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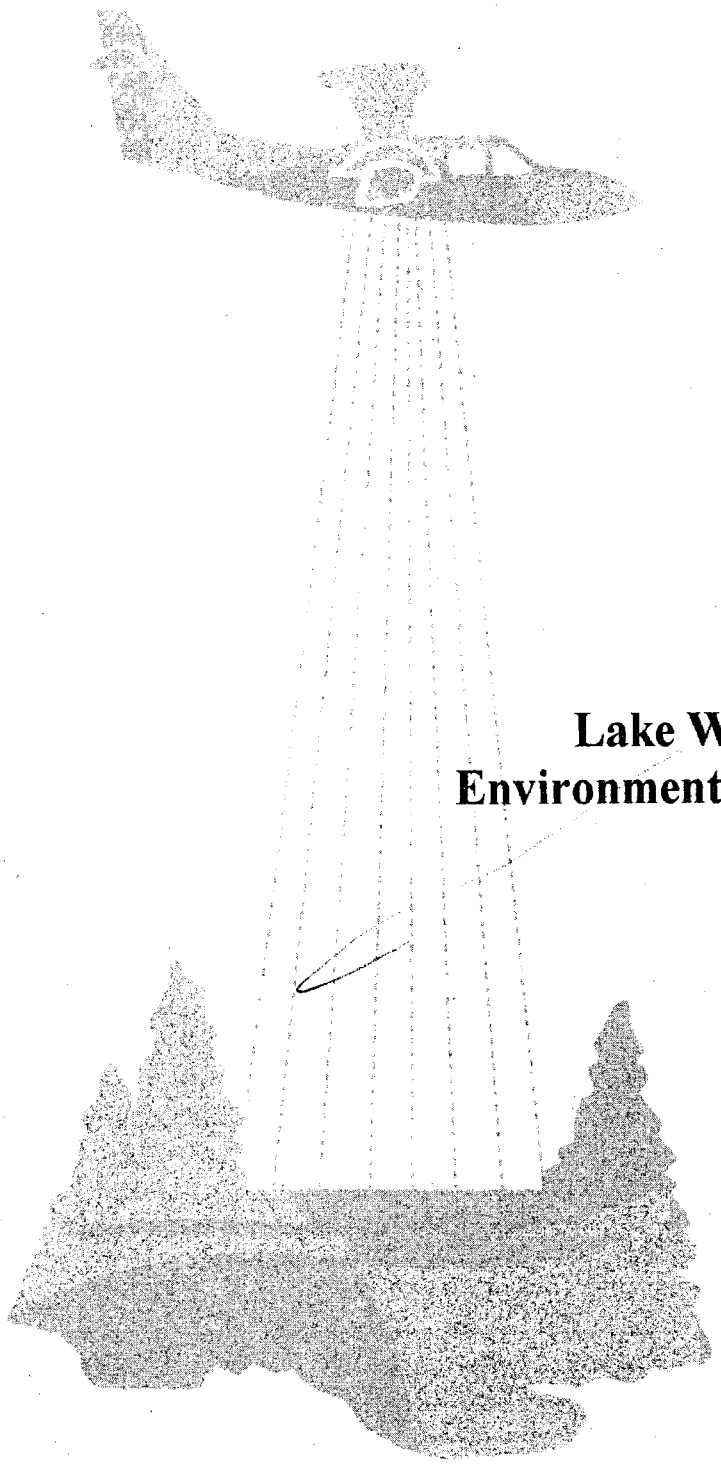

June 23, 2001

Lake Wappogasset – Bear Trap Environmental Assessment Overflight

August 13, 2001

A.W. Research Laboratories, Inc.
2403 Airport Rd. NE · Brainerd, Minnesota 56401 · Phone: (218) 829-7974 · Fax: (218) 829-1316

Date: August 13, 2001

To: Lake Wapogasset / Bear Trap Association

Subject: June 23, 2001 Environmental Assessment Overflight of Wapogasset and Bear Trap Lakes

From:

John Reynolds
Alan W. Cibuzar
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Introduction

An Environmental Assessment Overflight (EAO) was flown over Wapogasset – Bear Trap Lake by A.W.Research Laboratory on June 23, 2001 under the following conditions:

Time:	Mid –morning
Sky:	Clear

The purpose of the EAO was to document existing environmental conditions at various locations. Video images were taken with aircraft mounted cameras. Slide images were taken with a handheld camera. The images were analyzed at A.W.R.L. for environmental land use concerns and ordinance non-conformity.

User Guide

Image sites are marked on the maps located in the front of the report. These numbers correlate with image site numbers. Some images have ovals or arrows indicating areas of interest. A key is provided below each of those sets of images.

EXECUTIVE SUMMARY

The purpose of conducting an Environmental Assessment Overflight is to detect point and nonpoint sources of nutrients and toxins. Once these sources are located and investigated for their nutrient and/or toxic content, then concerned parties - whether they are governmental entities, industries, or homeowner and Lake Associations - can prioritize actions to minimize the adverse impacts of the pollution.

A.W. Research Laboratories began the Environmental Assessment for the Lake Wapogasset / Bear Trap Association on June 23, 2001. The purpose of the overflight was to gather imagery data for the analysis. The two data collection methods used were photography using 35mm slide film for the visible light spectrum photographed from oblique angle. Detected areas of concern along the shoreline of Lake Wapogasset and Bear Trap Lake were photographed. The map in the introduction shows the areas detected and analyzed.

From the analysis there were several areas of concern and recommendations for mitigation;

1. There are several wetlands and tributaries that enter Lake Wapogasset. A mass balance analysis on these inlets is recommended. There may be ways to filter or control the amount of nutrients coming into the lake if more information is gathered on each site.

2. Consider increasing the vegetative buffer or developing a holding ponds along roads near the lakes to filter road runoff before it enters the lake.
3. Reforest deforested areas of the shoreline. The local DNR can provide basal density values.
4. Develop and implement stormwater plans for lots with greater than 15% impervious surface.

INTRODUCTION

Lake Wapogasset and Bear Trap lakes are located in the western side of Wisconsin. The majority of the landuse along the lake is medium-density residential and a few high-density areas. The lake provides a scenic environment for its residents and visitors, along with habitat for a broad diversity of wildlife and fish. The homes along the lake's shoreline provide valued seasonal and year-round lakeside living. The beauty and recreational environment that the lakes provide is a prime reason that families and individuals have invested in their lakeshore property. As part of an effort to protect this resource, A. W. Research Laboratories (AWRL) was contracted to conduct an Environmental Assessment Overflight for Lake Wapogasset / Bear Trap Association.

AWRL has used low altitude remote sensing imagery to identify nutrient and toxic conditions in lakes since 1974. The use of remote sensing (aerial imagery) is invaluable for Lake Management because it quickly and economically summarizes complex environmental conditions. Aerial images demonstrate environmental conditions to laypeople in a format that is easily understood, and becomes a tool for lakeshore residents to gain a better awareness of their effect on the environment, and with that awareness an increased willingness to rectify problems.

Additional advantages of the aerial perspective are:

1) It allows the user to see things that would be obscured from the ground perspective.
2) The visual image record can be reviewed at a remote location, and
3) The visual image record can be reviewed using standard protocols to detect evidence of conditions that the user is interested in. Because this review can take place in a controlled laboratory situation, it is often more consistent than field review.

On a technical level, the EAO provides a low altitude oblique view of shoreline; presented in the visible and near infrared range, recorded on 35mm slide for detected concern areas of lakeshore. Oblique imaging allows an image analyst to "see beneath trees and shrubs", and to view both vertical embankments and horizontal land surfaces at the same time. For non-point source pollution detection, EAO is a successful methodology because a comprehensive coverage is provided on the lake, streams, wetlands, and adjacent upland area.

Ultimately, the purpose of conducting an EAO is to detect point and nonpoint sources of nutrients and toxins. Once these sources are located and investigated, the concerned parties - whether they are governmental entities, industries, or homeowner and Lake Associations - can prioritize actions to minimize the adverse impacts of the pollution. Successful efforts will result in attaining the ultimate goal of improved water quality, along with cleaner and healthier environment for everyone to enjoy. Specifically, this report can be used to achieve these goals by serving as:

a. Baseline documentation of the trophic status of the lake during the warm weather months of 2001;
b. Identification of land use practices or other conditions that likely contribute to the eutrophication of the lake;
c. Suggestion of immediate steps to help minimize practices that lead to lake eutrophication;
d. Identification of planning, implementation, and lake restoration procedures which can be incorporated into the long range management of the watershed, and;
e. Documentation of specified shorelines as it existed on June 23, 2001. This can be helpful to aid in mitigation efforts on the situations detected.

METHODOLOGY

During the first phase of the Environmental Assessment Overflight, A.W. Research Laboratories' Remote Sensing System recorded areas of concern along the shoreline of Lake Wapogasset and Bear Trap Lake and two islands using visible 35mm slide film, and hyperspectral (chlorophyll "a", carotene, water penetrating and thermal) video from an airplane. The actual overflight was completed on June 23, 2001.

Next, the images were correlated to geographic maps, and analyzed for land use practices that have enhanced or deteriorated water quality. This land use analysis includes identification of nutrient loading to the lake (wastewater, runoff, toxic input, etc.), as well as other types of pollution.

Finally, in the interpretive section of this report, possible influences of water pollutants have been identified for follow-up investigation, and basic best management practices (BMP's) are recommended.

ANALYSIS CRITERIA

The focus of this study was to evaluate the effect of water pollutants related to shoreline development and landuse impacts within the watershed. Such anthropogenic pollution falls into several common categories: various sources of runoff, point sources, and toxic sources, and wastewater influences. The criteria for the slide analysis used to evaluate the effect each property has on water quality are dependent on the lake. The main content of the criteria is based on the following:

Runoff influences:

- **Property that has any structure within 50 feet of the shore, because runoff from the facility is unlikely to be attenuated by vegetation or other retention device;**
- **Property that indicates the use of lawn or garden fertilizer within 50 feet of the shoreline, because this activity can directly contribute heavy doses of nutrients into the lake;**
- **Property that indicates shoreline erosion, resulting in sedimentation of the lake and degradation of fish habitat;**
- **Roads that are within 75 feet of the shoreline, which can increase runoff, and may also be associated with road salt use, sediment laden runoff, and increased risk of illegal dumping;**
- **Presence of agriculture, because this land use may be associated with elevated use of fertilizers or pesticides.**

Point sources:

- **Evidence of a creek or ditch on the property, because these can contribute pollutants from other portions of the watershed;**
- **Culverts within 100 feet of the shoreline;**
- **Hoses or "straight pipes" within 100 feet of the shoreline.**

Toxic influences:

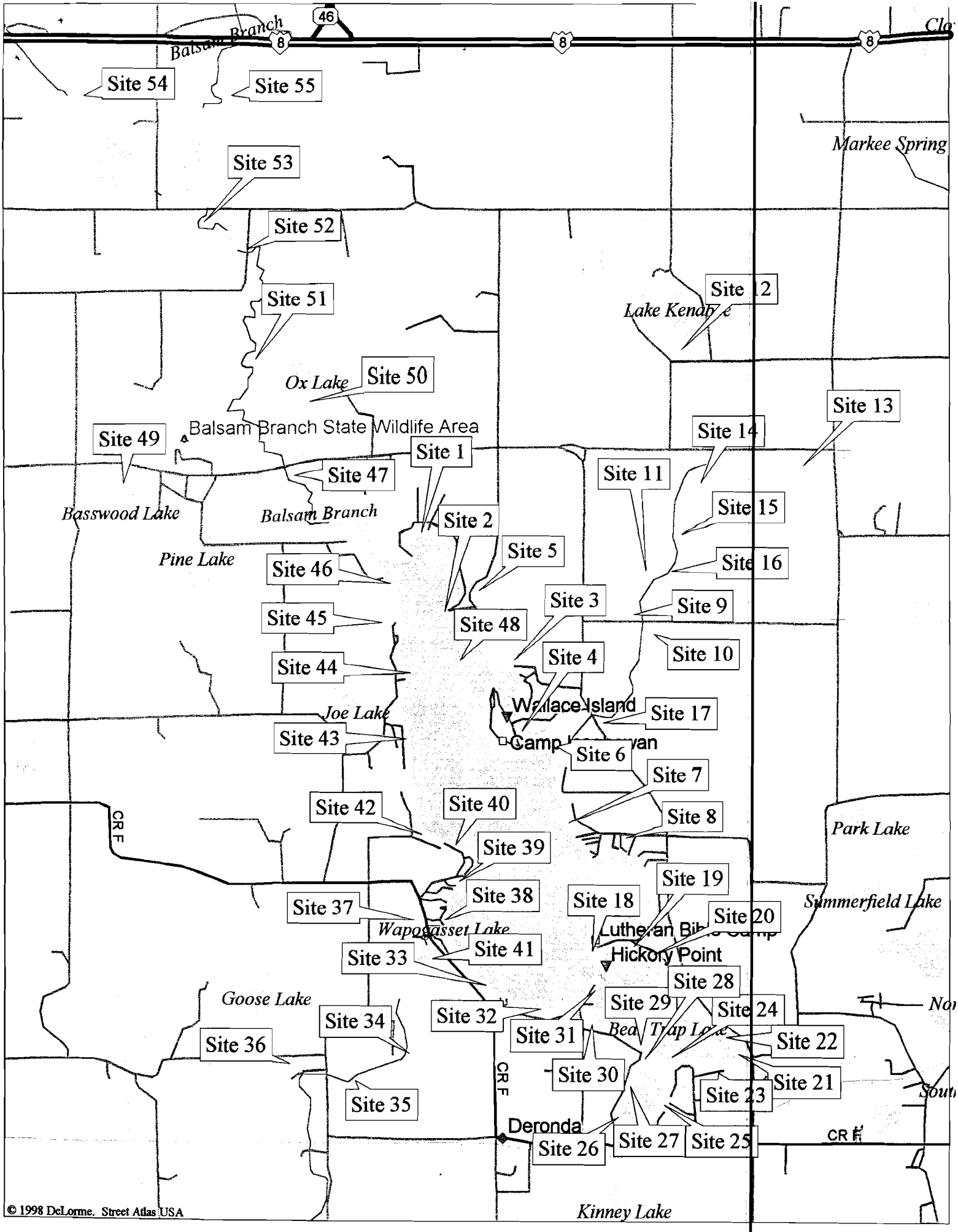
- **Evidence of a dump, landfill, or other debris site;**
- **Businesses or structures that may be handling hazardous waste;**
- **Evidence of the use of herbicides;**
- **Evidence of unhealthy or dead vegetation.**

The Map Position number corresponds to the number drawn on the map and also the number listed on the corresponding slides. There are one or two slides for each Map Position; a visible slide documenting the area of concern on the ground. In some cases there are more than one visible slide for a Map Position. This is usually done at the judgment of the pilot in order to ensure that adequate views of all structures within a position are clearly distinguishable.

"Groundtruthing" is essentially an on-site validation of concerns identified in the examination of the aerial images. One of the most effective uses of the EAC data is when a trained "groundtruther" presents the slides and analysis to the property owner of each residence. Together these parties can identify whether concerns identified in the slides are significant. In cases where problems are confirmed then the "groundtruther" can instruct the property owner on the need for - and implementation of - Best Management Practices (BMP). These BMP's have been recommended on the basis of their effectiveness and relative ease of implementation, and can usually substantially reduce degradation of the lake if properly installed

and maintained. Groundtruthing the area in the analysis section is CRUCIAL to getting the full value of the EAO study. The two most common options for obtaining a person to perform the ground truthing are listed below:

1. **A lake association can hire a person under contract.**
2. **One or more members of the lake association could perform the groundtruthing, either under contract or under other mutually agreeable arrangements.**
3. **AWRL can be retained to provide training for either of the options previously mentioned. Training is important to ensure that the groundtruthing results in accurate and complete documentation of the lakeshore situation. Also, the groundtruthing experience should be cooperative and educational rather that threatening to the lakeshore owner. A proposal outlining the costs of the groundtruth training can be submitted upon request.**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Markee Spring
Lake Kenaby e
Ox Lake
Balsam Branch State Wildlife Area
Basswood Lake
Balsam Branch
Pine Lake
Joe Lake
Wallace Island
Camp
Park Lake
Summerfield Lake
Wapogasset Lake
Lutheran Bible Camp
Hickory Point
Goose Lake
Bea Trap Lake
Deronda
Kinney Lake
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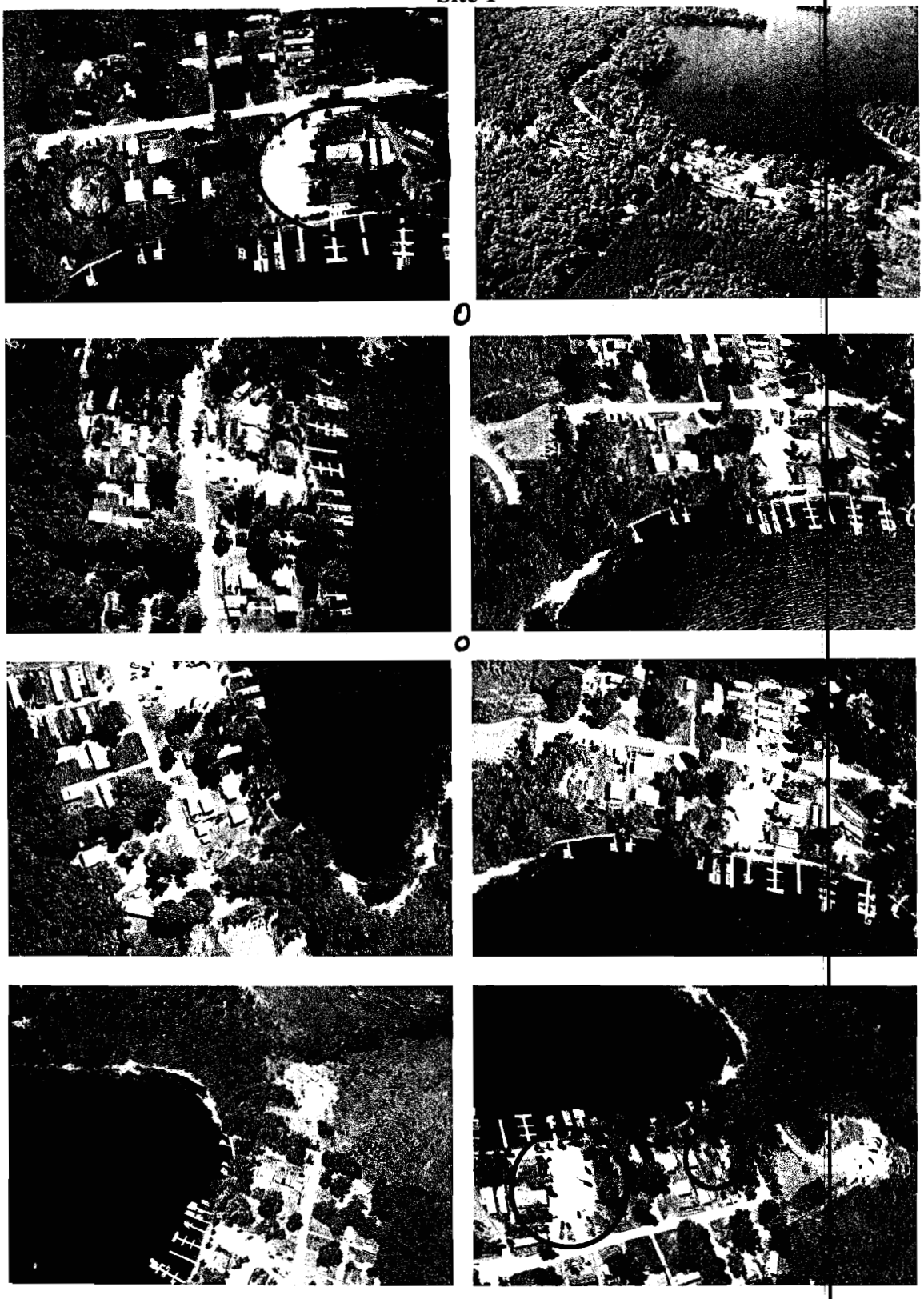
© 1998 DeLorme. Street Atlas USA

Site 1



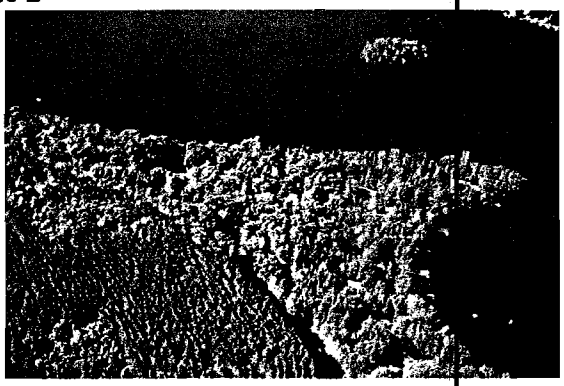
Approximate Location: N45 21.26' W 92 26.34'

Analysis / Recommendation:

1. **Large circle shows area with possible runoff and erosion potential. Develop and implement stormwater plan.**

2. **Small circle shows new construction site. Install and maintain silt fence.**

Site 2

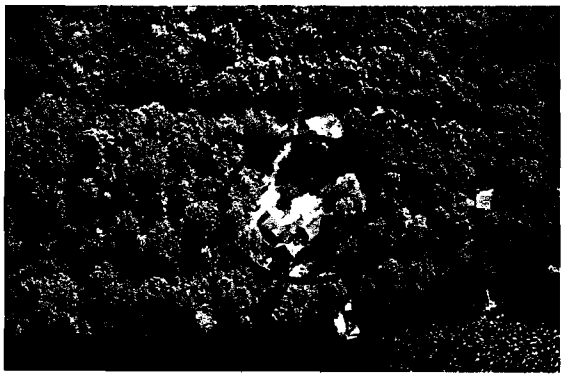


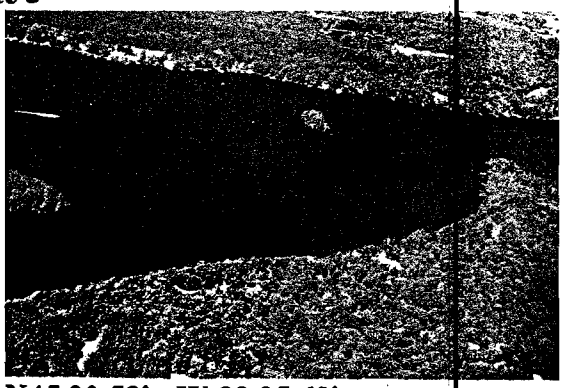
Approximate Location: N45 20.86' W 92 26.15'

Analysis / Recommendation:

1. **Oval shows possible impervious area and setback concerns. Check setback distance. Develop and implement stormwater plan if necessary.**

Site 3





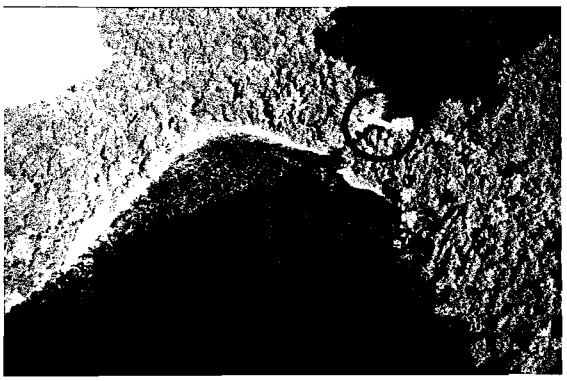
Approximate Location: N45 20.59' W 92 25.68'

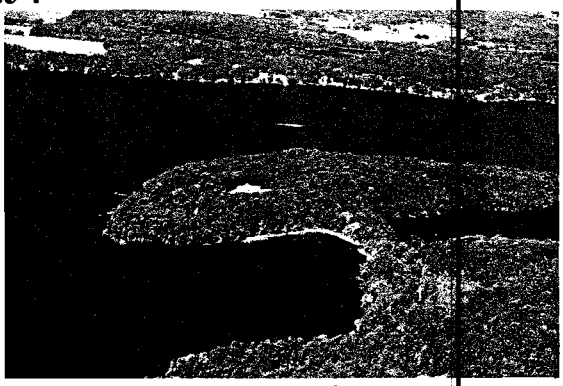
Analysis / Recommendation:

1. **Oval shows possible setback and impervious area concern. Check setback distance.**

Watch drainage ↓ towards lake

Site 4





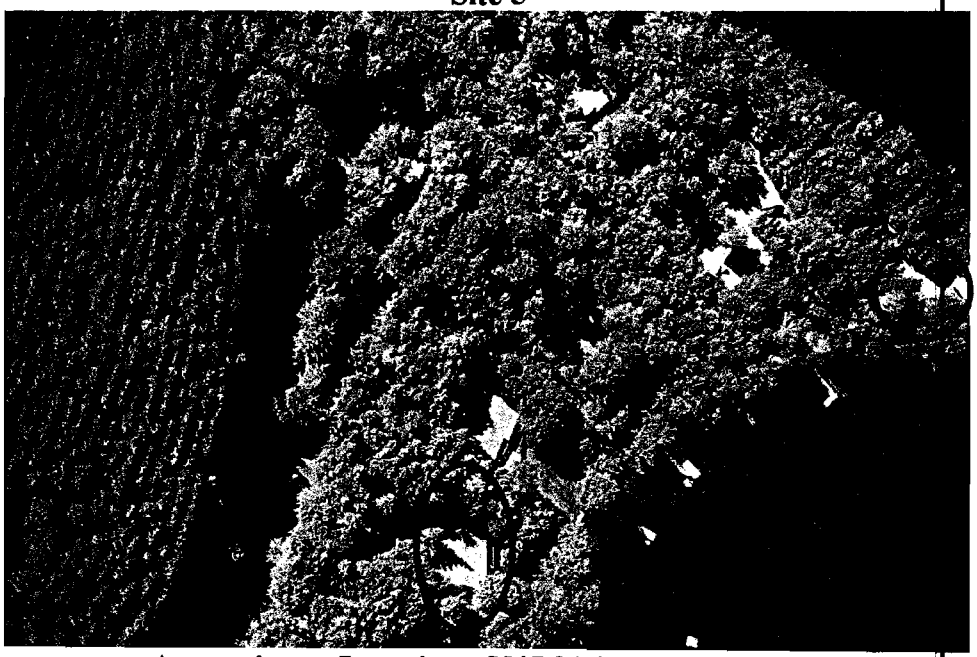
Approximate Location: N45 20.16' W 92 25.39'

Analysis / Recommendation:

1. **Check for road runoff at crossing.**

2. **Develop vegetative management plan.**

Site 5

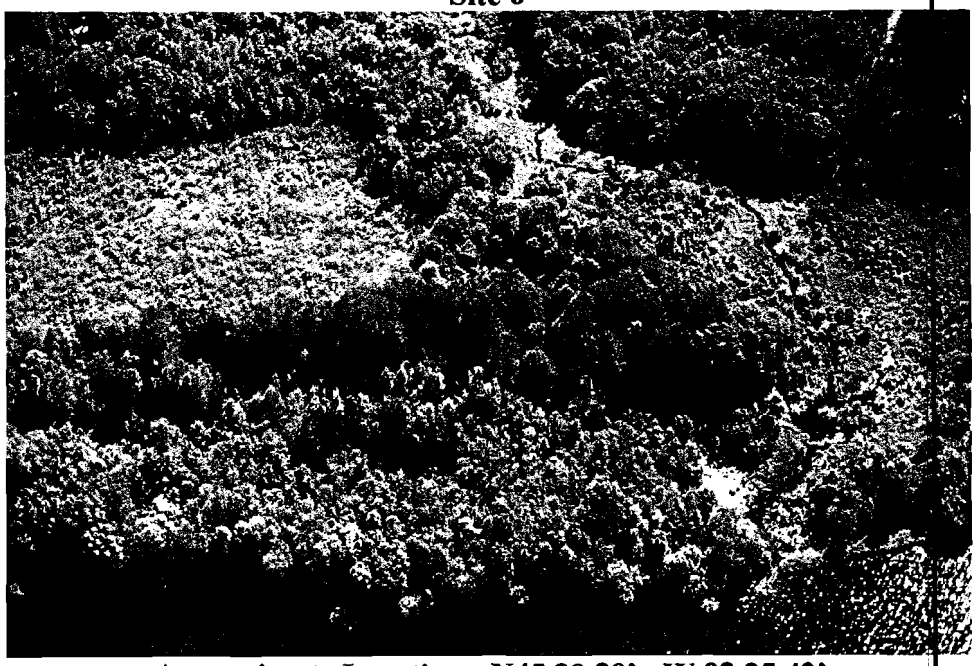


Approximate Location: N45 21.06' W 92 25.89'

Analysis / Recommendation:

1. **Oval and circle show possible setback concerns. Check setback distances.**

Site 6

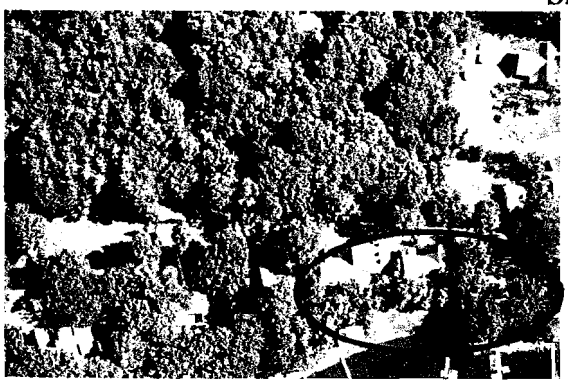


Approximate Location: N45 20.20' W 92 25.42'

Analysis / Recommendation:

1. **Analyze inlet water as part of a mass balance study. Sampling should continue throughout year.**

Site 7



Approximate Location: N45 19.77' W 92 25.20'

Analysis / Recommendation:

JOANN BUSS OR KOWES

1. **Oval shows possible impervious area and setback concerns. Check setback distances. Develop and implement stormwater plans.**

Site 8

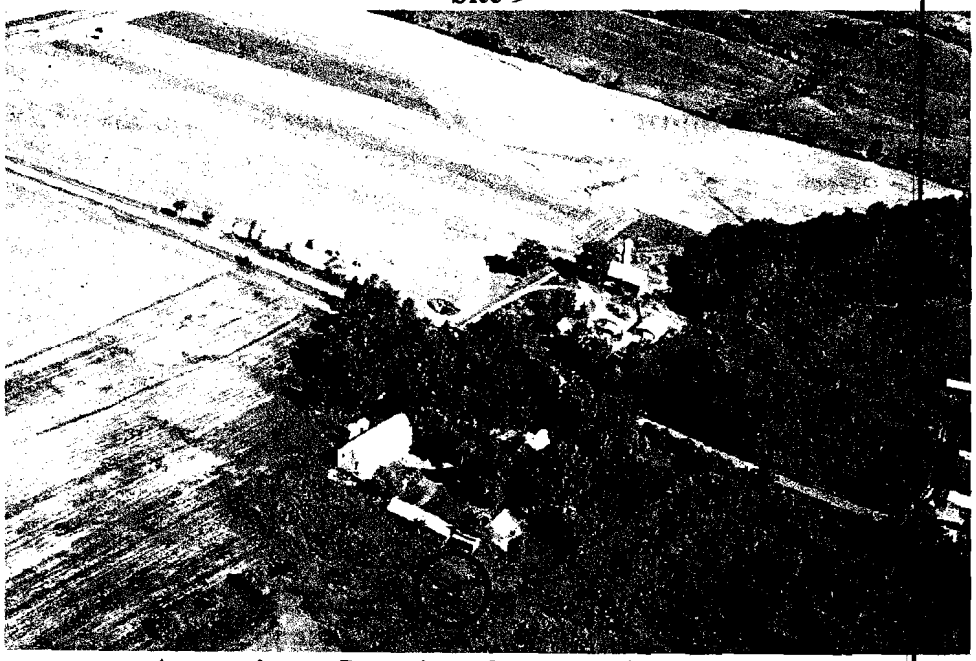
Approximate Location: N45 20.60' W 92 24.83'

Analysis / Recommendation:

Mortensen - have installed CATCH BASIN will be planting more trees ice dams & buffer zone

1. **Ovals show possible impervious area concerns and lawn runoff. Develop and implement stormwater plans. Establish vegetation buffer and reforest the area.**

Site 9

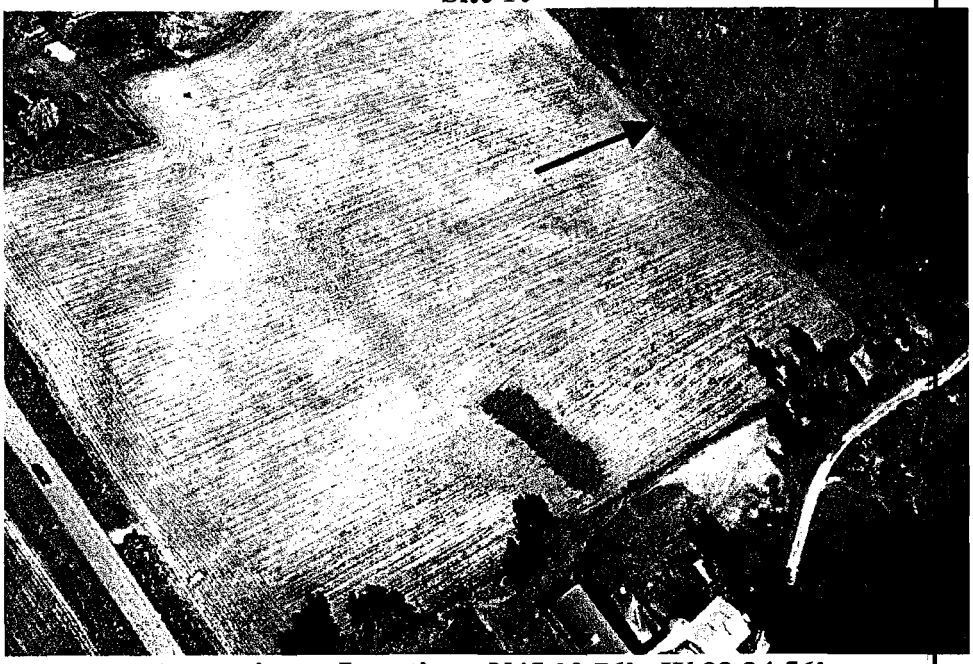


Approximate Location: N45 20.86' W 92 24.81'

Analysis / Recommendation:

1. **Circle indicates possible dumpsite in watershed. Check contents of site and remove any toxic materials.**

Site 10

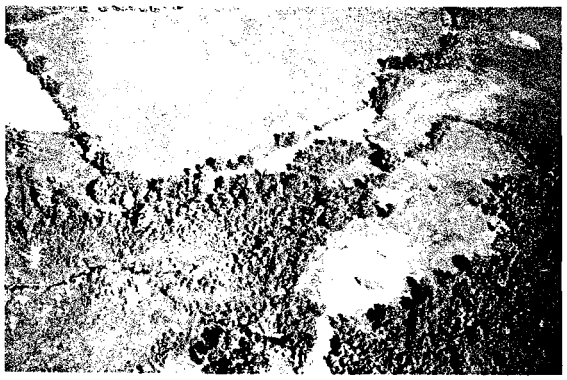


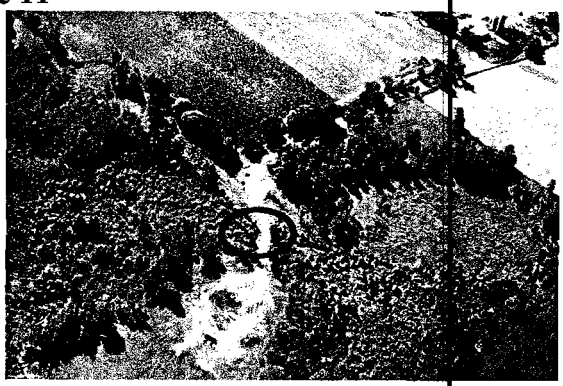
Approximate Location: N45 20.76' W 92 24.56'

Analysis / Recommendation:

1. **Check for tile drainage system at site marked by arrow.**

Site 11



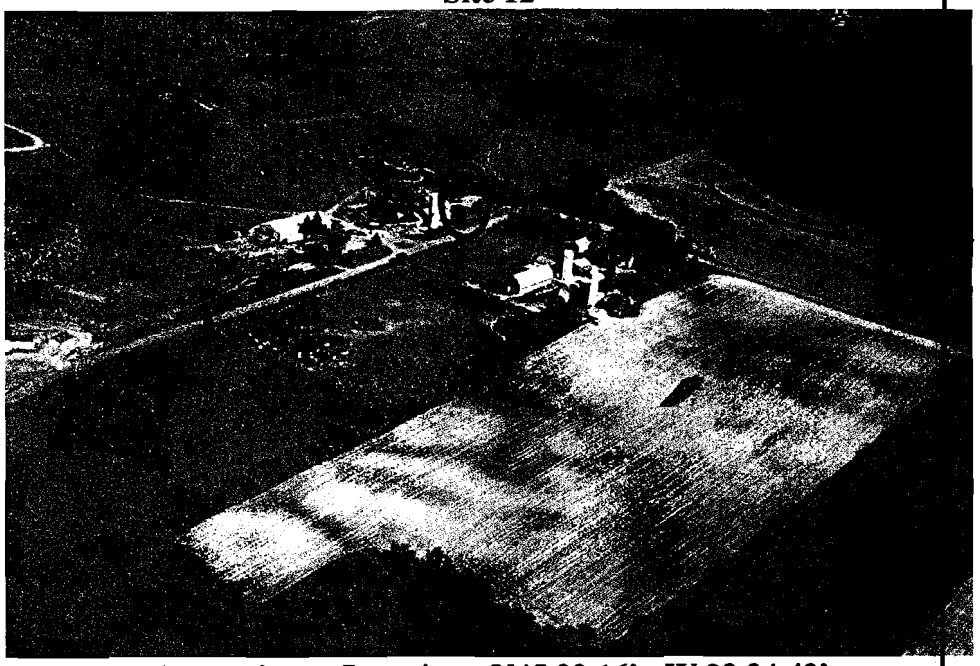


Approximate Location: N45 21.06' W 92 24.67'

Analysis / Recommendation:

1. **Oval indicates site of possible road runoff into stream. Check for erosion and establish vegetative cover to stabilize banks.**

Site 12

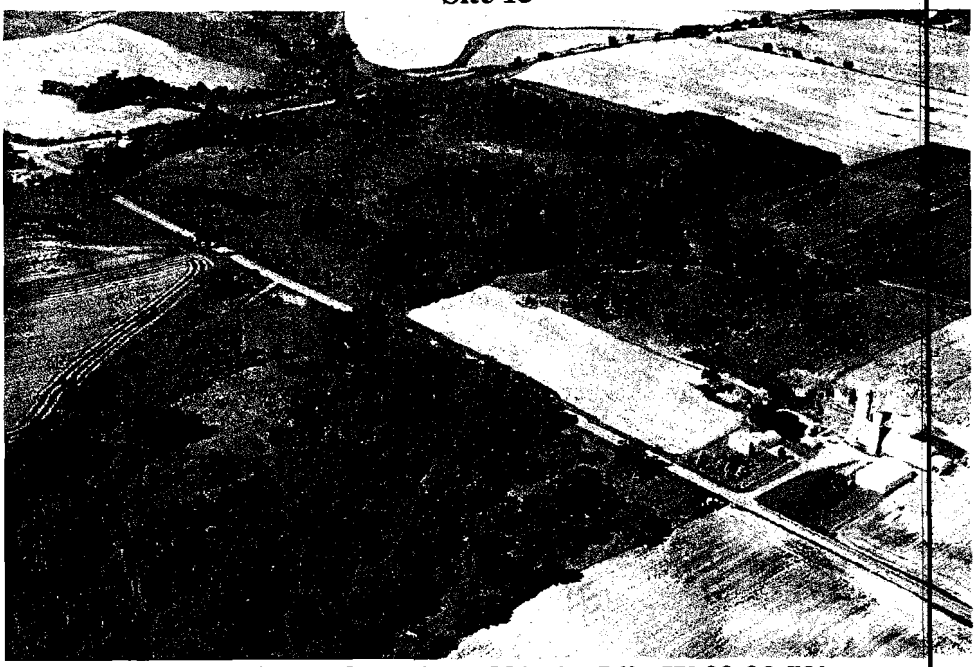


Approximate Location: N45 22.16' W 92 24.43'

Analysis / Recommendation:

1. **Ovals indicate possible agriculture runoff. Design and implement mitigation plan.**

Site 13

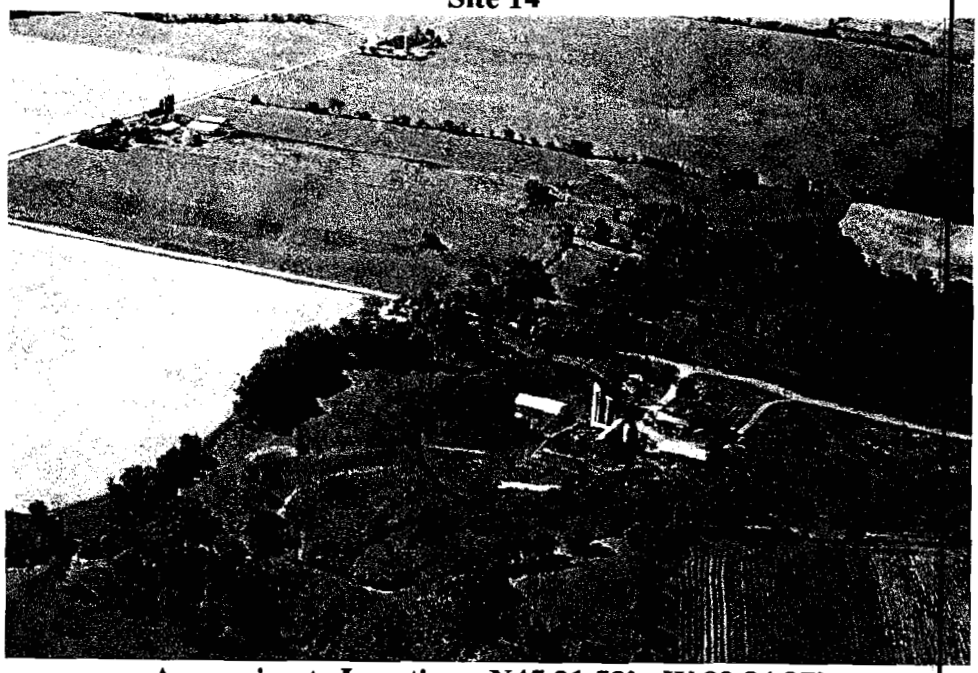


Approximate Location: N45 21.56' W 92 23.73'

Analysis / Recommendation:

1. **Determine if road ditch flows towards wetland. Design and implement mitigation plan.**

Site 14

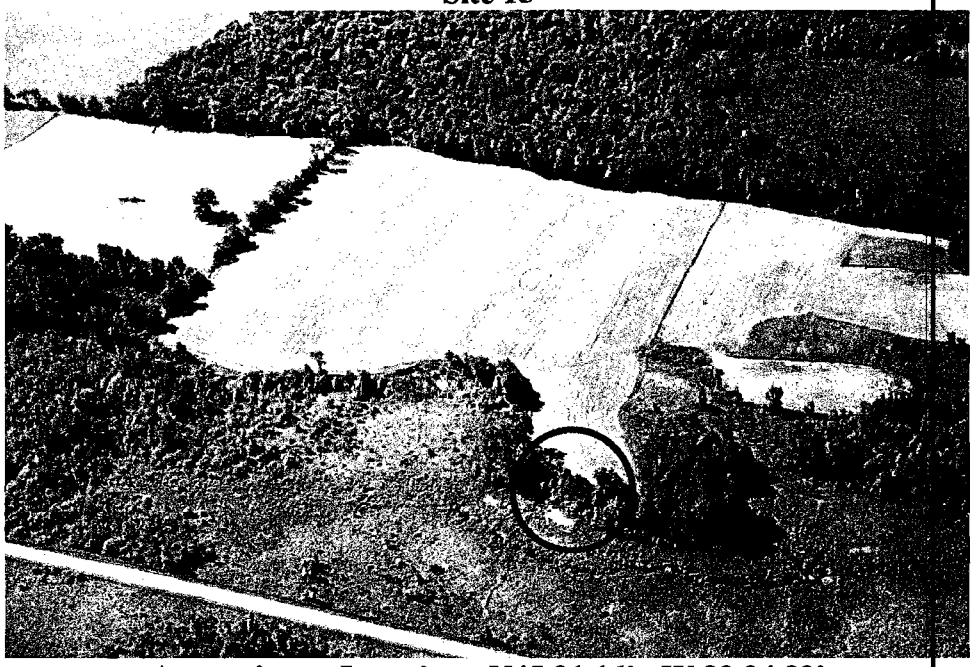


Approximate Location: N45 21.53' W 92 24.27'

Analysis / Recommendation:

1. **Oval indicates possible feedlot runoff into tributary. Design and implement mitigation plan.**

Site 15

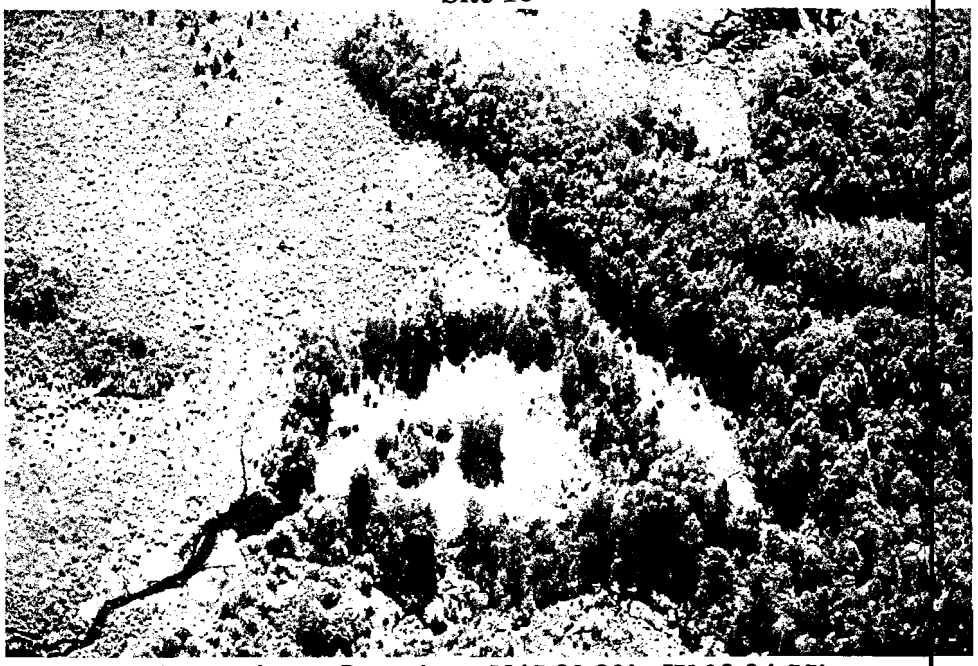


Approximate Location: N45 21.16' W 92 24.32'

Analysis / Recommendation:

1. **Circle indicates possible agriculture runoff into tributary. Design and implement mitigation plan.**

Site 16

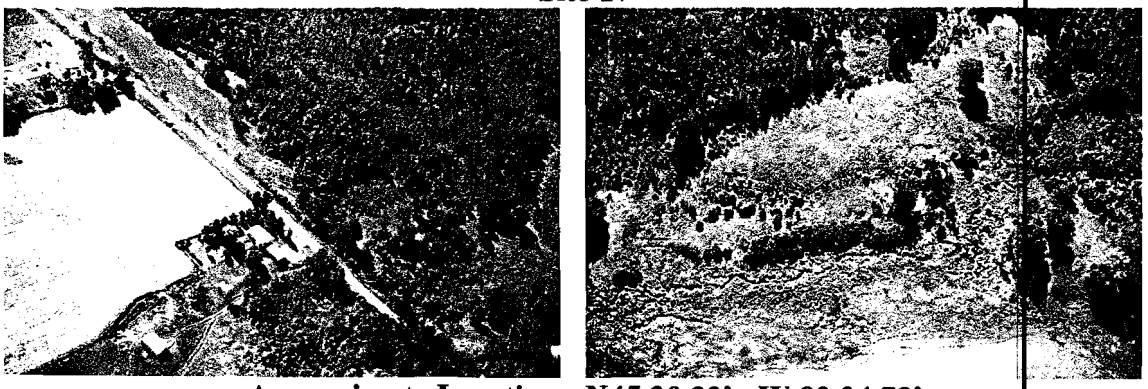


Approximate Location: N45 20.99' W 92 24.55'

Analysis / Recommendation:

1. **Possible tributary. Analyze possible impact by running year long mass balance study.**

Site 17

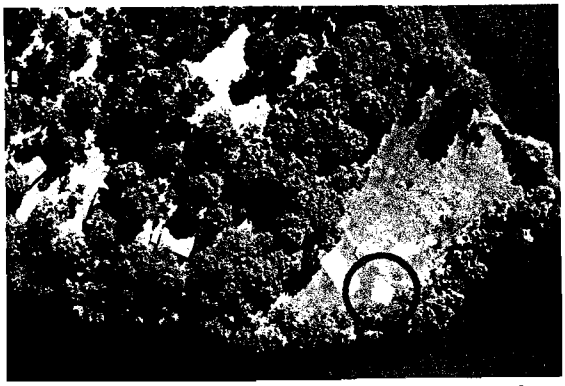


Approximate Location: N45 20.32' W 92 24.79'

Analysis / Recommendation:

1. **Investigate for springs to determine water quality.**

Site 18



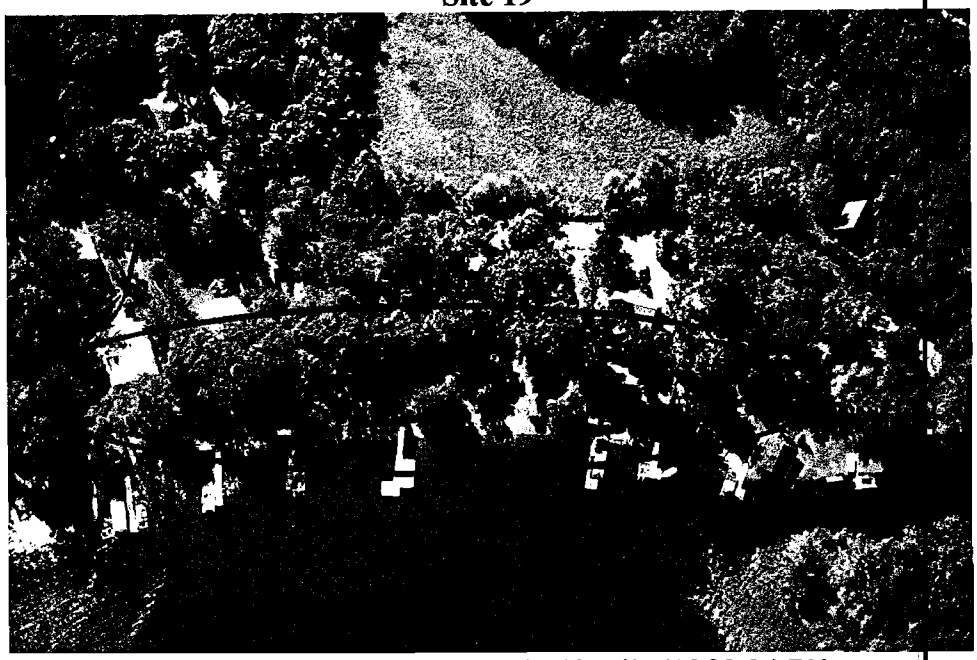
Bible Camp

Approximate Location: N45 19.32' W 92 24.97'

Analysis / Recommendation:

1. **Investigate intended use of sand pile.**

Site 19

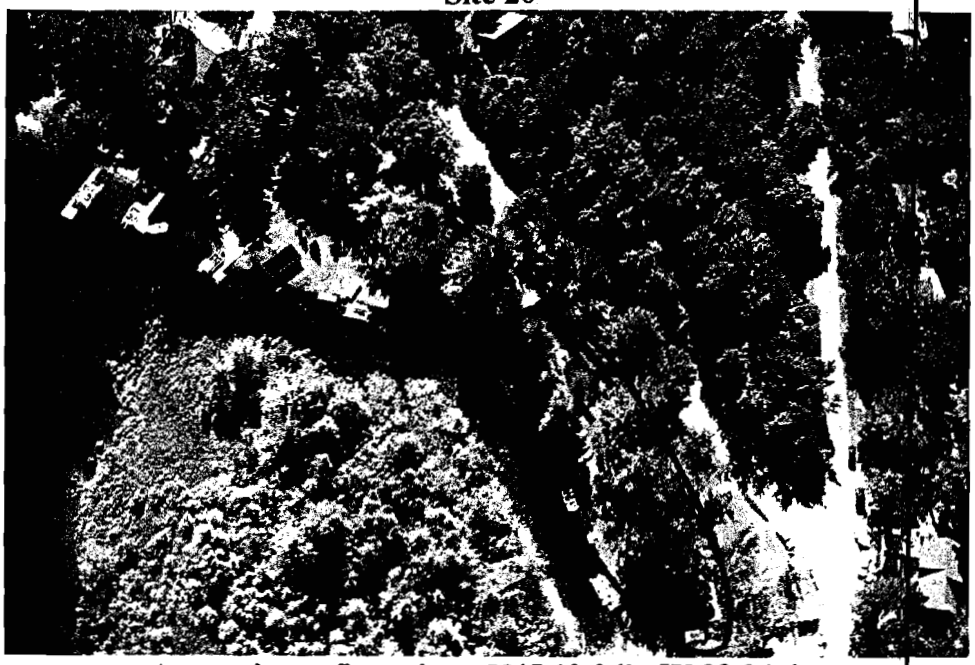


Approximate Location: N45 19.14' W 92 24.78'

Analysis / Recommendation: Nelson Building yr Around

1. **Oval indicates possible possible impervious area and setback concerns. Check distances. Develop and implement stormwater management plans.**

Site 20



Approximate Location: N45 19.06' W 92 24.61'

Analysis / Recommendation:

1. **Oval indicates possible setback concerns. Check distances. Develop stormwater mitigation plans to control runoff water.**

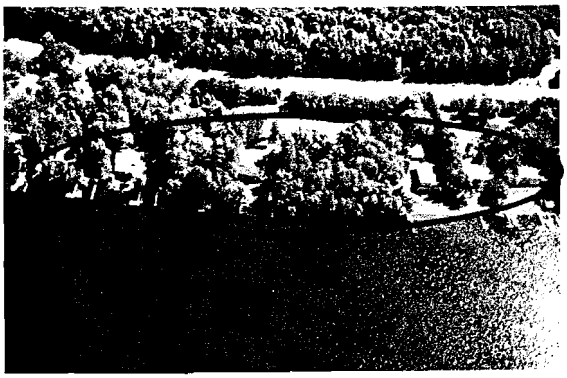
Site 21

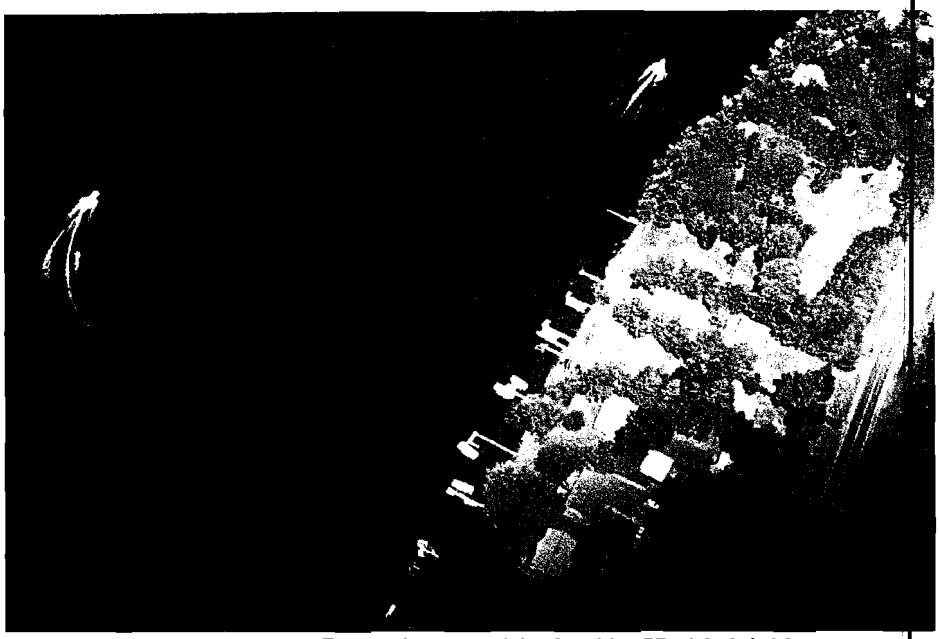
Approximate Location: N45 18.65' W 92 24.01'

Analysis / Recommendation:

1. **Oval indicates possible setback concerns. Check distances. Develop stormwater mitigation plans.**

Site 22





Approximate Location: N45 18.73' W 92 24.12'

Analysis / Recommendation:

1. **Ovals indicate possible setback and vegetative buffer concerns. Check distances. Develop shoreline buffer and reforest area.**

Site 23

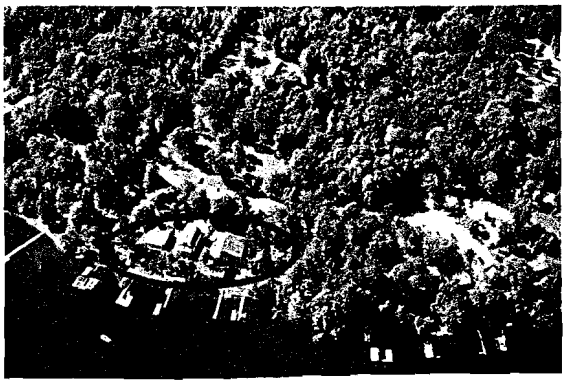
Approximate Location: N45 18.53' W 92 24.03'

Analysis / Recommendation:

ELBang

1. **Oval indicates possible lawn runoff. Establish vegetation buffer if possible.**
2. **Arrow indicates possible inlet. Analyze water as part of a mass balance study.**

Site 24

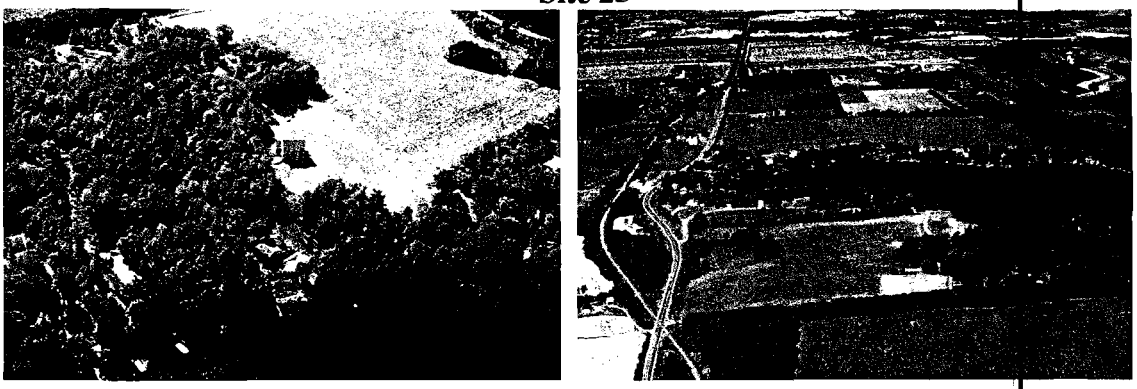


Approximate Location: N45 18.65' W 92 24.40'

Analysis / Recommendation:

1. **Ovals indicate possible setback and impervious area concerns. Check distances. Develop and implement stormwater plans where necessary.**

Site 25

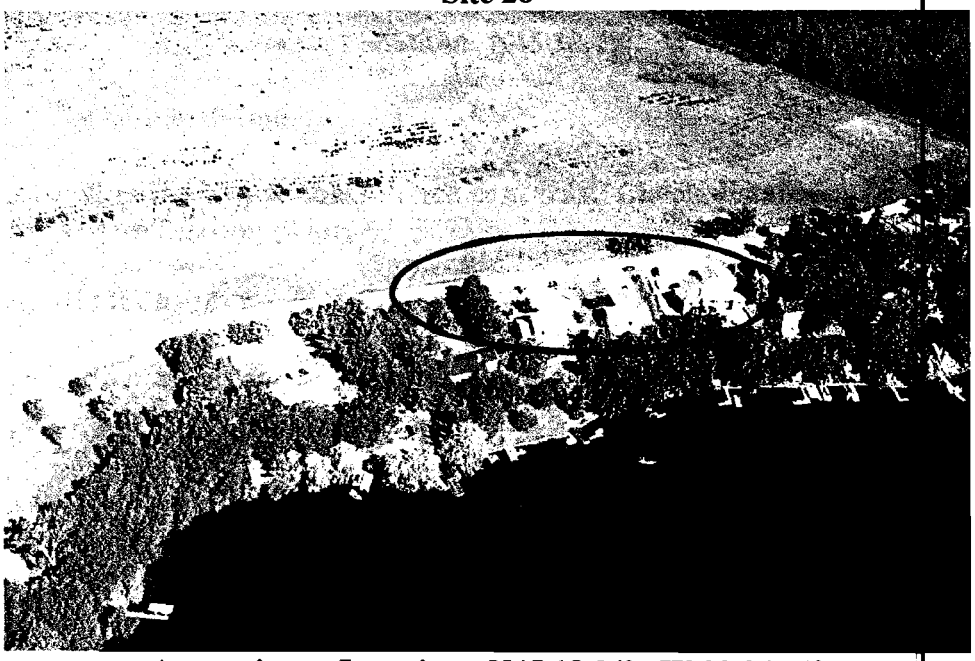


Approximate Location: N45 18.43' W 92 24.57'

Analysis / Recommendation:

1. **Investigate stormwater management of the second tier area.**

Site 26



Approximate Location: N45 18.34' W 92 24.81'

Analysis / Recommendation:

1. **Oval indicates possible impervious area concerns. Develop and implement stormwater plans where necessary.**

2. **Arrow indicates new construction with no silt fence visible.**

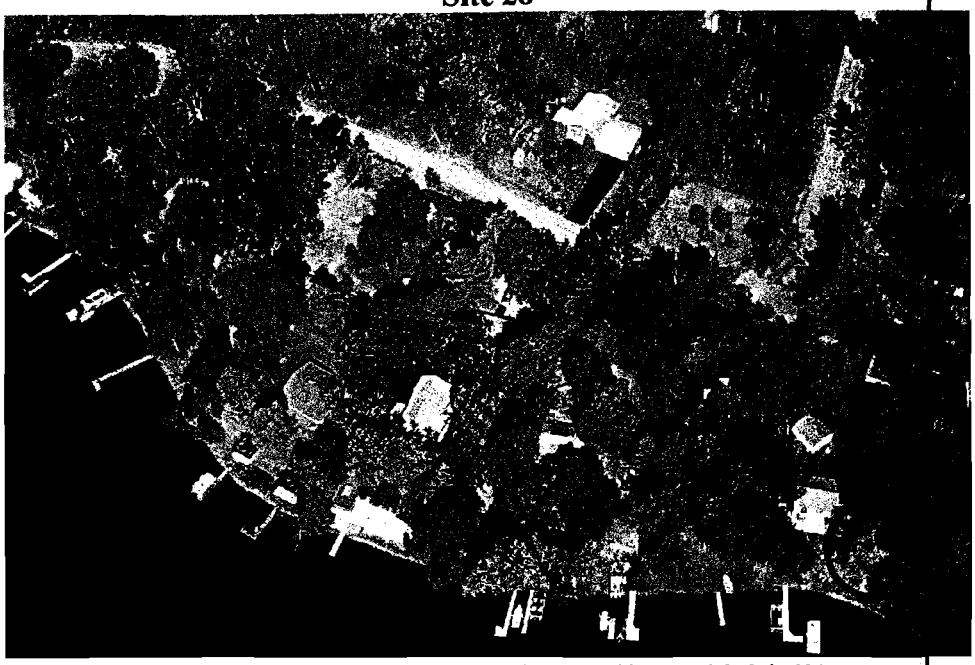
Site 27

Approximate Location: N45 18.49' W 92 24.76'

Analysis / Recommendation: Brunnel

1. **Large oval indicates possible setback concerns. Check distances. Develop stormwater mitigation plans.**
   old boat House
2. **Small oval indicates possible fire ring. Move fire ring back from lake.**
3. **Arrow indicates unknown dark area coming from shore. Investigate for possible drain.**

Site 28

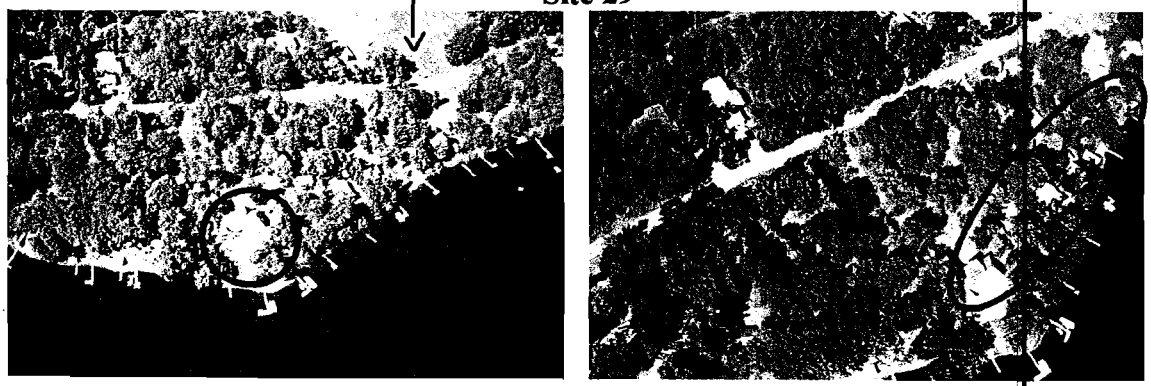


Approximate Location: N45 18.61' W 92 24.62'

Analysis / Recommendation:

1. Circle indicates possible dead vegetation. Determine cause of dead vegetation.
2. Possible setback concerns. Check distances. Develop stormwater mitigation plans.

Site 29



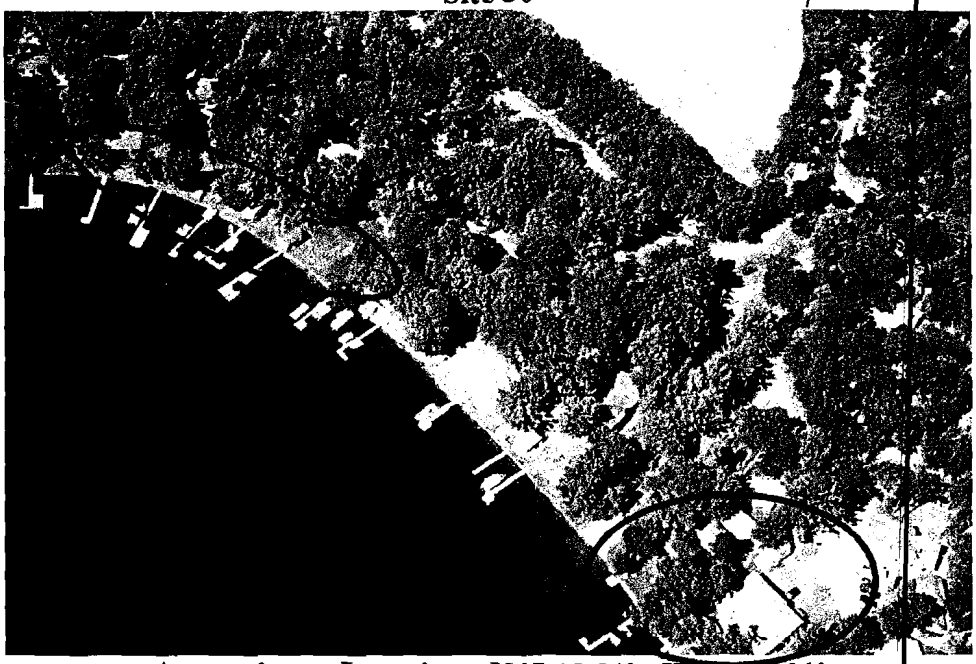
Collins

Approximate Location: N45 18.74' W 92 24.76'

Analysis / Recommendation:

1. Circle indicates new construction and silt fence breach. Maintain silt fencing.
2. Investigate setback concerns indicated by circled areas. Develop and implement stormwater mitigation plans.

Site 30



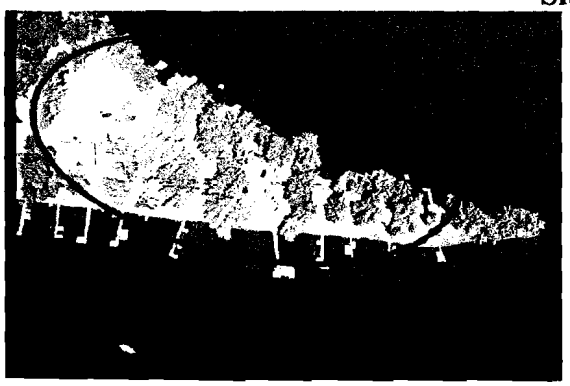
Need to talk to Lisa

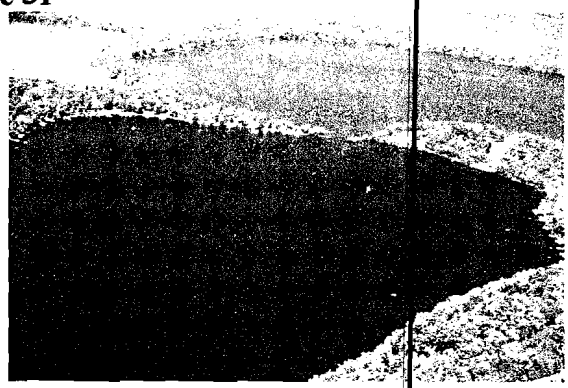
Approximate Location: N45 18.81' W 92 25.01'

Analysis / Recommendation:

1. **Ovals indicate possible setback concerns and lawn runoff. Check distances and establish vegetation buffer.**

Site 31





Approximate Location: N45 18.98' W 92 24.98'

Analysis / Recommendation:

1. **Oval indicates possible setback and impervious area concerns. Check distances.**
2. **Develop and implement stormwater plan for peninsula.**

Site 32

Approximate Location: N45 18.86' W 92 25.40'

Analysis / Recommendation:

1. **Oval indicates possible setback and impervious area concerns. Check distances. Develop and implement stormwater plans.**

2. **Develop and implement stormwater and erosion control procedures.**

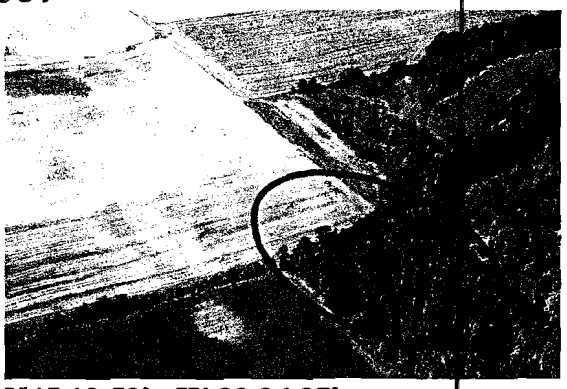
Site 33

Approximate Location: N45 18.98' W 92 25.76'

Analysis / Recommendation:

1. **Oval indicates possible impervious area concerns. Develop and implement stormwater plans.**

Site 34



Approximate Location: N45 18.59' W 92 26.37'

Analysis / Recommendation:

1. **Possible agriculture runoff into river. Mitigate where necessary.**

2. **Oval indicates trees that appear to be unhealthy. Determine if cause is agricultural chemicals related.**

Site 35

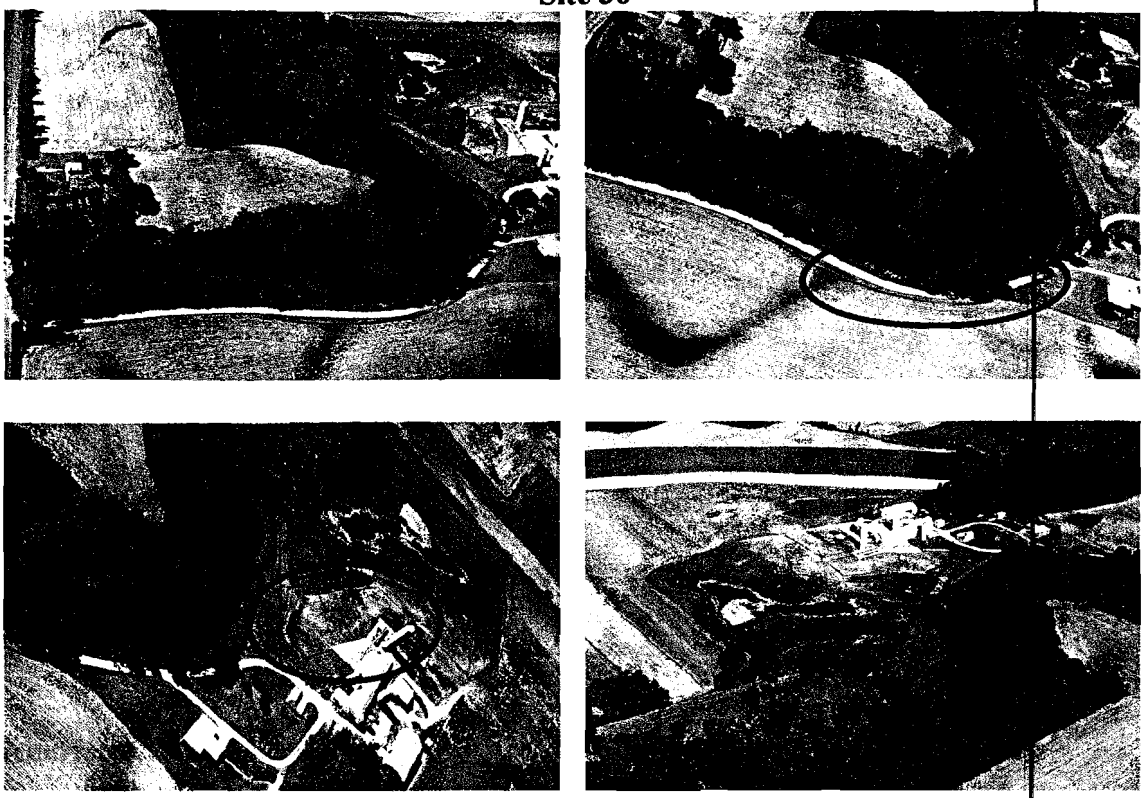
Approximate Location: N45 18.47' W 92 26.76'

Analysis / Recommendation:

1. **Large oval indicates possible feedlot runoff and animal access into river. Establish vegetative buffer and restrict animal access.**

2. **Small oval indicates debris pile. Check for hazardous materials.**

Site 36



Approximate Location: N45 18.57' W 92 27.23'

Analysis / Recommendation:

1. **Ovals indicate possible agriculture runoff into river. Develop and implement stormwater plan.**

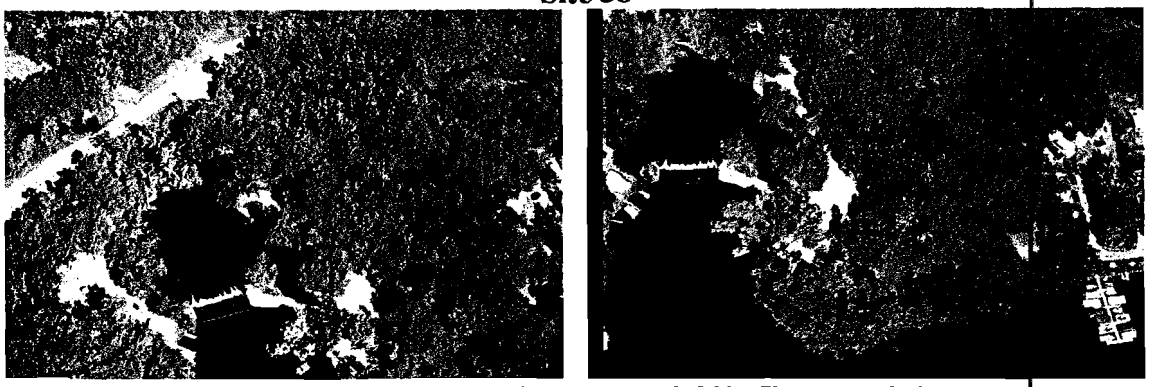
Site 37

Approximate Location: N45 19.25' W 92 26.40'

Analysis / Recommendation:

1. **Oval indicates possible animal manure runoff into stream. Establish vegetative buffer.**

Site 38



Approximate Location: N45 19.29' W 92 25.98'

Analysis / Recommendation:

1. **Sample outflow throughout year as part of a mass balance study.**

2. **Develop and implement stormwater plan to control parking lot water.**

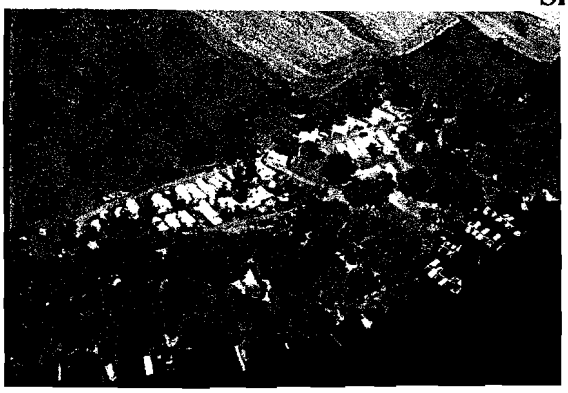
Site 39

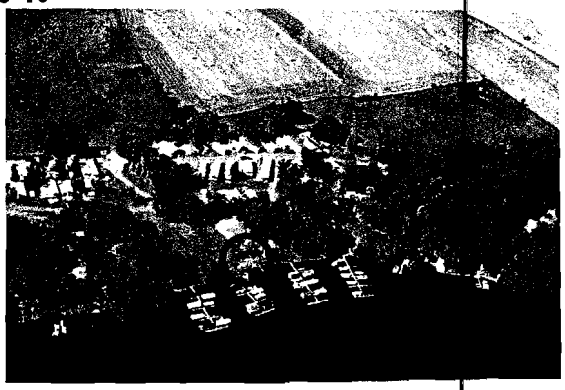
Approximate Location: N45 19.47' W 92 25.96'

Analysis / Recommendation:

1. **Possible impervious area concerns. Develop and implement stormwater plan**

Site 40



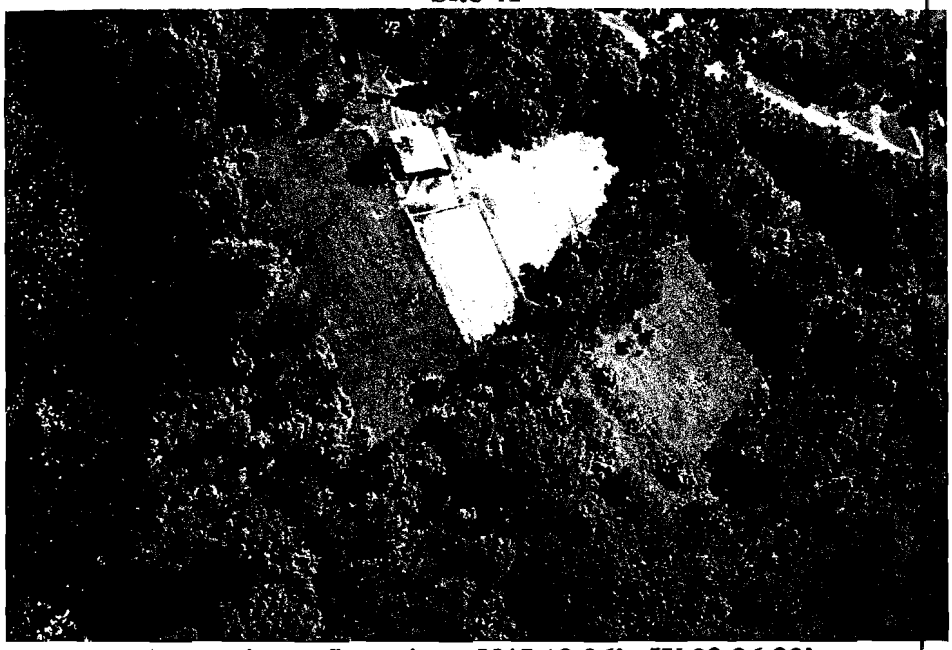


Approximate Location: N45 19.72' W 92 25.96'

Analysis / Recommendation:

1. **Circle indicates possible debris pile.**
2. **Develop and implement stormwater plan.**
3. **Sample and analyze for volatile organic carbons at site indicated by arrow during heavy boat useage periods.**

Site 41



Approximate Location: N45 19.06' W 92 26.23'

Analysis / Recommendation:

1. **Possible horse manure runoff into river. Check for berm and adequate vegetative buffer.**

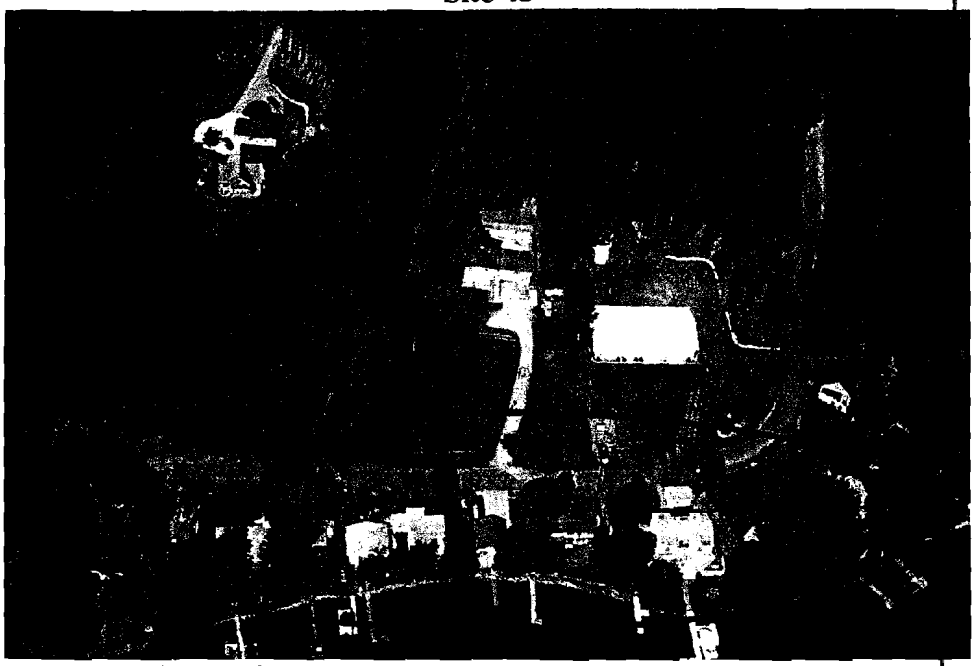
Site 42

Approximate Location: N45 19.76' W 92 26.26'

Analysis / Recommendation:

1. **Oval indicates new construction with no silt fence evident. Construct and maintain silt fence.**

Site 43

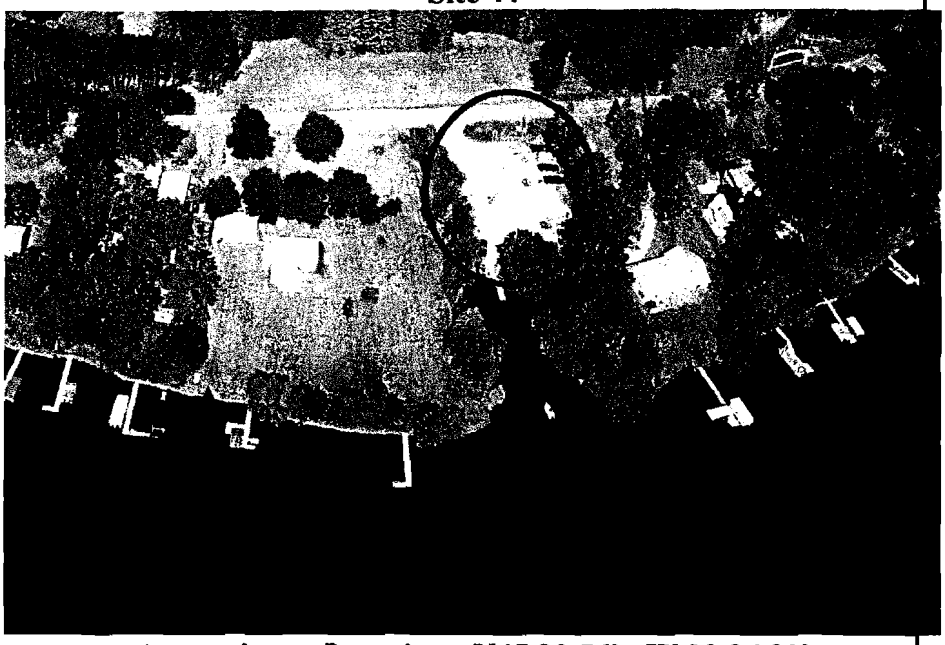


Approximate Location: N45 20.25' W 92 26.35'

Analysis / Recommendation:

1. **Oval indicates possible setback, impervious area concerns and fire pits. Check distances, establish stormwater plans and move fire pits away from the lake.**

Site 44



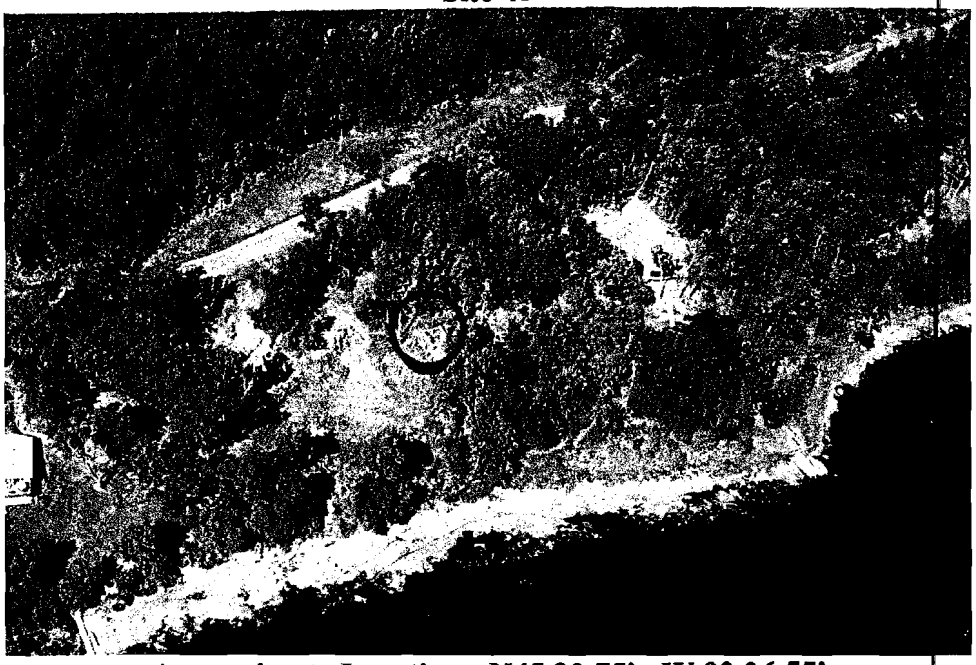
Approximate Location: N45 20.56' W 92 26.30'

Analysis / Recommendation:

1. **Oval indicates possible runoff from water access. Check for sedimentation matching access lot materials.**

2. **Arrow indicates possible lawn runoff sites. Establish berm and vegetative buffers system.**

Site 45

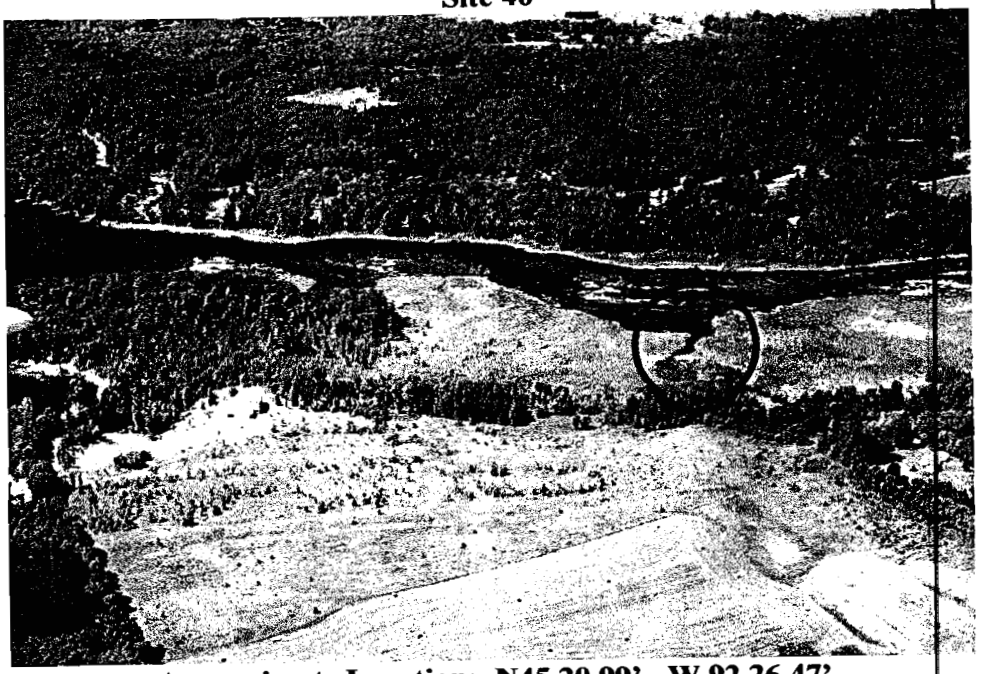


Approximate Location: N45 20.75' W 92 26.55'

Analysis / Recommendation:

1. **Unknown structure. Investigate for toxic materials.**

Site 46

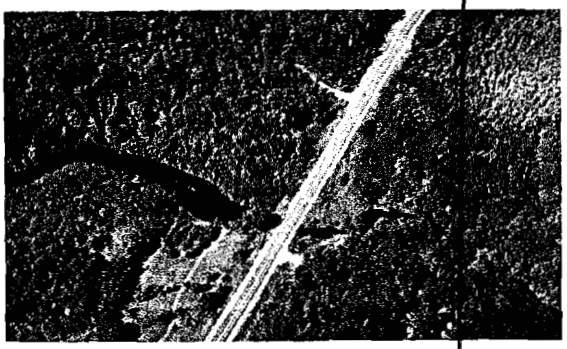


Approximate Location: N45 20.99' W 92 26.47'

Analysis / Recommendation:

1. **Investigate area indicated by circle to determine if it is a point source of nutrients.**

Site 47

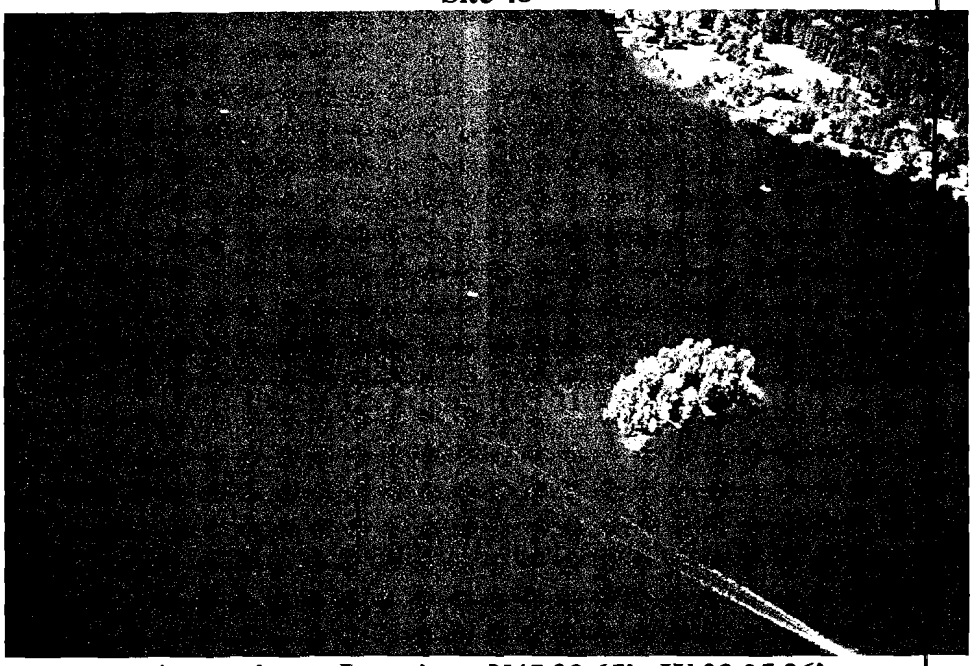


Approximate Location: N45 21.56' W 92 27.07'

Analysis / Recommendation:

1. **Investigate possible agriculture runoff.**

Site 48



Approximate Location: N45 20.65' W 92 25.96'

Analysis / Recommendation: Documentation

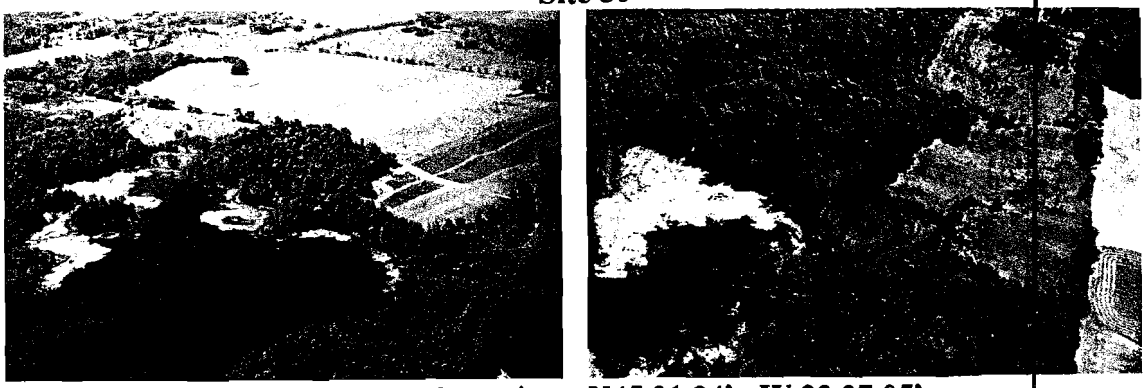
Site 49

Approximate Location: N45 21.53' W 92 28.40'

Analysis / Recommendation:

1. **Investigate agricultural runoff indicated by small oval.**
2. **Investigate debris pile for toxic materials.**

Site 50

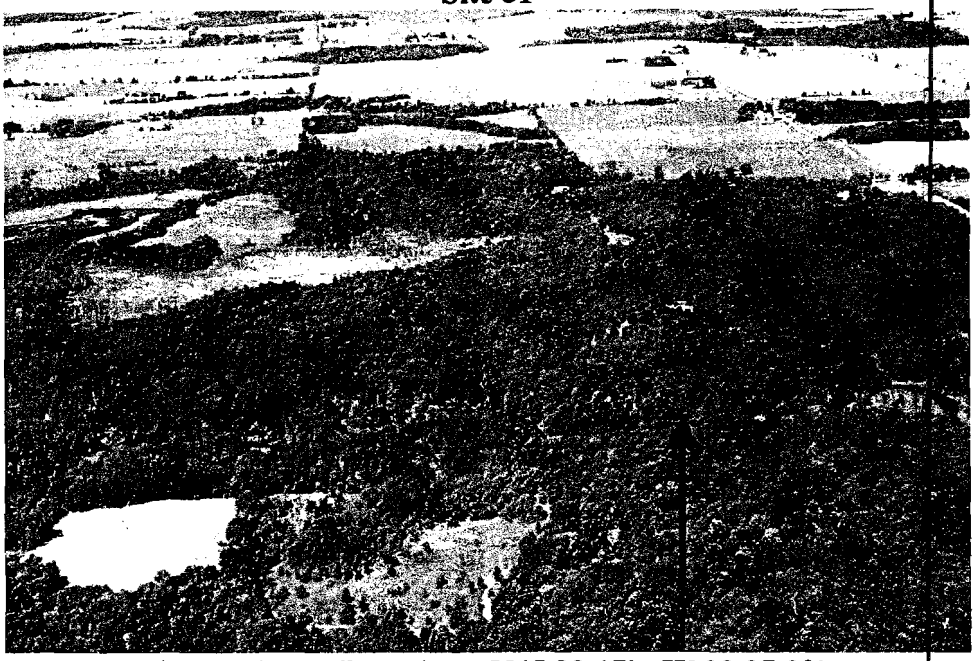


Approximate Location: N45 21.94' W 92 27.05'

Analysis / Recommendation:

1. Check circled area for possible inlet. If inlet, sample water for mass balance study.

Site 51

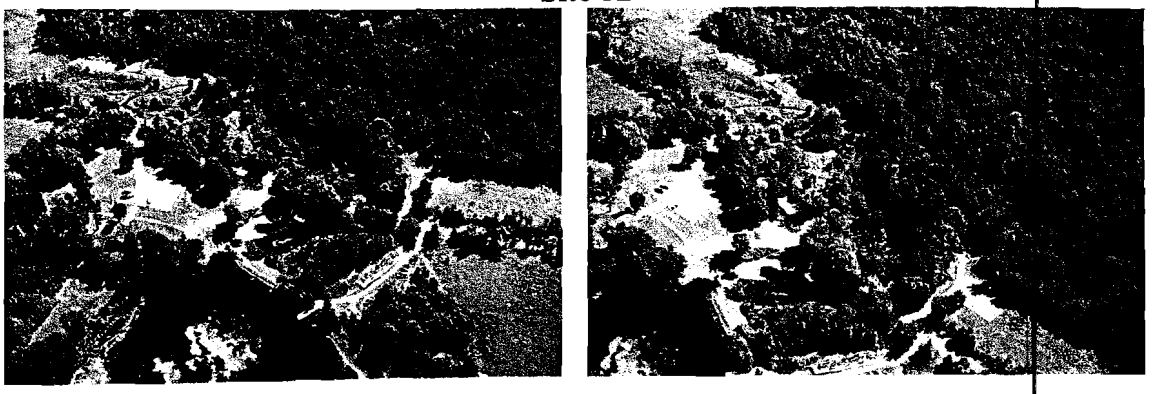


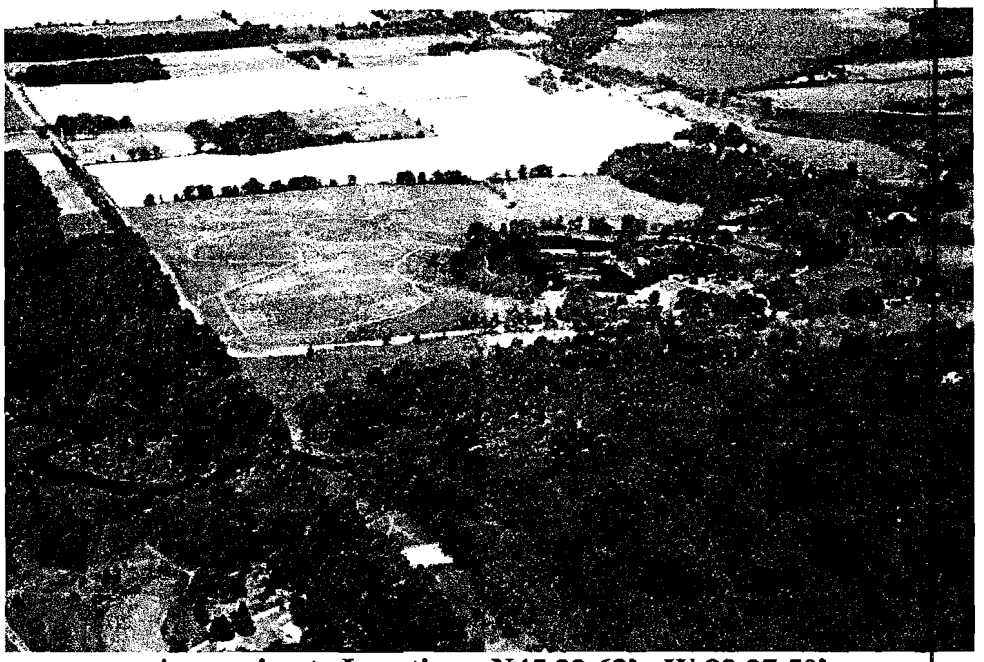
Approximate Location: N45 22.17' W 92 27.39'

Analysis / Recommendation:

1. Arrow indicates possible tributary to river.

Site 52



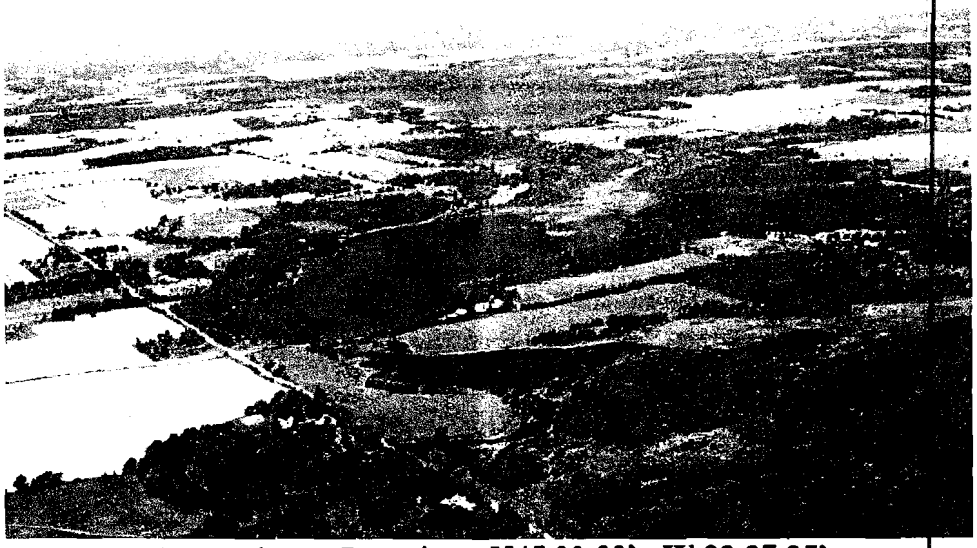


Approximate Location: N45 22.63' W 92 27.50'

Analysis / Recommendation:

1. **Develop and implement stormwater plan for parking lot and other impervious areas.**

Site 53

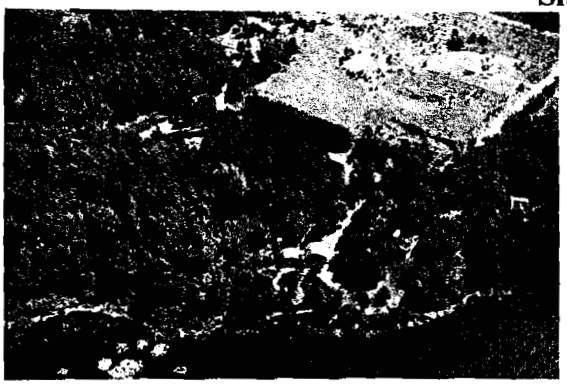


Approximate Location: N45 22.83' W 92 27.95'

Analysis / Recommendation:

1. Investigate site to determine influence on water quality and how the area could be managed to improve water quality.

Site 54



Approximate Location: N45 23.53' W 92 28.73'

Analysis / Recommendation:

1. **Develop stormwater plan for impervious area.**

Site 55

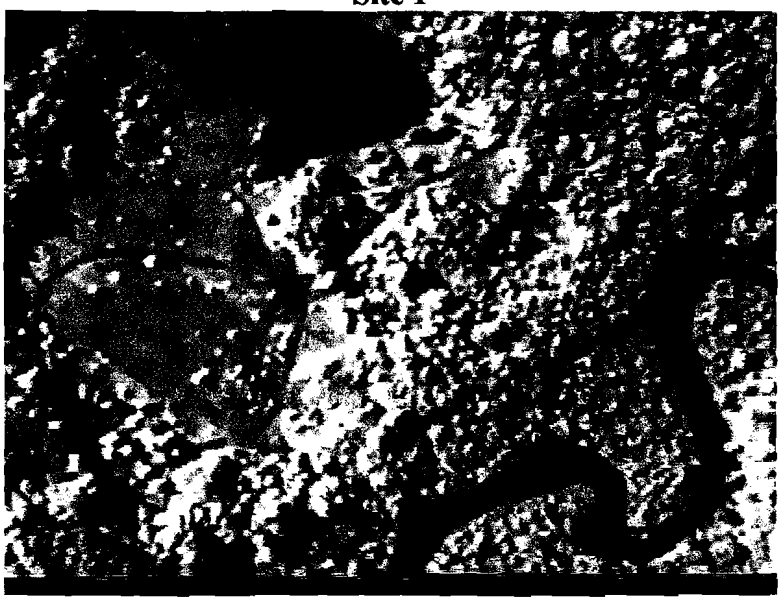
Approximate Location: N45 23.55' W 92 27.69'

Analysis / Recommendation:

1. **Develop strategies for fishery and water quality management.**

Hyperspectral Images

Site 1

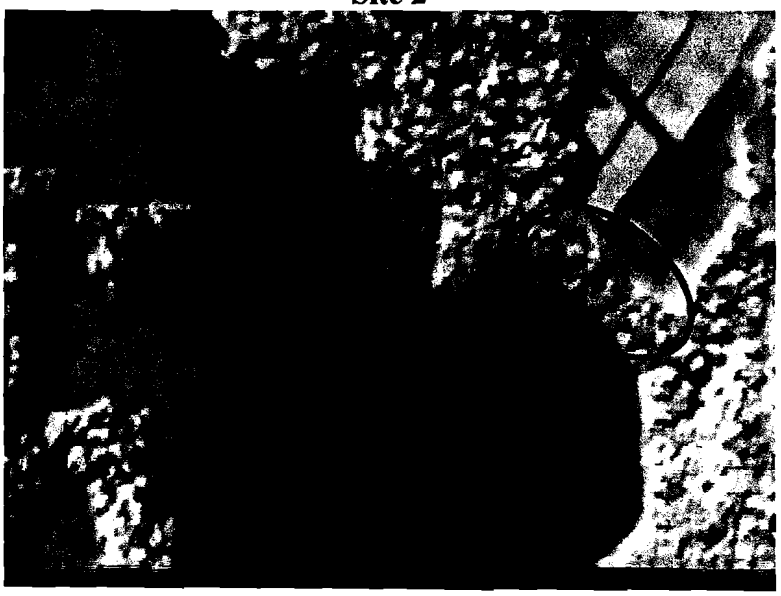


Outlet of Ox Lake to Balsam branch

Analysis / Recommendation:

1. **Conduct year round Mass Balance study to determine influence to Balsam Branch.**

Site 2



Ox Lake

Analysis / Recommendation:

1. **Possible agriculture run-off to lake.**

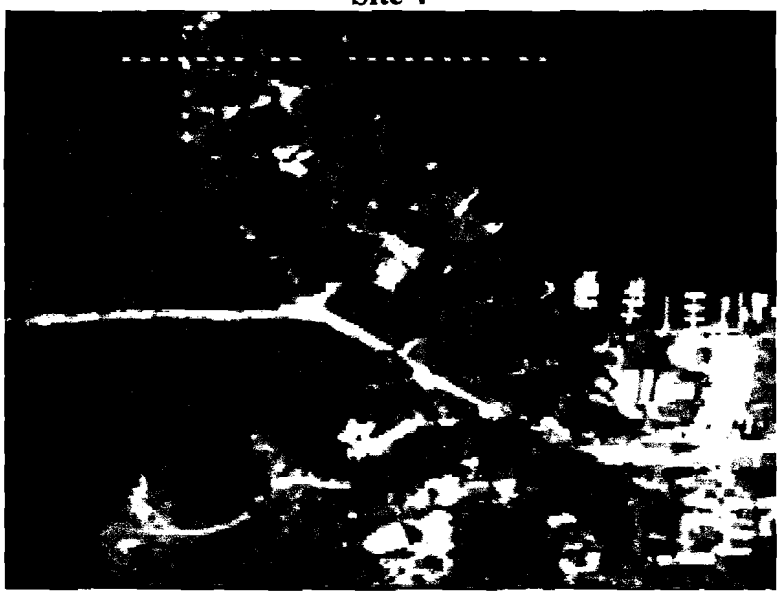
Site 3

North end of Wapogasset Lake

Analysis / Recommendation:

1. **Impervious area concern. Develop and implement stormwater management plan.**

Site 4

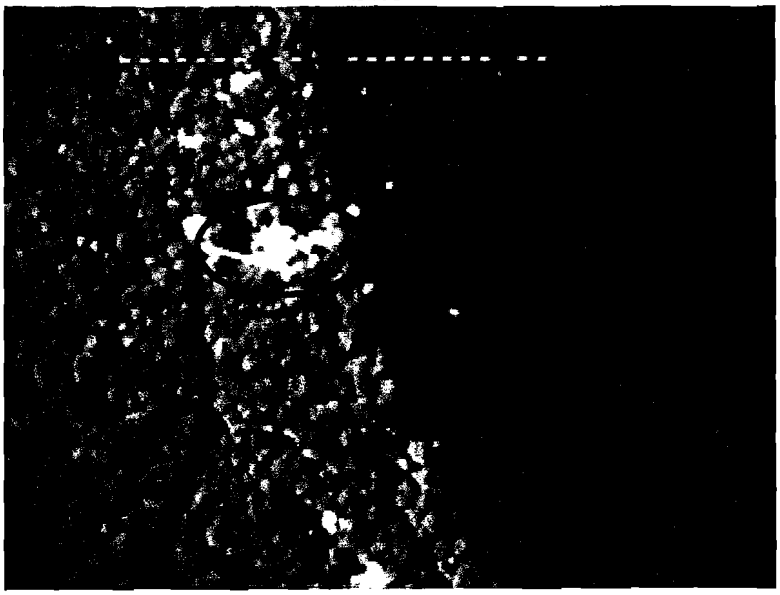


North end of Lake Wappogasset

Analysis / Recommendation:

1. **Investigate possible lawn run-off concern. Use phosphorus free fertilizer. Restore shoreline vegetation.**

Site 5

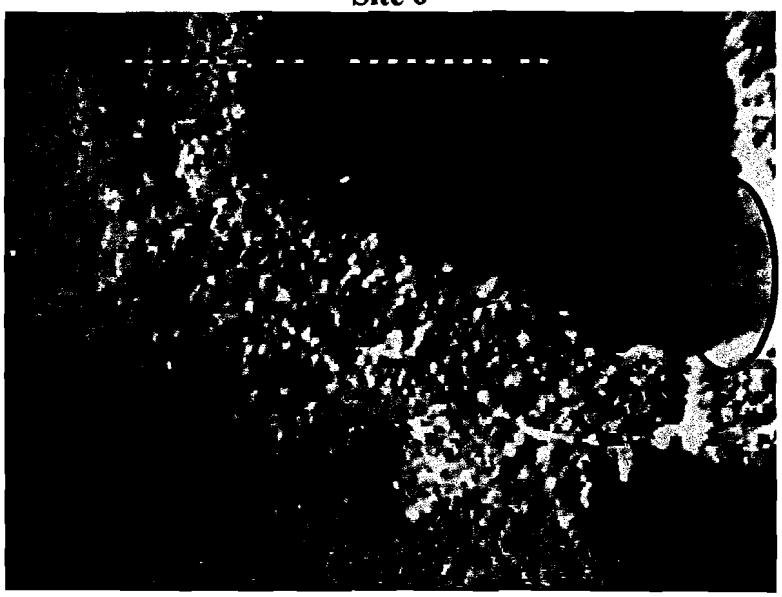


North of Wallace Island

Analysis / Recommendation:

1. **Impervious area concern. Develop and implement stormwater management plan.**

Site 6

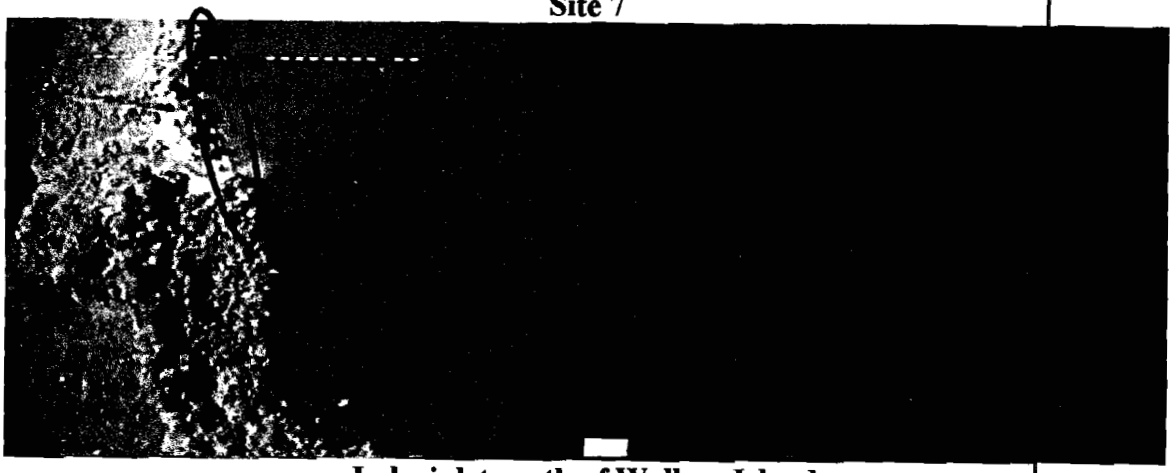


Road to Wallace Island

Analysis / Recommendaton:

1. **Develop and implement vegetation management plan.**

Site 7



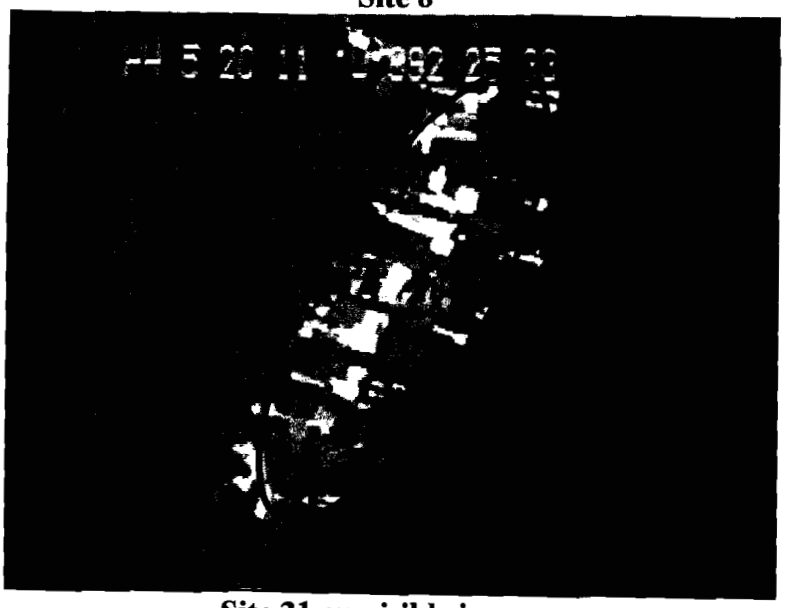
Lake inlet south of Wallace Island

Analysis / Recommendation:

1. **Conduct year long mass balance study to determine impact of inlet.**

2 **Arrow indicates cold water entering lake. Conduct fall or winter thermal overflight to identify springs.**

Site 8

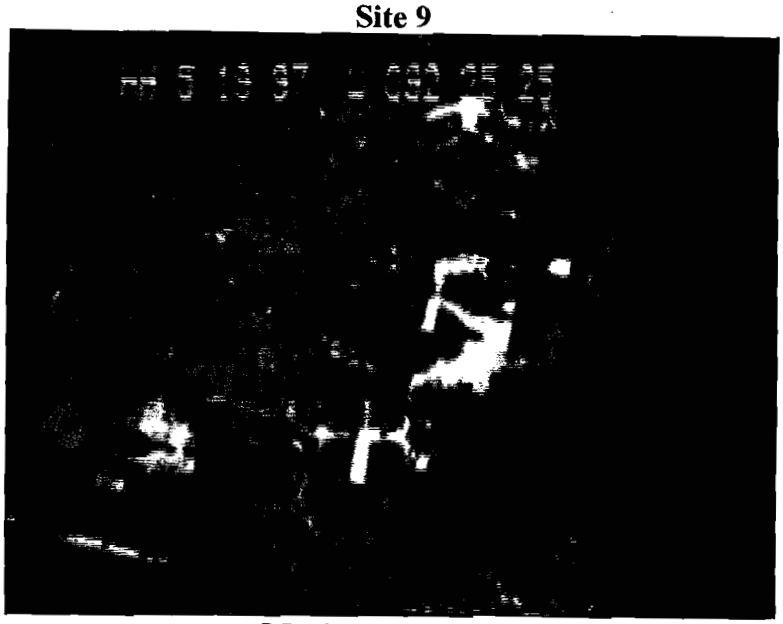


Site 31 on visible images.

Analysis / Recommendation:

1. **No forest canopy. Develop and implement stormwater plan and/or tree planting plan.**

Site 9

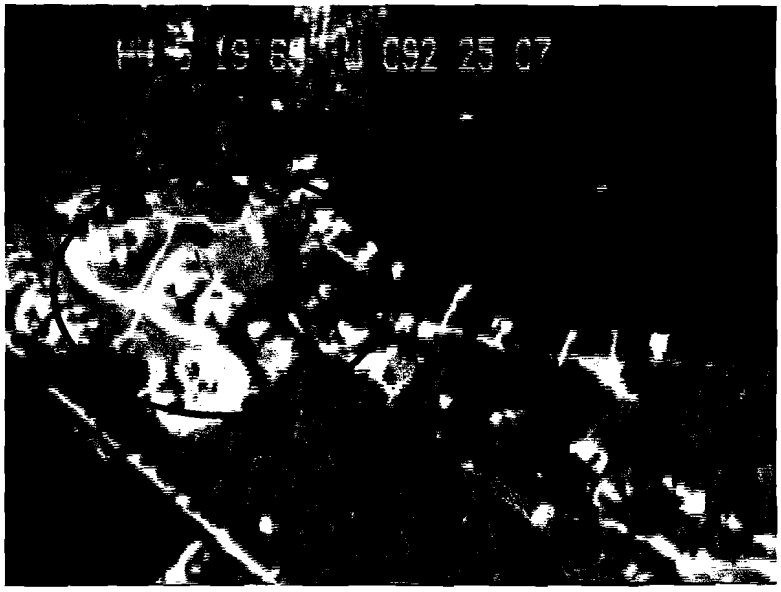


Marina Drive area

Analysis / Recommendation:

1. **Impervious area concern. Develop and implement stormwater management plan.**

Site 10

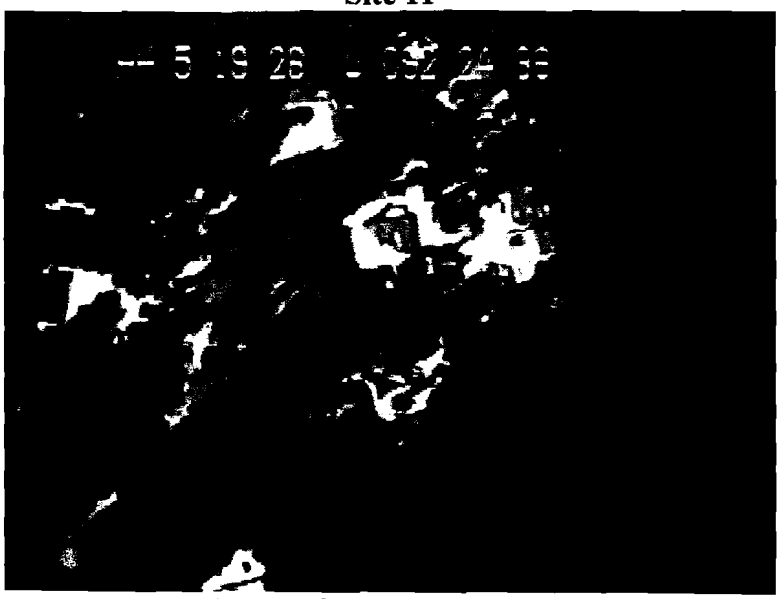


Site 8 on visible image map

Analysis / Recommendation:

1. **Oval shows impervious area concern and lawn runoff. Develop and implement stormwater plan. Establish vegetation shoreline buffer if possible. Re-plant trees where possible.**

Site 11

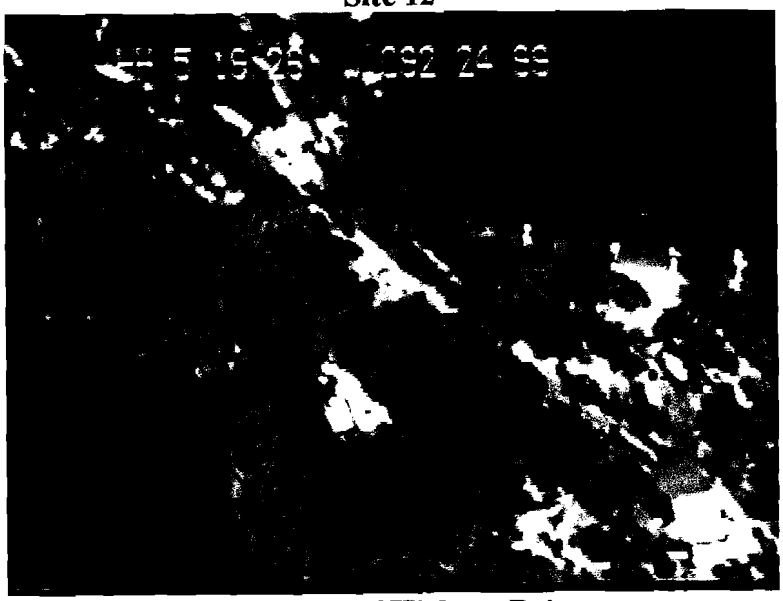


North side of Hickory Point

Analysis / Recommendation:

1. **Impervious area concern. Develop and implement stormwater plan.**

Site 12

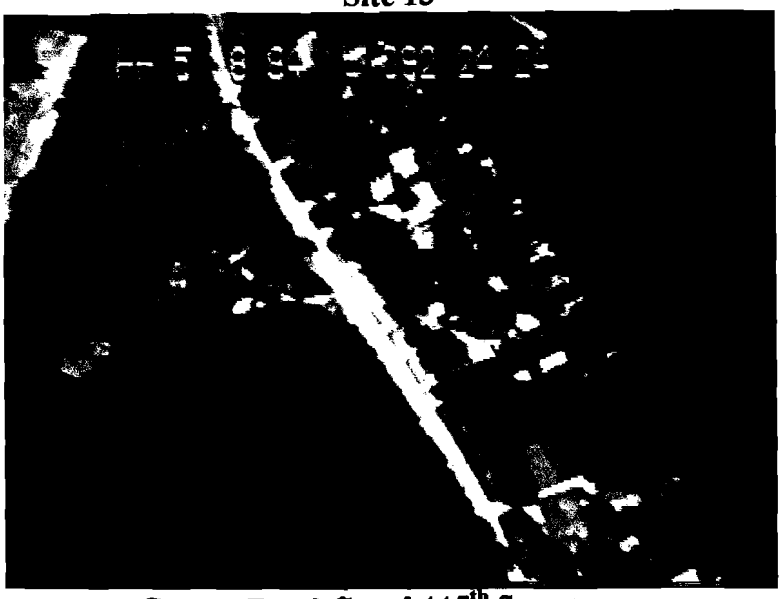


South side of Hickory Point

Analysis / Recommendation:

1. **Circles indicate impervious area concerns. Develop and implement stormwater management plans.**

Site 13

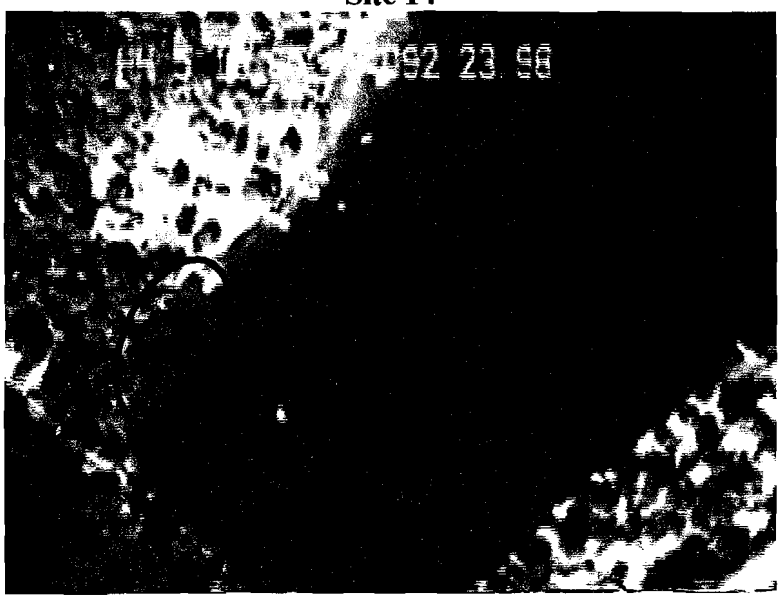


County Road C and 115th Street area

Analysis / Recommendation:

1. **Impervious area concern. Develop and implement stormwater management plans.**

Site 14

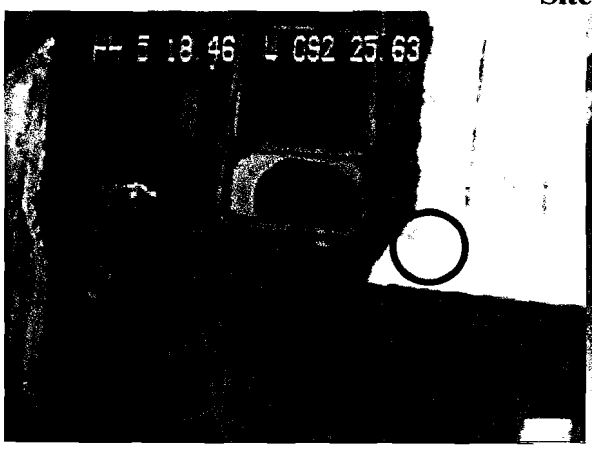


Jeans Lane area

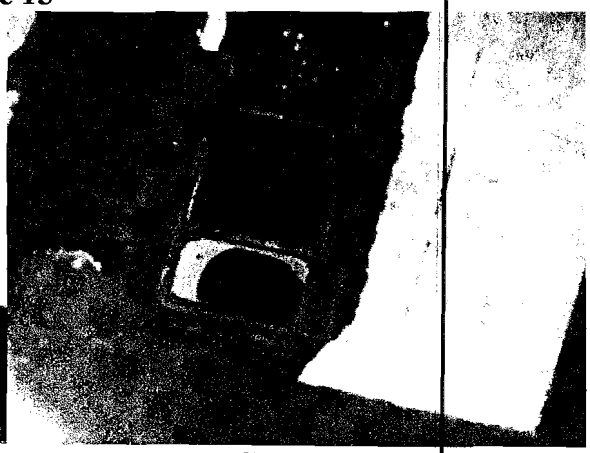
Analysis / Recommendation:

1. **Circle indicates possible point source of nutrients.**

Site 15

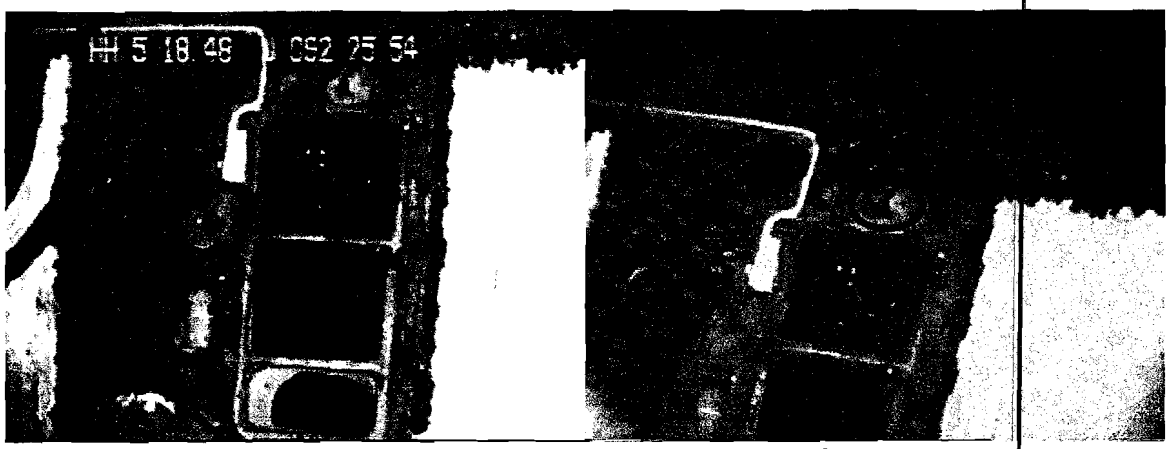


Chlorophyll a

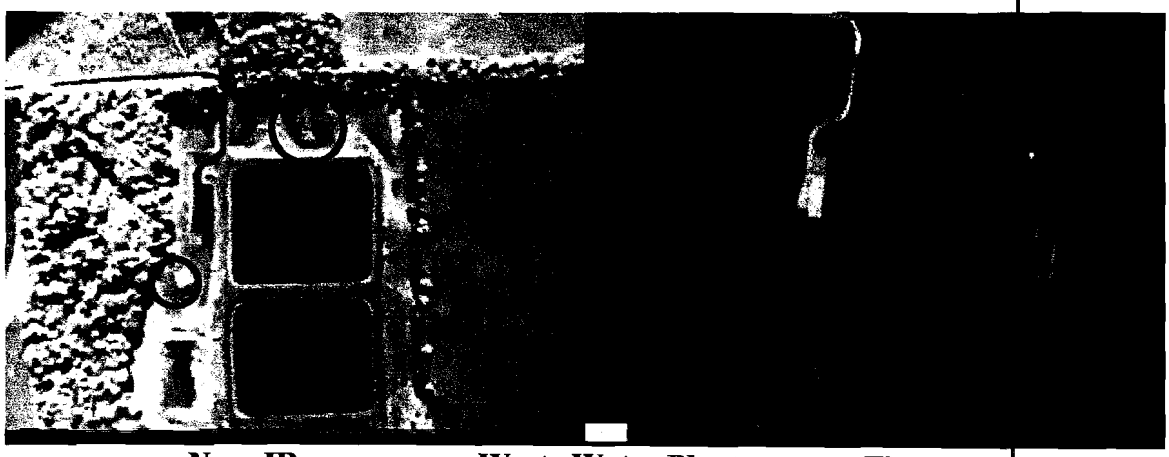


Carotene

Near IR Thermal



Chlorophyll a Carotene

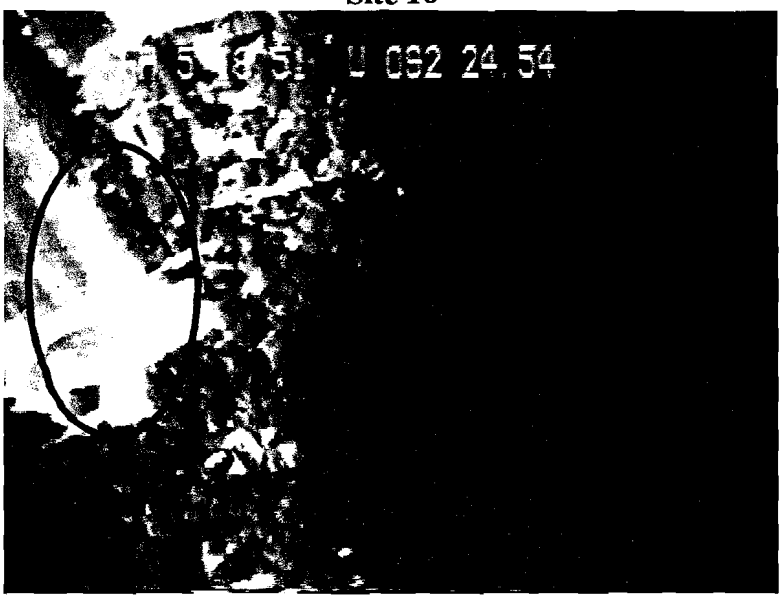


Near IR Waste Water Plant Thermal

Analysis / Recommendation:

1. Investigate circled areas for possible leaks.

Site 16

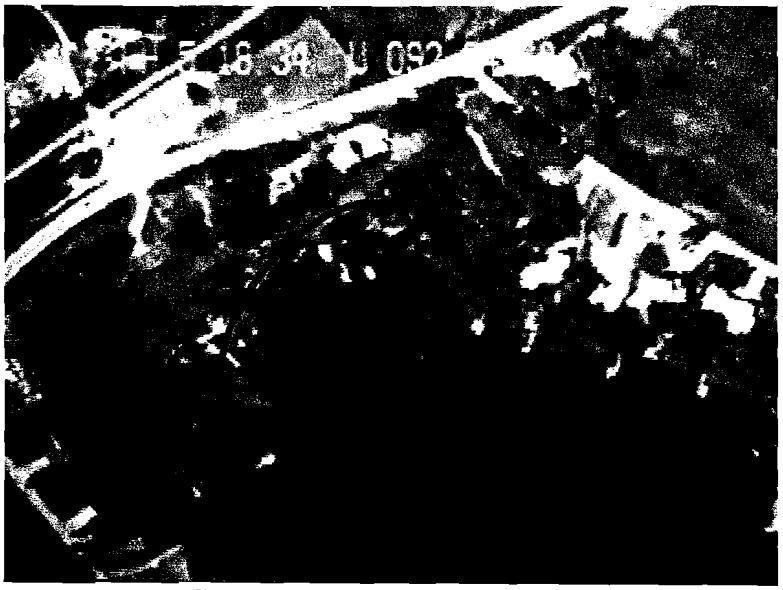


Bear Trap Lane area

Analysis / Recommendation:

1. **Investigate potential high loading area.**

Site 17

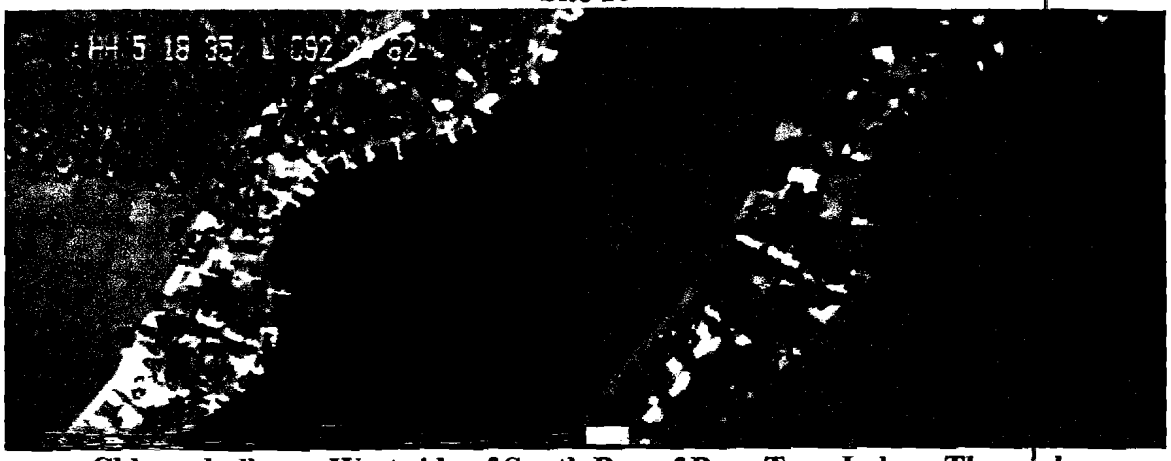


South end of Bear Trap Lake

Analysis / Recommendation:

1. **Investigate vegetation management and yard runoff. Implement tree planting program.**

Site 18

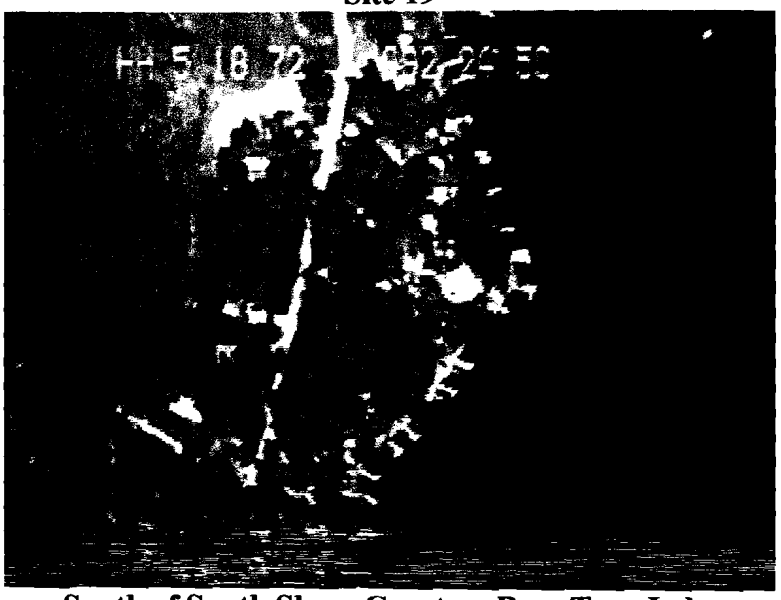


Chlorophyll a West side of South Bay of Bear Trap Lake Thermal

Analysis / Recommendation:

1. **Investigate yard runoff and temperature gradient in circled area.**

Site 19

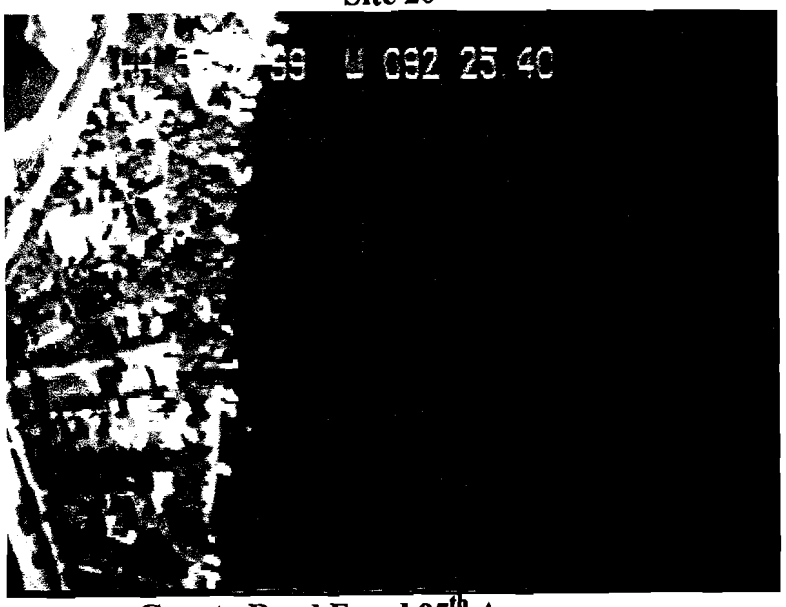


South of South Shore Court on Bear Trap Lake

Analysis / Recommendation:

1. **Investigate impervious area concerns.**

Site 20

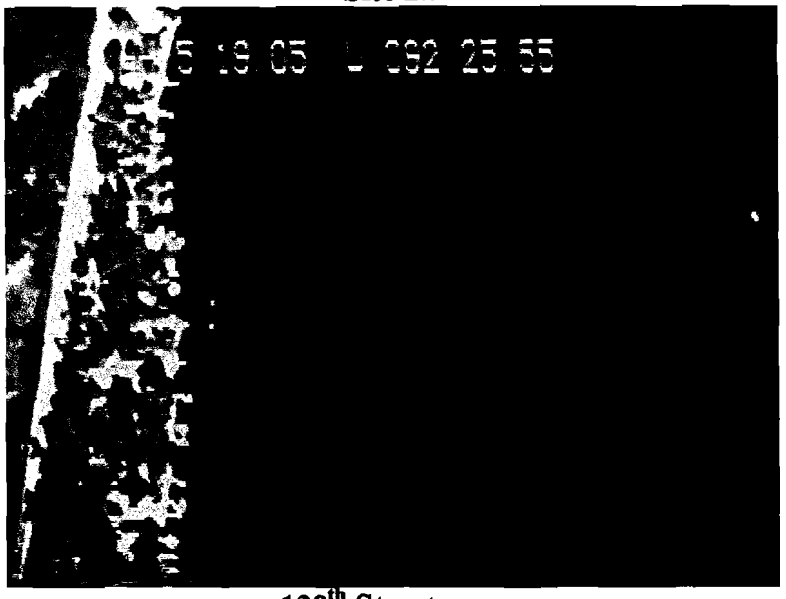


County Road F and 85th Avenue area

Analysis / Recommendation:

1. **Investigate impervious area concerns. Develop and implement stormwater management plan.**

Site 21

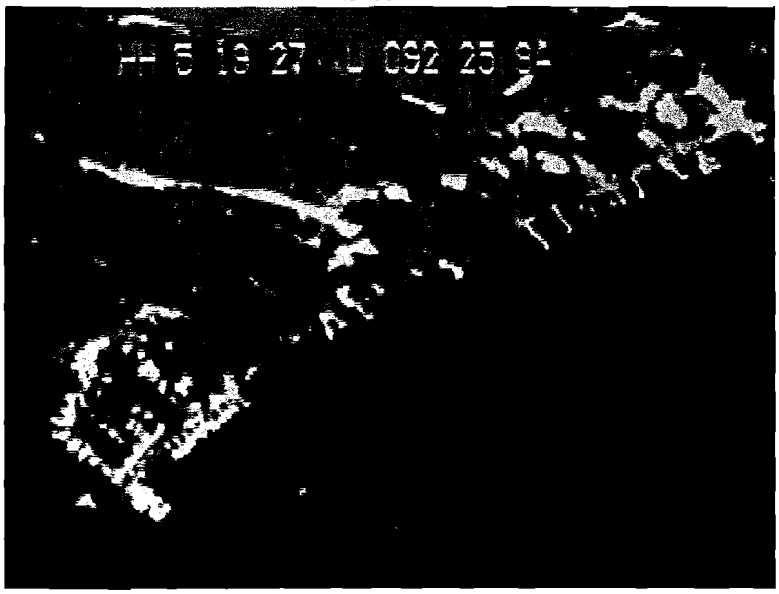


138th Street area

Analysis / Recommendations:

1. **High density dwellings. Develop and implement stormwater management plan for area.**

Site 22

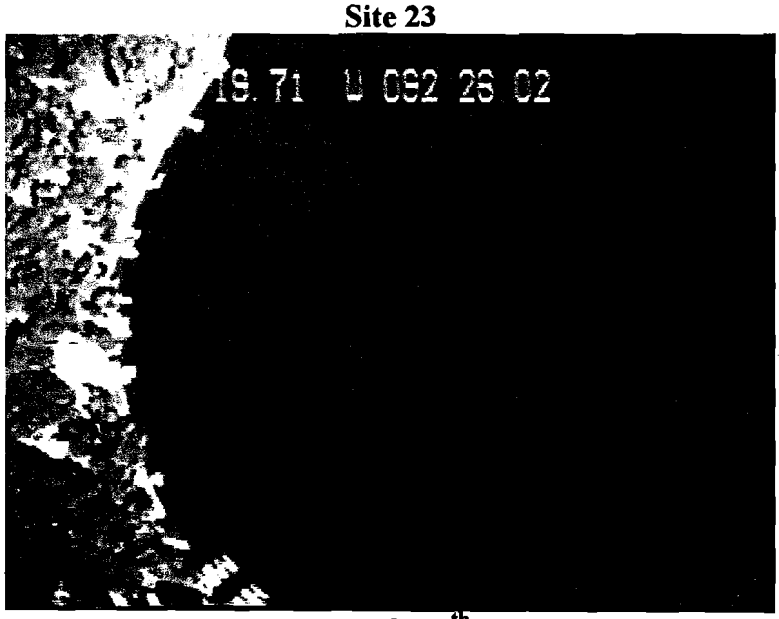


Southwest corner of Lake Wappogasset

Analysis / Recommendations:

1. **High density dwellings. Develop and implement stormwater management plan for area.**

Site 23

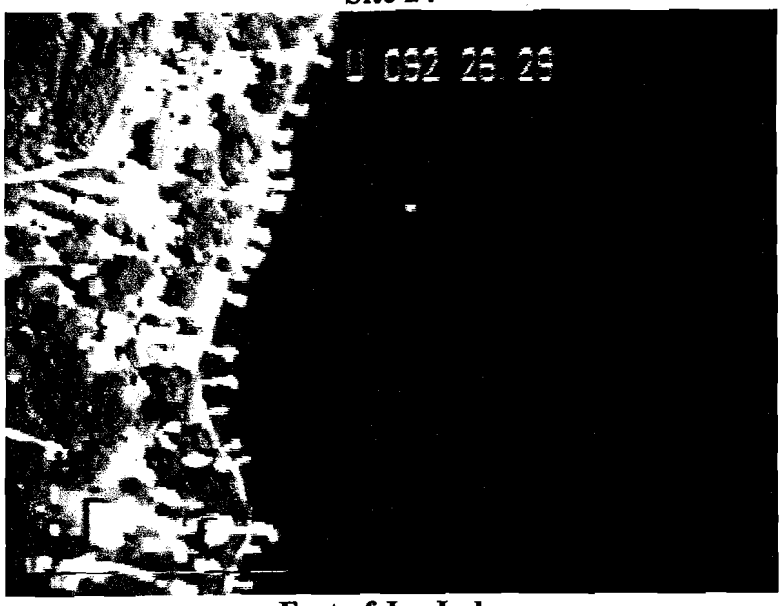


North end of 138th Street

Analysis / Recommendations:

1. **High density dwellings. Develop and implement stormwater management plan for area.**

Site 24

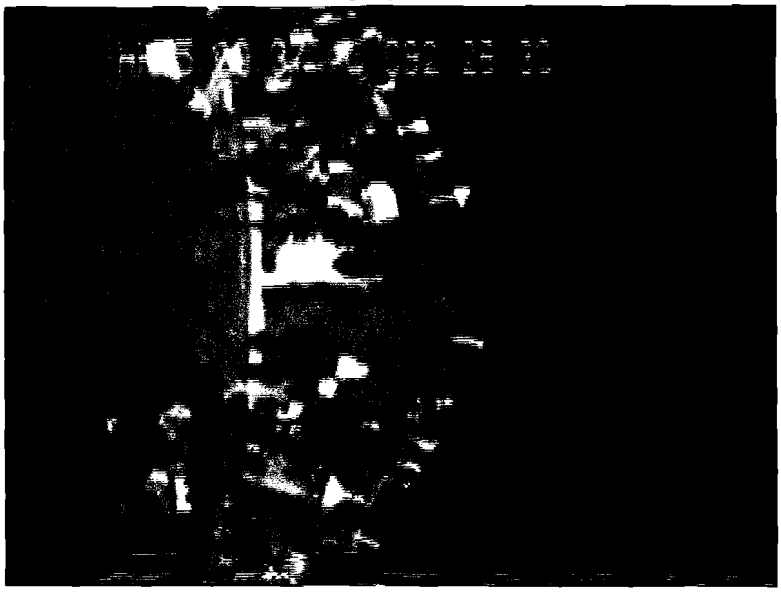


East of Joe Lake

Analysis / Recommendations:

1. **High density dwellings. Develop and implement stormwater management plan for area.**

Site 25

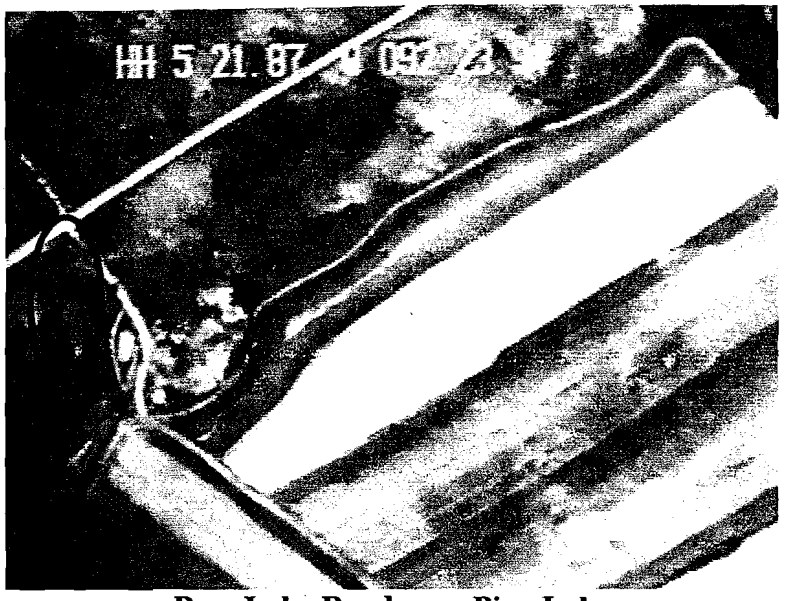


Public water access

Analysis / Recommendation:

1. **Investigate public access. Develop and implement stormwater management plan.**

Site 26



Bass Lake Road near Pine Lake

Analysis / Recommendation:

1. **Investigate stormwater runoff from circled area.**