

US EPA ARCHIVE DOCUMENT

**TETRA TECH NUS, INC.**

55 Jonspin Road • Wilmington, MA 01887-1020
Tel 978.658.7899 • Fax 978.658.7870 • www.tetrattech.com

Superfund Records CenterSITE: CentredaleBREAK: 3.4OTHER: 25.21

RACI-EPA-3772

Contract No. 68-W6-0045

April 30, 2002

Ms. Anna Krasko
U.S. Environmental Protection Agency
One Congress Street, Suite 1100, HBO
Boston, Massachusetts 02114-2023

Subject: Transmittal of Data from Sediment Re-sampling, Allendale Dam
Centredale Manor Restoration Project, Technical Assistance
RAC I W. A. No. 106-ANLA -016P

Dear Ms. Krasko:

In July 2001 EPA requested Tetra Tech NUS, Inc. to resample four sediment stations downstream of the Allendale Dam. These stations were originally sampled as a part of the Woonasquatucket River Sediment Investigation in October and November 1999. The intention of the re-sampling effort was to determine possible effects to the sediment from the widening of the breach in the Allendale Dam during flood stage conditions in March 2001. This letter and its attachments present the data from this re-sampling effort.

Tetra Tech NUS, Inc. (TtNUS) returned to the area in July 2001, and located three of the four station markers that were placed in this area during the 1999 sampling efforts. Stations WRL-SD-2041, 2042, 2043 and LPX-SD-2045 were sought for re-sampling. Station LPX-SD-2045 was not found, and the station was remarked as LPX-SD-2045B. To augment the data set, EPA requested TtNUS locate additional stations in any new depositional areas present. Two such areas were found and two stations (WRL-SD-2071 and LPX-SD-2072) were added to account for these areas. Thus a total of six stations were located and sampled under this effort.

Each of the stations were surveyed with differential GPS, and location coordinates were imported into the project GIS data management system. The GPS survey found that stations 2045 and 2045B were within 3 feet of each other, so they are considered for the purposes of this letter as the same location. Locations of the stations are presented on Figure 1, attached.

Sediments at each of the six stations were inspected by a wetlands scientist to identify most recent deposits. The samples were collected from those most recent deposits to attempt to collect only those sediments that may have been transported to these locations during the recent flood event. As a result, stations were sampled from the intervals of between 0-0.2 feet and 0-0.5 feet in depth. Observations by the field scientists and the selected sample intervals are presented on the Field Sample Data Sheets, attached to this letter.

Samples were collected for laboratory analysis of dioxins (per method 8290), TAL metals (per CLP ILM04.1), and organic contaminants (SVOCs and pesticides and PCBs per CLP OLM04.2). Data from the contract laboratories were provided to EPA and TtNUS chemists for validation. Data validation summary memoranda were provided, and are attached to this letter.



TETRA TECH NUS, INC.

Ms. Anna Krasko
U.S. Environmental Protection Agency
April 30, 2002
Page 2 of 2

Dioxin TEQ values from the sampling conducted as described above were compared with data from samples collected at these stations from the 0-0.5 foot interval in October and November 1999. The 1999 results were published in the Technical Memorandum for the Woonasquatucket River Sediment Investigations, Centredale Manor Restoration Project Site (TtNUS, June 2000). This comparison is presented on Table 1, attached to this letter.

These results show that the new sediments transported to the stations evaluated during the breach widening in 2001 appear to have lower concentrations of dioxins than the surface sediments sampled during 1999. However, this observation is based only on these limited data points, and any overall trend would have to be determined using a larger data set and a series of sampling efforts over time.

If you have any questions about this material, please do not hesitate to contact me.

Very truly yours,

Stephen S. Parker
Project Manager

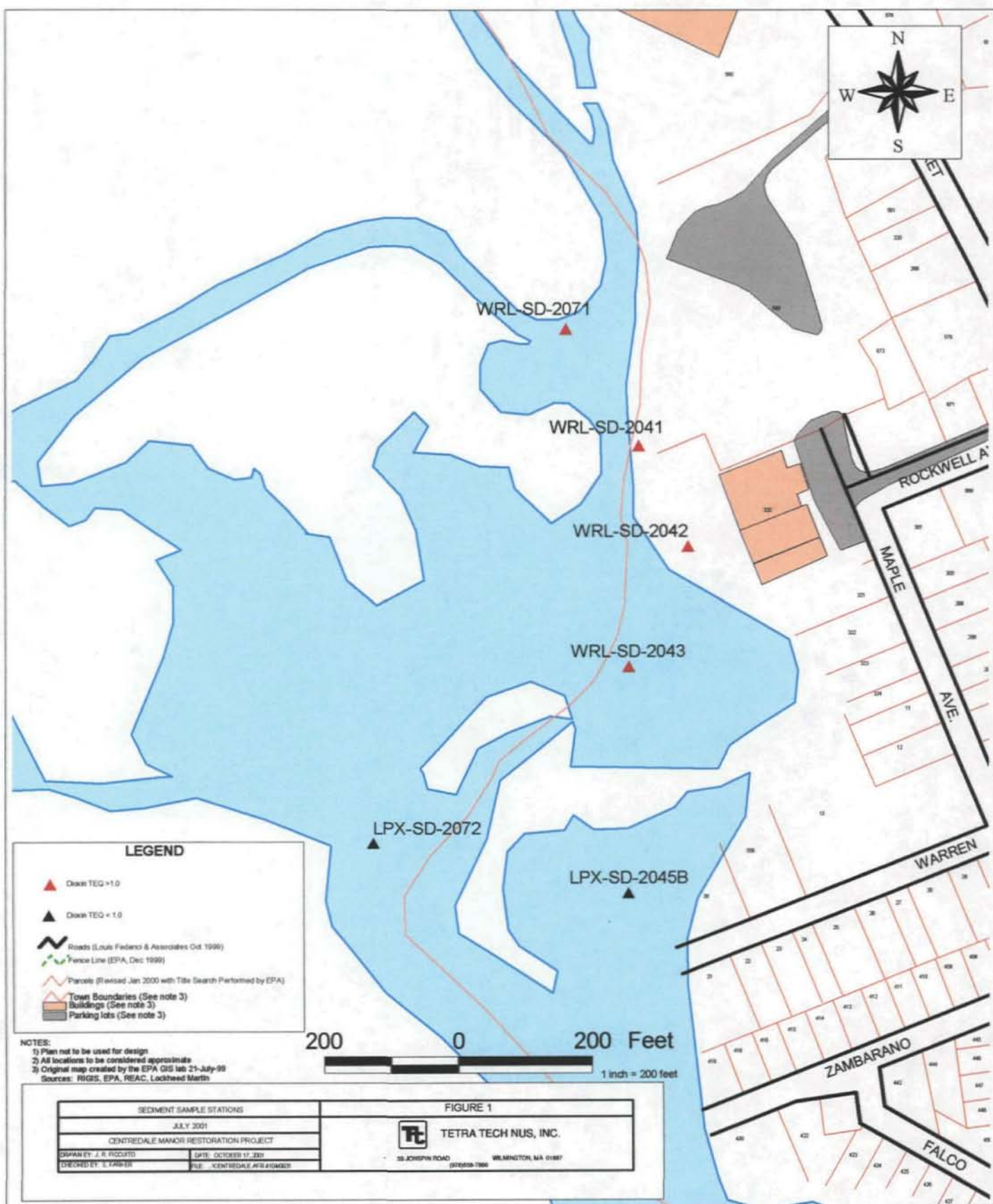
PMO - @

SSP:rp

Enclosure

c: H. Horahan (EPA) w/o enc.
A. Ostrofsky/L. Guzman (TtNUS) w/enc.
File N4104-1.0 w/o enc./N4104-3.4 w/enc.

US EPA ARCHIVE DOCUMENT



Original includes color coding.

TABLE 1
DIOXIN TEQ IN SEDIMENTS
LOCATIONS DOWNSTREAM OF ALLENDALE DAM
CENTREDALE MANOR RESTORATION PROJECT
NORTH PROVIDENCE RHODE ISLAND

Location	Oct/Nov 1999 Samples		July 2001 Samples	
	Concentration ug/kg	Depth of Sample (ft)	Concentration ug/kg	Depth of Sample (ft)
WRL-SD-2071	NS	NA	1.8	0-0.2
WRL-SD-2041(2)	3.17	0-0.5	2.0, 0.5	0-0.2
WRL-SD-2042	2.05	0-0.5	1.7	0-0.3
WRL-SD-2043	3.27	0-0.5	1.2	0-0.2
LPX-SD-2072	NS	NA	0.5	0-0.5
LPX-SD-2045 and 2045B (1)	7.67	0-0.5	0.73	0-0.3

- (1) - LPX-2045 marker from 1999 could not be found, 2045B was sampled in same vicinity 7/01
(2) - Duplicate samples collected 7/01 at this location



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Inc. Sample ID: WIL-SD-2041-02

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: WIL-SD-2041-02 (if applicable)

Sample Method/Gear Used: SCOOPULA + BOWL Sediment Depth Collected: 0 - 0.2 feet

Sample Date & Time: 7/24/2001 1450 hours Duplicate: 1500 hours
(24-hour)

Sampler(s): K. O'Neill D. MacDougall

Form Completed By: [Signature] (Signature)

Water Depth: 0 (SATURATED) ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)

How were samples collected? wading ☒ from bank ☐ from boat Other _____

Type of Sample: (Check all that apply)

- ☒ Stream/River ☐ Trip Blank*
☐ Wetland ☐ Rinsate Blank*
☐ Pond ☒ Field Duplicate collected
☒ Grab ☐ Composite

Other: _____

Weather: _____

Sediment Description: ORGANIC SILTY FINE SAND
(Sand, Silt, Mud, Muck, Peat, Etc.)

EXPOSED SEDIMENT
OPEN WATER WITHIN 6 INCHES (LINEAR)
SAMPLE TAKEN WITHIN 1 FT OF
*include DIUF lot # in "other" above EXISTING STAKE

Surface Water Quality: Temp. not recorded °C pH nr Spec. Cond. nr uS/cm DO nr mg/L ORP nr mV Turbidity nr NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	
TAL Metals	☒	
Dioxin	☒	
AVS/SEM	☐	
Toxicity Assess.	☐	
Benthic Comm. Assessment	☐	
Ekman Grabs:	☐	
Chemistry	☐	
Toxicity:	☐	
BCA: <u>1 each</u>	☐	

Tt NUS Form 0005A

Note River level was at base of stake. Collected sed. from inside area of exposed sediments



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Job No./PMS 0400-0242

Tetra Tech NUS Inc. Sample ID: WIL-SD-2042-07

QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: Shoofah + Bowl Sediment Depth Collected: 0-0.3 feetSample Date & Time: 7/24/2001 1525 hours Duplicate: 0.0 hours
(24-hour)

Sampler(s): K. O'Neill B. MacDougall

Form Completed By: [Signature]

(Signature)

Water Depth: 1.5 ft. Flow: None Low / Moderate / Fast (Circle Appropriate)How were samples collected? ___ wading ___ from bank ___ from boat Other WALCED IN

Type of Sample: (Check all that apply)

☐ Stream/River☒ Wetland☐ Pond☒ GrabOther: FLOODPLAIN

Weather: _____

☐ Trip Blank*☐ Rinsate Blank*☐ Field Duplicate collected☐ Composite

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

SILTY SAND SOME ORGANICSHIGH WATER DEPOSITION AREA

*include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	LOCATION HAD BEEN NONE OF A DEPRESSION IN FIRST RD OF SAMPLE LINE IT HAS FILLED IN. RACCOON TRACKS
TAL Metals	☒	
Dioxin	☒	
AVS/SEM	☐	
Toxicity Assess.	☐	
Benthic Comm. Assessment	☐	Note: Typically found last falls leaves covered by newer sediments (n.3ft) sampled top portion only NO LEAF MATTER PRESENT WASHED AWAY (PROB. HIGH WATER) ROOT MAT THRU SOIL
Ekman Grabs:	☐	
Chemistry	☐	
Toxicity:	☐	
BCA: <u>1 each</u>	☐	Estimated Area Sampled _____ ft. ²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Inc. Sample ID: WRL-SD-2043-02

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: Bowl + Spoon Sediment Depth Collected: 0.02 feet

Sample Date & Time: 7/25/2001 0920 hours Duplicate: _____ hours
(24-hour)

Sampler(s): K. O'Neill D. MacDougall DS 7-25

Form Completed By: [Signature]

(Signature)

Water Depth: 0 (SATURATED) ft. Flow: (None) Low / Moderate / Fast (Circle Appropriate)

How were samples collected? _____ wading X from bank _____ from boat Other _____

Type of Sample: (Check all that apply)

☒ Stream/River ☐ Trip Blank*
☒ Wetland ☐ Rinsate Blank*
☐ Pond ☒ Field Duplicate collected
☒ Grab ☒ Composite

Other: _____

Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

SILTY SAND
w/ organic matter

*include DIUF lot # in "other" above

Surface Water Quality: Temp. _____ not recorded _____ °C pH nr Spec. Cond. _____ nr _____ uS/cm DO _____ nr _____ mg/L ORP _____ nr _____ mV Turbidity _____ nr _____ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	FOLLOW BLUE FLAGGING COMPOSITED FROM SEVERAL SMALL PONDED AREAS MOST OF REGION SCOURED w/ SAND w/in 20' of stake Estimated Area Sampled _____ ft.²
TAL Metals	☒	
Dioxin	☒	
AVS/SEM	☐	
Toxicity Assess.	☐	
Benthic Comm. Assessment	☐	
Ekman Grabs: Chemistry _____ Toxicity: _____	☐	
BCA: _____ 1 each	☐	



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR ^{LPX -}Tetra Tech NUS Inc. Sample ID: ~~WLT-57~~ - 204513 - 00

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: MS/MS (if applicable)Sample Method/Gear Used: Bowl + Scoopula Sediment Depth Collected: 0-03 feetSample Date & Time: 7 / 25 / 2001 0840 hours Duplicate: _____ hours
(24-hour)Sampler(s): K. O'Neill ~~D. MacDougall~~Form Completed By: [Signature] (Signature)Water Depth: 1.5 ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)

How were samples collected? ___ wading ___ from bank ___ from boat Other _____

Type of Sample: (Check all that apply)

☐ Stream/River ☐ Trip Blank*
☒ Wetland ☐ Rinsate Blank*
☐ Pond ☐ Field Duplicate collected
☒ Grab ☐ Composite
 Other: MATRIX SPIKE

Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

ORGANIC SAND
W/ STICKS, ROOTS, + COARSE MATERIAL

*include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	
TAL Metals	☒	
Dioxin	☒	
AVS/SEM	☐	
Toxicity Assess.	☐	
Benthic Comm. Assessment	☐	
Ekman Grabs: Chemistry _____	☐	
Toxicity: _____	☐	
BCA: <u>1 each</u>	☐	
Estimated Area Sampled _____ ft.²		



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Inc. Sample ID: WRL-SD-2701-01

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: 1 shovel + Bow Sediment Depth Collected: 0-0.5 feetSample Date & Time: 7/24/2001 1615 hours Duplicate: _____ hours
(24-hour)

Sampler(s): K. O'Neill D. MacDonnell

Form Completed By: [Signature]

(Signature)

Water Depth: 0 ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)How were samples collected? _____ wading X from bank _____ from boat Other _____

Type of Sample: (Check all that apply)

☐ Stream/River	☐ Trip Blank*
☒ Wetland	☐ Rinsate Blank*
☐ Pond	☐ Field Duplicate collected
☒ Grab	☐ Composite

Other: _____

Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

FINE SANDY SILT
ORGANIC w/ LEAF

*include DIUF lot # in "other" above

Surface Water Quality: Temp. _____ not recorded _____ °C pH nr Spec. Cond. _____ nr _____ uS/cm DO _____ nr _____ mg/L ORP _____ nr _____ mV Turbidity _____ nr _____ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	
TAL Metals	☒	
Dioxin	☒	
AVS/SEM	☐	
Toxicity Assess.	☐	
Benthic Comm. Assessment	☐	
Ekman Grabs:	☐	
Chemistry _____	☐	
Toxicity: _____	☐	
BCA: <u>1 each</u>	☐	

Estimated Area Sampled _____ ft.²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Inc. Sample ID: LTX-SD-2072-01

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: BOWL + SPOON Sediment Depth Collected: 0-0.5 feetSample Date & Time: 7/25/2001 0950 hours Duplicate: _____ hours
(24-hour)

Sampler(s): K. O'Neill D. MacDougall _____

Form Completed By: [Signature]
(Signature)Water Depth: 2.1 ft. Flow: None Low / Moderate / Fast (Circle Appropriate)How were samples collected? X wading _____ from bank _____ from boat Other _____

Type of Sample: (Check all that apply)

☒ Stream/River _____ Trip Blank*
☐ Wetland _____ Rinsate Blank*
☐ Pond _____ Field Duplicate collected
☐ Grab _____ Composite

Other: _____

Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

ORGANIC SILT SANDY SILT
PODDING LIKE 7/26/01

*include DIUF lot # in "other" above

Surface Water Quality: Temp. _____ not recorded _____ °C pH nr Spec. Cond. _____ nr _____ uS/cm DO _____ nr _____ mg/L ORP _____ nr _____ mV Turbidity _____ nr _____ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	<u>X(2)</u>	
TAL Metals	<u>X</u>	
Dioxin	<u>X</u>	
AVS/SEM		
Toxicity Assess.		
Benthic Comm. Assessment		
Ekman Grabs:		
Chemistry _____		
Toxicity: _____		
BCA: <u>1 each</u>		

Estimated Area Sampled _____ ft.²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Inc. Sample ID:

WRL-AQ-RB01-02

Tetra Tech NUS Job No./PMS 0400-0242

QC/Replicate Information: Rinsate - sediment (if applicable)

Sample Method/Gear Used: ^{5/5} bowl - direct pour Sediment Depth Collected: N/A feetSample Date & Time: 7/25/2001 1100 hours Duplicate: _____ hours
(24-hour)

Sampler(s): K. O'Neill D. MacDougall

Form Completed By:

Kevin O'Neill
(Signature)Water Depth: N/A ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)How were samples collected? _____ wading _____ from bank _____ from boat Other N/A

Type of Sample: (Check all that apply)

☐ Stream/River☐ Wetland☐ Pond☐ Grab

Other: _____

Weather: _____

☐ Trip Blank*☒ Rinsate Blank*☐ Field Duplicate collected☐ Composite

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

*include DIUF lot # in "other" above

Surface Water Quality: Temp. _____ not recorded _____ °C pH nr Spec. Cond. _____ nr _____ uS/cm DO _____ nr _____ mg/L ORP _____ nr _____ mV Turbidity _____ nr _____ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	☒	
TAL Metals	☒	
Dioxin	☒	
AVS/SEM		
Toxicity Assess.		
Benthic Comm. Assessment		
Ekman Grabs:		
Chemistry _____		
Toxicity: _____		
BCA: 1 each		

Note: 94° F outside

DIUF Water at ambient temperature

Estimated Area Sampled _____ ft.²

Tt NUS Form 0005A