

DECEMBER 2003 SAMPLING AND ANALYSIS EVENT.

Samples were collected on December 10, 2003 by the firm Aqua-Survey under contract to the Saint Lawrence Seaway Development Corporation (Corporation) The samples were analyzed by the same firm in January 2004. Sample collection and handling procedures were in accordance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP). The Contractor collected one (1) sample each of the sediment (i.e. above Elevation 122.5 ft. USLS 1935) at Locations 1, 2, and 3 and one (1) sample each of the stream bed (i.e. between Elevation 122.5 ft. and Elevation 121.5 USLS 1935) at Locations 1 and 2. At each sampling location, the Contractor collected a representative sample of the bottom materials, using a "vibracore" coring apparatus to collect the sample. Sufficient sample volumes were collected to perform all the required analyses. When necessary to obtain a sufficient volume of sample, the sampling operation was repeated at an offset no more than 5 feet from the original location. The sampling equipment was decontaminated prior to beginning the sampling operations, and between sample locations using a standard protocol such as that described in Appendix "D" of the USACE Great Lakes Dredged Material Testing and Evaluation Manual. The sampler was made of (or lined with) an inert material that will not contaminate the sample, a plastic such as PVC or HDPE). After collection, each sample was composited, placed in sample containers in volumes as shown in Table I and analyzed for the parameters in Table II. All samples were classified in accordance with the American Society for Testing and Materials (ASTM) Standard Test Methods for Classifications of Soils D-2847 and D-2488. This sampling and analysis work plan was developed by the Corporation in consultation with Region 5 of the New York State Department of Environmental Conservation.

Quality Control (QC) samples were taken as follows:

- one (1) duplicate sample
- one (1) matrix spike sample
- one (1) matrix spike duplicate sample
- one (1) rinsate sample

The sampling field logs recorded the location of each sample with distance and direction of any offsets, water surface elevation and depth, sampler advancement resistance (hammer weight and blow count for a drive sampler or a subjective description of the resistance encountered by other sampler types), a field description of the sample material, weather observations and any other pertinent observations. Chain-of-custody documentation was maintained for each sample continuously through the sample collection, handling, and laboratory testing processes.

Table I

Sediment Sample Containers and Volumes

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume
Volatile Organics	2-oz. glass jar with Teflon-lined cap.	Two, fill completely
Extractable Organics, Dioxin, Furans, Pesticides/PCB	8-oz. amber glass jar with Teflon-lined cap.	One, fill completely
Metals	8-oz.glass jar with Teflon-lined cap.	One, fill half full

ANALYSIS.

Composite samples for the sediment and stream bed samples including the duplicate sample shall be analyzed for all parameters in Table II. The matrix spike and matrix spike duplicate samples shall be analyzed for all parameters except for Dioxin and the rinsate sample shall be analyzed for all parameters except Dioxin and PCB's.

Table II
Analytical Parameters, Methods, and Detection Limits

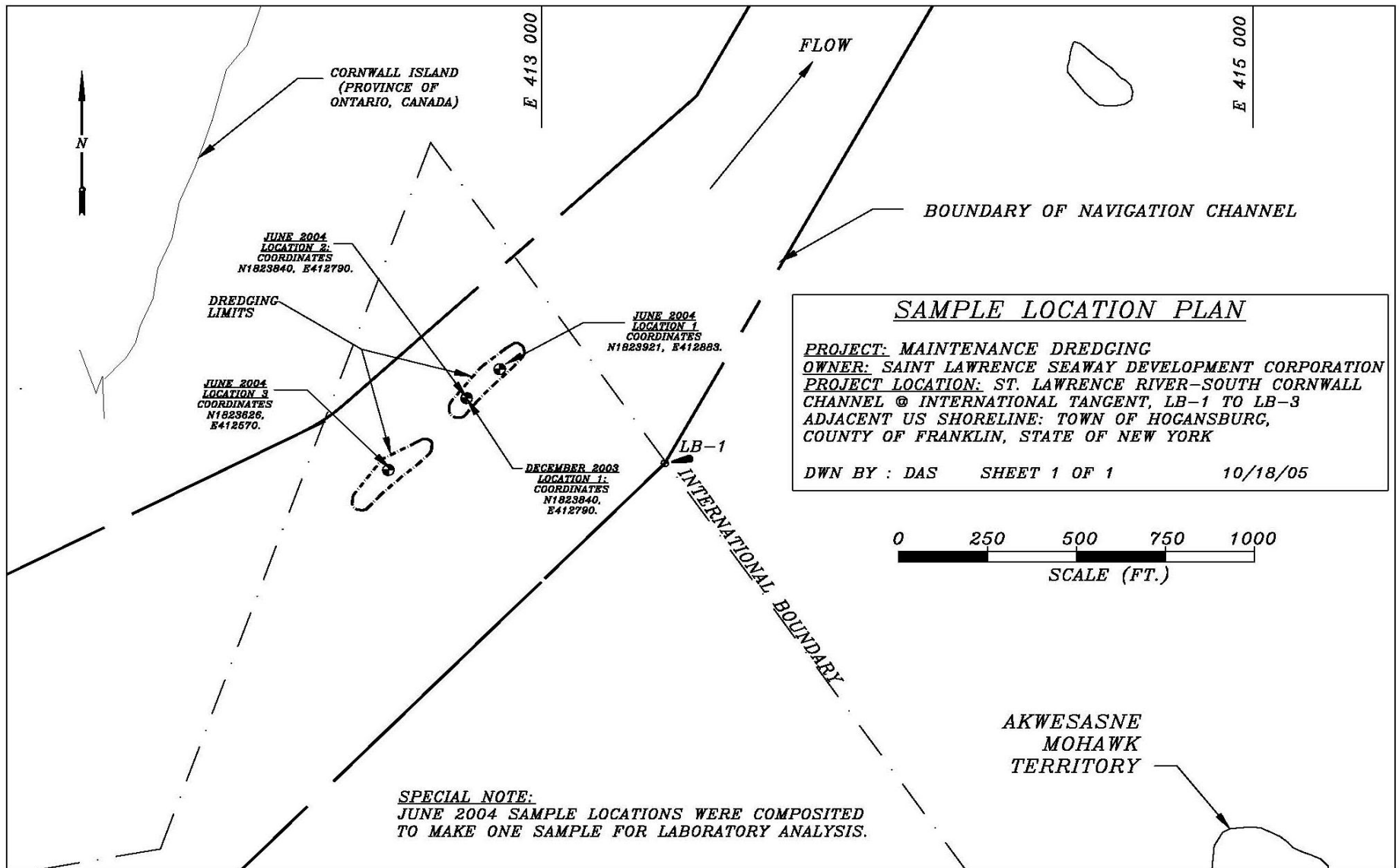
Parameter		EPA Test Method CLP/RCRA	Required Detection Limits (ppm or mg/kg)	Method Limits (ppm or mg/kg)
Metals	Arsenic	Metals-EPA 6010B	1.0	
	Cadmium	Metals-EPA 6010B	0.5	
	Copper	Metals-EPA 6010B	2.5	
	Lead	Metals-EPA 6010B	5.0	
	Mercury	Metals-EPA 6010B	0.2	
PAH's, Petroleum -Related Compounds	Benzene	EPA 8020, 8021, 8260	0.002	
	Total BTX	EPA 8020, 8021, 8260	0.002	
	Total PAH	EPA 8270	0.33	
Pesticides	Summation of DDT, DDE, & DDD	EPA 8081	0.29	
	Mirex	EPA 8081	0.189	
	Chlordanes	EPA 8081	0.031	
	Dieldrins	EPA 8081	0.019	
	Chlorinated Hydrocarbons	PCB (sum of arochlors)	EPA 8082	0.025
Dioxins (toxic equivalency totals)		EPA 1613B	0.000002	

In addition to the chemical analyses, all samples shall also be classified in accordance with the American Society for Testing and Materials (ASTM) Standard Test Methods for Classifications of Soils D-2487 and D-2488.

**SOUTH CORNWALL CHANNEL @ INTERNATIONAL TANGENT-PROPOSED MAINTENANCE DREDGING
SEDIMENT SAMPLING RESULTS (DECEMBER 2003)**

Sample and Location (DGPS coordinates)	Sediment Material	Metals (ppm)					PAH's and VOC (ppb)			Pesticides (ppb)				Chlorinated Hydrocarbons	
		Arsenic	Cadmium	Copper	Lead	Mercury	Benzene	Total BTX*	Total PAH	Pesticides (DDT,DDE,DDD)**	Mirex	Chlordane	Dieldrin	PCB Aroclor (ppb)	Dioxins (pptr)
1A (412790E, 1823845N)	0-0.5'-Coarse sand & gravel, cobbles, shell fragments	1.60	0.049	5.62	0.009	2.720 C	0.88	4.29	7.65	12.66 B	0.065	0.112	0.091	14.00	25.391 B
1B (412790E, 1823845N)	0.5'- 1.5' Grey compact clay-silt-glacial till	1.90	0.145	8.14	0.007	4.200 C	0.86	4.22	5.82	10.90 B	0.063	0.107	0.089	14.00	55.602 C
2A (412820E, 1823185N)	0.0'-0.5'- Coarse sand & gravel, cobbles, shell fragments	1.60	0.046	8.04	0.006	3.520 C	0.86	4.22	8.13	11.05 B	0.063	0.108	0.089	14.00	27.903 B
2B (412820E, 1823185N)	0.5'- 1.2' Grey compact clay-silt-glacial till	2.80	0.169	18.90	0.008	5.790 C	0.89	4.31	6.82	11.96 B	0.065	0.113	0.092	14.70	29.84 B
3A (412215E, 1822531N)	0.0'-0.5'- zebra mussel shells with silty sand and gravel	3.50	0.045	9.85	0.008	6.800 C	0.96	4.80	7.48	260.90 C	0.07	6.52 B	0.099	353.20 C	26.97 B
3B *** (412215E, 1822531N)	0.5'- 1.4' Coarse sand grading into grey compact clay-silt-glacial till	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Includes benzene. ** Includes all pesticides except Mirex, chlordane and dieldrin. *** No chemical analyses performed on the lower horizon (3B) sample
Sample locations are shown on Drawing No. SLS-330-9/2. The letters "B" and "C" after a given result refer to "moderate" and "high" levels of contamination, as given in the NYSDEC draft document "In-Water and Riparian Management of Sediment and Dredge Material", TOGS 5.1.9..



JUNE 2004 BULK SAMPLING AND ANALYSIS EVENT

I. Project Scope.

On June 30th 2004, the Corporation obtained river bottom sediment samples for pick-up by the subcontracted laboratory (Environmental Testing Laboratories, Inc. of Farmingdale, New York) at the Corporation Maintenance Facility at 215 Fregoe Road, Massena, New York. The samples consisted of four sealed and covered five gallon pails filled about half way with sediment and the rest of the way with river water. The laboratory picked up three of the samples in their entirety and also collected a supplemental water sample from a fourth pail which will remain on Corporation premises. This pail was marked by the Corporation's representative. The supplemental water sample was placed in suitable sample containers provided by the laboratory. Upon delivery to the laboratory, the three sediment samples were composited and analyzed per Tables 1 and 2. The supplemental water sample was archived at the laboratory for possible future Mercury, PCB and Pesticide testing which may be requested by the Corporation. All analyses were performed by a New York State Department of Health (NYSDOH) approved laboratory. This sampling and analysis work plan was developed by the Corporation in consultation with Region 5 of the New York State Department of Environmental Conservation.

Table 1
(Elutriates and TCLP)

Analysis	Procedure
Elutriate- PCB and Pesticides	Prepare elutriate per the procedure given in the USACE "Inland Testing Manual" using river water furnished with sample and perform analysis per US Environmental Protection Agency (EPA) SW846 8081 on one composite elutriate sample.
Elutriate-Mercury	Prepare elutriate per the procedure given in the USACE "Inland Testing Manual" using river water furnished with sample and perform analysis per EPA SW846 7470 on one composite elutriate sample.
TCLP-Mercury	EPA SW846 1311/7470 on composite sediment sample

Table 2
(Metals, Pesticides and PCB on composite sediment sample)

Parameter	EPA Test Method CLP/RCRA	Required Method Detection Limits (ppm or mg/kg)
Metals	Arsenic	Metals-EPA 6010B 1.0
	Cadmium	Metals-EPA 6010B 0.5
	Copper	Metals-EPA 6010B 2.5
	Lead	Metals-EPA 6010B 5.0
Pesticides	Summation of DDT, DDE, & DDD	EPA 8081 0.29
	Mirex	EPA 8081 0.189
	Chlordanes	EPA 8081 0.031
	Dieldrins	EPA 8081 0.019
Chlorinated Hydrocarbons	PCB (sum of aroclor)s	EPA 8082 0.025

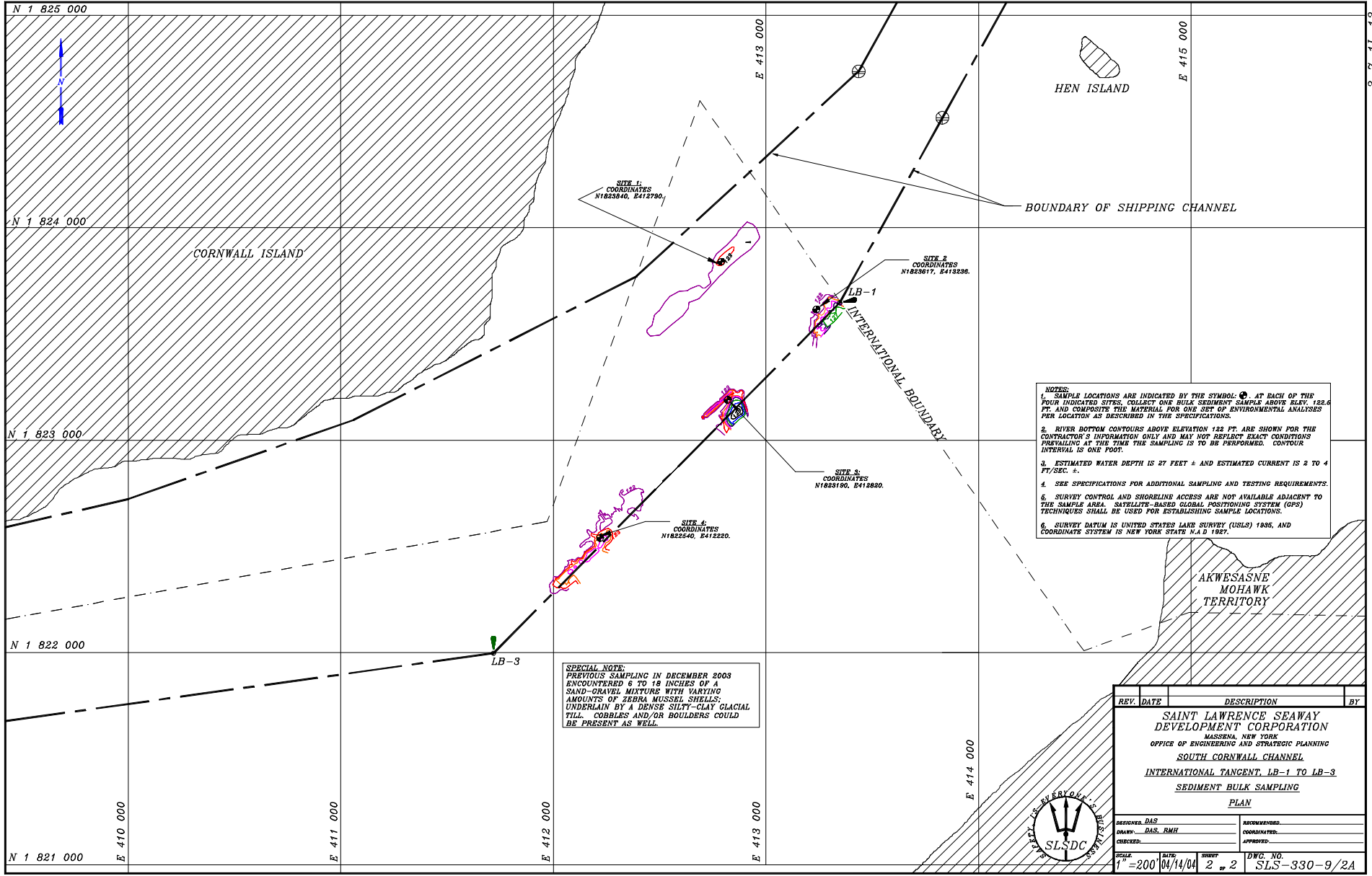
The USACE "Inland Testing Manual" is more fully described as "Evaluation of Dredged Material Proposed for Discharge in Waters of the US-Testing Manual" prepared jointly by the EPA and the USACE. Chain of custody documentation was maintained continuously for each sample throughout the sample handling, transportation and laboratory testing processes. For each sample, the Contractor shall provide a chain of custody form which will be initially signed by the Corporation's representative when the sample is relinquished to the Contractor's representative, and maintained throughout the life of the sample. The Contractor shall archive any samples that are not consumed in testing until further notice from the Corporation. The samples shall be preserved, transported, handled, and stored under conditions consistent with the applicable test methods. If requested by the Corporation, the Contractor was to perform PCB/ Pesticides (EPA SW846 8081) and Mercury (EPA SW846 7470) testing on the supplemental water sample.

II. Deliverables.

A report was prepared which included the analytical results in tabular form and chain of custody records for each sample. Five (5) copies of the report were furnished to the Corporation.

III. Schedule

The samples were delivered to the laboratory within one week of notification from the Corporation that the samples were ready for pick-up, and coordinated his/her pick-up of the samples with the Corporation's representative. All testing except the supplemental water sample was completed and the report delivered to the Corporation within three weeks of the date the samples were picked up by the Contractor. Test results for the supplemental water sample were delivered within two weeks of the date of the request for testing.



NOTES:

1. SAMPLE LOCATIONS ARE INDICATED BY THE SYMBOL: AT EACH OF THE FOUR INDICATED SITES, COLLECT ONE BULK SEDIMENT SAMPLE ABOVE ELEV. 122.6 FT. AND COMPOSITE THE MATERIAL FOR ONE SET OF ENVIRONMENTAL ANALYSES PER LOCATION AS DESCRIBED IN THE SPECIFICATIONS.
2. RIVER BOTTOM CONTOURS ABOVE ELEVATION 122 FT. ARE SHOWN FOR THE CONTRACTOR'S INFORMATION ONLY AND MAY NOT REFLECT EXACT CONDITIONS PREVAILING AT THE TIME THE SAMPLING IS TO BE PERFORMED. CONTOUR INTERVAL IS ONE FOOT.
3. ESTIMATED WATER DEPTH IS 27 FEET ± AND ESTIMATED CURRENT IS 2 TO 4 FT/SEC. ±.
4. SEE SPECIFICATIONS FOR ADDITIONAL SAMPLING AND TESTING REQUIREMENTS.
5. SURVEY CONTROL AND SHORELINE ACCESS ARE NOT AVAILABLE ADJACENT TO THE SAMPLE AREA. SATELLITE-BASED GLOBAL POSITIONING SYSTEM (GPS) TECHNIQUES SHALL BE USED FOR ESTABLISHING SAMPLE LOCATIONS.
6. SURVEY DATUM IS UNITED STATES LAKE SURVEY (USLS) 1885, AND COORDINATE SYSTEM IS NEW YORK STATE N.A.S. 1987.

REV.	DATE	DESCRIPTION	BY
SAINT LAWRENCE SEAWAY DEVELOPMENT CORPORATION MASSENA, NEW YORK OFFICE OF ENGINEERING AND STRATEGIC PLANNING SOUTH CORNWALL CHANNEL INTERNATIONAL TANGENT, LB-1 TO LB-3 SEDIMENT BULK SAMPLING PLAN			
DESIGNED BY:	DAS	APPROVED BY:	
DRAWN BY:	DAS, RMH	COORDINATED BY:	
CHECKED BY:		APPROVED:	
SCALE:	DATE:	SHEET:	DWG. NO.:
1" = 200'	04/14/04	2 OF 2	SLS-330-9/2A

SUMMARY OF INTERNATIONAL TANGENT SEDIMENT ANALYSES-JUNE 2004

Metals	Parameter	Composite Sample Results		Limits (NYSDEC Draft TOGS 5.1.9)-parts per million (ppm)		
		Type of Sample	Results	Class A (No Appreciable Contamination)	Class B (Moderate Contamination)	Class C (High Contamination)
	Arsenic	Sediment	2.45 ppm	<14 (8.2 marine)	14-53 (8.2 marine)	>53
	Cadmium	Sediment	1.05 ppm	<1.2	1.2-9.5	>9.5
	Copper	Sediment	7.62 ppm	<33	33-207 (270 marine)	>207 (270 marine)
	Lead	Sediment	3.86 ppm	<33 (47 marine)	33-166 (47-218 marine)	>166 (218 marine)
	Mercury (dissolved)	Elutriate	MDL*	<0.17	0.17-1.6	>1.6
	Mercury	Elutriate	MDL*		(1.0 marine)	(1.0 marine)
	TCLP Mercury	Sediment	MDL*	(0.2 ppm-limit for hazardous waste)		
Pesticides	TCL Pesticides** (MET, dissolved)	Elutriate	MDL*	<0.003	0.003-0.03	>0.03
	Pesticide** Compounds	Sediment	MDL*	<0.003	0.003-0.03	>0.03
	Mirex	Elutriate	MDL*	<0.0014	0.0014-0.014	>0.014
	Mirex	Sediment	MDL*	<0.0014	0.0014-0.014	>0.014
	Chlordane	Elutriate	MDL*	<0.003	0.003-0.036	>0.036
	Chlordane	Sediment	MDL*	<0.003	0.003-0.036	>0.036
	Dieldrin	Elutriate	MDL*	<0.11	0.11-0.48	>0.48
	Dieldrin	Sediment	MDL*	<0.11	0.11-0.48	>0.48
Chlorinated Hydrocarbons	PCB Aroclor (MET, dissolved)	Elutriate	MDL*	<0.1	0.1-1.0	>1.0
	PCB Aroclor	Sediment	MDL*	<0.1	0.1-1.0	>1.0

NOTES: **MDL" listing indicates that all test results were at the Method Detection Limit (MDL) for that particular compound, or for each individual compound in a category containing multiple compounds (pesticides and PCB). ** Includes DDT, DDE, & DDD.

1. Chlordanes and dieldrins are included in the TCL Pesticides and Pesticides analyses. SW846 8081A was the analytical method used for the pesticides and mirex analyses. PCB analyses were by SW846 8082/EPA 608. Dissolved mercury was analyzed by Method SW846 7470/7471. Mercury was analyzed per SW846 7470/7471/EPA 245.1. TCLP Mercury was analyzed per SW846 1311/7470/7471

2. Testing was performed July 2004 by Environmental Testing Laboratories of Farmingdale, NY, on composite bulk samples collected June 2004 by the Saint Lawrence Seaway Development Corporation.

3. All samples were below the NYSDEC TOGS 5.1.9 limits for no appreciable contamination.

