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M E M O R A N D U M

TO: Robert Knizek, Chief, Remedial Bureau E

FROM: Linda Ross and Gregory Sutton, Region 9

DATE: May 3, 2010

SUBJECT: Cattaraugus Cutlery Soil Remediation, Little Valley-Route 353 (hw905026)

Issue

Whether to excavate a relatively small amount of soil (400 cubic yards) above the TCE cleanup goal or to let the in-situ Soil Vapor Extraction System (ISVE) continue to run for an estimated thirteen (13) additional years

Background

The Little Valley Site is an Environmental Protection Agency (EPA) lead National Priority List (NPL) site.

A groundwater plume of trichloroethene (TCE) extending approximately eight miles southeastward from the Village of Little Valley through the Town of Little Valley to the northern edge of the City of Salamanca (Cattaraugus County) is considered the Little Valley Superfund site. The site is located in a rural, agricultural area with a number of small, active and inactive industries and more than 200 residential properties which are situated along Route 353, the main transportation road between Little Valley and the City of Salamanca.

The Little Valley site is being addressed in two phases, an interim groundwater remedy consisting of point-of-use treatment units on residential and business wells (Operable Unit One) and a groundwater remedy including the control of the sources of groundwater contamination (Operable Unit Two, OU-2). The Cattaraugus Cutlery site is part of OU-2.

Borings at Cattaraugus Cutlery indicate a relatively thin silt layer (0-5 ft) over a portion of the site underlain by a gravel and sand with varying amounts of fine. It appears that the elevated TCE contamination is adsorbed to this upper silt layer. The gravel and sand unit overlies till or bedrock.

A Remedial Investigation (RI) for the Little Valley site, conducted from 1997 to 2003 investigated 10 potential sources areas of the presence of TCE and TCE related compounds.

Based on the RI two of these areas were considered the most likely source areas, Bush Industries and Cattaraugus Cutlery. On August 19, 2005 a ROD (Record of Decision) was signed which called for the excavation and off-site treatment/disposal of an estimated 220 cubic yards of contaminated soils located on the Cattaraugus Cutlery property and monitored natural attenuation (MNA) for the site-wide groundwater. The 2005 ROD also called of an evaluation of the potential for soil vapor intrusion (SVI) into structures within the study area. (The results of the SVI investigation were that 100 homes were samples, 2 sub-slab depressurization systems were installed and 5 additional homes are being monitored). In addition, the ROD included institutional controls in the form of notifications to the local municipalities, about the need to test drinking water wells in new homes and businesses.

On September 28, 2006 a ROD amendment was approved, changing the soil remedy selected in the 2005 ROD to ISVE (In-situ Soil Vapor Extraction) for the newly estimated 3,000 cubic yards of TCE contaminated soil. The 2006 ROD amendment for the Cattaraugus Cutlery property, also called for excavation and off-site treatment/disposal as a contingency remedy, should operational data indicate that ISVE will not address all of the contaminated soils.

The ISVE system at Cattaraugus Cutlery consists of 25 vapor extraction wells and a positive displacement blower rated at 500 CFM air flow at 5 inches of Hg. The ISVE system (blower, etc..) is located in a sealed metal cargo container. Off-gas treatment from the ISVE system is provided by two 2,000 pound vapor phase groundwater activated carbon vessels arranged in series. Since the ISVE system has been installed it has been optimized several times.

Soil Cleanup Goals

EPA has chosen the NYSDEC TAGM 4046 of 700 ug/kg TCE as the cleanup goal for the soil at the Little Valley site, which includes the Cattaraugus Cutlery property.

Soil Sampling at Cattaraugus Cutlery

The attached Table shows the comparison between the soils sampled at Cattaraugus Cutlery in 2005, before the ISVE 2006 startup date, and the soils sampled in June 2009. This attached Table shows that the ISVE was successful in remediating the lower concentration soils, which went from an average of 16,000 ug/kg TCE to 116 ug/kg, so approximately 2,600 cubic yards (cy) of soil have been remediated; however the ISVE was not successful in remediating the higher concentration soil source (up to 450,000 ug/kg).

The soil source area determined from this soil sampling is at 1-2 ft depth and consists of approximately 400 cubic yards ranging in concentration from 1,050 ug/kg to 450,000 ug/kg of TCE. The soils tested at the 3-4 ft depth were all below the cleanup goals.

Cost Comparison between ISVE and Excavation

EPA planned on operating this SVE system for a total of 3 years. However, based on the 2009 TCE soil concentration data, the residual soil source, which ranged from 1,050 ug/kg to 450,000 ug/kg, will not be remediated soon. It is estimated that it will take an additional 13 years to remediate the soil via ISVE, assuming equilibrium conditions.

The attached cost estimates shows that it would be more effective to excavated the 400 cubic

years of soil at a cost of $196,000 immediately, rather than spend 13 years and a cost of $481,000 to remediate the soil with ISVE.

Excavation is included as a contingency remedy for Cattaraugus Cutlery in the 2006 ROD amendment and the Amendments to the Superfund contract.

Recommendation

The recommendation is to stop funding the ISVE and change pending Amendment Number 7 to excavation. This is because it is estimated that ISVE will take 13 years to reach cleanup goals and $481,000, as opposed to $196,000 for the excavation, which can be done immediately.

In addition, the site owner would like the use of his property back and excavation would allow this to happen quickly.

TCE Soil Sampling Results Comparison Table
Little Valley Superfund Site, Cattaraugus Cutlery Area
August/November 2005 and June 2009 (Preliminary Results)

Location:	LV-C8		LV-D4		LV-D5		LV-N05		LV-N08		LV-N09		LV-N11		LV-N13	
Depth:	1-2 feet bgs		1-2 feet bgs		1-2 feet bgs*		1-2 feet bgs*		1-2 feet bgs*		1-2 feet bgs*		3-4 feet bgs*		1-2 feet bgs	
Units:	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date:	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
August/November 2005	134000	5560	175000	11200	6480 E	112	914	35.7	1700	59.5	24100 E	294	1830 E	32.9	34400	1140
June 2009	450000	29100	528	61.7	145	6.58	25.9	6.25	2.29 J	7.58	3.00 J	6.10	172	6.25	1050	28.7

Location:	LV-N14		LV-N18		LV-N21		LV-N24		LV-N24		LV-N28		LV-N30		LV-N33	
Depth:	1-2 feet bgs		1-2 feet bgs		1-2 feet bgs*		1-2 feet bgs*		3-4 feet bgs*		1-2 feet bgs*		2-3 feet bgs		1-2 feet bgs	
Units:	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date:	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
August/November 2005	39000	1200	10600	309	1100	28.10	64600 E	1180	1490	135	198000	6020	36700	1220	44600	1190
June 2009	214000	6170	22400	658	15.5	6.10	39200	6410	3.11 J	5.88	477000	32500	27.2	6.25	160	6.17

Location:	LV-N35		LV-N37		LV-N37		LV-N40		LV-N41		LV-N42		LV-N43		LV-N46	
Depth:	3-4 feet bgs		1-2 feet bgs		3-4 feet bgs		1-2 feet bgs*		1-2 feet bgs*		1-2 feet bgs		3-4 feet bgs		1-2 feet bgs*	
Units:	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Date:	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
August/November 2005	3340	34.7	39000	1190	280	29.8	4040	305	29200	34.7	1150	30.1	1190	31.3	3070	28.1
June 2009	75.2	6.94	102000	6250	2.90 J	5.56	1360	59.5	105000	3290	214	7.14	28.0	6.41	251	6.33

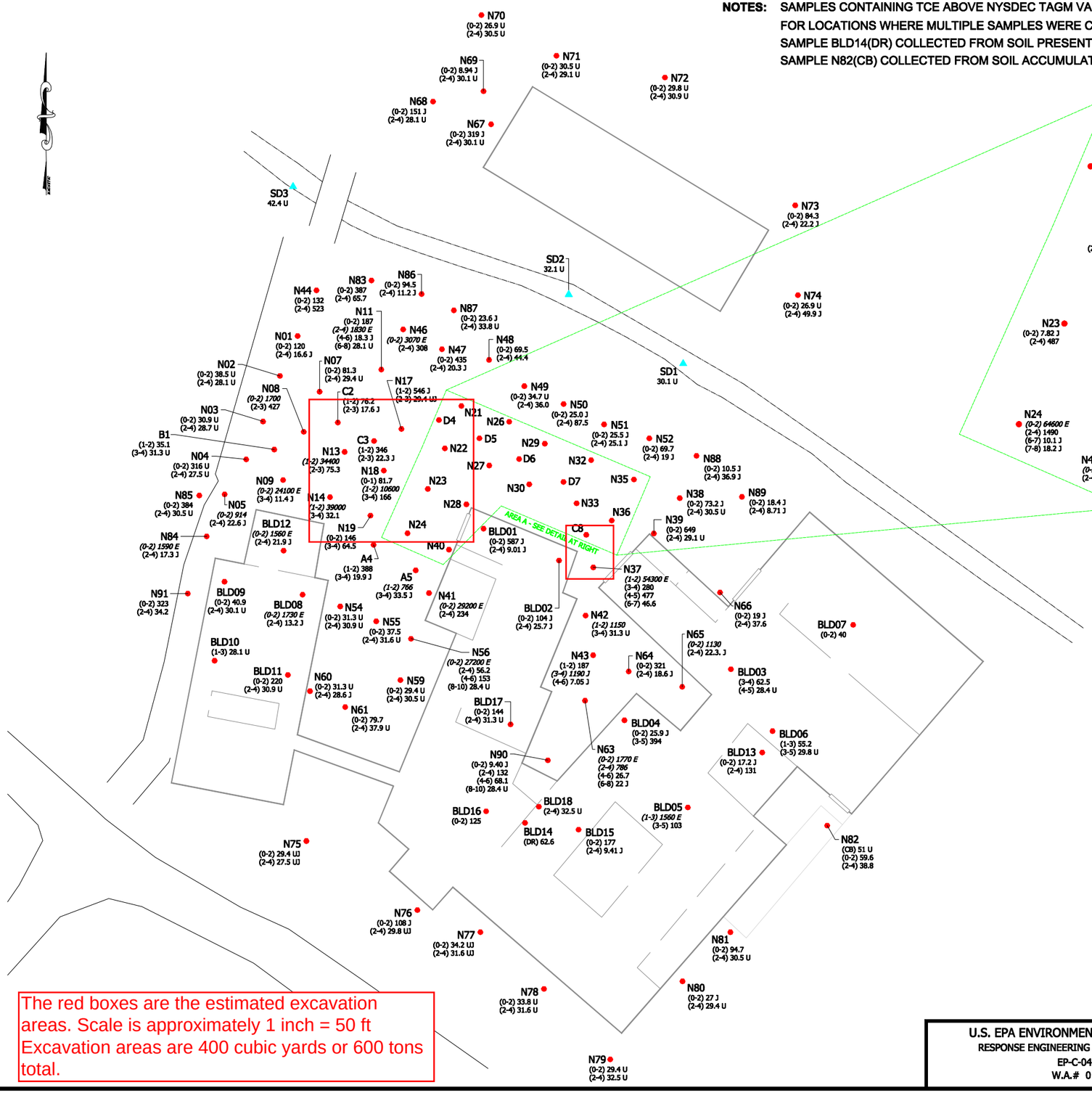
Location:	LV-N56		LV-N63		LV-N63		LV-N65		LV-N84		LV-BLD5	
Depth:	1-2 feet bgs*		1-2 feet bgs*		3-4 feet bgs*		1-2 feet bgs*		1-2 feet bgs*		1-2 feet bgs*	
Units:	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil	
Date:	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
August/November 2005	27200	35.2	1770	32.9	786	37.3	1130	30.9	1590 E	31.6	1560 E	32.1
June 2009	135	6.49	94.8	6.49	64.8	7.04	48.8	6.41	219	6.33	133	5.88

*Actual depth for the August/November 2005 sampling was 0-2 (instead of 1-2) feet bgs or 2-4 feet bgs (instead of 3-4)

Notes:
RESULTS FOR JUNE 2009 ARE PRELIMINARY
µg/kg=micrograms per kilogram
bgs=Below ground surface
RL=Reporting Limit
E=Result exceeded calibration limits
J=Result is below reporting limit

The yellow highlights are the June 2009 soil samples which exceeded the TCE soil remedial goals which are from TAGM 4046 (700 ug/kg). All these exceedances are found in the 1 to 2 ft depth interval. The SVE system start up date was September 2006. The SVE system is planned for shut down in 2011. These highlighted soil samples should be remediated by excavation. See the attached map for locations.

NOTES: SAMPLES CONTAINING TCE ABOVE NYSDEC TAGM VALUE OF 700 ug/kg PRESENTED IN ITALICS.
FOR LOCATIONS WHERE MULTIPLE SAMPLES WERE COLLECTED (i.e., FIELD DUPLICATE SAMPLES), THE HIGHEST TCE CONCENTRATION IS PRESENTED.
SAMPLE BLD14(DR) COLLECTED FROM SOIL PRESENT IN DRAIN.
SAMPLE N82(CB) COLLECTED FROM SOIL ACCUMULATED IN CATCH BASIN ADJACENT TO BORING N82.



LEGEND

- SOIL BORING/SAMPLING LOCATION
- SEDIMENT SAMPLING LOCATION

DESCRIPTION OF SAMPLE NOMENCLATURE

N13 — BORING LOCATION
(1-2) 34400 — TCE CONCENTRATION, IN ug/kg
SAMPLE INTERVAL (WHERE APPLICABLE) IN FEET BELOW SURFACE

U = COMPOUND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT

J = COMPOUND IS PRESENT ABOVE REPORTING LIMIT; VALUE IS ESTIMATED DUE TO LIMITATIONS IDENTIFIED DURING DATA VALIDATION REVIEW

UJ = COMPOUND IS NOT PRESENT ABOVE REPORTING LIMIT; VALUE IS ESTIMATED DUE TO LIMITATIONS IDENTIFIED DURING DATA VALIDATION REVIEW

E = COMPOUND IS PRESENT AT A CONCENTRATION ABOVE THE HIGHEST LINEAR STANDARD; VALUE IS ESTIMATED

NOT TO SCALE

The red boxes are the estimated excavation areas. Scale is approximately 1 inch = 50 ft
Excavation areas are 400 cubic yards or 600 tons total.

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
EP-C-04-032
W.A.# 0 - 165

FIGURE 3
TRICHLOROETHYLENE ANALYTICAL RESULTS
LITTLE VALLEY SUPERFUND SITE
CATTARAUGUS CUTLERY AREA
LITTLE VALLEY, NEW YORK

I:\GEO\165 LITTLE VALLEY\MAPS\TR_FIGURE3.DWG

Cattaraugus Cutlery (hw905026) Cost Estimate for Excavation

Excavate and Restore (200 cy)				
	Quantitity	Unit	Unit Cost	Total
Mobilization/Demobolization	1	Lump Sum	$5,000	$5,000
Precharacterization Analysis	5	Each	$1,500	$7,500
Excavate and Load Soil	400	cy	$30	$12,000
Supply and place imported backfill	450	cy	$25	$11,250
Supply and place topsoil (6 inch thickness)	100	cy	$35	$3,500
Seed and vegetate	1	Lump Sum	$1,500	$1,500

Transportation and Disposal				
Transportation and disposal as hazardous	600	tons	$155	$93,000

Resampling	15	each	$85	$1,275
		Capital Cost		**$135,000**

Design Engineering, Oversight (25% of Capital Cost)	$34,000

Contingency Allowance (20% of capital cost)	$27,000

Total Cost **$196,000**

Cattaraugus Cutlery (hw905026) Cost Estimate for In-situ Soil Vapor Extraction (ISVE)

Annual Operating Cost

	Quantity	Unit Cost	Cost
General Operations and Maintenance	12 months/year	$1000/month	$12,000
Electricity ($0.15 Kw HR)	12 months/year	$500/month	$6,000
GAC Replacement	12 months/year	$1,000/month	$12,000
Air Monitoring	12 months/year	$500/month	$6,000
Reporting	Each year	$1,000	$1,000
	Total per year		**$37,000**

ISVE system is estimated to run for 13 additional years (2010 to 2022)

Total Cost **$481,000**

NORTHWEST
A

SOUTHEAST
B

ELEVATION IN FEET ABOVE MSL

1600
1590
1580
1570
1560
1550
1540
1530
1520
1510
1500
1490
1480
1470

PZ–14

VILLAGE
WELL
FIELD

SILT
SOME CLAY
SOME SAND

GRAVEL AND
SAND,
LITTLE SILTY
CLAY

COUNTY
FAIRGROUNDS PZ–12

SILT

GRAVEL AND
SAND

PZ–17

CATTARAUGUS/
KORN
CUTLERIES
SITE

PERCHED WATER TABLE

PZ–20D

CATTARAUGUS
COUNTY
MAINTENANCE
AREA

SILT

GRAVEL

SILT

KINGS
WINDOWS

SG11
LITTLE VALLEY
CREEK

PZ–9

SILT

GRAVEL AND
SAND, LITTLE SILT

WATER TABLE

LV–8

CLAYEY
SILT

LEGEND:

WATER TABLE

SCREENED INTERVAL

PERCHED WATER TABLE

0 200 400 600
SCALE IN FEET

SOURCE: Final Phase I – Site Screening Report, TtFW, May 1998, Figure 2–3.

LITTLE VALLEY SUPERFUND SITE

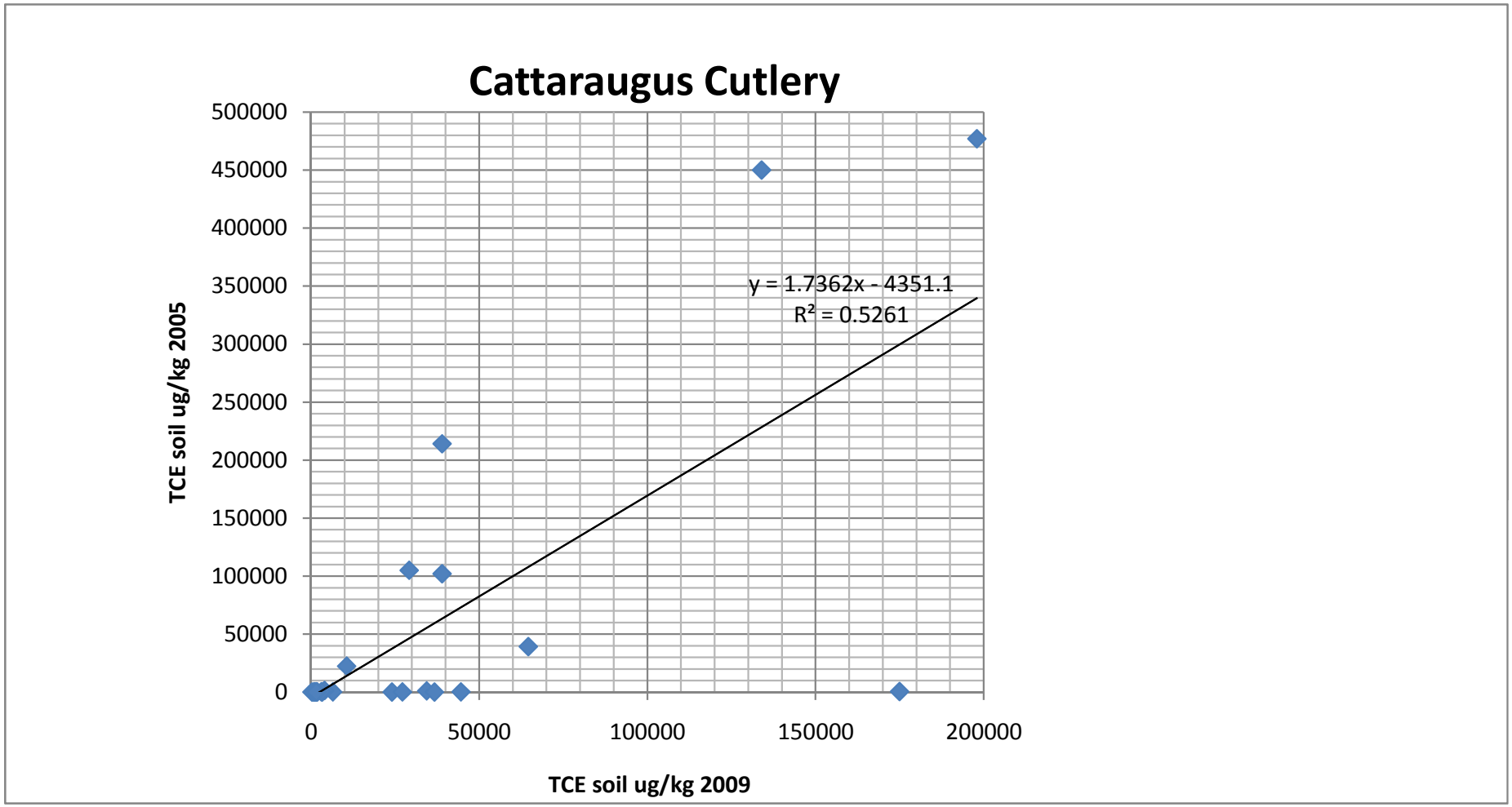
LITTLE VALLEY
CATTARAUGUS COUNTY, NEW YORK

FIGURE 3–4

CROSS–SECTION A–B

TETRA TECH FW, INC.

N:\GIS\GISKEY\GISPROJ31\EPA LITTLE VALLEY\FINAL RI FIGURES\FIGURE 3–4 (XSECT A–B).DWG


Cattaraugus Cutlery
TCE soil ug/kg 2005
TCE soil ug/kg 2009
y = 1.7362x - 4351.1
R² = 0.5261
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
0
50000
100000
150000
200000