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Supplemental Remedial Investigation Report, D.C. Rollforms\Ingersoll-Rand Site, Jamestown, NY, Site Code 907019

Ingersoll-Rand Company
Proj. No. AY000219.0002

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REPORT

February 11, 1999

Tables

Figures

Appendices

1.0 Introduction

1.1 Purpose

On behalf of the Ingersoll-Rand Company, ARCADIS Geraghty & Miller, Inc. has prepared this supplemental Remedial Investigation (SRI) Report for the D.C. Rollforms/Ingersoll-Rand Site (site) located in Jamestown, New York. The SRI was conducted to address the New York State Department of Environmental Conservation (NYSDEC) comments (letter dated June 9, 1998) on the RI Report and specifically the request for additional sediment and background subsurface soil sampling at the site. The scope of work for the SRI was submitted to the NYSDEC on October 6, 1998 and approved by the NYSDEC in November 1998.

The scope of work for the SRI consisted of: 1) the collection of eight additional sediment samples from the Chadakoin River at locations adjacent to and upstream of the site; and 2) the collection of three additional subsurface soil samples in the northeast corner of the site. The sediment samples were collected to evaluate site-related impacts to sediments in the Chadakoin River. The three additional subsurface soil samples were collected from a localized area in the northeast corner of the site where a previous sample (designated as GP-13) had indicated an elevated concentration of lead in soils.

This SRI report summarizes the methods and field activities performed during the SRI. All field investigation and sampling activities conducted during the SRI were performed in accordance with the methods and protocols previously approved by the NYSDEC as part of the field sampling plan (FSP), health and safety plan (HASP), quality assurance project plan (QAPP) and the supplemental RI scope of work letter prepared by ARCADIS Geraghty & Miller dated October 6, 1998. This report supplements the RI report previously submitted to the NYSDEC and is consistent with the interim final "Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA" developed by the United States Environmental Protection Agency (USEPA 1988) and NYSDEC technical and administrative guidance documents.

1.2 Organization of Report

The SRI Report is organized into the following sections: Section 2 provides a brief summary of the results of the RI as it relates to the supplemental sediment and soil sampling conducted for the SRI; Section 3 describes the scope of the work performed for the SRI; Section 4 contains the results of the sediment and soil sampling performed; Section 5 summarizes the findings of the SRI; and Section 6 lists the references cited in the preparation of the SRI report.

2.0 Remedial Investigation Soil and Sediment Sampling

This section provides a brief summary of sediment and background soil sampling activities conducted during the RI. The locations of sediment samples and the designated background soil sample are shown on Figure 1.

2.1 GP-13 Soil Sample

During the RI, a soil sample was collected from soil boring GP-13 for the purpose of establishing background metals concentrations at the site (see Figure 1). The sample was collected from the 4 to 6 foot interval and submitted for analysis of metals. The GP-13 location was chosen as a background sample because no former D.C. Rollforms/Ingersoll-Rand operations were known to have occurred in this area. Copper, lead, nickel, and zinc were detected at estimated concentrations of 584 ppm, 86,900 ppm, 13.9 ppm, and 1,000 ppm, respectively. Due to the elevated concentration of lead in this sample, the NYSDEC requested additional delineation sampling in this area and to determine if the soils were characteristically hazardous for lead.

2.2 Sediment Sampling Results

Analytical results for the sediment sample collected adjacent to the site (SED-1) and the upstream sample (SED-2) during the RI indicated that the concentrations of VOCs, SVOCs, PCBs and certain metals were higher in the upstream sample (see Figure 1). VOCs were not detected in sediment sample SED-1 collected adjacent to the site. Concentrations of SVOCs and PCBs in the upstream sample were more than twice the concentrations in the sediment sample adjacent to the site. Several metals exceeded their respective NYSDEC sediment criteria levels in the sample collected adjacent to the site (SED-1) and in the sample collected upstream of the site (SED-2). Based on these initial results, the NYSDEC requested additional sediment sampling adjacent to the site.

3.0 Scope of Work

The scope of work for the supplemental sediment and soil sampling activities is described below.

3.1 Supplemental Background Soil Sampling

Three additional subsurface soil samples were collected within the vicinity of soil boring GP-13 (see Figure 1). The soil borings were drilled on November 19, 1998 using a hollow-stem auger drill rig and split-spoon sampling methods in accordance with the methods and protocols outlined in the FSP. The additional soil samples were collected from a depth of 4 feet below land surface (bls), corresponding to the GP-13 sample depth collected during the RI, and submitted for analysis of toxicity characteristic leaching procedure (TCLP) lead. Sample/core logs for each of the borings are provided in Appendix A.

Immediately following sample collection, the sediment samples were labeled, packaged on ice in laboratory supplied coolers, and shipped with chain-of-custody documentation via overnight courier service to Severn-Trent Laboratories (STL) in Monroe, Connecticut.

3.2 Supplemental Sediment Sampling

Based on the NYSDEC comments on the draft RI report, additional sediment samples were collected from within the Chadakoin River to further evaluate site-related impacts to sediments. The sediment sample locations are shown on Figure 1. Six additional sediment samples were collected adjacent to and downstream of the site and two additional sediment samples were collected upstream of the site. Originally, four sediment samples were proposed adjacent to the site and two sediment samples were proposed upstream of the site. However, the NYSDEC requested that two additional sediment samples be collected downstream of the site. Jaspal Walia of the NYSDEC met with ARCADIS Geraghty & Miller personnel at the site to determine the downstream sediment sampling locations.

The supplemental sediment samples (SED-4 through SED-10) were collected on December 1, 1998. Prior to collecting the sediment samples, ARCADIS Geraghty & Miller personnel coordinated with the Washington Street dam operator to minimize flow and lower the level of the Chadakoin River. The dam was closed from 7:30 AM to 4:30 PM on December 1, 1998 during which the stream stage dropped approximately 2.5 to 3 feet.

The sediment grab samples were collected from 0-6" below the top of the stream bed using a stainless steel trowel. The sediments were then placed in a stainless steel mixing bowl. Photoionization Detectors (PID) readings of the samples were measured with a Thermo-Environmental Instruments Model 580 B PID. The VOC sample containers were filled first, and the remaining sample was homogenized and immediately transferred to the appropriate remaining sample containers.

The stainless steel trowel and mixing bowl were decontaminated prior to sampling at each location by washing with distilled water and laboratory grade detergent, followed by a final distilled water rinse. The sampling equipment was placed on new polyethylene sheeting after the final rinse. The decontamination fluids were contained in dedicated buckets and transferred to 55-gallon drums on-site.

Immediately following sample collection, the sediment samples were labeled, packaged on ice in laboratory supplied coolers, and shipped with chain-of-custody documentation via overnight courier service to STL laboratory for analysis of TCL VOCs, TAL list metals and total organic carbon. Category B deliverables were requested. One sediment sample was also collected at each location and submitted to Maxim Technologies geotechnical laboratory in Hamburg, New York for grain size analysis.

3.3 Air Monitoring

In accordance with the HASP, air monitoring was performed during the drilling activities. A PID and a MINIRAM particulate monitor were used to monitor air in the immediate vicinity of the boreholes and breathing zones during the drilling activities. The field instruments were calibrated daily, at a minimum. No exceedences in action levels were recorded during the drilling activities.

3.4 Data Validation

The data packages pertaining to the soil samples collected on November 19, 1998 and sediment samples collected on December 1, 1998 were reviewed in accordance with USEPA validation protocols. The data package was validated by Data Validation Services of North Creek, New York according to the procedures specified in Section 10.0 of the QAPP. Reported results were then additionally qualified to reflect the applicable validation qualifiers. In summary, samples were processed with compliance, and all data was found to be usable, although some are qualified as estimated in value. Results for two of the volatile analytes in all samples are considered estimated due to typical calibration variances, and results for nine metal analytes in all samples are considered estimated due to apparent nonhomogeneity and matrix interferences within the samples. Matrix interferences and nonhomogeneity of sediment samples is not uncommon. The qualified metals results may vary by as much as an order of magnitude. Data validation reports are included in Appendix B.

4.0 Supplemental Remedial Investigation Results

This section presents the results of the supplemental field sampling activities conducted in November and December 1998.

4.1 Analysis of TCLP Lead in Soil Samples

Analysis of TCLP lead of soil samples collected in the vicinity of GP-13 indicated concentrations of 5.5 ug/L in SB-1, 70.5 ug/L in SB-2, and 5.2 ug/L in SB-3. Each of these results is below the TCLP regulatory level of 500 ug/L for lead. Therefore, the soils in this area are not characteristically hazardous for lead. Laboratory analytical data sheets are provided in Appendix C.

4.2 Sediment Samples

Sediment samples were collected from locations upstream, adjacent to, and downstream of the site as approved by the NYSDEC. Sediments at each location were generally observed to be coarse-grained sand and gravel. Fragments of concrete and other fill materials were observed in SED-3 through SED-8 and exhibited no odors or staining. The sediment analytical results are presented in Tables 1 and 2 and are discussed below. Laboratory analytical data sheets are provided in Appendix D.

4.2.1 VOCs

The sediment sample results for VOCs are included in Table 1. Methylene chloride and acetone (common laboratory contaminants) were detected in each of the sediment samples collected. An estimated concentration of trichloroethene (TCE) of 0.4 micrograms per kilogram (ug/kg) was detected in SED-8 and an estimated concentration of toluene of 1 ug/kg was detected in SED-9. None of the samples collected during the RI or SRI exceeded available sediment screening criteria for VOCs as outlined in the NYSDEC Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediments (NYSDEC 1993).

4.2.2 Metals

The sediment sample results for metals are included in Table 2. The data analysis involved first comparing average adjacent/downstream and upstream concentrations, in order to designate chemicals of potential concern (COPCs). Because chemicals adjacent to or downstream of the site at average concentrations less than upstream concentrations are unlikely to be site-related (i.e., they are associated with an upstream source), they were excluded from further evaluation and were not designated as COPCs. If the average concentration of a given chemical was greater adjacent/downstream than upstream, its presence was assumed to be partially site-related and it was designated as a COPC. Because all metals detected adjacent/downstream were also detected upstream, the presence of COPCs downstream cannot be wholly attributed to the site. Average concentrations of COPCs were then compared to the severe effect level (SEL). The data analysis is summarized in Table 3.

Several metals were detected adjacent/ downstream at average concentrations lower than average upstream concentrations and were consequently excluded from the list of COPCs: aluminum, barium, beryllium, calcium, magnesium, manganese, mercury, potassium, and sodium. Of these, calcium, magnesium, potassium, and sodium are also considered essential nutrients. Essential nutrients generally would not be considered potential toxicants, even if they had been present adjacent/downstream at concentrations greater than upstream.

Of the COPCs, average concentrations of five metals were less than the SEL, indicating low likelihood that they pose an ecological risk: antimony, arsenic, cadmium, chromium, and silver. Because sediment quality criteria are not available for four other COPCs (cobalt, selenium, thallium, vanadium), it was not possible to assess their potential to cause an ecological risk.

Five COPCs -- copper, iron, lead, nickel, and zinc -- were present adjacent/downstream at average concentrations greater than their respective SELs, indicating their potential to pose an ecological risk.

4.2.3 Total Organic Carbon

The total organic carbon content (TOC) of sediment samples varied from 0.522 milligrams per kilograms (mg/kg) in DUP-1 (SED-5) to 2.09 mg/kg in SED-9. TOC was highest in SED- 9 which appears to be generally consistent with the relatively finer grain size distribution of sediment at that location (see Section 4.2.4 below).

4.2.4 Grain Size Analysis

Grain size analysis of sediment samples generally indicated that the streambed sediments are comprised primarily medium to coarse grained sands with varying amounts of fine to medium gravel. Sediment sample SED-9 was comprised of finer-grained sand with trace amounts of gravel and silts. Grain size distribution curves are provided in Appendix E.

5.0 Summary

The general findings of the supplemental remedial investigation are summarized below.

5.1 Supplemental Soil Sampling

Three additional subsurface soil samples were collected as part of the supplemental RI activities the site. The samples were collected from a depth of 2-4 feet bls in borings located in the vicinity of the former GP-13 sample location on the north side of the D.C. Rollforms building. Analysis of TCLP lead indicated concentrations of 5.5 ug/L in SB-1, 70.5 ug/L in SB-2, and 5.2 ug/L in SB-3. Each of these results is below the TCLP regulatory level of 500 ug/L for lead. Based on these findings, no further investigation of this area is warranted.

5.2 Supplemental Sediment Sampling

Eight additional sediment samples were collected from the Chadakoin River during the supplemental RI. Including the RI, seven samples were collected adjacent/downstream of the site and three were collected upstream of the site to evaluate the presence or absence of site-related impacts. Several metals were detected adjacent/downstream at average concentrations lower than average upstream concentrations and were consequently excluded from the list of COPCs.

Of the COPCs, average concentrations of five metals (antimony, arsenic, cadmium, chromium and silver) were less than the SEL, indicating low likelihood that they pose an ecological risk. Sediment quality criteria are not available for four other COPCs (cobalt, selenium, thallium and vanadium) and, therefore, it was not possible to assess their potential to cause an ecological risk. Five COPCs (copper, iron, lead, nickel and zinc) were present adjacent/downstream at average concentrations greater than their respective SELs, indicating their potential to pose an ecological risk.

VOCs were not detected at concentrations exceeding their respective NYSDEC screening criteria upstream or adjacent downstream of the site.

5.3 Evaluation of Remedial Alternatives

The results of the supplemental remedial investigation sampling activities indicate that the chemical constituents detected at the site do not pose an immediate threat to human health or the environment. Potential remedial technologies and remedial alternatives relative to sediments for the final site remedy will be evaluated as part of the Focused Feasibility Study (FFS) being conducted for the site.

6.0 References

ARCADIS Geraghty & Miller, Inc., Remedial Investigation Report, D.C. Rollforms/Ingersoll-Rand Site, April 1998.

Long, E.R. and L.G. Morgan. 1990. *The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program.* National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum No. 5, OMA52, NOAA National Ocean Service, Seattle, Washington.

New York State Department of Environmental Conservation (NYSDEC), Division of Fish & Wildlife. *Technical Guidance for Screening Contaminated Sediments.* November 1993.

Persuad, D., R. Jaagumagi and A. Hayton. 1992. *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario.* Ontario Ministry of Environment. Queen's Printer for Ontario.

Table 1. Summary of Volatile Organic Compounds in Chadakoin River Sediment Samples, 1997 and 1998, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.

CONSTITUENT: (Units in ug/kg)	SITE: SAMPLE ID: DATE:	SED-3 SED-3 12/1/98	SED-4 SED-4 12/1/98	SED-2 SED-2 9/17/97	SED-5 SED-5 12/1/98	DUP-1 DUP-1 12/1/98	SED-3 SED-3 9/17/97
Chloromethane		< 10	< 10	< 14	< 10	< 10	< 14
Bromomethane		< 10	< 10	< 14	< 10	< 10	< 14
Vinyl chloride		< 10	< 10	4	< 10	< 10	< 14
Chloroethane		< 10	< 10	< 14	< 10	< 10	< 14
Methylene chloride		1 J	2 J	< 14	1 J	1 J	< 14
Acetone		9 J	8 J	< 16 J	12	10 J	< 26 J
Carbon disulfide		< 5	< 5	< 14	< 5	< 5	< 14
Vinyl Acetate		< 10	< 10	< 14	< 10	< 10	< 14
1,1-Dichloroethene		< 5	< 5	< 14	< 5	< 5	< 14
1,1-Dichloroethane		< 5	< 5	< 14	< 5	< 5	< 14
1,2-Dichloroethene (total)		< 5	< 5	< 14	< 5	< 5	< 14
Chloroform		< 5	< 5	< 14	< 5	< 5	< 14
1,2-Dichloroethane		< 5	< 5	< 14	< 5	< 5	< 14
2-Butanone		< 10	< 10	< 14	< 10	< 10	< 14
1,1,1-Trichloroethane		< 5	< 5	< 14	< 5	< 5	< 14
Carbon tetrachloride		< 5	< 5	< 14	< 5	< 5	< 14
Bromodichloromethane		< 5	< 5	< 14	< 5	< 5	< 14
1,2-Dichloropropane		< 5	< 5	< 14	< 5	< 5	< 14
cis-1,3-Dichloropropene		< 5	< 5	< 14	< 5	< 5	< 14
Trichloroethene		< 5	< 5	2	< 5	< 5	< 14
Dibromochloromethane		< 5	< 5	< 14	< 5	< 5	< 14
1,1,2-Trichloroethane		< 5	< 5	< 14	< 5	< 5	< 14
Benzene		< 5	< 5	< 14	< 5	< 5	< 14
trans-1,3-Dichloropropene		< 5	< 5	< 14	< 5	< 5	< 14
Bromoform		< 5	< 5	< 14	< 5	< 5	< 14
4-Methyl-2-pentanone		< 10	< 10	< 14	< 10	< 10	< 14
2-Hexanone		< 10	< 10	< 14	< 10	< 10	< 14
Tetrachloroethene		< 5	< 5	< 14	< 5	< 5	< 14
1,1,2,2-Tetrachloroethane		< 5	< 5	< 14	< 5	< 5	< 14
Toluene		< 5	< 5	< 14	< 5	< 5	< 14
Chlorobenzene		< 5	< 5	< 14	< 5	< 5	< 14
Ethylbenzene		< 5	< 5	< 14	< 5	< 5	< 14
Styrene		< 5	< 5	< 14	< 5	< 5	< 14
Xylene (total)		< 5	< 5	< 14	< 5	< 5	< 14

ug/kg Micrograms per kilogram.
J Estimated value.

Table 1. Summary of Volatile Organic Compounds in Chadakoin River Sediment Samples, 1997 and 1998, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.

CONSTITUENT: (Units in ug/kg)	SITE: SAMPLE ID: DATE:	SED-1 SED DUP 9/17/97	SED-6 SED-6 12/1/98	SED-7 SED-7 12/1/98	SED-8 SED-8 12/1/98	SED-9 SED-9 12/1/98	SED-10 SED-10 12/1/98
Chloromethane		< 14	< 10	< 10	< 10	< 10	< 10
Bromomethane		< 14	< 10	< 10	< 10	< 10	< 10
Vinyl chloride		< 14	< 10	< 10	< 10	< 10	< 10
Chloroethane		< 14	< 10	< 10	< 10	< 10	< 10
Methylene chloride		< 14	1 J	1 J	1 J	2 J	2 J
Acetone		< 22 J	12	12	4 J	24	11 J
Carbon disulfide		< 14	< 5	< 5	< 5	< 5	< 5
Vinyl Acetate		< 14	< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethene		< 14	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 14	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethene (total)		< 14	< 5	< 5	< 5	< 5	< 5
Chloroform		< 14	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 14	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 14	< 10	< 10	< 10	< 10	< 10
1,1,1-Trichloroethane		< 14	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 14	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane		< 14	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 14	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene		< 14	< 5	< 5	< 5	< 5	< 5
Trichloroethene		< 14	< 5	< 5	0.4 J	< 5	< 5
Dibromochloromethane		< 14	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 14	< 5	< 5	< 5	< 5	< 5
Benzene		< 14	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene		< 14	< 5	< 5	< 5	< 5	< 5
Bromoform		< 14	< 5	< 5	< 5	< 5	< 5
4-Methyl-2-pentanone		< 14	< 10	< 10	< 10	< 10	< 10
2-Hexanone		< 14	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene		< 14	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 14	< 5	< 5	< 5	< 5	< 5
Toluene		< 14	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 14	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 14	< 5	< 5	< 5	< 5	< 5
Styrene		< 14	< 5	< 5	< 5	< 5	< 5
Xylene (total)		< 14	< 5	< 5	< 5	< 5	< 5

ug/kg Micrograms per kilogram.

J Estimated value.

Table 2. Summary of Metals and Cyanide Analysis in Chadakoin River Sediment Samples Collected In September 1997 and December 1998, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.

CONSTITUENT: (Units in mg/kg)	SITE: / SAMPLE ID: / DATE:	SED-03 SED-3 12/1/98	SED-04 SED-4 12/1/98	SED-02 SED-2 09/17/97	SED-05 SED-5 12/1/98	DUP-01 DUP-1 12/1/98	SED-06 SED-6 12/1/98	SED-01 SED-1 09/17/97	SED-01 SED DUP 09/17/97	SED-07 SED-7 12/1/98	SED-08 SED-8 12/1/98	SED-09 SED-9 12/1/98	SED-10 SED-10 12/1/98
Aluminum		4,710	6,550	11,500	6,230	4,900	5,470	3,910	3,630	5,400	5,090	5,500	6,560
Antimony		0.88 UN	1.0 BN	< 2	3.0 BN	1.5 BN	4.9 BN	< 2.1	< 2.2	2.0 BN	< 1.0 N	1.0 BN	3.7 BN
Arsenic		13.1 JN	16.4 JN	7.8	28.2 JN	18.6 JN	23.5 JN	30	25.5	17.4 JN	13.9 JN	14.5 JN	14.4 JN
Barium		49.6	56.7	192.	65.6	47.8	61.1	137.	68.6	49.1	46.8	82.5	78.2
Beryllium		0.48 B	0.48 B	1.4	0.54 B	0.42 B	0.44 B	0.47	0.46	0.42 B	0.49 B	0.52 B	0.55 B
Cadmium		0.55BJ*N	0.62 JB*N	1.0	2.7 J*N	2.6 J*N	2.6 J*N	< 0.26	< 0.27	1.4 J*N	1.1 J*N	1.1 J*N	0.93 JB*N
Calcium		20500	16300	45500	21700	26700	8770	3130	4100	12200	12200	9130	6760
Chromium		14.2 J*	20.1 J*	20.8	75.7 J*	56.5 J*	211 J*	130	102	33.5 J*	33 J*	61 J*	35.4 J*
Cobalt		3.9 B	6.0 B	4.1	8.3	7.3 B	13.3	11.0	8.0	7.2 B	6.0 B	6.0 B	7.5 B
Copper		39 J*	47.4 J*	686	178 J*	88.9 J*	9750 J*	497	450	730 J*	541 J*	179 J*	98.1 J*
Iron		17,000	28,900	25700	69800	68000	44800	102000	90300	49,100	38,800	34,200	37,700
Lead		44.5 J*	42.6 J*	76.2	269 J*	26 J*	524 J*	73.9 J	381 J	107 J*	63.4 J*	128 J*	151 J*
Magnesium		3,100	5,700	6,920	6,380	8,740	3,940	1,680	2,040	4,780	3,860	3,560	3,600
Manganese		715	524	1050	832	795	655	1530	878.	507	418	513	465
Mercury		0.053 B	0.027 B	0.15	0.016 B	0.019 B	0.051 B	< 0.12	< 0.10	0.045 B	0.053 B	0.079 B	0.05 B
Nickel		12.2 J*N	19.1 J*N	63.6	53.4 J*N	50.2 J*N	111 J*N	125.	151.	26.1 J*N	51 J*N	28.1 J*N	29.3 J*N
Potassium		332 B	405 B	838.	342 B	329 B	324 B	379.	342.	318 B	351 B	493 B	606 B
Selenium		0.94	1.7	1.4	3.3	2.3	1.8	5.3	5.3	2.2	1.8	2.2	2.2
Silver		0.18 JUN	0.18 JUN	< 0.24	0.26 JBN	< 0.19 JN	1.5 JBN	0.61	< 0.27	0.25 JBN	0.26 JBN	0.35 JBN	< 0.22 JN
Sodium		94.3 B	94.9 B	420.	96.2 B	97 B	64.8 B	65.7	64.6	82.8 B	80.2 B	95.2 B	108 B
Thallium		< 1.0	< 1.1	< 0.73 J	1.4	< 1.2	< 1.2	4.4 J	3.4 J	< 1.0	< 1.2	1.3 B	< 1.3
Vanadium		7.6 B	9.7	9.7	12.2	11.8	13.5	16.5	13.0	10.4	9.2 B	12.3	13.6
Zinc		157 J*E	178 J*E	330 J	169 J*E	186 J*E	2380 J*E	231 J	174 J	250 J* E	241 J*E	262 J*E	204 J*E
Cyanide		NS	NS	2.42 J	NS	NS	NS	< 0.63 J	< 0.68 J	NS	NS	NS	NS

J - Estimated Value.

B - Analyte result between IDL and CRDL.

N - Spiked sample - recovery not within control limits.

* - Duplicate analysis not within control limits.

E - Reported value is estimated due to the presence of interference.

Table 3. Comparison of Average Metals Concentrations in Chadakoin River Sediment Samples to NYSDEC Sediment Screening Criteria, D.C.Rollforms/Ingersoll-Rand Site, Jamestown, New York.

CONSTITUENT: (Units in mg/kg)	ADJACENT/DOWNSTREAM MAXIMUM CONCENTRATION	UPSTREAM ARITHMETIC AVERAGE	ADJACENT/DOWNSTREAM ARITHMETIC AVERAGE	SEVERE EFFECT LEVEL
Aluminum	6,560.00	7,586.67	5,336.43	NL
Antimony*	4.90	0.81	2.20	25
Arsenic*	27.75	12.43	19.26	33
Barium	102.80	99.43	68.17	NL
Beryllium	0.55	0.79	0.48	NL
Cadmium*	2.65	0.72	1.42	9.0
Calcium	24,200.00	27,433.33	10,982.14	NL
Chromium*	211.00	18.37	79.43	110
Cobalt*	13.30	4.67	8.19	NL
Copper**	9,750.00	257.47	1,700.72	110
Iron**	10.00	2.00	5.00	4.00
Lead**	524.00	54.43	192.62	110
Magnesium	7,560.00	5,240.00	4,165.71	NL
Manganese	1,204.00	763.00	653.64	1100
Mercury	0.08	0.08	0.05	1.3
Nickel**	138.00	31.63	62.19	50
Potassium	606.00	525.00	398.29	NL
Selenium*	5.30	1.35	2.61	NL
Silver*	1.50	0.10	0.44	2.2
Sodium	108.00	203.07	84.68	NL
Thallium*	3.90	0.47	1.18	NL
Vanadium*	14.75	9.00	12.25	NL
Zinc**	2,380.00	221.67	531.00	270

Note:

With the exception of iron, all units are mg/kg. Concentration of iron given as a percent.

Concentrations measured in duplicates (SED-05 & DUP-01, SED-01 & SED-01 DUP) were averaged prior to averaging across sampling stations.

Concentrations below the detection limit were assumed to equal one-half the detection limit, for purposes of calculating average concentrations.

*Chemical designated as chemical of potential concern (COPC) because adjacent/downstream concentration is greater than upstream concentration.

**COPC is present at average concentration greater than the SEL.

APPENDIX A

Sample/Core Logs

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well SB-1 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY

Drilling Started 11/19/98 Drilling Completed 11/19/98

Total Depth Drilled 4 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval 2 feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description	OVM
0	0.4			Asphalt and Gravel	
0.4	2	1.0	7,10,10,23	Brown/Gray CLAY, GRAVEL and coarse SAND, dry	0.0
2	4	1.0	19,11,17,26	Same as 0-2' interval	0.0

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well SB-2 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY Drilling Started 11/19/98 Drilling Completed 11/19/98

Total Depth Drilled 4 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval 2 feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description	OVM
0	0.4			Asphalt and Gravel	
0.4	2	1.0	4,2,2,2	Brown CLAY and GRAVEL, bootm 2" black wood, glass, gravel	0.0
2	4	1.0	3,8,5,5	Brown CLAY, smeared with black clay, large angular gravel, moist	0.0

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well SB-3 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY Drilling Started 11/19/98 Drilling Completed 11/19/98

Total Depth Drilled 4 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval 2 feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description	OVM
0	0.4			Asphalt and Gravel	
0.4	2	0.8	4,4,4,2	Brown/Black CLAY, trace sand, gravel, brick, wood	0.0
2	4	1.0	3,4,5,8	Tan/Green CLAY, trace sand and fine gravel, wood, brick, moist, slightly plastic	0.0

APPENDIX B

Data Validation Reports

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

December 17, 1998

David Jones
Ingersoll-Rand Company
114 Spencer Rd
Cassopolis, MI 49031

RE: Validation of Dowcraft Site Data Packages
Severn Trent SDG Nos. A2523 and A2575

Dear Mr. Jones:

Review has been completed for the data packages generated by Severn Trent Laboratories, pertaining to samples collected 11/19/98 and 12/01/98 at the Dowcraft, Jamestown NY Site. Nine sediment samples were analysed for TCL volatiles and TAL metals. Three additional soil samples were processed for TCLP lead. Matrix spikes/duplicates were also processed. Methodologies utilized are those of the NYSDEC ASP/USEPA SW846.

Data validation was performed with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic and Inorganic Data Review and the USEPA SOPs HW-2 and HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate and Internal Standard Recoveries
* Matrix Spike Recoveries/Duplicate Correlations
* Preparation/Calibration Blanks
* Control Spike/Laboratory Control Samples
* Instrumental Tunes
* Calibration Standards
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology.

Unless noted specifically in the following text, reported results are substantiated by the raw data, generated in compliance with protocol requirements, and generally usable as reported with minor qualification..

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherance to quality criteria. The volatile and TCLP lead results are usable with minor qualification. The metals results for the sediments are qualified as estimated for many elements, due to apparent sample nonhomogeneity. Additionally, the initially reported forms for the sediment metals did not show all required laboratory qualifiers, and have been resubmitted. These are attached, and should be used as replacements to those originally reported. Reported values were not changed.

Certain edits to, and qualification of, reported results are indicated. These issues are discussed in the following analytical sections, and relate primarily to matrix effects.

Copies of laboratory case narratives are attached to this narrative, and should be reviewed in conjunction with this narrative. Laboratory NYSDEC Sample Preparation and Analysis Summary Forms are also included with this report. The report include a qualification summary outlining the specific validation qualifiers to be applied to the final reported results tables.

Data Completeness

Please see the attached, resubmitted report Forms 1-IN for the sediment metals.

Additional resubmitted items are also included with this report.

Volatile Analyses-1995 NYSDEC ASP/SW846

The detection of trichloroethene in SED-8 is rejected due to response below the Method Detection Limit (MDL), indicating likely background contribution. The result for that analyte in the sample should be edited to nondetection at the CRDL.

Although methylene chloride and acetone were not detected in the associated method blank (and no trip or field blank data are available), it should be noted that the reported sample concentrations are at levels typical of contamination. Detected results for those analytes should be regarded with caution.

Due to low daily standard responses (50%D and 31%D), results for chloromethane and acetone should be considered estimated in the samples, possibly biased slightly low. Acetone also showed poor linearity (41%RSD) and elevated spiked blank recovery (225%).

Matrix spikes of SED-6 showed acceptable accuracy and precisiosn.. Outlying elevated recoveries were observed in the spiked blank for some analytes. However, reported sample results (which showed nondetection) are unaffected.

Field duplicate correlation between SED-5 and DUPLICATE was acceptable.

Metals Analyses-1995 NYSDEC ASP/SW846

Please see the resubmitted report forms for the sediment samples in SDG A2575. These have been corrected to include additional "N" (for outlying spike recovery) and "E" (for serial dilution outliers) qualifiers.

Matrix spike/duplicate evaluations were performed on SED-6. Results showed signficant outliers for spike recovery of five elements, and for duplicate correlation of six elements. Results for these nine elements in all sediments should be considered estimated:

Analyte	Outlying spike recovery	Outlying Duplicate Correlation
Antimony	69%	
Arsenic	56	
Cadmium	46	180%RPD
Chromium		131
Copper		183
Lead		123
Nickel	19	112
Silver	12	
Zinc		150

When the duplicate correlations vary by these amounts, the reported values can differ by an order of magnitude.

The field duplicates SED-5 and DUP also showed very poor correlation for lead (165%), with values also differing by an order of magnitude.

Results for the analytes not recommended for qualification should also be regarded with caution. They also showed very poor spike recoveries and duplicate correlations, but had concentrations that placed them outside the range for evaluation.

The ICP serial dilution correlation for SED-6 showed possible matrix effect on the zinc recovery (36%D) indicating a low bias to the reported result. Zinc is also qualified as estimated due to duplicate correlation.

TCLP accuracy and precision determinations were performed on batch QC, and were acceptable. Reported TCLP results are substantiated by the raw data.

TOC Analyses - LLoyd Kahn method

Accuracy and precision of SED-6, and field duplicate correlation of SED-5, were acceptable.

Reported results are substantiated by the raw data

QUALIFICATION SUMMARY

Volatile

1. Trichloroethene in SED-8 edited to "12U".

2. Chloromethane and acetone results for all samples qualified as "J."

Metals

1. Resubmitted forms include the addition of the "E" flag to zinc, and the addition of the "N" flag to arsenic, cadmium, nickel, and silver for samples in SDG A2575.

2. Results for antimony, arsenic, cadmium, chromium, copper, nickel, silver, lead, and zinc qualified as "J" for all sediments in SDG A2575.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Judy Harry

Data Validation Services

120 Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

Facsimile Transmission

TO: Marsha Culik

COMPANY: STL

FAX NUMBER: 203 268 5346

FROM: Judy Harry

DATE: 12-14-98

No. of pages (including cover): 1

COMMENTS: RE: Ingersoll Rand/G&M --Jamestown Site
IEA SDG Nos. A2523 and A2575

Please provide the following items so that validation of the data can be completed:

SDG 2575

1. Please review the flagging for the metals spike ~~and duplicate~~. It appears that failures for spike recovery (i.e. As, Cd, Ni, and Ag) were not flagged accordingly.
2. Similarly, please review the flagging for the metals serial dilution of zinc.
3. Provide any applicable corrected forms (hand-edits are acceptable).

SDG 2523

1. Please provide a copy of the prep log for the TCLP leaching
2. Please explain the metals analysis timegap between 12/03/98 11:30 to 11:46. It appears as though more than ten analyses were processed between standards, and I want to confirm that these were not failed QC runs.

Thank you in advance for an expedited response to this request.

Committed To *Your* Success

December 15, 1998

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Ms. Judy Harry
Data Validation Services
120 Cobble Creek Road P.O. Box 208
North Creek, NY 12853

Dear Judy:

Per your fax dated 12/14/98, enclosed please find validation responses for the Ingersoll Rand/G&M-Jamestown site, for various SDGs.

SDG 2575A

1. Flagging corrected for the metals spike recoveries.
2. Flagging corrected for serial dilution of Zinc.
3. All forms corrected and resubmitted.

SDG 2523A

1. TCLP prep log enclosed.
2. The time gap between 11:30 to 11:46 on 12/3/98 was to repour a CCV cup and double check the analysis.

If you have any further questions or comments please do not hesitate to contact me at (203) 261-4458.

Sincerely,

Marsha Culik
Quality Assurance Manager

Enclosure

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-4

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-02

Level (low/med): LOW Date Received: 12/02/98

% Solids: 88.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6550			P
7440-36-0	Antimony	1.0	B	N	P
7440-38-2	Arsenic	16.4		N	P
7440-39-3	Barium	56.7			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.62	B	*N	P
7440-70-2	Calcium	16300			P
7440-47-3	Chromium	20.1		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	47.4		*	P
7439-89-6	Iron	28900			P
7439-92-1	Lead	42.6		*	P
7439-95-4	Magnesium	5700			P
7439-96-5	Manganese	524.			P
7439-97-6	Mercury	0.027	B		CV
7440-02-0	Nickel	19.1		*N	P
7440-09-7	Potassium	405.	B		P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	0.18	U	N	P
7440-23-5	Sodium	94.9	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	9.7			P
7440-66-6	Zinc	178.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-5

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-03

Level (low/med): LOW Date Received: 12/02/98

% Solids: 92.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6230			P
7440-36-0	Antimony	3.0	B	N	P
7440-38-2	Arsenic	28.2		N	P
7440-39-3	Barium	65.6			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	2.7		*N	P
7440-70-2	Calcium	21700			P
7440-47-3	Chromium	75.7		*	P
7440-48-4	Cobalt	8.3			P
7440-50-8	Copper	178.		*	P
7439-89-6	Iron	69800			P
7439-92-1	Lead	269.		*	P
7439-95-4	Magnesium	6380			P
7439-96-5	Manganese	832.			P
7439-97-6	Mercury	0.016	B		CV
7440-02-0	Nickel	53.4		*N	P
7440-09-7	Potassium	342.	B		P
7782-49-2	Selenium	3.3			P
7440-22-4	Silver	0.26	B	N	P
7440-23-5	Sodium	96.2	B		P
7440-28-0	Thallium	1.4			P
7440-62-2	Vanadium	12.2			P
7440-66-6	Zinc	169.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-5

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-03

Level (low/med): LOW Date Received: 12/02/98

% Solids: 92.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6230			P
7440-36-0	Antimony	3.0	B	N	P
7440-38-2	Arsenic	28.2		N	P
7440-39-3	Barium	65.6			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	2.7		*N	P
7440-70-2	Calcium	21700			P
7440-47-3	Chromium	75.7		*	P
7440-48-4	Cobalt	8.3			P
7440-50-8	Copper	178.		*	P
7439-89-6	Iron	69800			P
7439-92-1	Lead	269.		*	P
7439-95-4	Magnesium	6380			P
7439-96-5	Manganese	832.			P
7439-97-6	Mercury	0.016	B		CV
7440-02-0	Nickel	53.4		*N	P
7440-09-7	Potassium	342.	B		P
7782-49-2	Selenium	3.3			P
7440-22-4	Silver	0.26	B	N	P
7440-23-5	Sodium	96.2	B		P
7440-28-0	Thallium	1.4			P
7440-62-2	Vanadium	12.2			P
7440-66-6	Zinc	169.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-6

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-04

Level (low/med): LOW Date Received: 12/02/98

% Solids: 86

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5470			P
7440-36-0	Antimony	4.9	B	N	P
7440-38-2	Arsenic	23.5		N	P
7440-39-3	Barium	61.1			P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	2.6		*N	P
7440-70-2	Calcium	8770			P
7440-47-3	Chromium	211.		*	P
7440-48-4	Cobalt	13.3			P
7440-50-8	Copper	9750		*	P
7439-89-6	Iron	44800			P
7439-92-1	Lead	524.		*	P
7439-95-4	Magnesium	3940			P
7439-96-5	Manganese	655.			P
7439-97-6	Mercury	0.051	B		CV
7440-02-0	Nickel	111.		*N	P
7440-09-7	Potassium	324.	B		P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	1.5	B	N	P
7440-23-5	Sodium	64.8	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	13.5			P
7440-66-6	Zinc	2380		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-7

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-05

Level (low/med): LOW Date Received: 12/02/98

% Solids: 87.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5400			P
7440-36-0	Antimony	2.0	B	N	P
7440-38-2	Arsenic	17.4		N	P
7440-39-3	Barium	49.1			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	1.4		*N	P
7440-70-2	Calcium	12200			P
7440-47-3	Chromium	33.5		*	P
7440-48-4	Cobalt	7.2	B		P
7440-50-8	Copper	730.		*	P
7439-89-6	Iron	49100			P
7439-92-1	Lead	107.		*	P
7439-95-4	Magnesium	4780			P
7439-96-5	Manganese	507.			P
7439-97-6	Mercury	0.045	B		CV
7440-02-0	Nickel	26.1		*N	P
7440-09-7	Potassium	318.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.25	B	N	P
7440-23-5	Sodium	82.8	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	10.4			P
7440-66-6	Zinc	250.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-8

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-06

Level (low/med): LOW Date Received: 12/02/98

% Solids: 89.1

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5090			P
7440-36-0	Antimony	1.0	U	N	P
7440-38-2	Arsenic	13.9		N	P
7440-39-3	Barium	46.8			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	1.1		*N	P
7440-70-2	Calcium	12200			P
7440-47-3	Chromium	33.0		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	541.		*	P
7439-89-6	Iron	38800			P
7439-92-1	Lead	63.4		*	P
7439-95-4	Magnesium	3860			P
7439-96-5	Manganese	418.			P
7439-97-6	Mercury	0.053	B		CV
7440-02-0	Nickel	51.0		*N	P
7440-09-7	Potassium	351.	B		P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	0.26	B	N	P
7440-23-5	Sodium	80.2	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	9.2	B		P
7440-66-6	Zinc	241.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-9

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-07

Level (low/med): LOW Date Received: 12/02/98

% Solids: 73.5

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5500			P
7440-36-0	Antimony	1.0	B	N	P
7440-38-2	Arsenic	14.5		N	P
7440-39-3	Barium	82.5			P
7440-41-7	Beryllium	0.52	B		P
7440-43-9	Cadmium	1.1		*N	P
7440-70-2	Calcium	9130			P
7440-47-3	Chromium	61.0		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	179.		*	P
7439-89-6	Iron	34200			P
7439-92-1	Lead	128.		*	P
7439-95-4	Magnesium	3560			P
7439-96-5	Manganese	513.			P
7439-97-6	Mercury	0.079	B		CV
7440-02-0	Nickel	28.1		*N	P
7440-09-7	Potassium	493.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.35	B	N	P
7440-23-5	Sodium	95.2	B		P
7440-28-0	Thallium	1.3	B		P
7440-62-2	Vanadium	12.3			P
7440-66-6	Zinc	262.		*E	P
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: F

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-10

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-08

Level (low/med): LOW Date Received: 12/02/98

% Solids: 77.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6560			P
7440-36-0	Antimony	3.7	B	N	P
7440-38-2	Arsenic	14.4		N	P
7440-39-3	Barium	78.2			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	0.93	B	*N	P
7440-70-2	Calcium	6760			P
7440-47-3	Chromium	35.4		*	P
7440-48-4	Cobalt	7.5	B		P
7440-50-8	Copper	98.1		*	P
7439-89-6	Iron	37700			P
7439-92-1	Lead	151.		*	P
7439-95-4	Magnesium	3600			P
7439-96-5	Manganese	465.			P
7439-97-6	Mercury	0.050	B		CV
7440-02-0	Nickel	29.3		*N	P
7440-09-7	Potassium	606.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.22	U	N	P
7440-23-5	Sodium	108.	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	13.6			P
7440-66-6	Zinc	204.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: F

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP-1

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-09

Level (low/med): LOW Date Received: 12/02/98

% Solids: 91.6

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4900			P
7440-36-0	Antimony	1.5	B	N	P
7440-38-2	Arsenic	18.6		N	P
7440-39-3	Barium	47.8			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	2.6		*N	P
7440-70-2	Calcium	26700			P
7440-47-3	Chromium	56.5		*	P
7440-48-4	Cobalt	7.3	B		P
7440-50-8	Copper	88.9		*	P
7439-89-6	Iron	68000			P
7439-92-1	Lead	26.0		*	P
7439-95-4	Magnesium	8740			P
7439-96-5	Manganese	795.			P
7439-97-6	Mercury	0.019	B		CV
7440-02-0	Nickel	50.2		*N	P
7440-09-7	Potassium	329.	B		P
7782-49-2	Selenium	2.3			P
7440-22-4	Silver	0.19	U	N	P
7440-23-5	Sodium	97.0	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	11.8			P
7440-66-6	Zinc	186.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

TABLE AS-1.0
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-3	SED-4	SED-5	SED-6
Lab Sample I.D.	982575A-01	982575A-02	982575A-03	982575A-04
Aluminum	4710	6550	6230	5470
Antimony	0.88UN	1.0BN	3.0BN	4.9BN
Arsenic	13.1N	16.4N	28.2N	23.5N
Barium	49.6	56.7	65.6	61.1
Beryllium	0.48B	0.48B	0.54B	0.44B
Cadmium	0.55B*N	0.62B*N	2.7*N	2.6*N
Calcium	20500	16300	21700	8770
Chromium	14.2*	20.1*	75.7*	211.*
Cobalt	3.9B	6.0B	8.3	13.3
Copper	39.0*	47.4*	178.*	9750*
Iron	17000	28900	69800	14800
Lead	44.5*	42.6*	269.*	524.*
Magnesium	3100	5700	6380	3940
Manganese	715.	524.	832.	655.
Mercury	0.053B	0.027B	0.016B	0.051B
Nickel	12.2*N	19.1*N	53.4*N	111.*N
Potassium	332.B	405.B	342.B	324.B
Selenium	0.94	1.7	3.3	1.8
Silver	0.18UN	0.18UN	0.26BN	1.5BN
Sodium	94.3B	94.9B	96.2B	64.8B
Thallium	1.0U	1.1U	1.4	1.2U
Vanadium	7.6B	9.7	12.2	13.5
Zinc	157.*E	178.*E	169.*E	2380*E

See Appendix for qualifier definitions

TABLE AS-1.1
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-6 D	SED-6 S	SED-7	SED-8
Lab Sample I.D.	982575A-04D	982575A-04S	982575A-05	982575A-06
Aluminum	5470	6250	5400	5090
Antimony	2.1B	68.4N	2.0BN	1.0UN
Arsenic	27.7	27.6N	17.4N	13.9N
Barium	58.3	380.	49.1	46.8
Beryllium	0.49B	9.2	0.42B	0.49B
Cadmium	50.9*	3.0N	1.4*N	1.1*N
Calcium	8570	NR	12200	12200
Chromium	43.9*	134.	33.5*	33.0*
Cobalt	6.7B	91.6	7.2B	6.0B
Copper	436.*	258.	730.*	541.*
Iron	51500	48800	49100	38800
Lead	124.*	65.2	107.*	63.4*
Magnesium	3530	NR	4780	3860
Manganese	537.	562.	507.	418.
Mercury	0.10	0.25	0.045B	0.053B
Nickel	31.5*	129.N	26.1*N	51.0*N
Potassium	338.B	NR	318.B	351.B
Selenium	2.2	3.2	2.2	1.8
Silver	0.29B	2.6N	0.25BN	0.26BN
Sodium	59.2B	NR	82.8B	80.2B
Thallium	2.2B	10.0	1.0U	1.2U
Vanadium	10.8B	97.5	10.4	9.2B
Zinc	336.*	272.	250.*E	241.*E

See Appendix for qualifier definitions

TABLE AS-1.2
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-9	SED-10	DUP-1	
Lab Sample I.D.	982575A-07	982575A-08	982575A-09	
Aluminum	5500	6560	4900	
Antimony	1.0BN	3.7BN	1.5BN	
Arsenic	14.5N	14.4N	18.6N	
Barium	82.5	78.2	47.8	
Beryllium	0.52B	0.55B	0.42B	
Cadmium	1.1*N	0.93B*N	2.6*N	
Calcium	9130	6760	26700	
Chromium	61.0*	35.4*	56.5*	
Cobalt	6.0B	7.5B	7.3B	
Copper	179.*	98.1*	88.9*	
Iron	34200	37700	68000	
Lead	128.*	151.*	26.0*	
Magnesium	3560	3600	8740	
Manganese	513.	465.	795.	
Mercury	0.079B	0.050B	0.019B	
Nickel	28.1*N	29.3*N	50.2*N	
Potassium	493.B	606.B	329.B	
Selenium	2.2	2.2	2.3	
Silver	0.35BN	0.22UN	0.19UN	
Sodium	95.2B	108.B	97.0B	
Thallium	1.3B	1.3U	1.2U	
Vanadium	12.3	13.6	11.8	
Zinc	262.*E	204.*E	186.*E	

See Appendix for qualifier definitions

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-3

Lab Name: STL Contract:

Lab Code: STL Case No.: 2575A SAS No.: SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-01

Level (low/med): LOW Date Received: 12/02/98

% Solids: 84.9

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4710			P
7440-36-0	Antimony	0.88	U	N	P
7440-38-2	Arsenic	13.1		N	P
7440-39-3	Barium	49.6			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.55	B	*N	P
7440-70-2	Calcium	20500			P
7440-47-3	Chromium	14.2		*	P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	39.0		*	P
7439-89-6	Iron	17000			P
7439-92-1	Lead	44.5		*	P
7439-95-4	Magnesium	3100			P
7439-96-5	Manganese	715.			P
7439-97-6	Mercury	0.053	B		CV
7440-02-0	Nickel	12.2		*N	P
7440-09-7	Potassium	332.	B		P
7782-49-2	Selenium	0.94			P
7440-22-4	Silver	0.18	U	N	P
7440-23-5	Sodium	94.3	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	157.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SED-6S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 86

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum		6252.8442		5474.5487		369.14	210.8		P
Antimony	75-125	68.4334		4.8612	B	92.28	68.9	N	P
Arsenic	75-125	27.5621		23.4652		7.38	55.5	N	P
Barium	75-125	379.8671		61.1214		369.14	88.3		P
Beryllium	75-125	9.1785		0.4450	B	8.23	94.5		P
Cadmium	75-125	3.0367		2.6151		0.92	45	N	P
Calcium				8774.9014		0.00	0.0		P
Chromium		134.3071		211.0410		36.91	-20		P
Cobalt	75-125	91.6042		13.2817		92.28	84.9		P
Copper		257.5733		9749.8187		46.14	0.0		P
Iron		48840.5500		44774.2609		184.57	2503.1		P
Lead		65.1852		523.8220		3.69	0.0		P
Magnesium				3943.6342		0.00	0.0		P
Manganese		561.5268		655.3810		92.28	-101.7		P
Mercury	75-125	0.2488		0.0510	B	0.23	85.0		CV
Nickel	75-125	129.1274		111.2624		92.28	19.4	N	P
Potassium				324.5518	B	0.00	0.0		P
Selenium	75-125	3.2214		1.7708		1.84	78.6		P
Silver	75-125	2.6029		1.5084	B	9.23	11.9	N	P
Sodium				64.8210	B	0.00	0.0		P
Thallium	75-125	10.0239		1.1825	U	9.23	108.6		P
Vanadium	75-125	97.4762		13.5040		92.28	91.0		P
Zinc		272.2274		2383.0883		92.28	-2287.3		P
Cyanide									NR

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

SED-6D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 86 % Solids for Duplicate: 86

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		5474.5487		5472.4673				P
Antimony		4.8612	B	2.1443	B	77.6		P
Arsenic		23.4652		27.7406		16.7		P
Barium	44.2	61.1214		58.3300		4.7		P
Beryllium		0.4450	B	0.4895	B	9.5		P
Cadmium	1.1	2.6151		50.9145		180.4	*	P
Calcium		8774.9014		8569.3112		2.4		P
Chromium		211.0410		43.8624		131.2	*	P
Cobalt	11.0	13.2817		6.6852	B	66.1		P
Copper		9749.8187		436.1515		182.9	*	P
Iron		44774.2609		51462.7021		13.9		P
Lead		523.8220		124.0366		123.4	*	P
Magnesium	1107.4	3943.6342		3526.0753		11.2		P
Manganese		655.3810		536.9506		20.9		P
Mercury	0.0	0.0510	B	0.1059		69.9		CV
Nickel	8.8	111.2624		31.4692		111.8	*	P
Potassium		324.5518	B	337.9034	B	4.0		P
Selenium	1.1	1.7708		2.2484		23.8		P
Silver		1.5084	B	0.2911	B	135.3		P
Sodium		64.8210	B	59.2198	B	9.0		P
Thallium		1.1825	U	2.1555	B	200.0		P
Vanadium	11.0	13.5040		10.8027	B	22.2		P
Zinc		2383.0883		336.5103		150.5	*	P
Cyanide								NR

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

SED-6L

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix(soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	27777.86		27574.68		0.7		P
Antimony	24.66	B	25.00	U	100.0		P
Arsenic	119.06		99.22		16.7		P
Barium	310.13		314.19	B	1.3		P
Beryllium	2.26	B	5.00	U	100.0		P
Cadmium	13.27		6.03	B	54.5		P
Calcium	44523.85		46618.97		4.7		P
Chromium	1070.82		1101.13		2.8		P
Cobalt	67.39		73.28	B	8.7		P
Copper	49470.58		50835.45		2.8		P
Iron	227184.60		236244.20		4.0		P
Lead	2657.87		2729.30		2.7		P
Magnesium	20010.00		20864.80	B	4.3		P
Manganese	3325.40		3459.93		4.0		P
Mercury							NR
Nickel	564.54		581.06		2.9		P
Potassium	1646.78	B	1407.47	B	14.5		P
Selenium	8.98		10.00	U	100.0		P
Silver	7.65	B	9.85	B	28.7		P
Sodium	328.90	B	342.90	B	4.2		P
Thallium	6.00	U	57.15				P
Vanadium	68.52		71.24	B	4.0		P
Zinc	12091.79		16463.49		36.2	E	P
Cyanide							NR

Laboratory Sample ID	PREP BLANK	258801	258802	258803		
E. Determination of Sample Size (method requires 100 grams)						
1. Particle size reduction? Y/N	N	N	N	N		
2. Amount of dry solids. (g)		100.06	99.98	100.11		
3. Amount of multi-phase sample						
a. wt of material (g)						
b. Wt of filtrate (g)						
c. Wt of solid material (g)						
F. Determination of Amount of Extraction Fluid						
1. For dry solids (20X sample Wt.)		2000	2000	2000		
2. For multi-phasic samples						
G. Record of Leach procedure (18 hrs ± 2 hrs)						
1. Extraction start time		11-20-98 1700	11-20-98			
2. Extraction stop time		11-21-98 1200				
3. Filtration completetion time						
4. pH of filtrate	<5	<5	<5	<5		
5. Volume of filtrate (ml)	300	300	300	300		
H. Record of ZHE Extraction Test (18 hrs ±2 hrs)						
1. Amount of Extraction Fluid 1						
2. Sample mass (g)						
3. Extraction start time						
4. Starting pressure						
5. Extraction stop time						
6. Positive pressure?						
7. Filtration completetion time						
8. Volume of filtrate						

TCLP Preparation Logbook

	M	M	M	M		
Laboratory Sample ID	PREP-BLANK	25833A-01	25833A-02	25833A-03		
A. Sample Description Number of phases:		1	1	1		
1. Solid		✓	✓	✓		
2. Liquid						
Lighter or heavier than water		H	H	H		
B. Percent solid Phase						
1. Weight of filter						
2. Weight of subsample						
3. Weight of filtrate						
4. Weight percent solids (wet)		100	100	100		
5. Weight percent solids (dry)						
6. Volume of initial aqueous filtrate						
7. Volume of initial organic filtrate						
C. Extraction Fluid Determination						
2. Sample weight ✓ if 5.0 ± 0.1 gms		✓	✓	✓		
3. Volumeof water ✓ if 96.5 ± 1.0 ml added		✓	✓	✓		
4. Initial pH (after 5 minutes)		7.06	6.11	6.55		
5. If pH > 5.0, ✓ if 3.5 ml 1N HCL added		✓	✓	✓		
6. ✓ if heated and held at 50C for 10 minutes		✓	✓	✓		
7. Secondary pH (room temp.)		1.60	2.01	1.85		
D. Selection of Extraction Fluid						
1. ✓ if pH from C.4 or C.7 is < 5.0 use extraction fluid No. 1		✓	✓	✓		
2. ✓ if pH from C.7 is > 5.0, use extraction fluid No.2						

Reviewed by:_____ Date:_____

STL Form# CVF03402.CT

Committed To *Your* Success

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

7098-2575A
INGERSOLL RAND

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP; mercury was determined by the cold vapor technique utilizing a Spectro Products mercury analyzer using guidance provided in SW846 according to the following Methods: ICAP-3050/6010; mercury-7471.

Antimony failed the controls for spike recovery analysis of sample SED-6 resulting in one "N" flag. A post-digestion spike was analyzed and recovered within the control limits.

Six "*" resulted from duplicate analysis of sample SED-6 for cadmium, copper, chromium, lead, nickel and zinc. A sample homogeneity problem appears to be the cause.

No other problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. Samples prepared following Lloyd Kahn, Determination of Total Carbon in Sediment, July 27, 1988. No analytical problems were encountered.

Analyte	Method	Reference
TOCD	9060	1

References:

1. Test Methods for the Evaluation of Solid Wastes, SW846, 3rd ed., 1986.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5970A GC/MS/DS.

Sample Calculation:

Sample ID - SED-9
Compound - Toluene

$$\frac{(102384)(250)}{(5791395)(.889)(5)(.67)} = 1.48 = 1 \text{ UG/L.}$$

No problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Chef A Cascella for — Dec 10, 1998

Jeffrey C. Curran — Date
Laboratory Manager

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other
SED-3	982575A-01	X				X	
SED-4	982575A-02	X				X	
SED-5	982575A-03	X				X	
SED-6	982575A-04	X				X	
SED-6	982575A-04D					X	
SED-6	982575A-04MS	X					
SED-6	982575A-04MSB	X					
SED-6	982575A-04MSD	X					
SED-6	982575A-04S					X	
SED-7	982575A-05	X				X	
SED-8	982575A-06	X				X	
SED-9	982575A-07	X				X	
SED-10	982575A-08	X				X	
DUP-1	982575A-09	X				X	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
982575A-01	SOIL	12/01/98	12/02/98	N/A	12/02/98
982575A-02	SOIL	12/01/98	12/02/98		
982575A-03	SOIL	12/01/98	12/02/98		
982575A-04	SOIL	12/01/98	12/02/98		
982575A-05	SOIL	12/01/98	12/02/98		
982575A-06	SOIL	12/01/98	12/02/98		
982575A-07	SOIL	12/01/98	12/02/98		
982575A-08	SOIL	12/01/98	12/02/98		
982575A-09	SOIL	12/01/98	12/02/98		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Metals Requested	Date Rec'd at Lab	Date Analyzed
982575A-01	SOIL	MET-NSW846-TAL	12/02/98	12/7/98
982575A-02	SOIL	MET-NSW846-TAL	12/02/98	
982575A-03	SOIL	MET-NSW846-TAL	12/02/98	
982575A-04	SOIL	MET-NSW846-TAL	12/02/98	
982575A-05	SOIL	MET-NSW846-TAL	12/02/98	
982575A-06	SOIL	MET-NSW846-TAL	12/02/98	
982575A-07	SOIL	MET-NSW846-TAL	12/02/98	
982575A-08	SOIL	MET-NSW846-TAL	12/02/98	
982575A-09	SOIL	MET-NSW846-TAL	12/02/98	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other
B-1	982523A-01					X	
B-2	982523A-02					X	
B-3	982523A-03					X	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Metals Requested	Date Rec'd at Lab	Date Analyzed
523A-01	LEACHATE	PB-MLSW846	11/20/98	12/3/98
523A-02	LEACHATE	PB-MLSW846	11/20/98	"
523A-03	LEACHATE	PB-MLSW846	11/20/98	"

Committed To *Your* Success

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

7098-2523A
INGERSOLL RAND

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. No analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
TCLP-PREP	1311	1

References:

1. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Dec. 8, 1998
Date

APPENDIX C

Soil Sample Laboratory Analytical Results

Committed To *Your* Success

December 08, 1998

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
213 Madison Ave. Ext.
Albanycreek, NY 12203

Dear Mr. Sanford :

Please find enclosed the analytical results of 3 sample(s) received at our laboratory on November 20, 1998. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7098-2523A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
M. SANFORD

7098-2523A
INGERSOLL RAND

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. No analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
TCLP-PREP	1311	1

References:

1. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

TABLE AS-1.0
7098-2523A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY

Aqueous

All values are ug/L.

Client Sample I.D.	SB-1	SB-2	SB-3	
Lab Sample I.D.	982523A-01	982523A-02	982523A-03	
Lead	5.5	70.5	5.2	

See Appendix for qualifier definitions

INORGANICS APPENDIX

C - Concentration qualifiers

J - Indicates analyte was not detected at method reporting limit.

- Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

- Duplicate injection precision not met

- Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

- Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

- Duplicate analysis not within control limit

- Correlation coefficient for MSA is less than 0.995

M - Method codes

- ICP

A - Flame AA

- Furnace AA

- Cold vapor AA (manual)

C - Cyanide

R - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of September 1998)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health & Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7098-2523A
INGERSOLL RAND
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
SB-1	982523A-01	SOIL	11/19/98	11/20/98
SB-2	982523A-02	SOIL	11/19/98	11/20/98
SB-3	982523A-03	SOIL	11/19/98	11/20/98

IEA-CT ANALYTICAL SUMMARY

Client ID: SB-1, SB-2, SB-3
Job Number: 7098-2523A

Date: 12/8/98

Qty	Matrix	Analysis	Description
3	LEACHATE	MET-PREP-ICAP-TCLP	Metals ICAP Prep
3	LEACHATE	PB-NLSW846	Lead
1	None	DISK	Diskette Prep.
3	SOIL	MET-N1311-PREP	TCLP Metals Leach

TCLP Preparation Logbook (cont)

Laboratory Sample ID	PREP BLANK	258A01	258A02	258A03		
E. Determination of Sample Size (method requires 100 grams)						
1. Particle size reduction? Y/N	N	N	N	N		
2. Amount of dry solids. (g)		100.06	99.98	100.11		
3. Amount of multi-phase sample						
a. wt of material (g)						
b. Wt of filtrate (g)						
c. Wt of solid material (g)						
F. Determination of Amount of Extraction Fluid						
1. For dry solids (20X sample Wt.)		2000	2000	2000		
2. For multi-phasic samples						
G. Record of Leach procedure (18 hrs ± 2 hrs)						
1. Extraction start time		11-20-98 1700	11-20-98			
2. Extraction stop time		11-21-98 1200				
3. Filtration completetion time						
4. pH of filtrate	<5	<5	<5	<5		
5. Volume of filtrate (ml)	300	300	300	300		
H. Record of ZHE Extraction Test (18 hrs ±2 hrs)						
1. Amount of Extraction Fluid 1						
2. Sample mass (g)						
3. Extraction start time						
4. Starting pressure						
5. Extraction stop time						
6. Positive pressure?						
7. Filtration completetion time						
8. Volume of filtrate						

Reviewed by:_____ Date:_____

STL Form# CVF03402.CT

TCLP Preparation Logbook

		M	M	M		
Laboratory Sample ID	PREP-BLANK	2583A-01	2583A-02	2583A-03		
A. Sample Description Number of phases:		1	1	1		
1. Solid		✓	✓	✓		
2. Liquid						
Lighter or heavier than water		H	H	H		
B. Percent solid Phase						
1. Weight of filter						
2. Weight of subsample						
3. Weight of filtrate						
4. Weight percent solids (wet)		100	100	100		
5. Weight percent solids (dry)						
6. Volume of initial aqueous filtrate						
7. Volume of initial organic filtrate						
C. Extraction Fluid Determination						
2. Sample weight ✓ if 5.0 ± 0.1 gms		✓	✓	✓		
3. Volumeof water ✓ if 96.5 ± 1.0 ml added		✓	✓	✓		
4. Initial pH (after 5 minutes)		7.06	6.11	6.55		
5. If pH > 5.0, ✓ if 3.5 ml 1N HCL added		✓	✓	✓		
6. ✓ if heated and held at 50C for 10 minutes		✓	✓	✓		
7. Secondary pH (room temp.)		1.60	2.01	1.75		
D. Selection of Extraction Fluid						
1. ✓ if pH from C.4 or C.7 is < 5.0 use extraction fluid No. 1		✓	✓	✓		
2. ✓ if pH from C.7 is > 5.0, use extraction fluid No.2						

Reviewed by:_____ Date:_____

STL Form# CVF03402.CT

APPENDIX D

Sediment Sample Laboratory Analytical Results

Committed To *Your* Success

December 10, 1998

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
213 Madison Ave. Ext.
Albanycreek, NY 12203

Dear Mr. Sanford :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on December 2, 1998. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7098-2575A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
M. SANFORD

7098-2575A

INGERSOLL RAND

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP; mercury was determined by the cold vapor technique utilizing a Spectro Products mercury analyzer using guidance provided in SW846 according to the following Methods: ICAP-3050/6010; mercury-7471.

Antimony failed the controls for spike recovery analysis of sample SED-6 resulting in one "N" flag. A post-digestion spike was analyzed and recovered within the control limits.

Six "*" resulted from duplicate analysis of sample SED-6 for cadmium, copper, chromium, lead, nickel and zinc. A sample homogeneity problem appears to be the cause.

No other problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. Samples prepared following Lloyd Kahn, Determination of Total Carbon in Sediment, July 27, 1988. No analytical problems were encountered.

Analyte	Method	Reference
TOCD	9060	1

References:

1. Test Methods for the Evaluation of Solid Wastes, SW846, 3rd ed., 1986.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5970A GC/MS/DS.

Sample Calculation:

Sample ID - SED-9
Compound - Toluene

$$\frac{(102384)(250)}{(5791395)(.889)(5)(.67)} = 1.48 = 1 \text{ UG/L.}$$

No problems were encountered.

TABLE VO-1.0 Soil
7098-2575A
INGERSOLL RAND
TCL VOLATILE ORGANICS + TIC'S

All values are ug/Kg dry weight basis.

Client Sample I.D.	Method Blank	SED-3	SED-4	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKKW	982575A-01	982575A-02	
Method Blank I.D.	VBLKKW	VBLKKW	VBLKKW	
Quant. Factor	1.00	1.22	1.26	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	1J	2J	5.0
Acetone	U	9J	8J	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		12/02/98	12/02/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/02/98	12/02/98	12/02/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1
7098-2575A
INGERSOLL RAND
TCL VOLATILE ORGANICS + TIC'S

Soil

All values are ug/Kg dry weight basis.

Client Sample I.D.	SED-5	SED-6	SED-6 MS	Quant. Limits with no Dilution
Lab Sample I.D.	982575A-03	982575A-04	982575A-04MS	
Method Blank I.D.	VBLKKW	VBLKKW	VBLKKW	
Quant. Factor	1.23	1.25	1.25	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	1J	1J	2J	5.0
Acetone	12	12	13	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	62X	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	55X	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	61X	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	62X	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	62X	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	12/02/98	12/02/98	12/02/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/02/98	12/02/98	12/02/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.2 Soil
7098-2575A
INGERSOLL RAND
TCL VOLATILE ORGANICS + TIC'S

All values are ug/Kg dry weight basis.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	SED-6 MSD 982575A-04 MSD VBLKKW 1.25	SED-7 982575A-05 VBLKKW 1.11	SED-8 982575A-06 VBLKKW 1.19	Quant. Limits with no Dilution
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	2J	1J	1J	5.0
Acetone	28	12	4J	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	57X	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	53X	U	.4J	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	60X	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	66X	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	60X	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	12/02/98	12/02/98	12/02/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/02/98	12/02/98	12/02/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.3 Soil
7098-2575A
INGERSOLL RAND
TCL VOLATILE ORGANICS + TIC'S

All values are ug/Kg dry weight basis.

Client Sample I.D.	SED-9	SED-10	DUP-1	Quant. Limits with no Dilution
Lab Sample I.D.	982575A-07	982575A-08	982575A-09	
Method Blank I.D.	VBLKKW	VBLKKW	VBLKKW	
Quant. Factor	1.49	1.26	1.22	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	2J	2J	1J	5.0
Acetone	24	11J	10J	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	1J	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	12/02/98	12/02/98	12/02/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/02/98	12/02/98	12/02/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE AS-1.0
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-3	SED-4	SED-5	SED-6
Lab Sample I.D.	982575A-01	982575A-02	982575A-03	982575A-04
Aluminum	4710	6550	6230	5470
Antimony	0.88UN	1.0BN	3.0BN	4.9BN
Arsenic	13.1N	16.4N	28.2N	23.5N
Barium	49.6	56.7	65.6	61.1
Beryllium	0.48B	0.48B	0.54B	0.44B
Cadmium	0.55B*N	0.62B*N	2.7*N	2.6*N
Calcium	20500	16300	21700	8770
Chromium	14.2*	20.1*	75.7*	211.*
Cobalt	3.9B	6.0B	8.3	13.3
Copper	39.0*	47.4*	178.*	9750*
Iron	17000	28900	69800	44800
Lead	44.5*	42.6*	269.*	524.*
Magnesium	3100	5700	6380	3940
Manganese	715.	524.	832.	655.
Mercury	0.053B	0.027B	0.016B	0.051B
Nickel	12.2*N	19.1*N	53.4*N	111.*N
Potassium	332.B	405.B	342.B	324.B
Selenium	0.94	1.7	3.3	1.8
Silver	0.18UN	0.18UN	0.26BN	1.5BN
Sodium	94.3B	94.9B	96.2B	64.8B
Thallium	1.0U	1.1U	1.4	1.2U
Vanadium	7.6B	9.7	12.2	13.5
Zinc	157.*E	178.*E	169.*E	2380*E

See Appendix for qualifier definitions

TABLE AS-1.1
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-6 D	SED-6 S	SED-7	SED-8
Lab Sample I.D.	982575A-04D	982575A-04S	982575A-05	982575A-06
Aluminum	5470	6250	5400	5090
Antimony	2.1B	68.4N	2.0BN	1.0UN
Arsenic	27.7	27.6N	17.4N	13.9N
Barium	58.3	380.	49.1	46.8
Beryllium	0.49B	9.2	0.42B	0.49B
Cadmium	50.9*	3.0N	1.4*N	1.1*N
Calcium	8570	NR	12200	12200
Chromium	43.9*	134.	33.5*	33.0*
Cobalt	6.7B	91.6	7.2B	6.0B
Copper	436.*	258.	730.*	541.*
Iron	51500	48800	49100	38800
Lead	124.*	65.2	107.*	63.4*
Magnesium	3530	NR	4780	3860
Manganese	537.	562.	507.	418.
Mercury	0.10	0.25	0.045B	0.053B
Nickel	31.5*	129.N	26.1*N	51.0*N
Potassium	338.B	NR	318.B	351.B
Selenium	2.2	3.2	2.2	1.8
Silver	0.29B	2.6N	0.25BN	0.26BN
Sodium	59.2B	NR	82.8B	80.2B
Thallium	2.2B	10.0	1.0U	1.2U
Vanadium	10.8B	97.5	10.4	9.2B
Zinc	336.*	272.	250.*E	241.*E

See Appendix for qualifier definitions

TABLE AS-1.2
7098-2575A
INGERSOLL RAND
TAL METALS

Soil

All values are mg/Kg dry weight basis.

Client Sample I.D.	SED-9	SED-10	DUP-1	
Lab Sample I.D.	982575A-07	982575A-08	982575A-09	
Aluminum	5500	6560	4900	
Antimony	1.0BN	3.7BN	1.5BN	
Arsenic	14.5N	14.4N	18.6N	
Barium	82.5	78.2	47.8	
Beryllium	0.52B	0.55B	0.42B	
Cadmium	1.1*N	0.93B*N	2.6*N	
Calcium	9130	6760	26700	
Chromium	61.0*	35.4*	56.5*	
Cobalt	6.0B	7.5B	7.3B	
Copper	179.*	98.1*	88.9*	
Iron	34200	37700	68000	
Lead	128.*	151.*	26.0*	
Magnesium	3560	3600	8740	
Manganese	513.	465.	795.	
Mercury	0.079B	0.050B	0.019B	
Nickel	28.1*N	29.3*N	50.2*N	
Potassium	493.B	606.B	329.B	
Selenium	2.2	2.2	2.3	
Silver	0.35BN	0.22UN	0.19UN	
Sodium	95.2B	108.B	97.0B	
Thallium	1.3B	1.3U	1.2U	
Vanadium	12.3	13.6	11.8	
Zinc	262.*E	204.*E	186.*E	

See Appendix for qualifier definitions

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-3

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-01

Level (low/med): LOW Date Received: 12/02/98

% Solids: 84.9

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4710			P
7440-36-0	Antimony	0.88	U	N	P
7440-38-2	Arsenic	13.1		N	P
7440-39-3	Barium	49.6			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.55	B	*N	P
7440-70-2	Calcium	20500			P
7440-47-3	Chromium	14.2		*	P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	39.0		*	P
7439-89-6	Iron	17000			P
7439-92-1	Lead	44.5		*	P
7439-95-4	Magnesium	3100			P
7439-96-5	Manganese	715.			P
7439-97-6	Mercury	0.053	B		CV
7440-02-0	Nickel	12.2		*N	P
7440-09-7	Potassium	332.	B		P
7782-49-2	Selenium	0.94			P
7440-22-4	S[illegible]er	0.18	U	N	P
7440-23-5	S[illegible]um	94.3	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	157.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-4

Lab Name: STL Contract:

Lab Code: STL Case No.: 2575A SAS No.: SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-02

Level (low/med): LOW Date Received: 12/02/98

% Solids: 88.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6550			P
7440-36-0	Antimony	1.0	B	N	P
7440-38-2	Arsenic	16.4		N	P
7440-39-3	Barium	56.7			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.62	B	*N	P
7440-70-2	Calcium	16300			P
7440-47-3	Chromium	20.1		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	47.4		*	P
7439-89-6	Iron	28900			P
7439-92-1	Lead	42.6		*	P
7439-95-4	Magnesium	5700			P
7439-96-5	Manganese	524.			P
7439-97-6	Mercury	0.027	B		CV
7440-02-0	Nickel	19.1		*N	P
7440-09-7	Potassium	405.	B		P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	0.18	U	N	P
7440-23-5	Sodium	94.9	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	9.7			P
7440-66-6	Zinc	178.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-5

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-03

Level (low/med): LOW Date Received: 12/02/98

% Solids: 92.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6230			P
7440-36-0	Antimony	3.0	B	N	P
7440-38-2	Arsenic	28.2		N	P
7440-39-3	Barium	65.6			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	2.7		*N	P
7440-70-2	Calcium	21700			P
7440-47-3	Chromium	75.7		*	P
7440-48-4	Cobalt	8.3			P
7440-50-8	Copper	178.		*	P
7439-89-6	Iron	69800			P
7439-92-1	Lead	269.		*	P
7439-95-4	Magnesium	6380			P
7439-96-5	Manganese	832.			P
7439-97-6	Mercury	0.016	B		CV
7440-02-0	Nickel	53.4		*N	P
7440-09-7	Potassium	342.	B		P
7782-49-2	Selenium	3.3			P
7440-22-4	Silver	0.26	B	N	P
7440-23-5	Sodium	96.2	B		P
7440-28-0	Thallium	1.4			P
7440-62-2	Vanadium	12.2			P
7440-66-6	Zinc	169.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-6

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-04

Level (low/med): LOW Date Received: 12/02/98

% Solids: 86

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5470			P
7440-36-0	Antimony	4.9	B	N	P
7440-38-2	Arsenic	23.5		N	P
7440-39-3	Barium	61.1			P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	2.6		*N	P
7440-70-2	Calcium	8770			P
7440-47-3	Chromium	211.		*	P
7440-48-4	Cobalt	13.3			P
7440-50-8	Copper	9750		*	P
7439-89-6	Iron	44800			P
7439-92-1	Lead	524.		*	P
7439-95-4	Magnesium	3940			P
7439-96-5	Manganese	655.			P
7439-97-6	Mercury	0.051	B		CV
7440-02-0	Nickel	111.		*N	P
7440-09-7	Potassium	324.	B		P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	1.5	B	N	P
7440-23-5	Sodium	64.8	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	13.5			P
7440-66-6	Zinc	2380		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-7

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-05

Level (low/med): LOW Date Received: 12/02/98

% Solids: 87.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5400			P
7440-36-0	Antimony	2.0	B	N	P
7440-38-2	Arsenic	17.4		N	P
7440-39-3	Barium	49.1			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	1.4		*N	P
7440-70-2	Calcium	12200			P
7440-47-3	Chromium	33.5		*	P
7440-48-4	Cobalt	7.2	B		P
7440-50-8	Copper	730.		*	P
7439-89-6	Iron	49100			P
7439-92-1	Lead	107.		*	P
7439-95-4	Magnesium	4780			P
7439-96-5	Manganese	507.			P
7439-97-6	Mercury	0.045	B		CV
7440-02-0	Nickel	26.1		*N	P
7440-09-7	Potassium	318.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.25	B	N	P
7440-23-5	Sodium	82.8	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	10.4			P
7440-66-6	Zinc	250.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-8

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-06

Level (low/med): LOW Date Received: 12/02/98

% Solids: 89.1

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5090			P
7440-36-0	Antimony	1.0	U	N	P
7440-38-2	Arsenic	13.9		N	P
7440-39-3	Barium	46.8			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	1.1		*N	P
7440-70-2	Calcium	12200			P
7440-47-3	Chromium	33.0		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	541.		*	P
7439-89-6	Iron	38800			P
7439-92-1	Lead	63.4		*	P
7439-95-4	Magnesium	3860			P
7439-96-5	Manganese	418.			P
7439-97-6	Mercury	0.053	B		CV
7440-02-0	Nickel	51.0		*N	P
7440-09-7	Potassium	351.	B		P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	0.26	B	N	P
7440-23-5	Sodium	80.2	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	9.2	B		P
7440-66-6	Zinc	241.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-9

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-07

Level (low/med): LOW Date Received: 12/02/98

% Solids: 73.5

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5500			P
7440-36-0	Antimony	1.0	E	N	P
7440-38-2	Arsenic	14.5		N	P
7440-39-3	Barium	82.5			P
7440-41-7	Beryllium	0.52	B		P
7440-43-9	Cadmium	1.1		*N	P
7440-70-2	Calcium	9130			P
7440-47-3	Chromium	61.0		*	P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	179.		*	P
7439-89-6	Iron	34200			P
7439-92-1	Lead	128.		*	P
7439-95-4	Magnesium	3560			P
7439-96-5	Manganese	513.			P
7439-97-6	Mercury	0.079	B		CV
7440-02-0	Nickel	28.1		*N	P
7440-09-7	Potassium	493.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.35	B	N	P
7440-23-5	Sodium	95.2	B		P
7440-28-0	Thallium	1.3	B		P
7440-62-2	Vanadium	12.3			P
7440-66-6	Zinc	262.		*E	P
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: F

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SED-10

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-08

Level (low/med): LOW Date Received: 12/02/98

% Solids: 77.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6560			P
7440-36-0	Antimony	3.7	B	N	P
7440-38-2	Arsenic	14.4		N	P
7440-39-3	Barium	78.2			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	0.93	B	*N	P
7440-70-2	Calcium	6760			P
7440-47-3	Chromium	35.4		*	P
7440-48-4	Cobalt	7.5	B		P
7440-50-8	Copper	98.1		*	P
7439-89-6	Iron	37700			P
7439-92-1	Lead	151.		*	P
7439-95-4	Magnesium	3600			P
7439-96-5	Manganese	465.			P
7439-97-6	Mercury	0.050	B		CV
7440-02-0	Nickel	29.3		*N	P
7440-09-7	Potassium	606.	B		P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.22	U	N	P
7440-23-5	Sodium	108.	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	13.6			P
7440-66-6	Zinc	204.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: F

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP-1

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix (soil/water): SOIL Lab Sample ID: 982575A-09

Level (low/med): LOW Date Received: 12/02/98

% Solids: 91.6

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4900			P
7440-36-0	Antimony	1.5	B	N	P
7440-38-2	Arsenic	18.6		N	P
7440-39-3	Barium	47.8			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	2.6		*N	P
7440-70-2	Calcium	26700			P
7440-47-3	Chromium	56.5		*	P
7440-48-4	Cobalt	7.3	B		P
7440-50-8	Copper	88.9		*	P
7439-89-6	Iron	68000			P
7439-92-1	Lead	26.0		*	P
7439-95-4	Magnesium	8740			P
7439-96-5	Manganese	795.			P
7439-97-6	Mercury	0.019	B		CV
7440-02-0	Nickel	50.2		*N	P
7440-09-7	Potassium	329.	B		P
7782-49-2	Selenium	2.3			P
7440-22-4	Silver	0.19	U	N	P
7440-23-5	Sodium	97.0	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	11.8			P
7440-66-6	Zinc	186.		*E	P
57-12-5	Cyanide				NR

Color Before: BLACK Clarity Before: OPAQUE Texture: M

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SED-6S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 86

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum		6252.8442		5474.5487		369.14	210.8		P
Antimony	75-125	68.4334		4.8612	B	92.28	68.9	N	P
Arsenic	75-125	27.5621		23.4652		7.38	55.5	N	P
Barium	75-125	379.8671		61.1214		369.14	86.3		P
Beryllium	75-125	9.1785		0.4450	B	9.23	94.6		P
Cadmium	75-125	3.0367		2.6151		0.92	45.7	N	P
Calcium				8774.9014		0.00	0.0		P
Chromium		134.3071		211.0410		36.91	-207.9		P
Cobalt	75-125	91.6042		13.2817		92.28	84.9		P
Copper		257.5733		9749.8187		46.14	0.0		P
Iron		48840.5500		44774.2609		184.57	2203.1		P
Lead		65.1852		523.8220		3.69	0.0		P
Magnesium				3943.6342		0.00	0.0		P
Manganese		561.5268		655.3810		92.28	-101.7		P
Mercury	75-125	0.2488		0.0510	B	0.23	85.0		CV
Nickel	75-125	129.1274		111.2624		92.28	19.4	N	P
Potassium				324.5518	B	0.00	0.0		P
Selenium	75-125	3.2214		1.7708		1.84	78.6		P
Silver	75-125	2.6029		1.5084	B	9.23	11.9	N	P
Sodium				64.8210	B	0.00	0.0		P
Thallium	75-125	10.0239		1.1825	U	9.23	108.6		P
Vanadium	75-125	97.4762		13.5040		92.28	91.0		P
Zinc		272.2274		2383.0883		92.28	-2287.3		P
Cyanide									NR

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

SED-6D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 86 % Solids for Duplicate: 86

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		5474.5487		5472.4673				P
Antimony		4.8612	B	2.1443	B	77.6		P
Arsenic		23.4652		27.7406		16.7		P
Barium	44.2	61.1214		58.3300		4.7		P
Beryllium		0.4450	B	0.4895	B	9.5		P
Cadmium	1.1	2.6151		50.9145		180.4	*	P
Calcium		8774.9014		8569.3112		2.4		P
Chromium		211.0410		43.8624		131.2	*	P
Cobalt	11.0	13.2817		6.6852	B	66.1		P
Copper		9749.8187		436.1515		182.9	*	P
Iron		44774.2609		51462.7021		13.9		P
Lead		523.8220		124.0366		123.4	*	P
Magnesium	1107.4	3943.6342		3526.0753		11.2		P
Manganese		655.3810		536.9506		19.9		P
Mercury	0.0	0.0510	B	0.1059		69.9		CV
Nickel	8.8	111.2624		31.4692		111.8	*	P
Potassium		324.5518	B	337.9034	B	4.0		P
Selenium	1.1	1.7708		2.2484		23.8		P
Silver		1.5084	B	0.2911	B	135.3		P
Sodium		64.8210	B	59.2198	B	9.0		P
Thallium		1.1825	U	2.1555	B	200.0		P
Vanadium	11.0	13.5040		10.8027	B	22.2		P
Zinc		2383.0883		336.5103		150.5	*	P
Cyanide								NR

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

SED-6L

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2575A SAS No.: _____ SDG No.: A2575

Matrix(soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	27777.86		27574.68		0.7		P
Antimony	24.66	B	25.00	U	100.0		P
Arsenic	119.06		99.22		16.7		P
Barium	310.13		314.19	B	1.3		P
Beryllium	2.26	B	5.00	U	100.0		P
Cadmium	13.27		6.03	B	54.6		P
Calcium	44523.85		46618.97		4.7		P
Chromium	1070.82		1101.13		2.8		P
Cobalt	67.39		73.28	B	8.7		P
Copper	49470.58		50835.45		2.8		P
Iron	227184.60		236244.20		4.0		P
Lead	2657.87		2729.30		2.7		P
Magnesium	20010.00		20864.80	B	4.3		P
Manganese	3325.40		3459.93		4.0		P
Mercury							NR
Nickel	564.54		581.06		2.9		P
Potassium	1646.78	B	1407.47	B	14.5		P
Selenium	8.98		10.00	U	100.0		P
Silver	7.65	B	9.85	B	28.7		P
Sodium	328.90	B	342.90	B	4.2		P
Thallium	6.00	U	57.15				P
Vanadium	68.52		71.24	B	4.0		P
Zinc	12091.79		16463.49		36.2	E	P
Cyanide							NR

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte was not detected at method reporting limit.

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of September 1998)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health & Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewate , Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Waste· ater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7098-2575A
INGERSOLL RAND
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
SED-3	982575A-01	SOIL	12/01/98	12/02/98
SED-4	982575A-02	SOIL	12/01/98	12/02/98
SED-5	982575A-03	SOIL	12/01/98	12/02/98
SED-6	982575A-04	SOIL	12/01/98	12/02/98
SED-6	982575A-04D	SOIL	12/01/98	12/02/98
SED-6	982575A-04MS	SOIL	12/01/98	12/02/98
SED-6	982575A-04MSB	SOIL	12/01/98	12/02/98
SED-6	982575A-04MSD	SOIL	12/01/98	12/02/98
SED-6	982575A-04S	SOIL	12/01/98	12/02/98
SED-7	982575A-05	SOIL	12/01/98	12/02/98
SED-8	982575A-06	SOIL	12/01/98	12/02/98
SED-9	982575A-07	SOIL	12/01/98	12/02/98
SED-10	982575A-08	SOIL	12/01/98	12/02/98
DUP-1	982575A-09	SOIL	12/01/98	12/02/98

IEA-CT ANALYTICAL SUMMARY

Client ID: DUP-1, SED-10, SED-3, SED-4, SED-5, SED-6, SED-7, SED-8, SED-9
Job Number: 7098-2575A

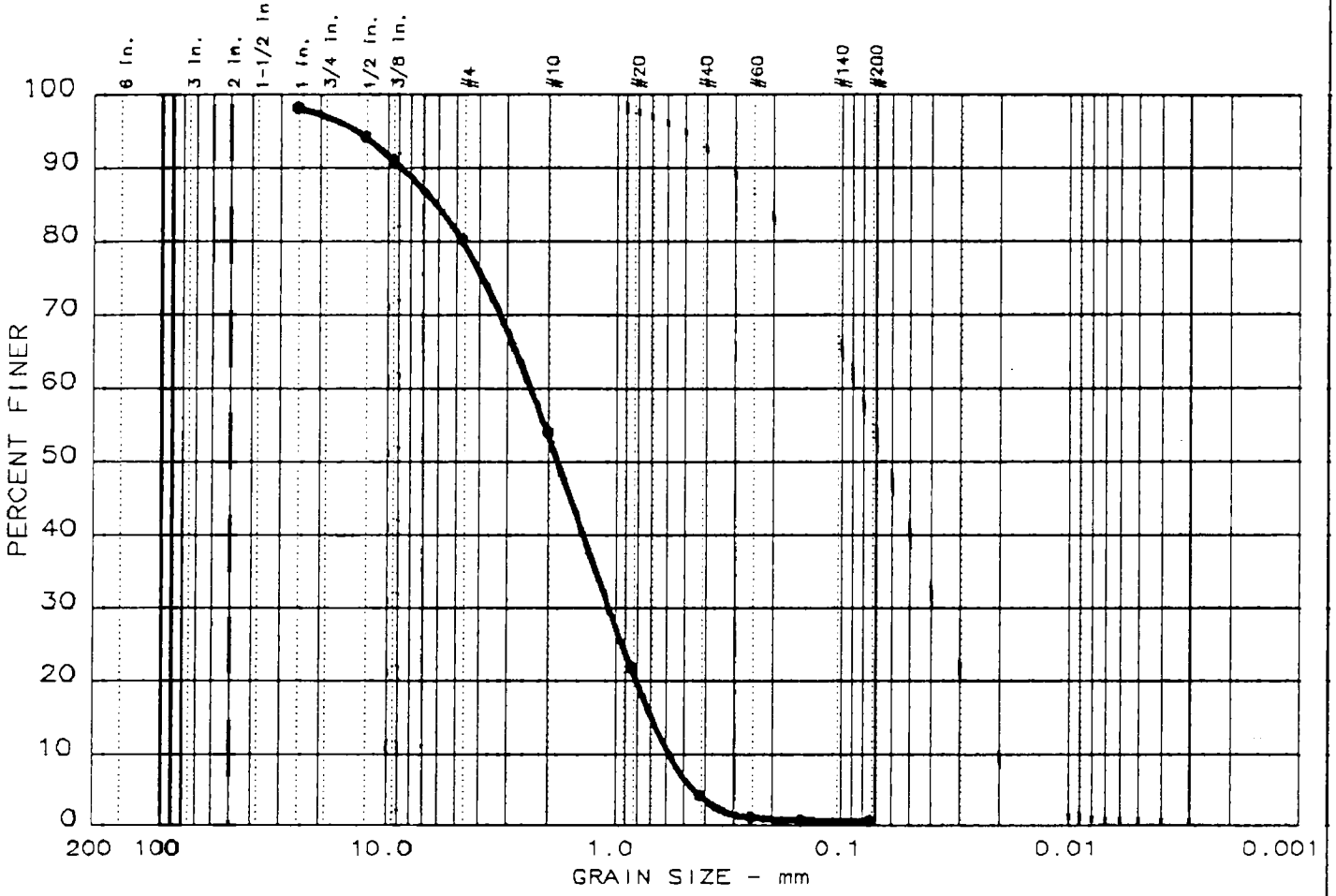
Date: 12/10/98

Qty	Matrix	Analysis	Description
2	None	DISK	Diskette Prep.
11	SOIL	MET-NSW846-TAL	TAL Metals
11	SOIL	TOC-NLLOYD KAHN	Total Organic Carbon
2	SOIL	VOA-N8260A-TCL	TCL Volatile Organic
1	SOIL	VOA-N8260A-TCL-10	TCL Volatile Organic
9	SOIL	VOA-N8260A-TCL-10	TCL Volatile Organic

APPENDIX E

Geotechnical Laboratory Grain Size Analysis

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	19.8	79.6	0.6	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	6.10	2.36	1.79	1.067	0.6887	0.5728	0.84	4.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand, some gravel	SP	A-1-b

Project No.: ???
Project: Jerry's Sieve Analyses
● Location: Jamestown

Date: December 17, 1998

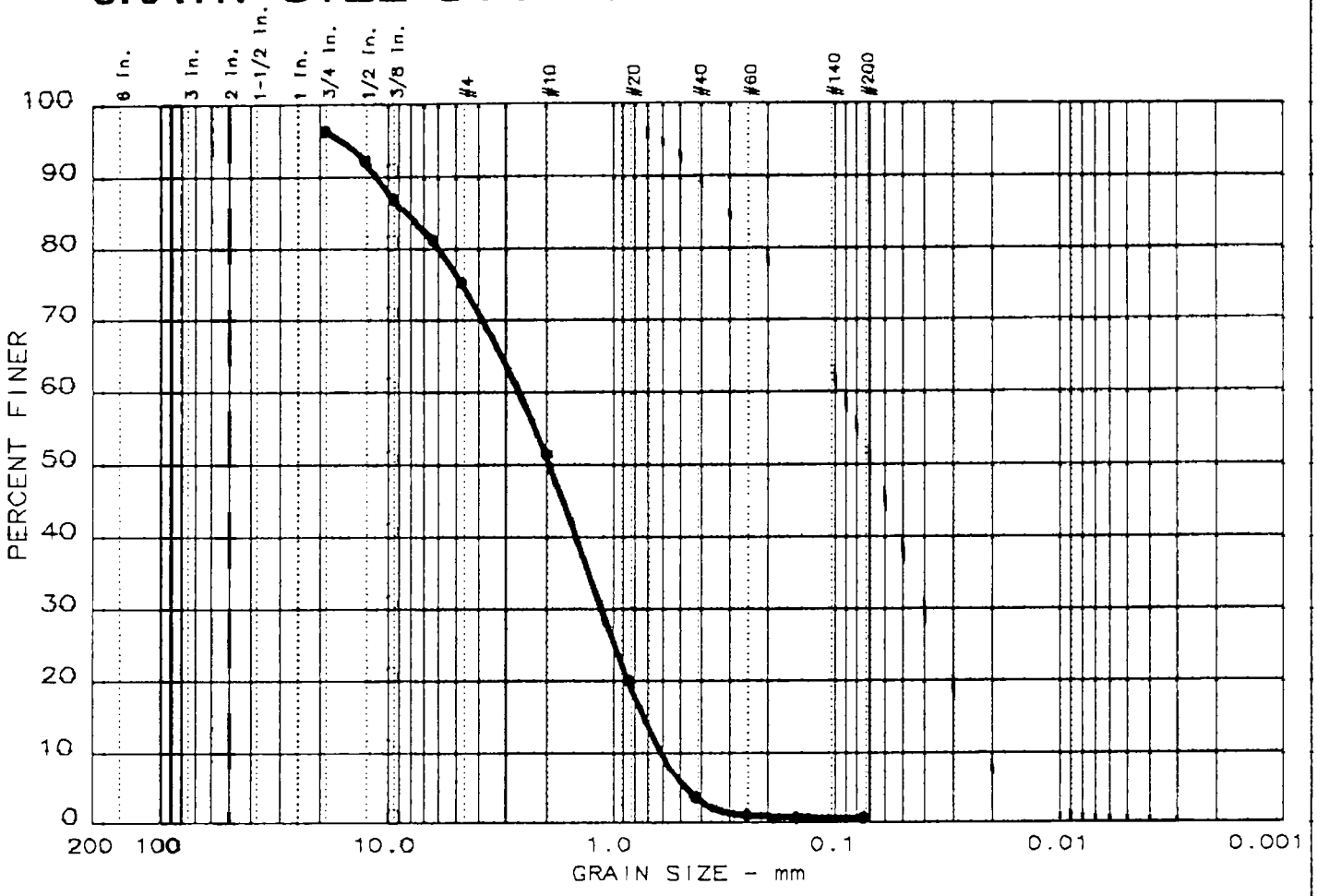
Remarks:
Sample #SED-3

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	24.8	74.6	0.6	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	8.41	2.62	1.92	1.123	0.7253	0.6033	0.80	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand, some gravel	SP	A-1-b

Project No.: ???
Project: Jerry's
● Location: Jamestown

Date: Dec. 17, 1998

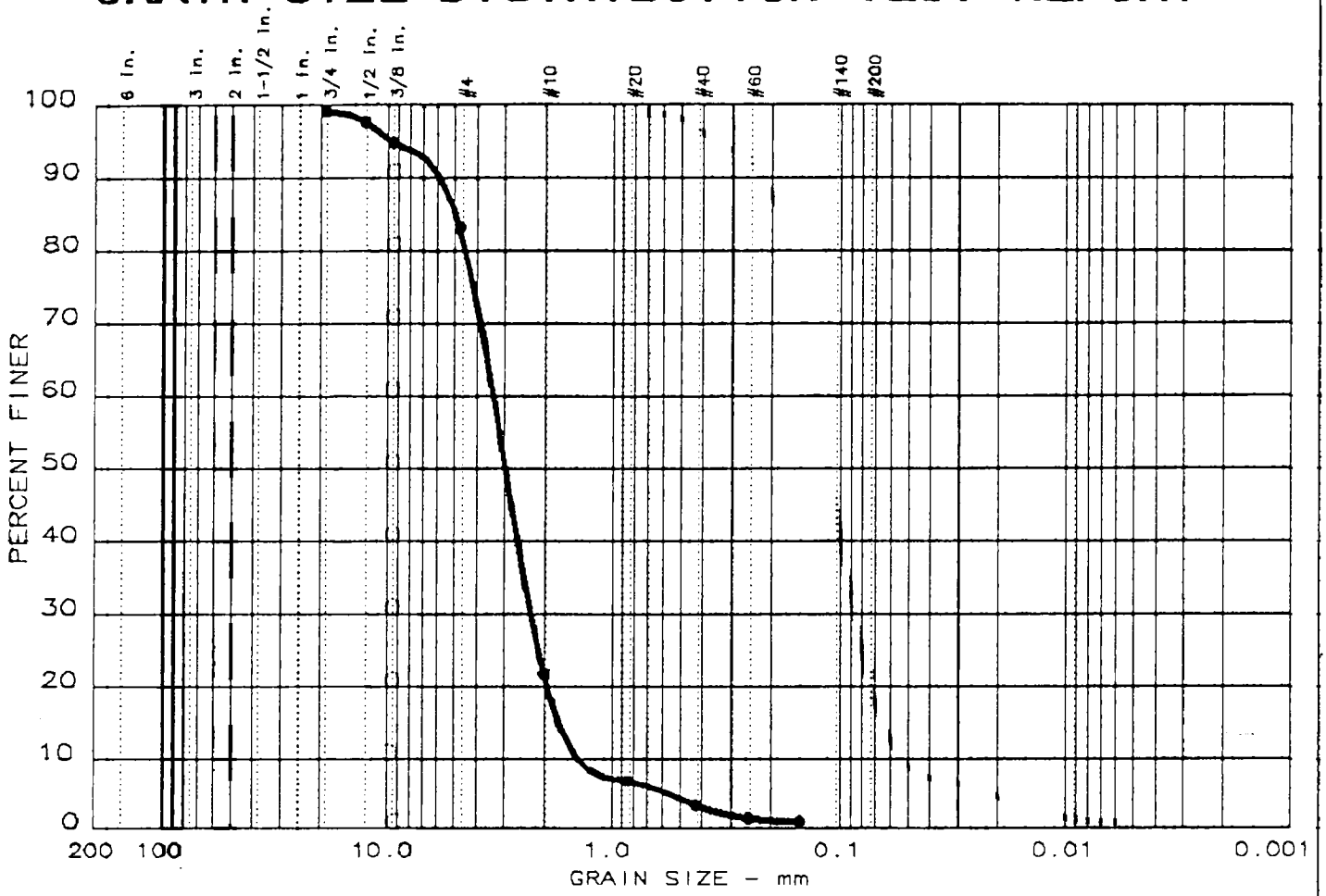
Remarks:
sample # SED-4

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	16.9	83.1		

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	4.95	3.35	2.96	2.286	1.7140	1.4093	1.11	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand, little gravel	SP	A-1-a

Project No.: ???
Project: Jerry's
● Location: Jamestown

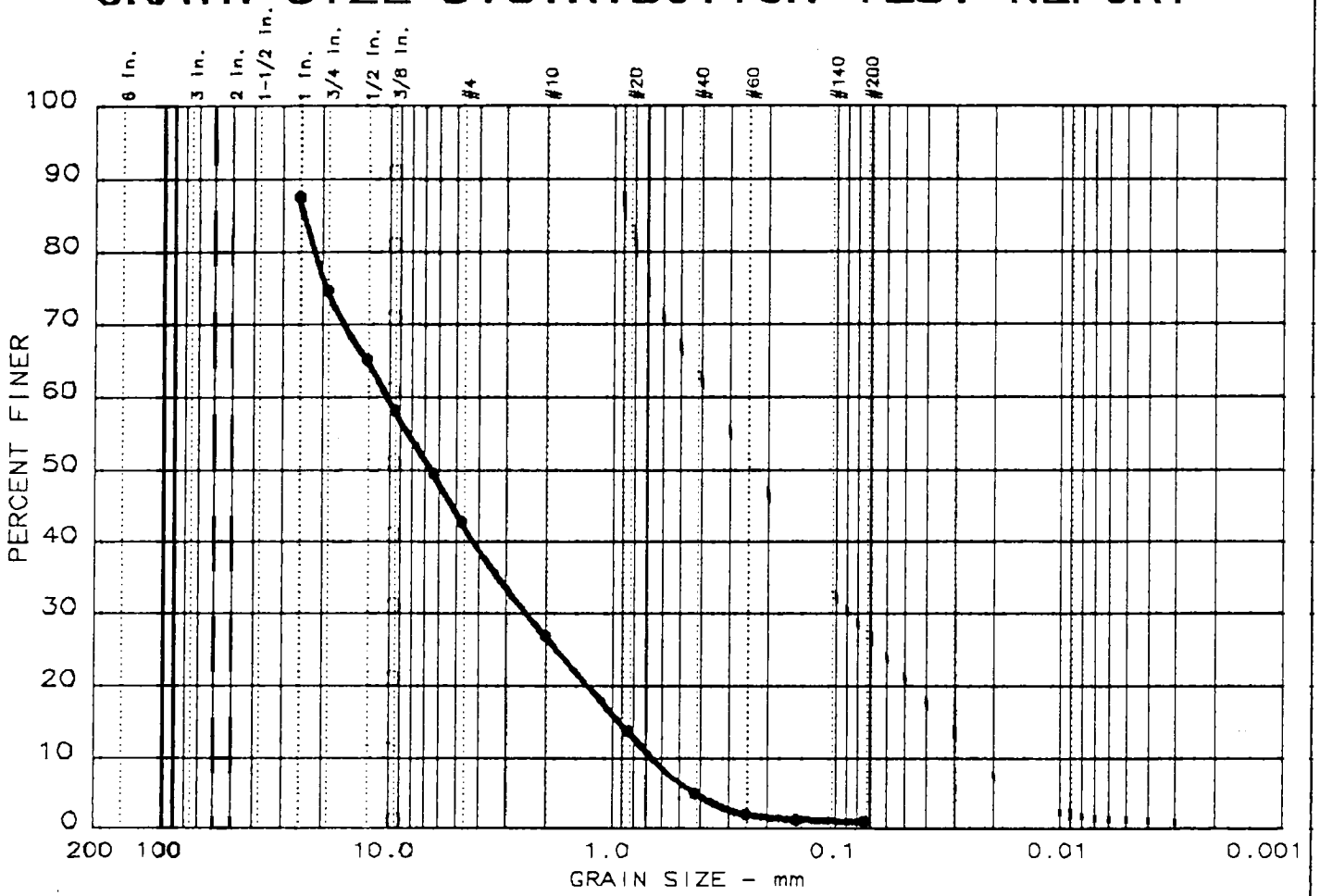
Date: Dec. 17, 1998

Remarks:
Sample #SED-5

GRAIN SIZE DISTRIBUTION TEST REPORT
HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 3

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	57.3	41.8	0.9	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	24.13	10.29	6.49	2.413	0.9173	0.6494	0.87	15.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Gravel and sand	SP	A-1-a

Project No.: ???
Project: Jerry's
● Location: Jamestown

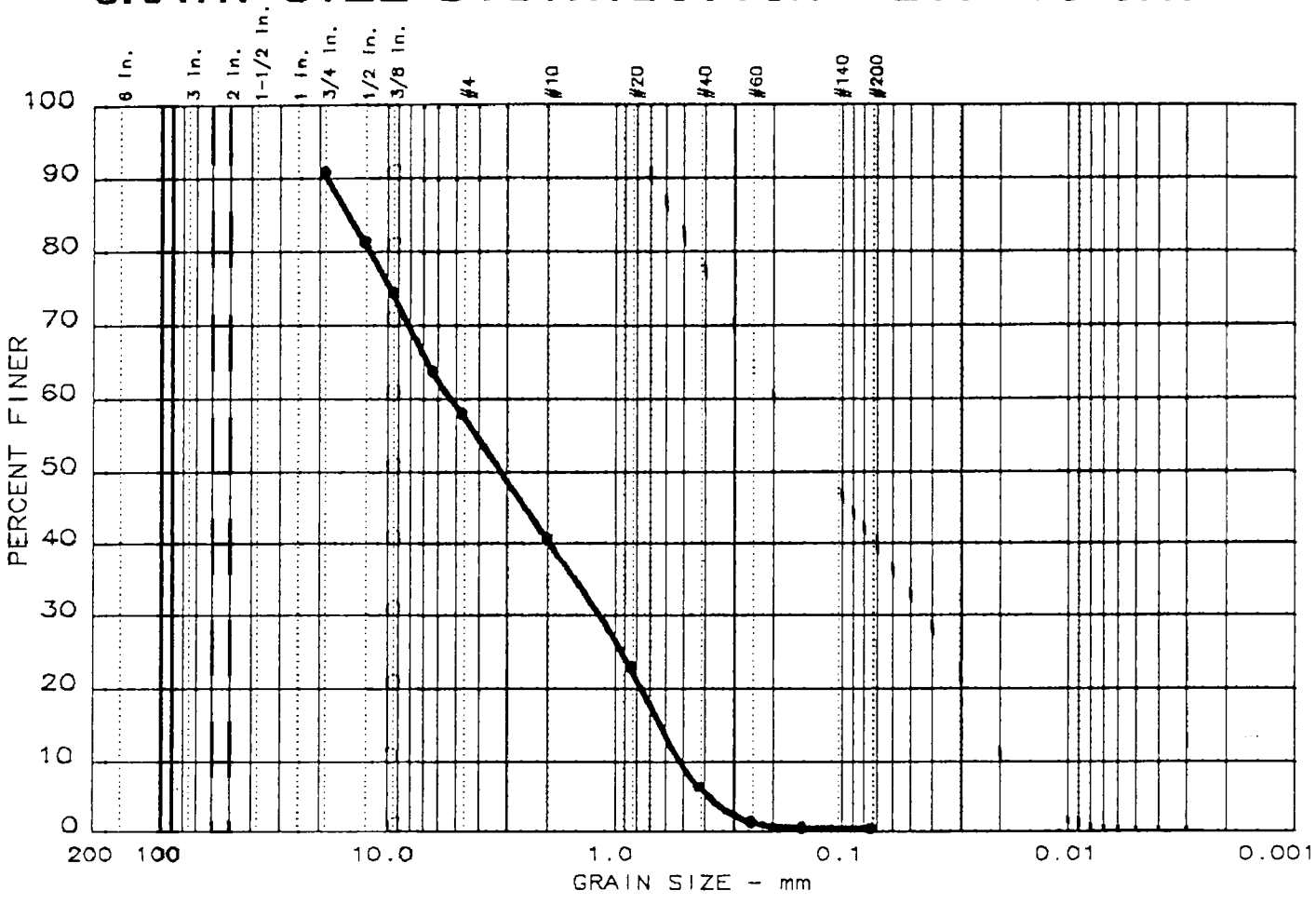
Date: Dec. 17, 1998

Remarks:
Sample # SED-6

GRAIN SIZE DISTRIBUTION TEST REPORT
HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 4

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	42.0	57.6	0.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	14.96	5.25	3.16	1.161	0.6237	0.5070	0.51	10.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand and gravel	SP	A-1-a

Project No.: ???
Project: Jerry's
● Location: Jamestown

Date: Dec. 17, 1998

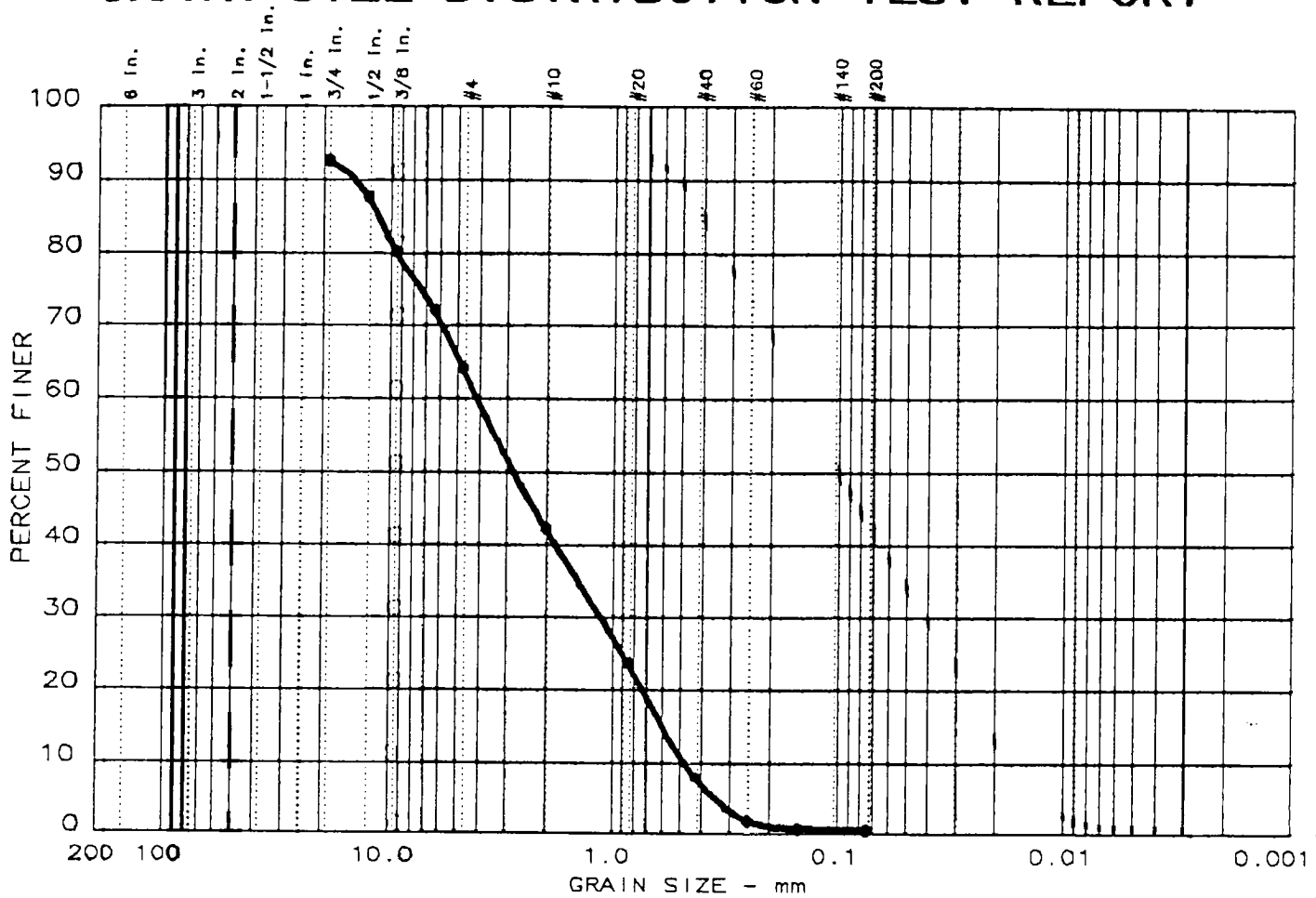
Remarks:
Sample #SED-7

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 5

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	35.8	63.7	0.5	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	11.35	4.07	2.79	1.122	0.5888	0.4732	0.65	8.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand and gravel	SP	A-1-a

Project No.: ???
Project: Jerry's
● Location: Jamestown

Date: Dec. 17, 1998

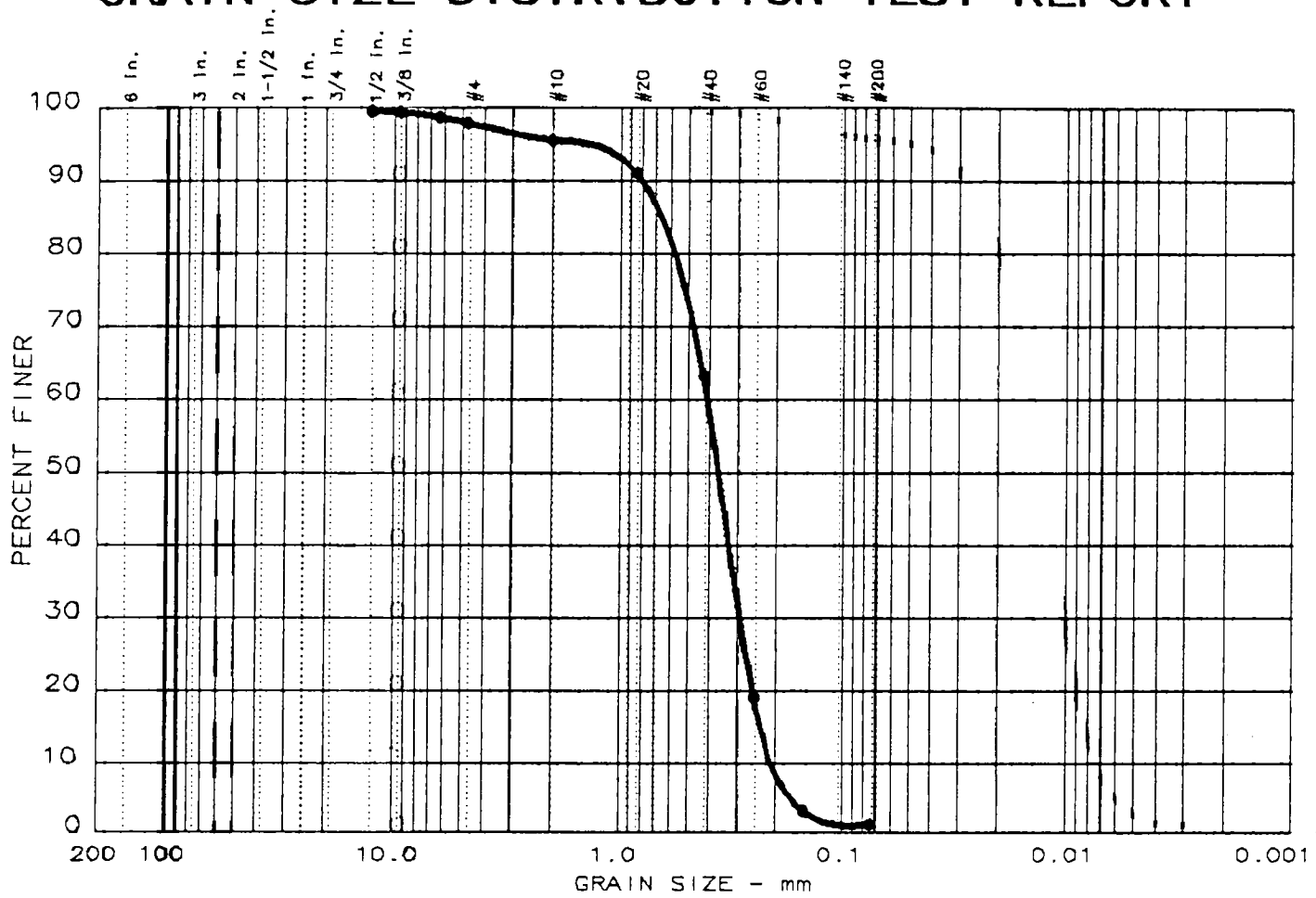
Remarks:
Sample #SED-8

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 6

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	2.2	96.7	1.1	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	0.65	0.41	0.36	0.289	0.2323	0.2070	0.99	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand, trace gravel and fines	SP	A-3

Project No.: ???
Project: Jerry's
● Location: Jamestown

Date: Dec. 17, 1998

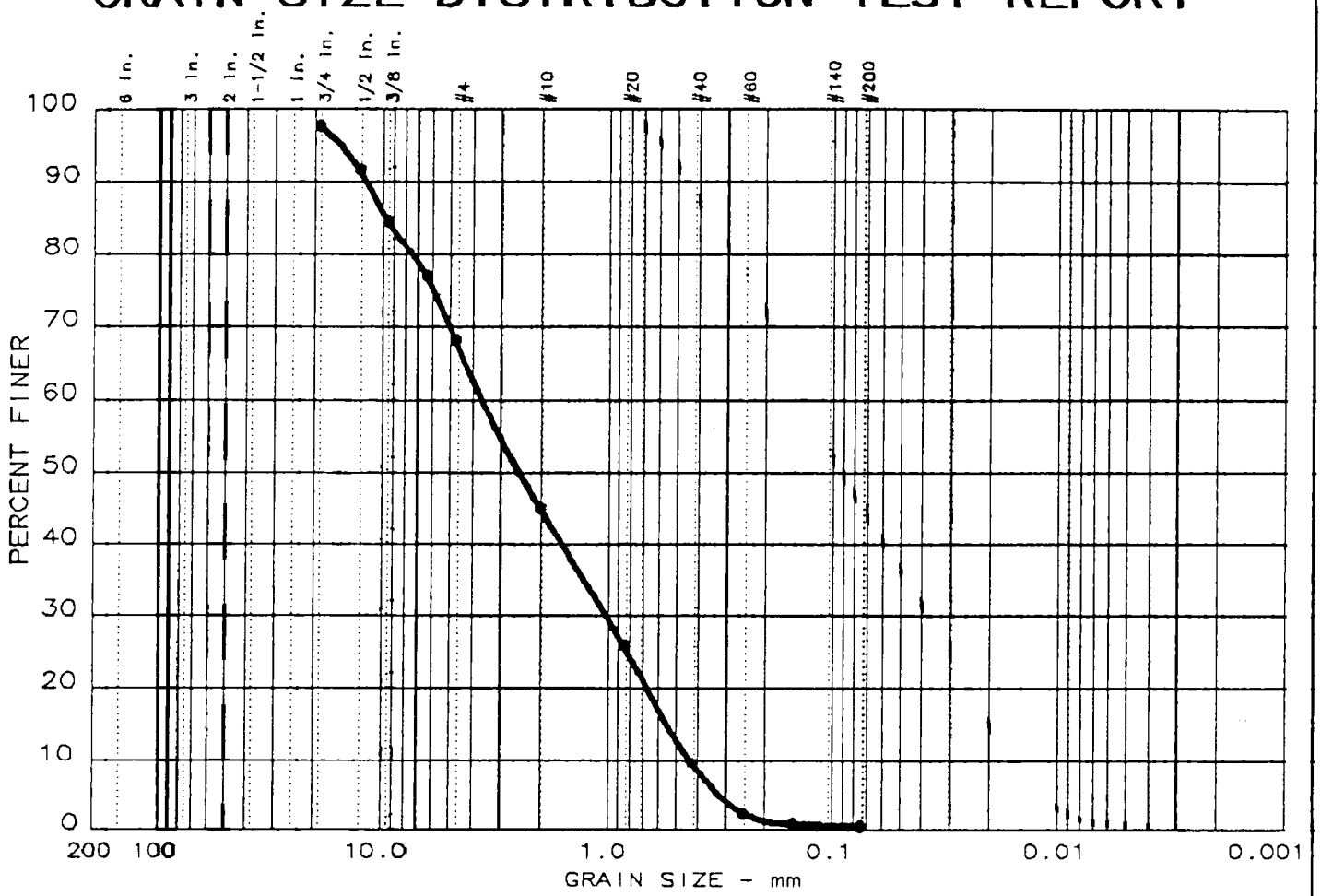
Remarks:
Sample #SED-9

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 7

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	31.8	67.7	0.5	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	N/A	N/A	9.66	3.62	2.47	1.007	0.5408	0.4295	0.65	8.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Sand, some gravel	SP	A-1-a

Project No.: ???
Project: Jerry's
● Location: Jamestown

Date: Dec. 17, 1998

Remarks:
Sample #SED-10

GRAIN SIZE DISTRIBUTION TEST REPORT

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

Figure No. 8