CON: 12-15
Doc #36962

February 27, 2020

Dan Cook
Iowa Department of Natural Resources
Contaminated Sites Section
Wallace State Office Building
502 E. 9th Street
Des Moines, Iowa 50319

Re: ***Lead in Soil Report***
Former Shooting Range
2431 Expedition Court, Sioux City, Iowa

Dear Mr. Cook:

ATC Group Services LLC (ATC), on behalf of K and L Properties LLC (K and L) wishes to provide the Iowa Department of Natural Resources (IDNR) the attached report. K and L owns the property where a former shotgun shooting range operated. Lead and antimony in the surface soil at concentrations exceeding applicable IDNR action limits were detected during a Phase II assessment performed in December 2019. K and L retained ATC to complete IDNR notification, prepare a work plan and perform the site assessment of the above referenced property. The contact information for K and L is:

K and L Properties LLC
Attn: Kevin Alexander
501 S Ridge Road
PO Box 1049
Sergeant Bluff, IA 51054-1049

Please review the attached report prepared by Steffen Engineering, Inc. and provide ATC and K and L guidance on IDNR requirements. If you have any questions or need additional information, please contact me at 319-233-0441.

Sincerely,

ATC GROUP SERVICES, LLC

Gaylen Hiesterman, CGP
Branch Manager

K AND L PROPERTIES LLC

Kevin Alexander

328 LaPorte Road
Waterloo, IA 50702
Telephone 319-233-0441
Fax 319-233-3269

STEFFEN
ENGINEERING, INC.

1844 Hwy 20
Lawton, Iowa 51030
PH: (712)-944-5511

January 8, 2020

Beau Braunger
NAI UNITED
400 Gold Circle – Suite 120
Dakota Dunes, SD 57049

Re: Phase II Environmental Site Assessment of the Shooting Rang Activities Conducted at 2431 Expedition Ct., Sioux City, Iowa.

Dear Beau:

The following presents the Phase II investigation of the depositing of lead shot from the former shooting activities conducted at the above referenced property.

INTRODUCTION:

From the Phase I investigation, it was discovered that this property had been used as a Skeet and Trap shooting range. Historical Aerial Photos from the 1930's to 2017 were obtained. The skeet & trap facility was identified in the 1966 aerial photo and last visible in the 1990 photo. (See Attached Aerial Photos) The shooting range activities were conducted for approximately 24 years.

The scope of this Phase II investigation was to determine the impact that the shooting range activities has had on this property. Research indicates that Lead and Antimony are the elements used to make lead shot. The State of Iowa has established limits on these elements in soil. The goals of this investigation were to:

- Recreate the location of the shooting range on the property.
- Identify the location of the shot deposited.
- Develop a grid system for sampling locations.
- Sample the surface soil.
- Separate the lead shot from the soil.
- Analyze the soil for the weathered lead and antimony.

PROCEDURE:

The aerial photos were used to recreate the location of the shooting range. The airport taxiway south of this property was a common physical feature in the aerial photos. Using this feature the shooting range facility location was recreated on a current property boundary map. (See Attached Soil Sampling Maps)

Using skeet and trap shot fall zone distance documentation, the shot fall zones were placed on the Soil Sampling Maps. (See Attached) A 100 ft. sampling grid was then placed in the shot fall zone area. The sampling grid locations were then survey on the property.

The property has been used for agricultural crop production sense the close of the Shooting Range in the 1990's. This site was a corn field in the summer of 2019. Tilling activities have periodically stirred the top 4 to 6 inches of the soil. Approximately 0.5 cubic foot of soil was collected from the top 4 to 6 inches at each sampling location.

The soils were brought to our lab and sieved to remove the lead shot. The soils were dried and then run through a ⅜ inch sieve to remove the organic material. The soil was then run through a No. 4 and No. 8 sieve. Based on the attached shot sieving document the No. 4 sieve will remove BBB and larger shot and the No. 8 sieve will retain No. 7½ and larger shot. The soil was the passed through a No. 10 sieve to remove all of the unweather shot.

The soil passing the No. 10 sieve from each sampling location was place in two 4 oz. sample jars. One jar was sent to the lab for analysis of Lead and Antimony by the Method 6010C. The second jar was retained for potential further analysis.

Evaluation of Material Retained on the No. 8 Sieve:

To evaluate the material retained on the No. 8 sieve, a quarter cup of the material was placed on a No. 40 sieve and washed. The washed material was placed in a zip lock bag for visual analysis. Photos and description of materials remaining from each sampling location are attached.

Analytical Results:

The following are the results of soil analysis. The levels of lead and antimony have been placed on the attached sampling location maps. The Lab Report is attached.

Soil Analysis
mg/Kg - Parts per Million

Sample No.	#1	#2	#3	#4	#5	#6	#7	State's Limits
Lead	23.1	100	26.8	397	5,240	1,660	2,810	400
Antimony	<0.724	1.53	<0.743	5.43	98.0	38.3	65	31

Sample No.	#8	#9	#10	#11	#12	#13	#14	State's Limits
Lead	33.5	103	21.5	813	27.5	59.7	1,040	400
Antimony	0.961	1.61	<0.753	17.5	<0.677	0.823	7.60	31

<0.743	= Less Than the Lab Method's Lowest Detection Limit of 0.743 Parts per Million
Yellow	= Exceeds Soil Contamination Limits
Green	= Lead or Antimony found, Does Not Exceed Soil Contamination Limits

Conclusions And Recommendations:

The results of this investigation found lead and antimony levels in 5 of the 14 soil samples over the State's established limits. A copy of this report should be submitted to the Iowa Department of Natural Resources (DNR) Contaminated Sites Section for their review. The following is the address for the Contaminated Site Section.

Iowa Department of Natural Resources
Contaminated Sites Section
502 East 9th Street
Des Moines, IA 50319-0034

Email: Dan Cook dan.cook@dnr.iowa.gov

If you have any questions regarding this, please contact me

Sincerely,

Jerry E. Steffen, P.E.
For the Firm

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2017 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2017 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2017 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2011 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2008 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

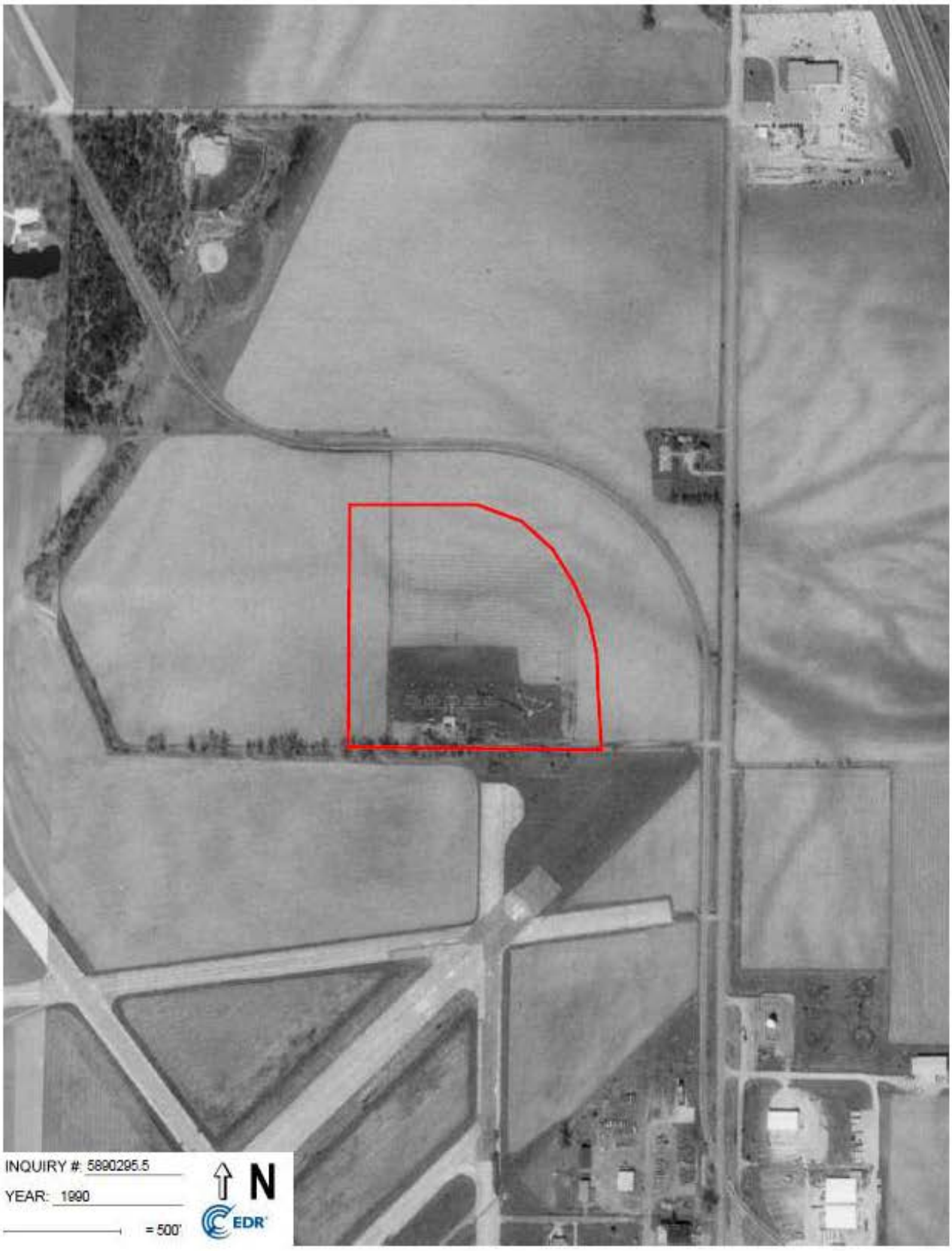
2005 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

2002 GIS Infrared
Aerial Photograph
2431 Expedition Court, Sioux City, IA

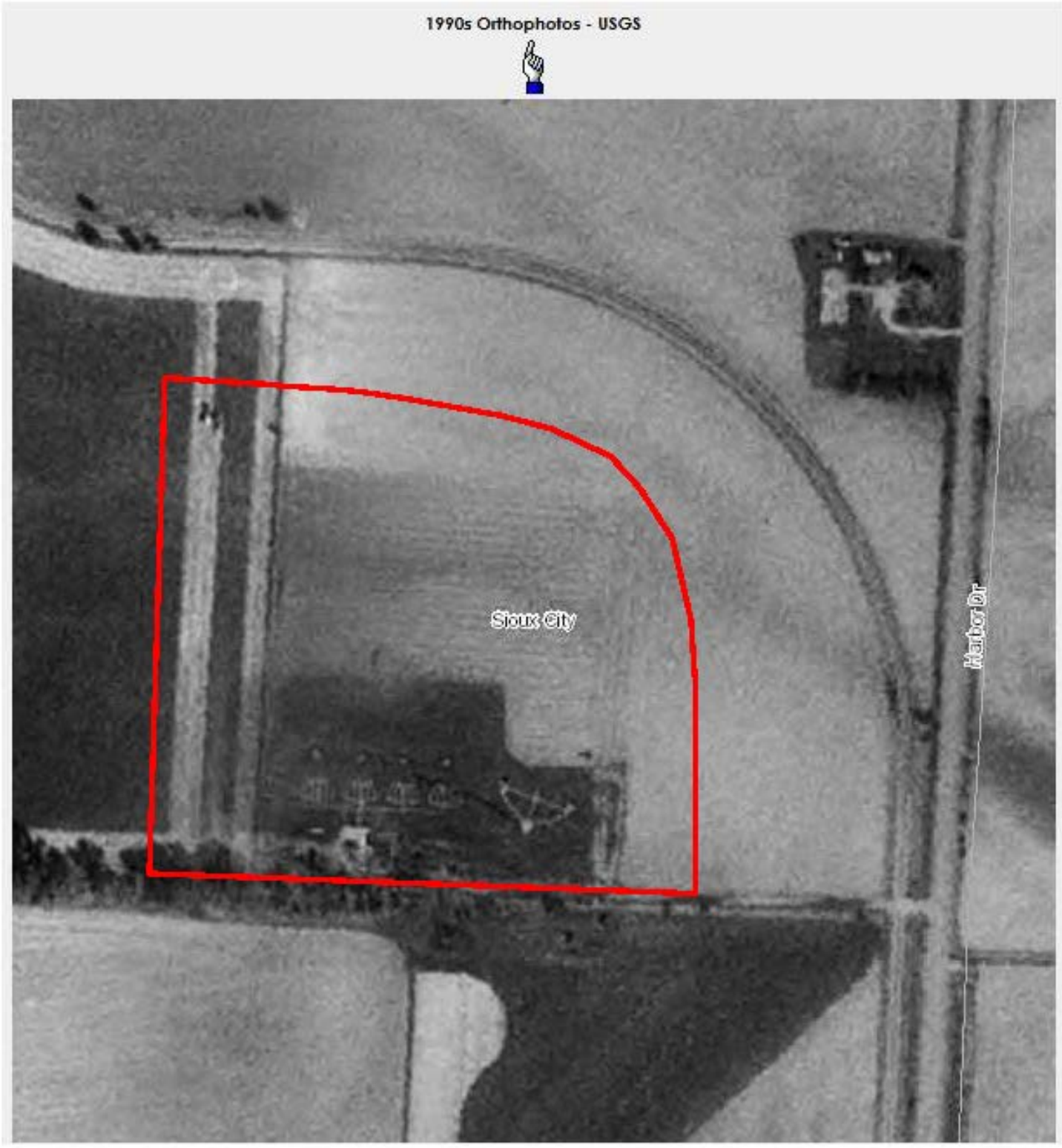
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1990 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1990 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

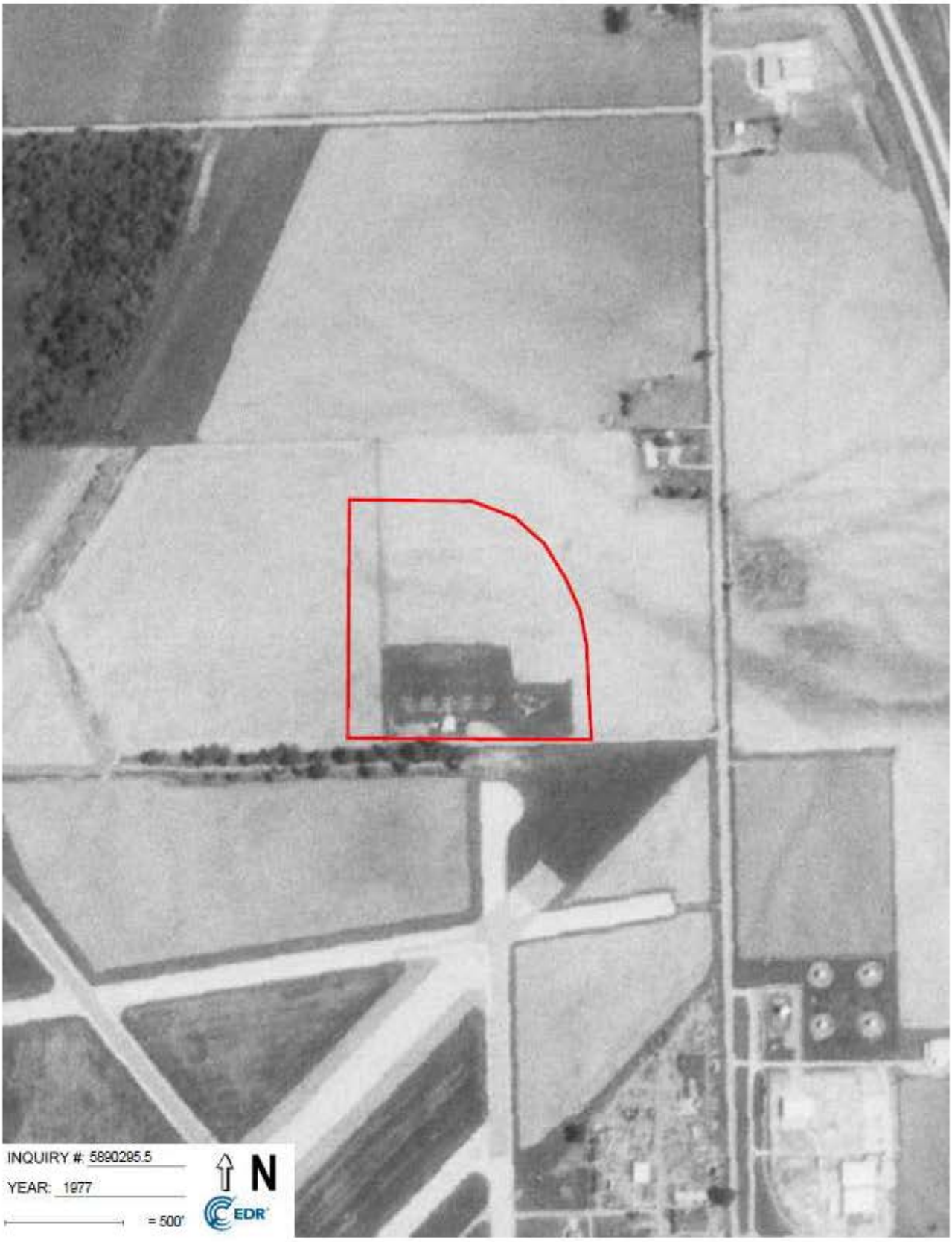
1983 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1980 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

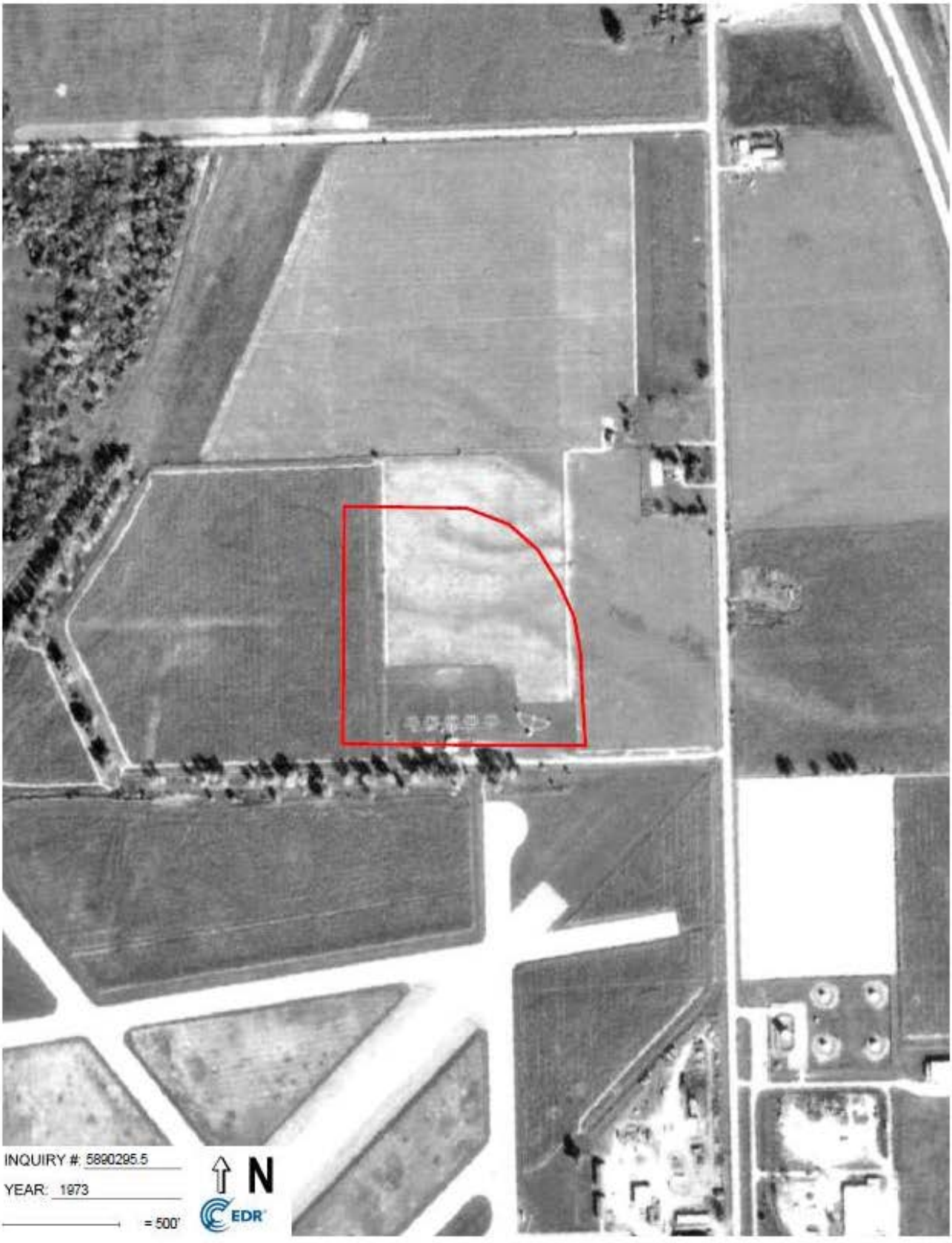
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1977 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

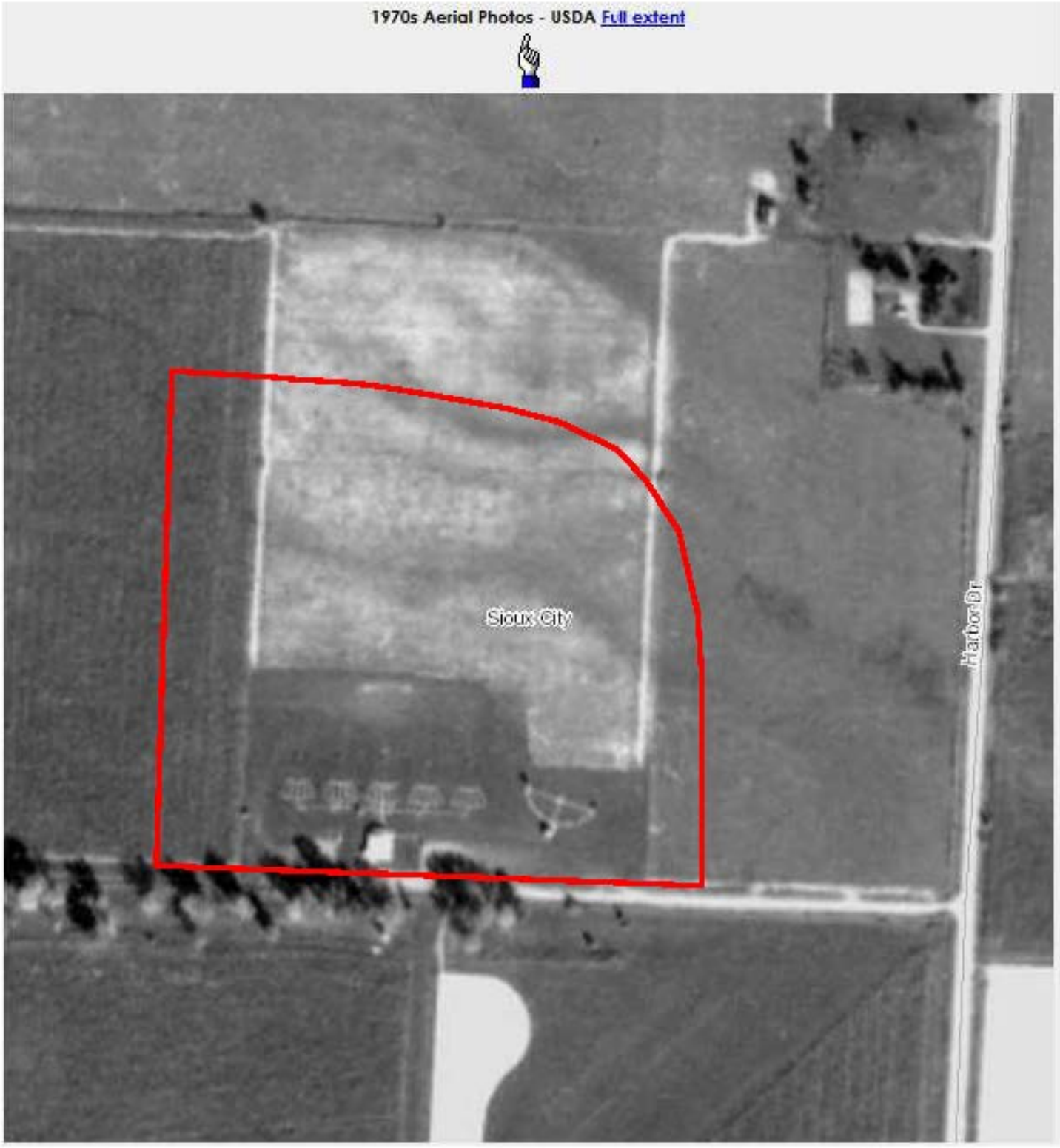
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1973 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

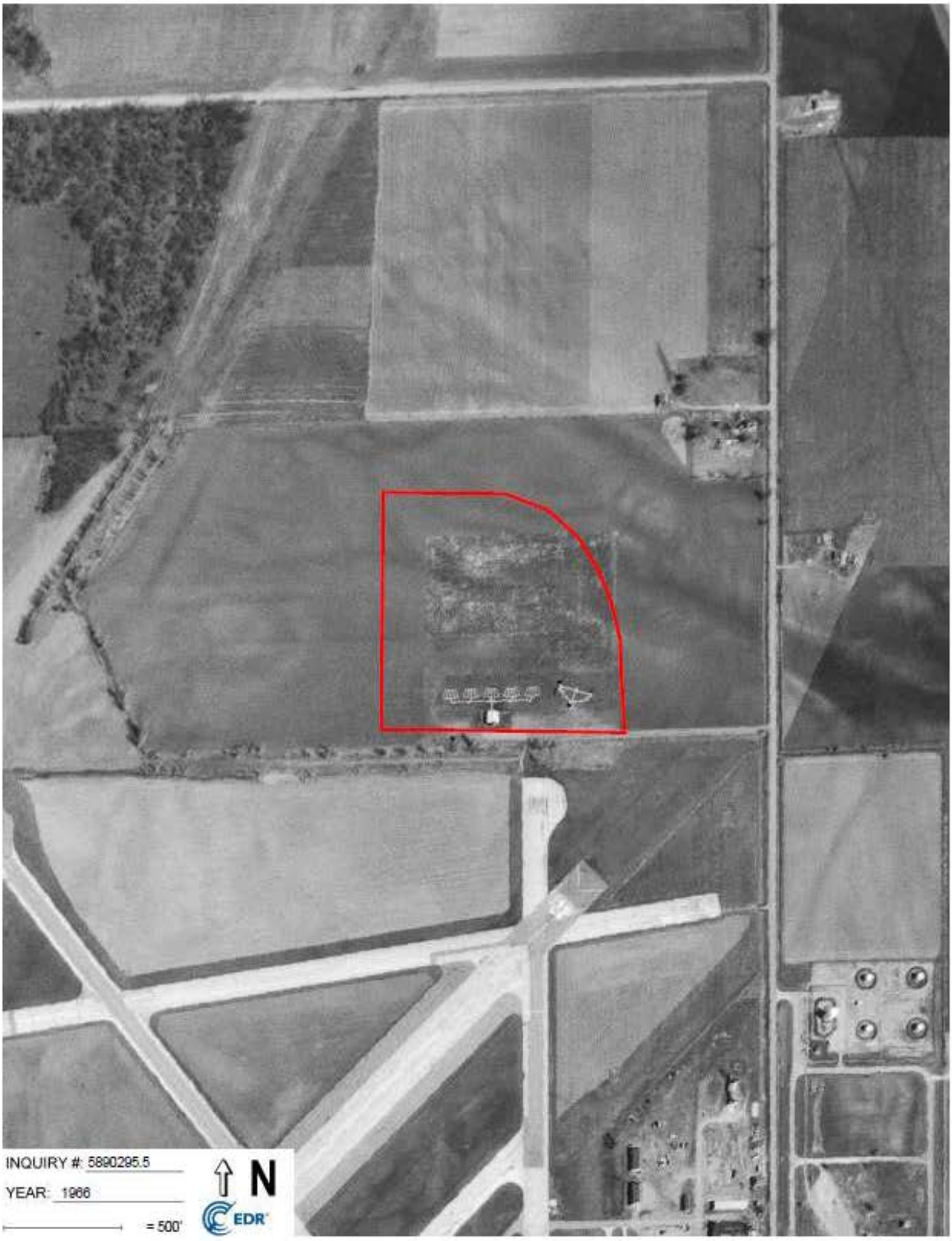
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1970 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

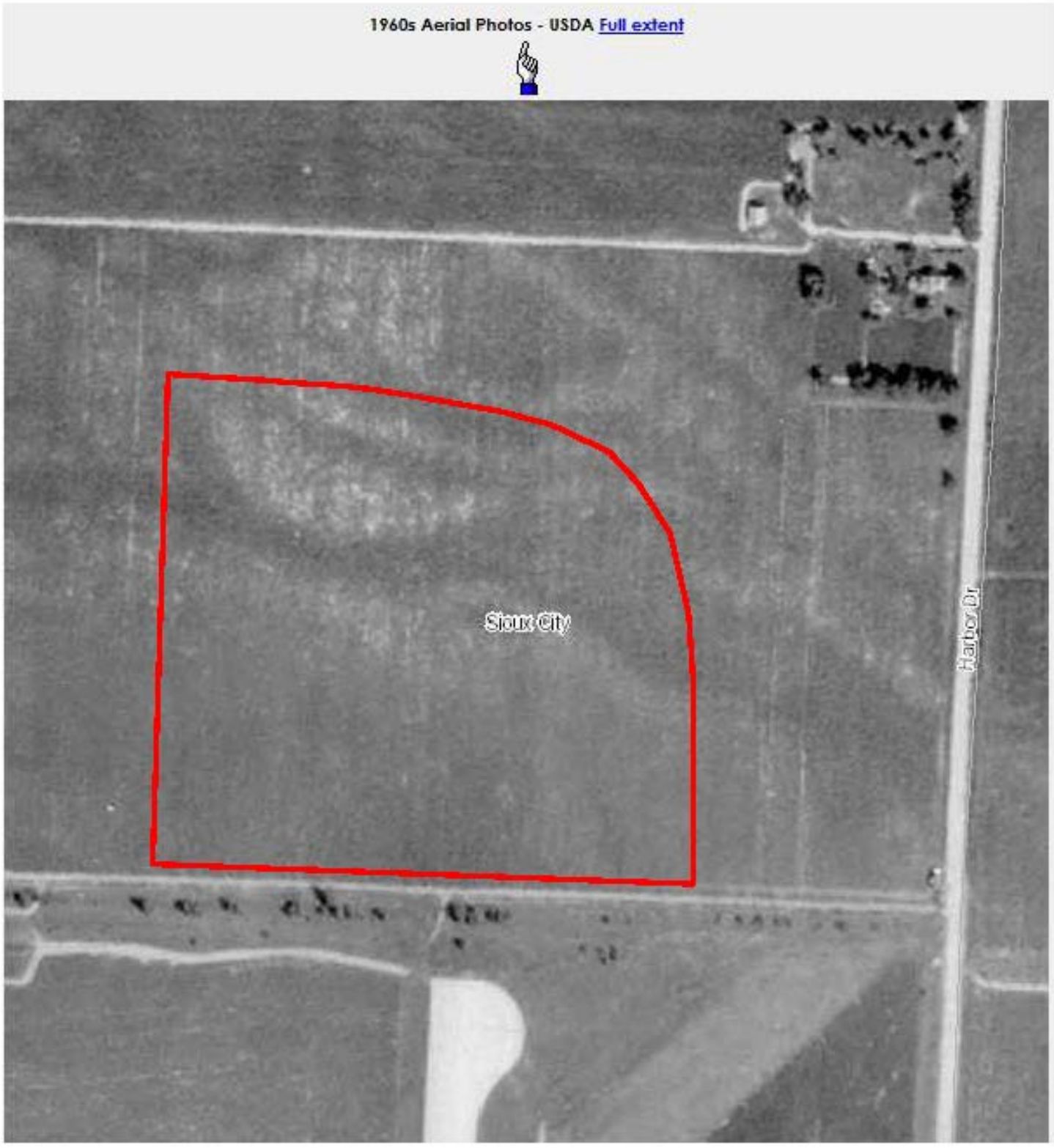
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1966 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

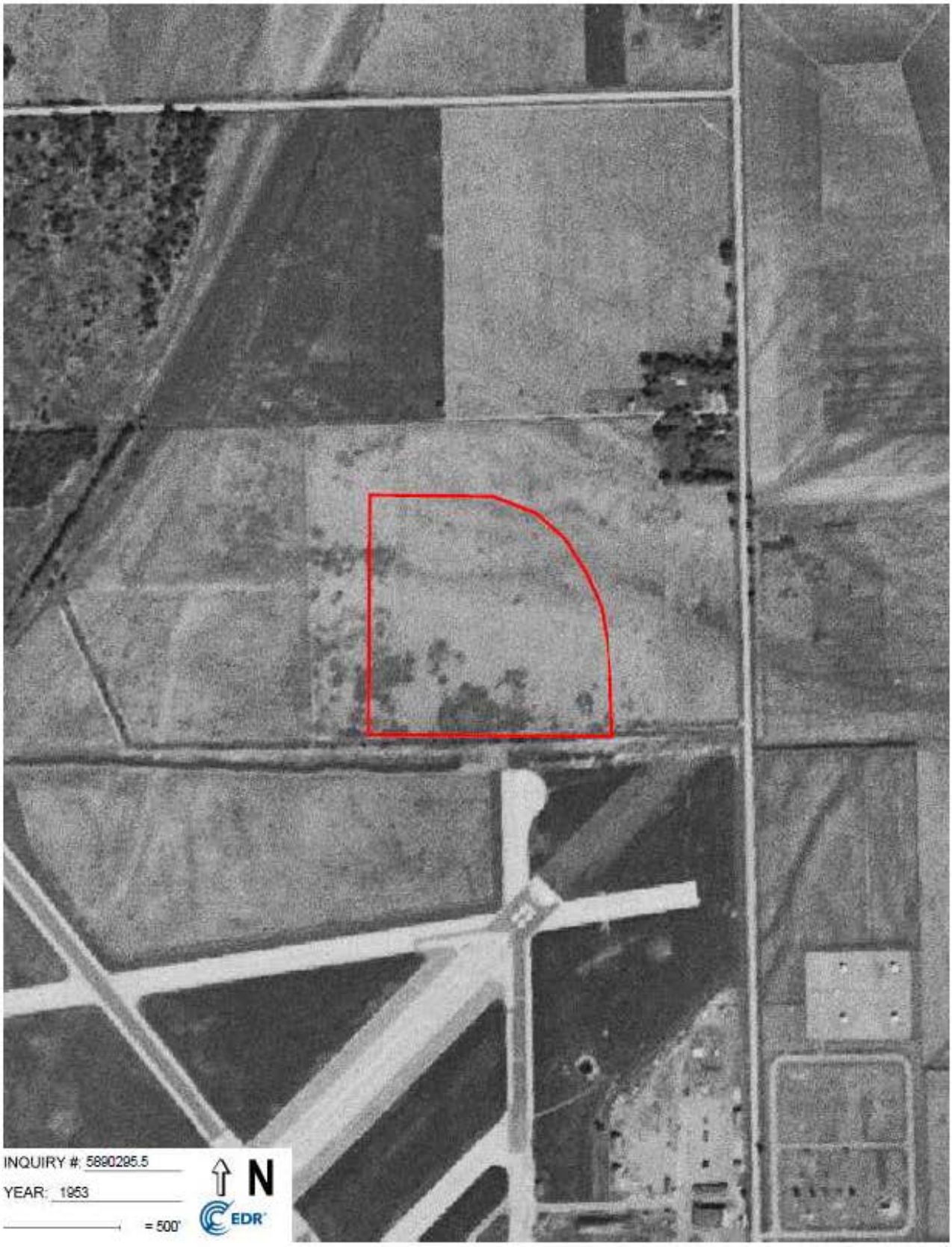
↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1960 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1953 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

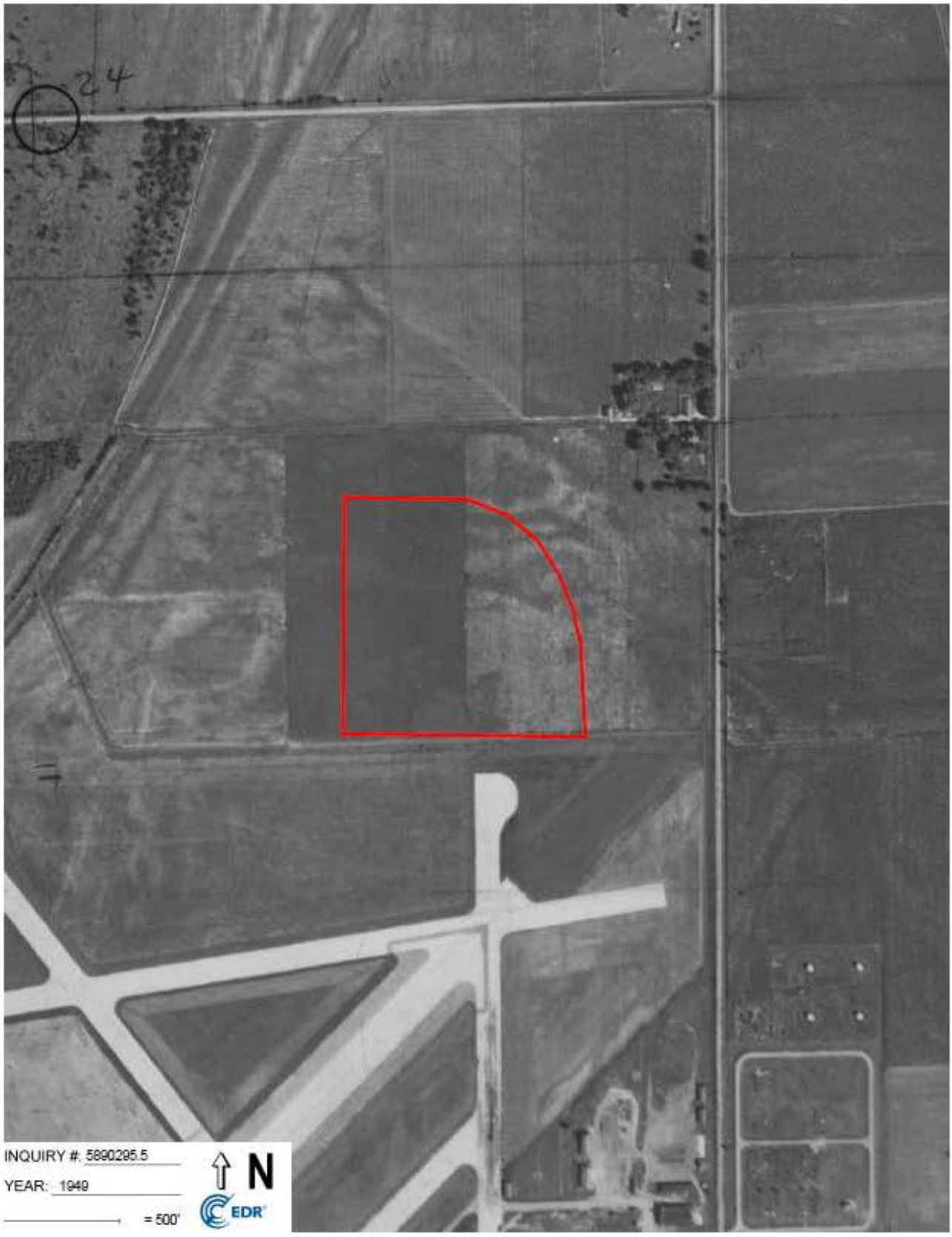
1950 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1950 Sioux City
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North



STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1949 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1938 EDR
Aerial Photograph
2431 Expedition Court, Sioux City, IA

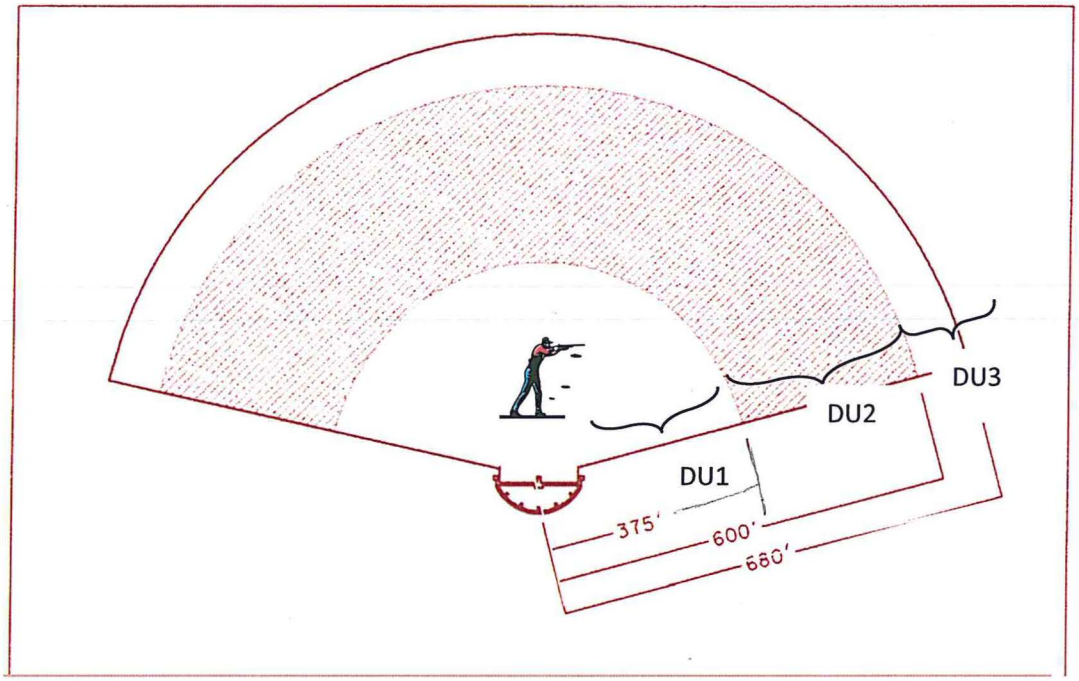
↑
North

STEFFEN
ENGINEERING, INC.
1844 Hwy 20
Lawton, IA 51030

1930 GIS
Aerial Photograph
2431 Expedition Court, Sioux City, IA

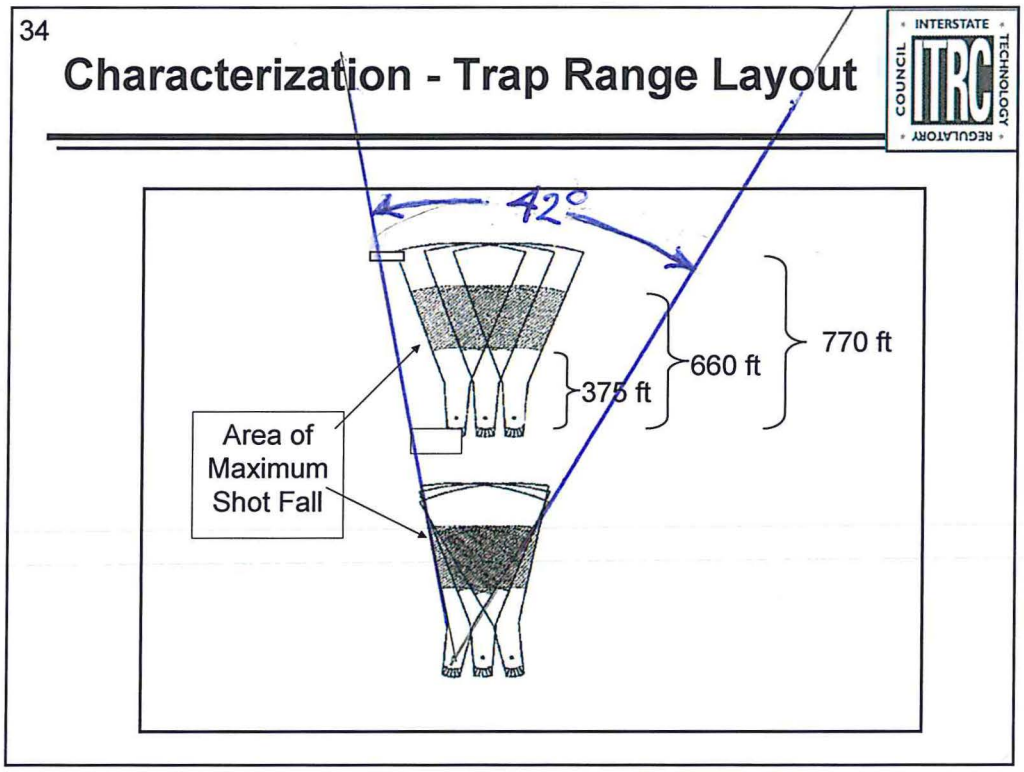
↑
North

Figure 17- 3 Hypothetical shot fall zones and strata or decision units for skeet range sampling.



[Notes: The appropriate sample design for a skeet range is dependent upon several factors. The size and placement of strata or decision units should be designated based upon the density of shot location within the range. The size and shape of the shot fall zone is a function of the layout of the site, the type of shot used, and the shooting angle. In skeet shooting, the targets are thrown overhead and the shooting angle is approximately 45 degrees from the horizontal. Targets are released much closer to the ground in trap shooting; the shooting angle is approximately horizontal. Therefore, the area of highest shot density from trap shooting will tend to be less than for skeet shooting due to the angle at which shooting occurs. Another factor that affects the distance the shot will travel is the size of the shot used. When the shooting angle is approximately horizontal, the maximum distance shot will travel varies from 198 yards for No. 8 shot to 330 yards for No. 2 shot (Baldwin, 1994). Number 6 shot will cover an area between 300 and 700 feet from the shooting position when the shooting angle is level; if released from an angle of 40 degrees from the horizontal, the shot will drop between 400 and 900 feet from the shooting position. Initial screening to verify these areas can be done visually or with an XRF.]

Source: Baldwin, D. 1994.



Refer to Figure 2-1 in the document. ITRC's Environmental Management at Operating Outdoor Small Arms Firing Ranges (SMART-2, February 2005) is available from the ITRC Web site (www.itrcweb.org) under "Guidance Documents" and "Small Arms Firing Ranges."

An individual trap range has approximately a 4 acre drop zone, with 1 ¾ acres per additional trap range.

The suggested overlapping of drop zones is supported by NSSF, SAAMI, and other national organizations to help reduce the footprint of a range. The overlap also makes recovery more feasible.

Table 17- 1 Shot size typically used at small arms firing ranges using shotgun rounds. Note: Shot size is generally limited to a maximum of no. 7 ½ for trap and sporting clay use, and a maximum of no. 7 ½ and minimum of no. 9 for skeet shooting.

Standard Sieve Size for screening	Shot size	inches	millimeter
	Buckshot		
	No. 000-No.2	0.36-0.27	9.14-6.86
	No. 3	0.25	6.35
	No. 4	0.24	6.10
	Regular Shot		
	F	0.22	5.59
	T	0.20	5.08
No. 4 sieve /4 mesh (4.75 mm nominal opening) will remove BBB and larger shot	BBB	0.19	4.83
	BB	0.18	4.57
No. 5 sieve/5 mesh (4.00 mm nominal opening) will remove No.1 and larger shot	1	0.16	4.06
	2	0.15	3.81
No. 6 sieve/6 mesh (3.35 mm nominal opening) will remove No.3 and larger shot	3	0.14	3.56
	4	0.13	3.30
No. 7 sieve/7 mesh (2.80 mm nominal opening) will remove No.5 and larger shot	5	0.12	3.05
	6	0.11	2.79
	7	0.10	2.54
No. 8 sieve/8 mesh (2.36 mm nominal opening) will remove No. 7½ and larger shot	7½	0.095	2.41
	8	0.09	2.29
	8½	0.085	2.16
No.10 sieve/9 mesh (2.00 mm nominal opening) will remove all unweathered shot	9	0.08	2.03

A NO. 60 MESH (0.25 MM OPENING) SIEVE IS TYPICALLY THE 'FINE ' SOIL FRACTION UTILIZED FOR INCIDENTAL HUMAN HEALTH EXPOSURE

Source: EPA/OSWER 2003

Material Retained on the No. 8 Sieve
and ¼ cup Washed on a No. 40 Sieve
2431 Expedition Court

Small Rocks

Very few lead pellets, mainly clay pigeon pieces.

3 lead shot and the rest rocks & clay pigeon pieces.

2 lead shot and the rest rocks & clay pigeon pieces.

All lead shot pieces.

6 lead shot pieces.

All lead shot pieces.

Small Rocks

Very few lead pellets, mainly clay pigeon pieces.

Small Rocks

All lead shot pieces.

Small Rocks and a few lead shot.

A few lead shot, clay pigeon, & rocks.

One lead shot and 4 rocks

Sieves used for size separation.

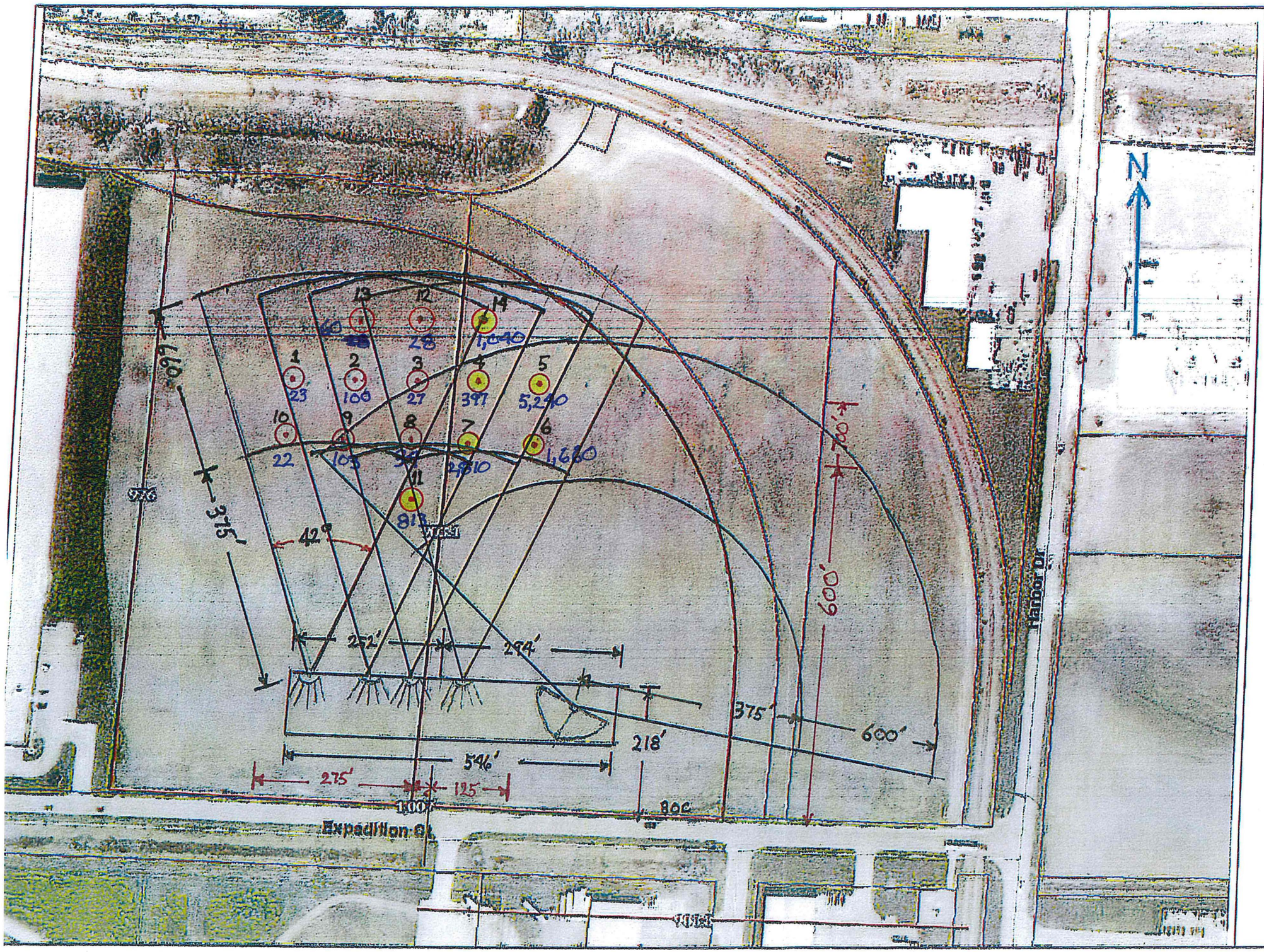
2431 Expedition Ct.

Sioux City, Iowa

Scale:
1 in. = 156 ft.

= Lead mg/kg
⊙ = Soil Sampling
100 Locations

⊙ = Over the State's Limit of 400 mg/kg



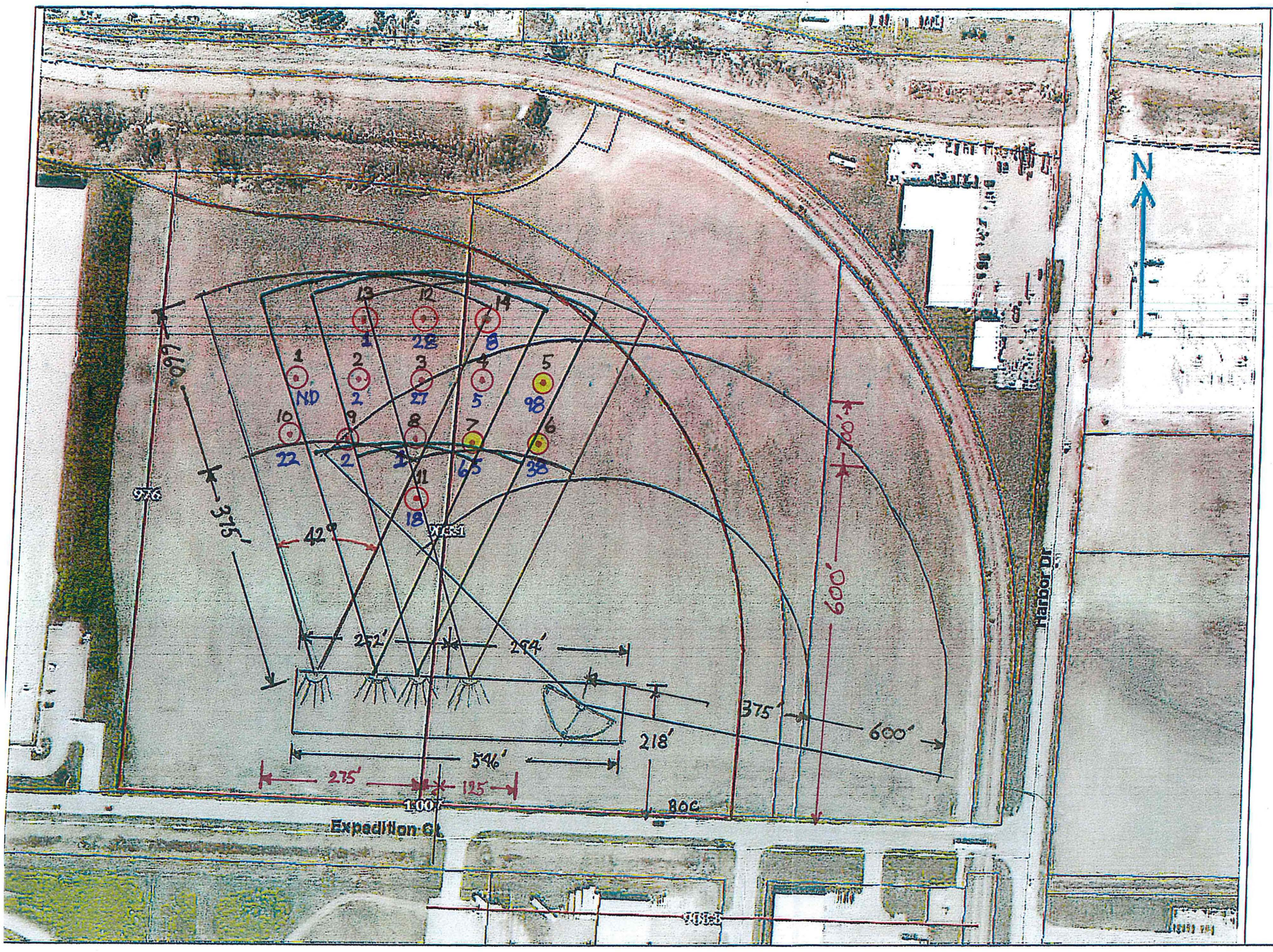
2431 Expedition Ct.

Sioux City, Iowa

Scale:
1 in. = 156 ft.

\# = Antimony mg/kg
⊙ = Soil Sampling Locations
27

⊙ = Over the State's Limit of 31 mg/kg



eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-172103-1
Client Project/Site: 2431 Expedition Ct

For:
Steffen Engineering Inc
1844 Hwy 20
Lawton, Iowa 51030

Attn: Jerry Steffen

Authorized for release by:
12/20/2019 1:03:39 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Job ID: 310-172103-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-172103-1

Comments
No additional comments.

Receipt
The samples were received on 12/13/2019 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 18.0º C.

Metals
Methods 6010C: The following sample was diluted due to the presence of an interferent: 4 (310-172103-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-172103-1	1	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-2	2	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-3	3	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-4	4	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-5	5	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-6	6	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-7	7	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-8	8	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-9	9	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-10	10	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-11	11	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-12	12	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-13	13	Solid	12/05/19 00:00	12/13/19 09:45	
310-172103-14	14	Solid	12/05/19 00:00	12/13/19 09:45	

Detection Summary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 1 — Lab Sample ID: 310-172103-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	23.1		4.36	1.13	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 2 — Lab Sample ID: 310-172103-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	1.53	J	4.22	0.700	mg/Kg	1	☼	6010C	Total/NA
Lead	100		4.22	1.10	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 3 — Lab Sample ID: 310-172103-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	26.8		4.48	1.16	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 4 — Lab Sample ID: 310-172103-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	5.43	J	7.87	1.31	mg/Kg	2	☼	6010C	Total/NA
Lead	397		7.87	2.05	mg/Kg	2	☼	6010C	Total/NA

Client Sample ID: 5 — Lab Sample ID: 310-172103-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	98.0		8.51	1.41	mg/Kg	2	☼	6010C	Total/NA
Lead	5240		8.51	2.21	mg/Kg	2	☼	6010C	Total/NA

Client Sample ID: 6 — Lab Sample ID: 310-172103-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	38.3		8.58	1.42	mg/Kg	2	☼	6010C	Total/NA
Lead	1660		8.58	2.23	mg/Kg	2	☼	6010C	Total/NA

Client Sample ID: 7 — Lab Sample ID: 310-172103-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	65.0		4.57	0.758	mg/Kg	1	☼	6010C	Total/NA
Lead	2810		4.57	1.19	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 8 — Lab Sample ID: 310-172103-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.961	J	4.28	0.710	mg/Kg	1	☼	6010C	Total/NA
Lead	33.5		4.28	1.11	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 9 — Lab Sample ID: 310-172103-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	1.61	J	4.13	0.685	mg/Kg	1	☼	6010C	Total/NA
Lead	103		4.13	1.07	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 10 — Lab Sample ID: 310-172103-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	21.5		4.54	1.18	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 11 — Lab Sample ID: 310-172103-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	17.5		4.57	0.759	mg/Kg	1	☼	6010C	Total/NA
Lead	813		4.57	1.19	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 12 — Lab Sample ID: 310-172103-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	27.5		4.08	1.06	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 13 — Lab Sample ID: 310-172103-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.823	J	4.40	0.730	mg/Kg	1	☼	6010C	Total/NA
Lead	59.7		4.40	1.14	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 14 — Lab Sample ID: 310-172103-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	7.60		4.70	0.780	mg/Kg	1	☼	6010C	Total/NA
Lead	1040		4.70	1.22	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 1
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-1
Matrix: Solid
Percent Solids: 91.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.724	F1	4.36	0.724	mg/Kg	☼	12/18/19 09:00	12/19/19 14:20	1
Lead	**23.1**		4.36	1.13	mg/Kg	☼	12/18/19 09:00	12/19/19 14:20	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 2

Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-2

Matrix: Solid
Percent Solids: 97.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	1.53	J	4.22	0.700	mg/Kg	☼	12/18/19 09:00	12/19/19 14:29	1
Lead	100		4.22	1.10	mg/Kg	☼	12/18/19 09:00	12/19/19 14:29	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 3
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-3
Matrix: Solid
Percent Solids: 97.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.743		4.48	0.743	mg/Kg	☼	12/18/19 09:00	12/19/19 14:30	1
Lead	**26.8**		4.48	1.16	mg/Kg	☼	12/18/19 09:00	12/19/19 14:30	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 4
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-4
Matrix: Solid
Percent Solids: 97.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	5.43	J	7.87	1.31	mg/Kg	☼	12/18/19 09:00	12/19/19 15:08	2
Lead	397		7.87	2.05	mg/Kg	☼	12/18/19 09:00	12/19/19 15:08	2

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 5
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-5
Matrix: Solid
Percent Solids: 97.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	98.0		8.51	1.41	mg/Kg	☼	12/18/19 09:00	12/19/19 15:09	2
Lead	5240		8.51	2.21	mg/Kg	☼	12/18/19 09:00	12/19/19 15:09	2

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 6

Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-6

Matrix: Solid
Percent Solids: 97.2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	38.3		8.58	1.42	mg/Kg	☼	12/18/19 09:00	12/19/19 15:11	2
Lead	1660		8.58	2.23	mg/Kg	☼	12/18/19 09:00	12/19/19 15:11	2

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 7
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-7
Matrix: Solid
Percent Solids: 97.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	65.0		4.57	0.758	mg/Kg	☼	12/18/19 09:00	12/19/19 14:41	1
Lead	2810		4.57	1.19	mg/Kg	☼	12/18/19 09:00	12/19/19 14:41	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 8
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-8
Matrix: Solid
Percent Solids: 97.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.961	J	4.28	0.710	mg/Kg	☼	12/18/19 09:00	12/19/19 14:43	1
Lead	33.5		4.28	1.11	mg/Kg	☼	12/18/19 09:00	12/19/19 14:43	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 9
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-9
Matrix: Solid
Percent Solids: 97.8

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	1.61	J	4.13	0.685	mg/Kg	☼	12/18/19 09:00	12/19/19 14:45	1
Lead	103		4.13	1.07	mg/Kg	☼	12/18/19 09:00	12/19/19 14:45	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 10
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-10
Matrix: Solid
Percent Solids: 98.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.753		4.54	0.753	mg/Kg	☼	12/18/19 09:00	12/19/19 14:48	1
Lead	**21.5**		4.54	1.18	mg/Kg	☼	12/18/19 09:00	12/19/19 14:48	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 11
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-11
Matrix: Solid
Percent Solids: 91.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	17.5		4.57	0.759	mg/Kg	☼	12/18/19 09:00	12/19/19 14:50	1
Lead	813		4.57	1.19	mg/Kg	☼	12/18/19 09:00	12/19/19 14:50	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 12
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-12
Matrix: Solid
Percent Solids: 89.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.677		4.08	0.677	mg/Kg	☼	12/18/19 09:00	12/19/19 14:52	1
Lead	**27.5**		4.08	1.06	mg/Kg	☼	12/18/19 09:00	12/19/19 14:52	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 13
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-13
Matrix: Solid
Percent Solids: 97.8

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.823	J	4.40	0.730	mg/Kg	☼	12/18/19 09:00	12/19/19 14:53	1
Lead	59.7		4.40	1.14	mg/Kg	☼	12/18/19 09:00	12/19/19 14:53	1

Client Sample Results

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 14
Date Collected: 12/05/19 00:00
Date Received: 12/13/19 09:45

Lab Sample ID: 310-172103-14
Matrix: Solid
Percent Solids: 97.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	7.60		4.70	0.780	mg/Kg	☼	12/18/19 09:00	12/19/19 14:55	1
Lead	1040		4.70	1.22	mg/Kg	☼	12/18/19 09:00	12/19/19 14:55	1

Definitions/Glossary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F3	Duplicate RPD exceeds the control limit
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 310-264782/1-A
Matrix: Solid
Analysis Batch: 265469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264782

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.645		3.89	0.645	mg/Kg		12/18/19 09:00	12/19/19 14:13	1
Lead	<1.01		3.89	1.01	mg/Kg		12/18/19 09:00	12/19/19 14:13	1

Lab Sample ID: LCS 310-264782/2-A
Matrix: Solid
Analysis Batch: 265469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264782

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	145	145.7		mg/Kg		100	80 - 120
Lead	145	143.7		mg/Kg		99	80 - 120

Lab Sample ID: 310-172103-1 MS
Matrix: Solid
Analysis Batch: 265469

Client Sample ID: 1
Prep Type: Total/NA
Prep Batch: 264782

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.724	F1	194	99.73	F1	mg/Kg	☼	51	75 - 125
Lead	23.1		194	204.3		mg/Kg	☼	93	75 - 125

Lab Sample ID: 310-172103-1 MSD
Matrix: Solid
Analysis Batch: 265469

Client Sample ID: 1
Prep Type: Total/NA
Prep Batch: 264782

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.724	F1	174	83.50	F1	mg/Kg	☼	48	75 - 125	18	20
Lead	23.1		174	183.4		mg/Kg	☼	92	75 - 125	11	20

Lab Sample ID: 310-172103-9 DU
Matrix: Solid
Analysis Batch: 265469

Client Sample ID: 9
Prep Type: Total/NA
Prep Batch: 264782

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	1.61	J	1.554	J	mg/Kg	☼	3	20
Lead	103		64.85	F3	mg/Kg	☼	46	20

Metals

Prep Batch: 264782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172103-1	1	Total/NA	Solid	3050B	
310-172103-2	2	Total/NA	Solid	3050B	
310-172103-3	3	Total/NA	Solid	3050B	
310-172103-4	4	Total/NA	Solid	3050B	
310-172103-5	5	Total/NA	Solid	3050B	
310-172103-6	6	Total/NA	Solid	3050B	
310-172103-7	7	Total/NA	Solid	3050B	
310-172103-8	8	Total/NA	Solid	3050B	
310-172103-9	9	Total/NA	Solid	3050B	
310-172103-10	10	Total/NA	Solid	3050B	
310-172103-11	11	Total/NA	Solid	3050B	
310-172103-12	12	Total/NA	Solid	3050B	
310-172103-13	13	Total/NA	Solid	3050B	
310-172103-14	14	Total/NA	Solid	3050B	
MB 310-264782/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 310-264782/2-A	Lab Control Sample	Total/NA	Solid	3050B	
310-172103-1 MS	1	Total/NA	Solid	3050B	
310-172103-1 MSD	1	Total/NA	Solid	3050B	
310-172103-9 DU	9	Total/NA	Solid	3050B	

Analysis Batch: 265469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172103-1	1	Total/NA	Solid	6010C	264782
310-172103-2	2	Total/NA	Solid	6010C	264782
310-172103-3	3	Total/NA	Solid	6010C	264782
310-172103-4	4	Total/NA	Solid	6010C	264782
310-172103-5	5	Total/NA	Solid	6010C	264782
310-172103-6	6	Total/NA	Solid	6010C	264782
310-172103-7	7	Total/NA	Solid	6010C	264782
310-172103-8	8	Total/NA	Solid	6010C	264782
310-172103-9	9	Total/NA	Solid	6010C	264782
310-172103-10	10	Total/NA	Solid	6010C	264782
310-172103-11	11	Total/NA	Solid	6010C	264782
310-172103-12	12	Total/NA	Solid	6010C	264782
310-172103-13	13	Total/NA	Solid	6010C	264782
310-172103-14	14	Total/NA	Solid	6010C	264782
MB 310-264782/1-A	Method Blank	Total/NA	Solid	6010C	264782
LCS 310-264782/2-A	Lab Control Sample	Total/NA	Solid	6010C	264782
310-172103-1 MS	1	Total/NA	Solid	6010C	264782
310-172103-1 MSD	1	Total/NA	Solid	6010C	264782
310-172103-9 DU	9	Total/NA	Solid	6010C	264782

Lab Chronicle

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 1
Lab Sample ID: 310-172103-1
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 91.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:20	CTB	TAL CF

Client Sample ID: 2
Lab Sample ID: 310-172103-2
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:29	CTB	TAL CF

Client Sample ID: 3
Lab Sample ID: 310-172103-3
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:30	CTB	TAL CF

Client Sample ID: 4
Lab Sample ID: 310-172103-4
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		2	265469	12/19/19 15:08	CTB	TAL CF

Client Sample ID: 5
Lab Sample ID: 310-172103-5
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		2	265469	12/19/19 15:09	CTB	TAL CF

Client Sample ID: 6
Lab Sample ID: 310-172103-6
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		2	265469	12/19/19 15:11	CTB	TAL CF

Lab Chronicle

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 7
Lab Sample ID: 310-172103-7
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:41	CTB	TAL CF

Client Sample ID: 8
Lab Sample ID: 310-172103-8
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:43	CTB	TAL CF

Client Sample ID: 9
Lab Sample ID: 310-172103-9
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:45	CTB	TAL CF

Client Sample ID: 10
Lab Sample ID: 310-172103-10
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 98.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:48	CTB	TAL CF

Client Sample ID: 11
Lab Sample ID: 310-172103-11
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 91.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:50	CTB	TAL CF

Client Sample ID: 12
Lab Sample ID: 310-172103-12
Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 89.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:52	CTB	TAL CF

Lab Chronicle

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Client Sample ID: 13

Lab Sample ID: 310-172103-13

Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:53	CTB	TAL CF

Client Sample ID: 14

Lab Sample ID: 310-172103-14

Date Collected: 12/05/19 00:00
Matrix: Solid
Date Received: 12/13/19 09:45
Percent Solids: 97.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264782	12/18/19 09:00	DLS	TAL CF
Total/NA	Analysis	6010C		1	265469	12/19/19 14:55	CTB	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19 *
Illinois	NELAP	200024	11-29-19 *
Iowa	State	007	12-01-19 *
Iowa	State Program	007	12-01-19 *
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
North Dakota	State	R-186	09-30-20
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Steffen Engineering Inc
Project/Site: 2431 Expedition Ct

Job ID: 310-172103-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CF
3050B	Preparation, Metals	SW846	TAL CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing TestAmerica

310-172103 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Steffan

City/State: CITY Lawton STATE IA Project:

Receipt Information

Date/Time Received: DATE 12/13/19 TIME 0945 Received By: CC

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☐ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☒ NONE

Thermometer ID: 0 Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): ~~17~~ CC 12/13 Corrected Temp (°C):

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:	4 oz jar	
Uncorrected Temp (°C):	17.9	
Corrected Temp (°C):	18.0	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

STEFFEN
ENGINEERING, INC.

1844 Hwy 20
Lawton, Iowa 51030
PH: (712)-944-5511

CHAIN OF CUSTODY RECORD

COMPANY:

PROJECT: 2431 Expedition Ct.

SAMPLER: Jerry Steffen

SAMP #	DATE	TIME	COMP	GRAB	STATION LOCATION:	NUM OF VIALS	REQUIRED TESTS:
1	12-5-19					1-40z	Total Lead
2							Total Antimony
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14	12-5-19					1-40z	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Jerry Steffen	12-12-19	4:30	Lindsay Bindert	12.13.19	945
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME

Login Sample Receipt Checklist

Client: Steffen Engineering Inc

Job Number: 310-172103-1

Login Number: 172103
List Number: 1
Creator: Bindert, Lindsay A

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	Thermal preservation not required.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	