Fields of Opportunities

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DEPARTMENT OF NATURAL RESOURCES
RICHARD A. LEOPOLD, DIRECTOR

May 20, 2010

Jim Golden, Executive Director
Lakes Community Land Trust
2650 Enterprise Avenue
Spirit Lake, IA 51360

Subject: Spirit Lake Community Gardens, Spirit Lake, Iowa
Summary of Surface Soil Sampling Results

Dear Mr. Golden:

The purpose of this letter is summarize the findings of the limited surface soil sampling conducted by the Iowa Department of Natural Resources (IDNR) at three locations in Spirit Lake that have been proposed as community gardens (Figures 1 and 2). The sampling and analyses were conducted to determine if there was evidence suggesting the existence of a hazardous condition. No previous environmental assessment documentation for this site was provided to IDNR. It is IDNR's understanding that the three locations are to be used for community gardens.

IDNR collected soil samples from each of the three locations on April 27 and 28, 2010. At each sample location (Figures 3, 4, and 5), samples were collected from a depth of 0-2 inches below ground surface (BGS) and from 1-2 feet BGS. No groundwater samples were collected. Samples were analyzed as summarized in the following table.

Sampling and Analytical Summary

	Analytes	Method
Soil	Metals*	EPA 6200 (XRF)
	Benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE)	Iowa OA-1
	Total Extractable Hydrocarbons (TEH)	Iowa OA-2
	Polynuclear aromatic hydrocarbons (PAH)	EPA 8270

*Antimony (Sb), Tin (Sn), Cadmium (Cd), Silver (Ag), Strontium (Sr), Rubidium (Rb), Lead (Pb), Selenium (Se), Arsenic (As), Mercury (Hg), Zinc (Zn), Copper (Cu), Nickel (Ni), Colbalt (Co), Iron (Fe), Manganese (Mn), Chromium (Cr), Vanadium (V), Titanium (Ti), Scandium (Sc), Calcium (Ca), Potassium (K)

The metals were analyzed by IDNR personnel using a NITON Model XLt 793WY X-Ray Fluorescence Metal Analyzer. The other samples were stored in a cooler and maintained in the custody of the collector until submitted directly to the University of Iowa Hygienic Laboratory (UHL) in Ankeny on April 29, 2010. Chain-of-Custody (COC) forms were used to document samples collected and submitted for

laboratory analyses. Upon receipt of the samples, laboratory personnel signed and retained the first two copies of the COC form and the IDNR Project Manager received the third (bottom) copy.

Analytical results are summarized in the attached table.

Metal Results

This limited investigation noted elevated metal concentrations in soil at a few sample locations, as summarized below:

Site 1 (SS1 – SS6), Hospital Field, 23rd St & Zenith Ave.
Only cobalt was detected above the statewide standard (23.0 mg/kg) for soil:

- 0-2″ sample: SS2, 148 mg/kg
- 1-2′ sample: SS2 and SS3, average 127 mg/kg

Sample locations are shown on Figure 3.

Site 2 (SS7 – SS12), Dyno Oil Co., 18th & Lincoln Ave.
Arsenic, cobalt, and lead were detected above their respective statewide standards for soil:

Arsenic (Statewide Standard: 17.0 mg/kg)

- 0-2″ sample: SS11, 2.6 mg/kg
- 1-2′ sample: SS11, 62.0 mg/kg

Cobalt (Statewide Standard: 23.0 mg/kg)

- 0-2″ sample: SS9, 127 mg/kg
- 1-2′ sample: SS11, 464 mg/kg

Lead (Statewide Standard: 400 mg/kg)

- 0-2″ sample: SS9, 444 mg/kg
- 1-2′ sample: SS11, 1,080 mg/kg

Sample locations are shown on Figure 4.

Site 3 (SS13 – SS18), 21st St. Right-of-Way, between Ithica & Jackson on 21st alignment
Antimony, cobalt, and lead were detected above their respective statewide standards for soil:

Antimony (Statewide Standard: 31.0 mg/kg)

- 0-2″ sample: SS15, 55.5 mg/kg

Cobalt (Statewide Standard: 23.0 mg/kg)

- 0-2″ sample: SS14 and SS18, average 123 mg/kg
- 1-2′ sample: SS14, 136 mg/kg

Lead (Statewide Standard: 400 mg/kg)

- 1-2′ sample: SS15, 537 mg/kg

Sample locations are shown on Figure 5.

BTEX, MTBE Results

No BTEX compounds or MTBE were detected in any of the IDNR samples.

TEH Results

Diesel fuel was detected at sample locations SS3 (0-2″ sample) and SS4 (0-2″ and 1-2′ samples), with a maximum concentration of 4 mg/kg, well below the statewide standard of 3,800 mg/kg.

Motor oil was detected at numerous sample locations, with a maximum concentration of 150 mg/kg:

SS2 (0-2″ sample)
SS5 (0-2″ sample)
SS6 (0-2″ sample)
SS7 (0-2″ and 1-2′ samples)
SS8 (0-2″ and 1-2′ samples)
SS9 (0-2″ and 1-2′ samples)
SS10 (0-2″ and 1-2′ samples)
SS11 (0-2″ and 1-2′ samples)
SS12 (0-2″ and 1-2′ samples)
SS13 (0-2″ and 1-2′ samples)
SS14 (0-2″ and 1-2′ samples)
SS15 (0-2″ and 1-2′ samples)
SS16 (0-2″ and 1-2′ samples)
SS17 (0-2″ sample)
SS18 (0-2″ and 1-2′ samples)

No statewide standard has been established for motor oil.

TEH Results

Several PAHs (Phenanthrene, Fluorene, and Pyrene) were detected at SS10 (0-2″ sample) and SS16 (0-2″ sample) at concentrations below their respective statewide standards for soil.

Discussion

Although the three sites are not enrolled in the Iowa DNR Land Recycling Program (LRP) (567 Iowa Administrative Code (IAC) Chapter 137), LRP rules were used as guidelines in evaluating the site, specifically 567 IAC 137.10(5)(a)(1):

> *a*. To demonstrate compliance with the statewide standard for soils in each affected area, in addition to (1) or (2) as follows, all other applicable requirements of this rule shall be met.
>
> (1) Seventy-five percent of all soil samples, collected during a single event, shall be less than or equal to the statewide standard, with no individual sample exceeding 10 times the statewide standard.

Only cobalt exceeded this threshold:

Site 1	Site 2	Site 3
SS2 (0-2″ and 1-2′ samples)	SS9 (0-2″ sample)	SS14 (0-2″ and 1-2′ samples)
SS3 (1-2′ sample)	SS11 (1-2′ sample)	SS18 (0-2″ sample)
>10x for 0-2″ samples	>10x for 0-2″ samples	>75% and >10x for 0-2″ samples
>75% and >10x for 1-2′ samples	>10x for 1-2′ samples	>10x for 1-2′ samples

Note that the statewide standards are based on the ingestion of soil, rather than uptake in garden plants. The Agency for Toxic Substances & Disease Registry's toxicological profile for cobalt (ATSDR 2004, http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=373&tid=64) states that uptake of cobalt "from roots to above-ground parts of plants is not significant in most soils…." While this suggests that use of these sites as community gardens may potentially be acceptable, it should not be interpreted as a clear indication that plant uptake of cobalt at the site, under site-specific soil conditions, will not exceed acceptable levels.

With consideration of these conditions, the IDNR does not require any follow-up action based on the report findings. This determination should not be construed to be an endorsement by the IDNR that a hazardous condition does not exist on the property. Instead, it is a conclusion by the IDNR that available

information (without regard to the quality or quantity of that information) does not suggest the likely existence of hazardous condition on the property.

Note that hazardous conditions (as defined in 567 IAC Chapter 131) are required to be reported to the IDNR (567 IAC Chapter 131), e.g., if a hazardous condition is discovered during site development activities.

Feel free to contact me if there are any questions, comments, or concerns at jim.kacer@dnr.iowa.gov or (515) 281-4117.

Sincerely,

Jim Kacer
Environmental Specialist
Contaminated Sites Section
Iowa Department of Natural Resources

cc: Cal Lundberg, Supervisor, Contaminated Sites Section, Iowa Department of Natural Resources
Tami Rice, Environmental Specialist Senior, Contaminated Sites Section, Iowa Department of Natural Resources
Mel Pins, Executive Officer, Iowa Brownfield Redevelopment Program, Iowa Department of Natural Resources
Field Office 3, 1900 North Grand Ave, Suite E17, Spencer, IA 51301

Figure 1 – Site Topography

Spirit Lake Community Gardens
Spirit Lake, Iowa

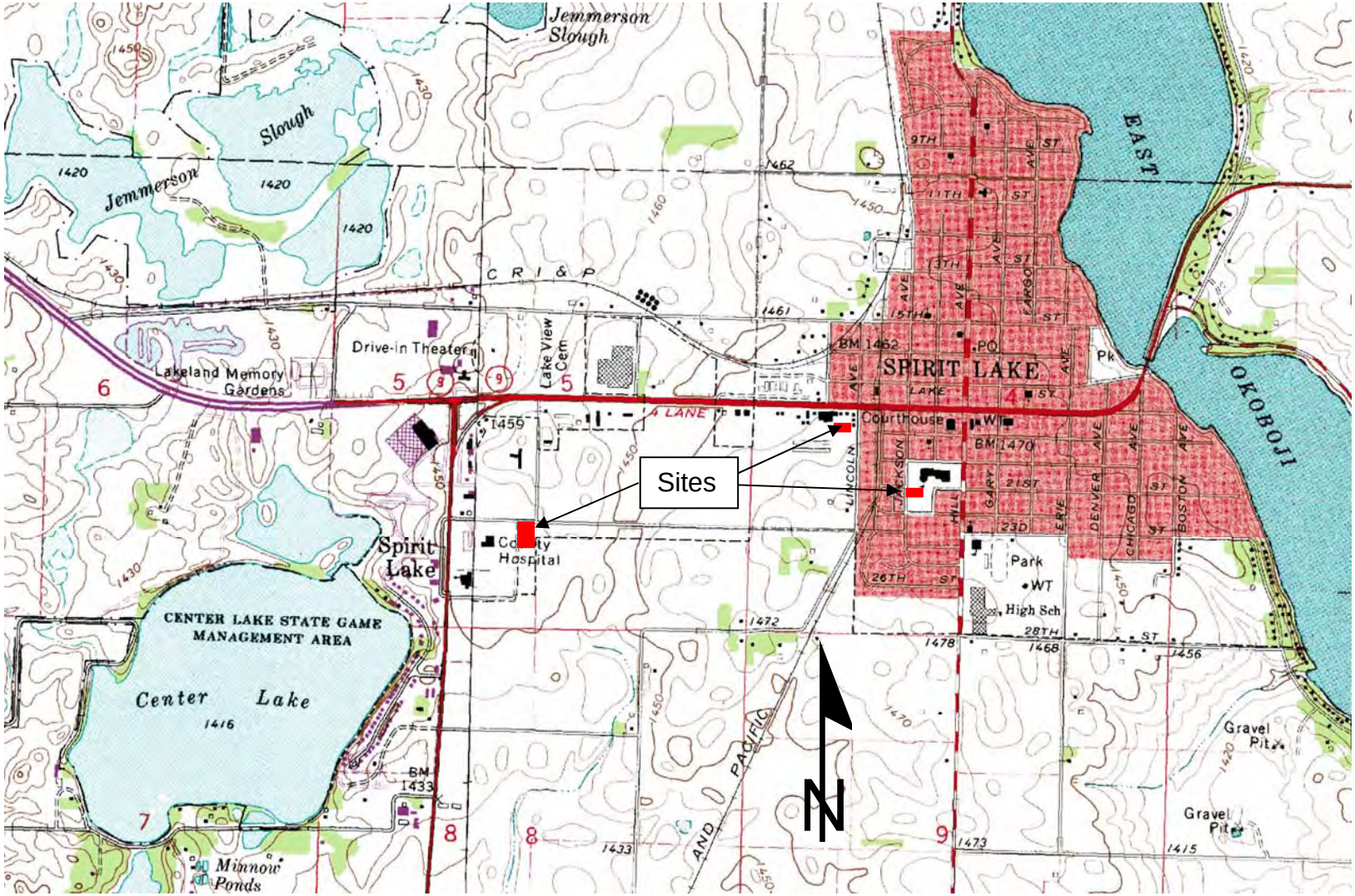

Figure 2 – Site Location

Spirit Lake Community Gardens
Spirit Lake, Iowa

Figure 3 – Sample Locations, Site 1
Spirit Lake Community Gardens
Spirit Lake, Iowa

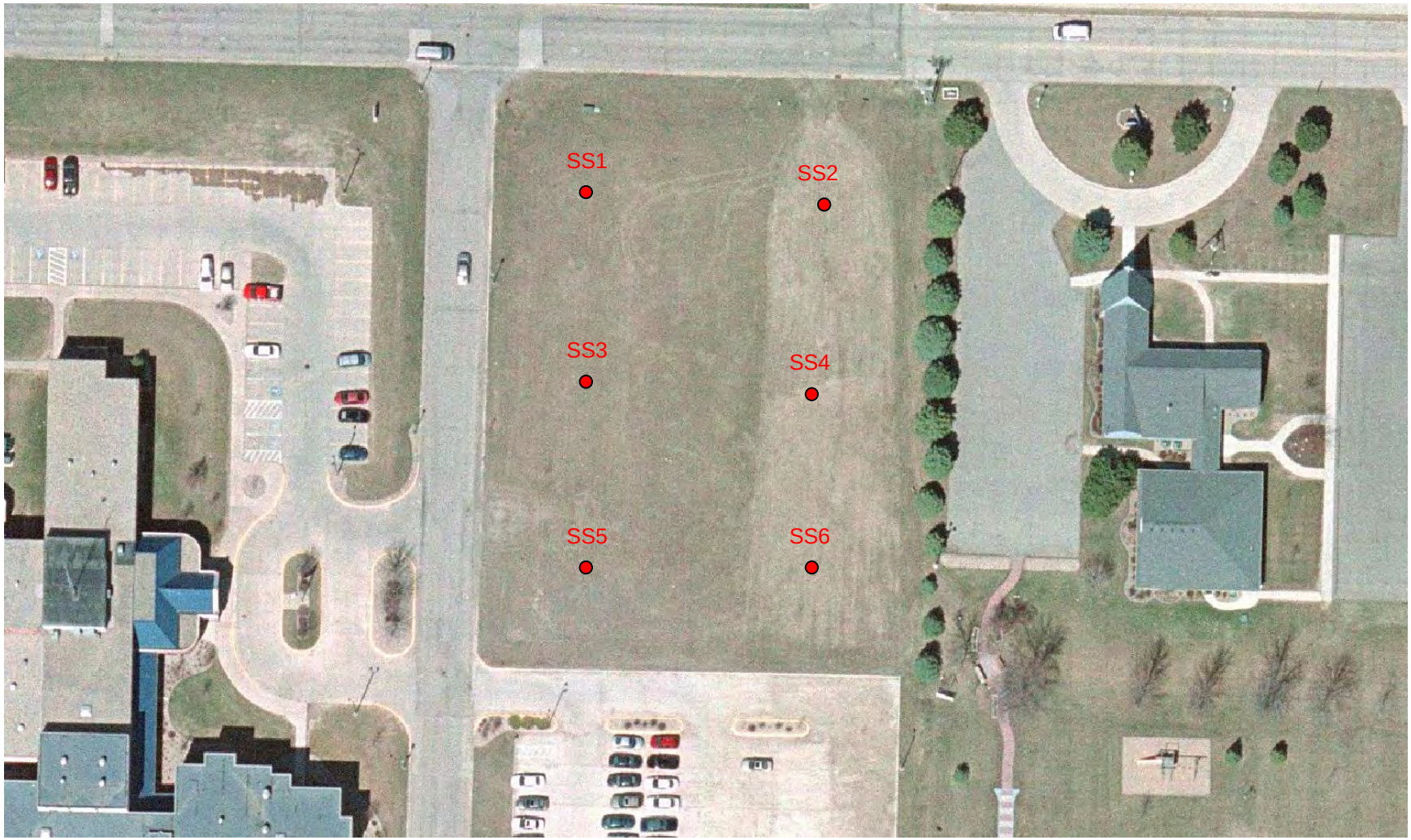

Figure 4 – Sample Locations, Site 2
Spirit Lake Community Gardens
Spirit Lake, Iowa

Figure 5 – Sample Locations, Site 3
Spirit Lake Community Gardens
Spirit Lake, Iowa