SUMMARY OF CSO TRIAL RUN PROGRAM AND FULL-SCALE RECOMMENDATION REPORT
Passaic River Study Area
Administrative Order on Consent Index No. II-CERCLA-0117
June 2000

INTRODUCTION

Chemical Land Holdings, Inc. (CLH) recently completed the Trial Run Combined Sewer Overflow (CSO) sampling program at the Saybrook Place CSO located in Newark, New Jersey. This program was conducted under the auspices of the United States Environmental Protection Agency (EPA)-approved Ecological Sampling Plan (ESP, March 1999). Results of the CSO Trial Run program, along with recommendations related to the execution of a Full-Scale CSO Sampling Program, are provided herein.

Specifically, this correspondence addresses the following:

- Overview of CSO Sampling Program;
- Trial Run Implementation;
- Data Considerations;
- Logistical Considerations;
- Proposed Full-Scale Program; and
- Potential Program Modifications.

A discussion of each of these items follows.

OVERVIEW OF CSO SAMPLING PROGRAM

The ESP identifies two sampling protocols for the collection of solids associated with Passaic River Study Area (Study Area) CSO discharges: Standard Operating Procedures (SOPs) 6 and 14.

- SOP 6 describes a sampling approach that involves the collection of CSO water (up to 400 gallons) followed by homogenization and collection of water and solids samples. Water samples are paired filtered and unfiltered liquid samples; solids are settleable and/or filtered solids from the 400 gallon water sample. This method will be referred to as the "bulk sampling" approach.
- SOP 14 involves the collection of solids using passive collection devices installed within the CSO chamber. This method will be referred to as the "sediment trap" approach.

Both SOPs specify automated monitoring of other CSO-related parameters including, but not limited to, flow and dissolved oxygen (DO).

According to the ESP, a Trial Run program was to be implemented to compare and assess both sampling methods. The results of this program were to be used to design a Full-Scale sampling approach. As outlined in the ESP, the Trial Run was to be conducted at one CSO discharge location considered generally representative of the entire CSO system. Specifically, the Trial Run included a 30-day period during which the sediment traps were to be installed and maintained at

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the selected CSO location. During this same period, and from the same CSO, a bulk sample was to be collected during a single overflow event.

TRIAL RUN IMPLEMENTATION

With one exception, the CSOs and related appurtenances within the Study Area are owned and operated by the Passaic Valley Sewerage Commissioners (PVSC). The City of Newark owns the Roanoke Avenue CSO. Prior to conducting the Trial Run, it was first necessary to obtain PVSC's permission to access the CSO network. This process was completed in November 1999. In parallel with access negotiations, retrieval and review of CSO-related information was performed to identify an appropriate Trial Run location. CLH selected the Saybrook Place CSO in downtown Newark (Figure 1).

The Trial Run was conducted from early December 1999 through early March 2000. At the start of the program, and in close coordination with PVSC, sampling equipment was mounted within the Saybrook Place CSO, including an automated sampler (to primarily measure flow and water depth) and sediment traps (Figure 2). As shown in Figure 2, a total of six sediment traps were installed within the chamber, four more than required by the ESP. CLH surmised that six traps would be better for evaluation of capture rates at various locations within the CSO structure. Additional monitoring/sampling equipment was utilized during actual sample collection procedures, as further described herein.

Concurrent with the sampling at Saybrook Place CSO, CLH conducted a reconnaissance of the remaining 28 CSOs to collect physical information and evaluate sampling logistics. This information was tabulated and summarized to support planning for the Full-Scale sampling program.

Sediment Traps

The sediment traps were deployed on December 8, 1999 and retrieved on January 12, 2000, providing a total exposure period of 36 days (this deployment period exceeded the 30-day requirement specified in the ESP). Upon retrieval, approximately 2 to 2 ½ inches of sediment were recovered from Trap 2, located in the middle of the CSO chamber (see Figure 2). Less than ½ inch of sediment was recovered from each of the remaining five traps. Recovered materials included black fine sand and fines, as well as food matter and floatables. A single composite sample was prepared for chemical analyses, and shipped to the ESP-approved laboratories.

To determine if "wash-out" was occurring in the sediment traps (i.e., loss of collected sediments due to higher flow events), and to collect additional sediment for grain size analysis, the six traps were re-deployed in mid-January 2000. During an inspection in mid-February, Trap 2 was found to have approximately 1¾ inches of sediment, while the remaining five had less than ½ inch of material.

The sediment traps were retrieved at the end of the second deployment on March 2, 2000. At least one overflow event had occurred between the mid-February inspection and the retrieval date. Four of the traps (1, 2, 3, and 5) were found to have recovered 2 to 3 inches of sediment, while Trap 4 recovered one inch, and Trap 6 recovered 3 ¾ inches. Similar to the first deployment, recovered materials included black fine sand and fines, as well as food matter and floatables. A single composite sample was again prepared for laboratory submittal, this time for grain size analysis only.

Bulk Sampling

On January 4, 2000, the bulk water sample (400 gallons) was collected during an overflow event. In addition to collecting the water, measurements of pH, DO, and conductivity were obtained using manual probes. Flow was measured using the automated sampler. That same day, unfiltered aqueous samples were submitted to the approved laboratories for chemical analyses (including TSS). A filtered aqueous sample was obtained and submitted for chemical analyses the following day. (Note that, according to the ESP, the aqueous samples were to be analyzed only if sufficient solids were not collected from the tank. As indicated below, this was not the case. However, CLH chose to analyze the samples anyway.)

On January 7, 2000, water from the 400-gallon tank was filtered to obtain and analyze sediments contained within. The filters were submitted to the laboratories with the retained solids for chemical and physical (grain size) analyses. CLH also submitted an unused filter for chemical analyses to determine if, and to what extent, the filters themselves may affect the final results.

ASTM grain size analyses require more sediment than could readily be obtained from the filtered sample. Therefore, to provide a direct comparison between the distribution of grain sizes collected with each method, a different analytical technique was performed. Particle Technologies Laboratory (PTL, Downers Grove, IL) requires much less material, since it utilizes a laser diffraction methodology to measure the grain size fractions. On March 2, 2000, a subsequent round of filtered sediments were collected from the tank. These sediments, along with material obtained from the sediment traps on that same day, were sent to PTL for analysis.

Table 1 presents a summary of the bulk sampling and sediment trap samples collected, including descriptions of the media represented by each. Note that as part of the bulk sampling process, two equipment rinse blanks were obtained. The first (CSO00RB01) was collected from the decontaminated tank, filter plates, tubing, and spatulas. The second rinse blank (CSO00RB02) was obtained from a surrogate submersible pump and hose. Similar items had been installed and used to collect the bulk sample without prior decontamination. Therefore, this second rinse blank was collected to determine the impact (if any) of "off the shelf" equipment that was used without undergoing decontamination.

DATA CONSIDERATIONS

The validated data from the Trial Run sampling event (Tables 2, 3, and 4) were used to evaluate the two sampling methodologies. The constituents (including dioxins/furans and PCBs) contained in the bulk sediment samples were detected at higher frequencies and concentrations compared to the solids collected from within the sediment traps. This observation is not unexpected given the grain size data presented in Attachment 1. As shown in the attachment, the "bulk" solids were shown to contain a higher fraction of fines relative to the sediment trap material.

Several of the bulk solids analyses generated relatively high detection limits. Based upon input from the laboratories, and CLH's data validator, Environmental Data Services, Ltd. (EDS), it is believed that this is a result of the relatively high moisture content found in the filters. CLH considered filter presses and air drying of the filters to remove excess moisture. However, the most promising approach seems to be an alternate solids separation technique (i.e., centrifuging).

Finally, the data indicate potential QA/QC issues associated with some of the sampling equipment and filters used in the bulk sampling procedures. However, only "valid" data have been considered in development of the recommendations. Additional useable data would have been available absent these QA/QC issues. As a result of this evaluation, "off the shelf" equipment will not be utilized without full decontamination, unless certified clean, as required for sample containers. Further, pending the results of CLH's evaluation of centrifugation to replace the filtration process, the impact of filter materials on the results of chemical analyses will be eliminated. Finally, recognizing that the Trial Run was implemented to "debug" the overall CSO Program, CLH will resample Saybrook Place as part of the Full-Scale operation.

LOGISTICAL CONSIDERATIONS

Logistical considerations affect the ability to conduct the sampling program and must be considered as part of the final recommendation. Factors such as manhole access, traffic, tidal influence, and potential for overflow are all important. Based upon the reconnaissance of the CSOs, along with data from other sources (i.e., the CSO plans provided by PVSC and various reports prepared by Killam Associates, PVSC's consultant), these factors are summarized in Table 5 for each CSO. The results of the reconnaissance are incorporated into the recommendations for the proposed Full-Scale program, below.

PROPOSED FULL-SCALE PROGRAM

Based upon the information presented above, CLH recommends that, overall, bulk sampling be employed as the primary sample collection methodology for the Full-Scale CSO program. For those CSOs where bulk sampling may be infeasible, sediment traps will be considered for use. However, due to the difference between analytical results derived from each of these methods,

before the sediment traps are utilized exclusively for data collection, CLH believes that additional performance evaluation is necessary.

To aid in this evaluation, and for the purposes of implementing a more manageable program, CLH proposes that the Full-Scale operation be performed in stages. Therefore, each CSO has been segregated into a separate category, as described further below.

Category 1a

This category includes all of those CSOs where CLH believes the bulk sampling methodology (SOP 6) is readily implementable, including:

1. Worthington Avenue;
2. Herbert Place;
3. Middlesex Street;
4. Saybrook Place;
5. Dey Street;
6. Tappan Street;
7. Duke Street;
8. Rector Street;
9. Bergen Street; and
10. Ivy Street.

Utilizing the bulk sampling methodology, CLH proposes to initially sample the CSOs at Worthington Avenue and Herbert Place over the two required storm events (the ESP specifies that one dry weather and one wet weather event be monitored for each CSO). Upon evaluation of the logistics associated with this initial sampling phase, the remaining eight CSOs in Category 1a would then be sampled in groups of two to four according to the requirements of the ESP.

As part of this overall sampling effort, CLH also proposes to install sediment traps within each of the first five CSOs listed above (i.e., Worthington, Herbert, Middlesex, Saybrook, and Dey). According to available records, these five CSOs represent a relatively wide range of tidal influences. Information gathered from this effort will be used to further evaluate the trap performance. With PVSC's cooperation, CLH may request that the sediment traps remain in place beyond the time required to collect the two bulk samples, possibly as long as the four months specified in SOP 14. Unless the sediment trap data obtained from the first five CSOs reveal conclusions different than those obtained during the Trial Run, traps will not be installed within the latter five.

Category 1b

This category includes 11 CSOs where, according to available information, bulk sampling may be more difficult to implement due to vehicular traffic and limited working areas. Therefore, CLH will require additional time to plan the sampling effort and coordinate with PVSC and/or local law enforcement for traffic control. This category includes the following 11 CSOs:

11. Clay Street;
12. Polk Street;
13. City Dock;
14. Harrison Avenue;
15. Fourth Avenue;
16. Johnston Avenue;
17. Passaic Street;
18. Central Avenue;
19. New Street;
20. Cleveland Avenue; and
21. Marshall Street.

If bulk sampling is not a feasible option at some or all of the Category 1b CSOs, then consideration will be given to the use of sediment traps (again utilizing whatever information is gathered during the first phase of work). Should bulk sampling be deemed feasible, the CSOs will be sampled in groups of three to four (maximum) per storm event following 1a sampling.

Category 2

The second category includes nine CSOs where available records indicate that overflow events do not occur; that the CSO is inactive; or that the CSO was not inspected during the initial reconnaissance effort (i.e., Roanoke Avenue). This category includes the following nine CSOs:

22. Roanoke Avenue;
23. Freeman Street;
24. Third Avenue;
25. Nairn Street;
26. Jackson Street;
27. Bergen Avenue (West);
28. Orange Street;
29. Bridge Street; and
30. Bergen Avenue (East).

For each of these CSOs, CLH will attempt to obtain additional information from PVSC to confirm whether overflow events do or do not occur. Should it be confirmed that overflow events do not

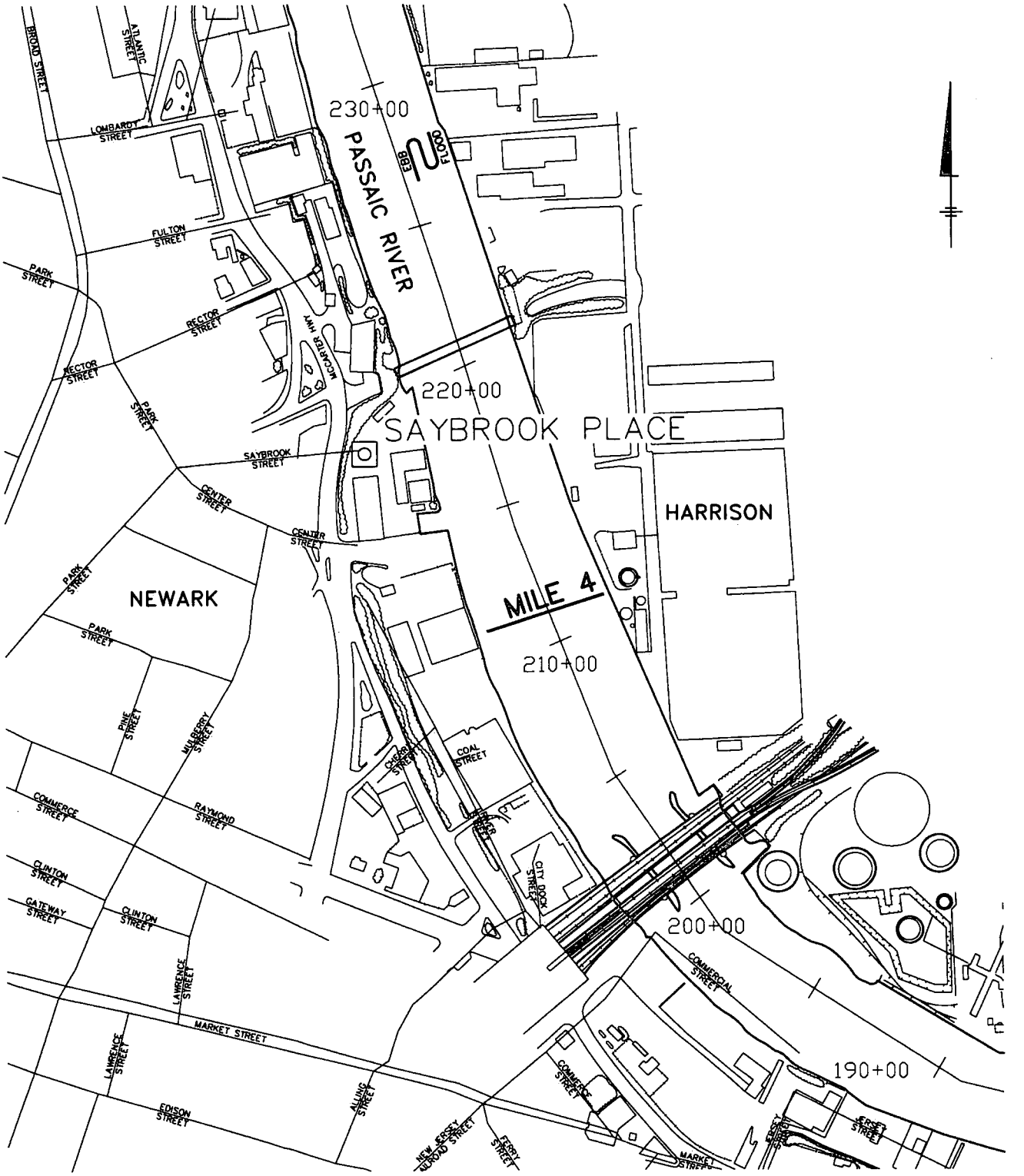
occur at a specific CSO, it may be eliminated from consideration for sampling as part of the Full-Scale program. Conversely, should it be determined that overflow events do occur, that CSO will be evaluated for implementation of bulk sampling and placed within Category 1a or 1b, as appropriate.

POTENTIAL PROGRAM MODIFICATIONS

As indicated previously, CLH is considering modifying one or more techniques associated with the bulk sampling procedure.

1. CLH is evaluating the use of a portable centrifuge to separate solids from the bulk water sample in lieu of filtration. A demonstration of a portable centrifuge was conducted, as well as a comparison of grain size distribution from a sample collected with the centrifuge versus a sample collected from the same tank of water using traditional filtration. Since the data have not been fully checked and analyzed, a recommendation is not included in this report. CLH will update EPA and PVSC on this evaluation during our meeting.

2. CLH is planning to analyze all water samples collected as part of the bulk sampling methodology (i.e., the filtered/unfiltered water samples). The ESP currently states that such samples would be analyzed only if sufficient solids were not collected through the filtering (or solids separation) process. CLH is prepared to perform the additional analyses to support this investigation, as well as other studies being performed by the PVSC, Harbor Estuary Program/Contaminant Assessment Reduction Program, etc.



LEGEND:

—— SHORELINE

⊡ CSO CHAMBER

SAYBROOK PLACE

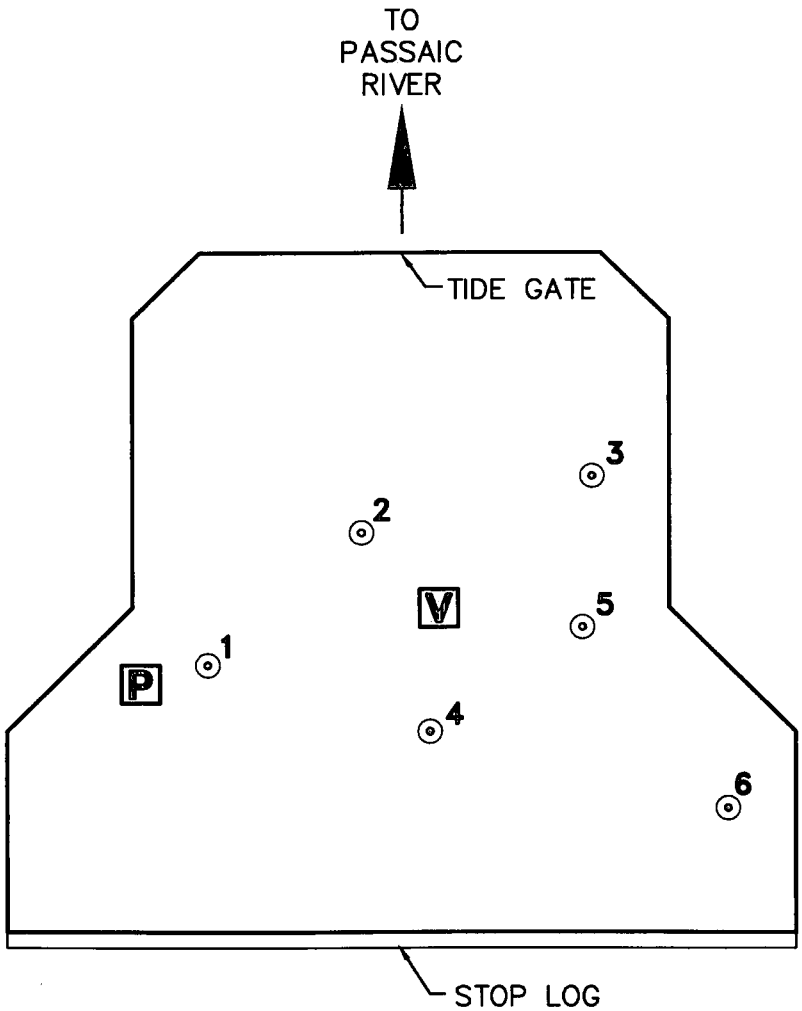
0 500' 1000'

GRAPHIC SCALE

X: 09994X01.DWG, 09994X02.DWG
L: ON=*, OFF=REF, |GRID
P: STD-PCP/AP
6/23/00 SYR-54-GMS LAS DCC
09994063/09994B23.DWG

SAYBROOK PLACE CSO LOCATION

FIGURE **1**



LEGEND

⊙2 SEDIMENT TRAP

P SUBMERSIBLE PUMP

V VELOCITY PROBE

0 2' 4'

APPROXIMATE SCALE IN FEET

X: NONE
L: OFF=REF
P: STD AP.PCP
JUNE 22, 2000 CRA-62-WDN SYR-54-JER LAS
09994063\09994G01.DWG

SAYBROOK PLACE CSO EQUIPMENT LAYOUT

FIGURE **2**

TABLE 1
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN - SAMPLE SUMMARY

SDG #	SAMPLE #	MATRIX	DATE COLLECTED	FIELD SAMPLE	MS	MSD	DUPLICATE	RINSE BLANK	PERFORMANCE EVALUATION SAMPLE	COMMENTS
BULK SAMPLING METHODOLOGY										
CSO01	CSO00RB01	WATER	1/3/00					X		Rinse blank from decontaminated sampling equipment (tank, filter plates, tubing for pump and filter, spatulas)
	CSO00RB02	WATER	1/3/00					X		Rinse blank from unused (not decontaminated) equipment (submersible pump and hose)
	CSO0011CWUE-1	WATER	1/4/00	X	X	X				Unfiltered aqueous sample
	DCSOCWUE 1	WATER	1/4/00	X			X			Duplicate of CSO0011CWUE-1
	CSO0011CWUE02	WATER	1/4/00							TSS sample for sediment trap protocol sent to laboratory in multiple jars for flow-weighted compositing
CSO02	CSO0011CWFE-1	WATER	1/5/00	X	X	X				Filtered aqueous sample
	DCSOCWFE 1	WATER	1/5/00	X			X			Duplicate of CSO0011CWFE-1
CSO03	CSO0011SDFS01	FILTERED SEDIMENT	1/7/00	X	X	X				Filtered sediment (on filters)
	DCSOSDFSO1	FILTERED SEDIMENT	1/7/00	X			X			Duplicate of CSO0011SDFS01
	CSO0011CF	UNUSED FILTERS	1/7/00	X						Sample of unused filters
	CSO0011SDFS02	FILTERED SEDIMENT	1/13/00	X						Filtered sediment (on filters) for grain size analysis
CSO04	CSO0011SDPE01	SOIL	1/7/00						X	Performance Evaluation Sample - unfortified
	CSO0011SDPE02	SOIL	1/7/00						X	Performance Evaluation Sample -fortified
CSO06	CSO0011SDFS03	FILTERED SEDIMENT	3/2/00	X						Filtered sediment samples for grain size analysis
SEDIMENT TRAP METHODOLOGY										
CSO05	CSO0011SDSS01	SEDIMENT	1/12/00	X						Sediment from sediment traps - insufficient mass for MS/MSD or Duplicate. Requested lab spike for QC.
CSO07	CSO0011SDSS02	SEDIMENT	3/2/00	X						Sediment from sediment traps for grain size analyses.

TABLE 2
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF SEDIMENT SAMPLE DATA

Analyte	Reporting Units	CSO0011SDFS01 Filtered Sediment	DCSOSDFS01 Filtered Sediment Dup.	CSO0011SDSS01 Sediment Trap
Semi-VOAs				
Phenol	ug/Kg	1900 UM	R	510 U
bis(2-Chloroethyl)ether	ug/Kg	1900 UM	R	510 U
2-Chlorophenol	ug/Kg	1900 UM	R	510 U
1,3-Dichlorobenzene	ug/Kg	1900 UM	R	510 U
1,4-Dichlorobenzene	ug/Kg	1900 UM	R	300 G
1,2-Dichlorobenzene	ug/Kg	1900 UM	R	510 U
2-Methylphenol	ug/Kg	1900 UM	R	510 U
2,2'-oxybis(1-Chloropropane)	ug/Kg	1900 UJ	R	510 U
4-Methylphenol	ug/Kg	1900 UM	R	140 G
N-Nitroso-di-n-propylamine	ug/Kg	1900 UM	R	510 U
Hexachloroethane	ug/Kg	1900 UM	R	510 U
Nitrobenzene	ug/Kg	1900 UM	R	510 U
Isophorone	ug/Kg	1900 UM	R	510 U
2-Nitrophenol	ug/Kg	1900 UM	R	510 U
2,4-Dimethylphenol	ug/Kg	1900 UM	R	510 U
bis(2-Chloroethoxy)methane	ug/Kg	1900 UM	R	510 U
2,4-Dichlorophenol	ug/Kg	1900 UM	R	510 U
1,2,4-Trichlorobenzene	ug/Kg	1900 UM	R	510 U
Naphthalene	ug/Kg	1900 UM	R	55 G
4-Chloroaniline	ug/Kg	1900 UM	R	510 U
Hexachlorobutadiene	ug/Kg	1900 UM	R	510 U
4-Chloro-3-methylphenol	ug/Kg	1900 UM	R	510 U
2-Methylnaphthalene	ug/Kg	1900 UM	R	510 U
Hexachlorocyclopentadiene	ug/Kg	3900 UM	R	1000 U
2,4,6-Trichlorophenol	ug/Kg	1900 UM	R	510 U
2,4,5-Trichlorophenol	ug/Kg	1900 UM	R	510 U
2-Chloronaphthalene	ug/Kg	1900 UM	R	510 U
2-Nitroaniline	ug/Kg	1900 UM	R	510 U
Dimethylphthalate	ug/Kg	1900 UM	R	510 U
Acenaphthylene	ug/Kg	1900 UM	R	510 U
3-Nitroaniline	ug/Kg	1900 UM	R	510 U
Acenaphthene	ug/Kg	1900 UM	R	94 G
2,4-Dinitrophenol	ug/Kg	11000 UM	R	3100 U
4-Nitrophenol	ug/Kg	4900 UM	R	1300 U
Dibenzofuran	ug/Kg	1900 UM	R	73 G
2,4-Dinitrotoluene	ug/Kg	1900 UM	R	510 U
2,6-Dinitrotoluene	ug/Kg	1900 UM	R	510 U
Diethylphthalate	ug/Kg	1900 UM	R	510 U
4-Chlorophenyl-phenylether	ug/Kg	1900 UM	R	510 U
Fluorene	ug/Kg	1900 UM	R	110 G

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 2
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF SEDIMENT SAMPLE DATA

Analyte	Reporting Units	CSO0011SDFS01 Filtered Sediment	DCSOSDFS01 Filtered Sediment Dup.	CSO0011SDSS01 Sediment Trap
Semi-VOAs (Continued)				
4-Nitroaniline	ug/Kg	1900 UM	R	510 U
4,6-Dinitro-2-methylphenol	ug/Kg	4900 UM	R	1300 U
N-Nitrosodiphenylamine	ug/Kg	1900 UM	R	510 U
4-Bromophenyl-phenylether	ug/Kg	1900 UM	R	510 U
Hexachlorobenzene	ug/Kg	1900 UM	R	510 U
Pentachlorophenol	ug/Kg	4900 UM	R	1300 U
Phenanthrene	ug/Kg	400 GM	R	1400
Anthracene	ug/Kg	1900 UM	R	250 G
Carbazole	ug/Kg	1900 UM	R	160 G
Di-n-butylphthalate	ug/Kg	1900 UM	R	810
Fluoranthene	ug/Kg	840 GM	R	1800
Pyrene	ug/Kg	780 GM	R	1700
Butylbenzylphthalate	ug/Kg	510 GM	R	620
3,3'-Dichlorobenzidine	ug/Kg	3900 UM	R	1000 U
Benzo(a)anthracene	ug/Kg	260 GM	R	800
bis(2-Ethylhexyl)phthalate	ug/Kg	5400 M	R	3000
Chrysene	ug/Kg	450 GM	R	970
Di-n-octylphthalate	ug/Kg	520 GM	R	160 G
Benzo(b)fluoranthene	ug/Kg	530 GM	R	1100
Benzo(k)fluoranthene	ug/Kg	210 GM	R	420 G
Benzo(a)pyrene	ug/Kg	310 GM	R	740
Indeno(1,2,3-cd)pyrene	ug/Kg	290 GM	R	550
Dibenz(a,h)anthracene	ug/Kg	1900 UM	R	140 G
Benzo(g,h,i)perylene	ug/Kg	310 GM	R	480 G
Pesticides/PCB Aroclors				
Alpha BHC	ug/Kg	16 UM	UR	52 UJ
Beta BHC	ug/Kg	16 UM	R	52 UJ
Delta BHC	ug/Kg	16 UM	R	52 U
Gamma BHC - Lindane	ug/Kg	16 UM	R	5.9 GJ
Heptachlor	ug/Kg	16 UM	R	52 U
Aldrin	ug/Kg	16 UM	R	52 U
Heptachlor Epoxide	ug/Kg	16 UM	R	52 U
Endosulfan I	ug/Kg	16 UM	R	52 U
Dieldrin	ug/Kg	31 UM	R	100 U
DDE	ug/Kg	31 UM	R	100 U
Endrin	ug/Kg	13 GM	R	6.7 GJ
Endosulfan II	ug/Kg	3.9 GM	R	100 UJ
DDD	ug/Kg	31 UJ	R	100 U
Endosulfan Sulfate	ug/Kg	31 UJ	R	100 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 2
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF SEDIMENT SAMPLE DATA

Analyte	Reporting Units	CSO0011SDFS01 Filtered Sediment	DCSOSDFS01 Filtered Sediment Dup.	CSO0011SDSS01 Sediment Trap
Pesticides/PCB Aroclors (Continued)				
DDT	ug/Kg	31 UJ	R	100 UJ
Endrin Ketone	ug/Kg	31 UJ	R	100 U
Methoxychlor	ug/Kg	160 UJ	R	520 UJ
Alpha Chlordane	ug/Kg	16 UM	R	52 U
Gamma Chlordane	ug/Kg	16 UJ	R	52 U
Toxaphene	ug/Kg	1600 UM	R	5200 U
Endrin Aldehyde	ug/Kg	31 UM	R	100 UJ
PCB-1016	ug/Kg	310 UM	R	1000 U
PCB-1221	ug/Kg	310 UM	R	1000 U
PCB-1232	ug/Kg	310 UM	R	1000 U
PCB-1242	ug/Kg	310 UM	R	1000 U
PCB-1248	ug/Kg	310 UM	R	1000 U
PCB-1254	ug/Kg	310 UM	R	1000 U
PCB-1260	ug/Kg	310 UM	R	1000 U
Herbicides				
2,4-D	ug/Kg	2300 UM	R	370 U
2,4,5-TP (Silvex)	ug/Kg	950 UM	R	150 U
2,4,5-T	ug/Kg	950 UM	R	150 U
2,4-DB	ug/Kg	R	R	280 U
Dioxin/Furan				
2,3,7,8-TCDD	ng/Kg	3.71	R	1.66 UJ
1,2,3,7,8-PeCDD	ng/Kg	9.26	5.82 J	1.75 UJ
1,2,3,4,7,8-HxCDD	ng/Kg	11.7 J	8.90 J	2.27 UJ
1,2,3,6,7,8-HxCDD	ng/Kg	28.8 J	23.6 J	2.55 UJ
1,2,3,7,8,9-HxCDD	ng/Kg	18.9 J	16.3 J	2.24 UJ
1,2,3,4,6,7,8-HpCDD	ng/Kg	610	490 J	26.3 J
OCDD	ng/Kg	6730	5310 J	245 J
2,3,7,8-TCDF	ng/Kg	12.4	9.65	1.39 UJ
1,2,3,7,8-PeCDF	ng/Kg	6.01	R	3.06 UJ
2,3,4,7,8-PeCDF	ng/Kg	13.0	10.6 J	2.20 UJ
1,2,3,4,7,8-HxCDF	ng/Kg	18.9 J	15.7 J	1.57 UJ
1,2,3,6,7,8-HxCDF	ng/Kg	15.0 J	14.2 J	1.58 UJ
2,3,4,6,7,8-HxCDF	ng/Kg	13.1 J	12.6 J	0.491 UJ
1,2,3,7,8,9-HxCDF	ng/Kg	3.21 U	R	0.889 UJ
1,2,3,4,6,7,8-HpCDF	ng/Kg	199	174 J	7.66 J
1,2,3,4,7,8,9-HpCDF	ng/Kg	12.2	R	0.761 UJ
OCDF	ng/Kg	427	294 J	16.6 J

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 2
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF SEDIMENT SAMPLE DATA

Analyte	Reporting Units	CSO0011SDFS01 Filtered Sediment	DCSOSDFS01 Filtered Sediment Dup.	CSO0011SDSS01 Sediment Trap
PCB Congeners				
PCB-1	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-3	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-8	ng/Kg	42600 UJ	32600 UJ	4810 U
PCB-15	ng/Kg	42600 UJ	32600 UJ	4810 U
PCB-18	ng/Kg	4260 UJ	3260 UJ	R
PCB-28	ng/Kg	4260 UJ	3260 UJ	R
PCB-44	ng/Kg	5080 J	4240 J	481 UJ
PCB-52	ng/Kg	5920 J	5440 J	499 J
PCB-66	ng/Kg	6050 J	5140 J	481 UJ
PCB-77	ng/Kg	4260 UJ	3260 UJ	481 UJ
PCB-81	ng/Kg	4260 UJ	3260 UJ	481 UJ
PCB-87	ng/Kg	11400 J	10300 J	913
PCB-90/101	ng/Kg	19600 J	17800 J	1680
PCB-118	ng/Kg	22100 J	19300 J	1050
PCB-123	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-105	ng/Kg	10400 J	8730 J	481 U
PCB-114	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-126	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-128	ng/Kg	8040 J	6700 J	481 U
PCB-138	ng/Kg	38200 J	31800 J	2740
PCB-153	ng/Kg	25600 J	20700 J	1860
PCB-167	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-156	ng/Kg	4260 UJ	3410 J	481 U
PCB-157	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-169	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-170	ng/Kg	9850 J	8150 J	786
PCB-180	ng/Kg	23100 J	18500 J	2030
PCB-183	ng/Kg	5410 J	4010 J	481 U
PCB-184	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-187	ng/Kg	17500 J	12300 J	1200
PCB-189	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-202	ng/Kg	19200 J	5180 J	847
PCB-194	ng/Kg	14600 J	8220 J	731
PCB-195	ng/Kg	4260 UJ	3260 UJ	481 U
PCB-206	ng/Kg	171000 J	36100 J	3240
PCB-207	ng/Kg	12000 J	3260 UJ	481 U
PCB-209	ng/Kg	41800 J	7160 J	671

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 2
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF SEDIMENT SAMPLE DATA

Analyte	Reporting Units	CSO0011SDFS01 Filtered Sediment	DCSOSDFS01 Filtered Sediment Dup.	CSO0011SDSS01 Sediment Trap
Inorganics				
Aluminum	mg/Kg	R	R	2580
Antimony	mg/Kg	1.0 BM	R	8.1 B
Arsenic	mg/Kg	0.84 BM	R	0.65 B
Barium	mg/Kg	R	R	27.4 B
Beryllium	mg/Kg	0.21 BM	R	0.15 B
Cadmium	mg/Kg	0.079 BM	R	0.045 U
Calcium	mg/Kg	R	R	4560 *
Chromium	mg/Kg	R	R	14.4
Cobalt	mg/Kg	4.5 BM	R	3.5 B
Copper	mg/Kg	51.6 *NJH	R	101 N*JL
Iron	mg/Kg	2990 *M	R	7280 *
Lead	mg/Kg	55.2 *M	R	55.0 *
Magnesium	mg/Kg	1310 M	R	1410
Manganese	mg/Kg	42.5 *M	R	86.1 NJL
Mercury	mg/Kg	0.32 M	R	0.14 *J
Nickel	mg/Kg	5.6 J	R	8.5
Potassium	mg/Kg	R	R	299 BNJH
Selenium	mg/Kg	0.33 UM	R	0.64 BJH
Silver	mg/Kg	1.7 M	R	4.0 *
Sodium	mg/Kg	R	R	283 BNJL
Thallium	mg/Kg	0.74 BM	R	0.76 U
Vanadium	mg/Kg	6.4 M	R	9.0
Zinc	mg/Kg	R	R	163 N*JL
Organotin				
Monobutyltin	ug Sn/Kg	25.6 UJ	24.0 UJ	R
Dibutyltin	ug Sn/Kg	51.1 UJ	19.9 UJ	8.42 J
Tributyltin	ug Sn/Kg	11.3 UJ	23.1 UJ	UR
Tetrabutyltin	ug Sn/Kg	1.00 UJ	1.00 UJ	R

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
Semi-VOAs							
Phenol	ug/L	10 U	11 U	10 U	10 U	100 U	46
bis(2-Chloroethyl)ether	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Chlorophenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
1,3-Dichlorobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
1,4-Dichlorobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
1,2-Dichlorobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Methylphenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,2'-oxybis(1-Chloropropane)	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Methylphenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
N-Nitroso-di-n-propylamine	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Hexachloroethane	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Nitrobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Isophorone	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Nitrophenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,4-Dimethylphenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
bis(2-Chloroethoxy)methane	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,4-Dichlorophenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
1,2,4-Trichlorobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Naphthalene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Chloroaniline	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Hexachlorobutadiene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Chloro-3-methylphenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Methylnaphthalene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Hexachlorocyclopentadiene	ug/L	25 U	28 U	25 U	25 U	250 U	25 U
2,4,6-Trichlorophenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,4,5-Trichlorophenol	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Chloronaphthalene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2-Nitroaniline	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Dimethylphthalate	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Acenaphthylene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
3-Nitroaniline	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Acenaphthene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
Semi-VOAs (Continued)							
2,4-Dinitrophenol	ug/L	60 U	67 U	60 U	60 U	600 U	61 U
4-Nitrophenol	ug/L	50 U	56 U	50 U	50 U	500 U	51 U
Dibenzofuran	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,4-Dinitrotoluene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
2,6-Dinitrotoluene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Diethylphthalate	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Chlorophenyl-phenylether	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Fluorene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Nitroaniline	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4,6-Dinitro-2-methylphenol	ug/L	25 U	28 U	25 U	25 U	250 U	25 U
N-Nitrosodiphenylamine	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
4-Bromophenyl-phenylether	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Hexachlorobenzene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Pentachlorophenol	ug/L	25 U	28 U	25 U	25 U	250 U	25 U
Phenanthrene	ug/L	10 U	11 U	1.0 G	1.0 G	100 U	10 U
Anthracene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Carbazole	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Di-n-butylphthalate	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Fluoranthene	ug/L	10 U	11 U	2.0 G	2.0 G	100 U	10 U
Pyrene	ug/L	10 U	11 U	2.0 G	1.0 G	100 U	10 U
Butylbenzylphthalate	ug/L	10 U	11 U	2.0 G	2.0 G	100 U	10 U
3,3'-Dichlorobenzidine	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Benzo(a)anthracene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
bis(2-Ethylhexyl)phthalate	ug/L	10 U	11 U	15 U	14 U	100 U	15
Chrysene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Di-n-octylphthalate	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Benzo(b)fluoranthene	ug/L	10 U	11 U	1.0 G	1.0 G	100 U	10 U
Benzo(k)fluoranthene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Benzo(a)pyrene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Indeno(1,2,3-cd)pyrene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Dibenz(a,h)anthracene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U
Benzo(g,h,i)perylene	ug/L	10 U	11 U	10 U	10 U	100 U	10 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
Pesticides/PCBs							
Alpha BHC	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.0052 G	0.010 G
Beta BHC	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Delta BHC	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Gamma BHC - Lindane	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Heptachlor	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.014 G	0.050 U
Aldrin	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Heptachlor Epoxide	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Endosulfan I	ug/L	0.050 UJ	0.050 UJ	0.019 GJ	0.020 GJ	0.050 U	0.050 U
Dieldrin	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U	0.10 U
DDE	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U	0.10 U
Endrin	ug/L	0.10 UJ	0.10 UJ	0.023 GJ	0.022 GJ	0.10 U	0.10 U
Endosulfan II	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U	0.10 U
DDD	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U	0.10 U
Endosulfan Sulfate	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.020 G	0.10 U
DDT	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ
Endrin Ketone	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ
Methoxychlor	ug/L	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ
Alpha Chlordane	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Gamma Chlordane	ug/L	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U	0.050 U
Toxaphene	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U	5.0 U
Endrin Aldehyde	ug/L	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U	0.10 U
PCB-1016	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1221	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1232	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1242	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1248	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1254	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
PCB-1260	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
Herbicides							
2,4-D	ug/L	12 U	12 U	12 U	12 U	12 U	12 U
2,4,5-TP (Silvex)	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	R	5.0 U
2,4,5-T	ug/L	5.0 U	5.0 U	R	R	5.0 U	5.0 U
2,4-DB	ug/L	R	9.1 UJ	9.1 UJ	9.1 UJ	9.1 UJ	9.1 UJ
Dioxin/Furan							
2,3,7,8-TCDD	pg/L	3.57 U	4.09 U	3.02 U	3.83 U	7.61 U	8.53 U
1,2,3,7,8-PeCDD	pg/L	3.76 U	5.24 U	5.15 U	4.95 U	10.1 U	16.3 U
1,2,3,4,7,8-HxCDD	pg/L	4.24 U	6.65 U	6.91 U	6.72 U	15.6 U	15.8 U
1,2,3,6,7,8-HxCDD	pg/L	4.74 U	7.41 U	9.02 U	9.56 U	17.1 U	18.1 U
1,2,3,7,8,9-HxCDD	pg/L	4.18 U	6.54 U	7.33 U	7.45 U	15.2 U	15.8 U
1,2,3,4,6,7,8-HpCDD	pg/L	7.99 U	8.05 U	130	127	13.2 U	59.3
OCDD	pg/L	40.9	44.6	1460	1400	36.6 U	137
2,3,7,8-TCDF	pg/L	1.50 U	1.66 U	2.40 U	2.78 U	3.90 U	9.09 U
1,2,3,7,8-PeCDF	pg/L	7.01 U	6.53 U	2.36 U	2.72 U	14.8 U	17.6 U
2,3,4,7,8-PeCDF	pg/L	5.30 U	4.75 U	6.41 U	3.94 U	10.4 U	19.7
1,2,3,4,7,8-HxCDF	pg/L	2.41 U	4.42 U	5.00 U	5.22 U	8.63 U	59.1
1,2,3,6,7,8-HxCDF	pg/L	2.37 U	4.21 U	5.18 U	4.73 U	9.14 U	35.9
2,3,4,6,7,8-HxCDF	pg/L	1.77 U	3.11 U	3.99 U	2.97 U	6.09 U	11.5
1,2,3,7,8,9-HxCDF	pg/L	2.96 U	5.74 U	3.81 U	1.61 U	9.70 U	7.88 U
1,2,3,4,6,7,8-HpCDF	pg/L	4.23 U	5.16 U	50.7	53.6	10.1 U	192
1,2,3,4,7,8,9-HpCDF	pg/L	6.83 U	9.34 U	5.75 U	3.68 U	18.5 U	15.3 U
OCDF	pg/L	11.3 U	22.3 U	101	98.2	31.7 U	291
PCB Congeners							
PCB-1	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-3	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	6260 J
PCB-8	pg/L	10400 UJ	9950 UJ	9930 UJ	R	33300 UJ	33300 UJ
PCB-15	pg/L	10400 UJ	9950 UJ	9930 UJ	R	33300 UJ	33300 UJ
PCB-18	pg/L	R	995 UJ	1280 J	1260 J	R	3500 J
PCB-28	pg/L	R	995 UJ	2020 J	1520 J	R	R
PCB-44	pg/L	1040 UJ	995 UJ	2550 J	2290 J	3330 UJ	5920 J
PCB-52	pg/L	1040 UJ	995 UJ	2990 J	2940 J	3330 UJ	6530 J
PCB-66	pg/L	1040 UJ	995 UJ	2610 J	2530 J	3330 UJ	7480 J

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
PCB Congeners (Continued)							
PCB-77	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-81	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-87	pg/L	1040 UJ	R	3980 J	3860 J	3330 UJ	4060 J
PCB-90/101	pg/L	2090 UJ	R	7510 J	7130 J	6670 UJ	6670 UJ
PCB-118	pg/L	1040 UJ	R	7550 J	6410 J	3330 UJ	3330 UJ
PCB-123	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-105	pg/L	1040 UJ	R	3440 J	2970 J	3330 UJ	3330 UJ
PCB-114	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-126	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-128	pg/L	1040 UJ	R	2570 J	1940 J	3330 UJ	3330 UJ
PCB-138	pg/L	1040 UJ	R	11700 J	10300 J	3330 UJ	3330 UJ
PCB-153	pg/L	1040 UJ	R	7240 J	7020 J	3330 UJ	3330 UJ
PCB-167	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-156	pg/L	1040 UJ	R	1400 J	1190 J	3330 UJ	3330 UJ
PCB-157	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-169	pg/L	1040 UJ	R	993 UJ	R	3330 UJ	3330 UJ
PCB-170	pg/L	1040 UJ	995 UJ	3200 J	3460 J	3330 UJ	3330 UJ
PCB-180	pg/L	1040 UJ	995 UJ	6800 J	6990 J	3330 UJ	3330 UJ
PCB-183	pg/L	1040 UJ	995 UJ	1430 J	1890 J	3330 UJ	3330 UJ
PCB-184	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-187	pg/L	1040 UJ	995 UJ	4110 J	4950 J	3330 UJ	3330 UJ
PCB-189	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-202	pg/L	1040 UJ	995 UJ	1940 J	1780 J	3330 UJ	3330 UJ
PCB-194	pg/L	1040 UJ	995 UJ	2660 J	2520 J	3330 UJ	3330 UJ
PCB-195	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-206	pg/L	1040 UJ	995 UJ	9680 J	8340 J	3330 UJ	3330 UJ
PCB-207	pg/L	1040 UJ	995 UJ	993 UJ	R	3330 UJ	3330 UJ
PCB-209	pg/L	1040 UJ	995 UJ	2650 J	2390 J	3330 UJ	8940 J

(See Data Qualifier Sheet for explanation of data qualifiers)
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TABLE 3
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF WATER SAMPLE DATA

Analyte	Reporting Units	CSO0011CWFE-1 Filtered Water	DCSOCWFE-1 Filtered Water Dup.	CSO0011CWUE-1 Unfiltered Water	DCSOCWUE-1 Unfiltered Water Dup.	CSO00RB01 Rinse Blank	CSO00RB02 Rinse Blank
Inorganics							
Aluminum	ug/L	83.2 B	75.2 B	1500 N	1150 N	84.9 BN	62.5 BN
Antimony	ug/L	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
Arsenic	ug/L	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
Barium	ug/L	12.9 BE	12.5 BE	63.6 B	50.1 B	0.85 B	3.9 B
Beryllium	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Cadmium	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Calcium	ug/L	9780	9590	12100	11600	430 B	268 B
Chromium	ug/L	3.6 B	1.3 U	9.8 B	9.1 B	1.3 U	3.8 B
Cobalt	ug/L	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Copper	ug/L	5.0 B	4.7 B	64.3 EJ	49.1 EJ	1.9 BE	1.8 BE
Iron	ug/L	87.5 B	61.6 B	2940 N	2170 N	63.2 BN	16.8 UN
Lead	ug/L	1.5 U	1.5 U	70.8	53.3	1.5 U	2.9 B
Magnesium	ug/L	1550 B	1530 B	2380 B	2190 B	22.6 U	22.6 U
Manganese	ug/L	31.8	32.0	89.2 EJ	71.4 EJ	1.2 BE	0.19 UE
Mercury	ug/L	0.041 U	0.041 U	0.061 B	0.049 B	0.041 U	0.041 U
Nickel	ug/L	1.2 U	1.2 U	6.8 B	4.8 B	1.2 U	1.2 U
Potassium	ug/L	1770 B	1750 B	2220 BNJH	2220 BNJH	22.3 UN	22.3 UN
Selenium	ug/L	2.2 U	2.2 U	2.2 UJL	2.2 UJL	2.2 UJL	2.2 UJL
Silver	ug/L	0.82 U	0.82 U	2.2 B	2.4 B	0.82 U	0.82 U
Sodium	ug/L	19600	19100	19100	20300	833 B	936 B
Thallium	ug/L	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
Vanadium	ug/L	1.2 B	1.4 B	5.6 B	5.0 B	0.87 U	0.87 U
Zinc	ug/L	R	R	R	R	109	5.0 B
Organotin							
Monobutyltin	ug Sn/L	0.0250 UJL	1.16 UJL	1.66 UJL	1.12 UJL	0.0250 UJL	0.574 JL
Dibutyltin	ug Sn/L	0.0250 UJL	0.0250 UJL	2.97 UJL	3.04 UJL	0.0250 UJL	0.136 JL
Tributyltin	ug Sn/L	1.45 UJL	1.52 UJL	2.78 UJL	1.47 UJL	1.21 GJL	1.18 GJL
Tetrabutyltin	ug Sn/L	0.0250 UJL	0.0250 UJL	0.0250 UJL	0.0250 UJL	0.0250 UJL	0.0250 UJL

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 4
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF UNUSED FILTER DATA

Analyte	Reporting Units	CSO0011CF Unused Filter
Semi-VOAs		
Phenol	ug/Kg	14000 U
bis(2-Chloroethyl)ether	ug/Kg	14000 U
2-Chlorophenol	ug/Kg	14000 U
1,3-Dichlorobenzene	ug/Kg	14000 U
1,4-Dichlorobenzene	ug/Kg	14000 U
1,2-Dichlorobenzene	ug/Kg	14000 U
2-Methylphenol	ug/Kg	14000 U
2,2'-oxybis(1-Chloropropane)	ug/Kg	14000 UJ
4-Methylphenol	ug/Kg	14000 U
N-Nitroso-di-n-propylamine	ug/Kg	14000 U
Hexachloroethane	ug/Kg	14000 U
Nitrobenzene	ug/Kg	14000 U
Isophorone	ug/Kg	14000 U
2-Nitrophenol	ug/Kg	14000 U
2,4-Dimethylphenol	ug/Kg	14000 U
bis(2-Chloroethoxy)methane	ug/Kg	14000 U
2,4-Dichlorophenol	ug/Kg	14000 U
1,2,4-Trichlorobenzene	ug/Kg	14000 U
Naphthalene	ug/Kg	14000 U
4-Chloroaniline	ug/Kg	14000 U
Hexachlorobutadiene	ug/Kg	14000 U
4-Chloro-3-methylphenol	ug/Kg	14000 U
2-Methylnaphthalene	ug/Kg	14000 U
Hexachlorocyclopentadiene	ug/Kg	27000 U
2,4,6-Trichlorophenol	ug/Kg	14000 U
2,4,5-Trichlorophenol	ug/Kg	14000 U
2-Chloronaphthalene	ug/Kg	14000 U
2-Nitroaniline	ug/Kg	14000 U
Dimethylphthalate	ug/Kg	14000 U
Acenaphthylene	ug/Kg	14000 U
3-Nitroaniline	ug/Kg	14000 U
Acenaphthene	ug/Kg	14000 U
2,4-Dinitrophenol	ug/Kg	82000 U
4-Nitrophenol	ug/Kg	34000 U
Dibenzofuran	ug/Kg	14000 U
2,4-Dinitrotoluene	ug/Kg	14000 U
2,6-Dinitrotoluene	ug/Kg	14000 U
Diethylphthalate	ug/Kg	14000 U
4-Chlorophenyl-phenylether	ug/Kg	14000 U
Fluorene	ug/Kg	14000 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 4
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF UNUSED FILTER DATA

Analyte	Reporting Units	CSO0011CF Unused Filter
Semi-VOAs (Continued)		
4-Nitroaniline	ug/Kg	14000 U
4,6-Dinitro-2-methylphenol	ug/Kg	34000 U
N-Nitrosodiphenylamine	ug/Kg	14000 U
4-Bromophenyl-phenylether	ug/Kg	14000 U
Hexachlorobenzene	ug/Kg	14000 U
Pentachlorophenol	ug/Kg	34000 U
Phenanthrene	ug/Kg	14000 U
Anthracene	ug/Kg	14000 U
Carbazole	ug/Kg	14000 U
Di-n-butylphthalate	ug/Kg	14000 U
Fluoranthene	ug/Kg	14000 U
Pyrene	ug/Kg	14000 U
Butylbenzylphthalate	ug/Kg	14000 U
3,3'-Dichlorobenzidine	ug/Kg	27000 U
Benzo(a)anthracene	ug/Kg	14000 U
bis(2-Ethylhexyl)phthalate	ug/Kg	14000 U
Chrysene	ug/Kg	14000 U
Di-n-octylphthalate	ug/Kg	14000 U
Benzo(b)fluoranthene	ug/Kg	14000 U
Benzo(k)fluoranthene	ug/Kg	14000 U
Benzo(a)pyrene	ug/Kg	14000 U
Indeno(1,2,3-cd)pyrene	ug/Kg	14000 U
Dibenz(a,h)anthracene	ug/Kg	14000 U
Benzo(g,h,i)perylene	ug/Kg	14000 U
Pesticides/PCB Aroclors		
Alpha BHC	ug/Kg	13 G
Beta BHC	ug/Kg	14 U
Delta BHC	ug/Kg	14 U
Gamma BHC - Lindane	ug/Kg	14 U
Heptachlor	ug/Kg	14 U
Aldrin	ug/Kg	14 U
Heptachlor Epoxide	ug/Kg	14 U
Endosulfan I	ug/Kg	14 U
Dieldrin	ug/Kg	28 U
DDE	ug/Kg	28 U
Endrin	ug/Kg	28 UJ
Endosulfan II	ug/Kg	28 U
DDD	ug/Kg	28 UJ
Endosulfan Sulfate	ug/Kg	28 UJ

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 4
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF UNUSED FILTER DATA

Analyte	Reporting Units	CSO0011CF Unused Filter
Pesticides/PCB Aroclors (Continued)		
DDT	ug/Kg	28 UJ
Endrin Ketone	ug/Kg	28 UJ
Methoxychlor	ug/Kg	140 UJ
Alpha Chlordane	ug/Kg	14 U
Gamma Chlordane	ug/Kg	14 UJ
Toxaphene	ug/Kg	1400 U
Endrin Aldehyde	ug/Kg	28 U
PCB-1016	ug/Kg	710 U
PCB-1221	ug/Kg	710 U
PCB-1232	ug/Kg	710 U
PCB-1242	ug/Kg	710 U
PCB-1248	ug/Kg	710 U
PCB-1254	ug/Kg	710 U
PCB-1260	ug/Kg	710 U
Herbicides		
2,4-D	ug/Kg	710 U
2,4,5-TP (Silvex)	ug/Kg	100 U
2,4,5-T	ug/Kg	100 U
2,4-DB	ug/Kg	R
Dioxin/Furan		
2,3,7,8-TCDD	pg/Sample	2.57 UJ
1,2,3,7,8-PeCDD	pg/Sample	3.42 UJ
1,2,3,4,7,8-HxCDD	pg/Sample	3.64 UJ
1,2,3,6,7,8-HxCDD	pg/Sample	4.03 UJ
1,2,3,7,8,9-HxCDD	pg/Sample	3.57 UJ
1,2,3,4,6,7,8-HpCDD	pg/Sample	7.27 UJ
OCDD	pg/Sample	89.1 J
2,3,7,8-TCDF	pg/Sample	1.40 UJ
1,2,3,7,8-PeCDF	pg/Sample	4.58 UJ
2,3,4,7,8-PeCDF	pg/Sample	3.65 UJ
1,2,3,4,7,8-HxCDF	pg/Sample	1.82 UJ
1,2,3,6,7,8-HxCDF	pg/Sample	1.77 UJ
2,3,4,6,7,8-HxCDF	pg/Sample	1.36 UJ
1,2,3,7,8,9-HxCDF	pg/Sample	2.56 UJ
1,2,3,4,6,7,8-HpCDF	pg/Sample	6.16 UJ
1,2,3,4,7,8,9-HpCDF	pg/Sample	6.14 UJ
OCDF	pg/Sample	25.0 U

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 4
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF UNUSED FILTER DATA

Analyte	Reporting Units	CSO0011CF Unused Filter
PCB Congeners		
PCB-1	ng/Sample	1000 U
PCB-3	ng/Sample	1000 U
PCB-8	ng/Sample	10000 U
PCB-15	ng/Sample	10000 U
PCB-18	ng/Sample	R
PCB-28	ng/Sample	R
PCB-44	ng/Sample	1000 UJ
PCB-52	ng/Sample	1000 UJ
PCB-66	ng/Sample	1000 UJ
PCB-77	ng/Sample	1000 UJ
PCB-81	ng/Sample	1000 UJ
PCB-87	ng/Sample	1000 U
PCB-90/101	ng/Sample	2000 U
PCB-118	ng/Sample	1000 U
PCB-123	ng/Sample	1000 U
PCB-105	ng/Sample	1000 U
PCB-114	ng/Sample	1000 U
PCB-126	ng/Sample	1000 U
PCB-128	ng/Sample	1000 U
PCB-138	ng/Sample	1000 U
PCB-153	ng/Sample	1000 U
PCB-167	ng/Sample	1000 U
PCB-156	ng/Sample	1000 U
PCB-157	ng/Sample	1000 U
PCB-169	ng/Sample	1000 U
PCB-170	ng/Sample	1000 UJ
PCB-180	ng/Sample	1000 UJ
PCB-183	ng/Sample	1000 UJ
PCB-184	ng/Sample	1000 UJ
PCB-187	ng/Sample	1000 UJ
PCB-189	ng/Sample	1000 UJ
PCB-202	ng/Sample	1000 UJ
PCB-194	ng/Sample	1000 UJ
PCB-195	ng/Sample	1000 UJ
PCB-206	ng/Sample	1000 UJ
PCB-207	ng/Sample	1000 UJ
PCB-209	ng/Sample	1000 UJ

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 4
CHEMICAL LAND HOLDINGS, INC.

CSO TRIAL RUN SAMPLING (1/00)
SUMMARY OF UNUSED FILTER DATA

Analyte	Reporting Units	CSO0011CF Unused Filter
Inorganics		
Aluminum	mg/Kg	13800 *
Antimony	mg/Kg	0.21 U
Arsenic	mg/Kg	0.49 U
Barium	mg/Kg	22600 *
Beryllium	mg/Kg	0.13 B
Cadmium	mg/Kg	0.12 B
Calcium	mg/Kg	6590
Chromium	mg/Kg	10.5
Cobalt	mg/Kg	3.9 B
Copper	mg/Kg	0.48 B*NJH
Iron	mg/Kg	181 *
Lead	mg/Kg	2.4 *
Magnesium	mg/Kg	653 B
Manganese	mg/Kg	6.0 *
Mercury	mg/Kg	0.0045 B
Nickel	mg/Kg	0.73 B
Potassium	mg/Kg	14100
Selenium	mg/Kg	0.38 U
Silver	mg/Kg	0.14 B
Sodium	mg/Kg	38300 *
Thallium	mg/Kg	0.88 B
Vanadium	mg/Kg	0.31 B
Zinc	mg/Kg	17200 *
Organotin		
Monobutyltin	ug Sn/Kg	1.00 UJL
Dibutyltin	ug Sn/Kg	8.67 JL
Tributyltin	ug Sn/Kg	31.7 JL
Tetrabutyltin	ug Sn/Kg	1.00 UJL

(See Data Qualifier Sheet for explanation of data qualifiers)

TABLE 5

CSO INFORMATION SUMMARY

ESP OUTFALL NUMBER	CSO NJPDES PERMIT No.	LOCATION OR STREET NAME	BULK SAMPLING FEASIBLE?	SEDIMENT TRAP FEASIBLE	TIDE INTRUSION LIKELY? (Based on elev.)	ELEV. BEHIND STOPLOG (DATUM ELEV. 100 FT)	ELEV. BOTTOM OF TG CHAMBER (DATUM ELEV. 100 FT)	Est. HIGH TIDE ELEV BASED ON SAYBROOK TRIAL (DATUM ELEV. 100 FT)	OVERFLOW FREQUENCY (times/yr)*	EST MAX. DISCHARGE TO RIVER (mld)*
1	?	Roanoke Avenue	NOT INSPECTED	NOT INSPECTED	?	?	?	102.5	?	?
2	026/K-010	Duke Street	YES - Limited traffic control required. Located in residential neighborhood.	YES - Sediment Traps feasible although TG chamber installation may be preferrable. Limited space behind SL would limit number of traps. Traps would be packed in tight.	YES	101.2	101.18	102.5	65-80	24.6
3	025/K-009	Tappan Street	YES - Limited traffic control required. Located in residential neighborhood.	YES - Sediment trap installation feasible although difficult due to shallow MH. Tide gate chamber more floor room but small entry.	POSSIBLE	103.3	103.3	102.5	45-55	32.93
4	024/K-008	Bergen Avenue (East)	NOT OPERATIONAL	NOT OPERATIONAL	INACTIVE	INACTIVE	INACTIVE	102.5	INACTIVE	INACTIVE
5	023/K-007	Ivy Street	YES - MH in alley used for parking by residents. Residential area. Access down MH blocked by planks.	YES - Sediment traps feasible if can access MH. Access down MH blocked by planks.	YES	101.2	NO ELEVATION ON DRAWING	102.5	50-65	923.54
6	016/H-007	Worthington Avenue	YES - Traffic control required.	MARGINAL - Sediment trap installation likely infeasible in SC due to limited space. TG chamber installation feasible but spacing limited by TG clearance.	YES	101.8	101.6	102.5	NO OVERFLOW	30.47
7	041/N-014	Freeman Street	LIKELY - Traffic control required. Parking space will need to be addressed.	MARGINAL - Sediment Trap installation infeaible due to limited accessibility from MH to area behind SL. Scaffold or work bridge required to access area. Installation in TG chamber may be feasible if not covered by intermodal containers. TG chamber has plate instead of MH.	YES	99.36	99.2	102.5	5**	60.56
8	040/N-013	Polk Street	LIKELY - Traffic control required. Parking space will need to be addressed.	YES -Sediment Trap installation feasible. Large area between SL and TG for installation on floor of SC. Depth of MH and traffic considerations.	YES	96.6	96.27	102.5	45-60	234.67
9	039/N-012	Jackson Street	LIKELY - Bulk sampling would require closure of Jackson St. Relatively light traffic so may be feasible. Close to Raymond Blvd.	YES - Sediment trap installation feasible in area behind SL.	YES	97.37	96.7	102.5	Low**	253.6
10	038/N-011	City Dock	LIKELY - Traffic control required. Parking space will need to be addressed.	YES - Sediment Trap installation feasible in SC and TG chambers.	YES	96.67	96.17	102.5	45-55	420.14
11	037/N-010	Saybrook Place	YES - Good access and off-street parking.	YES -Sediment Trap installation feasible.	YES	101.22	100.64	102.5	35-45	336.87
12	014/H-005	Middlesex Street	YES - Traffic control required.	YES - Sediment trap installation appears feasible in area behind SL. However, installation difficult due to MH configuration. TG chamber installation may be easier.	YES	99.6	99.5	102.5	50-60	47.69
13	036/N-009	Rector Street	YES - Good access and parking.	YES - Sediment Trap installation feasible in SC and TG chambers. TG chamber has plate covers instead of MH cover.	POSSIBLE	103.2	102.8	102.5	31	257.38
14	015/H-006	Bergen Street	YES - Traffic control required.	YES - Insufficient space behind SL for installation. TG chamber installation appears feasible.	YES	98.9	98.7	102.5	60-75	9.08

TABLE 5

CSO INFORMATION SUMMARY

ESP OUTFALL NUMBER	CSO NJPDES PERMIT No.	LOCATION OR STREET NAME	BULK SAMPLING FEASIBLE?	SEDIMENT TRAP FEASIBLE	TIDE INTRUSION LIKELY? (Based on elev.)	ELEV. BEHIND STOPLOG (DATUM ELEV. 100 FT)	ELEV. BOTTOM OF TG CHAMBER (DATUM ELEV. 100 FT)	Est. HIGH TIDE ELEV BASED ON SAYBROOK TRIAL (DATUM ELEV. 100 FT)	OVERFLOW FREQUENCY (times/yr)*	EST MAX. DISCHARGE TO RIVER (mld)*
15	013/H-004	Dey Street	YES - Traffic control required.	YES - Sediment trap installation feasible in area behind SL. However very close spacing of traps required and may need to install fewer traps. TG chamber installation may be easier.	YES	101.3	101.1	102.5	40-55	30.28
16	012/H-003	Harrison Avenue	LIKELY - Traffic control required on approach to bridge.	YES - Installation in TG chamber recommended due to limited space in SC. Small entry to TG chamber will need to be considered for installation.	YES	102.66	102.2	102.5	45-55	75.7
17	035/N-008	Bridge Street	LIKELY - Traffic control required. Parking space will need to be addressed.	MARGINAL - Sediment trap installation infeasible due to limited space; may be able to install fewer sediment traps.	NO	108.12	NO TIDEGATE	102.5	NO OVERFLOW	NONE
18	011/H-002	Cleveland Avenue	LIKELY - Traffic control required. Parking space will need to be addressed.	YES - Installation in TG chamber recommended due to limited space in SC. Small entry to TG chamber will need to be considered for installation.	YES	101.67	101.4	102.5	40-50	46.18
19	034/N-007	Orange Street	LIKELY - Traffic control required.	YES - Sediment trap approach appears feasible based on PVSC drawing. Small area behind SL may require fewer sediment traps or tighter cluster.	NO	105.17	NO TIDEGATE	102.5	NO OVERFLOW	NONE
20	010/H-001	New Street	LIKELY - Traffic control required. Parking space will need to be addressed.	YES - Installation in TG chamber recommended due to limited space in SC. Small entry to TG chamber will need to be considered for installation.	YES	100.72	100.74	102.5	55-70	68.13
21	033/N-006	Clay Street	LIKELY - Traffic control required.	MARGINAL - Sediment trap sampling appears feasible based on PVSC drawings. Traffic control a required. (Could not inspect TG/diversion chamber due to traffic.)	YES	101.91	NO DRAWING AVAILABLE FOR TIDEGATE CHAMBER	102.5	APPROX. 56	1275.55
22	008/E-001	Central Avenue	LIKELY - Traffic control required. Parking space will need to be addressed.	YES - Installation in TG chamber recommended due to limited space in SC. Small entry to TG chamber will need to be considered for installation.	YES	100.41	100.16	102.5	50-65	233.16
23	022/K-006	Johnston Avenue	LIKELY - MH location in parking area for car dealer. May be feasible during daylight hours or with adequate coordination with car dealer.	YES - Sediment Trap approach feasible in SC.	YES	99.7	99.7	102.5	50-65	423.92
24	032/N-005	Fourth Avenue	LIKELY - MH location in gated parking area. May be feasible during daylight hours or with cooperation from property owner.	YES - Sediment trap installation feasible.	YES	102.3	101.7	102.5	55-70	234.67 (INCL. 3RD AVE.)
25	021/K-005	Marshall Street	LIKELY - Traffic control required; police control likely necessary.	YES - Sediment trap approach infeasible in SC cannot reach area behind SL. Installation feasible in TG chamber.	YES	100.1	100.1	102.5	30-40	18.93
26	031/N-004	Third Avenue	LIKELY - MH location in gated parking area. May be feasible during daylight hours or with cooperation from property owner.	YES -Sediment trap installation feasible, but narrow area would make installation tight. TG chamber would allow easier installation.	YES	102.28	102.18	102.5	NO OVERFLOW	INCLUDED IN 4TH AVE.

TABLE 5

CSO INFORMATION SUMMARY

ESP OUTFALL NUMBER	CSO NJPDES PERMIT No.	LOCATION OR STREET NAME	BULK SAMPLING FEASIBLE?	SEDIMENT TRAP FEASIBLE	TIDE INTRUSION LIKELY? (Based on elev.)	ELEV. BEHIND STOPLOG (DATUM ELEV. 100 FT)	ELEV. BOTTOM OF TG CHAMBER (DATUM ELEV. 100 FT)	Est. HIGH TIDE ELEV BASED ON SAYBROOK TRIAL (DATUM ELEV. 100 FT)	OVERFLOW FREQUENCY (times/yr)*	EST MAX. DISCHARGE TO RIVER (mld)*
27	020/K-004	Nairn St	LIKELY - Traffic control required; police control likely necessary.	YES - Sediment trap approach feasible in outfall MH. Configuration of MH bottom will require consideration prior to installation.	NO	NA	NO TIDEGATE	102.5	?	9.84
28	019/K-003	Bergen Avenue (West)	NOT OPERATIONAL	NOT OPERATIONAL	INACTIVE	INACTIVE	INACTIVE	102.5	INACTIVE	INACTIVE
29	030/N-003	Herbert Place	YES - Water quality monitoring must be performed with permanent installation.	YES - Sediment Trap installation feasible.	NO	104.95	NO TIDEGATE	102.5	31**	416.35
-	?	Passaic Street	LIKELY - Traffic control required. MH in center of street close to busy intersection.	MARGINAL - Insufficient space behind SL for installation. TG chamber installation may be possible, but unlikely based on general configuration. Additional drawings of chambers required from PVSC.	NO DRAWING AVAILABLE	NO DRAWING AVAILABLE	NO DRAWING AVAILABLE	102.5	?	?

Notes:

*Based on the assumption that rainfalls will occur from 70-90 times per year.
**Period of observation was one in which rainfall was relatively low (see files for rainfall occurrences)

DC = Diversion Chamber
SC = Sandcatcher Chamber
RC = Regulator Chamber
Regulator Chamber Valve: Inactive = automatic valve disabled valve open or partially open; Active = automatic valve functional; Removed = valve removed; Sluice=Electric Operated Sluice w/Local and Plant Control
TC = Tidegate Chamber
SIC = Siphon Inlet Chamber
SOC = Siphon Outlet Chamber
SOM = Siphon Outlet Manhole
FG = Flap Gate
GR = Gates Removed
VTP = Vitrified Tile Pipe
mld = Million Liters/Day
NR = Not Readable

CSO TRIAL RUN SAMPLING (1/00)
DATA QUALIFIER SHEET

QUALIFIER	DESCRIPTION
B	The reported value was obtained from an instrument reading that was less than the sample quantitation limit (SQL).
E	The reported value is estimated because of the presence of an interference.
G	Organic data indicated the presence of a compound that meets the identification criteria; the result is below the SQL but above the MDL.
N	Matrix spike sample recovery is not within control limits.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
*	The laboratory duplicate analysis is not within control limits.
J	Estimated value - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected. Due to significant QA/QC problem the analysis is invalid and provides no information as to whether the analyte is present or not.
JL	If the data reviewer can determine the overall bias for sample data qualified as estimated, the reviewer will qualify the sample result as estimated minimum value (JL).
JH	If the data reviewer can determine the overall bias for sample data qualified as estimated, the reviewer will qualify the sample result as estimated maximum value (JH).
M	The analytical result reported was obtained from a sediment sample found to contain between 50 and 90 percent moisture and had no other data qualifiers added during the data validation process.

ATTACHMENT 1

PARTICLE SIZE ANALYSIS RESULTS

Particle Technology Labs, Ltd.

555 ROGERS STREET • DOWNERS GROVE, ILLINOIS 60515 630/969-2703 • FAX 630/969-2745
NET: www.particletechlabs.com E-MAIL: experts@particletechlabs.com FDA Certificate# 1422692

March 9, 2000

BLASLAND, BOUCK, & LEE
6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214

Attn: Mr. Russell Houck
cc: Mr. Cliff Firstenberg

Subject: Malvern and Sieve Particle Size Analyses of One Combined Filter Sample and One Soil/Sediment Sample

PTL Projects: 4159

Dear Mr. Houck:

Enclosed are the results from the Malvern and sieve particle size analyses performed on your one Combined Filter sample and one Soil/Sediment sample received 3/3/00. The particle size of the Combined Filters was determined on our Malvern Mastersizer S LASER diffractor. As requested, one filter from each of the four jars was selected at random. Each filter was wetted with sodium pyrophosphate and Triton X-100 in water. The particulate from each filter was then removed, combined into a large beaker and ultrasonicated for a timed one minute. The sample was then analyzed according to standard operating procedures for this instrumentation type.

As discussed, the Soil/Sediment sample contained particulate larger in size than the upper detection limit of the instrument (900 microns). Therefore it was necessary to first perform a sieve analysis in order to capture the percent of particulate larger than 850 microns. An aliquot portion of the sample was dispersed with sodium pyrophosphate and Triton X-100 in water, ultrasonicated for a timed one minute, and then sieved through a standard size 850-micron sieve. The material greater than 850 microns was dried and the percent of particulate greater than 850 microns was calculated. The material less than 850 microns was placed in the Malvern's recirculating bath of water and analyzed according to standard operating procedures for our Malvern Mastersizer S LASER diffractor. The results from both techniques were then normalized and blended into one complete distribution; see Table 1.

The samples were very floccy in nature, creating instability in the analysis over the first four-minute period. Due to instability, we then instructed the instrument to perform additional analyses

until stability over time (reproducible results) was achieved. Therefore, two analysis have been submitted for your review; the first initial analysis and an analysis which reflects one of the stable readings.

Please note that the data from the Soil/Sediment sample has been normalized for both the initial and stable analysis.

If you have any questions regarding this data or the methods used to acquire the data, please do not hesitate to contact us here at Particle Technology Labs.

Submitted by,

Amy Hahn

Reviewed by,

Kelli Hubert

DR:\4159.doc:371

TABLE 1

BLENDED SIEVE AND MALVERN DATA

SAMPLE ID		SIZE μm	CUMULATIVE WT% < INDICATED SIZE
Soil/Sediment "Initial Run"	Sieve Data	850	98.4
	Malvern Data	722.7	97.9
		655.4	97.2
		539.0	94.9
		443.3	91.4
		364.6	86.7
		271.9	78.1
		166.8	62.8
		102.3	49.9
		84.2	45.31
		46.8	33.2
		17.6	18.1
		7.31	9.6
		1.03	2.3
		0.4	1.3

SAMPLE ID		SIZE μm	CUMULATIVE WT% < INDICATED SIZE
Soil/Sediment "Stable Run"	Sieve Data	850	98.4
	Malvern Data	722.7	98.4
		655.4	97.4
		539.0	95.2
		443.3	91.6
		364.6	84.7
		271.9	72.1
		166.8	60.3
		102.3	55.9
		84.2	42.0
		46.8	24.0
		17.6	13.2
		7.31	3.1
		1.03	1.7
		0.4	1.3

Particle Technology Labs, Ltd.

555 ROGERS STREET • DOWNERS GROVE, ILLINOIS 60515 630/969-2703 • FAX 630/969-2745

NET: pages.prodigy.net/particletech E-MAIL: particletech@prodigy.net FDA Certificate # 1422692

INTERPRETING YOUR MALVERN FINE PARTICLE ANALYSIS

INTRODUCTION

Your samples have been analyzed on a Malvern MasterSizer S LASER particle size analyzer. This instrument analyzes particles on an ensemble basis, calculating a volume distribution from the LASER diffraction pattern of particle diameters.

THE REPORT

The information presented in your report consists of four basic categories:

SAMPLE DETAILS: The first section of the report page consists of SAMPLE DETAILS: client, sample identification, and sample conditioning information. If you find it necessary to contact us concerning this work, please refer to the four-digit PTL Project #, which appears under *Sample File*.

SYSTEM DETAILS: This section describes parameters specific to the instrument being used as well as to the analysis. It should be noted that in the size region of 0.1 - 3 microns, LASER technology is sensitive to the refractive index (RI) of the sample material. Therefore, a standard instrument default value for the refractive index of the sample and carrier fluid is normally used if one is not provided by the client. A sample RI value of 1.5295 (glass beads) is used along with a carrier fluid RI of 1.33 (water). Likewise, the **Presentation: 0HD** and **Analysis Model: Polydisperse** is used as a default. For samples analyzed on a **dry** basis, the particle RI is 1.45 with a dispersant RI of 1.00 (air). Correspondingly, the **Presentation : RHA** is used as the default. If the client provides a RI at a later date, the raw data can be recalculated to adjust for the refractive index.

RESULT STATISTICS: This section presents

1. Statistics
   A. ***Statistics **ALWAYS** appear as "Percent Less Than" or "% Under."***
   B. Span is defined as the 90% - 10% size divided by the 50% size level.
   C. The Surface to Volume mean diameter is reported as the **D[3,2]** value.
   D. The Mean Volume statistic is reported as the **D[4,3]** value.
   E. The 90%, 50%, and the 10% size values appear as D[v,0.90], D[v,0.50] and D[v,0.10] respectively.
   F. A calculated Specific Surface Area value is reported. However, consider this value only as an approximate surface area since calculations are based upon **smooth spheres**.

2. Tabulated data as a **Cumulative Weight Percent Greater Than (Or Less Than) Indicated Size.**

HISTOGRAM: This last section displays the differential histogram as well as the cumulative curve for the data displayed in the table above.

MALVERN INSTRUMENTS MASTERSIZER

Result: Histogram Report

Sample Details

Sample ID: CS00011SDFS03
Sample File: 4159
Sample Path: A:\
Sample Notes: BLASLAND, BOUCK & LEE Combined Filters
Carrier: Water Dispersant: Triton X-100. Na Pyrophos
Ultrasonic: 1 minute Tech: AH
Particle Technology Labs PTL: 23406,23407,23408,23409

Run Number: 5
Record Number: 5

Measured: Tue Mar 7 2000 5:49PM
Analysed: Tue Mar 7 2000 5:49PM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: None

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]

Sampler: MS17

Obscuration: 13.4 %
Residual: 0.453 %

Result Statistics

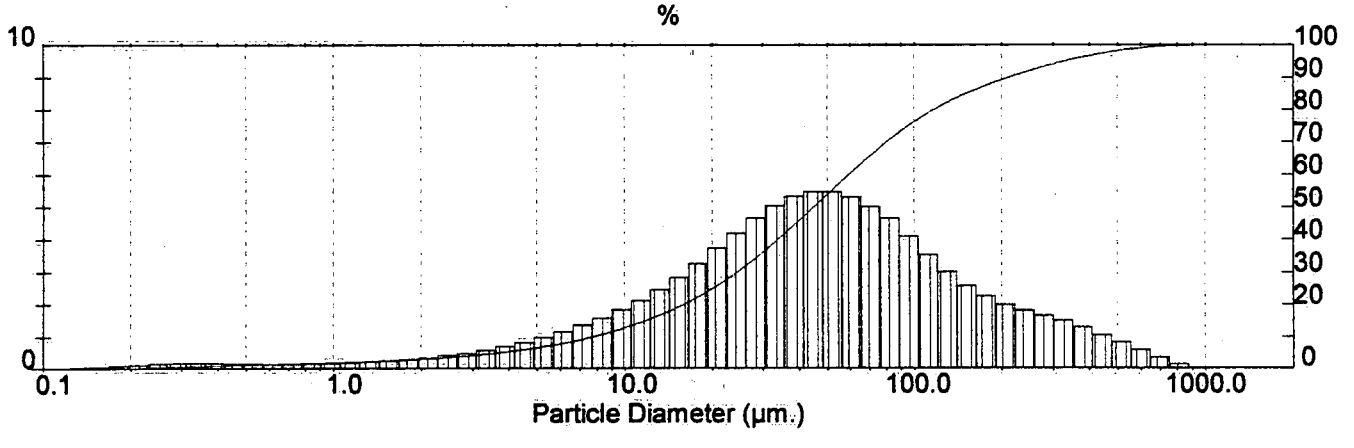
Distribution Type: Volume
Mean Diameters:
D [4, 3] = 84.29 um

Concentration = 0.0279 %Vol
D (v, 0.1) = 7.65 um
D [3, 2] = 8.68 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 44.82 um
Span = 4.537E+00

Specific S.A. = 0.6914 sq. m / g
D (v, 0.9) = 211.00 um
Uniformity = 1.419E+00

Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %
0.055	0.00	0.635	1.59	7.31	9.57	84.15	71.52
0.061	0.00	0.700	1.69	8.06	10.51	92.79	74.35
0.067	0.00	0.772	1.79	8.89	11.54	102.3	76.93
0.074	0.01	0.851	1.89	9.80	12.67	112.8	79.29
0.082	0.01	0.938	2.00	10.81	13.91	124.4	81.42
0.090	0.02	1.03	2.11	11.91	15.28	137.2	83.35
0.099	0.03	1.14	2.24	13.14	16.78	151.3	85.10
0.109	0.05	1.26	2.38	14.49	18.42	166.8	86.68
0.121	0.07	1.39	2.52	15.97	20.23	183.9	88.14
0.133	0.09	1.53	2.68	17.62	22.21	202.8	89.48
0.147	0.13	1.69	2.86	19.42	24.36	223.6	90.74
0.162	0.17	1.86	3.05	21.42	26.71	246.6	91.92
0.178	0.23	2.05	3.27	23.62	29.25	271.9	93.04
0.196	0.30	2.26	3.50	26.04	31.98	299.8	94.09
0.217	0.38	2.49	3.76	28.72	34.90	330.6	95.07
0.239	0.48	2.75	4.05	31.66	37.99	364.6	95.98
0.263	0.58	3.03	4.37	34.92	41.23	402.0	96.81
0.290	0.69	3.34	4.73	38.50	44.60	443.3	97.54
0.320	0.81	3.69	5.13	42.45	48.06	488.8	98.18
0.353	0.93	4.07	5.58	46.81	51.57	539.0	98.72
0.389	1.05	4.48	6.08	51.62	55.09	594.3	99.16
0.429	1.17	4.94	6.64	56.92	58.58	655.4	99.52
0.473	1.28	5.45	7.26	62.76	62.00	722.7	99.78
0.522	1.39	6.01	7.96	69.21	65.30	796.9	99.91
0.576	1.49	6.63	8.72	76.32	68.48	878.7	100.00



Malvern Instruments Ltd.
Malvern, UK
Tel:=+[44] (0)1684-892456 Fax+[44] (0)1684-892789

Mastersizer S long bed Ver. 2.18
Serial Number:

08 Mar 00 12:40

Initial Analysis

MALVERN INSTRUMENTS MASTERSIZER

Result: Histogram Report

Sample Details

Sample ID: CS00011SDFS03
Sample File: 4159
Sample Path: A:\
Sample Notes: BLASLAND, BOUCK & LEE Combined Filters
Carrier: Water Dispersant: Triton X-100. Na Pyrophos
Ultrasonic: 1 minute Tech: AH
Particle Technology Labs PTL: 23406,23407,23408,23409

Run Number: 16
Record Number: 16

Measured: Tue Mar 7 2000 6:02PM
Analysed: Tue Mar 7 2000 6:02PM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: None

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]

Sampler: MS17

Obscuration: 12.5 %
Residual: 0.475 %

Result Statistics

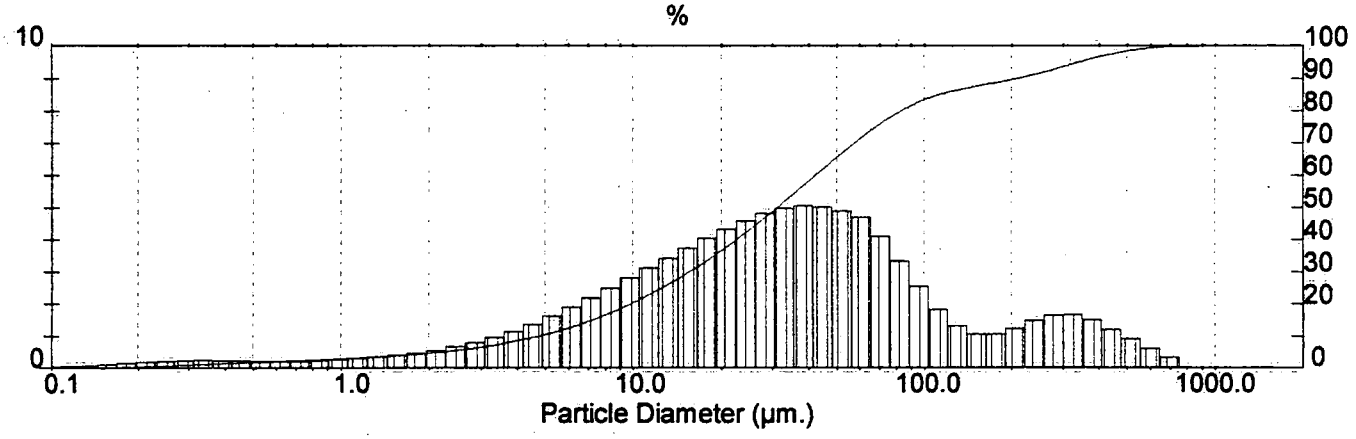
Distribution Type: Volume
Mean Diameters:
D [4, 3] = 71.28 um

Concentration = 0.0183 %Vol
D (v, 0.1) = 4.70 um
D [3, 2] = 5.87 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 31.07 um
Span = 6.528E+00

Specific S.A. = 1.0225 sq. m / g
D (v, 0.9) = 207.50 um
Uniformity = 1.862E+00

Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %
0.055	0.00	0.635	2.36	7.31	15.26	84.15	80.40
0.061	0.00	0.700	2.50	8.06	16.75	92.79	82.30
0.067	0.01	0.772	2.65	8.89	18.37	102.3	83.88
0.074	0.02	0.851	2.80	9.80	20.11	112.8	85.16
0.082	0.03	0.938	2.97	10.81	21.98	124.4	86.19
0.090	0.05	1.03	3.15	11.91	23.98	137.2	87.02
0.099	0.07	1.14	3.35	13.14	26.11	151.3	87.73
0.109	0.10	1.26	3.56	14.49	28.36	166.8	88.40
0.121	0.14	1.39	3.80	15.97	30.74	183.9	89.07
0.133	0.18	1.53	4.05	17.62	33.25	202.8	89.81
0.147	0.25	1.69	4.34	19.42	35.87	223.6	90.64
0.162	0.32	1.86	4.65	21.42	38.62	246.6	91.57
0.178	0.41	2.05	4.99	23.62	41.47	271.9	92.59
0.196	0.52	2.26	5.36	26.04	44.43	299.8	93.65
0.217	0.64	2.49	5.78	28.72	47.48	330.6	94.73
0.239	0.78	2.75	6.25	31.66	50.61	364.6	95.77
0.263	0.93	3.03	6.77	34.92	53.81	402.0	96.72
0.290	1.09	3.34	7.36	38.50	57.03	443.3	97.56
0.320	1.26	3.69	8.02	42.45	60.27	488.8	98.27
0.353	1.43	4.07	8.75	46.81	63.49	539.0	98.87
0.389	1.59	4.48	9.58	51.62	66.65	594.3	99.34
0.429	1.75	4.94	10.50	56.92	69.76	655.4	99.70
0.473	1.91	5.45	11.52	62.76	72.80	722.7	99.96
0.522	2.06	6.01	12.65	69.21	75.63	796.9	100.00
0.576	2.21	6.63	13.90	76.32	78.17	878.7	100.00



Malvern Instruments Ltd.
Malvern, UK
Tel:=+[44] (0)1684-892456 Fax:+[44] (0)1684-892789

Mastersizer S long bed Ver. 2.18
Serial Number:

08 Mar 00 12:42

Stable Analysis

MALVERN INSTRUMENTS MASTERSIZER

Result: Histogram Report

Sample Details

Sample ID: CS00011SD5502
Sample File: 4159
Sample Path: A:\
Sample Notes: BLASLAND, BOUCK & LEE Soil/ Sediment
Carrier: Water Dispersant: Triton X-100. Na Pyrophos
Ultrasonic: 1 minute Tech: AH
Particle Technology Labs PTL: 23410

Run Number: 1
Record Number: 17

Measured: Wed Mar 8 2000 10:37AM
Analysed: Wed Mar 8 2000 10:38AM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: None

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]

Sampler: MS17

Obscuration: 25.7 %
Residual: 0.414 %

Result Statistics

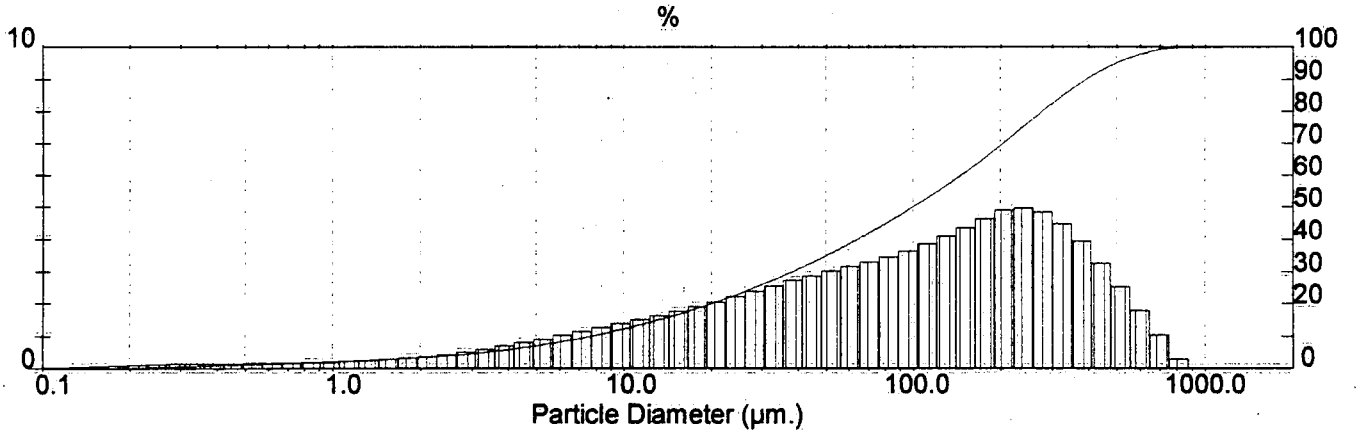
Distribution Type: Volume
Mean Diameters:
D [4, 3] = 156.18 um

Concentration = 0.0625 %Vol
D (v, 0.1) = 7.60 um
D [3, 2] = 8.19 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 99.61 um
Span = 3.861E+00

Specific S.A. = 0.7328 sq. m / g
D (v, 0.9) = 392.18 um
Uniformity = 1.214E+00

Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %
0.055	0.00	0.635	1.73	7.31	9.70	84.15	46.04
0.061	0.01	0.700	1.85	8.06	10.47	92.79	48.31
0.067	0.02	0.772	1.97	8.89	11.28	102.3	50.65
0.074	0.03	0.851	2.09	9.80	12.15	112.8	53.09
0.082	0.04	0.938	2.22	10.81	13.06	124.4	55.62
0.090	0.06	1.03	2.36	11.91	14.02	137.2	58.25
0.099	0.08	1.14	2.51	13.14	15.04	151.3	60.99
0.109	0.11	1.26	2.67	14.49	16.10	166.8	63.83
0.121	0.15	1.39	2.84	15.97	17.23	183.9	66.79
0.133	0.19	1.53	3.02	17.62	18.40	202.8	69.86
0.147	0.24	1.69	3.22	19.42	19.64	223.6	73.03
0.162	0.30	1.86	3.43	21.42	20.94	246.6	76.21
0.178	0.37	2.05	3.67	23.62	22.31	271.9	79.37
0.196	0.44	2.26	3.92	26.04	23.74	299.8	82.44
0.217	0.53	2.49	4.20	28.72	25.24	330.6	85.37
0.239	0.62	2.75	4.51	31.66	26.82	364.6	88.11
0.263	0.72	3.03	4.85	34.92	28.46	402.0	90.61
0.290	0.82	3.34	5.22	38.50	30.16	443.3	92.84
0.320	0.93	3.69	5.63	42.45	31.94	488.8	94.78
0.353	1.04	4.07	6.08	46.81	33.78	539.0	96.40
0.389	1.15	4.48	6.57	51.62	35.67	594.3	97.72
0.429	1.27	4.94	7.10	56.92	37.63	655.4	98.75
0.473	1.38	5.45	7.68	62.76	39.64	722.7	99.48
0.522	1.50	6.01	8.30	69.21	41.71	796.9	99.86
0.576	1.61	6.63	8.98	76.32	43.84	878.7	100.00



Malvern Instruments Ltd.
Malvern, UK
Tel:=+[44] (0)1684-892456 Fax+[44] (0)1684-892789

Mastersizer S long bed Ver. 2.18
Serial Number:

08 Mar 00 12:43

Initial Analysis

MALVERN INSTRUMENTS MASTERSIZER

Result: Histogram Report

Sample Details

Sample ID: CS00011SD5502
Sample File: 4159
Sample Path: A:\
Sample Notes: BLASLAND, BOUCK & LEE Soil/ Sediment
Carrier: Water Dispersant: Triton X-100. Na Pyrophos
Ultrasonic: 1 minute Tech: AH
Particle Technology Labs PTL: 23410

Run Number: 12
Record Number: 28

Measured: Wed Mar 8 2000 10:49AM
Analysed: Wed Mar 8 2000 10:49AM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: None

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]

Sampler: MS17

Obscuration: 27.8 %
Residual: 0.346 %

Result Statistics

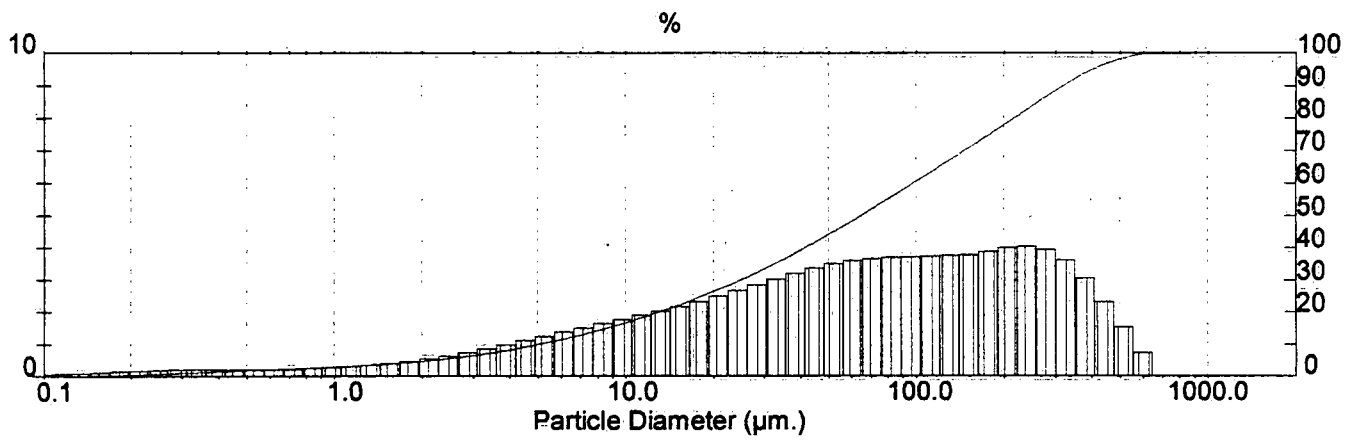
Distribution Type: Volume
Mean Diameters:
D [4, 3] = 117.68 um

Concentration = 0.0520 %Vol
D (v, 0.1) = 5.02 um
D [3, 2] = 6.01 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 64.28 um
Span = 4.869E+00

Specific S.A. = 0.9985 sq. m / g
D (v, 0.9) = 317.96 um
Uniformity = 1.476E+00

Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %	Size (um)	Volume Under %
0.055	0.00	0.635	2.37	7.31	13.38	84.15	56.48
0.061	0.01	0.700	2.52	8.06	14.39	92.79	58.86
0.067	0.02	0.772	2.67	8.89	15.45	102.3	61.25
0.074	0.04	0.851	2.83	9.80	16.56	112.8	63.64
0.082	0.06	0.938	3.00	10.81	17.72	124.4	66.04
0.090	0.09	1.03	3.19	11.91	18.94	137.2	68.45
0.099	0.13	1.14	3.38	13.14	20.21	151.3	70.87
0.109	0.17	1.26	3.60	14.49	21.54	166.8	73.30
0.121	0.22	1.39	3.83	15.97	22.92	183.9	75.78
0.133	0.28	1.53	4.08	17.62	24.37	202.8	78.31
0.147	0.36	1.69	4.36	19.42	25.88	223.6	80.88
0.162	0.44	1.86	4.67	21.42	27.46	246.6	83.47
0.178	0.53	2.05	5.00	23.62	29.10	271.9	86.04
0.196	0.64	2.26	5.37	26.04	30.82	299.8	88.55
0.217	0.76	2.49	5.78	28.72	32.62	330.6	90.93
0.239	0.89	2.75	6.22	31.66	34.49	364.6	93.12
0.263	1.02	3.03	6.71	34.92	36.43	402.0	95.05
0.290	1.17	3.34	7.24	38.50	38.44	443.3	96.69
0.320	1.32	3.69	7.83	42.45	40.53	488.8	98.00
0.353	1.47	4.07	8.46	46.81	42.68	539.0	98.98
0.389	1.62	4.48	9.15	51.62	44.88	594.3	99.71
0.429	1.77	4.94	9.89	56.92	47.14	655.4	100.00
0.473	1.92	5.45	10.68	62.76	49.44	722.7	100.00
0.522	2.07	6.01	11.53	69.21	51.76	796.9	100.00
0.576	2.22	6.63	12.43	76.32	54.11	878.7	100.00



Malvern Instruments Ltd.
Malvern, UK
Tel:=+[44] (0)1684-892456 Fax:+[44] (0)1684-892789

Mastersizer S long bed Ver. 2.18
Serial Number:

08 Mar 00 12:46

Stable Analysis