8 December 2008

Ms. Chantelle Carroll
U.S. Army Corps of Engineers, Buffalo District
Regulatory Branch, Orwell Field Office
33 Grand Valley Avenue
Orwell, Ohio 44076
Phone: (440) 437-8970
Fax: (440) 437-5842

Re: *Section 404 Nationwide Permit Application,*
Haley's Ditch Restoration Project
North of East Archwood Avenue and south of Triplett Boulevard,
Akron, Summit County, Ohio 44306

Dear Ms. Carroll:

Two copies of the Application for a Section 404 Nationwide Permit for the subject site are enclosed. The applicant is Lockheed Martin. EnviroScience, Inc. has prepared the necessary permit documents under contract with this company. As a reminder, the letter from the US EPA discussing approval is pending and is anticipated by early 2009.

Please review the 404 Application and notify me of any changes or further information the USACE may require within 20 days of receipt. If you have any questions or would like more information, please contact me by phone at (330) 688-0111, or email me at jkrejsa@enviroscienceinc.com.

Respectfully,

Jamie Krejsa
Vice President / Director of Ecological Services

enc: Section 404 NWP Application

CC:
Mr. Dave Gunnarson, Lockheed Martin
File

INDIVIDUAL 404 PERMIT APPLICATION

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR-325)

OMB APPROVAL NO 0710-003
Expires October 1996

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principle Purpose: These laws require permits authorizing activities in, affecting, navigable waters of the United States, the discharge of dredged or fill material into the waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor ca a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICANT NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED OUT BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
Mr. Steve Vardavas	Jamie Krejsa, Vice President / Director of Ecological Services
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
Steve Vardavas Manager, ESH & Fire Protection Environmental, Safety and Health Lockheed Martin MS2 1210 Massillon Road Akron, Ohio 44315-0001	EnviroScience, Inc. 3781 Darrow Road Stow, Ohio 44224
7. APPLICANT'S PHONE NOS. W/AREA CODE	**10. AGENT'S PHONE NOS. W/AREA CODE**
a. Residence	a. Residence
b. Business 330-796-2185	b. Business 330-688-0111

11. STATEMENT OF AUTHORIZATION

I hereby authorize, EnviroScience, Inc. to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE — DATE: 12/10/08

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Haley's Ditch Remediation

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Haley's Ditch and adjacent wetland habitat

14. PROJECT STREET ADDRESS
No associated street address; the project area is located in Akron, Ohio (Appendix A: Map 1) is bordered to the north by East Archwood Avenue and to the south by Triplett Boulevard; South Seiberling Street and Landon Street are located east of the project area (Appendix A: Maps 2 and 3).

15. LOCATION OF PROJECT
Summit (COUNTY) Ohio (STATE)

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
Lat: 81° 28' 21.38" Long: 41° 02' 42.51"

17. DIRECTIONS TO THE SITE

From Buffalo, NY merge onto I-190S/New York State Thruway and travel approximately 9 miles. Merge onto I-90W (portions toll) via exit 54-61 toward Erie, PA and travel approximately 171 miles. Keep left to take I-271S via exit 188 toward Columbus, OH and travel approximately 22 miles. Merge onto OH-8 via exit 18 toward Boston Hts/Akron/Blossom Music Center/I-80/Ohio Turnpike and travel approximately 17 miles. Take the I-76E exit and travel approximately 1.5 miles. Take exit 25A to merge onto South Martha Avenue and travel approximately 0.7 mile. Take a slight right at South Seiberling Street and travel approximately 0.5 mile; turn right at East Archwood Avenue and turn immediately left into an auto body business parking lot. The northern end of the project area is located just southwest of the car dealership parking lot.

18. Nature of Activity (description of project, include all features)

PCB containing soil has been identified along approximately 1,800 linear feet of Haley's Ditch and the immediate surrounding floodplain area (Figure 5). Proposed remedial actions will involve site clearing, construction of material staging areas, assembly of material handling and water handling systems, and excavation and off-site disposal of targeted PCB-containing soil. Soil located adjacent to Haley's Ditch containing PCB concentrations greater than 1 mg/kg will be excavated and PCB-containing unconsolidated soft sediments will be removed from the ditch. Excavated contaminated soil will be managed as PCB remediation waste and will be transported offsite for proper disposal. An onsite water treatment system may be used to treat water generated by remediation activities. The treated water will be discharged to the local POTW under approval of the City of Akron.

Excavated areas will be backfilled, as needed, with soil containing less than 1 mg/kg total PCBs. The restored stream channel (Haley's Ditch) and wetland areas (Appendix B: Davey Resource Wetland Delineation Report; Appendix C: EnviroScience Ecological Resources Assessment Report) will be covered with suitable soil containing less than 0.5 mg/kg. Following these soil remedial actions, restoration of stream and wetland habitat will be performed in accordance to the USACE requirements. See below for additional details regarding restoration.

19. Project Purpose (Describe the reason or purpose of project, see instructions)

The purpose of the project is to remove PCB containing soil and sediment from Haley's Ditch as well as along the banks and surrounding floodplain area such that any remaining PCBs will not pose an unreasonable risk to human health or the environment.

Commencement of remedial activities is anticipated to begin in early 2009; this start date is contingent upon approvals from USEPA, Ohio EPA, USACE.

USE BLOCKS 20 - 22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Excavation of soils in Haley's Ditch and the surrounding floodplain area is necessary to remove PCBs. Because soil excavation will occur in some stream and wetland habitat, placement of suitable soil is necessary to restore Haley's Ditch, onsite wetlands, and riparian floodplain habitat.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Approximately 600 cubic yards of unconsolidated sediment will be excavated from 1,800 linear feet of Haley's Ditch; approximately 10,000 cubic yards of surface and subsurface soil containing PCBs above 1 mg/kg will be excavated from the wetland and riparian areas onsite. Suitable soil will be discharged (in lesser amounts) in the excavated areas to replace the excavated soils and to restore the stream, wetland and riparian floodplain habitats. An estimated 608 cubic yards of stream substrate will be used to create the new stream bed. Exact fill amounts will be determined during the final stages of restoration design.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Approximately 1,800 linear feet of Haley's Ditch (0.17 acre) and 0.83 acre of onsite wetlands will be excavated and filled with suitable earthen fill.

23. Is Any Portion of the Work Already Complete? Yes ____ No X IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

See attached list.

25. List of Other Certificates or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
	12/10/08		12/10/08

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements of entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

*U.S. GPO:1994-520-478/82018

Nationwide 404 Permit Application
Haley's Ditch Restoration

Additional Information

Conceptual Restoration Plan
In conjunction with the remediation project, the applicant foresees and opportunity to enhance the long-term ecological function of the area instead of simply returning existing conditions and channel alignment. Therefore, a stream restoration project incorporating natural channel design strategies and native plantings is proposed for Haley's Ditch. The channelized ditch will be replaced with a meandering stream that is designed to improve hydraulics and habitat along the remediation corridor. Since the remediation effort is excavating materials beyond the stream channel, there is potential to expand the flood prone area for lower return interval storm events (ie. 1-2 yr storms) thereby improving hydraulics. The proposed restoration plan takes advantage of the remedial excavation to restore a new stream pattern and flood corridor within the work limits (Appendix A: Map 4). However, the exact limits of the flood plain expansion will be determined in final restoration design as this relates to additional cost of excavation, plantings and grading work.

A suitable mixture of natural sand and gravel material that will contain less than 0.5 mg/kg PCBs will be used to create the streambed. Riffle-pool characteristics will be replaced along the profile at appropriate slope and interval spacing determined in final design. The restored floodplain will be backfilled and graded to final elevation using suitable topsoil that will contain less than 0.5 mg/kg PCBs. The restoration plan will aim to establish an early successional community toward a trajectory of forest recovery. Native riparian grasses, sedges and forbs will be seeded through the corridor and floodplain. Woody vegetation will be concentrated near the restored stream banks such as willow and dogwood cuttings for long-term stability. Larger woody species such as sycamore, maple, ironwood etc. will be installed along the stream length as well.

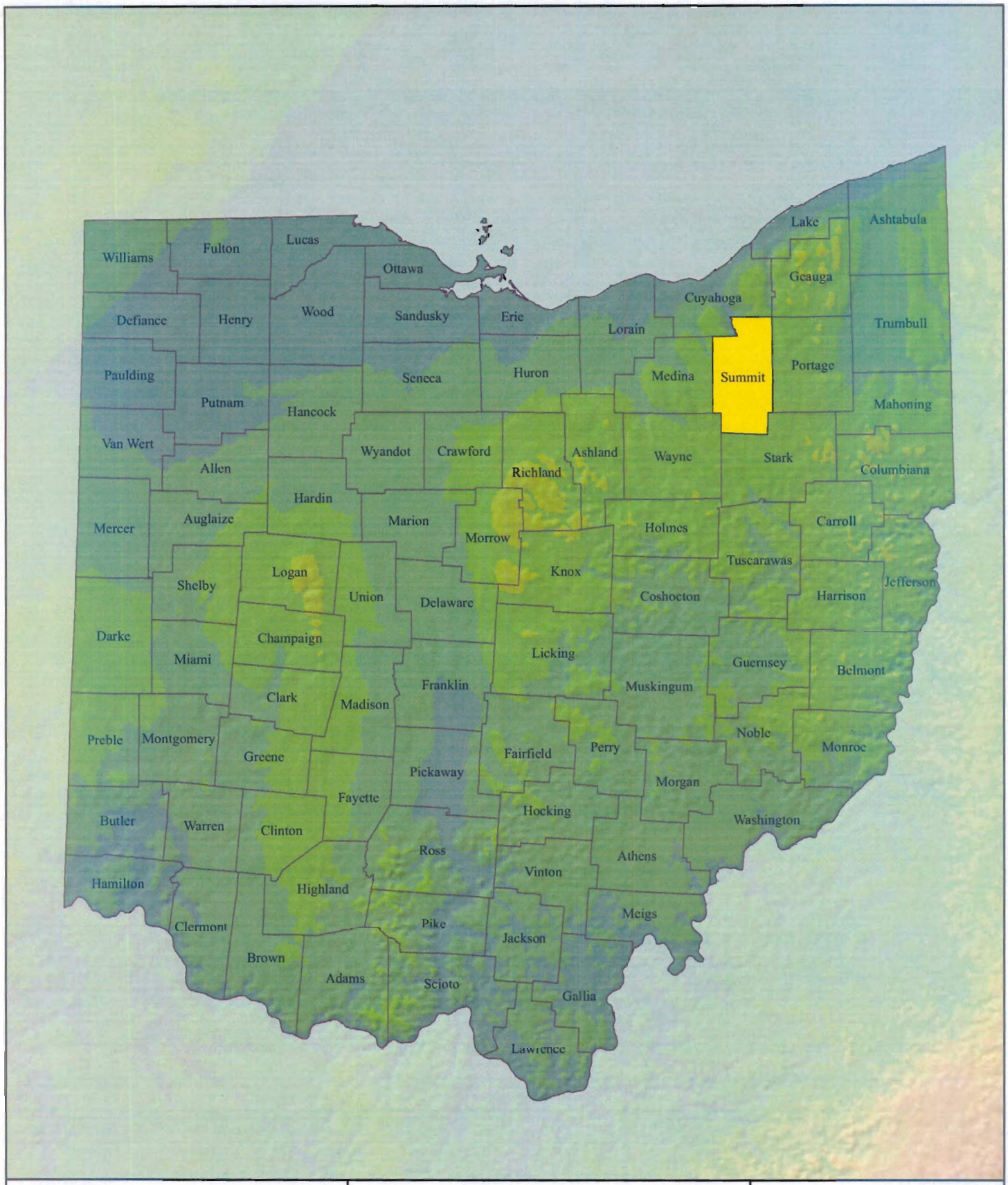
In addition to stream restoration, wetland totaling 0.83 acre will be replaced within the project area. The wetland(s) will be similar to the existing type of wetland but will actually have increased hydrology due to their presence in the new more hydraulically active floodplain. The restored wetland(s) area will be backfilled with suitable soil and planted with native obligate or facultative species comprised of perennial grasses, sedges, rush and forb species. Wetland shrub and tree species will be planted in clusters surrounding and within the restored areas. The final restoration plan will be provided along with the final drawings and project plans.

Threatened and Endangered Species
The project is located within the range of the federally endangered Indiana bat (*Myotis sodalis*), the federally threatened northern monkshood (*Aconitum noveboracense*) and the federal species of concern bald eagle (*Haliaeetus leucocephalus*). The site consists mainly of successional forest, scrub shrub and urban area (mowed lawn). No Potential northern monkshood or bald eagle habitat onsite; however, potential Indiana bat roost tree habitat was identified within site boundaries. A bat mist net survey was conducted by EnviroScience in July 2008; no Indiana bats were observed (Appendix C: EnviroScience Indiana Bat Survey Report).

Block 24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody

Parcel Number	Name of parcel owner and parcel address
6734729	GOODYEAR TIRE & RUBBER CO; 1485 E ARCHWOOD AVE
6756639	GOODYEAR TIRE & RUBBER CO; 200 MARTHA AVE
6712611	BURDETT JAMES R & MARKO STEVE; E ARCHWOOD AVE
6806215	BURDETT JAMES R & MARKO STEVE; 1490 E ARCHWOOD AVE
6806214	BURDETT JAMES R & MARKO STEVE; 1568 E ARCHWOOD AVE
6839388	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6837678	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6837677	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6837676	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6837675	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6837673	SAIKALY MAURICE W & SUZANNE A; SEIBERLING ST
6806218	BURDETT JAMES R & MARKO STEVE; MERRILL AVE
6806217	BURDETT JAMES R & MARKO STEVE; MERRILL AVE
6806219	BURDETT JAMES R & MARKO STEVE; MERRILL AVE
6806216	BURDETT JAMES R & MARKO STEVE; MERRILL AVE
6828122	SAIKALY MAURICE W & SUZANNE A; 586 SEIBERLING ST
6806213	MARKO STEVE; SEIBERLING ST
6806212	MARKO STEVE; SEIBERLING ST
6710663	TALBOTT DAVID & CHRISTINE; 1503 HOBART AVE
6727595	TALBOTT DAVID; HOBART AVE
6730516	CASSANDRA JOANNE L TRUSTEE; 1493 HOBART AVE
6803493	LISIC BILLIE E; SEIBERLING ST
6803492	LISIC BILLIE E; SEIBERLING ST
6704109	AUSTIN BETTY J AND WAYNE; SEIBERLING ST
6723679	CHESTERWOOD ASSOCIATES; 1492 HOBART AVE
6820165	HORNYAK FRANK D; 1485 WILDON AVE
6807481	ROGERS MILDOLINE; WILDON AVE
6717756	COLLIER HEIDI D; LANDON AVE
6717753	COLLIER HEIDI D; LANDON AVE
6717755	COLLIER HEIDI D; 639 LANDON AVE
6717757	COLLIER HEIDI D; LANDON AVE
6741717	ERNSBERGER WILLIAM; 1480 CANADIAN AVE
6741719	ERNSBERGER WILLIAM; CANADIAN AVE
6814399	HOWES WILLIAM S; LANDON ST
6814398	HOWES WILLIAM S; LANDON ST
6802772	JUMBERT PROPERTIES LLC; SALEM AVE
6750091	KOZY STEVE R TRUSTEE; LANDON ST
6750089	KOZY STEVE R TRUSTEE; LANDON ST
6837919	VICTOR PROPERTIES LLC; 1533 TRIPLETT BLVD
6747975	KITTINGER CHARLES M TRUSTEE; 1529 TRIPLETT BLVD
6747974	KESSELRING CHARLES E; LANDON ST
6729998	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713553	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713540	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713545	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713541	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713539	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD
6713473	AKRON AIRPORT PROPERTIES INC; TRIPLETT BLVD

APPENDIX A:
MAPS



Map 1. Location of Summit County, Ohio

40 20 0 40 Miles

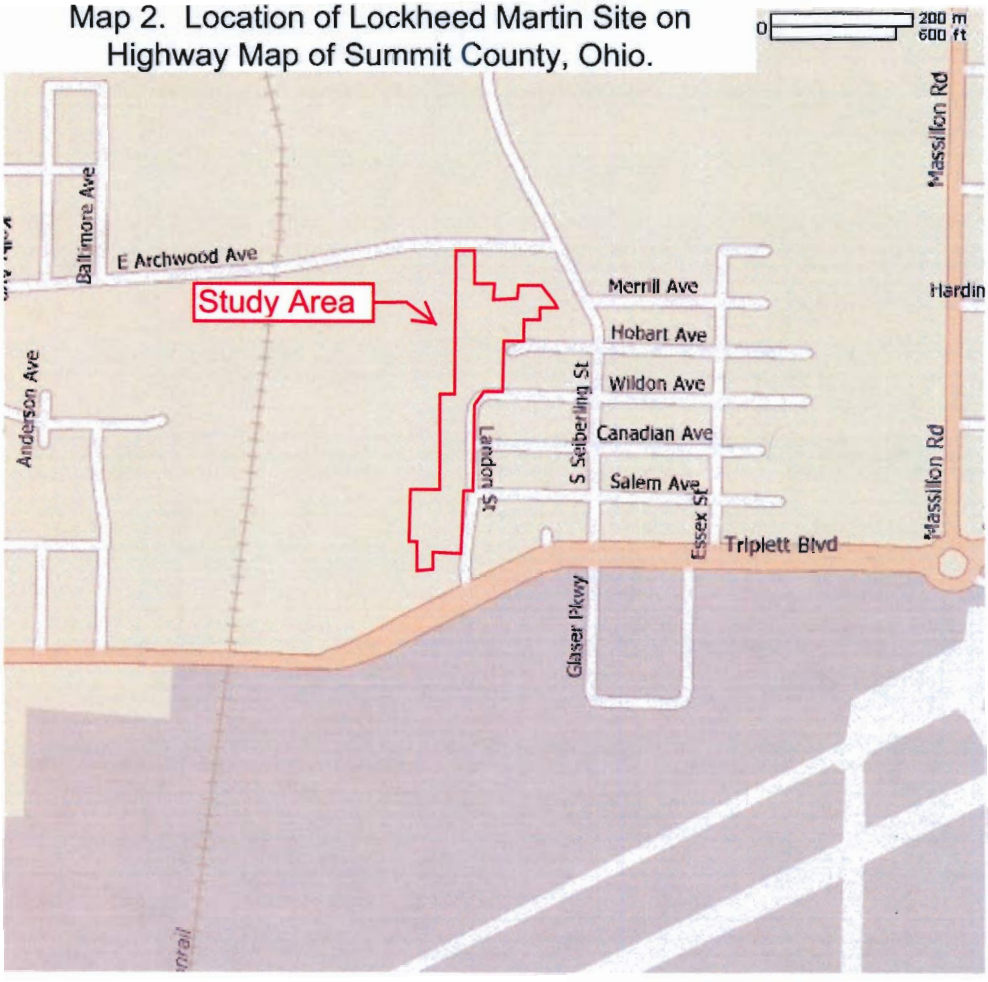
60 30 0 60 Kilometers

N

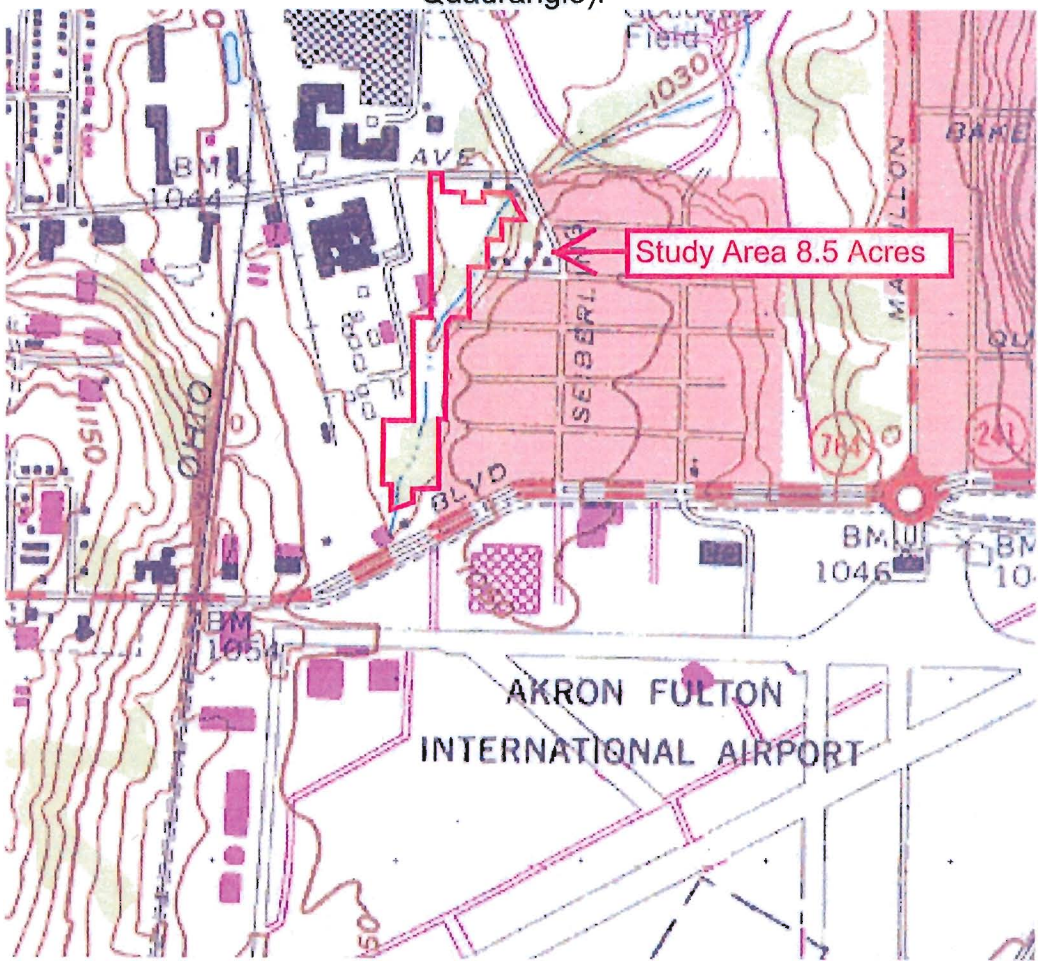
EnviroScience, Inc.

"Excellence in Ecological Monitoring"

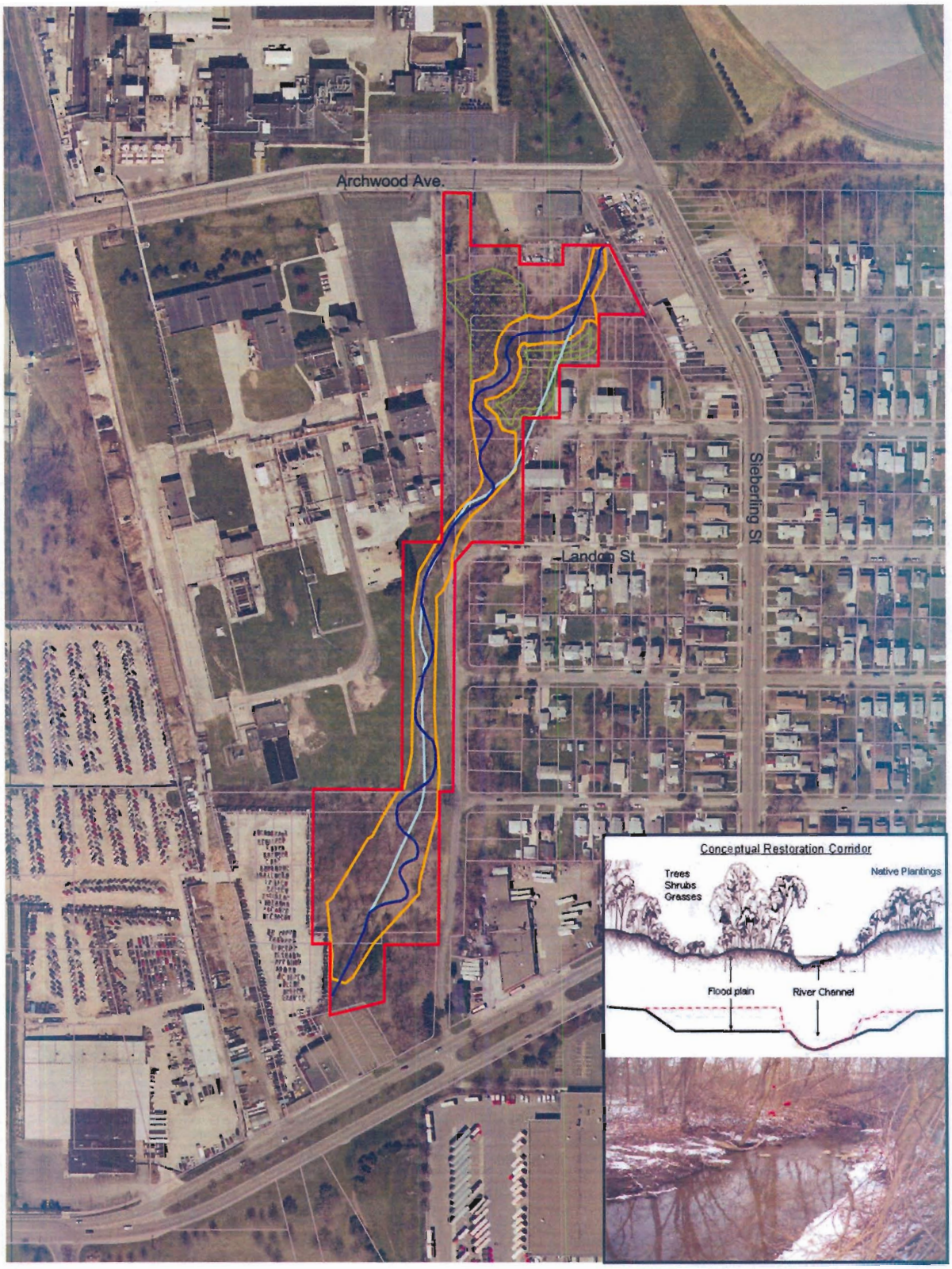
Map 2. Location of Lockheed Martin Site on Highway Map of Summit County, Ohio.



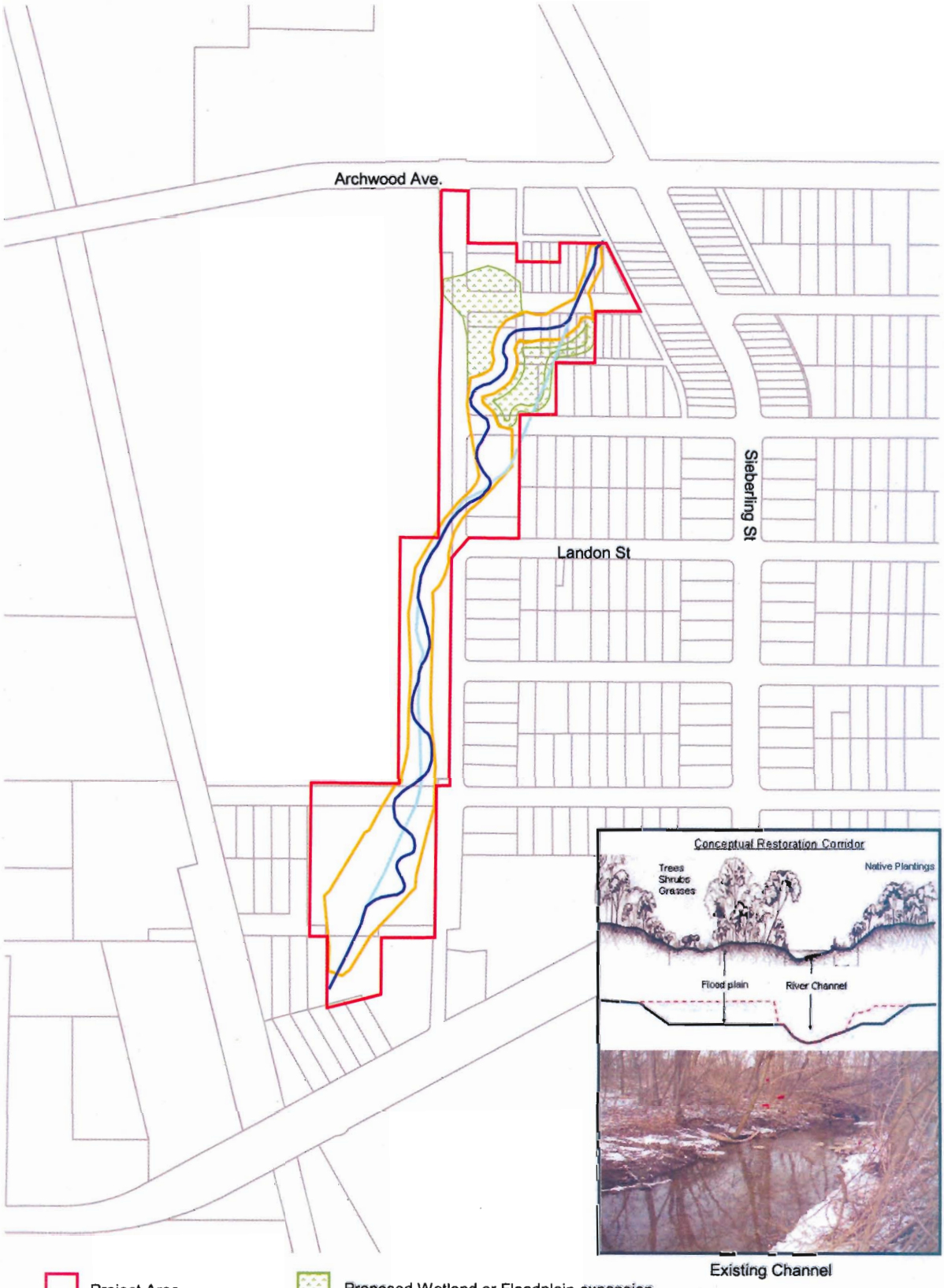
Map 3. USGS 7.5-minute Topographic Map of Site (Akron East Quadrangle).

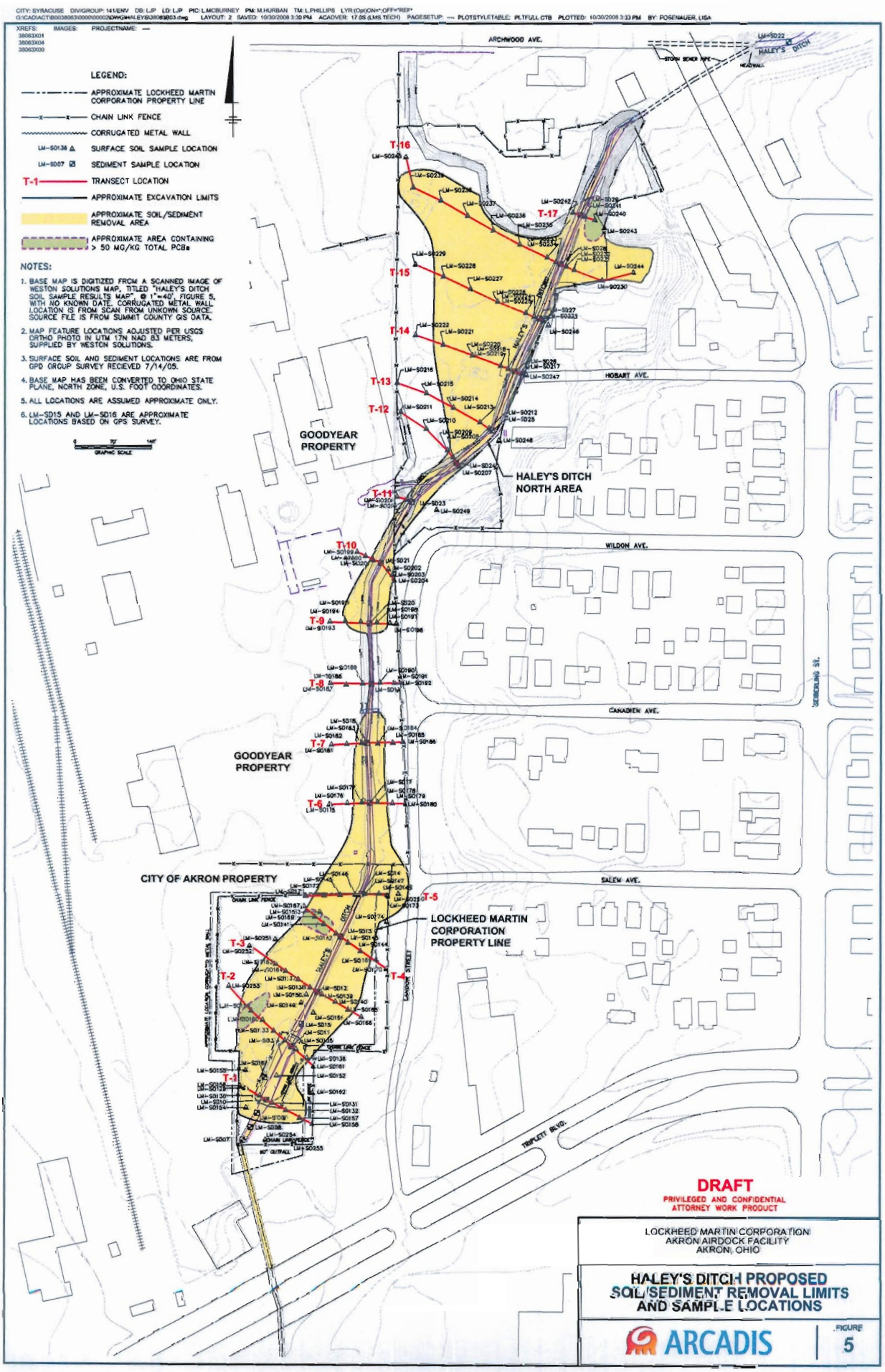


Map 4. Haley's Ditch
Lockheed Martin Proposed Restoration



Map 4. Haley's Ditch
Lockheed Martin Proposed Restoration




LEGEND:
APPROXIMATE LOCKHEED MARTIN CORPORATION PROPERTY LINE
CHAIN LINK FENCE
CORRUGATED METAL WALL
SURFACE SOIL SAMPLE LOCATION
SEDIMENT SAMPLE LOCATION
TRANSECT LOCATION
APPROXIMATE EXCAVATION LIMITS
APPROXIMATE SOIL/SEDIMENT REMOVAL AREA
APPROXIMATE AREA CONTAINING > 50 MG/KG TOTAL PCBs
NOTES:
1. BASE MAP IS DIGITIZED FROM A SCANNED IMAGE OF WESTON SOLUTIONS MAP, TITLED "HALEY'S DITCH SOIL SAMPLE RESULTS MAP", @ 1"=40', FIGURE 5, WITH NO KNOWN DATE. CORRUGATED METAL WALL LOCATION IS FROM SCAN FROM UNKOWN SOURCE. SOURCE FILE IS FROM SUMMIT COUNTY GIS DATA.
2. MAP FEATURE LOCATIONS ADJUSTED PER USGS ORTHO PHOTO IN UTM 17N NAD 83 METERS, SUPPLIED BY WESTON SOLUTIONS.
3. SURFACE SOIL AND SEDIMENT LOCATIONS ARE FROM GPD GROUP SURVEY RECIEVED 7/14/05.
4. BASE MAP WAS BEEN CONVERTED TO OHIO STATE PLANE, NORTH ZONE, U.S. FOOT COORDINATES.
5. ALL LOCATIONS ARE ASSUMED APPROXIMATE ONLY.
6. LM-SD15 AND LM-SD16 ARE APPROXIMATE LOCATIONS BASED ON GPS SURVEY.
ARCHWOOD AVE.
HALEY'S DITCH
HOBART AVE.
WILDON AVE.
CANADIEN AVE.
SALEM AVE.
SEIBERLING ST.
TRIPLETT BLVD.
CARNOT STREET
GOODYEAR PROPERTY
HALEY'S DITCH NORTH AREA
GOODYEAR PROPERTY
CITY OF AKRON PROPERTY
LOCKHEED MARTIN CORPORATION PROPERTY LINE
T-1
T-2
T-3
T-4
T-5
T-6
T-7
T-8
T-9
T-10
T-11
T-12
T-13
T-14
T-15
T-16
T-17
DRAFT
PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT
LOCKHEED MARTIN CORPORATION
AKRON AIRDOCK FACILITY
AKRON, OHIO
HALEY'S DITCH PROPOSED SOIL/SEDIMENT REMOVAL LIMITS AND SAMPLE LOCATIONS
ARCADIS
FIGURE 5

APPENDIX B:
DAVEY RESOURCE WETLANDS DELINEATION REPORT

Wetlands Delineation Report

5.85 Acres
Haley's Ditch Remediation Area

Akron Airdock Facility, Lockheed Martin Corporation
Akron, Ohio

July, 2008

Prepared for:
ARCADIS
11000 Regency Parkway
West Tower, Suite 205
Cary, North Carolina 27518
919-415-2260

Prepared by:
Davey Resource Group
1500 North Mantua Street
P.O. Box 5193
Kent, Ohio 44240
800-828-8312

Introduction

Site Description and Location

The 5.85-acre site is located in Akron, Ohio (Appendix A). The property is along Haley's Ditch and extends from north of Triplett Boulevard to just south of Archwood Avenue (Appendix B).

The property contains successional woods, upland old fields and shrub thickets, wet meadows, and lowland woods. These semi-natural areas surround Haley's Ditch and are located in a heavily urbanized area.

Haley's Ditch flows north through the study area, entering a culvert at the north end of the site (Photographs 4 and 5, Appendix H). Haley's Ditch continues flowing north through the Goodyear Tire and Rubber Company property, eventually entering Springfield Lake Outlet, which in turn enters the Little Cuyahoga River, a tributary to the Cuyahoga River. The Cuyahoga River has a watershed area of 809 square miles and debouches into Lake Erie in the City of Cleveland.

Secondary Source Information

The property is shown on the Akron East Quadrangle of the United States Geological Survey (USGS) map (Appendix C). Elevations range from approximately 1,030 to 1,040 feet across the site.

The National Wetlands Inventory (NWI) map (Akron East quadrangle) is in Appendix D. No wetlands are mapped for the site.

A map showing soil types from the U. S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (2007) is found in Appendix E. See Table 1 for a list of soil types mapped for the site.

Table 1. Soil Types Mapped for the Site

Map Unit	Soil Description
Cg	Carlisle muck[1]
CuB	Chili-Urban land complex, undulating
CuC	Chili-Urban land complex, rolling
Ur	Urban land

[1]Hydric soil

Descriptions from the Summit County Soil Survey (Ritchie and Steiger, 1974) and lists of hydric soils and non-hydric soils with hydric inclusions for the soil types found on the site are included in Appendix E.

Methodology

The *Corps of Engineers Wetlands Delineation Manual* (United States Army Engineer Waterways Experiment Station Environmental Laboratory, 1987) was used in delineating wetlands within the study area. The routine on-site determination method for sites over five acres was used. This method is detailed in Section D (page 53) of the *Corps of Engineers Wetlands Delineation Manual.*

The wetlands were delineated and surveyed on June 25, 2008 and July 1, 2008. The wetlands delineation fieldwork, boundary mapping, and data analysis were performed by Todd Crandall and Kristen Bates. Shawn Bruzda prepared the vegetation, soils, and wetlands maps using AutoCAD Map® 2008 and Appendices Maps A–E using ArcGIS® v.9.2. Ruth Ann Sobnosky provided technical oversight and quality control.

Wetlands are identified based on three characteristics: vegetation, soils, and hydrology. An area must meet all three criteria to be considered a jurisdictional wetlands. Six sampling points were established in the field to determine wetlands boundaries. Data sheets reporting the results of soils, vegetation, and hydrology analyses were completed for each sample station.

Soil samples were obtained to determine the extent of hydric soils on the site. A standard Munsell soil color chart was used to determine the hue, value, and chroma of each soil sample. Soil samples were taken at a depth of ten inches or immediately below the A horizon. Criteria established by the National Technical Committee for Hydric Soils (1991) were used to determine hydric soils.

Wetlands hydrology was characterized during this wetlands delineation. Inundation and/or soil saturation were noted for each sample point. Secondary hydrological indicators, including watermarks, drift lines, sediment deposits, wetlands drainage patterns, blackened leaves, and morphological indicators, were also noted. Other hydrological indicators observed include iron/manganese concretions and oxidized root zones within the upper soil layers.

Quantitative vegetation data were collected at each sampling point. Dominance was estimated by percent areal cover. Four strata were considered for each sample point—trees, saplings/shrubs, herbs, and woody vines. Trees are defined as any woody plant having a diameter at breast height (DBH) greater than 3.0 inches. Saplings and shrubs are those woody plants that have a DBH of less than 3.0 inches and are greater than 3.2 feet in height. For each stratum, plant species within a quadrat were identified and percent areal cover was estimated for each species. Fifteen-foot-square quadrats were used for trees, saplings/shrubs, and woody vines. A three-foot-square quadrat was used for herbs.

Any species within a stratum comprising 20 percent or more of the total quadrat areal cover was considered to be dominant. Dominant species within all strata were then added to determine the percentage of wetlands vegetation for each sample point. The wetlands vegetation criterion was met if greater than 50 percent of the dominant vegetation was indicative of wetlands conditions.

Wet Meadows. All of Wetland C and portions of Wetland A are wet meadows (Photographs 1 and 3, Appendix H). Common species include *Impatiens capensis* (spotted touch-me-not, FACW), *Leersia oryzoides* (rice cutgrass, OBL), and *Polygonum pennsylvanicum* (Pennsylvania smartweed, FACW).

Lowland Woods. All of Wetland B and portions of Wetland A are lowland woods (Photographs 1 and 2, Appendix H). These areas contain *Acer saccharinum* (silver maple, FACW), *Impatiens capensis* (spotted touch-me-not, FACW), *Lysimachia nummularia* (creeping Jennie, FACW-), *Populus deltoides* (eastern cotton-wood, FAC), and *Viburnum recognitum* (northern arrow-wood, FAC).

Soils

The soils on the site are disturbed. There are areas of fill as well as soils that have been disturbed from years of stream dredging and channelization. A large area of soils mapped as Carlisle muck in the northern portion of the site could not be located in the field. A map showing the general locations of soil types as shown on the soil survey and identified in the field is included in Appendix I.

Hydrology

All three of the wetlands are fed by surface water. Wetlands A and C also receive overflow from Haley's Ditch. All of the wetlands are considered non-isolated due to their close proximity to Haley's Ditch. A summary table of sample point data and vegetation, soils, and hydrology data sheets are included in Appendix J.

Conclusions

A map showing the location and size of the jurisdictional wetlands and aquatic features identified on the property, along with the locations of sample points, is shown in Appendix K. Three wetlands totaling 0.839 acre are found within the study area (Table 2). In addition to the wetlands, Haley's Ditch has a length of 1,757 linear feet.

Table 2. Jurisdictional Wetlands Delineated on the Site

Wetlands	Type	Connectivity to Waters of the U. S.[1]	Area (Acres)
A	Lowland woods and wet meadow	Non-isolated	0.722
B	Lowland woods	Non-isolated	0.093
C	Wet meadow	Non-isolated	0.024
Total			0.839

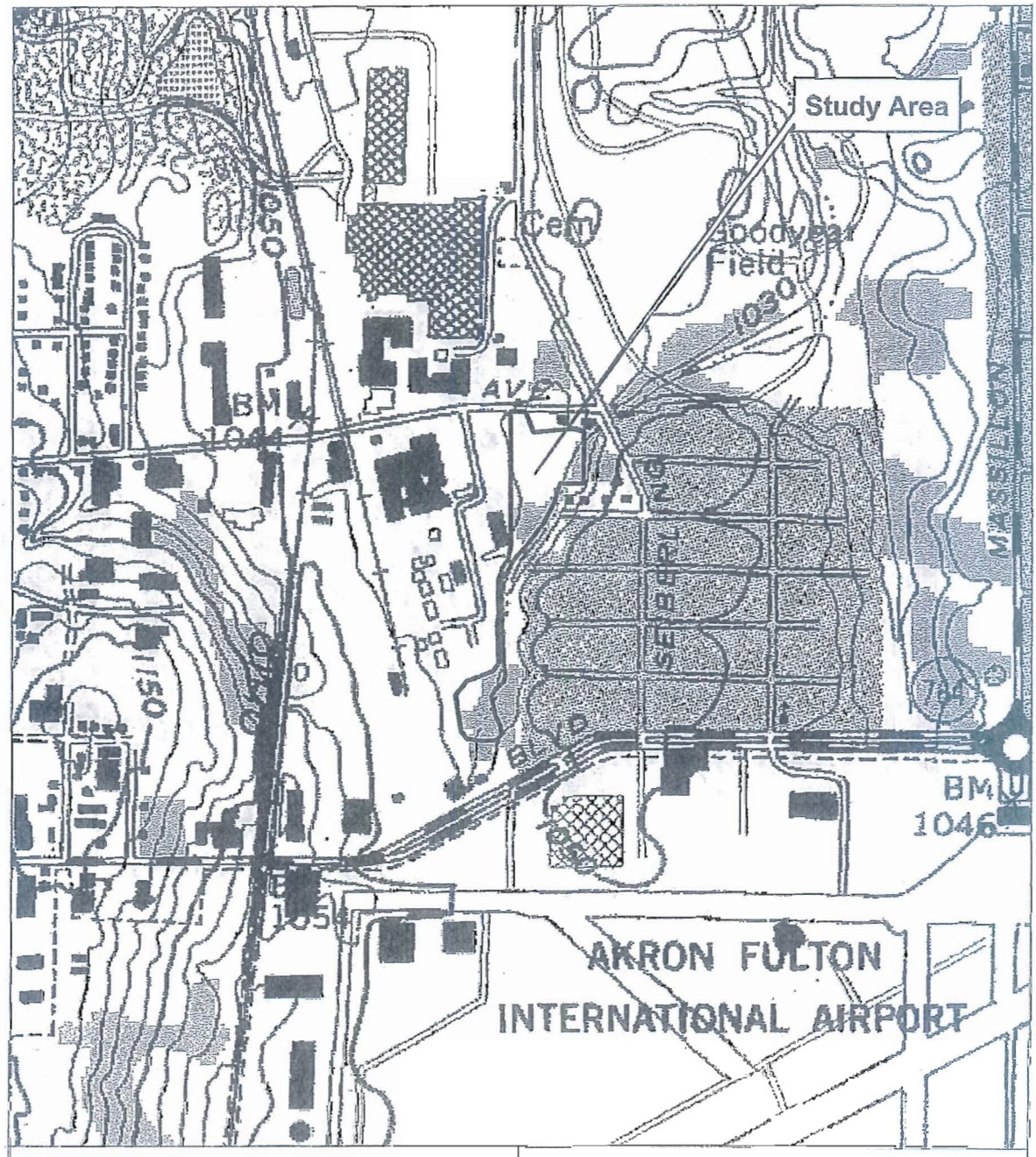
[1] The final determination of a wetlands' connectivity to Waters of the U. S. is made by the U. S. Army Corps of Engineers.

Appendix A
Location of Summit County, Ohio

Site Location: 5.85 Acres
Haley's Ditch Remediation Area
Akron, Ohio

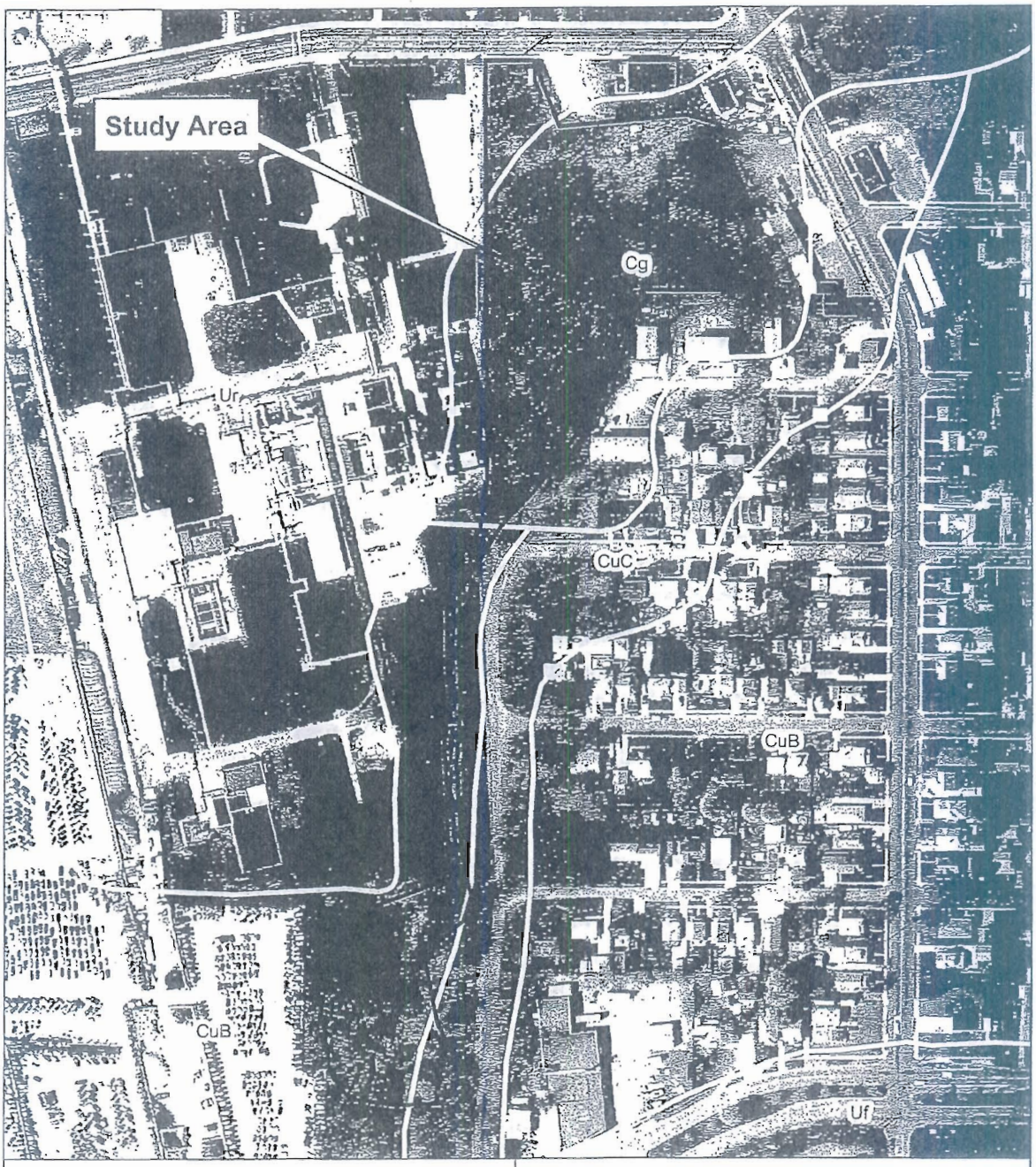
Source: ESRI
Redlands, California

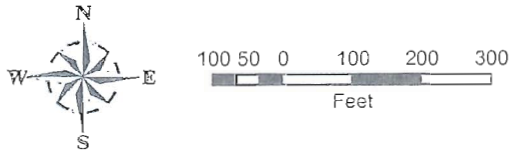
Appendix C
Location of Study Area on USGS 7.5-Minute Topographic Map (Akron East Quadrangle)



Site Location: 5.85 Acres
Haley's Ditch Remediation Area
Akron, Ohio
Source: U. S. Geological Survey
Reston, Virginia
Photorevised 1984

Appendix E
Soils Information for Study Area





Site Location: 5.85 Acres
Haley's Ditch Remediation Area
Akron, Ohio

Source: U. S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey
OIT OGRIP Orthophotograph from 2006

Urban land (Ur) consists of areas 10 acres or more in size that are covered by buildings, pavement, or other manmade surfaces. Among these areas are commercial and industrial areas, large factories, shopping centers, warehouses, and railroad yards. The slope ranges from 0 to 25 percent. Most areas have a very low infiltration rate and very rapid runoff. Large areas of Urban land materially increase the volume of water flowing in nearby streams after a rain. Urban land can be a source of pollution in nearby streams unless there is careful management of these areas. Capability unit not assigned; woodland suitability group 4.

Appendix F
Definition of Wetlands Vegetation Indicator Status (from Reed, 1988)

Obligate Wetlands (OBL). Occur almost always (estimated probability is greater than 99%) under natural conditions in wetlands.

Facultative Wetlands (FACW). Usually occur in wetlands (estimated probability 67–99%) but occasionally found in non-wetlands.

Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34–66%).

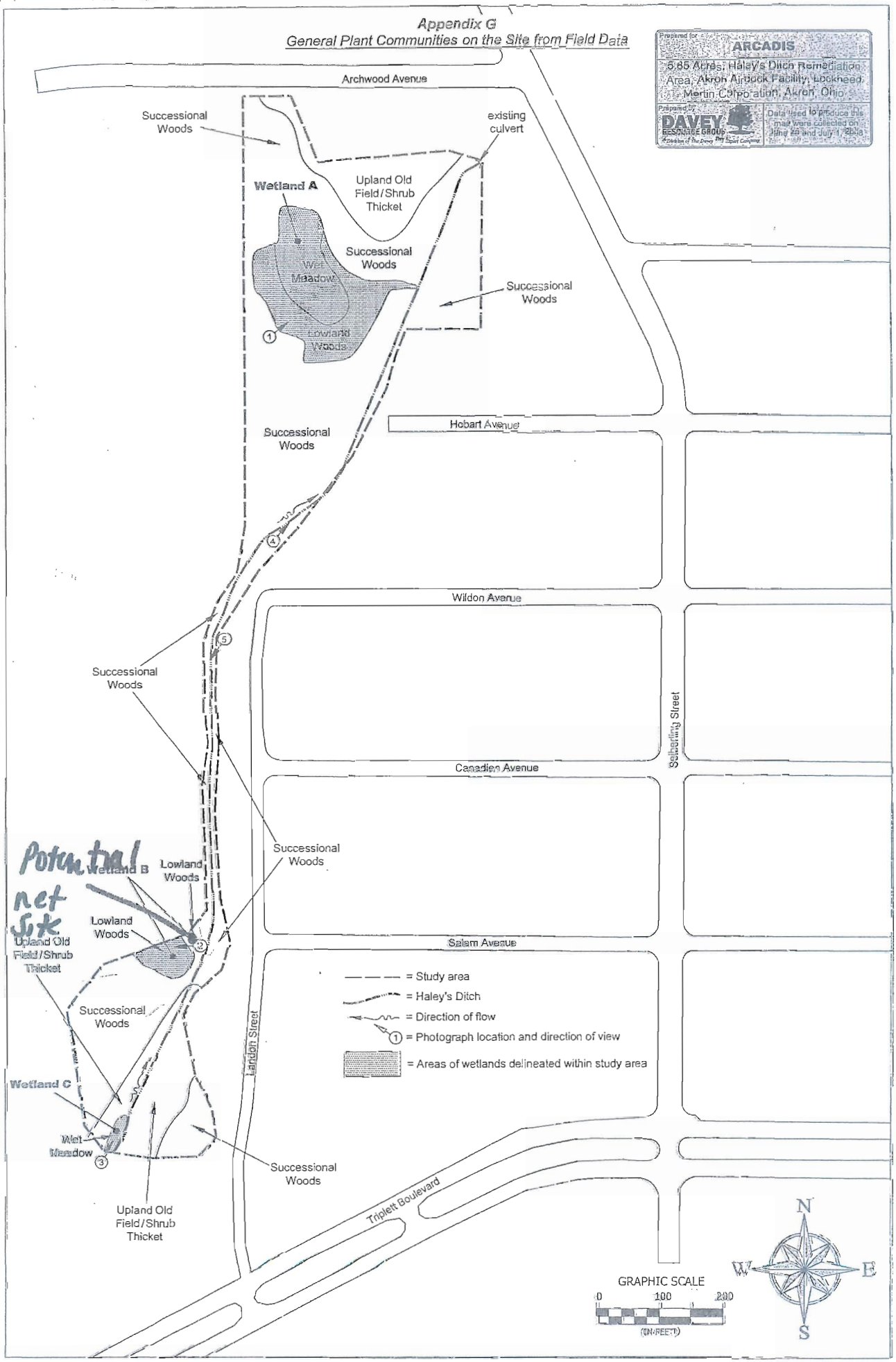
Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67–99%) but occasionally found in wetlands (estimated probability 1–33%).

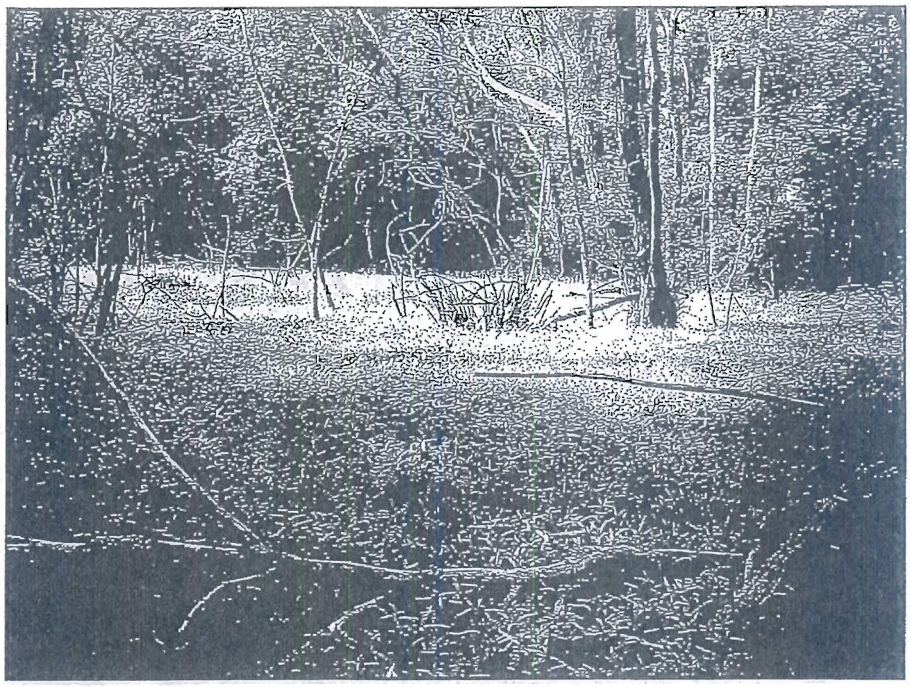
Obligate Upland (UPL). Occur in wetlands in another region, but occur almost always (estimated probability > 99%) under natural conditions in non-wetlands in the region specified. If a species does not occur in wetlands in any region, it is not on the *National List*.

Species for which little or no information was available to base an indicator status were assigned a no indicator (NI) status. An asterisk (*) after the indicator status indicates that the indicator status was based on limited ecological information.

The wetlands indicator categories should not be equated to degrees of wetness. Many obligate wetlands species occur in permanently or semipermanently flooded wetlands, but a number of obligates also occur, and some are restricted to wetlands that are only temporarily or seasonally flooded. The facultative upland species include a diverse collection of plants that range from weedy species adapted to exist in a number of environmentally stressful or disturbed sites (including wetlands), to species in which a portion of the gene pool (an ecotype) always occurs in wetlands. Both the weedy and ecotype representatives of the facultative upland category occur in seasonally and semipermanently flooded wetlands.

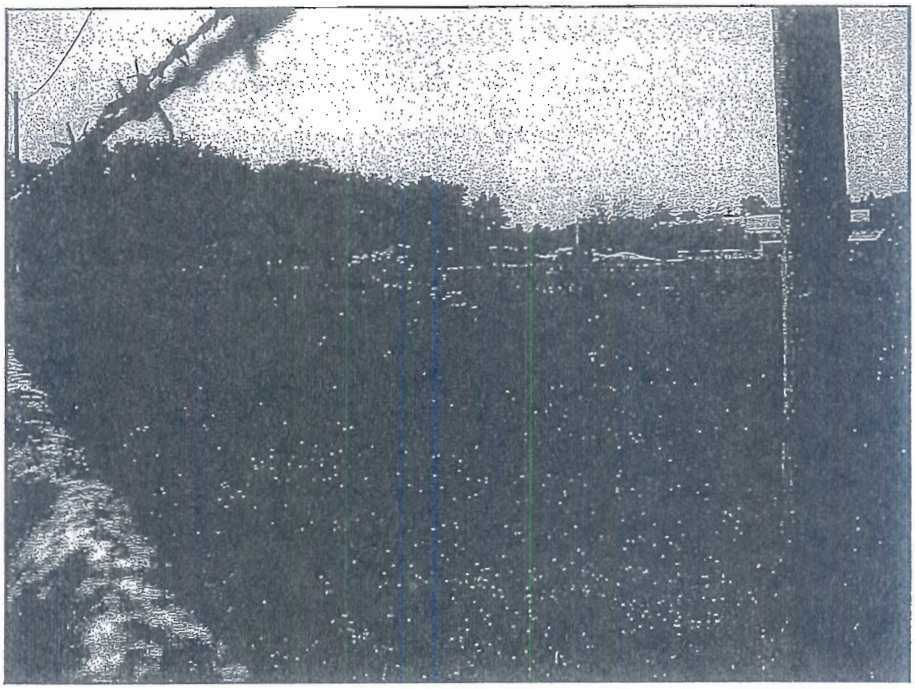
Davey Resource Group has added two additional indicators for situations when plants can only be identified to genus. A Wetlands Indicator Species (WIS) is a plant that is most likely obligate wetlands, facultative wetlands, or facultative. An Upland Indicator Species (UIS) is a plant that is most likely indicative of upland or facultative upland conditions. These additional indicators are used when species identification is not possible. A variety of factors are part of the UIS and WIS assignments. Indicator statuses of all locally occurring members of the genus in question are considered, as are the health and size of the population and the indicator status of nearby plants.


Appendix G
General Plant Communities on the Site from Field Data
Prepared for
ARCADIS
5.85 Acres, Haley's Ditch Remediation Area, Akron Airdock Facility, Lockheed Martin Corporation, Akron, Ohio
Prepared by
DAVEY RESOURCE GROUP
Data used to produce this map were collected on June 29 and July 1, 2014
Archwood Avenue
Successional Woods
existing culvert
Wetland A
Upland Old Field/Shrub Thicket
Successional Woods
Wet Meadow
Successional Woods
Lowland Woods
Hobart Avenue
Successional Woods
Wildon Avenue
Successional Woods
Selberling Street
Canadien Avenue
Potential Wetland B
Lowland Woods
Successional Woods
Lowland Woods
Upland Old Field/Shrub Thicket
Salem Avenue
= Study area
= Haley's Ditch
= Direction of flow
= Photograph location and direction of view
= Areas of wetlands delineated within study area
Successional Woods
Landon Street
Wetland C
Wet Meadow
Successional Woods
Upland Old Field/Shrub Thicket
Triplett Boulevard
GRAPHIC SCALE
0
100
200
(IN FEET)
N
W
E
S



Photograph 1 (6-25-08) Wetland A is a lowland woods and wet meadow.

Photograph 2 (6-25-08) Wetland B is a lowland woods.



Photograph 5 (6-25-08) Haley's Ditch in the central portion of the site is surrounded by a narrow area of upland old field.

Appendix I

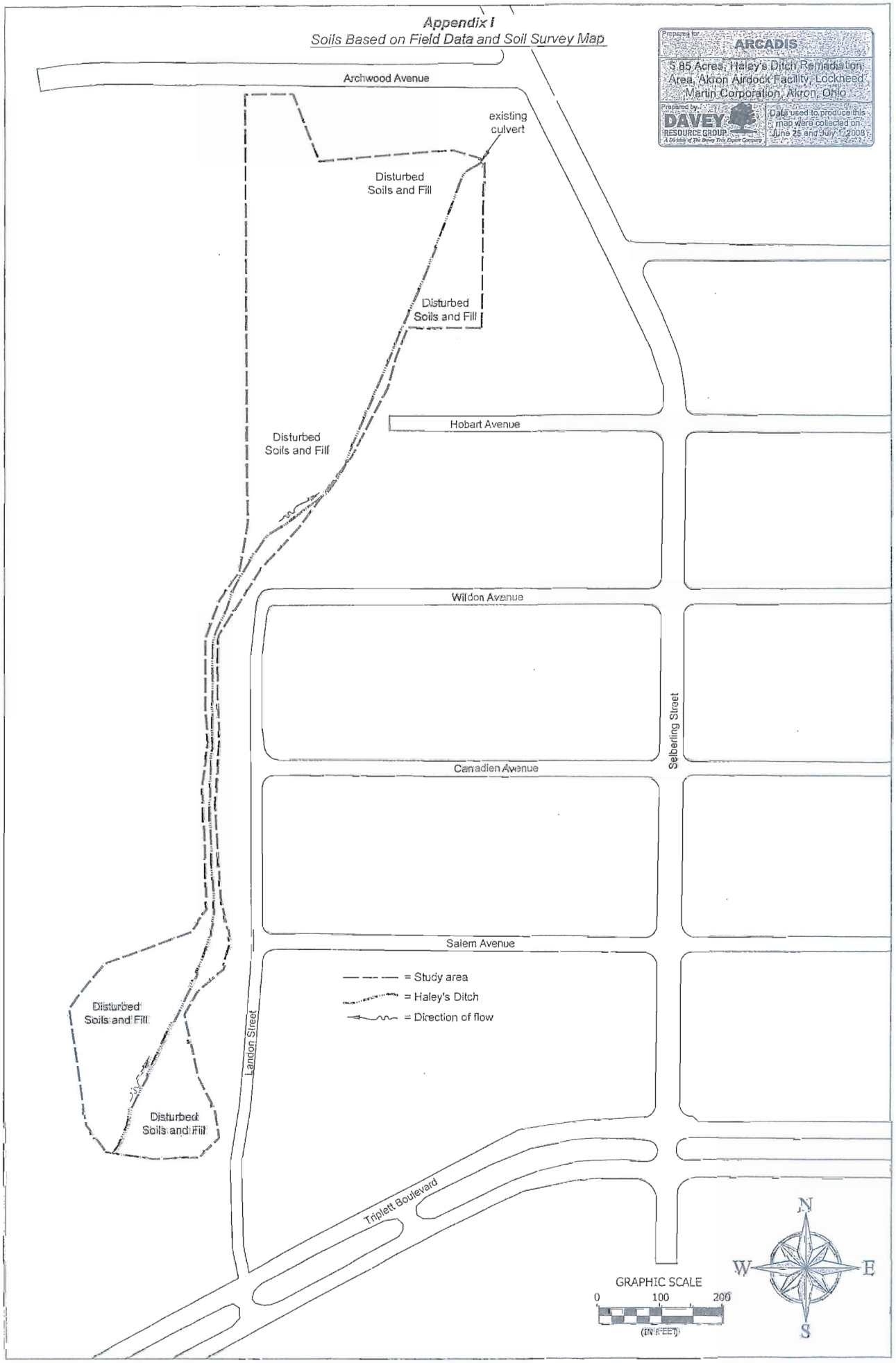
Soils Based on Field Data and Soil Survey Map

Prepared for: ARCADIS

5.85 Acres, Haley's Ditch Remediation Area, Akron Airdock Facility, Lockheed Martin Corporation, Akron, Ohio

Prepared by: DAVEY RESOURCE GROUP, A Division of The Davey Tree Expert Company

Data used to produce this map were collected on June 25 and July 1, 2008.



DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 1

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Lowland woods (Wetland A)
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION (USFWS Region No. 1)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Populus deltoides	Tree	FAC	*Lysimachia nummularia*	Herb	FACW-
Cotton-Wood,Eastern			Jennie,Creeping		
Polygonum pensylvanicum	Herb	FACW			
Smartweed,Pennsylvania					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/3 = 100.00%

FAC Neutral: 2/2 = 100.00%

Numeric Index: 7/3 = 2.33

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- YES Drift Lines
- YES Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 2

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Successional woods
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION **(USFWS Region No. 1)**

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Populus deltoides	Tree	FAC	*Hesperis matronalis*	Herb	FACU-
Cotton-Wood,Eastern			Dame's rocket		
Acer saccharinum	Tree	FACW	*Alliaria petiolata*	Herb	FACU-
Maple,Silver			Mustard,Garlic		
Lonicera tatarica	Shrub	FACU			
Honeysuckle,Tartarian					

Percent of Dominant Species that are OBL, FACW or FAC:	**FAC Neutral:** 1/4 = 25.00%
(excluding FAC-) 2/5 = 40.00%	**Numeric Index:** 17/5 = 3.40

Remarks:

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A **Stream, Lake or Tide Gauge**
- N/A **Aerial Photographs**
- N/A **Other**

YES **No Recorded Data**

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO **Inundated**
- NO **Saturated in Upper 12 Inches**
- NO **Water Marks**
- NO **Drift Lines**
- NO **Sediment Deposits**
- NO **Drainage Patterns in Wetlands**

Secondary Indicators
- NO **Oxidized Root Channels in Upper 12 Inches**
- NO **Water-Stained Leaves**
- NO **Local Soil Survey Data**
- NO **FAC-Neutral Test**
- NO **Other(Explain in Remarks)**

Remarks:
No hydrological indicators

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 3

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Lowland woods (Wetland B)
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION **(USFWS Region No. 1)**

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Acer saccharinum	Tree	FACW	*Lysimachia nummularia*	Herb	FACW-
Maple,Silver			Jennie,Creeping		
Viburnum recognitum	Shrub	FAC	*Impatiens capensis*	Herb	FACW
Arrow-Wood,Northern			Touch-Me-Not,Spotted		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 4/4 = 100.00%	**FAC Neutral:** 3/3 = 100.00% **Numeric Index:** 9/4 = 2.25

Remarks:

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A **Stream, Lake or Tide Gauge**
- N/A **Aerial Photographs**
- N/A **Other**

YES **No Recorded Data**

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	= 2 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO **Inundated**
- YES **Saturated in Upper 12 Inches**
- NO **Water Marks**
- NO **Drift Lines**
- YES **Sediment Deposits**
- YES **Drainage Patterns in Wetlands**

Secondary Indicators
- NO **Oxidized Root Channels in Upper 12 Inches**
- NO **Water-Stained Leaves**
- NO **Local Soil Survey Data**
- YES **FAC-Neutral Test**
- NO **Other(Explain in Remarks)**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 4

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Successional woods
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION **(USFWS Region No. 1)**

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Acer saccharinum	Tree	FACW	*Alliaria petiolata*	Shrub	FACU-
Maple,Silver			Mustard,Garlic		
Prunus serotina	Tree	FACU	*Lysimachia nummularia*	Herb	FACW-
Cherry,Black			Jennie,Creeping		
Viburnum recognitum	Shrub	FAC			
Arrow-Wood,Northern					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/5 = 60.00%	**FAC Neutral:** 2/4 = 50.00% **Numeric Index:** 15/5 = 3.00

Remarks:

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A **Stream, Lake or Tide Gauge**
- N/A **Aerial Photographs**
- N/A **Other**

YES **No Recorded Data**

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO **Inundated**
- NO **Saturated in Upper 12 Inches**
- NO **Water Marks**
- NO **Drift Lines**
- NO **Sediment Deposits**
- NO **Drainage Patterns in Wetlands**

Secondary Indicators
- NO **Oxidized Root Channels in Upper 12 Inches**
- NO **Water-Stained Leaves**
- NO **Local Soil Survey Data**
- NO **FAC-Neutral Test**
- NO **Other(Explain in Remarks)**

Remarks:
No hydrological indicators

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 5

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Wet meadow (Wetland C)
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION **(USFWS Region No. 1)**

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Typha latifolia	Herb	OBL	*Impatiens capensis*	Herb	FACW
Cattail,Broad-Leaf			Touch-Me-Not,Spotted		
Leersia oryzoides	Herb	OBL			
Cutgrass,Rice					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/3 = 100.00%	**FAC Neutral:** 3/3 = 100.00% **Numeric Index:** 4/3 = 1.33

Remarks:

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A **Stream, Lake or Tide Gauge**
- N/A **Aerial Photographs**
- N/A **Other**

YES **No Recorded Data**

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	= surface *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO **Inundated**
- YES **Saturated in Upper 12 Inches**
- NO **Water Marks**
- YES **Drift Lines**
- YES **Sediment Deposits**
- NO **Drainage Patterns in Wetlands**

Secondary Indicators
- NO **Oxidized Root Channels in Upper 12 Inches**
- NO **Water-Stained Leaves**
- NO **Local Soil Survey Data**
- YES **FAC-Neutral Test**
- NO **Other(Explain in Remarks)**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Haley's Ditch Remediation Area, Akron	**Project No:**	**Date:** 25-Jun-2008
Applicant/Owner:	ARCADIS		**County:** Summit
Investigators:	Todd Crandall; Kristen Bates		**State:** Ohio
			Plot ID: 6

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Upland old field/shrub thicket
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:**

VEGETATION (USFWS Region No. 1)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Polygonum cuspidatum	Herb	FACU-	*Alliaria petiolata*	Herb	FACU-
Knotweed,Japanese			Mustard,Garlic		
Rosa multiflora	Shrub	FACU			
Rose,Multiflora					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 0/3 = 0.00%

FAC Neutral: 0/3 = 0.00%

Numeric Index: 12/3 = 4.00

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- NO FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
No hydrological indicators

Appendix K
Wetlands Boundaries, Acreages, and Sample Point Locations

Appendix L
References

Braun, E. Lucy. 1989 (2nd edition). *The Woody Plants of Ohio: Trees, Shrubs, and Woody Climbers Native, Naturalized, and Escaped.* The Ohio State University Press, Columbus. 362 pp.

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Reed, Porter B., Jr. 1988. *National List of Plant Species that Occur in Wetlands: Ohio.* U. S. Fish and Wildlife Service, St. Petersburg.

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Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed August 17, 2007.

Weishaupt, Clara G. 1971 (3rd edition). *The Vascular Plants of Ohio.* Kendall/Hunt Publishing Company, Dubuque. iii + 293 pp.

Ruth Ann Sobnosky, M.S., is an environmental planner and project manager for a variety of natural resource projects, including wetlands delineations, wetlands monitoring, wetlands permitting/compliance, ecological surveys, environmental planning studies and grants, and other natural resource consulting projects. Ms. Sobnosky's experience includes working as an environmental planner, public involvement specialist, and community planner. Ms. Sobnosky's responsibilities included the review, evaluation, and reporting of environmental and socio-economic impacts to fulfill National Environmental Policy Act (NEPA) requirements. This required coordination with public agencies, working with engineers, and initiating and attending public involvement meetings necessary for the construction of new roads, bridges, and other important public infrastructure throughout Ohio. Ms. Sobnosky has completed training through the Ohio Department of Transportation for the following: Project Development Process, Categorical Exclusion, Section 106/National Register Eligibility, Section 4(f), and Managing the Environmental and Project Development Process (NEPA). Ms. Sobnosky graduated from Northern Illinois University with a Bachelor of Science degree in geography, and holds a Master of Science degree also in geography from Southern Illinois University at Edwardsville.

APPENDIX C:
ENVIROSCIENCE ECOLOGICAL RESOURCES ASSESSMENT REPORT

Ecological Resources Assessment Report
Lockheed Martin Site

Approximately 8.5 Acre Site,
Akron, Summit County, Ohio

Project # 34-2613

Prepared for:

ARCADIS
11000 Regency Parkway, West Tower, Suite 205
Cary, North Carolina 27518-8518
(919) 469-1952

Prepared by:

EnviroScience, Inc., 3781 Darrow Road, Stow OH 44224
(800) 940-4025 (330) 688-0111 FAX: (330)688-3858
www.enviroscienceinc.com

9 September 2008

STATEMENT OF CERTIFICATION

The analyses, opinions and conclusions in this report are based entirely on EnviroScience's unbiased, professional judgment. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study. Neither EnviroScience nor any EnviroScience employee has any vested interest in the property examined in this study.

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EXECUTIVE SUMMARY

In June and July 2008, Davey Resource Group provided wetland delineation services for ARCADIS on the Lockheed Martin Site. The site is located south of East Archwood Avenue, north of Triplett Boulevard, and west of Seiberling Avenue in Akron, Summit County, Ohio. EnviroScience, Inc. conducted an additional ecological resources site assessment in July 2008 to perform an assessment of previously delineated wetlands, a terrestrial habitat survey and a potential Indiana Bat habitat survey within site boundaries.

The site consists of three upland terrestrial habitat types: successional forest, scrub shrub, and urban area. The herbaceous habitat identified on project mapping represents the palustrine emergent portion of Wetland A delineated by Davey Resource Group. This habitat type was identified on project mapping only for the purposes of accurate calculations of all terrestrial habitat types onsite. The site also contains two types of wetland habitat: palustrine emergent and palustrine forested wetland habitat. Haley's Ditch flows north through the center of the study area. The study area is surrounded by urbanized area consisting of residential and commercial properties.

Three previously identified wetlands (Wetlands A, B and C) were assessed using the ORAM scoring forms. Wetland A was determined to be a Category 2 wetland, Wetland B was determined to fall within the Category 1 or 2 gray zone, and Wetland C was determined to be a Category 1 wetland. These wetlands are under the jurisdiction of the Ohio EPA or Corps. No filling may occur within these areas without their written permission. Please contact the Ohio EPA Division of Surface Water at (614) 644-2001 or the Buffalo District, U.S. Army Corps of Engineers, at (716) 879-4330 before working in these areas. Please refer to the Davey Resource Group Wetland Delineation Report, dated July 2008, for information regarding the previous site assessment.

Potential Indiana Bat roosting tree habitat was identified throughout the successional forest, scrub shrub and herbaceous wetland habitat portions of the study area. However, the Indiana Bat Mist Net Survey did not identify any Indiana Bats onsite. The survey identified one Big Brown Bat onsite. This species is not listed as an endangered, threatened or species of concern for Summit County, Ohio. Please refer to the EnviroScience Indiana Bat Survey Report for additional information on the Mist Net Survey.

1.0 INTRODUCTION AND SITE DESCRIPTION

In June and July 2008, Davey Resource Group provided wetland delineation services for ARCADIS on the Lockheed Martin Site. The site is located south of East Archwood Avenue, north of Triplett Boulevard, and west of Seiberling Avenue in Akron, Summit County, Ohio (Appendix A: Maps 1-3). EnviroScience, Inc. conducted an additional ecological resources site assessment in July 2008 to perform an assessment of previously delineated wetlands, a terrestrial habitat survey and a potential Indiana Bat habitat survey within site boundaries.

The site consists of three upland terrestrial habitat types: successional forest, scrub shrub, and urban area (Appendix A: Map 4) (Appendix C: Photos 1, 2, 4, and 5). The herbaceous habitat identified on project mapping represents the palustrine emergent portion of Wetland A (Appendix C: Photo 4) delineated by Davey Resource Group. This habitat type was identified on project mapping only for the purposes of accurate calculations of all terrestrial habitat types onsite. Additionally, two wetland habitat types were identified: palustrine emergent (PEM) and palustrine forested (PFO) (Appendix C: Photos 4, 6 and 7). Haley's Ditch flows north through the center of the study area (Appendix A: Map 4) (Appendix C: Photos 2 and 3). The study area is surrounded by urbanized area consisting of residential and commercial properties.

2.0 METHODS

Field surveys of the study area were conducted on July 24th and 25th, 2008. Wetland, terrestrial, and endangered species habitat were investigated. Following is a detailed discussion of specific methods employed.

2.1. Wetland Resources

The wetland resources investigation focused on three previously identified wetland systems (Wetlands A, B and C).

2.1.1. ORAM Categorization

Each previously identified wetland system was categorized in accordance with version 5.0 of the Ohio EPA's Ohio Rapid Assessment Method for Wetlands (ORAM) (Mack 2001). Each form consists of a narrative rating and a quantitative rating. The narrative rating requires ODNR Natural Heritage data, and serves to alert the rater of certain qualities that may have an obvious effect on the wetland category. The quantitative rating is based on wetland characteristics such as size, buffers, hydrology, disturbance and habitat. Scores from the quantitative rating produce a wetland category of 1-3, based on Mack (2000).

Category 1 wetlands are considered very low quality and are generally considered not restorable. They represent small emergent wetlands, which often

have a predominance of invasive/exotic species. Modified Category 2 wetlands are degraded systems that have potential to be restored, while Category 2 are medium quality systems which represent the majority of Ohio's wetlands. Category 3 wetlands are exceptional quality systems, such as large, undisturbed, forested wetlands, regionally significant ecosystems, and wetlands with known occurrences of endangered or threatened species.

2.2. Terrestrial Resources

Terrestrial resources in the study area were initially identified by examining topographic maps and aerial photos. While conducting field studies, notes were taken on plant community composition and flora. Vegetation cover types were noted on site mapping. These vegetation data were used to establish vegetation/habitat types found in the study area and to characterize quality of terrestrial habitats. Habitat boundaries were determined and these boundaries were then digitized into the base mapping and terrestrial habitat acreages were calculated.

2.2.1. Terrestrial Habitat Survey

A terrestrial habitat survey was completed to identify major plant communities. Mature nonwetland communities that had reached a stable equilibrium were classified according to Anderson (1982) and Gordon (1966, 1969). Disturbed and successional nonwetland communities were classified as one of the categories described in Table 1.

Table 1. Nonwetland Communities.

Community		Description
Disturbed	Urban	regularly maintained land; residential; industrial
	Agricultural	land used for producing crops or raising livestock; cropland; pastureland
	Cleared	disturbed areas devoid of most vegetation from recent clearing, grading or filling
Successional	New Field	herbaceous community without woody vegetation
	Old Field	herbaceous community having woody vegetation coverage of <50%
	Scrub Shrub	community dominated by woody vegetation <6 m (20 ft) tall
	Forest	community dominated by woody vegetation >6 m (20 ft) tall

3.0 ENDANGERED SPECIES

3.1. Potential Indiana Bat Habitat Survey

A potential Indiana Bat habitat survey was completed to identify habitat onsite.

3.2. ODNR Natural Heritage Database

The Ohio Department of Natural Resources, Division of Natural Areas and Preserves Natural Heritage Database was researched. No records of rare or endangered species exist within the study area; however, one record of the threatened Upland Sandpiper (*Bartramia longicauda*) was identified within a one mile radius of the study area (Appendix B: ODNR 2008).

There are no records of the federally endangered Indiana Bat (*Myotis sodalis*) capture locations or hibernacula within five miles of the site. Additionally, there are no state nature preserves or scenic rivers within the study area and no other unique ecological areas, geologic features, breeding or non-breeding animal concentrations, state parks, scenic rivers, or wildlife areas were noted.

3.3. U.S. Fish and Wildlife Service

The federally listed species whose range includes Summit County are the federally endangered Indiana Bat (*Myotis sodalis*), the federal species of concern bald eagle (*Haliaeetus leucocephalus*), and the federally threatened northern monkshood (*Aconitum noveboracense*).

The Indiana Bat is a federally endangered species with a summer range that includes Summit County. The Indiana Bat is migratory, using significantly different winter and summer habitats. Winter habitats include limestone mines and caves, where the bats hibernate. Summer habitat for the Indiana Bat includes live or standing dead trees or snags with exfoliating, peeling or loose bark, split trunks and/or branches, or cavities. Trees that support roosting habitat require an 8" diameter at breast height (dbh) or branches with a 6" diameter. Maternity trees require a 16" dbh or branches with an 8" diameter. Additionally, these trees require some solar exposure to provide thermoregulation to the young. Both maternity and roost trees require connection to a travel corridor to provide access to foraging areas. Potential Indiana Bat roosting tree habitat was identified throughout the successional forest, scrub shrub and herbaceous wetland habitat portions of the study area.

Bald eagles require foraging and perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers and some seacoasts. In the winter, these birds congregate near open water in tall trees for spotting prey and night roosts for shelter. No evidence of bald eagles or their nests were found during the site visit.

Preferred habitat for northern monkshood is cool, moist, shaded cliff faces or talus slopes in wooded ravines, near water seeps; no preferred habitat was identified during field investigations.

4.0 RESULTS

The following section describes the results of the ecological resource assessment.

4.1. ORAM Categorization

Three previously identified wetlands were assessed using the Ohio Rapid Assessment Method (ORAM) for Wetlands v.5.0; scoring forms are included in Appendix D and results are given in Table 2 below.

Table 2. Wetland Results.

Wetland	Photo(s)	Classification (Cowardin et al. 1979)	ORAM Score	ORAM Category
Wetland A	4	PEM/PFO	52.5	2
Wetland B	6	PFO	31	1 or 2 gray zone
Wetland C	7	PEM	25.5	1

4.2. Terrestrial Habitat Survey

Three upland vegetative communities exist on the site: successional forest, scrub shrub and urban area habitat (Appendix A: Map 4) (Appendix C: Photos 1, 2, 4, and 5). The northern portion of the site consists primarily of successional forest as well as scrub shrub habitat. The central portion of the site consists primarily of urban area mowed grass with shrubs and herbaceous vegetation lining Haley's Ditch. The southern portion of the site consists primarily of successional forest as well as scrub shrub and urban area habitat types. The successional forest habitat type consists of approximately 4.88 acres, the scrub shrub habitat type consists of approximately 1.74 acres and the urban habitat type consists of approximately 1.52 acres. Two wetland habitat types, palustrine emergent (PEM) and palustrine forested (PFO) were also identified onsite. Please refer to the Davey Resource Group Wetland Delineation Report, dated July 2008, for information on these wetland habitats.

Common species found in the successional forest and scrub shrub habitat include *Acer saccharinum* (silver maple, FACW-), *Populus deltoides* (eastern cottonwood, FAC), *Prunus serotina* (black cherry, FACU), *Robinia pseudoacacia* (black locust, FACU-), and *Acer negundo* (box-elder, FAC+) in the tree canopy layer; *Crataegus sp.* (hawthorn), *Cornus foemina* (gray dogwood, FAC), *Lonicera tatarica* (Tartarian honeysuckle, FACU), *Rosa multiflora* (multiflora rose, FACU), and *Rhamnus frangula* (glossy buckthorn, FAC) in the shrub layer; *Alliaria petiolata* (garlic mustard, FACU-), *Impatiens capensis* (spotted touch-me-not, FACW), and *Toxicodendron radicans* (poison ivy, FAC) in the herbaceous layer; *Vitis riparia* (river-bank grape, FACW) and *Parthenocissus quinquefolia* (Virginia creeper, FACU) in the vine layer.

Common species found in the urban area habitat include *Circium arvense* (creeping thistle, FACU), *Coronilla varia* (crownvetch, FACU), *Lonicera tatarica*, *Rosa multiflora*, and *Solidago canadensis* (Canada goldenrod, FACU).

4.3. Potential Indiana Bat Habitat Survey

Potential Indiana Bat maternity and roost tree habitat was identified throughout the successional forest, scrub shrub and herbaceous wetland habitat portions of the study area (Appendix C: Photos 8 and 9). However, no Indiana Bats were observed during the mist net survey, only one Big Brown Bat (*Eptesicus fuscus*) was observed. Please refer to the Indiana Bat Survey Report conducted by EnviroScience, Inc. in July 2008.

5.0 REGULATORY JURISDICTION

The wetlands habitats described in this document are under the jurisdiction either of the U.S. Army Corps of Engineers or the Ohio EPA. No filling may occur in these areas without their written permission. Please contact the Ohio EPA Division of Surface Water at (614) 644-2001 or the Buffalo District, U.S. Army Corps of Engineers, at (716) 879-4330 before working in these areas.

The following information is excepted and summarized from the 2007 *U.S. Army Corps Of Engineers Jurisdictional Determination Form Instructional Guidebook.*

> "In 2001, the ... U.S. Supreme Court's decision in the *Solid Waste Agency of Northern Cook County (SWANCC) v. Corps*...held that isolated, intrastate, non-navigable waters could not be regulated under the CWA based solely on the presence of migratory birds. Following the SWANCC decision ... it generally was believed that a water body (including a wetland) was subject to CWA jurisdiction if the water body was part of the U.S. territorial seas, or a traditional navigable water, or any tributary to a traditional navigable water, or a wetland adjacent to any one of the above. In addition, isolated wetlands and other waters might be considered jurisdictional where they had the necessary link to either navigable waters or interstate commerce."

In the state of Ohio, the Ohio EPA isolated wetland permitting program was legislatively created in response to the 2001 SWANC decision. On July 17, 2001, House Bill 231 was signed into law, establishing a permanent permitting process for isolated wetlands. The provisions of House Bill 231 were incorporated in Sections 6111.021 through 6111.029 of the Ohio Revised Code.

> "In 2006, the Supreme Court once again addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the

The decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. CWA jurisdiction over TNWs and their adjacent wetlands was not in question in this case, and, therefore, was not affected by the Rapanos decision. In addition, at least five of the Justices in Rapanos agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs.

The Memo states that the [Corps and USEPA] will assert jurisdiction over the following categories of water bodies: TNWs; all wetlands adjacent to TNWs; non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands."

6.0 ASSUMPTIONS AND DISCLAIMERS

The results and conclusions contained in this report apply to the year and date in which the data were collected. This report is not considered officially valid until it is approved by the Corps. The report is then valid for a period of five years. Refer to the Corps' Regulatory Guidance Letter # 94-1 (23 May 1994).

REFERENCES

Anderson, D.M. 1982. *Plant Communities of Ohio: A Preliminary Classification and Description*. Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Gordon, R.B. 1966. *Natural Vegetation of Ohio at the Time of the Earliest Land Surveys*. Ohio Biological Survey, Columbus, Ohio.

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Mack, J.J. 2000. *ORAM v. 5.0 Quantitative Score Calibration*. Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Unit, Columbus, Ohio.

Mack, J.J. 2001. *Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms*. Ohio EPA Technical Report WET/2001-1. Ohio Environmental Protection Agency, Division of Surface Water, 401/Wetland Ecology Unit, Columbus, Ohio.

Appendix A:

Maps

Map 1. Location of Summit County, Ohio

40 20 0 40 Miles

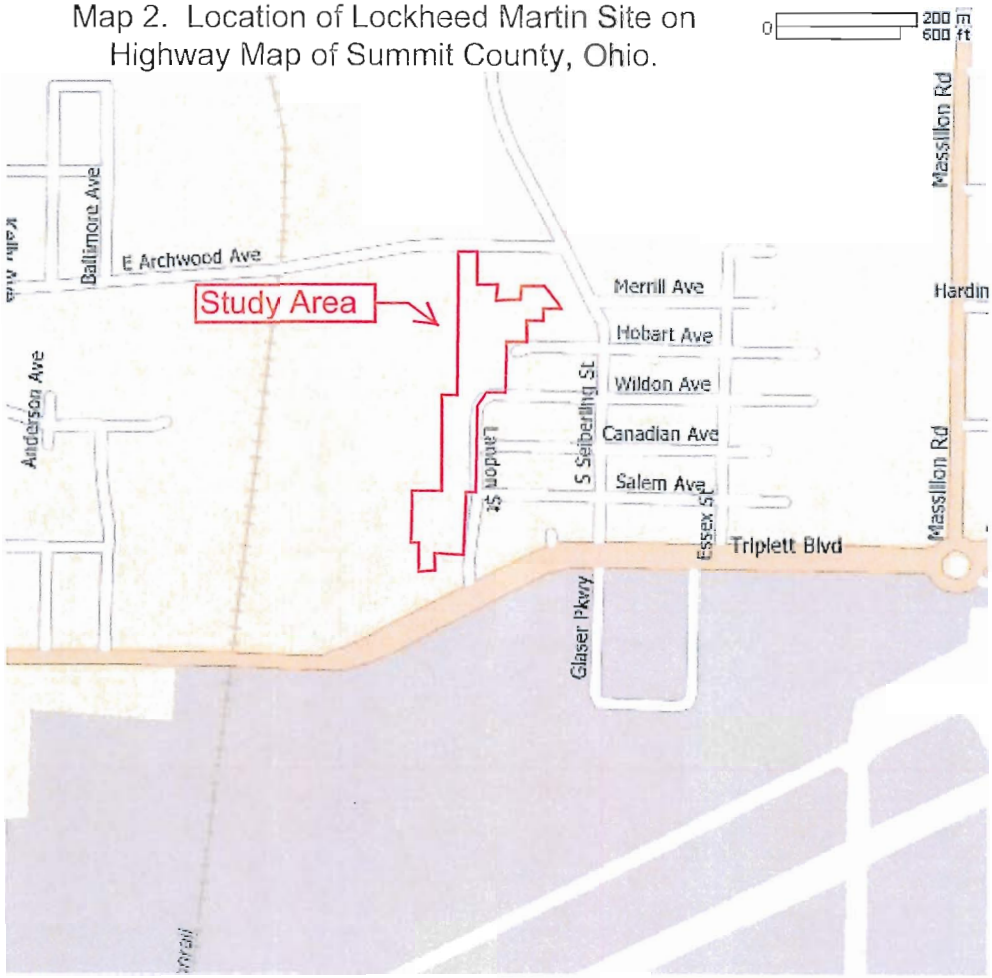
60 30 0 60 Kilometers

N

EnviroScience, Inc.

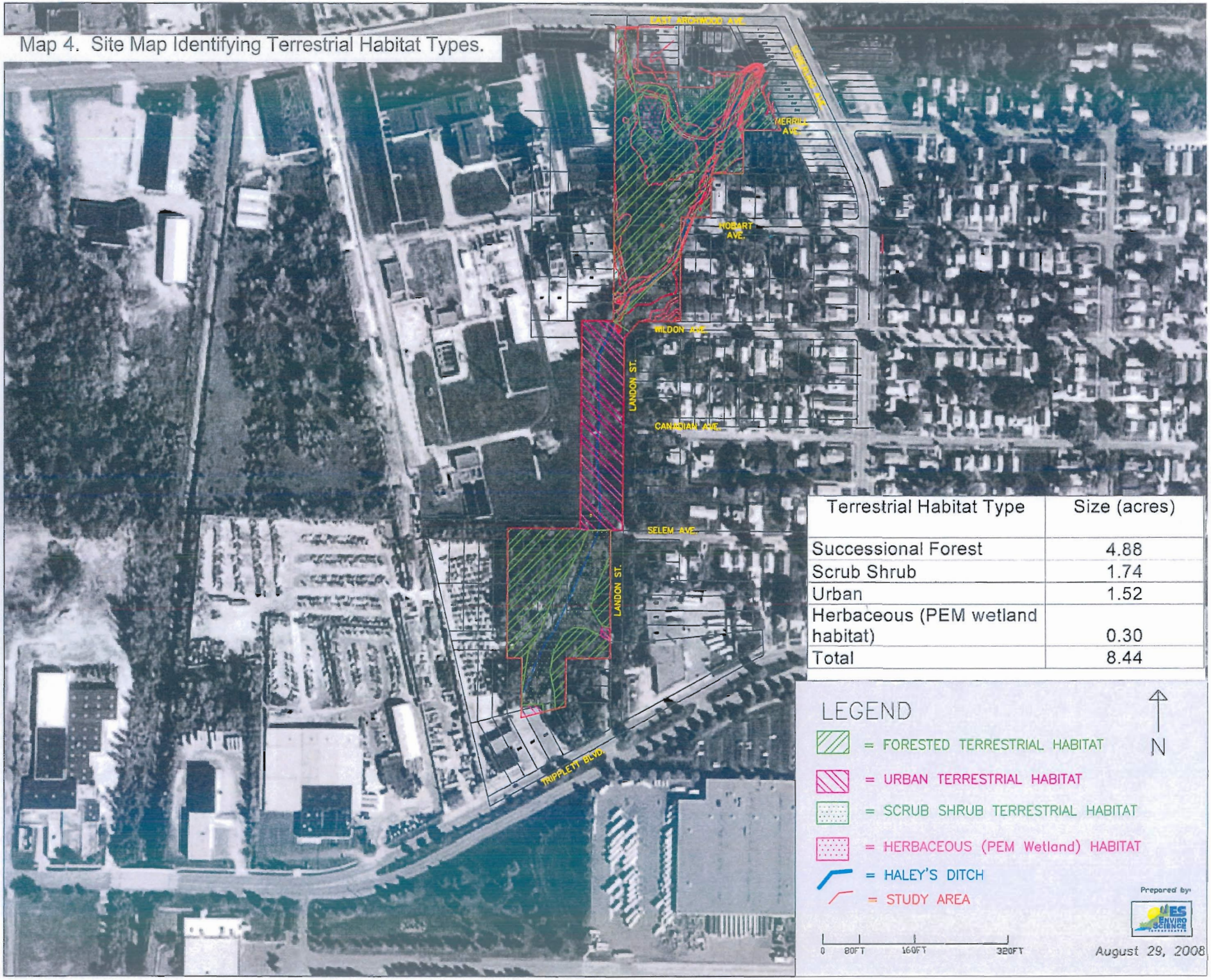
"Excellence in Ecological Monitoring"

Map 2. Location of Lockheed Martin Site on Highway Map of Summit County, Ohio.



Map 3. USGS 7.5-minute Topographic Map of Site (Akron East Quadrangle).

Map 4. Site Map Identifying Terrestrial Habitat Types.



Terrestrial Habitat Type	Size (acres)
Successional Forest	4.88
Scrub Shrub	1.74
Urban	1.52
Herbaceous (PEM wetland habitat)	0.30
Total	8.44

LEGEND

= FORESTED TERRESTRIAL HABITAT

= URBAN TERRESTRIAL HABITAT

= SCRUB SHRUB TERRESTRIAL HABITAT

= HERBACEOUS (PEM Wetland) HABITAT

= HALEY'S DITCH

= STUDY AREA

N

0 80FT 160FT 320FT

Prepared by:

August 29, 2008

Appendix B:

Natural Heritage Database Information

Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR SEAN D. LOGAN, DIRECTOR

Division of Natural Areas and Preserves
Steven D. Maurer, Chief
2045 Morse Rd., Bldg. F-1
Columbus, OH 43229-6693
Phone: (614) 265-6453; Fax: (614) 267-3096

August 18, 2008

Brooke Harrison
EnviroScience, Inc.
3781 Darrow Rd.
Stow, OH 44224

Dear Ms. Harrison:

I have reviewed our Natural Heritage maps and files for the Arcadis remediation project area, including a one mile radius, on Archwood Ave. in Akron, Summit County, and on the Akron East Quad (2613). We have no records for rare or endangered species or other significant natural features within the project area. However, we have one record within the one mile radius of the project site. The location for the Upland Sandpiper (*Bartramia longicauda*), threatened, is shown in red on the attached map.

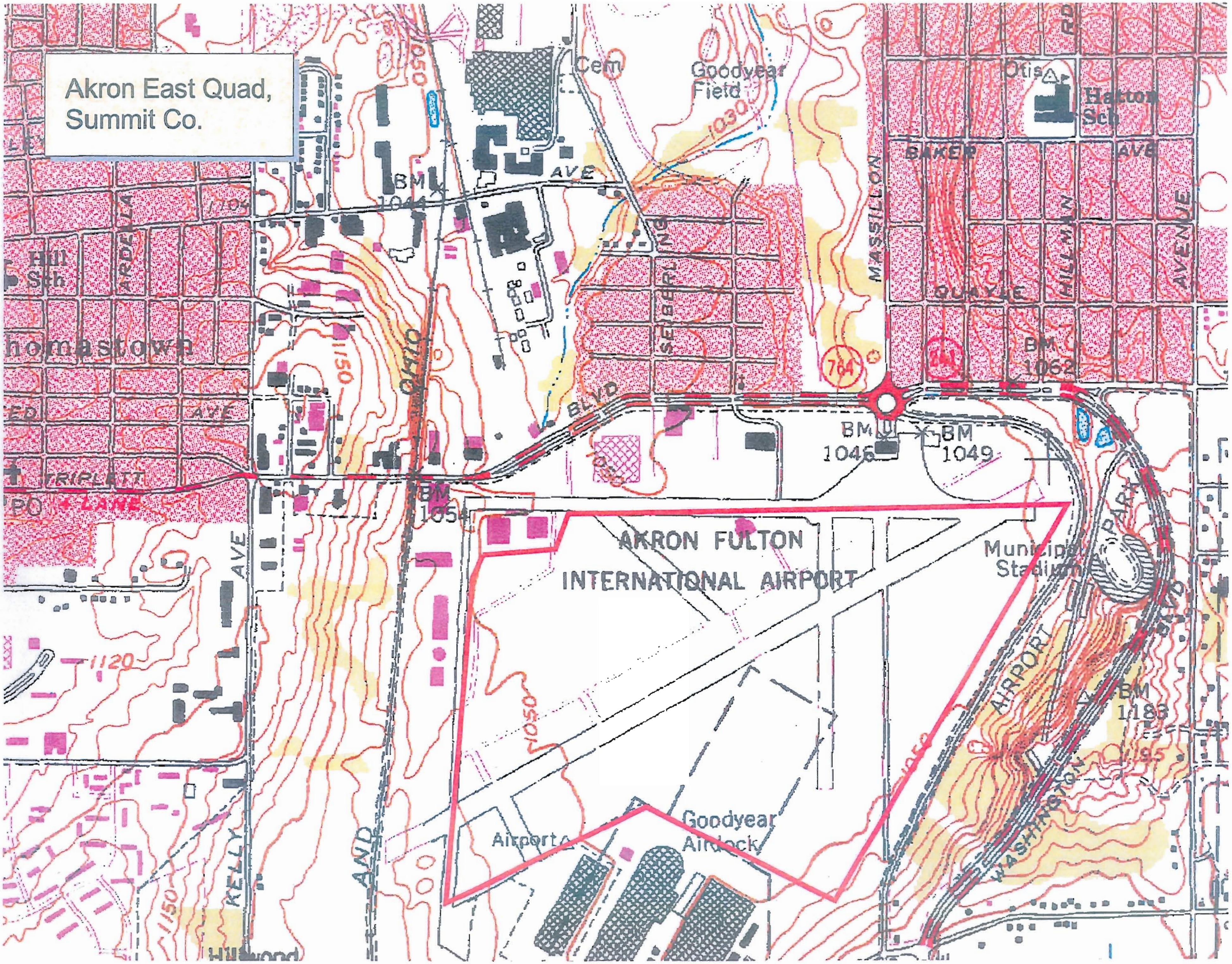
There are no state nature preserves or scenic rivers at the project site. We are unaware of any unique ecological sites, geologic features, animal assemblages, state parks, state forests or state wildlife areas within a one mile radius of the project area. We also have no records for Indiana Bat (*Myotis sodalis*, state endangered, federal endangered) capture locations or hibernacula within a five mile radius of the project site.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke, Ecological Analyst
Natural Heritage Program



Akron East Quad,
Summit Co.
AKRON FULTON
INTERNATIONAL AIRPORT
Goodyear Airdock
Airport
Municipal Stadium
Goodyear Field
Cem
Otis
Hatton Sch
Hill Sch
MASSILLON
BAKER
AVE
QUAYLE
HILLMAN
AVENUE
SEIBERLING
BLVD
OHIO
AND
KELLY
AIRPORT
WASHINGTON
PARK
TRIPLETT
ARDELLA
BM 1062
BM 1046
BM 1049
BM 1054
BM 1044
BM 1183
764
1030
1050
1150
1120

Appendix C:

Photographs

Photo 1. Facing north, central portion of the site along the left side of the fence, Landon Road visible to the right of the fence.

Photo 2. Facing west, urban area terrestrial habitat located in the central portion of the study area. Haley's Ditch is visible and is lined with vegetation.

Photo 3. Haley's Ditch flowing northwards through the site.

Photo 4. View of Wetland A and successional forest habitat surrounding the wetland.

Photo 5. View of scrub-shrub habitat.

Photo 6. View of Wetland B.

Photo 7. View of Wetland C.

Photo 8. Potential Indiana Bat roosting tree habitat.

Photo 9. Potential Indiana Bat roosting tree habitat.

Appendix D:

Ohio Rapid Assessment Method for Wetlands v. 5.0 Rating Forms

ORAM v. 5.0 Field Form Quantitative Rating | WETLAND A-ADJACENT

Site: Haleys Ditch Restoration	Rater(s): B. Harrison/M. Liptak	Date: 7/24/08

Metric 1. Wetland Area (size).

2 (max 6 pts.) | 2 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [X] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

7 (max 14 pts.) | 9 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [X] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

15.5 (max 30 pts.) | 24.5 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [X] Precipitation (1)
- [X] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [X] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [X] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [X] Seasonally inundated (2)
- [X] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [X] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [X] other_SANITARY SEWER

Metric 4. Habitat Alteration and Development.

11 (max 20 pts.) | 35.5 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [X] None or none apparent (4)
- [X] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [X] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [X] Recovered (6)
- [X] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [X] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

35.5 subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating — WETLAND B-ADJACENT

Site: Haleys Ditch Restoration	Rater(s): B. Harrison/M. Liptak	Date: 7/24/08

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [X] <0.1 acres (0.04ha) (0 pts)

7	7
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [X] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

14	21
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [X] Precipitation (1)
- [X] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [X] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [X] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [X] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [X] Recovered (7)
- [X] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [X] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

10	31
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [X] Recovered (3)
- [X] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [X] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [X] Recovered (6)
- [X] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [X] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

31
subtotal this page

last revised 1 February 2001 jjm

Site: Haleys Ditch Restoration	Rater(s): B. Harrison/M. Liptak	Date: 7/24/08

Metric 1. Wetland Area (size).

0 (max 6 pts.) | 0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [X] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

4 (max 14 pts.) | 4 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [X] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

15 (max 30 pts.) | 19 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [X] Precipitation (1)
- [X] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [X] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [X] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [X] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [X] Recovered (7)
- [X] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [X] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

6.5 (max 20 pts.) | 25.5 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [X] Recovered (3)
- [X] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [X] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [X] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [X] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

25.5 (subtotal this page)

APPENDIX D:
ENVIROSCIENCE INDIANA BAT SURVEY REPORT

INDIANA BAT SURVEY
Lockheed Martin Site

Approximately 8.5 Acre Site,
Akron, Summit County, Ohio

Project # 34-2613

Prepared for:

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9 September 2008

STATEMENT OF CERTIFICATION

The analyses, opinions and conclusions in this report are based entirely on EnviroScience's unbiased, professional judgment. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study. Neither EnviroScience nor any EnviroScience employee has any vested interest in the property examined in this study.

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1. 0 INTRODUCTION AND SITE DESCRIPTION

EnviroScience, Inc. performed a Mist-net survey on July 26th and July 27th of 2008 for Arcadis at their Lockheed Martin Site in Summit County, Ohio (Appendix A: Map 1) in order to assess the presence of the endangered Indiana Bat (*Myotis sodalis*).

The site is located west of Landon Street, south of East Archwood Avenue, and north of Triplett Avenue, in the City of Akron, Ohio (Appendix A: Map 2). The Lockheed Martin site is approximately 8.5 acres in total size, with approximately 5 acres of second growth forest. The forested area is divided into two main sections. One is located in the northern portion of the site and the second at the southern end of the site (Appendix A: Map 3). These forested areas are connected by a narrow section of open field (Appendix C: Photos 1 and 2). The site is surrounded by commercial and residential land-use and is located just north of the Akron Fulton International Airport (Appendix A: Map 4). Haley's Ditch, a large open water channel, runs south to north through the central portion of the site (Appendix C: Photo 3). The wooded sections of the site that Haley's Ditch passes through contain thick understory woody and herbaceous vegetation much of which is lacking suitable corridors for sampling (Appendix C: Photo 4). No underground mines, mine shafts, or mine portals were noted on the site.

Two netting sites were selected under or adjacent to the closed canopy of the riparian corridor of Haley's Ditch and two net sets were placed at each site. The mist-net survey was performed by Mr. Merrill Tawse (USFWU Permit #TE157679-0) and assisted by Kristina Tawse and Jamie Willaman of EnviroScience.

2.0 SPECIES DESCRIPTION

The Indiana Bat is in the genus *Myotis* (Appendix B: Photo 1 & 2). Within the study range, two other bats from this genus are encountered, the Little Brown Bat (*Myotis lucifugus*), and the Northern Long-eared Bat (*Myotis septentrionalis*). Size, length, and habitat requirements are similar for these three species. Each of these three species could be encountered foraging in habitats like those found on the study site and each could be encountered roosting under exfoliating bark. At this time, accurate identification can only be made by capturing and direct examination of these bats.

The Indiana Bat is distinguishable from the other two *Myotis* species in that the Northern Long Eared Bat has a longer and more pointed tragus (Appendix B: Photo 5) in its ear pinna than the Indiana Bat or Little Brown Bat. The Little Brown Bat has some scattered, longer toe hairs that extend well beyond their claws, which the Indiana Bat lacks. The Indiana Bat has a "keeled calcar" (Appendix B: Photo 2) along the trailing edge of its interfemoral membrane, which the Little Brown Bat does not. The pelage color of the Indiana Bat is a dull grayish color instead of the bronze color of the other two bats (Appendix B: Photo 1). The Indiana Bat has pink lips, which are brown in the other two species (Appendix B: Photo 3 & 4).

3.0 METHODS AND MATERIALS

The survey was conducted over two consecutive evenings, July 26th and 27th of 2008, by mist netting within the Lockheed Martin site. Two sites were selected and two canopy nets were stretched at each, so that they extended laterally beyond the corridor sides. The nets also extended above the closed upper canopy of the riparian corridor. Each net set was comprised of two canopy nets. The nets used were very fine black mist nets (36 mesh, 2 ply, 50 denier, 4 shelf, 12 meter long and 2.6 meter high nets from AFO Banding Supplies of Manomet MA) stacked horizontally to a height of approximately 5.2 meters and a length of 12 meters. The nets were stretched between telescoping metal poles equipped with pulley systems to facilitate raising and lowering. Each mist-net system was positioned across a potential bat corridor (flyway) in areas with a closed canopy and lateral borders approximating the net's length (12 m). The location of each net site was noted using a Global Positioning System (GPS). The nets were surveyed at a minimum surveying period of five hours each night.

The two net sites were selected were closed canopy riparian corridors formed by Haley's Ditch. Net Site 1 was in the northeastern section of the site and Net Site 2 was at the extreme southern section. The mid-section of the site is open field and was not suitable for netting. The extreme north and western portions of the site consisted of open wetland, sparsely surrounded by larger trees including a few dead cottonwoods; but no closed canopy corridors for netting. Net Site 1 was located just down the riparian corridor from these trees.

At Net Site 1, (Appendix A: Map 4), both nets were placed so that they traversed Haley's Ditch in the northeastern section of the site. This section of the channel was forested with secondary growth consisting of larger Cottonwoods (*Populus deltoides)* and various other young successional trees such as Boxelder, and Maples (Appendix C: Photo 5). Both nets completely spanned the stream corridor. Immediately east of this net site location is a parking lot.

Net Site 2 was located just north of Triplet Blvd, adjacent to a restricted concrete walkway that crosses Haley's Ditch (Appendix C: Photo 6). At this site, there was only one area with an open corridor over Haley's Ditch, where one of the nets was placed. The second net was placed in a mature wooded canopy opening with mowed grass, east of the ditch (Appendix C: Photo 7).

Nets were spread each evening at dusk (8:30pm) and lowered after over five hours of netting. Nets were checked every 20 minutes for the presence of captured individuals. At the end of the survey, all materials (nets and poles) were removed from the site.

4.0 RESULTS

TABLE 1: GPS Coordinates for Net Sites.

Net Site	Latitude	Longitude
1	N 41° 02.764'	W 081° 28.278'
2	N 41° 02.578'	W 081° 28.350'

TABLE 2: Activity Observed and Recorded July 26, 2008.

Trip	Time	Captures	Temperature	Comments
1	8:50 p	None*	80°F	
2	9:10 p	None*	78°F	
3	9:30 p	None*	70°F	
4	9:50 p	None*	69°F	
5	10:10 p	None*	69°F	
6	10:30 p	None*	69°F	
7	10:50 p	None*	69°F	
8	11:10 p	None*	69°F	
9	11:30 p	None*	69°F	
10	11:50 p	None*	68°F	
11	12:10 a	None*	68°F	
12	12:30 a	None*	68°F	
13	12:50 a	None*	68°F	
14	1:10 a	None*	68°F	
15	1:30 a	None*	68°F	Nets Closed

*signifies no physical captures and lack of activity detected either through visual or acoustical monitoring

TABLE 3: Activity Observed and Recorded July 27, 2008.

Trip	Time	Captures	Temperature	Comments
1	8:50 p	None*	78°F	
2	9:10 p	None	78°F	Saw first bat flying, Net Site 2
3	9:30 p	None*	77°F	
4	9:50 p	None*	77°F	
5	10:05 p	None*	75°F	
6	10:30 p	None*	74°F	
7	10:50 p	One	72°F	Captured 1 Big Brown Bat; Net Site 2
8	11:10 p	None*	71°F	
9	11:30 p	None*	69°F	
10	11:50 p	None*	68°F	
11	12:10 a	None*	68°F	
12	12:30 a	None*	68°F	
13	12:50 a	None*	68°F	
14	1:10 a	None*	67°F	
15	1:30 a	None*	67°F	Closed nets

*Signifies no physical captures and lack of activity detected either through visual or acoustical monitoring

TABLE 4: Bats captured July 27, 2008.

Common Name	*Scientific Name*	Sex	Time	Site #	Age	Weight	Band #
Big Brown Bat	*Eptesicus fuscus*	Male	10:50 p	2	Adult	19 g	ODNR 8705

5.0 DISCUSSION

Nets were opened at 8:30 PM on day one of the survey, July 26th 2008. The conditions at that time indicated that the evening would be acceptable for the conditions required by the US Fish and Wildlife Services (USFWS), with a starting temperature of 80° F (Table 2) and a final temperature of 68° F. A small amount of rain passed through the area in the late afternoon and skies remained cloudy until approximately midnight. After midnight, the skies were partly clear. There was no wind during the sampling period. Sampling on July 26 did not result in any captures, visual or acoustic detection of bats at the survey site.

On the second night of the survey, July 27th 2008, the nets were opened at 8:30 PM at a starting temperature of 78° F (Table 3). The conditions were partly overcast, with low

humidity and no wind. Over the five-hour survey the temperature decreased to a final reading of 67° F. All weather conditions and time intervals were in compliance with USFWS standards.

The sampling effort in this highly disturbed site resulted in only one bat capture, a Big Brown Bat (Table 4). In addition, the bat observed flying in the vicinity of Net Site 2 at dusk was visually larger than a *Myotis*. **No Indiana bats were captured in this survey**.

Appendix A: Maps

Map 1. Location of Summit County, Ohio

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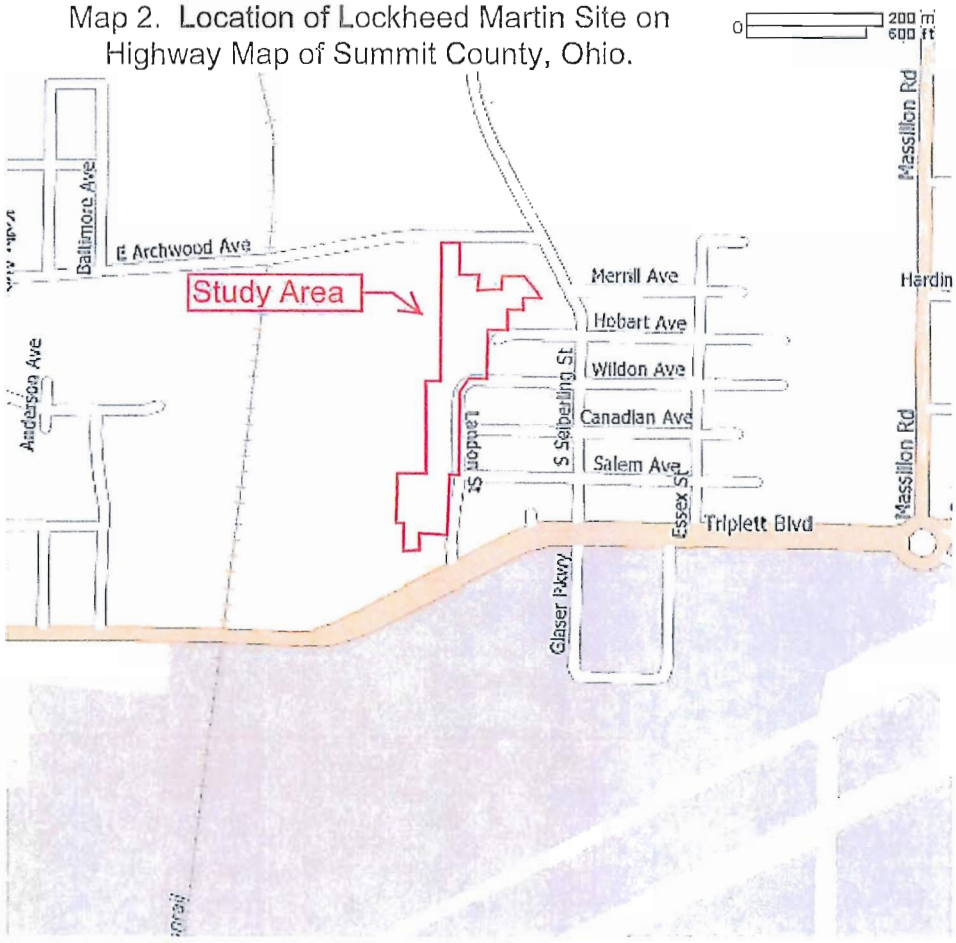
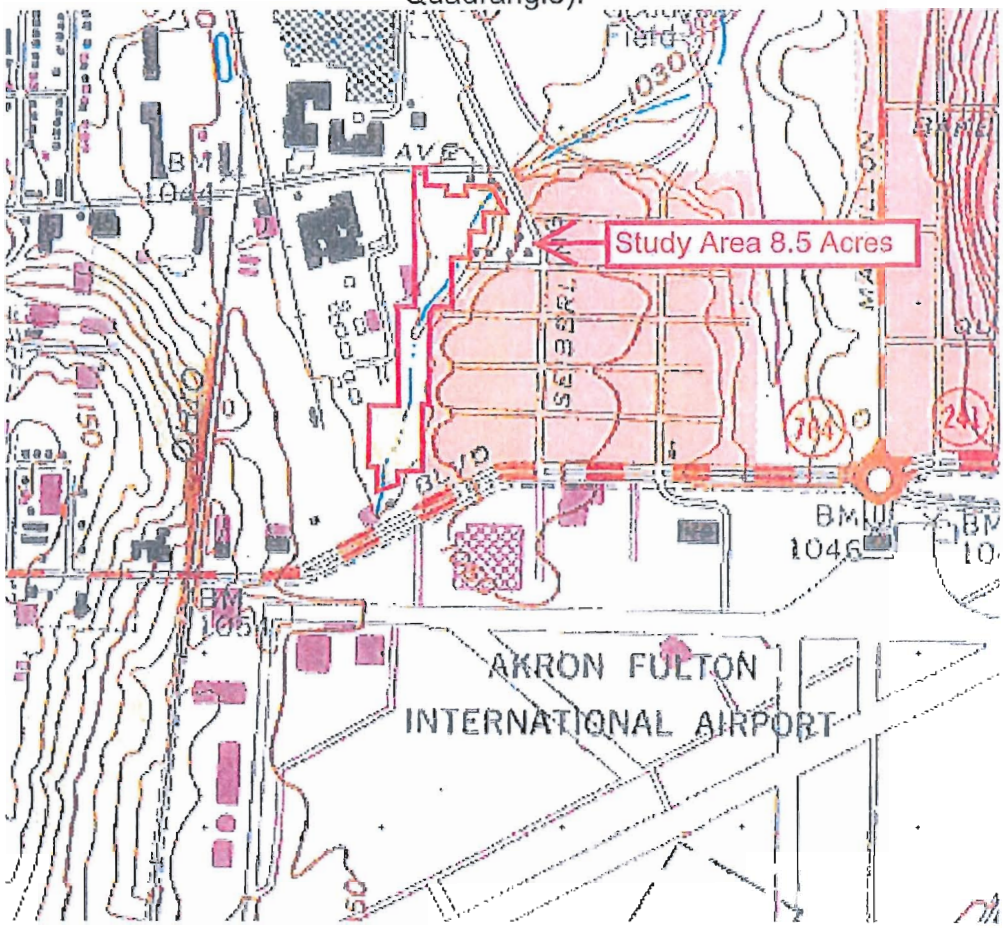
Map 2. Location of Lockheed Martin Site on Highway Map of Summit County, Ohio.



Map 3. USGS 7.5-minute Topographic Map of Site (Akron East Quadrangle).



Map 4. Site Map Identifying Net Site Locations.

Appendix B: Bat Species Photographs

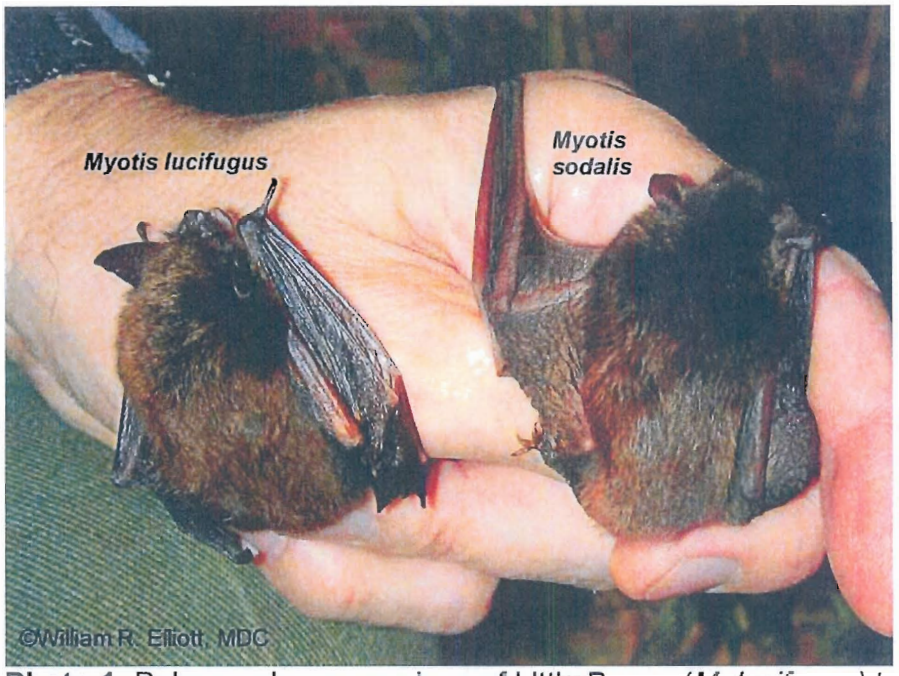


Photo 1. Pelage color comparison of Little Brown (*M. lucifugus)* to Indiana Bat (*M. sodalis*).

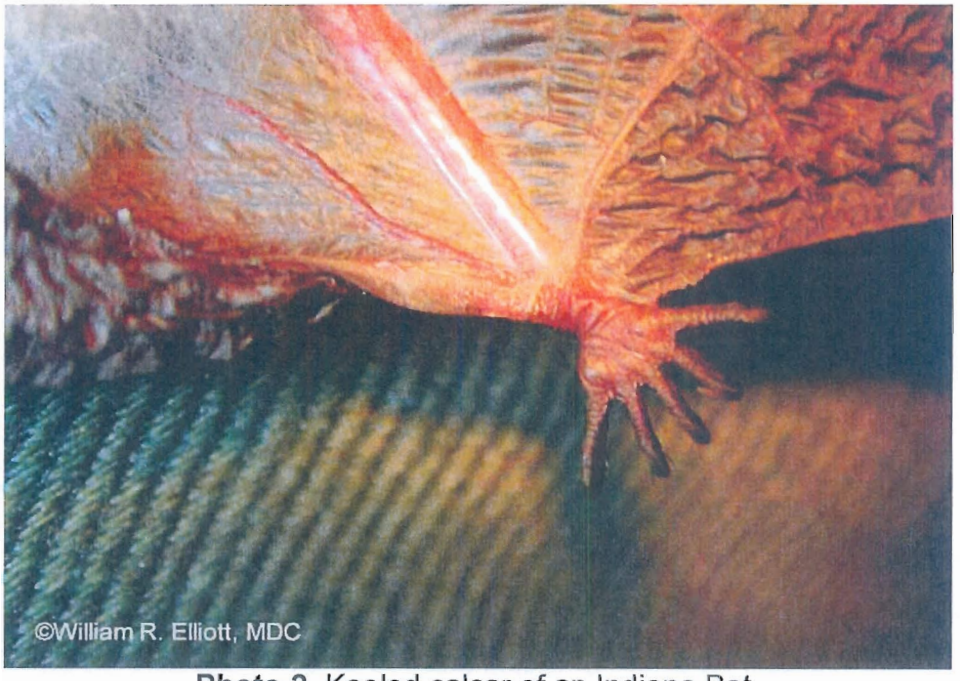


Photo 2. Keeled calcar of an Indiana Bat.

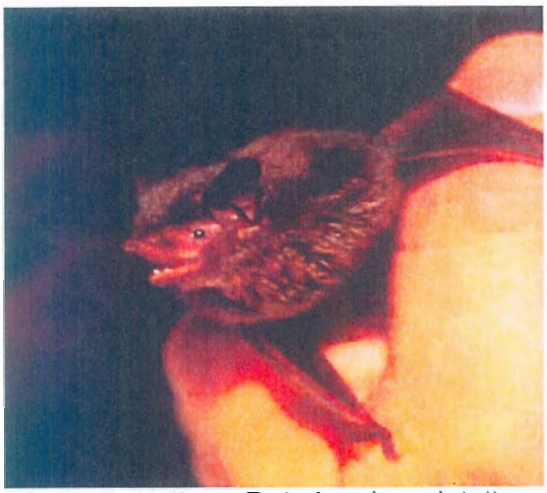


Photo 3. Indiana Bat showing pink lips.

Photo 4. Little Brown Bat showing dark lips and short ear tragus.

Photo 5. Northern Long-eared Bat showing long ear tragus.

Photos 6 & 7. Big Brown Bats showing bare muzzle.

Photo 8. Big Brown Bat captured at Lockheed Martin Site.

APPENDIX E:
SITE PHOTOGRAPHS

Photo 1. Developed area to the north and west and the road to the east of the survey site.

Photo 2. Central open region of survey site showing Haley's Ditch lined with vegetation.

Photo 3. Haley's Ditch running south to north through the site.

Photo 4. View of under story vegetation in wooded areas, too thick for sampling.

Photo 5. View of Net Site 1 looking upstream and showing edge of parking lot to left.

Photo 6. Net Site 2 looking down stream from walkway over ditch.

Photo 7. Net Site 2, net in wooded mowed area.