MILLER SPRINGS REMEDIATION MANAGEMENT, INC.
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A Subsidiary of Occidental Petroleum Corporation

WNY Operation Office

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March 31, 2004

Mr. Gerald J Rider, P.E.
Chief, Operation, Maintenance and Support Section
New York State Department of Environmental Conservation
Bureau of Water Compliance Programs
625 Broadway, 4th Floor
Albany, NY 12233-3056

Re: Love Canal 2003 Annual Report

Dear Mr. Rider:

On behalf of Occidental Chemical Corporation, enclosed are three (3) copies of:

- Love Canal 2003 Annual Report; and
- Love Canal 2003 Operations/Monitoring Report

The Annual Report is a brief summary of the Operation/Monitoring Report that we distribute to individuals on the mailing list, in accordance with Section 4. of Appendix B of the Consent Judgment between Occidental Chemical Corporation (OCC) and the State of New York.

An electronic copy of the full text, figures and tables associated with this report are included on the attached CD as Adobe Acrobat pdf files. If you have any questions please do not hesitate to call.

Sincerely,

Donald McLeod, P.E..

c.c. D. Duda, EPA Region 2
D. King, NYSDEC
M. Basile EPA Public Information Office
B. Downie, MSRM

2003 OPERATION/MONITORING REPORT
LOVE CANAL SITE
NIAGARA FALLS, NY

Occidental Chemical Corporation
Miller Springs Remediation Management, Inc.
Glenn Springs Holdings, Inc.

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1.0 INTRODUCTION

Operation of the Love Canal Site (Site) was transferred from the New York State Department of Environmental Conservation (NYSDEC) to Occidental Chemical Corporation (OxyChem) in April 1995.

Effective July 1, 1998, Site responsibility was assigned by OxyChem to Miller Springs Remediation Management, Inc. (MSRM), a subsidiary of Occidental Petroleum Corporation. This report is the eighth annual report prepared by or on behalf of OxyChem and covers operating and monitoring activities for 2003.

Love Canal Site.
Located South East end in the City of Niagara Falls, NY, eighth mile north of the Niagara River.

2.0 Remedial systems

Operation of remedial systems to prevent the off-Site migration of chemical contaminants from the Site began in October 1978 with the installation of a barrier drain along the east and west sides of the south section of the Canal; the barrier drain was later extended to completely encompass the Canal. The barrier drain, designed to intercept the shallow lateral groundwater flow, consists of a trench 15 to 25 feet deep and 4 feet wide. Installed within the trench is an 8-inch diameter perforated clay tile drain centered in 2 feet of uniformly sized gravel which is overlain to the surface with sand. Lateral trenches filled with sand were excavated perpendicular to the barrier drain in the direction of the canal. The tile drain is graded toward a series of manholes and wet wells (PC-1A / PC-2A North / Central and PC-1 / PC-2 South) where the leachate is collected. The leachate is pumped from the wet wells to two underground holding tanks (PC-3A North / Central and PC-3 South) where it is held prior to being treated at the on Site treatment facility and discharged into the City of Niagara Falls (City) sanitary sewer system.

2.1 OPERATIONS OF THE BARRIER DRAIN AND WELL COLLECTION SYSTEMS

2.1.1 Barrier Drain System

There was no major maintenance performed on the Barrier Drain system during the year. The system functioned without any problems or irregularities. A slight build-up of sludge was found in Manhole 6B (Second Manhole North of PC2A) within the Northwest section of the collection system. The manhole and the flumes of the manhole were flushed of residual build-up.

2.1.2 Wet Well Collection System

The collection well system consists of two sectors, the Northern / Central and the Southern Collection System. The collection systems were operational and functioned properly throughout the year.

The adjacent 102nd Street Landfill Site leachate line connection into the Love Canal Treatment Facility (LCTF) at the southern storage tank (PC3) was

completed in March of 1999. This provides for treatment of the 102nd Street leachate through the LCTF.

3.0 GROUNDWATER TREATMENT AND MONITORING

3.1 GROUNDWATER TREATMENT

3.1.1 Treatment System

The treatment system consists of clarification, bag filtration, and carbon treatment prior to discharge to the City sanitary sewer system under Permit #44 issued by the City. The City reissued the wastewater discharge permit to OxyChem on January 6, 2000; the permit has a 5-year term and will be up for renewal in 2005.

One carbon bed (V1, 20,000 lbs. of activated carbon) was changed during 2003. An internal visual inspection of the bed was performed at the time of the change. The supports of the internal sparger were reinforced while the vessel was open for inspection.

Additionally the bottom drain nozzle of the bed showed some wear on the liner and was recoated.

Routine maintenance activities were performed throughout the year. A list of the major activities is presented below (see attached Table 4.1 for a detailed list of Site activities for the year 2003):

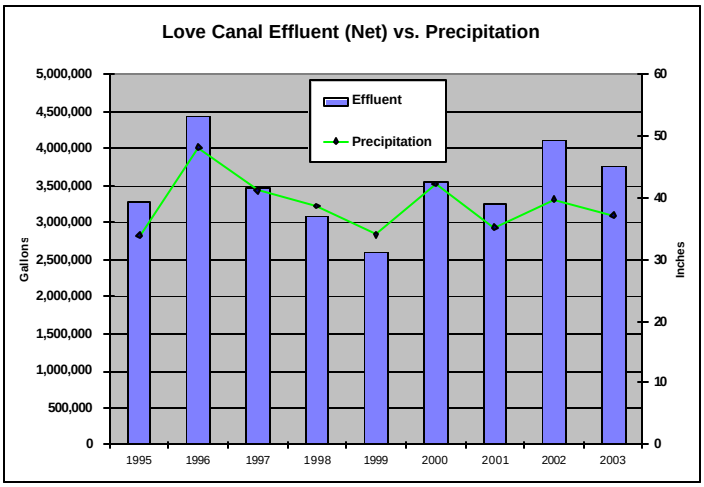
- Repair of Carbon Bed V1 internal sparger supports.
- Replacement of PC3A vertical pumps with submersible pumps (Gorman Rupps), which eliminates pump-related confined space entry and standardizes the Site's pumps.

3.1.2 Effluent Discharge

The LCTF discharged to the Niagara Falls sanitary sewer system on 148 days in 2003.

Unusually high rainfall in the area around Love Canal can result in surcharged sewers. The surcharge leads to overflow at the combined sanitary and storm sewer overflow points. Other points in the sewer shed require manual bypass pumping. Consequently, to minimize this overflow, the City of Niagara Falls requires the LCTF to cease discharge during these surcharge events. For the year, two requests from the City to stop discharging occurred. Groundwater treated at the Love Canal Leachate Treatment Facility was as follows:

- Total treated at LCTF (including 102nd Street): 4,345,500 gallons
- Total pumped from 102nd Street Site: 580,170 gallons
- Net Love Canal Collection: 3,770,337 gallons



Love Canal Effluent Discharge (Net gallons) vs. Annual Precipitation (inches), from 1995 to present.

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Table 3.1 shows the monthly total and average treated groundwater quantities for the 1995 to 2003 periods. Additionally, starting with 2000, the total days of discharge per month are shown.

In March of 1999, the adjacent 102nd Street Landfill Site leachate collection system was connected to the Love Canal Site to transfer the 102nd Street leachate into the Love Canal southern storage system (PC3). For the year, the four-well system at

102nd Street pumped 580,170 gallons to Love Canal (PC3), where the water was then treated along with groundwater accumulated on the Site.

3.1.3 Sampling

Sampling of the effluent discharged to City's sanitary sewer system occurred quarterly as required under the City of Niagara Falls Discharge Permit #44. As part of the permit requirements, the City and MSRM personnel completed an annual verification sampling. The Quarterly Effluent sampling was performed and sample results were submitted to the City and State agencies; analytical results were below the City's permitted limits for the sampled parameters during all events.

3.1.4 Precipitation

Precipitation in the Niagara Falls region totaled 37.15 inches (Buffalo Airport, National Weather Service data), compared to the average of 39.2 inches (1995 through 2002). Table 3.1 provides historic precipitation data.

3.2 GROUNDWATER MONITORING

3.2.1 Groundwater Quality

Sampling and analytical protocols for the sampling program have been established and are set forth in the "Sampling Manual, Love Canal Site, Long-Term Groundwater Monitoring Program" (LTGMP) dated January 1996.

3.2.2 Chemical Monitoring

The chemical sampling event was performed during the second quarter of 2003. In conjunction with the LTGMP and NYSDEC thirty-nine (39) wells were designated for groundwater monitoring in 2003. During the monitoring events, NYSDEC obtained eight split samples. Sampling was collected from thirty-eight (38) wells (one well no longer exists, 3151). Figure 3.1 identifies the wells sampled and their locations. Table 3.2 provides a summary of the wells, 20

overburden and 18 bedrock that were sampled along with the number of compounds found at or above the detection limits in each well.

Table 3.3 presents the analytical results from the annual monitoring and the analytes that were detected. Of the thirty-eight (38) sampled wells, twenty-three (23) were below detection limits of the analyzed compounds. There were forty-one (41) discrete compounds detected: eighteen (18) VOCs, twelve (12) semi-volatile organic compounds (SVOCs), and eleven (11) pesticides. The majority of these compounds (thirty-two) (fifteen (15) VOCs, ten (10) SVOCs, and seven (7) pesticides) were detected in well 10135 (and/or its duplicate sample), which historically has the highest number and concentration of compounds. Well 10135 is located within the boundaries of the remedial Site in the southwestern zone and groundwater in the vicinity of this well is captured by the collection system. Table 3.4 presents a summary of detected compounds of four long-term monitoring wells (10210A, 10210B, 10210C, and 10135) from 1990 to 2003. This data shows that the compounds detected in 2003 were at similar concentrations to those compounds detected in previous years.

Monitoring Well 10135 well located in the Southwest end of the Site.

As part of the sampling event and as part of the lab quality assurances three field duplicate samples, field blanks, two rinse blanks and a di-water were obtained. Rinse blanks and the deionized water blank were collected and analyzed with the samples. All field duplicates showed acceptable comparability with the original sample results indicating acceptable analytical and field precision. Generally, field blank results were non-detect with the exception of some VOCs, SVOCs, and pesticides present at low levels. All sample results with similar concentrations as in the blanks were qualified as non-detect.

Ecology and Environment, Inc. (E&E), located in Lancaster, New York, conducted the sample analyses. Conestoga-Rovers & Associates (CRA), located in Niagara Falls, New York, performed the analytical Quality Assurance / Quality Control (QA / QC). Both the analytical data and the QA / QC report are on file at the MSRM Western New York Office at Love Canal and are available for review upon request.

The Quality Assurance / Quality Controls (QA / QC) criteria by which these data have been assessed are outlined in:

- Methods 95-1, 95-2 and 95-3 referenced in the NYSDEC Analytical Services Protocol (ASP) (10 / 95 Rev); and
- "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" EPA 540 / R-99 / 008, October 1999.

The QA / QC evaluation concluded all data were judged acceptable with the qualifications noted in the report.

The 2003 chemical analytical results are consistent with previous Long-Term Monitoring analytical results. The chemistry detected was at low levels and does not indicate a failure in the barrier drain nor pose an immediate threat to groundwater quality.

3.2.3 Hydraulic Containment

Water levels were measured at six nested piezometer strings (1140, 1150, 1160, 1170, 1180, and 1190) in March, May, August, and December 2003. Figures 3.2 to 3.7 show the overburden groundwater flow conditions for May 2003 along the six-piezometer strings. The wells in the figures are ordered from the well furthest from the outside of the barrier drain to the barrier drain and the well inside the area enclosed by the barrier drain. The water level data are presented in Tables 3.5A to 3.5F.

The groundwater level data shows that groundwater flow in the vicinity of the barrier drain was toward the barrier drain. The barrier drain is drawing

groundwater from outside the drain and successfully capturing horizontal groundwater flow from the Site.

3.2.4 Well Maintenance

Rehabilitation of monitoring well 3257 was completed February 19, 2003 based on the NYSDEC approved work plan (Replacement Well 3257 Work Plan, August 2, 2002). Monitoring Well 3257 is a bedrock zoned well (located just north of Colvin Boulevard. & 97th Street) and is part of the Annual LTGMP. The well was sampled in 2003 as part of the monitoring event.

In 2003, an inventory of Site's monitoring wells (hydraulic and chemical) was initiated. A consensus between NYSDEC and MSRM on an active well list was compiled. The active wells list was developed based on the LTGMP and their relevance to the current on Site monitoring program. The wells were located, painted, labeled and coded to identify chemical monitoring and hydraulic monitoring wells. Upon completion, a summary of active wells and the wells proposed to be decommissioned will be submitted to the agencies.

4.0 OTHER ACTIVITIES

Summaries of normal activities and repairs performed in 2003 are listed in Table 4.1 (including those items previously mentioned in Section 3.0). A brief description of major activities is presented below.

4.1 PROCESS ACTIVITIES

Activities that occurred during the year included the following:

- MSRM has continued to upgrade the process control system software and programming. The upgrades provide improved monitoring, logging, and control of the Site collection and treatment plant process parameters.
- Maintenance on the Barrier Drain Collection system as noted in Section 2.1.1.
- Sludge Holding and Transfer system decommissioned, which include the removal of the indoor Sludge Holding Tank air-diaphragm transfer pump and the two inch transfer line to the Outside (4) NAPL Storage Tanks.
- Outside NAPL Storage Tanks, feed lines cleaned and decommissioned along with supporting utility lines. Additionally the four 10,000 gallon tanks were opened, power washed and vacuumed out of any residual fluids. This was done in preparation of future demolishing of the tanks.

4.2 NON-PROCESS ACTIVITIES

Activities that occurred throughout the year included the following:

- Removal of abandoned Power Panels (Plasma Thermal Destruction Unit)
- Removal of three utility poles located on the eastern side of Site adjacent to PC-1A.

- Security update of Site, which included removal of access gates and man gates around parameter with solid fence and update of on Site

security systems.

4.3 COMMUNITY OUTREACH

Community Outreach programs during 2003 included such activities as beautification of the neighborhood and tours of the facility.

4.3.1 Beautification

- Northern slope of Site along Colvin Boulevard. transformed from stoned covered hillside to plush grass highlighted with shrub beds and evergreens.

- Planting of forty (40) mature evergreens along 95th Street by the Dewatering Containment Facility (DCF) area.

- Several new shrub-beds: six (6) outside fence along 95th St. and one (1) main bed inside fence at the corner of Frontier and 95th.
- Maintenance and landscaping of the Site and surrounding areas.
- Maintenance of flowerbeds and shrubs along Colvin Boulevard and Frontier Avenue.

- Cleanup of discarded debris around fence line and adjacent lots.

4.3.2 Inspections

A Site visit and inspection was conducted on June 12, 2003 as part of a five-year review. The Site inspection team included Damian Duda (Site RPM), John Malleck (Section Chief) and Mike Basile (CIC) from EPA, Brian Sadowski and Jeff Konsella from NYSDEC, Frank Cornell, former Executive Director of LCARA, and Don Tubridy and Brian Downie from MSRM., The five-year review was conducted by Damian Dudawho is the U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM). This was the first five-year review for the Love Canal site (Site). This review was performed in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to ensure that implemented remedies are protective of public health and the environment and that they function as intended by the decision documents.

A Hazardous Waste Compliance Inspection was done on September 18, 2003 by representatives from the NYSDEC. The inspection is done to determine compliance with NEW York State Hazardous Waste Regulations. Shortly following the inspection a review letter and inspections package was submitted to MSRM. The inspection showed the inspector observed no violations of the NEW York State Hazardous Waster Regulations.

The City of Niagara Falls Fire Department toured the Site (July 16, 2003) and reviewed the Emergency Response Plan. This tour included the review of property access during any emergency responses, layout of Site and location of buildings, storage areas of equipment and reactive materials (gasoline, paints, etc.) and the MSRM personnel responders list.

4.3.3 Tours

Tours of the facility have been given throughout the years to representatives of various environmental agencies (domestic and foreign) and other community

groups. The tours included both an informational orientation accompanied with visual aids followed by a guided tour of the treatment facility and landfill.

4.3.3 Communications

The Annual Report for 2002 was issued to 24 citizens and agencies last year. The report summarizes items such as the amount of groundwater treated on Site and then discharged to City's sanitary sewer, maintenance activities and other non-operational activities for the year.

4.4 WASTE GENERATION

A total of 75,100 pounds of hazardous waste was generated from various activities on Site and from 102nd Street. The waste materials were then sent off-Site for proper disposal in accordance with all applicable laws and regulations (landfilled, incinerated or reclaimed depending on categorization).

4.4.1 Hazardous Waste

A total of 75,100 pounds of hazardous waste were generated on Site. Of this, 60,700 pounds was generated at the LCTF, and the balance (14,400 pounds) was generated from the 102nd Street Site.

Roll-Off Bins Used to Ship out Bulk Spent Carbon for Incineration.

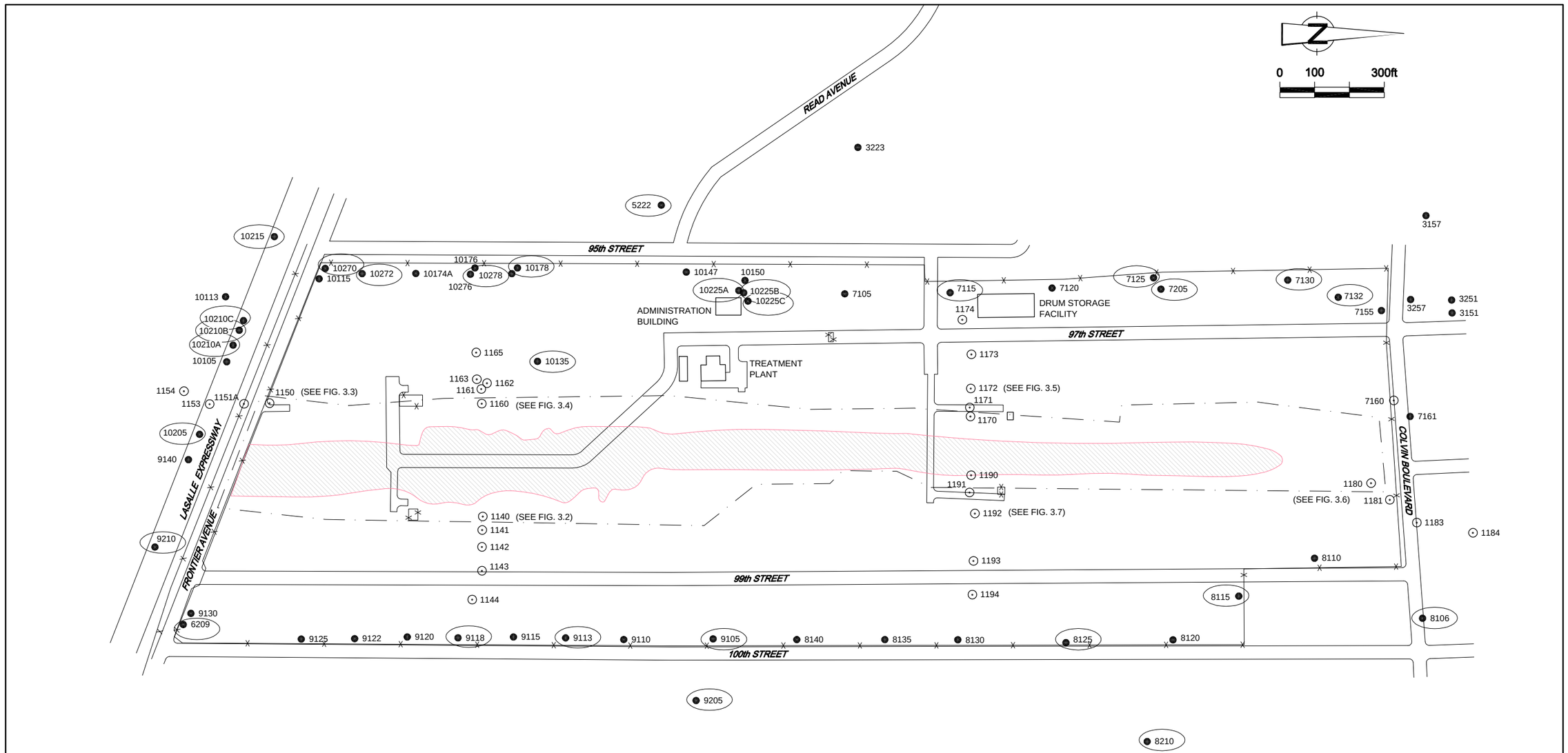
The waste was categorized as follows:

- Spent carbon used in the treatment process totaled 40,380 pounds.
- Debris / filters / Personal Protective Equipment (PPE) / Misc. Equipment totaled 14,320 pounds.
- NAPL (sediment / sludge from process cleanout) totaled 6,000 pounds.
- 102nd Street NAPL recovered from the extraction well system totaled 14,400 pounds.

5.0 CONCLUSION

The 2003 data indicate that there was no significant change in chemical and hydrological conditions at the Site. The barrier drain is successfully capturing leachate from the Site and preventing off-Site migration of chemicals. The remediation system is functioning as designed. 4,345,500 gallons of leachate were treated and discharged from the Site, of which 3,770,337 gallons of leachate were collected on-Site and the remaining 580,170 gallons were pumped from the 102nd Street Site.

FIGURES



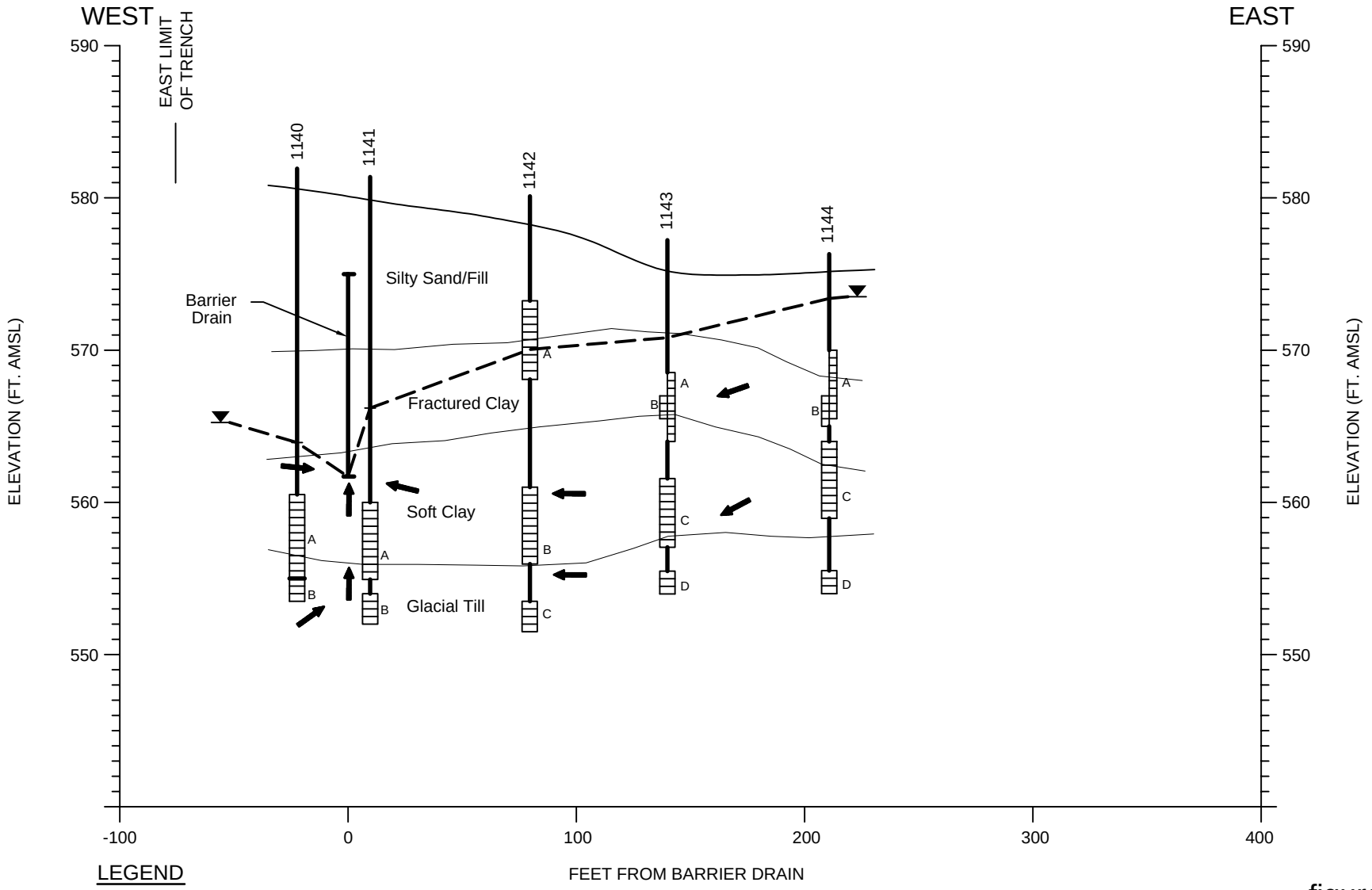
LEGEND

- FENCE LINE
- BARRIER DRAIN
- 7105 PIEZOMETER WELL
- 1167 OBSERVATION WELL
- WELLS SAMPLED IN JUNE 2002
- APPROXIMATE LIMITS OF DISPOSED WASTE

figure 3.1

2002 GROUNDWATER SAMPLE COLLECTION PROGRAM
LOVE CANAL
Miller Springs Remediation Management

09954-02(008)GN-NF007 MAR 07/2003



LEGEND

A PIEZOMETER DESIGNATION

GROUNDWATER LEVEL

FLOW DIRECTION

SCREENED INTERVAL

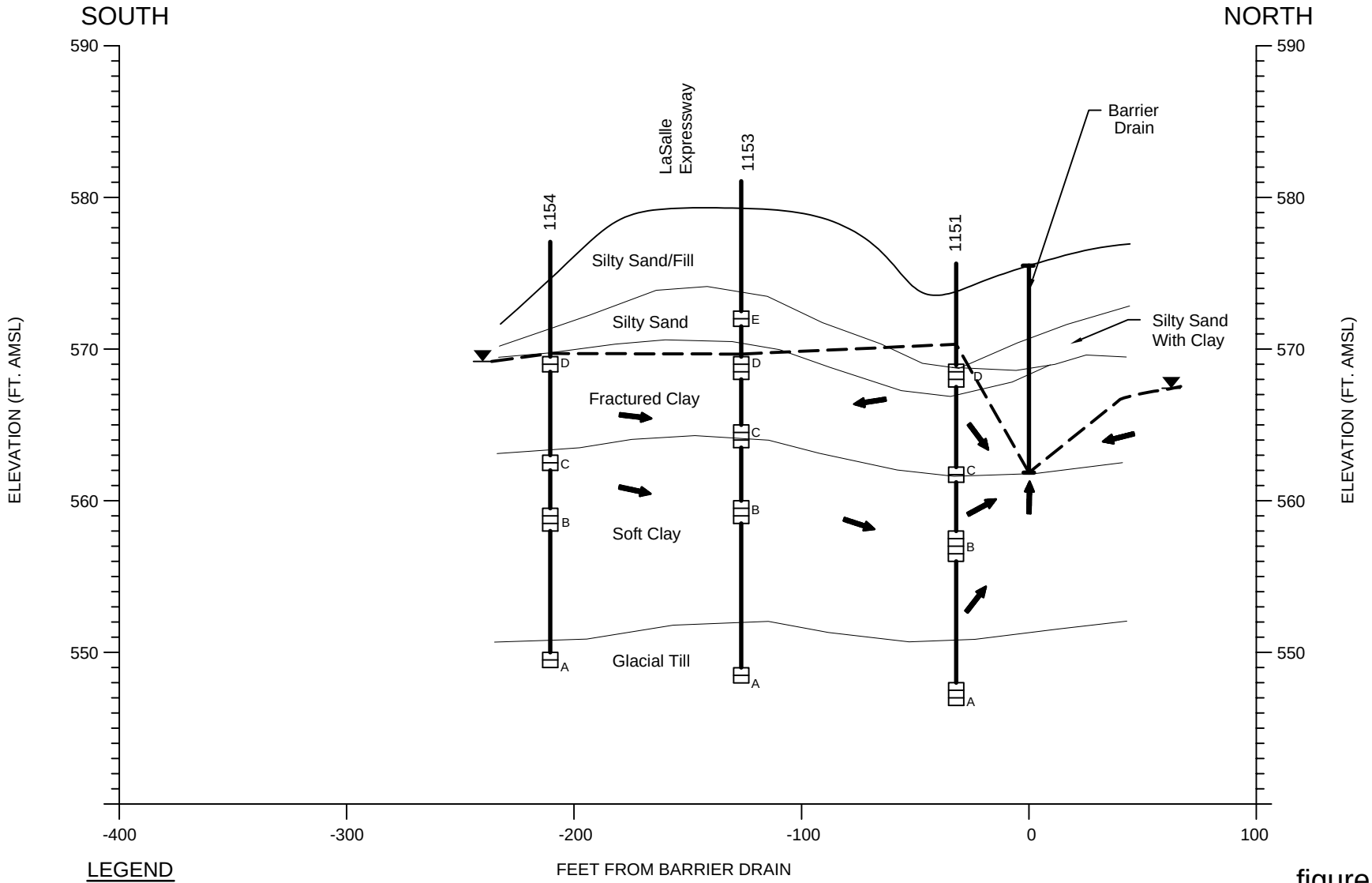
NOTE: (1) GROUNDWATER LEVEL SHOWN IS FOR UPPERMOST MONITORED INTERVAL

(2) PIEZOMETERS WERE INSTALLED IN SEPARATE BOREHOLES.

figure 3.2

JUNE 2002 FLOW DIAGRAM
1140 SERIES PIEZOMETERS
LOVE CANAL

Miller Springs Remediation Management



LEGEND

A PIEZOMETER DESIGNATION

GROUNDWATER LEVEL

FLOW DIRECTION

SCREENED INTERVAL

NOTE: (1) GROUNDWATER LEVEL SHOWN IS FOR UPPERMOST MONITORED INTERVAL

(2) PIEZOMETERS WERE INSTALLED IN SEPARATE BOREHOLES.

figure 3.3

JUNE 2002 FLOW DIAGRAM
1150 SERIES PIEZOMETERS
LOVE CANAL

Miller Springs Remediation Management

09954-02(008)GN-NF002 MAR 10/2003

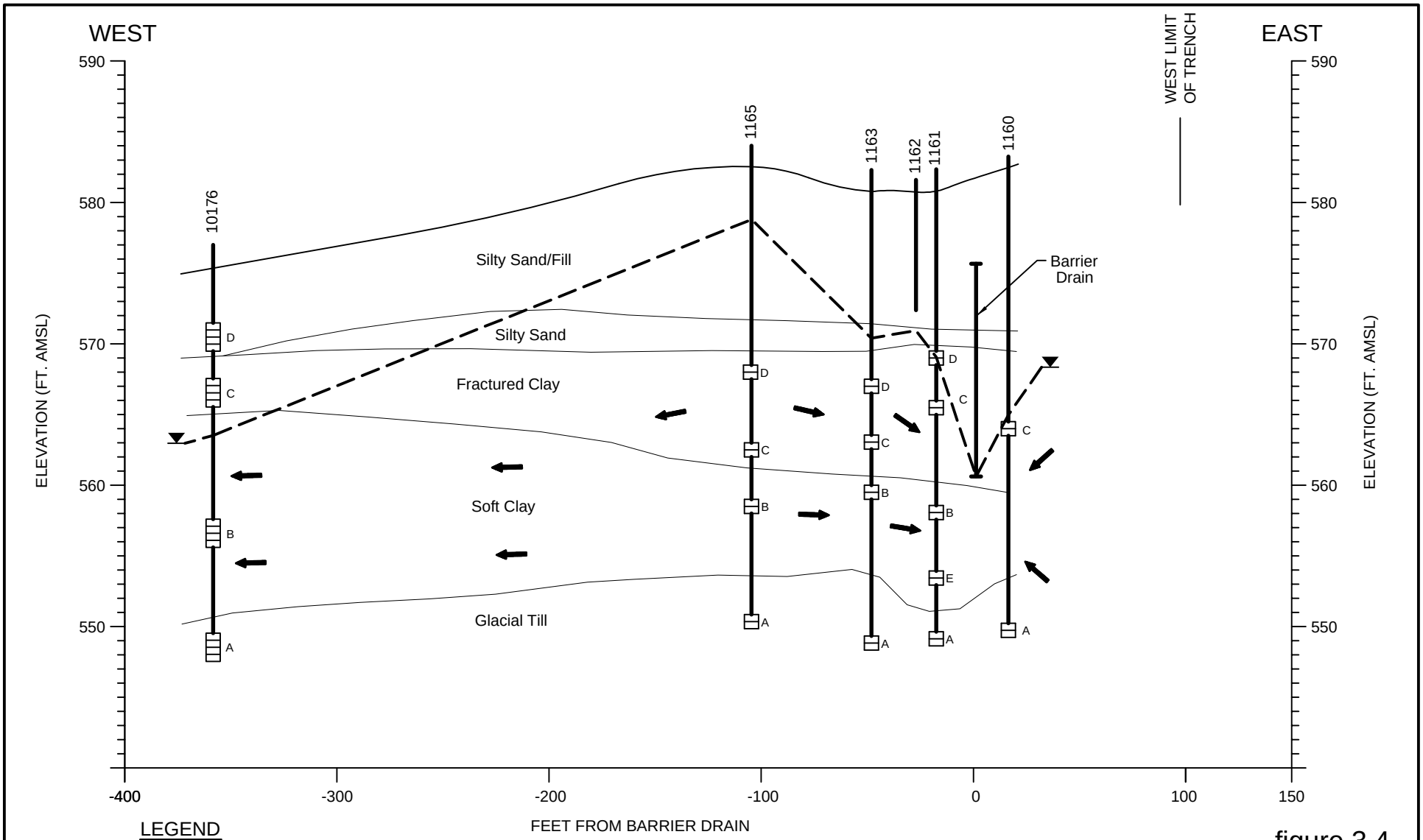
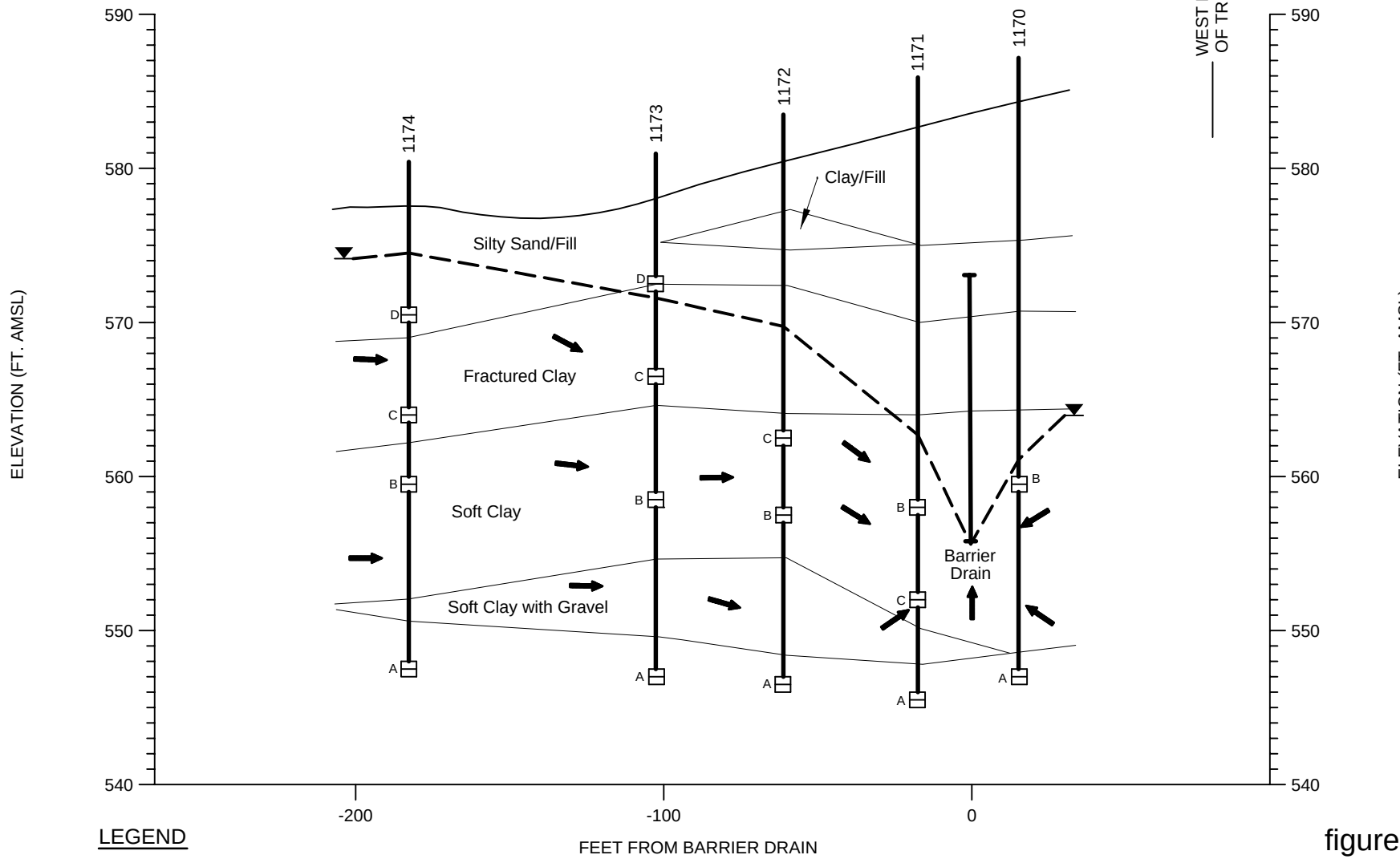


figure 3.4

JUNE 2002 FLOW DIAGRAM
1160 SERIES PIEZOMETER
LOVE CANAL

Miller Springs Remediation Management



LEGEND

A PIEZOMETER DESIGNATION

GROUNDWATER LEVEL

FLOW DIRECTION

SCREENED INTERVAL

NOTE: (1) GROUNDWATER LEVEL SHOWN IS FOR UPPERMOST MONITORED INTERVAL

(2) PIEZOMETERS WERE INSTALLED IN SEPARATE BOREHOLES.

figure 3.5

JUNE 2002 FLOW DIAGRAM
1170 SERIES PIEZOMETERS
LOVE CANAL

Miller Springs Remediation Management

09954-02(008)GN-NF004 MAR 10/2003

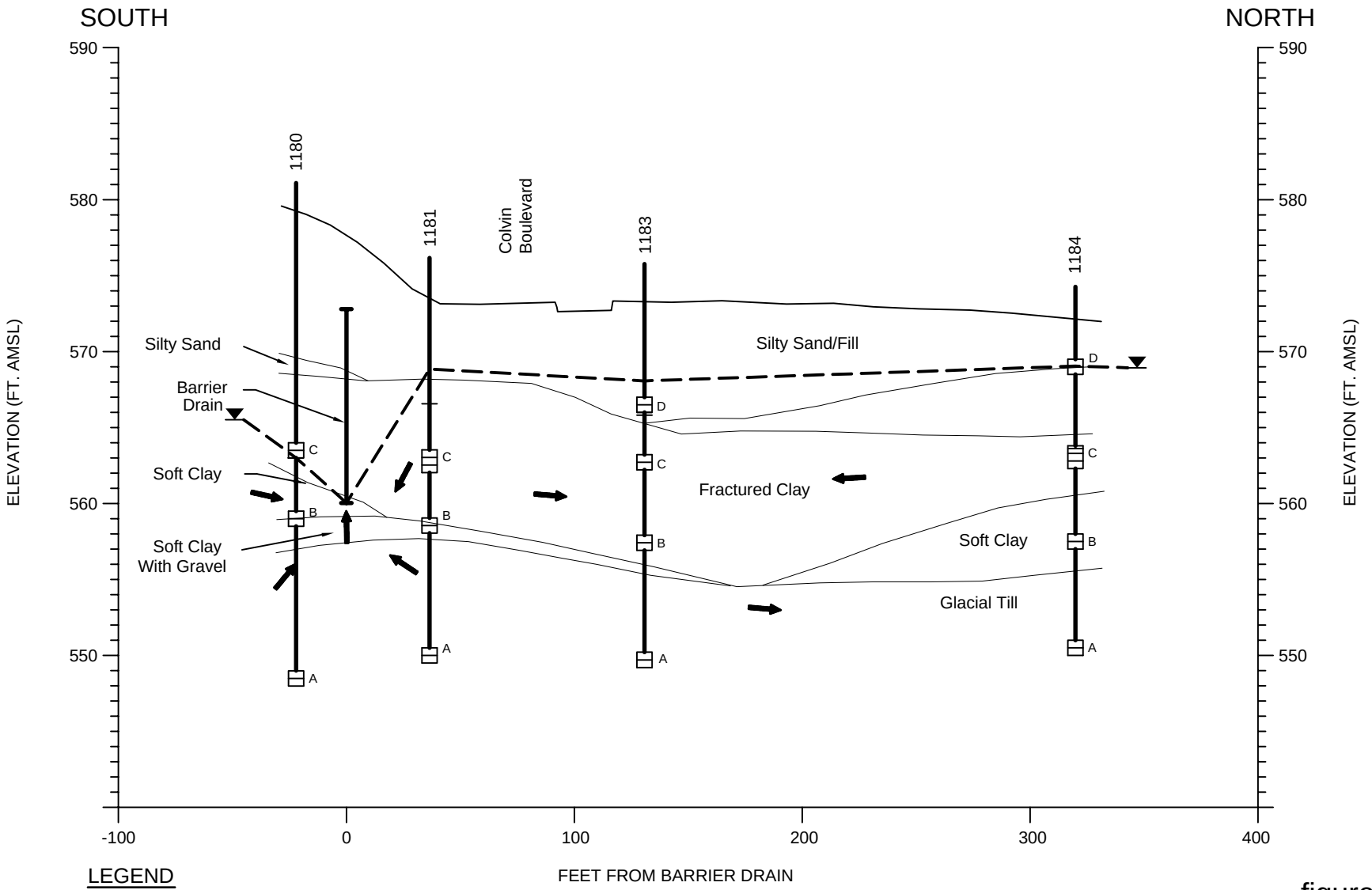
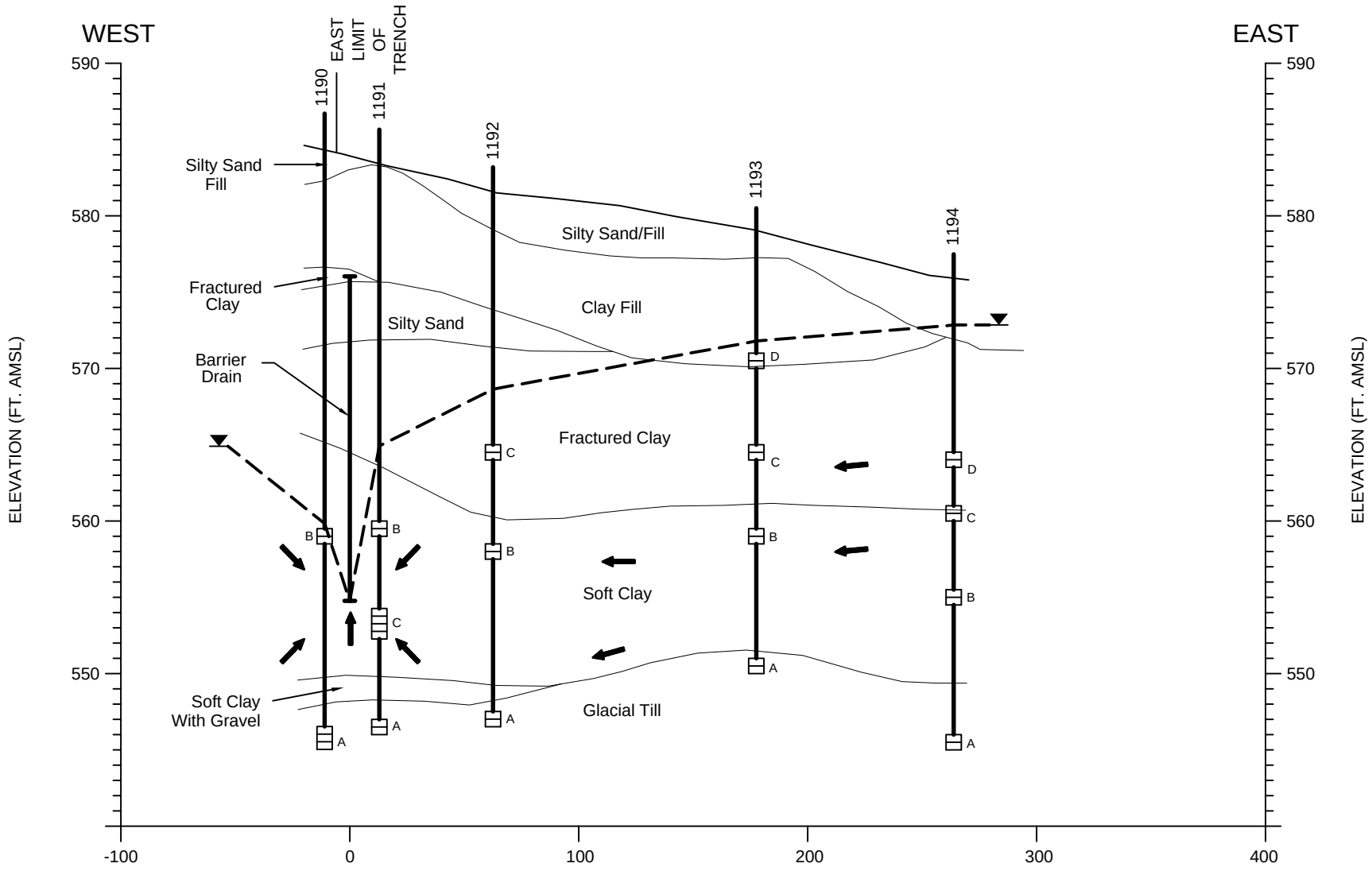


figure 3.6

JUNE 2002 FLOW DIAGRAM
1180 SERIES PIEZOMETERS
LOVE CANAL

Miller Springs Remediation Management

09954-02(008)GN-NF005 MAR 10/2003



LEGEND

A PIEZOMETER DESIGNATION

GROUNDWATER LEVEL

FLOW DIRECTION

SCREENED INTERVAL

NOTE: (1) GROUNDWATER LEVEL SHOWN IS FOR UPPERMOST MONITORED INTERVAL

(2) PIEZOMETERS WERE INSTALLED IN SEPARATE BOREHOLES.

figure 3.7

JUNE 2002 FLOW DIAGRAM 1190 SERIES PIEZOMETERS LOVE CANAL

Miller Springs Remediation Management

TABLE 3.1

MONTHLY VOLUMES OF GROUNDWATER TREATED
LOVE CANAL LEACHATE TREATMENT FACILITY
OCCIDENTAL CHEMICAL CORPORATION

		Volume (gal)								
		1995	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***	***2002***	***2003***
January	Gross (1)	**597,650**	**474,330**	**337,720**	**700,070**	**335,700**	**495,800**	**396,900**	**488,900**	**419,400**
	Net (2)	-	-	-	-	335,700	280,364	282,480	422,682	374,123
	Days (3)	N/A	N/A	N/A	N/A	N/A	21	20	21	14
February	Gross	**202,235**	**252,450**	**456,800**	**539,838**	**270,100**	**480,400**	**560,000**	**663,700**	**266,300**
	Net	-	-	-	-	270,100	368,492	468,863	608,116	231,049
	Days	N/A	N/A	N/A	N/A	N/A	21	19	20	13
March	Gross	**385,910**	**331,690**	**520,600**	**615,133**	**409,300**	**505,500**	**616,400**	**364,900**	**721,500**
	Net	-	-	-	-	321,558	290,501	493,476	316,696	667,337
	Days	N/A	N/A	N/A	N/A	N/A	23	21	21	17
April	Gross	**132,790**	**615,350**	**184,400**	**437,817**	**555,200**	**675,600**	**352,300**	**689,700**	**432,800**
	Net	-	-	-	-	296,535	547,926	262,946	629,683	380,745
	Days	N/A	N/A	N/A	N/A	N/A	20	20	20	16
May	Gross	**123,140**	**513,310**	**126,850**	**139,600**	**401,500**	**473,300**	**311,200**	**589,500**	**425,400**
	Net	-	-	-	-	123,790	335,331	207,580	532,251	379,299
	Days	N/A	N/A	N/A	N/A	N/A	20	17	20	14
June	Gross	**125,300**	**251,400**	**210,630**	**99,800**	**323,500**	**632,200**	**202,200**	**395,100**	**367,900**
	Net	-	-	-	-	63,658	486,721	132,132	347,485	303,576
	Days	N/A	N/A	N/A	N/A	N/A	20	16	14	13
July	Gross	**132,400**	**113,300**	**96,810**	**130,200**	**143,600**	**333,900**	**182,200**	**194,500**	**187,700**
	Net	-	-	-	-	104,649	184,955	111,941	145,344	142,849
	Days	N/A	N/A	N/A	N/A	N/A	20	16	16	11
August	Gross	**112,910**	**146,700**	**223,390**	**138,300**	**230,600**	**437,100**	**267,200**	**151,300**	**158,600**
	Net	-	-	-	-	97,423	286,925	194,821	107,928	114,497
	Days	N/A	N/A	N/A	N/A	N/A	23	18	17	8
September	Gross	**111,200**	**310,550**	**116,790**	**95,200**	**232,100**	**209,600**	**144,900**	**148,600**	**105,800**
	Net	-	-	-	-	62,759	82,263	81,619	94,401	60,350
	Days	N/A	N/A	N/A	N/A	N/A	20	16	12	7
October	Gross	**491,440**	**532,360**	**326,100**	**71,500**	**283,400**	**264,300**	**438,500**	**154,600**	**211,000**
	Net	-	-	-	-	175,837	134,248	348,153	108,226	157,120
	Days	N/A	N/A	N/A	N/A	N/A	20	18	13	9
November	Gross	**641,210**	**393,730**	**346,550**	**46,200**	**491,800**	**250,900**	**250,400**	**360,800**	**356,800**
	Net	-	-	-	-	344,145	132,728	194,481	306,258	310,650
	Days	N/A	N/A	N/A	N/A	N/A	17	16	14	12
December	Gross	**235,900**	**499,540**	**524,760**	**73,800**	**695,500**	**522,600**	**555,300**	**549,600**	**692,300**
	Net	-	-	-	-	397,912	421,149	475,856	496,556	643,735
	Days	N/A	N/A	N/A	N/A	N/A	17	18	15	14
Total	Gross	**3,292,085**	**4,434,710**	**3,471,400**	**3,087,458**	***4,372,300***	***5,281,200***	***4,277,500***	***4,751,200***	***4,345,500***
	Net	-	-	-	-	2,594,066	3,551,603	3,254,348	4,115,626	3,765,330
	Days	N/A	N/A	N/A	N/A	N/A	242	215	203	148
Monthly	Gross	**274,340**	**369,560**	**289,280**	**257,288**	**364,358**	**440,100**	**356,458**	**395,933**	**362,125**
Average	Net	-	-	-	-	216,172	295,967	271,196	342,969	313,778
	Days	N/A	N/A	N/A	N/A	N/A	20	18	17	12
Rainfall Inches		**33.99**	**48.22**	**41.17**	**38.77**	**34.08**	**42.2**	**35.18**	**39.74**	**37.15**

NOTES:
(1) Gross: Total Treated; As of March 1999 Treatment at LCTF included leachate collected from 102nd Street Landfill Site.
(2) Net: LC (Love Canal) Treated; Total treated less received from 102nd Street.
(3) Days: Number of days Treatment Facility discharged to the sanitary sewer.
N/A Not Available

TABLE 3.2

SUMMARY OF DETECTED COMPOUNDS
2003 LONG-TERM MONITORING PROGRAM
LOVE CANAL
OCCIDENTAL CHEMICAL CORPORATION

Overburden Wells	***Well***	***VOCs***	***SVOCs***	***Pesticides/PCBs***
3151	B-I	***Well no longer exists***		
7120	B-I	ND	1	ND
7130	A	ND	ND	ND
7132	A	ND/ND	ND/1	ND/ND
7155	B-I	ND	ND	ND
7161	B-I	ND	ND	ND
8106	X	ND	2	ND
8110	B-I	ND	ND	ND
8120	B-I	ND	ND	ND
8130	B-I	ND	ND	ND
8140	B-I	ND	ND	ND
9110	B-I	ND	ND	ND
9115	B-I	ND	ND	ND
9118	A	ND	ND	ND
9120	B-I	ND	ND	ND
9125	B-I	ND	ND	ND
9140	B-I	ND	ND	ND
10113	B-I	ND	ND	ND
10135	A	15	10	7
10147	B-I	ND	ND	ND
10174A	B-I	ND	ND	ND
		15	**13**	**7**
Bedrock Wells				
3257	X	ND	ND	ND
5222	A	1	ND	ND
6209	X	ND	ND	ND
7205	A	ND	ND	ND
8210	A	ND	ND	ND
9205	A	ND	ND	ND
9210	A	1/1	ND/ND	ND/ND
10205	A	ND	1	ND
10215	X	ND	ND	1
10270	X	ND	1	ND
10272	A	ND	ND	1
10278	A	ND	2	ND
10210A	A	ND	ND	ND
10210B	A	2	2	8
10210C	A	ND	ND	ND
10225A	A	2	3	3
10225B	A	ND	ND	1
10225C	A	2	3	2
		8	**12**	**16**
Total # of Detections		**23**	**25**	**23**

Notes:

ND/ND = Duplicate analyses.
ND = No parameters detected at or above detection limits.
A =Annual Well
B-I = Bi-Annual Well Group I
B-II = Bi-Annual Well Group II
X = Additional Well
N / M = Not Monitored

TABLE 3.3
ANALYTICAL RESULTS SUMMARY
LONG-TERM MONITORING PROGRAM
MSRM
NIAGARA FALLS, NEW YORK
MAY 2003

Sample Location		*10135*	*10205*	*10210B*	*10215*	*10225A*	*10225B*	*10225C*	*10270*	*10272*	*10278*	*5222*	*7120*	*7132*	*8106*	*9210*	*9210*
Sample ID		*LC-10135-503*	*LC-10205-503*	*LC-10210B-503*	*LC-10215-503*	*LC-10225A-503*	*LC-10225B-503*	*LC-10225C-503*	*LC-10270-503*	*LC-10272-503*	*LC-10278-503*	*LC-5222-503*	*LC-7120-503*	*LC-8215-503*	*LC-8106-503*	*LC-8205-503*	*LC-9210-503*
Sample Date		*5/19/2003*	*5/23/2003*	*5/23/2003*	*5/23/2003*	*5/29/2003*	*5/29/2003*	*5/29/2003*	*5/16/2003*	*5/16/2003*	*5/16/2003*	*5/21/2003*	*5/28/2003*	*5/19/2003 Duplicate*	*5/20/2003*	*5/29/2003 Duplicate*	*5/29/2003*
Parameter	***Units***																
Volatiles																	
1,1,2,2-Tetrachloroethane	µg/L	38	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	µg/L	3 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	µg/L	490 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	µg/L	10 U	10 U	23	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	74	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U	10 U
Benzene	µg/L	5500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	µg/L	10 U	10 U	2 J	10 U	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	µg/L	1900	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	µg/L	110	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	µg/L	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m&p-Xylene	µg/L	29	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	µg/L	26	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
o-Xylene	µg/L	9 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	µg/L	18	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	µg/L	15000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J	1 J
Trichloroethene	µg/L	91	10 U	10 U	10 U	10 U	10 U	16	10 U	10 U	10 U	2 J	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	µg/L	51	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Discrete Compounds	18	15	0	2	0	2	0	2	0	0	0	1	0	0	0	1	1
Semi-Volatiles																	
1,2,4-Trichlorobenzene	µg/L	97 J	10 U	3 J	10 U	10 U	10 U	7 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	µg/L	59 J	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	µg/L	160 J	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	µg/L	1700	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	µg/L	50 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	µg/L	41 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	µg/L	210 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	19	10 U	10 U
Benzoic acid	µg/L	26000	25 U	25 U	25 U	14 J	25 U	25 U	25 U	25 U	0.9 J	25 U	25 U	25 U	2 J	25 U	25 U
Benzyl Alcohol	µg/L	640	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	µg/L	280 U	34	10 U	10 U	10 U	10 U	10 U	13	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	µg/L	280 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	µg/L	180 J	10 U	10 U	10 U	2 J	10 U	10 U	10 U	10 U	3 J	10 U	1 J	1 J	10 U	10 U	10 U
Discrete Compounds	12	10	1	2	0	3	0	3	1	0	2	0	1	1	2	0	0
Pesticides																	
alpha-BHC	µg/L	49	0.047 U	19	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
alpha-Chlordane	µg/L	0.47 U	0.047 U	0.47 U	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
beta-BHC	µg/L	15 J	0.047 U	1.9	0.047 U	0.013 J	0.048 U	0.013 J	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
delta-BHC	µg/L	12	0.047 U	0.56 J	0.012 J	0.025 J	0.011 J	0.0069 J	0.048 U	0.016 J	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
Dieldrin	µg/L	0.94 U	0.094 U	0.13 J	0.094 U	0.094 U	0.095 U	0.094 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 UJ	0.095 U
Endosulfan I	µg/L	0.47 U	0.047 U	0.11 J	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
Endosulfan sulfate	µg/L	1.3 J	0.094 U	0.94 U	0.094 U	0.094 U	0.095 U	0.094 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 UJ	0.095 U
gamma-BHC (Lindane)	µg/L	7.1	0.047 U	2.1	0.047 U	0.015 J	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
gamma-Chlordane	µg/L	0.47 U	0.047 U	0.15 J	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
Heptachlor	µg/L	0.61 J	0.047 U	0.47 U	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
Heptachlor epoxide	µg/L	2.2 J	0.047 U	0.35 J	0.047 U	0.047 U	0.048 U	0.047 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 UJ	0.048 U
Discrete Compounds	11	7	0	8	1	3	1	2	0	1	0	0	0	0	0	0	0
Total Discrete Compounds	41	32	1	12	1	8	1	7	1	1	2	1	1	1	2	1	1

Notes:

BHC Benzene Hexachloride.
J Estimated.
U Non-detect at associated value.
UJ The analyte was not detected above the sample quantitation limit. The reported quantation limit is an estimated quantity.

TABLE 3.4

SUMMARY OF DETECTED COMPOUNDS FOR SELECTED WELLS, 1990 TO 2003
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

Well Number:	***10210A***												
Sample Date:	07/24/1990	08/22/1991	08/26/1992	08/11/1993	05/25/1995	07/01/1996	07/10/1997	06/26/1998	06/23/1999	06/21/2000	05/18/2001	06/13/2002	05/27/2003
Volatiles (ug/L)													
1,1,2,2-Tetrachloroethane													
1,1,2-Trichloroethane													
1,1-Dichloroethane													
1,2-Dichloroethene (total)													
2-Butanone									2J				
2-Hexanone									3J				
Acetone	14C			13B				120J			10J		
Benzene													
Carbon Disulfide					20	310					6J		
Chlorobenzene													
Chloroform													
Ethylbenzene													
Methylene Chloride													
Tetrachloroethene													
Toluene									2J				
Trichloroethene													
Vinyl Acetate													
Vinyl Chloride													
Xylene (total)													
Semi-volatiles (ug/L)													
1,2,4-Trichlorobenzene													
1,2-Dichlorobenzene													
1,4-Dichlorobenzene													
2-Butanone (Methyl Ethyl Ketone)												3J	
2,4,5-Trichlorophenol													
2,4,6-Trichlorophenol													
2,4-Dichlorophenol													
2,4-Dimethylphenol													
2-Chloronaphthalene													
2-Chlorophenol													
2-Methylphenol													
2-Nitrophenol													
4-Chloro-3-methylphenol													
4-Methylphenol													
Benzoic Acid							12J						
Benzyl Alcohol													
Bis(2-Chloroethyl)Ether													
bis(2-Ethylhexyl)Phthalate		12	21	31	51								
Dimethyl Phthalate	16												
Di-n-Octyl Phthalate	3B												
Hexachlorobenzene													
Napththalene													
Pentachlorophenol													
Phenol									1J				
Pesticides/PCBs (ug/L)													
4,4'-DDD													
Aldrin													
Alpha-BHC									0.28				
Alpha-Chlordane													
Beta-BHC									0.035J				
Delta-BHC													
Dieldrin													
Endosulfan I									0.046J				
Endosulfan II													
Endosulfan Sulfate													
Endrin													
Gamma-BHC (Lindane)									0.10J				
Gamma-Chlordane													
Heptachlor													
Heptachlor epoxide													

Notes:
B - Found in Blank
U - Non-Detected at the associated estimated value
C - Confirmed data.
J - Estimated Concentration.
JN - Presumptively present at the associated estimated value
D - Diluted Sampled.
E - Exceeded calibration range of the instrument
P - Greater than 25% difference for detected concentrations between the two GC columns in the pesticide target analyte. Lower of two values is reported.

SUMMARY OF DETECTED COMPOUNDS FOR SELECTED WELLS, 1990 TO 2003
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

Well Number:	***10210B***													
Sample Date:	07/24/1990	08/22/1991	08/26/1992	08/11/1993	06/15/1994	06/01/1995	07/05/1996	07/01/1997	06/18/1998	06/24/1999	06/15/2000	05/17/2001	06/10/2002	05/23/2003
Volatiles (ug/L)														
1,1,2,2-Tetrachloroethane														
1,1,2-Trichloroethane														
1,1-Dichloroethane														
1,2-Dichloroethene (total)														
2-Butanone														23
2-Hexanone														
Acetone			31		12B	23						12J		
Benzene														
Carbon Disulfide									8J	2J		14	3J	2 J
Chlorobenzene														
Chloroform														
Ethylbenzene														
Methylene Chloride														
Tetrachloroethene														
Toluene										2J	1J			
Trichloroethene														
Vinyl Acetate														
Vinyl Chloride														
Xylene (total)														
Semi-volatiles (ug/L)														
1,2,4-Trichlorobenzene														3 J
1,2-Dichlorobenzene														
1,4-Dichlorobenzene														
2-Butanone (Methyl Ethyl Ketone)														
2,4,5-Trichlorophenol														
2,4,6-Trichlorophenol														
2,4-Dichlorophenol														
2,4-Dimethylphenol														
2-Chloronaphthalene														
2-Chlorophenol														
2-Methylphenol														
2-Nitrophenol														
4-Chloro-3-methylphenol														
4-Methylphenol														
Benzoic Acid														
Benzyl Alcohol														
Bis(2-Chloroethyl)Ether														
bis(2-Ethylhexyl)Phthalate	7B	13		11				55	6J					
Dimethyl Phthalate														
Di-n-Octyl Phthalate												3J		
Hexachlorobenzene														1 J
Napththalene														
Pentachlorophenol														
Phenol		3												
Pesticides/PCBs (ug/L)														
4,4'-DDD														
Aldrin														
Alpha-BHC														19
Alpha-Chlordane														
Beta-BHC														1.9
Delta-BHC														0.56 J
Dieldrin														0.13 J
Endosulfan I														0.11 J
Endosulfan II														
Endosulfan Sulfate														
Endrin														
Gamma-BHC (Lindane)														2.1
Gamma-Chlordane														0.15 J
Heptachlor														0.35 J
Heptachlor epoxide														

Notes:
B - Found in Blank
U - Non-Detected at the associated estima
C - Confirmed data.
J - Estimated Concentration.
JN - Presumptively present at the associate
D - Diluted Sampled.
E - Exceeded calibration range of the inst
P - Greater than 25% difference for detect

SUMMARY OF DETECTED COMPOUNDS FOR SELECTED WELLS, 1990 TO 2003
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

Well Number:	***10210C***													
Sample Date:	07/25/1990	08/22/1991	08/26/1992	08/11/1993	06/08/1994	06/01/1995	07/01/1996	07/01/1997	06/22/1998	06/24/1999	06/15/2000	05/17/2001	06/10/2002	05/23/2003
Volatiles (ug/L)														
1,1,2,2-Tetrachloroethane														
1,1,2-Trichloroethane														
1,1-Dichloroethane														
1,2-Dichloroethene (total)														
2-Butanone														
2-Hexanone														
Acetone			10B	23B	19B					2100	8J	9J		
Benzene														
Carbon Disulfide											3J			
Chlorobenzene														
Chloroform														
Ethylbenzene														
Methylene Chloride														
Tetrachloroethene														
Toluene														
Trichloroethene														
Vinyl Acetate														
Vinyl Chloride														
Xylene (total)														
Semi-volatiles (ug/L)														
1,2,4-Trichlorobenzene														
1,2-Dichlorobenzene														
1,4-Dichlorobenzene														
2-Butanone (Methyl Ethyl Ketone)														
2,4,5-Trichlorophenol														
2,4,6-Trichlorophenol														
2,4-Dichlorophenol														
2,4-Dimethylphenol														
2-Chloronaphthalene														
2-Chlorophenol														
2-Methylphenol														
2-Nitrophenol														
4-Chloro-3-methylphenol														
4-Methylphenol						29	110	62	0.6J					
Benzoic Acid														
Benzyl Alcohol														
Bis(2-Chloroethyl)Ether														
bis(2-Ethylhexyl)Phthalate	7B	13		38										
Dimethyl Phthalate														
Di-n-Octyl Phthalate														
Hexachlorobenzene														
Napththalene														
Pentachlorophenol														
Phenol		6				22		22						
Pesticides/PCBs (ug/L)														
4,4'-DDD														
Aldrin														
Alpha-BHC														
Alpha-Chlordane														
Beta-BHC														
Delta-BHC														
Dieldrin														
Endosulfan I														
Endosulfan II														
Endosulfan Sulfate														
Endrin														
Gamma-BHC (Lindane)														
Gamma-Chlordane														
Heptachlor														
Heptachlor epoxide														

Notes:
B - Found in Blank
U - Non-Detected at the associated estima
C - Confirmed data.
J - Estimated Concentration.
JN - Presumptively present at the associate
D - Diluted Sampled.
E - Exceeded calibration range of the inst
P - Greater than 25% difference for detect

TABLE 3.4

SUMMARY OF DETECTED COMPOUNDS FOR SELECTED WELLS, 1990 TO 2003
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

Well Number:	***10135***											
Sample Date:	08/26/1992	08/19/1993	06/22/1994	06/01/1995	06/27/1996	07/07/1997	06/17/1998	06/16/1999	06/22/2000	05/11/2001	06/12/2002	05/19/2003
Volatiles (ug/L)												
1,1,2,2-Tetrachloroethane		12			26		94J	32 / 29	27J / 26J	100J / 120J	500U / 56	38
1,1,2-Trichloroethane					14		29J	15 / 12	14J / 16J	29J / 34J	500U / 27	
1,1-Dichloroethane		15						4J / 3J	4J / 4J	4J / 4J	500U / 4J	3 J
1,2-Dichloroethene (total)	700	840			560		58J	67 / 70	67J / 70J	60J / 59J		490 J
2-Butanone		5200							10UJ / 10J	12J / 11J		10 U
2-Hexanone												10 U
Acetone		270	100B		60		110J		28J / 46J		500U / 72	74
Benzene			6000E	4900D	4800	5600 / 5000	5300J	5600 / 5700	6400 / 6900J	7600 / 8500J	5900 / 6400	5500
Carbon Disulfide								ND / 2J				10 U
Chlorobenzene	2600	1700		2000D	1500	2300 / ND	1900J	1800 / 1900	2300J / 2300J	2700J / 3000J	2200 / 2400	1900
Chloroform		100			110		150J	120 / 110	100J / 130J	150J / 160J	500U / 160	110
Ethylbenzene		13					12	10J / 9J	12J / 12J	22J / 24J	500U / 15	10
Methylene Chloride		41			11				24J / 24J		500U / 39	26
Tetrachloroethene							40J	13 / 12	16J / 14J	50J / 61J	500U / 38	18
Toluene	2700	1700E	21500BE	18000D	14000	19000 / 17000	16000J	16000 / 17000	21000J / 21000J	22000 / 24000	20000J / 19000	15000
Trichloroethene		24			36		170J	70 / 58	60J / 72J	140J / 180J	130J / 160	91
Vinyl Acetate	6800		12B									
Vinyl Chloride					50		48J	62 / 61	110J / 85J	75J / 66J	500U / 48	51
Xylene (total)		47	10B		28		55J	43 / 44	42J / 44J		500U / 51	29
Semi-volatiles (ug/L)												
1,2,4-Trichlorobenzene		74	87B				78J	65J / 45J	45J / 36J	42J / 65J		97 J
1,2-Dichlorobenzene		35						30J / 24J	22J / 18J	ND / 48J		59 J
1,4-Dichlorobenzene	110	94	91					74J / 61J	59J / 52J	69J / 110J		160 J
2-Butanone (Methyl Ethyl Ketone)												
2,4,5-Trichlorophenol		70					38J		0.9J / ND			
2,4,6-Trichlorophenol									1J / ND			
2,4-Dichlorophenol	1200B	420	610	150		2100 / 2100	2000	610 / 690	1400J / 470J	620J / 1200J	1500J / 1800J	1700
2,4-Dimethylphenol									ND / 2J			
2-Chloronaphthalene				150						370J / 550J		
2-Chlorophenol							28J	25J / ND				
2-Methylphenol		51					55J	35J / 42J	160J / ND	ND / 41J		50 J
2-Nitrophenol									ND / 1J			
4-Chloro-3-methylphenol								33J / 25J				41 J
4-Methylphenol		80					130J	120 / 95J	99J / 300J	86J / 130J		210 J
Benzoic Acid				6400D	4000	30000J / 27000J	23000J	5000 / 4300	19000J / 4700J	4400J / 6200J	25000 / 31000	26000
Benzyl Alcohol				380		1900 / 1600	2700	540 / 680	14000 / 3200J	330J / 630J	1700J / 2000	640
Bis(2-Chloroethyl)Ether		23					24J	26J / 25J				
bis(2-Ethylhexyl)Phthalate		50							41J / 24 / J			280 U
Dimethyl Phthalate												
Di-n-Octyl Phthalate												
Hexachlorobenzene												280 U
Napththalene								2000J / 1400J	4000J / 1800J	1100 / 1400		
Pentachlorophenol		52										
Phenol		96	91	140				120 / 96J		ND / 51J		180 J
Pesticides/PCBs (ug/L)												
4,4'-DDD								0.020J / 0.21	0.071J / 0.13J			
Aldrin	0.53	0.24P						0.21J / 0.74JN		0.95JN / 1.5JN	0.12J / 0.12J	
Alpha-BHC	84	42C	24CEP	28D	29	39 / 39	59	37J / 40	50 / 50	43J / 50J	39 / 43	49
Alpha-Chlordane											0.031J / 0.017J	0.47 U
Beta-BHC				10D	11	8.1 / 8.6	12	11J / 12	15 / 16	16J / 16J	13J / 14J	15 J
Delta-BHC	15	9.8P	7.5CE	4.7	5.2	ND / 5.1	8.9	9.6J / 11	14 / 13	10J / 12J	9.0J / 11J	12
Dieldrin												0.94 U
Endosulfan I								0.43J / 0.34		1.5JN / 1.6JN		0.47 U
Endosulfan II									0.52J / 0.69J			
Endosulfan Sulfate		0.43P						0.17J / 0.18	0.17J / 0.10UJ			1.3 J
Endrin			0.15P									
Gamma-BHC (Lindane)	33	19.5	20.4CE			13.2 / 14.8	6.5J	4.1J / 5.5	8.0 / 6.4	5J / 7.3	6.1J / 7.1J	7.1
Gamma-Chlordane									0.16J / 0.18J		0.34J / 0.29J	0.47 U
Heptachlor								0.68JN / 0.63				0.61 J
Heptachlor epoxide								0.058J / 0.043J	0.029J / 0.031J		0.016J / 0.025J	2.2 J

Notes:
B - Found in Blank
U - Non-Detected at the associated estima
C - Confirmed data.
J - Estimated Concentration.
JN - Presumptively present at the associate
D - Diluted Sampled.
E - Exceeded calibration range of the inst
P - Greater than 25% difference for detect

TABLE 3.5A

1140 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	***1144***	***1143***	***1142***	***1141***	***Tile Drain***	***1140***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	574.26	570.80	566.98	565.26	561.70	563.64
May 03	573.97	571.60	570.68	566.27	561.70	564.04
August 03	572.58	570.55	570.70	566.48	561.70	564.55
December 03	574.00	570.60	569.70	566.40	561.70	564.95

B WELLS

Well (1)	***1144***	***1143***	***1142***	***1141***	***Tile Drain***	***1140***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	572.75	570.46	566.57	565.75	561.70	563.76
May 03	571.70	571.47	567.60	566.79	561.70	564.40
August 03	570.12	570.58	567.88	567.15	561.70	564.80
December 03	571.40	570.08	567.45	566.82	561.70	565.08

C WELLS

Well (1)	***1144***	***1143***	***1142***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	570.40	568.37	565.15	561.70
May 03	571.18	569.67	565.78	561.70
August 03	569.75	569.48	566.23	561.70
December 03	570.74	568.87	566.09	561.70

D WELLS

Well (1)	***1144***	***1143***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	567.80	566.60	561.70
May 03	569.10	567.55	561.70
August 03	569.28	566.98	561.70
December 03	568.45	567.53	561.70

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 3.5B

1150 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	***1154***	***1153***	***1151***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	569.89	571.45	566.92	561.85
May 03	568.46	570.45	567.08	561.85
August 03	567.57	568.66	567.29	561.85
December 03	567.16	568.00	567.31	561.85

B WELLS

Well (1)	***1154***	***1153***	***1151***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	567.88	568.95	567.07	561.85
May 03	568.82	568.47	567.30	561.85
August 03	568.22	568.85	567.98	561.85
December 03	568.43	568.41	568.00	561.85

C WELLS

Well (1)	***1154***	***1153***	***1151***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	568.18	575.95	568.76	561.85
May 03	568.58	575.58	569.28	561.85
August 03	568.38	569.78	568.71	561.85
December 03	568.13	575.68	567.49	561.85

D WELLS

Well (1)	***1154***	***1153***	***1151***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	569.71	573.99	572.1	561.85
May 03	569.31	572.81	571.48	561.85
August 03	568.51	569.91	568.88	561.85
December 03	568.9	572.48	568.86	561.85

E WELLS

Well (1)	***1153***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***
March 03	569.82	561.85
May 03	569.50	561.85
August 03	569.38	561.85
December 03	569.60	561.85

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 3.5C

1160 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	*10176*	*1165*	*1163*	*1162*	*1161*	*Tile Drain*	*1160*
Date	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*
March 03	568.30	575.40	567.95	565.97	563.38	560.60	563.65
May 03	567.34	575.70	568.65	566.25	564.17	560.60	564.12
August 03	565.64	575.82	569.05	566.30	564.30	560.60	563.98
December 03	567.85	575.39	569.10	566.05	564.34	560.60	564.20

B WELLS

Well (1)	*10176*	*1165*	*1163*	*1161*	*Tile Drain*
Date	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*
March 03	568.27	579.25	569.17	565.82	560.60
May 03	567.10	579.43	569.50	566.11	560.60
August 03	565.58	579.53	570.13	566.51	560.60
December 03	567.74	579.50	569.35	566.56	560.60

C WELLS

Well (1)	*10176*	*1165*	*1163*	*1162*	*1161*	*Tile Drain*	*1160*
Date	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*
March 03	564.42	579.34	569.30	568.74	567.80	560.60	564.80
May 03	564.98	580.22	570.35	569.79	568.50	560.60	564.78
August 03	565.16	580.23	570.68	569.75	569.10	560.60	565.90
December 03	565.80	579.87	569.86	569.40	568.67	560.60	565.55

D WELLS

Well (1)	*10176*	*1165*	*1163*	*1162*	*1161*	*Tile Drain*
Date	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*	*(ft. AMSL)*
March 03	562.84	577.35	569.34	570.14	568.75	560.60
May 03	563.57	577.95	DRY	571.08	569.36	560.60
August 03	563.92	577.95	569.35	570.99	569.95	560.60
December 03	564.30	577.59	569.36	569.20	569.03	560.60

E WELLS

Well (1)	*1161*	*Tile Drain*
Date	*(ft. AMSL)*	*(ft. AMSL)*
March 03	564.75	560.60
May 03	565.81	560.60
August 03	N / M	560.60
December 03	565.43	560.60

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 3.5D

1170 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	***1174***	***1173***	***1172***	***1171***	***Tile Drain***	***1170***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	576.05	569.64	569.02	564.10	555.60	562.58
May 03	575.67	569.10	566.23	567.30	555.60	562.30
August 03	575.06	568.75	566.36	564.33	555.60	562.31
December 03	575.47	569.09	566.11	563.91	555.60	562.43

B WELLS

Well (1)	***1174***	***1173***	***1172***	***1171***	***Tile Drain***	***1170***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	574.93	568.99	566.15	562.74	555.60	561.02
May 03	575.00	569.11	570.53	562.55	555.60	559.66
August 03	575.06	569.48	569.63	562.75	555.60	567.83
December 03	574.86	569.26	568.54	562.79	555.60	561.04

C WELLS

Well (1)	***1174***	***1173***	***1172***	***1171***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	577.14	571.35	569.15	562.39	555.60
May 03	577.64	571.55	569.38	562.23	555.60
August 03	577.10	571.40	569.43	563.12	555.60
December 03	575.57	570.71	568.77	562.01	555.60

D WELLS

Well (1)	***1174***	***1173***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	574.42	572.51	555.60
May 03	572.67	571.88	555.60
August 03	572.06	570.67	555.60
December 03	572.96	571.05	555.60

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 3.5E

1180 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	***1184***	***1183***	***1181***	***Tile Drain***	***1180***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	564.47	565.86	566.93	560.00	562.40
May 03	563.66	565.61	566.80	560.00	562.74
August 03	564.10	565.77	566.81	560.00	563.17
December 03	564.06	565.59	566.81	560.00	563.09

B WELLS

Well (1)	***1184***	***1183***	***1181***	***Tile Drain***	***1180***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	564.91	565.93	567.85	560.00	561.33
May 03	564.53	565.19	566.93	560.00	561.12
August 03	563.74	565.24	566.69	560.00	561.35
December 03	563.99	564.94	567.66	560.00	561.41

C WELLS

Well (1)	***1184***	***1183***	***1181***	***Tile Drain***	***1180***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	569.1	568.39	570.50	560.00	DRY
May 03	568.43	567.51	569.70	560.00	DRY
August 03	DRY	564.41	568.03	560.00	DRY
December 03	567.65	567.73	569.81	560.00	DRY

D WELLS

Well (1)	***1184***	***1183***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	568.48	567.07	560.00
May 03	568.08	566.90	560.00
August 03	DRY	564.13	560.00
December 03	DRY	567.18	560.00

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 3.5F

1190 SERIES PIEZOMETERS WATER LEVELS
LOVE CANAL LONG-TERM MONITORING PROGRAM
OCCIDENTAL CHEMICAL CORPORATION

A WELLS

Well (1)	***1194***	***1193***	***1192***	***1191***	***Tile Drain***	***1190***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	564.24	565.42	564.36	565.21	554.80	566.82
May 03	564.31	564.88	564.23	564.95	554.80	565.06
August 03	564.08	565.23	563.83	565.54	554.80	563.61
December 03	564.18	565.57	564.23	565.71	554.80	569.04

B WELLS

Well (1)	***1194***	***1193***	***1192***	***1191***	***Tile Drain***	***1190***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	569	567.84	567.87	564.19	554.80	559.94
May 03	569.23	567.75	568.00	564.47	554.80	559.91
August 03	568.63	568.64	568.53	567.97	554.80	559.42
December 03	569.44	568.70	568.24	564.40	554.80	560.73

C WELLS

Well (1)	***1194***	***1193***	***1192***	***1191***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	574.59	570.22	571.39	563.90	554.80
May 03	574.01	570.30	571.63	563.97	554.80
August 03	569.86	570.73	571.87	564.05	554.80
December 03	574.24	570.49	571.64	564.13	554.80

D WELLS

Well (1)	***1194***	***1193***	***Tile Drain***
Date	***(ft. AMSL)***	***(ft. AMSL)***	***(ft. AMSL)***
March 03	572.90	571.16	554.80
May 03	572.62	571.67	554.80
August 03	571.45	571.15	554.80
December 03	572.93	570.69	554.80

Note:
(1) Wells listed in order from most distant outside of tile drain, to tile drain, then inside of tile drain.

TABLE 4.1

2003 LOVE CANAL MAINTENANCE AND ACTIVITIES
MILLER SPRINGS REMEDIATION MANAGEMENT, INC.

- Replace front office and work area's HVAC unit.
- Repair DCF #3 floats and switch
- Replace process valves four 4", three 3", two 1" plug valves in process to stainless full ported ball valves.
- PC3/PC3A valve chamber leaking through concrete around piping and crack, cleared fractures and filled concrete watertight.
- Installed condensation control around tanks 1" aluminum angle around clarifier screwed down and sealed. Secure and seal ridged PVC tubing around raw and filter feed tanks. Paint around tanks use safety yellow as needed.
- Demoed DCF #3 hoist. Cut down hoist no longer needed eye sore. Cut to grade.
- Decommission outside sludge tanks (4) demoed all utilities and feed lines. Additionally tanks were power washed and vacuumed out.
- Replace wind-sock on treatment bldg. Made up new pipe, used new holder for the wind sock
- Add electrical outlets love canal drum barn (DDSF) heated side.
- Replace vent covers on PC-3A chamber
- Insulation on heat trace on southwest corner of treatment bldg (Drain Line)
- Relocate sludge holing tank level transmitter part of demo of outside sludge storage tanks.
- Inspect and repair Main Carbon Bed (V-1) drain. Repair under drain support. QIS perform visual inspection
- Replace PC-3A pumps replace with Gorman 2hp submersible pumps. Re-pipe as needed.
- A slight build-up of sludge was found in Manhole 6B (Second Manhole North of PC2A) within the Northwest section of the collection system. The manhole was flushed and the manhole drain flumes were flushed.
- Annual inspection of the back-flow preventers was performed replacement of two preventers (3/4" & 2") in treatment building.
- Replaced all (17) ventsorbs (activated carbon canisters) with new Calgon ventsorbs re-piped as needed.
- Clarifier's sludge removal system was activated and sludge was removed assisted via vacuum truck.
- A dike inspection of Outside Storage Tanks was performed.
- Maintenance of flowerbeds and shrubs along Colvin Blvd. and Frontier Avenue.
- Cleanup of discarded debris around fence line and adjacent lots.
- Extensive Beautification done around the Site, which included addition of fifty (50) mature evergreens and several new shrub beds, that included a mixture of bushes trees and flowers.