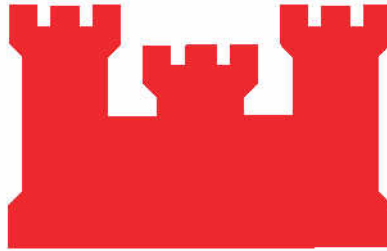


AFTER ACTION REPORT

UXO ACTIVITIES AT THE WASTE WATER TREATMENT PLANT (WWTP) AT THE FORMER LAKE ONTARIO ORDNANCE WORKS (LOOW) SITE 2003

**USACE CONTRACT NUMBER
DACW49-00-D-0002-0008**

JUNE 2004



DEPARTMENT OF THE ARMY

**PREPARED BY
ISSI UNEXPLODED ORDNANCE, INC. and
SEVENSON ENVIRONMENTAL SERVICES, INC.**

AFTER ACTION REPORT

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**UXO Activities at the Waste Water Treatment Plant (WWTP) at the former Lake Ontario
Ordnance Works (LOOW) SITE 2003**

Prepared for:

**DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
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2794 LOCKPORT ROAD
NIAGARA FALLS, NEW YORK 14305**

**REVISION 2
JUNE 2004**

1.0 INTRODUCTION:

ISSI Unexploded Ordnance, Inc. (ISSI UXO) was tasked by Severson Environmental Services, Inc. (Severson) to provide Ordnance and Explosives (OE) Services under their contract with the Buffalo District, US Army Corps of Engineers. ISSI UXO provided one OE team (one Senior UXO Supervisor/Explosives Analyst and one UXO technician) to support the investigation of possible TNT contamination in the former Waste Water Treatment Plant (WWTP) at the Lake Ontario Ordnance Works (LOOW) site. This area is further described in paragraph 2.0 DISCUSSION below. This report will summarize the actions taken during this investigation.

2.0 DISCUSSION:

The former LOOW is a 7,500-acre Formerly Used Defense Site (FUDS) located in the towns of Lewiston and Porter, New York. The former LOOW was built for the purpose of manufacturing trinitrotoluene (TNT) during World War II. The TNT production, production support, and storage areas were constructed on approximately 2,500 acres. The remaining 5,000 acres, located to the west of the production area, were left undeveloped and acted primarily as a buffer zone.

The WWTP is located approximately one half mile south of Balmer Road. The WWTP is approximately 22 acres in size. The Town of Lewiston currently owns the property. It is surrounded by Chemical Waste Management (CWM) property to the north and east, NFSS property to the south, and a Niagara Mohawk power easement to the west.

The WWTP handled sanitary waste and production waste from acid sewers and TNT washing facilities. The WWTP contained a pumping station, Imhoff tank, two sludge beds, a Venturi vault, a chlorination tank, an acid neutralization building, a collection tank and a final mixing tank. The plant was transferred to the Atomic Energy Commission (AEC) in 1946 and was subsequently sold to the Town of Lewiston in 1974. The plant is currently unused and has been idle since the 1970s. Refer to Appendix C for the overall layout of the WWTP.

Surface TNT found on this site is production grade TNT. During the production phase the unwanted isomers of TNT were washed out of the new TNT in a purification process using aqueous sodium sulfite called sellite. This wash water along with other non-hazardous waste products (water, sand, etc.) was then flushed down the sewers to the WWTP. This was the source of the majority of the TNT found in the pipes. For that reason, the purity of the TNT found in the pipes and therefore on the surface should be referred to as production grade TNT.

Activities consisted of surveying the WWTP for potential TNT contamination; performing Expray tests on various building surfaces; observing the collection of sediment samples from the vaults in the WWTP building; observing the excavation, breaching, and sampling of the 24" wooden pipe which connects the Acid Neutralization Building to the Mixing Tank and the 30" Terra Cotta outfall pipe which flows into the Niagara River; sampling soil at Excavation # 2; and performing EnSys TNT testing of some of the various samples. All samples were composites.

Activities were accomplished over portions of the days during the period 14, 15, and 18 August 2003. ISSI UXO personnel observed the taking of composite sediment and soil samples as

indicated in the table below. Location of the sample taking was directed by other project personnel. Attached as Appendix A are the respective Daily Activity Reports for that period. Photographs were taken of all the operations; a representative sample of these photographs is included in Appendix B. The full photographs are included on the attached CD and can be downloaded or printed.

Excavation #2 was suspended by the Radiation Safety Officer; gamma exposure rates exceeded the established action level. Information on the radiological status of Excavation #2 can be found in the Health and Safety Monitoring Report for TNT Investigation at the LOOW WWTP, Severson Environmental Services, Inc., June 2004.

As a result of the Expray Test in the vault area of the Acid Neutralization Building, TNT Surface Crystalline Contamination was noted on the floor. Due to the kit's limited scope, it only indicates a presence of TNT, not a quantitative amount. The sediment samples from all locations were allowed to dry over the weekend and an EnSys Test for TNT was conducted, the results are listed in Paragraph 4.0 Tests.

A Map for this area is included in Appendix C.

In accordance with Severson's work plan, ISSI UXO technicians performed inspections of WWTP areas. Testing of suspected TNT in each area was conducted using an Xpray Test Kit, which is described in paragraph 4.0 below.

3.0 DOCUMENTATION:

This report will reference Severson and ISSI UXO documents and reports, which are listed here. The items referenced will supplement and expand the content and purpose of this report.

- A. Final Explosive Safety Submission (ESS) for Surface Removal of TNT at the Lake Ontario Ordnance Works (LOOW) Site. 2003 Dated: June 25, 2003.
- B. Severson Environmental Services, Inc. Work Plan for the work at the former Lake Ontario Ordnance Works (LOOW) Site. 2003.

4.0 TESTS:

4.1 Sediment Sampling:

Sediment and soil sampling were conducted at the locations listed in the table; the results are listed below. All samples were composite.

Sediment Sample Test Results

Test Instrument: HACH Model DR/2010 Spectrophotometer.
SDI Strategic Diagnostic, Inc.
TNT EnSys Soil Test System (Rapid Field Screen).
Former LOOW Waste Water Treatment Plant (WWTP).
Testing done on 18 Aug 03 using the tests kit above.

	Test	Location/Site	Remarks	Results: TNT % in sample
1.	Composite 1	38" Terra Cotta Outfall to river	Sediment in pipe	1.05%
2.	Composite 2	Excavation #2	Soil Sample	1.5%
3.	Composite 3	Acid Neutralization Bldg. Vault	Sediment sample	5.0%
4.	Composite 4	24" Wooden Pipe	4" of Sludge in pipe 2-3" of water above sludge, black with visible crystalline TNT	29.0%

4.2 Xpray Tests:

Included as Appendix D is the Expray Test sheet showing the results from the vault area. Crystalline TNT contamination was found on the floor surface of the Vault area in the Acid Neutralization Building.

5.0 FINANCIAL BREAKDOWN:

Not Applicable.

6.0 SUMMARY:

This after action report summarizes the UXO Investigation of the WWTP at the former Lake Ontario Ordnance Works in Lewiston, New York on the 14, 15 and 18 August 2003. ISSI UXO personnel observed and took soil and sediment samples as directed by project personnel. Subsequent testing of these samples and the Xpray results are listed in paragraph 4.0 above.

7.0 PHOTOGRAPHS:

Appendix B contains a representation of the operations in photographic form. All photographs taken in this area are included in the CD version of this report.

8.0 CONCLUSIONS:

While the test results of the Terra Cotta outfall pipe to the river, Excavation #2, and the vault in the Acid Neutralization building are below explosive reaction levels of 10%, these areas should undergo further testing in a more comprehensive manner to insure the entire areas are safe. TNT contamination exists in the 24" Wooden Pipe and this needs to be addressed.

9.0 RECOMMENDATIONS:

ISSI UXO recommends action be taken to remediate the 24" wooden pipe, and that the other areas be comprehensively investigated.

APPENDIX A

DAILY ACTIVITY REPORTS

ISSI UNEXPLODED ORDNANCE, INC.

DAILY ACTIVITY REPORT



DATE: 14 Aug 03	LOCATION: Severson LOOW NY	SITE: Area Alpha
SITE MANAGER:		UXO SUPERVISOR: Jerry Hinton UXO TECHNICIAN: Jerome Keeler III

DAILY TASKS		
START TIME:	STOP TIME:	TOTAL HRS:
SAFETY BRIEF: Weather, Heat, TNT Hazards, Safety zones, blending, location & site comm	TAIL GATE BRIEF	CALIBRATE INSTRUMENTS
WORK PLANNED: - Area Alpha, Scan 10 lb		

SURFACE AND GEOPHYSICAL SWEEPS					
ANOMALIES:	SCRAP:	OEW:		UXO:	
NOMENCLATURE:	QTY	FUZZING	DEPTH	DISPOSITION	

REMARKS: Support site operations at WWI plant. Severson operation uncovered a previous excavation. Took 6 samples. XSprayed (4) Neg. Vault area pos TNT (+ pictures) 30.5 lb				
VEHICLE MILEAGE	START:	STOP:	TOTAL:	GAS:\$

USE BACK OR CONTINUATION SHEET FOR ADDITIONAL INFORMATION OR SKETCHES

ISSI UNEXPLODED ORDNANCE, INC.

DAILY ACTIVITY REPORT



DATE: 15 Aug 03	LOCATION: Severson LOOW NY	SITE: Area Alpha, Waste Water Treatment
SITE MANAGER:		UXO SUPERVISOR: Jerry Hinton UXO TECHNICIAN: Jerome Keeler III

DAILY TASKS		
START TIME:	STOP TIME:	TOTAL HRS:
SAFETY BRIEF: Weather, RAD, TNT Hazards, Safety zones, insects, blending, comm procedures	TAIL GATE BRIEF	CALIBRATE INSTRUMENTS
WORK PLANNED:		

SURFACE AND GEOPHYSICAL SWEEPS					
ANOMALIES:	SCRAP:	OEW:		UXO:	
NOMENCLATURE:		QTY	FUZING	DEPTH	DISPOSITION

<p>REMARKS: Continued to collect at Alpha, (morning returned to WWI Plant uncovered wooden pipe 24", took a sample of the sludge located in the bottom of pipe. No visible TNT observed in pipe or around soil. Samples will dry over weekend and will be tested on Monday 18 Aug 03).</p> <p>Collected another 10 lbs (new) crystalline/nodules and blended TNT with sand. The TNT is high quality crystals, are translucent, brown to yellow. Exspray kit was used to verify. 40.5 lb</p>				
VEHICLE MILEAGE	START:	STOP:	TOTAL:	GAS:\$

USE BACK OR CONTINUATION SHEET FOR ADDITIONAL INFORMATION OR SKETCHES

ISSI UNEXPLODED ORDNANCE, INC.

DAILY ACTIVITY REPORT



DATE: 18 Aug 03	LOCATION: Severson LOOW NY	SITE: Area Alpha, Area Bravo, Area Charlie
SITE MANAGER:		UXO SUPERVISOR: Jerry Hinton UXO TECHNICIAN: Jerome Keeler III

DAILY TASKS		
START TIME:	STOP TIME:	TOTAL HRS:
SAFETY BRIEF: Weather, RAD, TNT Hazards, Safety zones, insects, blending, comm procedures	TAIL GATE BRIEF	CALIBRATE INSTRUMENTS
WORK PLANNED:		

SURFACE AND GEOPHYSICAL SWEEPS					
ANOMALIES:	SCRAP:	OEW:		UXO:	
NOMENCLATURE:	QTY	FUZING	DEPTH	DISPOSITION	

NON-ESS Work				
REMARKS: - 1. Vault - Acid - 2. Analyzed CMSA Grid				
Team - Roped off lanes (3') for scan. - Tested samples from WWTP				
VEHICLE MILEAGE	START:	STOP:	TOTAL:	GAS:\$

USE BACK OR CONTINUATION SHEET FOR ADDITIONAL INFORMATION OR SKETCHES

APPENDIX B

PHOTOGRAPHS



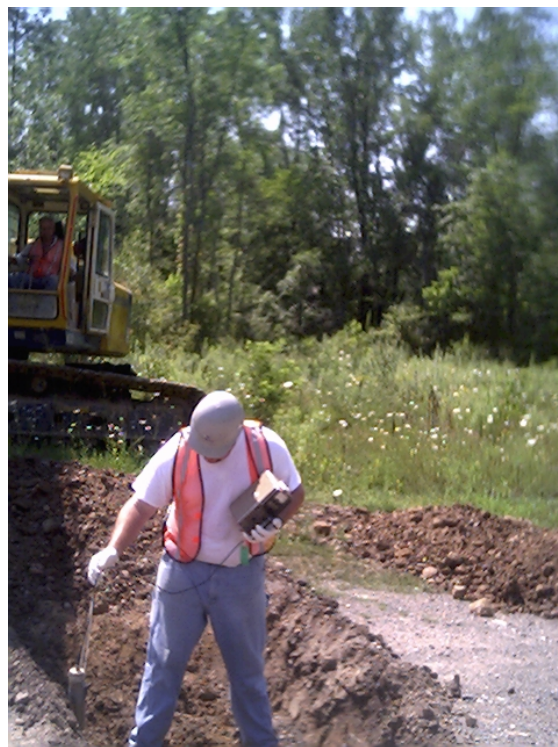
TNT 24" Wooden Transfer Pipe Entry No. 1



TNT 24" Wooden Transfer pipe Entry No. 2



Excavation No. 2



Health and Safety Scan for Excavation No.2



TNT Stains on Acid Neutralization Floor



TNT Stains on Acid Neutralization Floor

APPENDIX C

MAP OF THE WWTP

APPENDIX D

XPRA Y TEST SHEET

Site: WWTP Lake Ontario Ordnance Works, NY

EXPRA Y Test Kit Results

	Location	Polynitro-Aromatics Substance	Results		Remarks
	Waste Water Treatment Plant (WWPT)				
1.	Floor, Entrance Acid Neut. Bldg.	Trinitrotoluene, 2,4,6	Positive X	Negative	Visually Located on the Floor Entry Way
2.		Trinitrotoluene, 2,4,6	Positive	Negative	
3.		Trinitrotoluene, 2,4,6	Positive	Negative	
4.		Trinitrotoluene, 2,4,6	Positive	Negative	
5.		Trinitrotoluene, 2,4,6	Positive	Negative	
6.		Trinitrotoluene, 2,4,6	Positive	Negative	
7.		Trinitrotoluene, 2,4,6	Positive	Negative	
8.		Trinitrotoluene, 2,4,6	Positive	Negative	
9.		Trinitrotoluene, 2,4,6	Positive	Negative	
10.		Trinitrotoluene, 2,4,6	Positive	Negative	
11.		Trinitrotoluene, 2,4,6	Positive	Negative	
12.		Trinitrotoluene, 2,4,6	Positive	Negative	
13.		Trinitrotoluene, 2,4,6	Positive	Negative	
14.		Trinitrotoluene, 2,4,6	Positive	Negative	
15.		Trinitrotoluene, 2,4,6	Positive	Negative	
16.		Trinitrotoluene, 2,4,6	Positive	Negative	
17.		Trinitrotoluene, 2,4,6	Positive	Negative	
18.		Trinitrotoluene, 2,4,6	Positive	Negative	
19.		Trinitrotoluene, 2,4,6	Positive	Negative	
20.		Trinitrotoluene, 2,4,6	Positive	Negative	



























































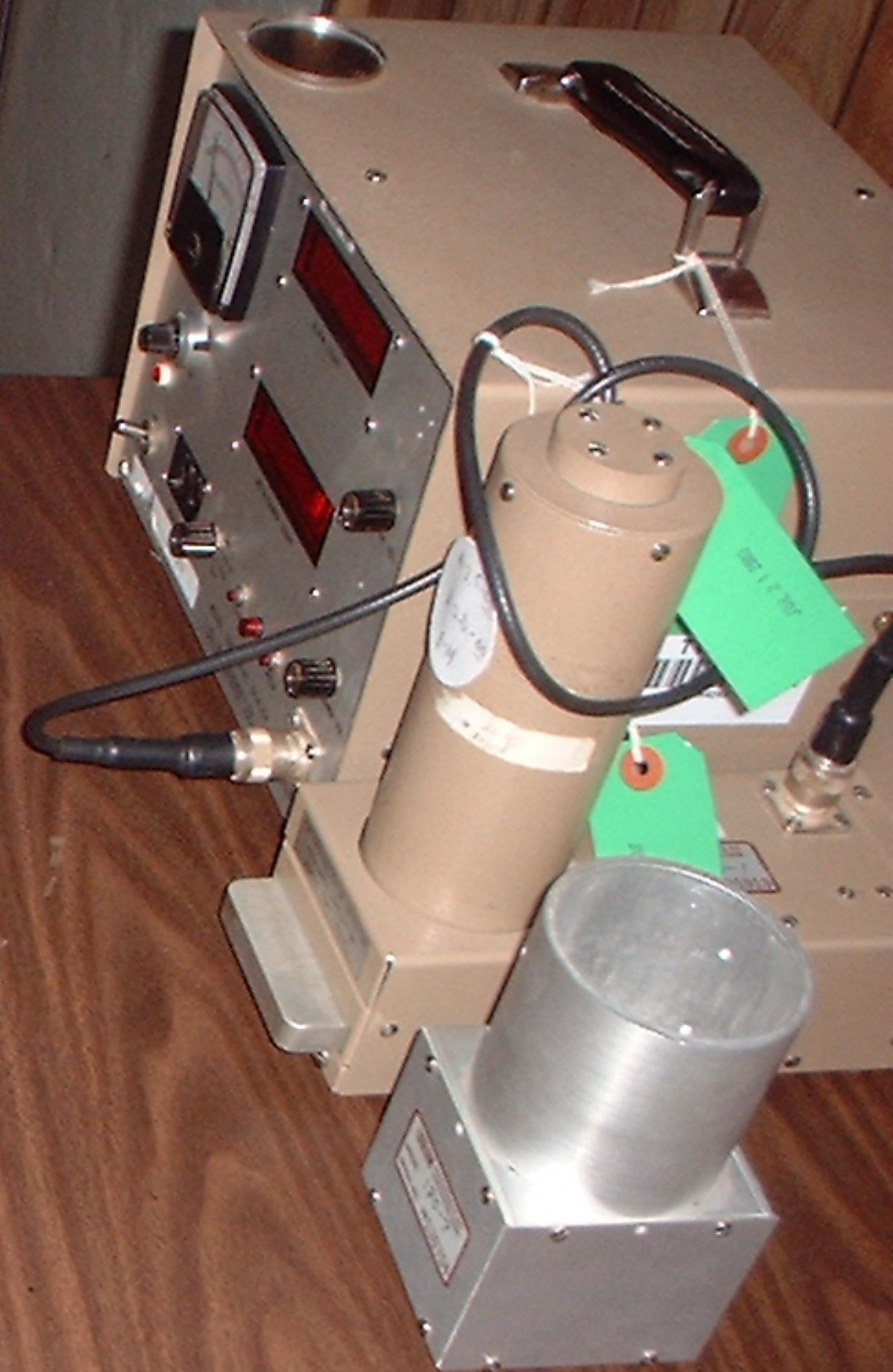
















RAE P/N: 008-3016-000
Calibration Adapter PGM-50

RAE P/N: 008-3015-001
IN ET FTU-000-1700-20



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TOX1 VOC TOX2
LEL Y/H NI- OXY
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