

ISSI Unexploded Ordnance, Inc.
ORDNANCE & EXPLOSIVE REMEDIATION

PROJECT REPORT

PHASE ONE

**LAKE ONTARIO ORDNANCE WORKS TNT PIPELINE
REMOVAL PROJECT, LEWISTON, NEW YORK**

CONTRACT NUMBER: DACW49-00-D-0002

DELIVERY ORDER NUMBER: 0002

SEVENSONPROJECT NUMBER: 80003625

CLIENT NAME: U.S. Army Corps of Engineers,

PRIME CONTRACTOR: Severson Environmental Services, LLC

8 AUGUST 2000

1.0 Introduction

ISSI Unexploded Ordnance, Inc (ISSI, UXO) was contracted by Severson Environmental Services, Inc. (Severson) to provide ordnance and explosives (OE) services under their contract with the Buffalo District, U.S. Army Corps of Engineers. ISSI UXO provided a Senior UXO Supervisor/ Explosives analyst to support Severson’s removal of the concrete encased TNT pipeline. In addition, ISSI UXO provided on-site technical guidance for the Severson team during the presampling phase of the project. The prior phase of the TNT Waste Pipeline remediation completed about 1,500 feet of line. This was done with a combination of power washing and direct removal. Approximately 5,000 feet of line remain to be remediated.

The Senior UXO Supervisor/Explosive Analyst observed the excavation down to the top of the concrete encasement and the exposing of two terracotta (10"and 18") concrete encased pipes. The Senior UXO Supervisor/Explosive Analyst visually examined each exposed pipeline for the presence of suspected crystalline TNT deposits during sampling. The pipes exposed contained a mixture of silt, clay, pea gravel, water, red water, and suspected crystalline TNT nodule/lumps. An explosives field test kit (XSPRAY) was used to identify the presence of TNT in the pipe, i.e. sludge, sediments, soil and water. Individual results of this testing are summarized in the table below.

2.0 RESULTS

**TNT PIPELINE SAMPLING RESULTS
Lake Ontario Ordnance Works Site**

TEST SAMPLING LOCATION	DATE	North Pipe (10")	South Pipe (18")	TNT Swipe Test Results	
				10"	8"
STATION NO# 8	17 JULY	1, 3, 6	1, 4		7
STATION NO# 4	18 JULY	1, 3, 4	1, 3	8	7
STATION NO# 3	18 JULY	1, 2, 3, 5	1, 3	8	7
STATION NO# 2	19 JULY	1, 3, 4, 5, 6 One Line		8	
STATION NO# 5	19 JULY	1, 3	1, 3		7
STATION NO# 6	19 JULY	1, 3, 4, 5	1, 3, 4	8	7
STATION NO# 7	20 JULY	1, 3, 4, 5	1, 3	8	7
STATION NO# 9	20 JULY	1, 3, 4	1, 3, 4	7	7
STATION NO# 10	21 JULY	1, 3, 4	1, 3, 4	7	7
STATION NO# 11	21 JULY	1, 3, 4, 6	1, 3, 4	8	7
STATION NO# 1	22 JULY	1, 3, 4, 5, 6 One Line		8	
STATION NO# 13	24 JULY	1, 3 MANHOLE	1, 3 MANHOLE		
STATION NO# 12	24 JULY	1, 3, 4, 5, 6	1, 3, 4	8	8

Explanations:

- 1. Water
- 2. Red –water
- 3. Silt/Sludge
- 4. Pea Gravel
- 5. Suspected TNT (crystalline)
- 6. Discolored Soil
- 7. Field Kit Test Results “NEGATIVE” for the presence of TNT.
- 8. Field Kit Test Results “POSITIVE” for the presence of TNT.

3.0 CONCLUSIONS

Based on the visual indications and the field Test Kit results it is ISSI Unexploded Ordnance, Inc professional opinion that there are considerable amounts of TNT in the pipeline. The laboratory test samples, which have been submitted separately, will in all likelihood confirm this finding. As it is impossible to determine the exact amount of TNT contamination at any specific point based on the sample it must be assumed for safety reasons that the entire remaining pipeline is contaminated and treated as such.

4.0 RECOMMENDATIONS

ISSI-UXO proposes that with the confirmation of crystalline TNT contamination the entire pipeline be treated as potentially detonable and handled and disposed of as such. Due to the quantity of suspected crystalline TNT deposits located during the test pit sampling series, ISSI UXO recommends at least a three person UXO Team, composed of a senior UXO Supervisor and Two UXO Technicians II's be on site during the removal phase of the TNT pipeline by Severson. The UXO Supervisor will oversee all OE operations and consult with the contractor, COE and all other federal and state agencies. The UXO Technicians will perform escort, sweep, removal, and disposal duties. This Team will oversee the removal of the pipe and the recovery and segregation of the internal material in the pipe.

The contractor will excavate down to the top of the concrete encasement. Measures will be taken to contain the overburden so as not to contaminate a large area with potential crystalline TNT. The contractor will gain access to and break the pipeline into a manageable length of the pipeline in the preapproved manner. The UXO Technicians will obtain samples per the protocols already approved. During the above operations the UXO Technicians are required on-site to observe the entry operation and visually examine the exposed pipeline. They will also instruct site personnel how to identify suspected crystalline TNT deposits.

Pipeline sections will be attached to a pressurized water system and the pipe pressurized to evacuate the water and internal loose material. This material will be captured in a filtering device that will allow the water to pass through. The water will be captured in a plastic lined sump or other container. The pipe will be pressure washed out. Again the residue will be captured in the filtering device and the water in the sump. Equipment used to pressurized and wash out the pipe will be tested at minimum pressure in order to determine the safest pressure to use. Recovery of the material (water and internal material) will be accomplished by a vacuum system, which has the ability to decant the water into barrels. The remaining material will be contained and segregated for disposal as explosive. The water barrels will be tested to determine their disposition. All suspected explosive material will be segregated and stockpiled approved containers in a safe area. Upon completion of the operation all stock piled material will be disposed of at the designated location on site.

Disposal Options to be considered are as follows:

The preferred method of disposal of the explosive material would be to Open Detonate (OD) or Open Burn (OB) or Confined (Rotary Kiln). However, due to the limited space and facilities available on site other options need to be explored. Bioremediation is one area to be examined for potential methods Some of the methods employed successfully are:

- Composting
- Soil Slurry Reactor of Explosive Contaminated Soil
- Biotreatment of Explosive Contaminated Soil
- Winrow Composting of explosive Contaminated Soil

Information on these methods can be found at <http://aec.army.mil/> at the US Army Environmental Center Web Site.