLPHTHALATE	10	ND
2-METHYLPHENOL	10	ND	4-CHLOROPHENYL-PHENYLETHER	10	ND
BIS(2-CHLOROISOPROPYL)ETHER	10	ND	FLUORENE	10	ND
4-METHYLPHENOL	10	ND	4-NITROANILINE	50	ND
N-NITROSO-DI-n-PROPYLAMINE	10	ND	4,6-DINITRO 2-METHYLPHENOL	50	ND
HEXACHLOROETHANE	10	ND	N-NITROSODIPHENYLAMINE	10	ND
NITROBENZENE	10	ND	4-BROMOPHENYL-PHENYLETHER	10	ND
ISOPHORONE	10	ND	HEXACHLOROBENZENE	10	ND
2-NITROPHENOL	10	ND	PENTACHLOROPHENOL	50	ND
2,4-DIMETHYLPHENOL	10	ND	PHENANTHRENE	10	ND
BENZOIC ACID	50	ND	ANTHRACENE	10	ND
BIS(2-CHLOROETHOXY)METHANE	10	ND	DI-N-BUTYLPHTHALATE	10	ND
2,4-DICHLOROPHENOL	10	ND	FLUORANTHENE	10	ND
1,2,4-TRICHLOROBENZENE	10	ND	PYRENE	10	ND
NAPHTHALENE	10	ND	BUTYLBENZYLPHTHALATE	10	ND
4-CHLOROANILINE	10	ND	3,3-DICHLOROBENZIDINE	20	ND
HEXACHLOROBUTADIENE	10	ND	BENZO(A)ANTHRACENE	10	ND
4-CHLORO-3-METHYLPHENOL	10	ND	BIS(2-ETHYLHEXYL)PHTHALATE	10	ND
2-METHYLNAPHTHALENE	10	ND	CHRYSENE	10	ND
HEXACHLOROCYCLOPENTADIENE	10	ND	DI-N-OCTYL PHTHALATE	10	ND
2,4,6-TRICHLOROPHENOL	10	ND	BENZO(b)FLUORANTHENE	10	ND
2,4,5-TRICHLOROPHENOL	50	ND	BENZO(k)FLUORANTHENE	10	ND
2-CHLORONAPHTHALENE	10	ND	BENZO(a)PYRENE	10	ND
2-NITROANILINE	50	ND	INDENO(1,2,3-CD)PYRENE	10	ND
DIMETHYLPHTHALATE	10	ND	DIBENZO(A,H)ANTHRACENE	10	ND
ACENAPHTHYLENE	10	ND	BENZO(G,H,I)PERYLENE	10	ND
3-NITROANILINE	50	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	89 %	2-FLUOROBIPHENYL(43-116)	86 %
TERPHENYL-d14(33-141)	111 %	PHENOL-d5(10-94)	51 %
2-FLUOROPHENOL(21-100)	64 %	2,4,6-TRIBROMOPHENOL(10-123)	* 192 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301S(222)
DATE : 03-21-95

SAMPLE MATRIX : WATER
DATE EXTRACTED: 03-07-95
DATE ANALYZED : 03-07-95
METHOD REF. : SW846-8270, EPA METHODOLOGY

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SPIKE BLANK/SPIKE BLANK DUPLICATE RECOVERY

COMPOUND	SPIKE ADDED	BLANK CONC.	SPK A CONC.	SPK A % REC.	QC REC. LIMITS
PHENOL	100	ND	24	24	12-89
2-CHLOROPHENOL	100	ND	49	49	27-123
1,4-DICHLOROBENZENE	50	ND	27	54	36-97
N-NITROSO-DI-n-PROPYLAMINE	50	ND	36	72	41-116
1,2,4-TRICHLOROBENZENE	50	ND	34	68	39-98
4-CHLORO-3-METHYLPHENOL	100	ND	54	54	23-97
ACENAPHTHENE	50	ND	31	62	46-118
4-NITROPHENOL	100	ND	28	28	10-80
2,4-DINITROTOLUENE	50	ND	46	92	24-96
PENTACHLOROPHENOL	100	ND	100	100	9-103
PYRENE	50	ND	19	38	26-127

COMPOUND	SPIKE ADDED	SPK B CONC.	SPK B % REC.	% RPD	QC LIMITS RPD	QC LIMITS REC.
PHENOL	100	27	27	12	42	12-89
2-CHLOROPHENOL	100	52	52	6	40	27-123
1,4-DICHLOROBENZENE	50	30	60	11	28	36-97
N-NITROSE-DI-n-PROPYLAMINE	50	38	76	5	38	41-116
1,2,4-TRICHLOROBENZENE	50	38	76	11	28	39-98
4-CHLORO-3-METHYLPHENOL	100	56	56	4	42	23-97
ACENAPHTHENE	50	34	68	9	31	46-118
4-NITROPHENOL	100	28	28	0	50	10-80
2,4-DINITROTOLUENE	50	50	100*	8	38	24-96
PENTACHLOROPHENOL	100	110	110*	10	50	9-103
PYRENE	50	29	58	42*	31	26-127

* = VALUES OUTSIDE OF QC LIMITS
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301X(218)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : 12313.01
DATE SUBMITTED: 02-15-95
DATE ANALYZED : 02-25-95
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-2

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	10.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	7.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
2NT	12.0	ND
4NT	8.0	ND
3NT	7.9	ND

ND NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301X(218)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : 12313.02
DATE SUBMITTED: 02-15-95
DATE ANALYZED : 02-25-95
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : PW-3

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	10.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	7.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
2NT	12.0	ND
4NT	8.0	ND
3NT	7.9	ND

ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301X(218)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-95
DATE ANALYZED : 02-25-95
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
HMX	13.0	ND
RDX	14.0	ND
1,3,5-TNB	7.3	ND
TETRYL	10.0	ND
1,3-DNB	4.0	ND
NITROBENZENE	7.0	ND
2,6 DNT	9.4	ND
2,4 DNT	5.7	ND
2,4,6 TNT	6.4	ND
2NT	12.0	ND
4NT	8.0	ND
3NT	7.9	ND

ND - NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301X(218)
DATE : 03-08-95

SAMPLE MATRIX : WATER
ATAS # : LABORATORY CONTROL SAMPLE
DATE SUBMITTED: 02-15-95
DATE ANALYZED : 02-25-95
METHOD REF. : SW846-8330, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : LABORATORY CONTROL SAMPLE

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	SPIKE ADDED(ug/L)	AMT. FOUND SMPL.(ug/L)	AMT. FOUND LCS(ug/L)	PERCENT RECOVERY	QC LIMITS RECOVERY
HMX	1600	ND	1860	116 %	46-151
RDX	1300	ND	1360	105 %	72-129
,5-TNB	900	ND	984	109 %	74-118
TRYL	1650	ND	1580	96 %	58-120
1,3-DNB	475	ND	536	113 %	79-132
TNT	750	ND	815	109 %	61-145
NITROBENZENE	850	ND	974	115 %	68-135
2,6 DNT	1150	ND	1260	110 %	77-125
2,4 DNT	700	ND	757	108 %	70-134
2NT	1450	ND	1540	106 %	73-131
4NT	1000	ND	1070	107 %	73-116
3NT	950	ND	1020	107 %	71-127

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1231301R(222)

DATE : 03-21-95

SAMPLE MATRIX : WATER
ATAS EPISODE : #12313
DATE SUBMITTED: 02-15-95
DATE ANALYZED : 03-14-95
PROJECT : WELDON SPRING

CLIENT ID	ATAS ID	UNITS	RADIONUCLIDE	RESULT
PW-2	12313.01	pCi/L	GROSS ALPHA	2 +/- 2*
PW-2	12313.01	pCi/L	GROSS BETA	6 +/- 3*
PW-2	12313.01	mg/L	TOTAL URANIUM	<0.005
PW-3	12313.02	pCi/L	GROSS ALPHA	1 +/- 2*
PW-3	12313.02	pCi/L	GROSS BETA	9 +/- 3*
PW-3	12313.02	mg/L	TOTAL URANIUM	<0.005

* VARIABILITY OF THE RADIOACTIVE DISINTEGRATION PROCESS (COUNTING ERROR) AT THE 95% CONFIDENCE LEVEL, 1.96σ.
pCi/L= PICOCURIES PER LITER
mg/L = PARTS PER MILLION(PPM)

ATAS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, Inc.

875 Fee Fee Road • Maryland Heights, MO 63043-3211 • Office (314) 434-4570 • FAX (314) 434-0060

PAGE ____ OF ____

CHAIN OF CUSTODY RECORD

ATAS Client Name: STAN REMINGTON

Project Name: WELDON SPRING

Project #:

Form Completed By: S. REMINGTON

PO #:

Preservative: Ice Chemical (see below)

Lab Use Only — Initials: WD — Date: 2-15-95 — Location/Temp: ACUMAS 3rd — 1313 15°

Sample ID	Sample Date	Sample Time	Sample Matrix	Grab	Comp	No. of Containers	TOTAL U	GROSS α & β	SVOC'S	ANIONS	PEST/PCB'S	NITROS	TSS	METALS	Remarks	Lab Use Only
PW-2	2/15/95						X	X	X	X	X	X		X		1231301
PW-3	2/15/95						X	X	X	X	X	X		X		1 V 02
WATER TREAT PLANT	2/15/95												X			

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm:	Firm:	Firm:	Firm:
Date/Time:	Date/Time: 2/15/95 1100	Date/Time:	Date/Time:

Turnaround Requirements
- ____ 1 to 2 working days
- ____ 3 working days
- ____ 5 working days
- ____ 10 working days
- ____ 15 working days

Preservative codes
- A - none
- B - HNO_3
- C - H_2SO_4
- D - NaOH
- E - HCl

SEND RESULTS TO (Name & Company): _____

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 6, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #12395.01
Weldon Spring

Dear Mr. Remington:

Enclosed is the analytical report for the sample received in our laboratory on February 24, 1995.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeff Carr

Jeffrey A. Carr
Project Manager

Enclosures

JAC/pck

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1239501MT(220)
DATE : 03-06-95

SAMPLE MATRIX : WATER
ATAS # : 12395.01
DATE SUBMITTED: 02-24-95
PROJECT : WELDON SPRING
SAMPLE ID : NP-EPSI-022495-C

PARAMETER	DET LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			INORGANICS		
NITRATE	1.0	mg/L	5.60	03-03-95	SM 418B
			METALS		
ARSENIC	10.0	ug/L	ND	02-28-95	SW 6010
CHROMIUM	1.0	ug/L	ND	02-28-95	SW 6010
LEAD	3.0	ug/L	ND	02-28-95	SW 6010
MANGANESE	1.0	ug/L	1.2	02-28-95	SW 6010
MERCURY	0.15	ug/L	ND	02-27-95	SW 7470
SELENIUM	5.0	ug/L	ND	02-28-95	SW 6010

ug/L = PARTS PER BILLION(PPB)
mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: QC0228MT(220)

DATE : 03-06-95

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	03-03-95	NITRATE	<1.0	mg/L
METHOD BLANK	02-28-95	ARSENIC	<10.0	ug/L
METHOD BLANK	02-28-95	CHROMIUM	<1.0	ug/L
METHOD BLANK	02-28-95	LEAD	<3.0	ug/L
METHOD BLANK	02-28-95	MANGANESE	<1.0	ug/L
METHOD BLANK	02-28-95	SELENIUM	<5.0	ug/L
METHOD BLANK	02-27-95	MERCURY	<0.15	ug/L
BLANK SPIKE	02-28-95	ARSENIC	103 %	RECOVERY
BLANK SPIKE	02-28-95	CHROMIUM	101 %	RECOVERY
BLANK SPIKE	02-28-95	LEAD	96 %	RECOVERY
BLANK SPIKE	02-28-95	MANGANESE	98 %	RECOVERY
BLANK SPIKE	02-28-95	SELENIUM	107 %	RECOVERY
BLANK SPIKE	02-27-95	MERCURY	85 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1239501RA(220)

DATE : 03-06-95

SAMPLE MATRIX : WATER
ATAS EPISODE : #12395
DATE SUBMITTED: 02-24-95
PROJECT : WELDON SPRING

RESULTS REPORTED IN pCi/L

LIENT ID	ATAS ID	RADIONUCLIDE	RESULT
NP-EPSI-022495-C	12395.01	GROSS ALPHA	1 +/- 3*
P-EPSI-022495-C	12395.01	GROSS BETA	30 +/- 5*
P-EPSI-022495-C	12395.01	TOTAL URANIUM (mg/L)	<0.005

VARIABILITY OF THE RADIOACTIVE DISINTERGRATION PROCESS (COUNTING ERROR) AT THE 95% CONFIDENCE LEVEL, 1.96σ.
pCi/L = PICOCURIES PER LITER
mg/L = PARTS PER MILLION(PPM)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1239501EX(220)
DATE : 03-06-95

SAMPLE MATRIX : WATER
ATAS # : 12395.01
DATE SUBMITTED: 02-24-95
DATE EXTRACTED: 02-27-95
DATE ANALYZED : 02-27-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : NP-EPSI-022495-C

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
2,6 DNT	0.0115	ND
2,4 DNT	0.0230	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	62 %
TETRACHLORO-M-XYLENE(30-150)	81 %

ND= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: BK0227EX(220)
DATE : 03-06-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-24-95
DATE EXTRACTED: 02-27-95
DATE ANALYZED : 02-27-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

EXPLOSIVE	REPORTING LIMIT	RESULTS
2,6 DNT	0.010	ND
2,4 DNT	0.020	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	52 %
TETRACHLORO-M-XYLENE(30-150)	79 %

D= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: QC0227EX(220)
DATE : 03-06-95

SAMPLE MATRIX : WATER
ATAS # : LABORATORY CONTROL SAMPLE
DATE SUBMITTED: 02-24-95
DATE EXTRACTED: 02-27-95
DATE ANALYZED : 02-27-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WELDON SPRING
SAMPLE ID : LABORATORY CONTROL SAMPLE

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	SPIKE ADDED(ug/L)	AMT. FOUND SMPL.(ug/L)	AMT. FOUND LCS(ug/L)	PERCENT RECOVERY
2,6 DNT	0.250	ND	0.240	96 %
DNT	0.250	ND	0.199	79 %

	AMT. FOUND SBD (ug/L)	PERCENT RECOVERY	PERCENT DIFFERENCE
1,6 DNT	0.240	96 %	0.0 %
2,4 DNT	0.194	78 %	1.3 %

ENVIRONMENTAL SAMPLE CHAIN–O CUSTODY / AUTHORIZATION FORM
WELDON SPRING SITE REMEDIAL ACTION PROJECT (WSSRAP)
7295 HIGHWAY 94 SOUTH, ST. CHARLES, MO 63304
TELEPHONE (314) 441–8086 TELEX (314) 447–0803

Validation Documentation ☐

ES&H 4.1.2.1, Rev.6, Effective 11/92

WSSRAP Contact:
Phone Number:
Request Number:

Lab/P.O. #: St. Charles
Dept./Cost Code:
Requisitioner:
Turnaround Time: ☐ Standard ☐ Accelerated ☐ Priority ☐ Urgent ☐ Emergency

#	Sample ID	QC	Date Sampled	Matrix	Cont.	Preserv.	Parameters	2/24/95 AL-BA-152	Arch. (Y/N)
1	NP-EPS1-022495-C		2/24/95	WATER	1-1L	HNO_3	As, Cr, Hg, Mn, Se, Pb	12395.01	N
	↓		↓	↓	1-1L Glass	ICE	2,4-DNT	↓	↓
					1-1L	H_2SO_4	NO_3		
					1-1 Glass	HNO_3	U, Gross α, β		

Sampler's Signature: [signature]
Checked By: [signature]
Technical Reviewer:

Relinquished By	Received By	Date	Time	Reason for Transfer	Seal Intact? (Y/N)	Cooler Temp
[signature]	[signature]	2/24/95	12:00			
[signature]	Carlos Allen	2/24/95	1325			

AUTHORIZATION

MK–F Procurement Date
ES&H Date
Site Shipping Officer Date

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 16, 1995

Stanley M. Remington
919 Broadmoor Lane
St. Charles, MO 63301

RE: ATAS #12500.01
WSSRAP

Dear Mr. Remington:

Enclosed is the analytical report for the sample received in our laboratory on March 9, 1995.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeffrey A. Carr
Project Manager

Enclosures

JAC/dms

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1250001R(222)

DATE : 03-16-95

SAMPLE MATRIX : WATER
ATAS EPISODE : #12500
DATE SUBMITTED: 03-09-95
PROJECT : WSSRAP

CLIENT ID	ATAS ID	UNITS	RADIONUCLIDE	RESULT
NP-EPQ1-030995-C	12500.01	pCi/L	GROSS ALPHA	6 +/- 4*
NP-EPQ1-030995-C	12500.01	pCi/L	GROSS BETA	12 +/- 4*
NP-EPQ1-030995-C	12500.01	mg/L	TOTAL URANIUM	<0.005

* VARIABILITY OF THE RADIOACTIVE DISINTEGRATION PROCESS (COUNTING ERROR) AT THE 95% CONFIDENCE LEVEL, 1.96σ.
pCi/L= PICOCURIES PER LITER
mg/L = PARTS PER MILLION(PPM)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1250001M(222)
DATE : 03-16-95

SAMPLE MATRIX : WATER
ATAS # : 12500.01
DATE SUBMITTED: 03-09-95
PROJECT : WSSRAP
SAMPLE ID : #NP-EPQ1-030995-C

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			INORGANICS		
NITRATE	1.0	mg/L	7.76	03-13-95	SM 418B
			METALS		
ARSENIC	10.0	ug/L	ND	03-14-95	SW 6010
CHROMIUM	1.0	ug/L	ND	03-14-95	SW 6010
COPPER	4.0	ug/L	ND	03-14-95	SW 6010
LEAD	3.0	ug/L	ND	03-14-95	SW 6010
MANGANESE	1.0	ug/L	8.1	03-14-95	SW 6010
MERCURY	0.15	ug/L	ND	03-13-95	SW 7470
SELENIUM	5.0	ug/L	ND	03-14-95	SW 6010

/L = PARTS PER MILLION(PPM)
/L = PARTS PER BILLION(PPB)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1250001M(222)

DATE : 03-16-95

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	03-14-95	ARSENIC	<10.0	ug/L
METHOD BLANK	03-14-95	CHROMIUM	<1.0	ug/L
METHOD BLANK	03-14-95	COPPER	<4.0	ug/L
METHOD BLANK	03-14-95	LEAD	<3.0	ug/L
METHOD BLANK	03-14-95	MANGANESE	<1.0	ug/L
METHOD BLANK	03-13-95	MERCURY	<0.15	ug/L
METHOD BLANK	03-14-95	SELENIUM	<5.0	ug/L
BLANK SPIKE	03-14-95	ARSENIC	104 %	RECOVERY
BLANK SPIKE	03-14-95	CHROMIUM	105 %	RECOVERY
BLANK SPIKE	03-14-95	COPPER	100 %	RECOVERY
BLANK SPIKE	03-14-95	LEAD	101 %	RECOVERY
BLANK SPIKE	03-14-95	MANGANESE	102 %	RECOVERY
BLANK SPIKE	03-13-95	MERCURY	97 %	RECOVERY
LANK SPIKE	03-14-95	SELENIUM	106 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1250001X(222)
DATE : 03-16-95

SAMPLE MATRIX : WATER
ATAS # : 12500.01
DATE SUBMITTED: 03-09-95
DATE EXTRACTED: 03-10-95
DATE ANALYZED : 03-10-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WSSRAP
SAMPLE ID : #NP-EPQ1-030995-C

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	REPORTING LIMIT	RESULTS
2,6-DINITROTOLUENE	0.011	ND
2,4-DINITROTOLUENE	0.021	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL	62 %
TETRACHLORO-M-XYLENE	95 %

ND= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: 1250001X(222)
DATE : 03-16-95

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 03-09-95
DATE EXTRACTED: 03-10-95
DATE ANALYZED : 03-10-95
METHOD REF. : SW846-8090, EPA METHODOLOGY
PROJECT : WSSRAP
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

COMPOUND	REPORTING LIMIT	RESULTS
2,6-DINITROTOLUENE	0.010	ND
2,4-DINITROTOLUENE	0.020	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL	62 %
TETRACHLORO-M-XYLENE	93 %

ND= NOT DETECTED ABOVE QUANTITATION LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: STANLEY M. REMINGTON
919 BROADMOOR LANE
ST. CHARLES, MO 63301
ATTN: STANLEY M. REMINGTON

REPORT: QC0316EX(222)
DATE : 03-16-95

SAMPLE MATRIX : WATER
ATAS # : SPIKE BLANK/SPIKE BLANK DUPLICATE
DATE SUBMITTED: 03-09-95
DATE EXTRACTED: 03-10-95
DATE ANALYZED : 03-10-95
PROJECT : WSSRAP
SAMPLE ID : SPIKE BLANK/SPIKE BLANK DUPLICATE

SPIKE BLANK/SPIKE BLANK DUPLICATE RESULTS

	SPIKE ADDED (ug/L)	AMT. FOUND BLK (ug/L)	AMT. FOUND SB (ug/L)	SB PERCENT RECOVERY
2,6-DINITROTOLUENE	0.250	ND	0.229	92 %
2,4-DINITROTOLUENE	0.250	ND	0.192	77 %

	AMT. FOUND SBD (ug/L)	SBD PERCENT RECOVERY	RECOVERY PERCENT DIFFERENCE
2,6-DINITROTOLUENE	0.236	94 %	2.2 %
2,4-DINITROTOLUENE	0.198	79 %	2.6 %

C

ENVIRONMENTAL SAMPLE CHAIN–C CUSTODY / AUTHORIZATION FORM

WELDON SPRING SITE REMEDIAL ACTION PROJECT (WSSRAP)
7295 HIGHWAY 94 SOUTH, ST. CHARLES, MO 63304
TELEPHONE (314) 441–8086 TELEX (314) 447–0803

Validation Documentation ☐

ES&H 4.1.1.1, Rev.6, Effective 11/93

WSSRAP Contact: _____ Lab/P.O. #: _____ Dept./Cost Code: _____
Phone Number: _____ Requisitioner: St. Charles
Request Number: _____ Turnaround Time: ☐ Standard ☐ Accelerated ☐ Priority ☐ Urgent ☐ Emergency

#	Sample ID	QC	Date Sampled	Matrix	Cont.	Preserv.	Parameters WD 3-9-95 1K3-BA ACLAB	Arch. (Y/N)
	NP-EPQ1-030995-C		3/9/95	Water	1-1 liter	HNO3	As,Cr,Hg,Mn,Se,Pb,SU 12500.01	N
					1-1 liter glass	Ice	2,4-DNT	
					1-1 liter	H2SO4	NO3	
					1-4 liter	HNO3	U, Gross alpha, Gross beta	

Sampler's Signature: _____ Checked By: _____ Technical Reviewer: _____

Relinquished By	Received By	Date	Time	Reason for Transfer	Seal Intact? (Y/N)	Cooler Temp
		3/9/95	12:03			
		3/9/95	1252	6°C		

AUTHORIZATION

MK–F Procurement _____ Date _____ ES&H _____ Date _____ Site Shipping Officer _____ Date _____

St. Louis County
Department of Health

February 24, 1995

Kenneth V. Miller
Bureau of Radiological Health
Missouri Department of Health
Jefferson City, MO 65102

Dear Mr. Miller:

The level of Gross Alpha and Gross Beta in the commercial samples from St. Charles County Court, Weldon Springs, Treatment Plant are as follows:

DATE: [01/01-95/01/31/95]	GROSS ALPHA	GROSS BETA	MDL(pCi/L)
Raw Water	1.9 ± 1.2	5.5 ± 1.0	1.0
Finished Water	< 1.0	4.4 ± 1.0	1.0

Wayne E. Black

Wayne E. Black, Ph.D.
Laboratory Director

pc - Dept. of Natural Resources - WSP - Jefferson City
Dept. of Natural Resources - WSP - St. Louis
✓ Mr. Thomas W. Aaron, St. Charles County Court, Weldon Springs % St. Charles County Water

WEB:y

Buzz Westfall
County Executive

Alpha Fowler Bryan, M.D.
Director

1 S. Meramec Avenue
Clayton, Missouri 63105

Phone: (314) 854-6000
Fax: (314) 854-6435
TDD: (314) 854-6446

An equal opportunity employer

DATE: 3/1/93

ST. CHARLES COUNTY WATER DEPARTMENT

MONTHLY WATER USAGE REPORT

MONTH OF: FEBRUARY	MONTHLY USAGE	DAILY AVG	Y TO D USAGE	Y TO D AVG
PLANT PRODUCTION	224119000	8.000	480170000	8.138
PLANT USE	20083000	0.710	28414000	0.481
DELIVERED TO SYSTEM	204036000	7.280	451772000	7.657
MISSOURI CITIES WATER	168420000	6.010	384213000	6.512
WATER DISTRICT #2 24" LINE	29688000	1.060	58822000	0.996
WATER DIST. #2 NEW MELLE	5727000	0.200	9755000	0.165
NATIONAL GUARD AREA	2000	0	21000	
TOTAL METER SALES	203837000	7.280	452811000	7.674
UNMETERED AND UNACCOUNTED	190000	0.060	190000	0.06

INVENTORY OF CHEMICALS

	LIME	CHLORINE
PREV. BALANCE	+ 267182	+ 9526
RECEIVED	+ 294860	+ 16000
TOTAL	= 562042	= 25526
USED	- 264316	- 14210
BALANCE	= 297726	= 11316
POUNDS PER 1000 GALLONS	= 1.179	= 0.063
PARTS PER MILLION	= 141	= 7.40
AVG. POUNDS PER DAY	= 9440	= 508
POUNDS USED YEAR TO DATE	= 575884	= 30100

DATE: 3/1/95 FOR THE MONTH OF: FEBRUARY

METER READINGS

ACCOUNT #	METER	TO: 3/1/95	FROM: 2/1/95	USAGED
MISSOURI CITIES BOOSTER STATION				
	ULTRA SONIC #1	+: 509580	-: 404196	=:
	ULTRA SONIC #2	+: 852885	-: 791113	=:
	TOTALIZER	+: 5094169	-: 4926486	=: 167683000

METERS BEFORE MISSOURI CITIES BOOSTER STATION

		TO: 1/30/95	FROM: 12/28/94	USAGED
04-50-1328350	1. FH ANNEX 4"	+: 1175	-: 1172	=: 3000
04-50-1328500	2. MO STATE SHED	+: 189	-: 183	=: 6000
04-50-1330000	3. DOE LAB LARGE	+: 410	-: 400	=: 10000
	SMALL	+: 11217	-: 10744	=: 473000
04-50-1330401	4. DOE FIRE LINE	+: 16211	-: 16104	=: 107000
04-50-1330701	5. DOE TRAILERS	+: 82	-: 82	=:
04-50-1330100	6. DOE 8" #1 LARGE	+: 6093	-: 6047	=: 46000
	SMALL	+: 6065	-: 6065	=:
04-50-1330200	7. DOE 8" #2 LARGE	+: 1963	-: 1962	=: 1000
	SMALL	+: 2440	-: 2440	=:
04-50-1320200	8. DOE 3"	+: 3754	-: 3734	=: 20000
04-50-1328550	9. FH SCHOOL	+: 12723	-: 12652	=: 71000
			TOTAL	=: 737000

MISSOURI CITIES TOTAL =: 168420000

WATER DIST. #2 24" LINE

	TO: 3/1/95	FROM: 2/1/95	USAGED
24" EAST	+: 201747	-: 201747	=:
24" WEST	+: 978124	-: 948436	=: 29688000
BYPASS	+: 2340	-: 2340	=:

WATER DIST. #2 TOTAL =: 2968800

NEW MELLE	+: 253494	-: 247767	=: 5727000

ANNUAL REPORT

APRIL 1, 1994 - MARCH 31, 1995

BY

Stanley M. Remington

Consulting Hydrologist

INTRODUCTION

Under Article IV - Accounting of my contract, I am required to submit an annual accounting of the preceding year with the County. The report should also include statistics on the Consultant's overall activities, all business revenues received by the organization and moneys spent.

Money Expended Under the Contract from April 1, 1994 through March 31, 1995

1. Chemical Analyses - - - - - - - - - - - - - - -	$18,283.00
2. Hydrology Consulting Services - - - - - - - -	13,062.50
3. Clerical -	1,950.00
4. Mileage -	973.50
5. Hotel -	173.84
6. Meals -	60.00
Total	$34,502.84

I had no other source of business revenues during this fiscal year.

ACTIVITIES

During the year monthly, quarterly and yearly samples were taken from the production and observation wells at St. Charles County Well Field at Weldon Spring. They were sent for analyses to the American Analytical and Technical Services (ATAS) on Fee Fee Road in St. Louis. This was done under Article I - General Terms, paragraphs A 1, 2 & 3 of the contract.

I attended several meetings, both public and meetings with other governmental agencies concerning the technical aspects of the Weldon Spring Waste Removal Project of the Department of Energy. This is under Article I, para A6.

Several reports were submitted to me by various agencies dealing with the clean-up of the Weldon Spring Chemical Plant Site and Quarry. This is under Article I para A4 & 5.

The two water treatment plants at the chemical plant site and quarry site were tested periodically by me and other agencies to ensure the validity of the results of the treatments. Appended are the WSSRAP Site Water Treatment Plant Batch Summary from the first through Batch S045 taken on 12/23/94. Batch S054 was completed at the end of March, 1995. The average batch size was 897,705 gallons at the plant site. Also appended are the samples taken by St. Charles County for both the Site and

Quarry from the beginning of treatments at both sites. The dates only run through 11/24/94 for the quarry and 1/18/95 for the site.

An estimated total of between 50,000 and 60,000 cubic yards of hazardous waste materials has been removed from the quarry as of March 31, 1995. An estimated total of 100,000 cubic yards was in the quarry originally. The material has been taken to a temporary site at the chemical plant site for storage until a permanent site can be selected. It appears that the temporary site will become a permanent site since no other states or localities are willing to take this material.

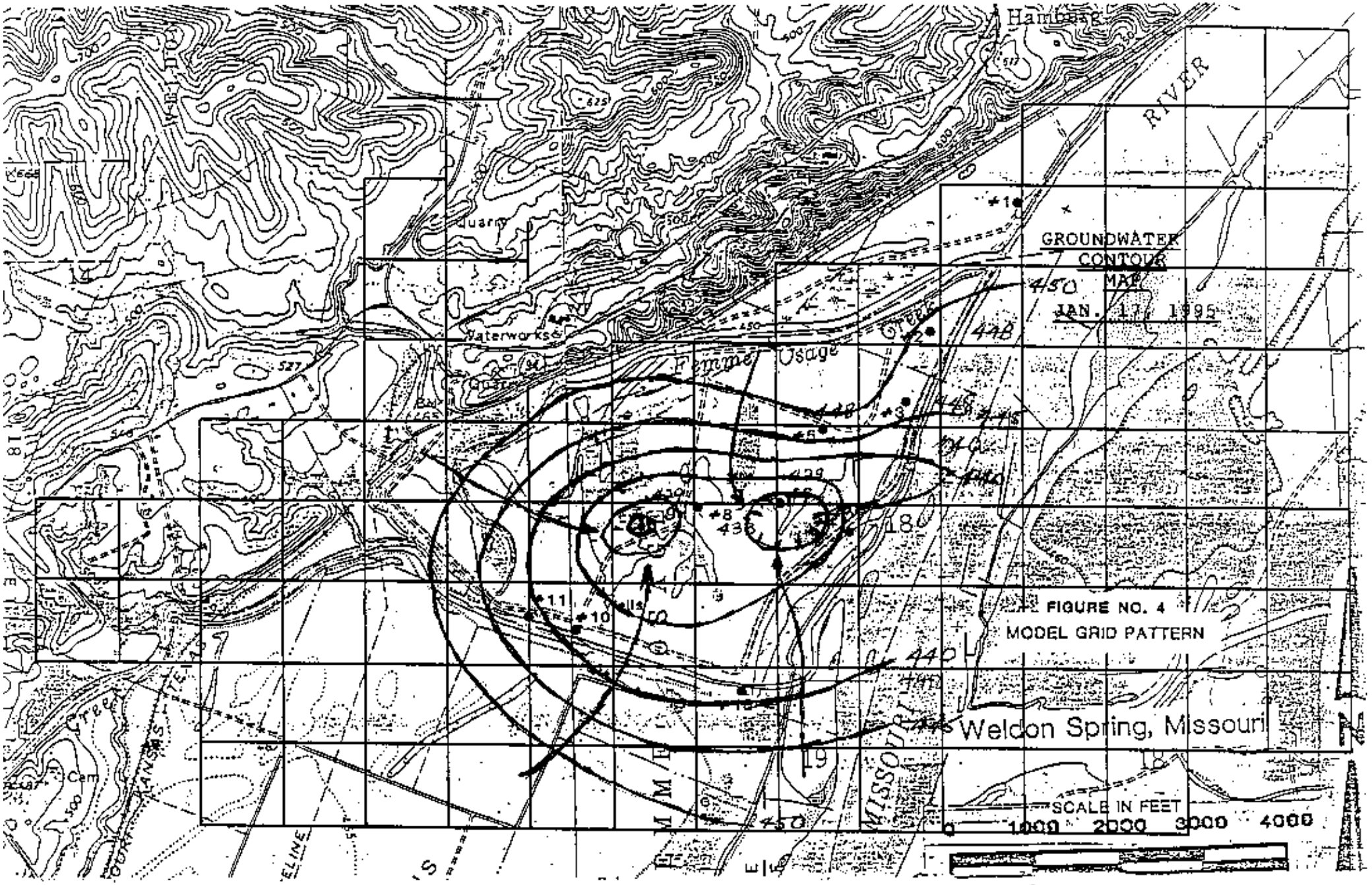
GROUNDWATER

Appended is a groundwater contour map constructed for the date of January 17, 1995. The usual cones of depressions are noted. Wells numbered 9 and 6 were pumping at the time of measurements so larger cones are noted. Also appended are hydrographs of all of the pumping wells from 1990 through January 1995. The effects of the floods in 1993 are evident on the groundwater levels in the well field. The water level has since gone down to near normal levels. Also the water stages of the Missouri river are shown at St. Charles and Hermann, Missouri. The flood effects are obvious.

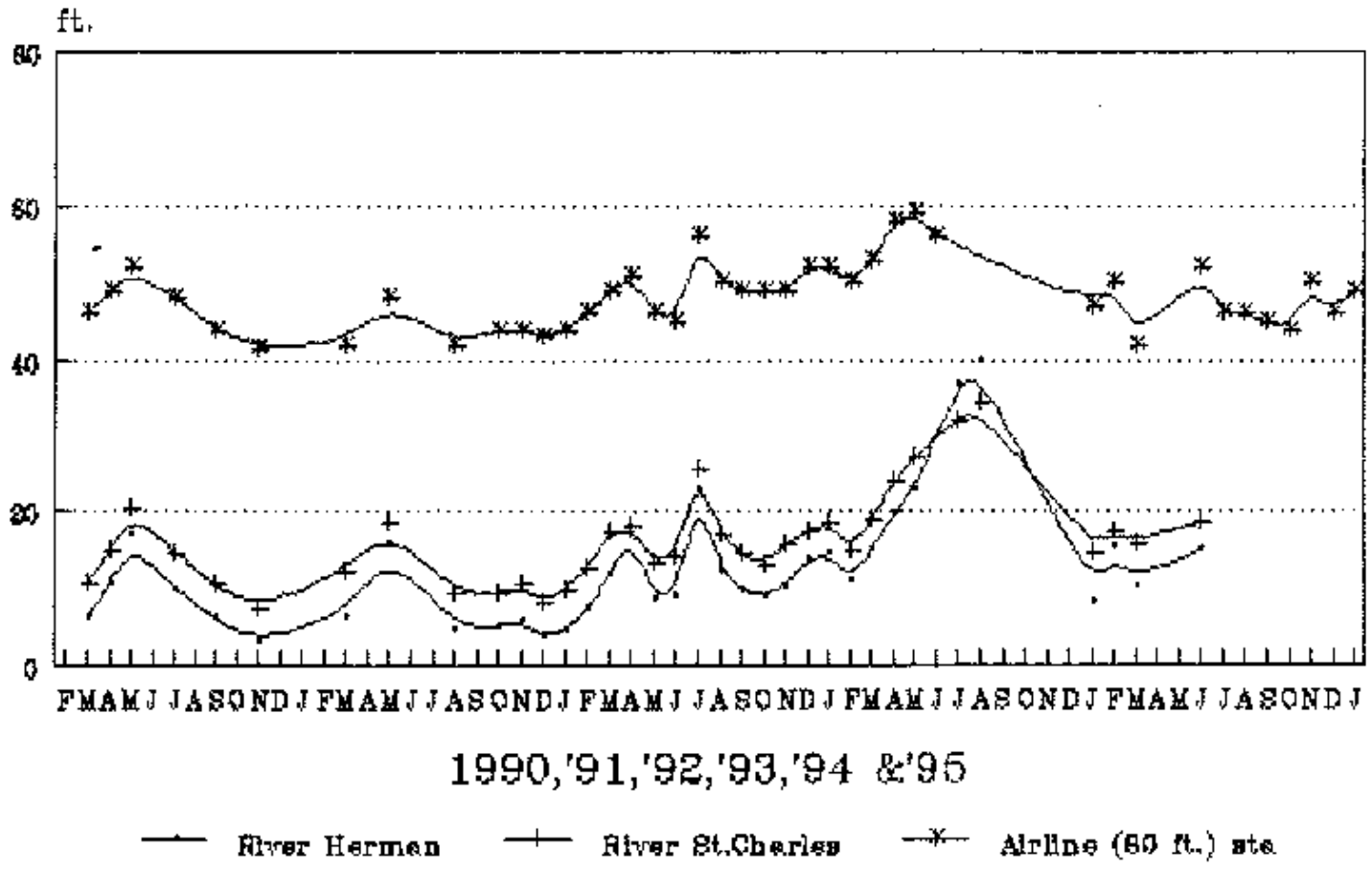
CONCLUSIONS

1. No hazardous chemicals have migrated into the St. Charles Well Field to date. It is unlikely that this will happen in the foreseeable future.
2. The reversal of flow toward the quarry is still in effect. It is apparent that most water into the quarry is from rainfall and not from groundwater. Pumping tests at the quarry show an extremely low output after pumping stabilization has been reached. It is only between 2 and 4 gallons per minute. It can be concluded that most water entering into the quarry is surface water runoff. This also indicates very little hazardous groundwater ever entered into the very impervious material underlying the quarry.
3. No public complaints were made about the functioning of the Weldon Spring Well Site during the year. There were a few adverse statements made concerning the treatment methods of the Department of Energy's two treatment plants, but they were not nearly as condemning as in the previous year.

Stanley M. Remington
Hydrology Consultant
St. Charles County
March 31, 1995

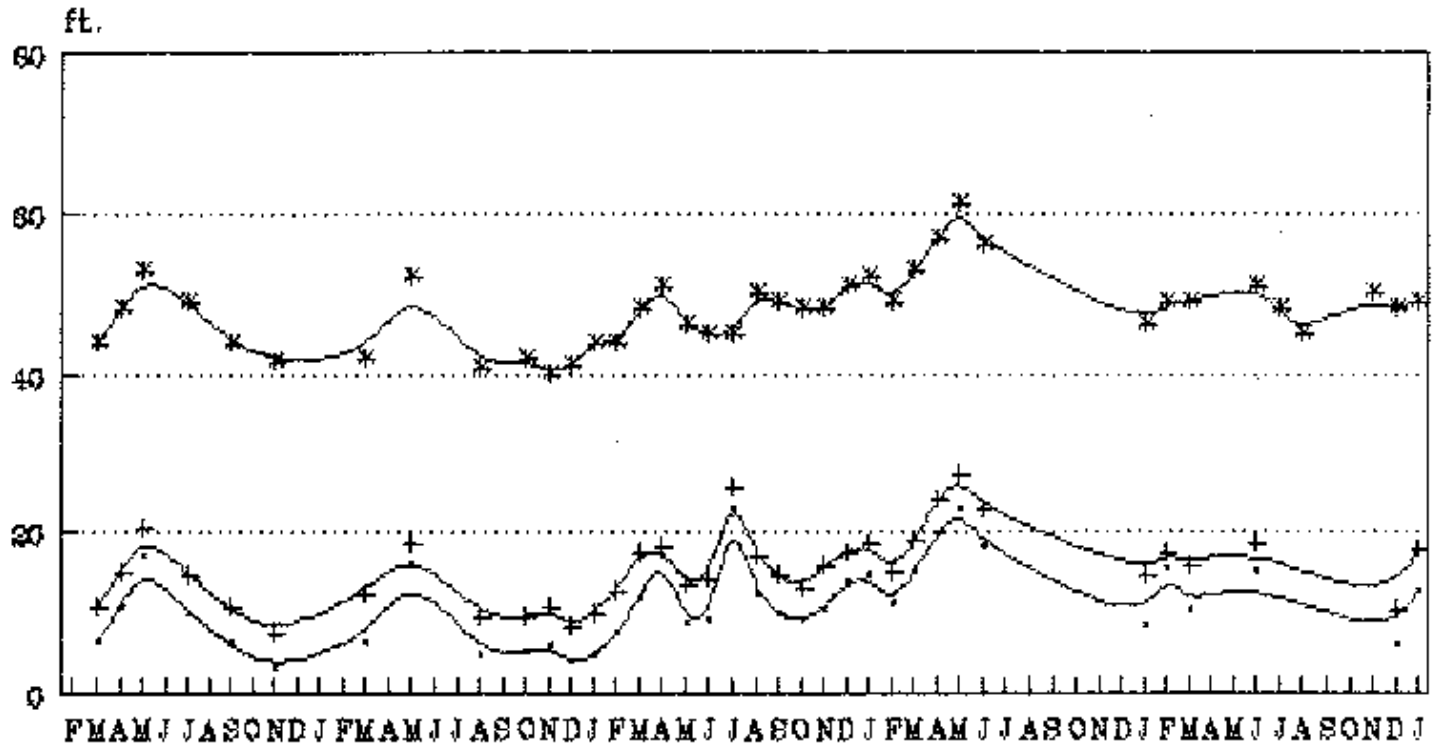

Hamburg
RIVER
Quarry
Waterworks
Femme Osage
Creek
GROUNDWATER
CONTOUR
MAP
JAN. 17, 1995
450
448
445
440
435
430
+1
+2
+3
+6
+8
+10
+11
FIGURE NO. 4
MODEL GRID PATTERN
Weldon Spring, Missouri
SCALE IN FEET
0 1000 2000 3000 4000
445 CONTOUR LINE
FLOW LINE

WELL #2
WATER LEVELS



TREAT WELL, NEW PUMP, 60' AIRLINE:DEC 99

WELL #3
WATER LEVELS

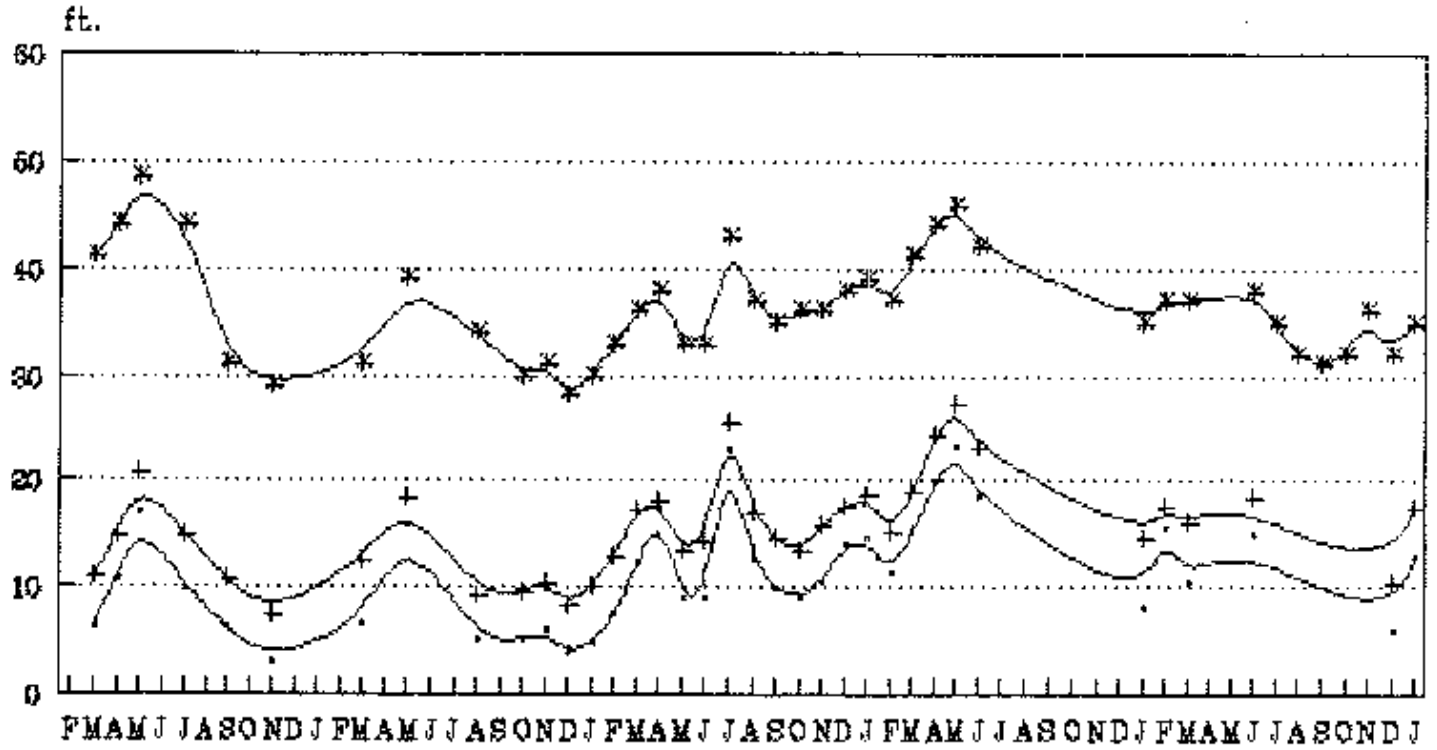


1990,'91,'92,'93,'94 &'95

River Herman — River St.Charles — Airline (70ft.) stat

ACIDIZE,NEW PUMP 2/90 ACIDIZE 6/94

WELL #4
WATER LEVELS

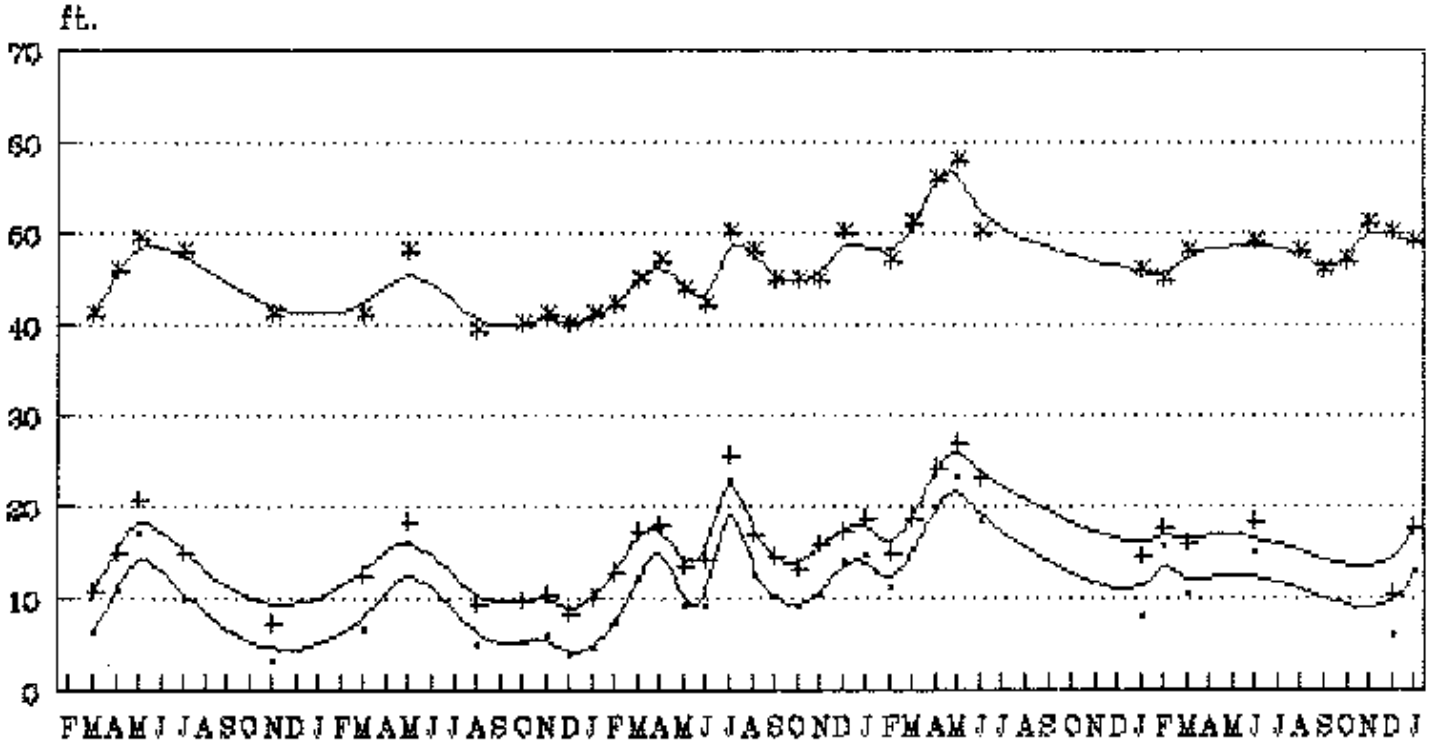


1990,'91,'92,'93,'94 &'95

River Herman — River St.Charles — Airline static

TREATED 8/90

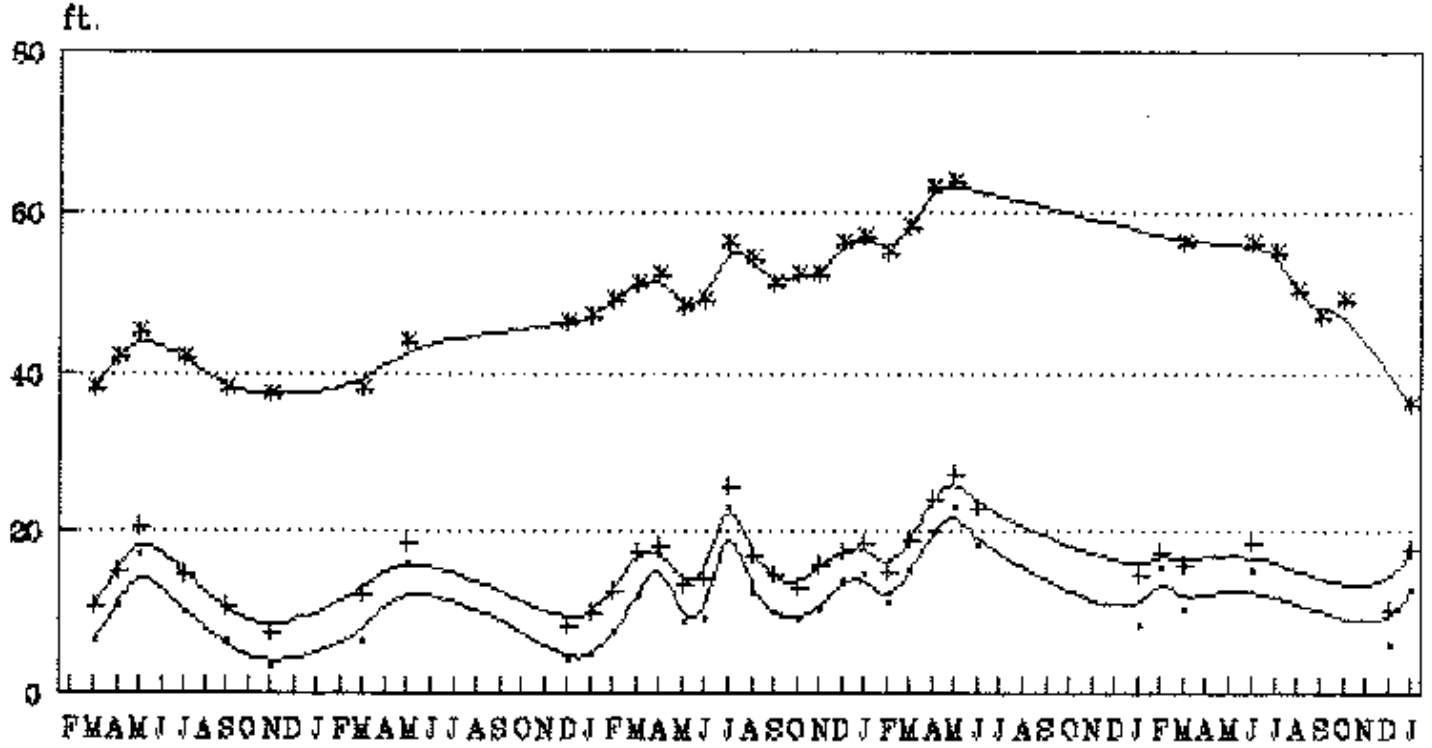
WELL #5
WATER LEVELS



River Herman — River St.Charles — Airline (80ft.) stat

NEW PUMP, TREATED:10/90, 7/94

WELL #6
WATER LEVELS

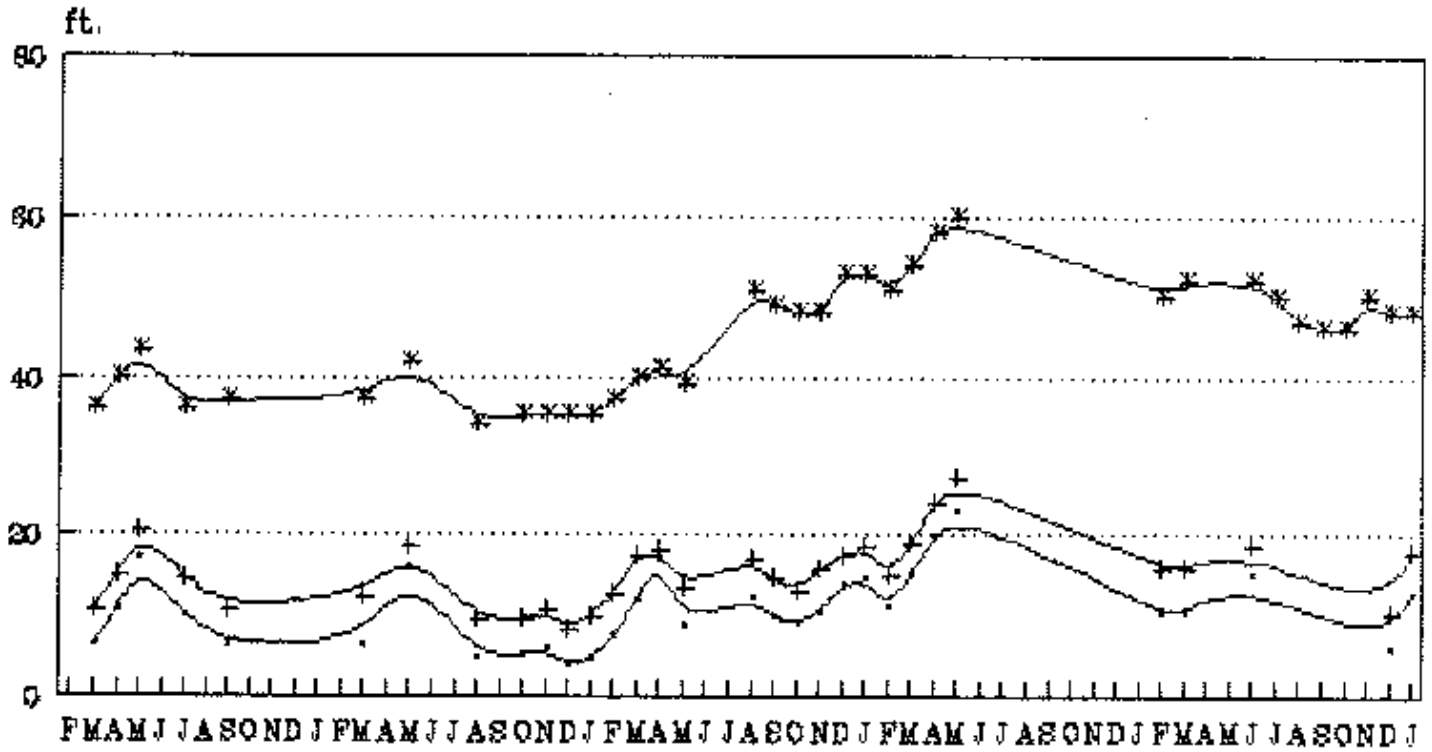


1990,'91,'92,'93,'94 &'95

River Hermen — River St.Charles — Airline (80ft.) stat

ACIDIZED '86,'89,'91 W/NEW PUMP,'94

WELL #7
WATER LEVELS

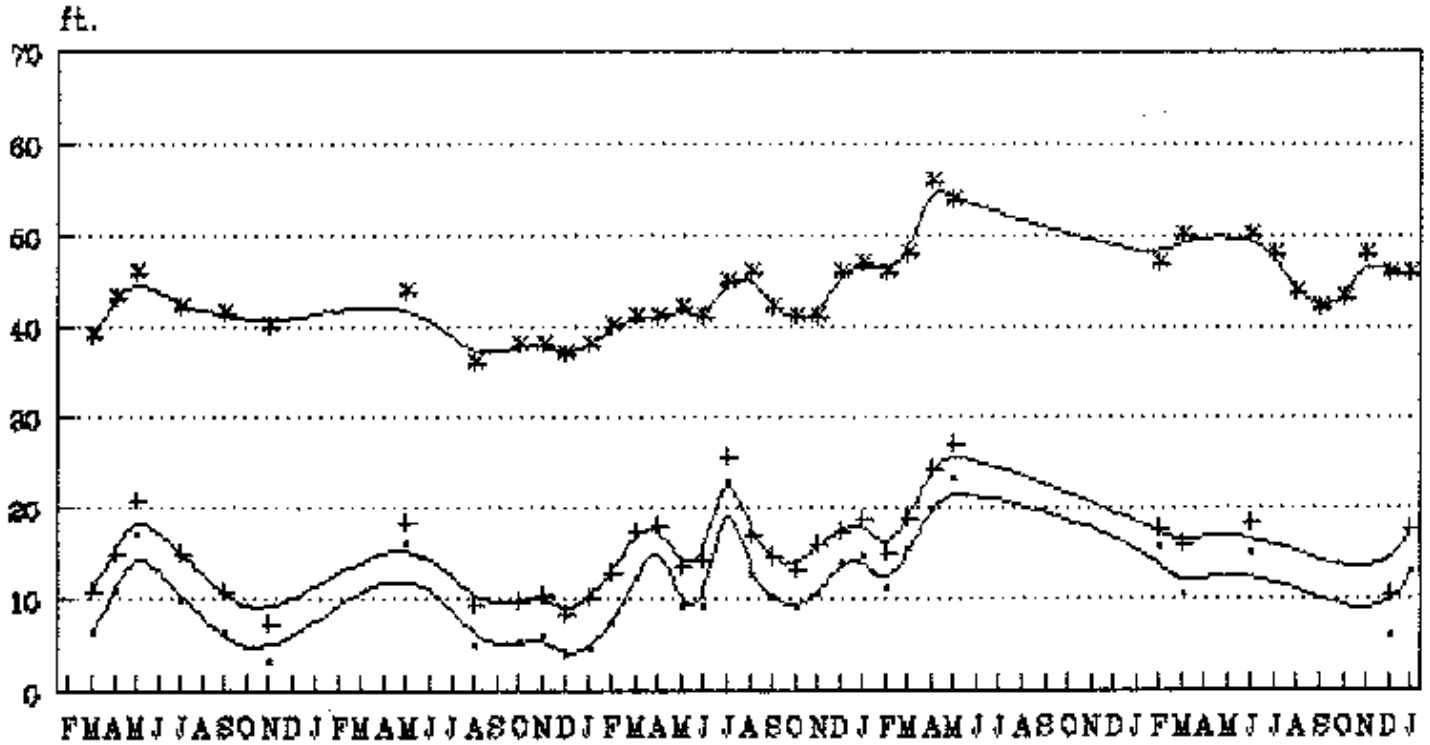


1990,'91,'92,'93,'94 &'95

River Herman — River St.Charles — Airline (70ft.) stat

ORIG SP CAP:235,CHEM TH:6/89,7/90

WELL #8
WATER LEVELS

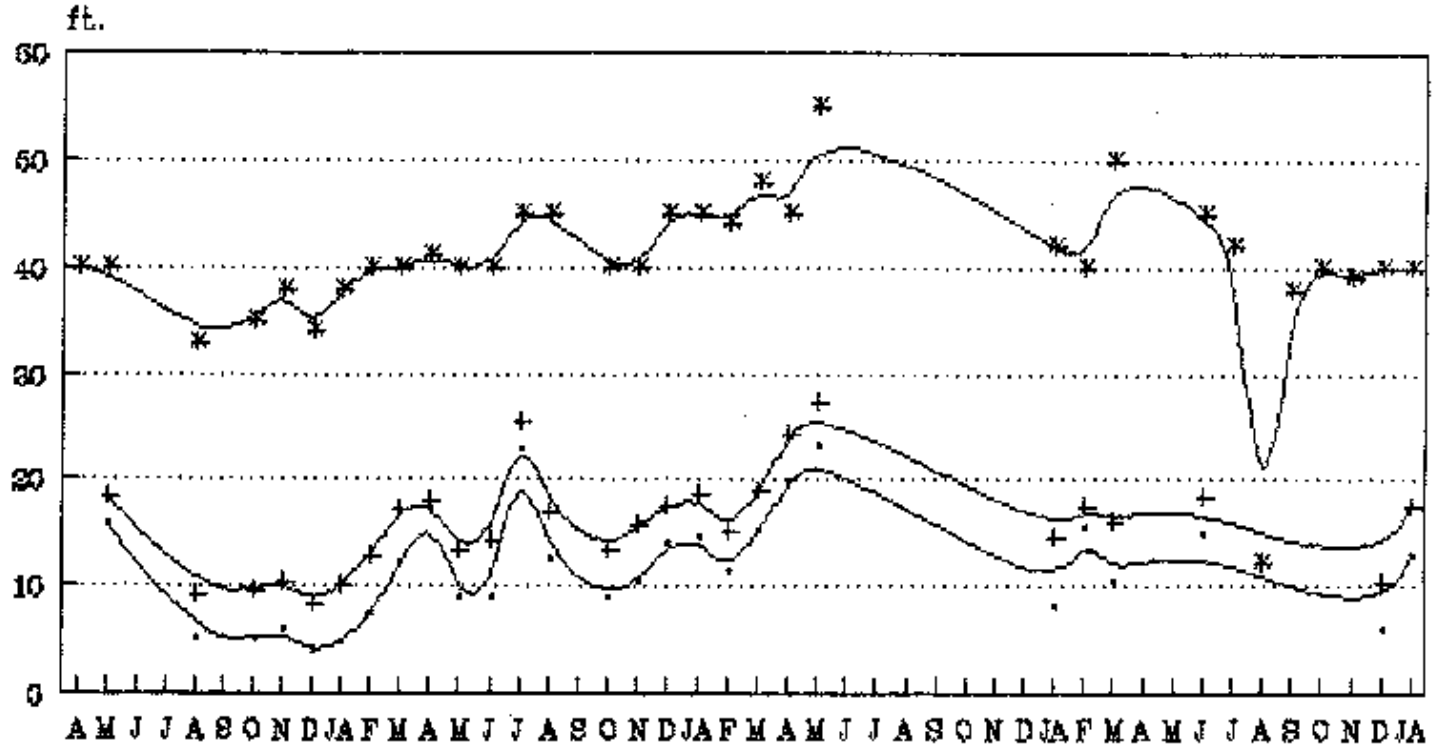


1990,'91,'92,'93,'94 &'95

River Herman — River St.Charles — Airline (70ft.) stat

ACIDIZED 1988,'89,'94 W/NEW PUMP

WELL #9
WATER LEVELS



1991,'92,'93,'94 &'95

River Hermen — River St. Charles — Airline (70 ft.) sta

ACIDEED 1/91

ST. CHARLES COUNTY

QUARRY WTP		SITE WTP	
Date Sampled	Batch No.	Date Sampled	Batch No.
11-19-92	Q001	4-5-93	S001
4-5-93	Q002	6-14-93	S002
4-22-93	Q003	7-21-93	S003
5-11-93	Q004	9-29-93	S008
6-14-93	Q005	11-11-93	S012
7-6-93	Q006	12-21-93	S016
8-3-93	Q008	3-1-94	S020
9-29-93	Q011	4-11-94	S024
10-13-93	Q012	5-25-94	S028
12-2-93	Q014	7-7-94	S032
6-16-94	Q022	8-24-94	S036
11-21-94	Q026	10-17-94	S040
		11-29-94	S044
		1-18-95	S049

03-Jan-95

WSSRAP SITE WATER TREATMENT PLANT BATCH SUMMARY

Batch #	Pond #	FLOWMETER PLANT START Date	START Gallons	FINISH Date	FINISH Gallons	Total Gallons	Cumulative Gallons	SAMPLED BY PMC	DNR	EPA	STC	STL
S001	2	5/7/93	995,100	5/11/93	1,613,900	618,800	618,800	X	X	X	X	X
S002	2	7/6/93		7/9/93		757,000	1,375,800	X	X	X	X	X
S003	2	8/15/93	1,613,900	8/18/93	2,161,700	547,800	1,923,600	X	X	X	X	X
S004	1	8/18/93	389,200	8/22/93	1,451,800	1,062,600	2,986,200	X	X			X
S005	2	9/3/93	2,161,700	9/7/93	3,025,700	864,000	3,850,200	X	X	X		X
S006	1	9/15/93	1,451,800	9/21/93	2,521,500	1,069,700	4,919,900	X	X			X
S007	2	9/27/93	3,025,700	9/30/93	3,731,700	706,000	5,625,900	X	X			X
S008	1	10/8/93	2,520,900	10/10/93	3,471,300	950,400	6,576,300	X	X	X	X	X
S009	2	10/19/93	3,731,700	10/21/93	4,391,200	659,500	7,235,800	X	X			X
S010	1	11/1/93	3,471,300	11/3/93	4,280,500	809,200	8,045,000	X	X	X		X
S011	2	11/9/93	4,391,200	11/13/93	4,998,000	606,800	8,651,800	X	X			X
S012	1	11/19/93	4,280,500	11/22/93	5,116,000	835,500	9,487,300	X	X		X	X
S013	2	12/2/93	4,998,100	12/4/93	5,650,000	651,900	10,139,200	X	X			X
S014	1	12/9/93	5,116,000	12/11/93	5,982,400	866,400	11,005,600	X	X	X	X	X
S015	2	12/21/93	5,650,000	12/23/93	6,363,700	713,700	11,719,300	X	X			X
S016	1	1/7/94	5,982,400	1/9/94	6,693,900	711,500	12,430,800	X	X		X	X
S017	2	1/24/94	6,363,700	1/31/94	7,065,800	702,100	13,132,900	X	X			X
S018	1	2/14/94	7,093,500	2/17/94	7,663,100	569,600	13,702,500	X	X			X
S019	2	2/24/94	7,663,100	2/28/94	8,382,500	719,400	14,421,900	X	X			X
S020	1	3/9/94	0	3/11/94	826,500	826,500	15,248,400	X	X		X	X
S021	2	3/18/94	8,382,500	3/20/94	9,071,700	689,200	15,937,600	X	X			X
S022	1	3/25/94	826,500	3/28/94	1,828,400	1,001,900	16,939,500	X	X			X

03-Jan-95

WSSRAP SITE WATER TREATMENT PLANT BATCH SUMMARY

Batch #	Pond #	FLOWMETER PLANT START Date	START Gallons	FINISH Date	FINISH Gallons		Total Gallons	Cumulative Gallons	SAMPLED BY PMC	DNR	EPA	STC	STL
S023	2	4/11/94	9,071,700	4/14/94	9,900,100		828,400	17,767,900	X	X			X
S024	1	4/15/94	1,828,400	4/19/94	2,978,500		1,150,100	18,918,000	X	X		X	X
S025	2	4/29/94	2,978,500	5/2/94	4,179,000		1,200,500	20,118,500	X	X			X
S026	1	5/6/94	4,179,000	5/9/94	5,410,700		1,231,700	21,350,200	X	X			X
S027	2	5/18/94	5,410,700	5/21/94	6,570,300		1,159,600	22,509,800	X	X			X
S028	1	6/2/94	6,570,400	6/5/94	7,512,700		942,300	23,452,100	X	X			X
S029	2	6/14/94	0	6/16/94	500,299	2	700,299	24,152,399	X	X			X
S030	1	6/24/94	0	6/26/94	624,747	3	624,747	24,777,146	X	X			X
S031	2	7/5/94	0	7/7/94	929,533		929,533	25,706,679	X	X			X
S032	1	7/14/94	11,154	7/16/94	916,926		905,772	26,612,451	X	X		X	X
S033	2	7/26/94	929,533	7/28/94	1,808,285		878,752	27,491,203	X	X			X
S034	1	8/9/94	0	8/11/94	945,236		945,236	28,436,439	X	X			X
S035	2	8/17/94	945,236	8/19/94	1,829,940		884,704	29,321,143	X	X			X
S036	1	8/30/94	4,306	9/2/94	1,690,042	4	1,150,000	30,471,143	X	X		X	X
S037	2	9/16/94	7,512,700	9/18/94	8,366,200		853,500	31,324,643	X	X			X
S038	1	9/30/94	8,366,200	10/4/94	9,195,900		829,700	32,154,343	X	X			X
S039	2	10/13/94	9,195,900	10/15/94	10,122,600		926,700	33,081,043	X	X			X
S040	1	10/25/94	10,122,600	10/28/94	11,345,300		1,222,700	34,303,743	X	X		X	X
S041	2	11/4/94	11,345,300	11/7/94	12,647,000		1,301,700	35,605,443	X	X			X
S042	1	11/14/94	12,647,000	11/18/94	13,880,100		1,233,100	36,838,543	X	X			X

S016 - S046

03-Jan-95

WSSRAP SITE WATER TREATMENT PLANT BATCH SUMMARY

Batch #	Pond #	FLOWMETER PLANT START Date	START Gallons	FINISH Date	FINISH Gallons	Total Gallons	Cumulative Gallons	SAMPLED BY PMC	DNR	EPA	STC	STL
S043	2	11/23/94	13,880,100	11/25/94	15,000,600	1,120,500	37,959,043	X	X			X
S044	1	12-6-94	15,000,600	12-8-94	16,143,300	1,142,700	39,101,743	X	X			X
S045	2	12-16-94	9,900,100	12-18-94	10,857,200	957,100	40,058,843	X	X			X
S046	1	12-23-94	16,143,300	12-27-94	17,378,900	1,235,600	41,294,443	X	X			X
S058		4-4-95										

Average Batch Size	897,705
Minimum Batch Size	547,800
Maximum Batch Size	1,301,700

NOTES:
1 - (Batch S002) Flowmeter removed for repairs from the River.
2 - (Batch S029) 300K gallons were used to flush Imhoff tank. Power outage reset flowmeter value before discharge was complete.
3 - (Batch S030) 425K gallons were used to support work to the Imhoff tank.
4 - (Batch S036) Flowmeter failed to give accurate reading. Estimated reading at 1,150K.

McClintock\SWTP\Batchsum