

Navigating the Site Evaluation Phase of Probability Based Surveys

Jennifer Linder, Tara Kolodiej, Chad Barbour, John Roberts, Christopher Wharton
Tetra Tech Inc.

Probability Based Survey Sites

- Sites chosen with a probability based survey design are randomly selected within a target population.
- The sites must be investigated thoroughly to make sure they meet the criteria for the study.
- The sites can fall on public or private property, they could be completely inaccessible or unsamplable, or, the random point may not be a “site” at all.

Physically inaccessible



Does not meet physical criteria - geyser

Probability Based Survey Sites

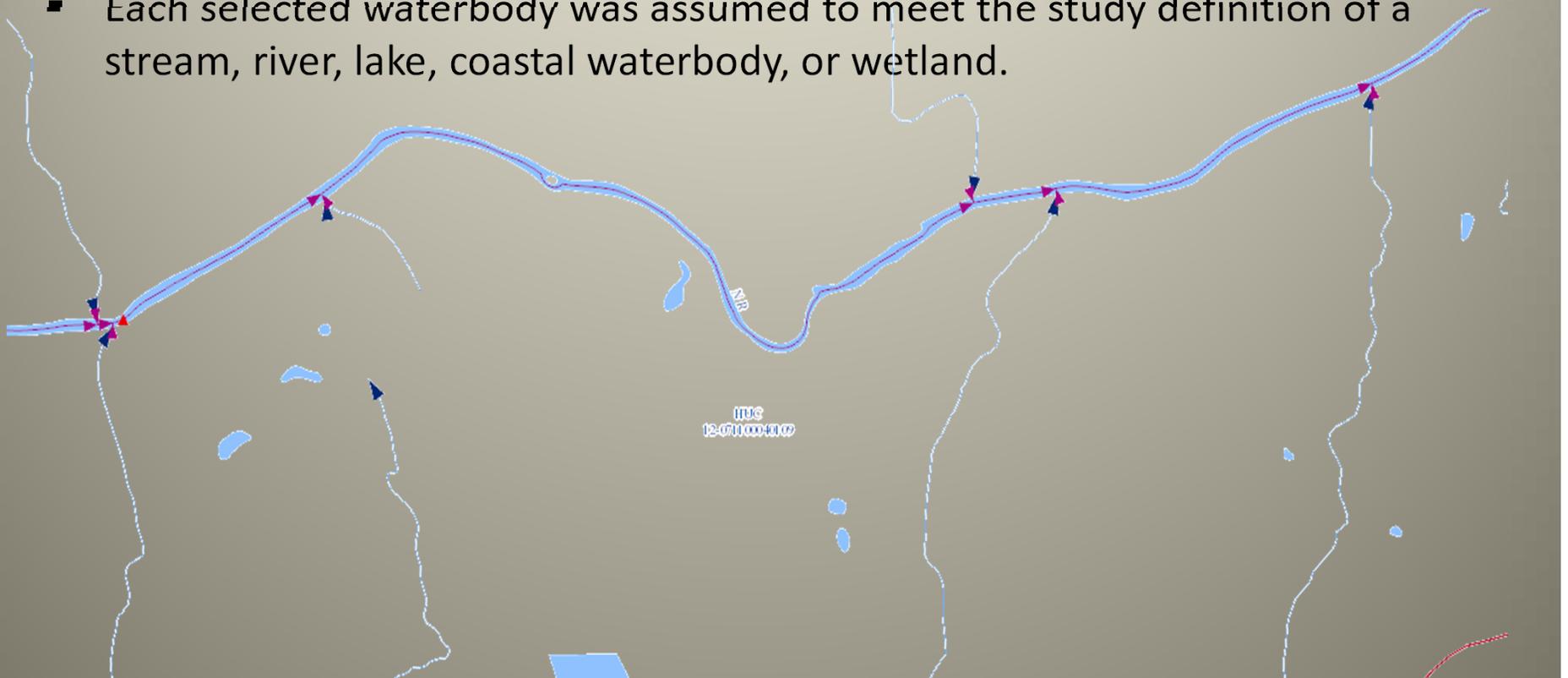
Probability based surveys require an intensive site evaluation process. It is important to allow enough time and resources for this up-front work to ensure access is streamlined for the crew on the day of sampling.

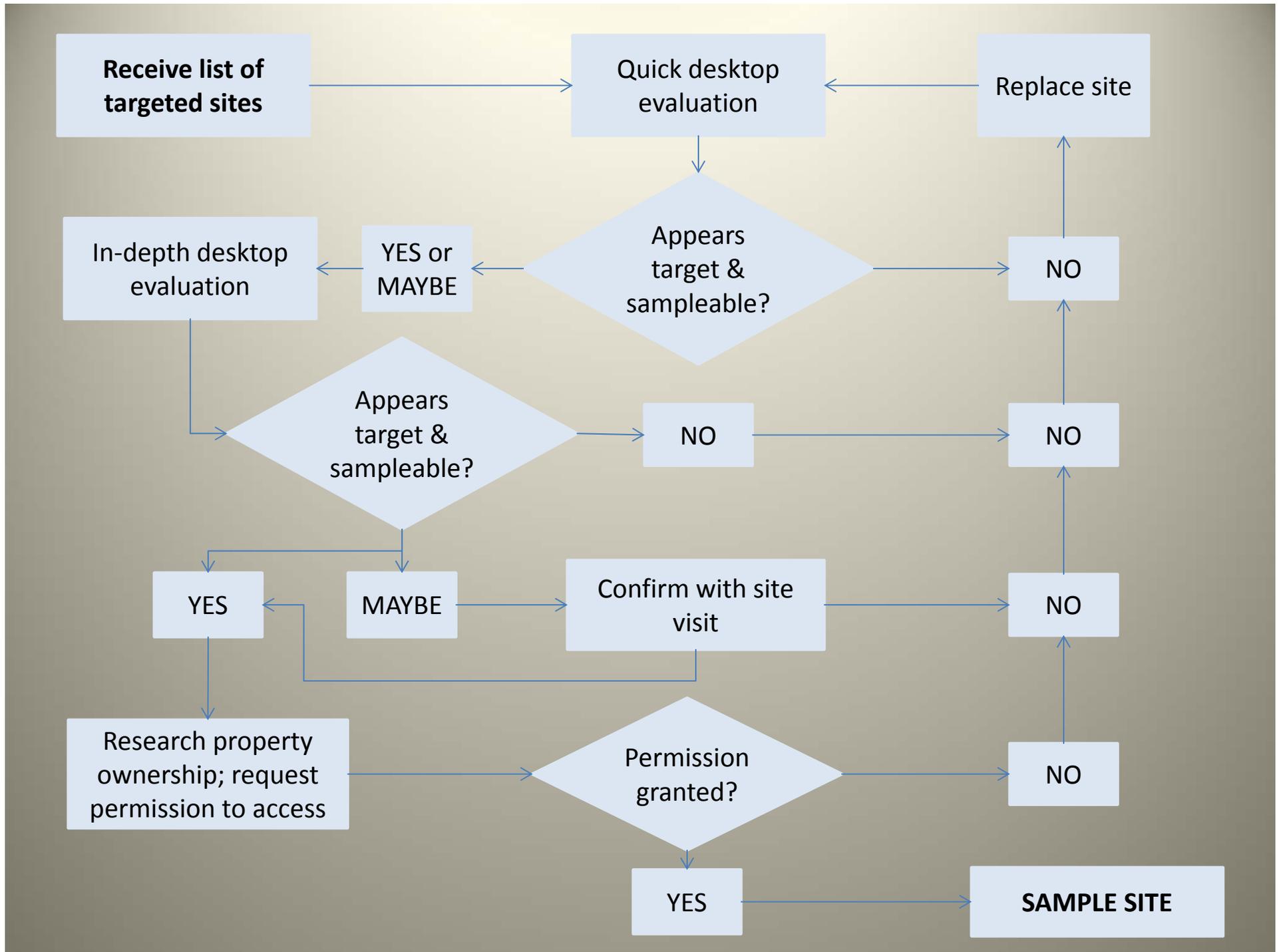


Probability Based Surveys

A GRTS survey design was used to select sites from the target population of streams, rivers, lakes, coastal waterbodies, & wetlands in the National Hydrography Database (NHD) for the EPA's NARS.

- The target populations included randomly selected waterbodies on both public and private property.
- Each selected waterbody was assumed to meet the study definition of a stream, river, lake, coastal waterbody, or wetland.



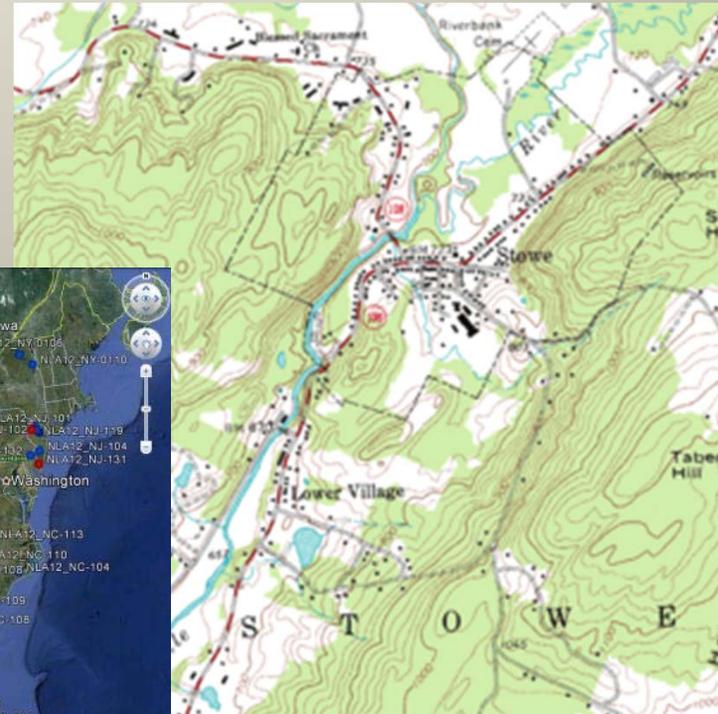
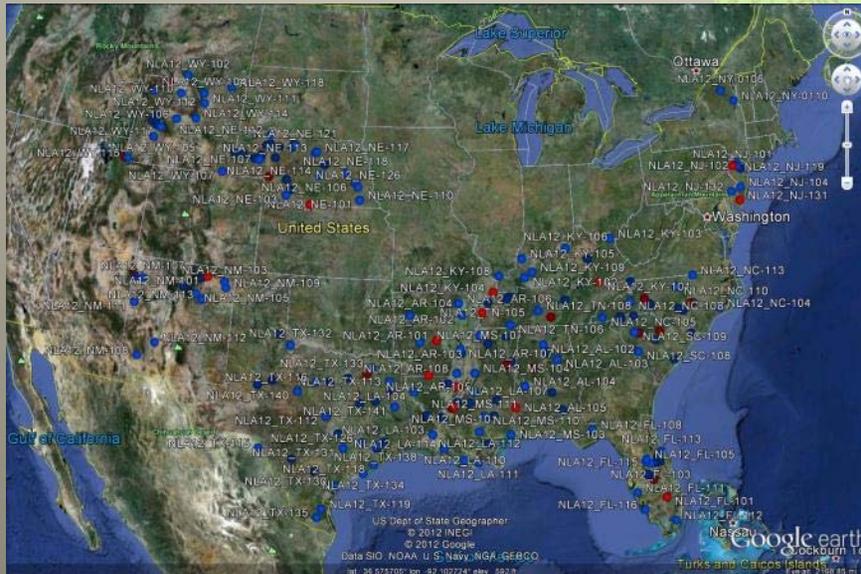


Quick Desktop Evaluation

A cursory desktop evaluation will reduce the number of candidate sites that need an in-depth evaluation.

Use quick tools such as:

- Google Earth
- Topographic maps



Quick Desktop Evaluation

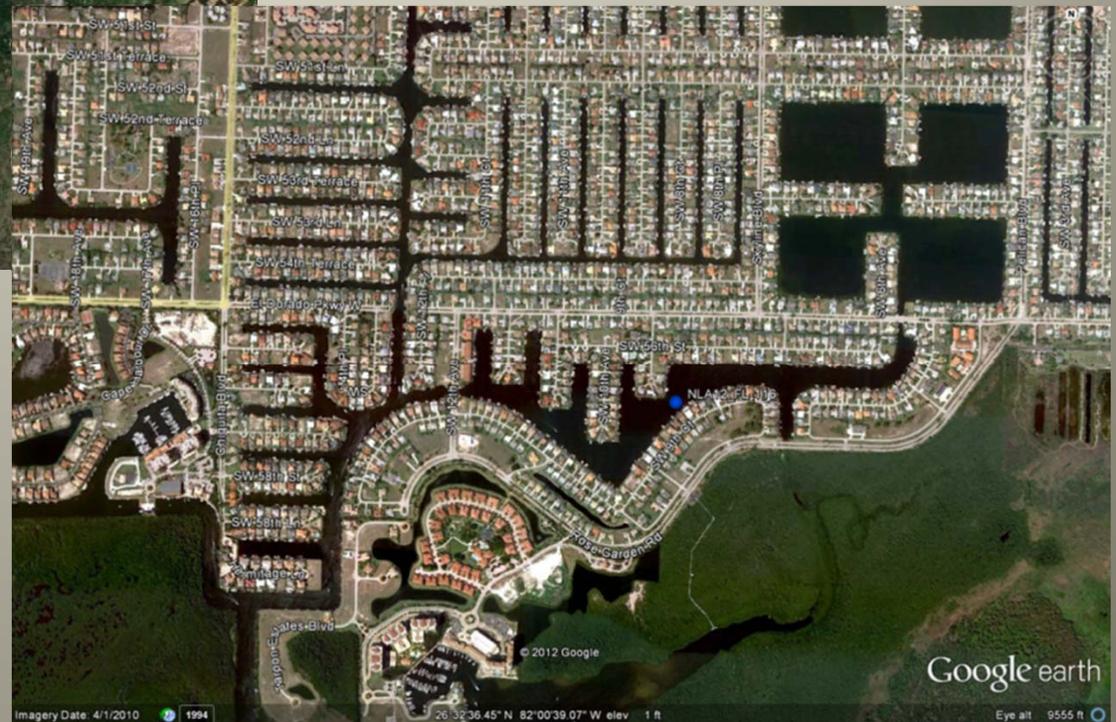
A quick desktop scan can quickly confirm some sites:



Quick Desktop Evaluation



.....and eliminate others



In-depth Desktop Evaluation

After the initial evaluation, questions will remain:

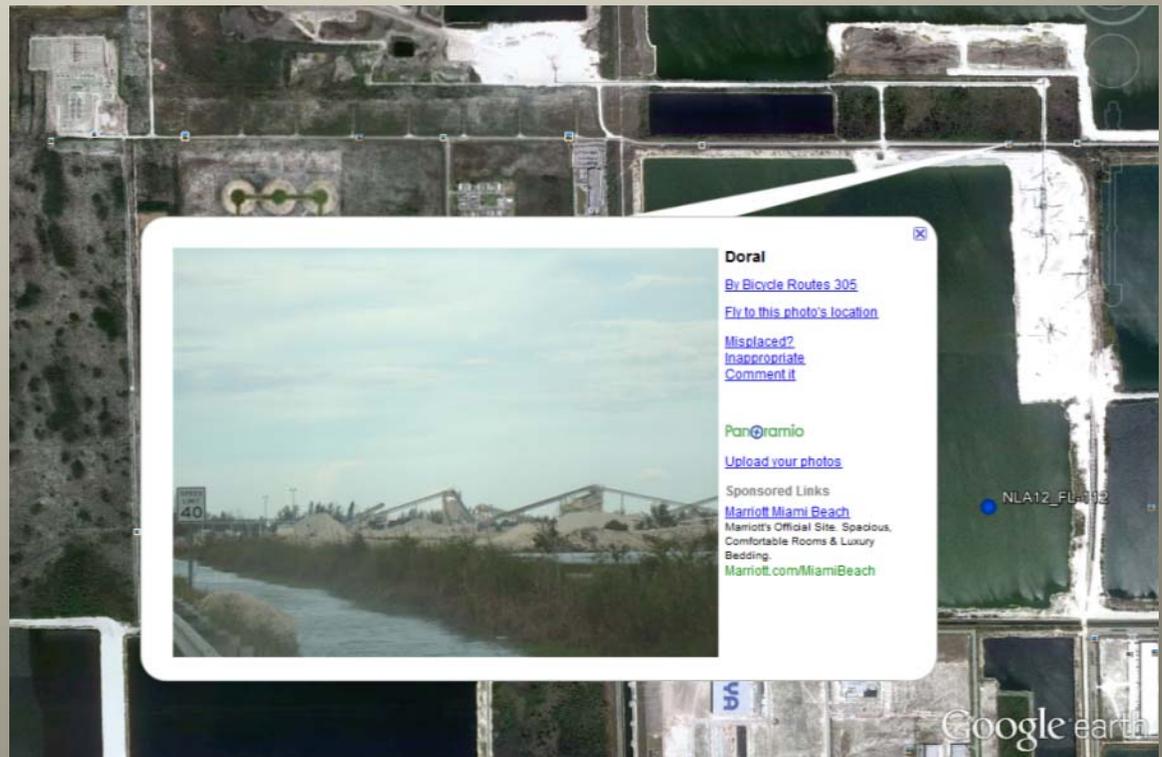
- Does site meet all physical requirements of the survey?
- Is site accessible?
- What gear is permissible?
- Do I need permission to access it?



In-depth Desktop Evaluation

Use all available sources to find out more about the candidate site:

- Desktop imagery
- *Ancillary data*
- *Web searches*
- *Local contacts*



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- *Local contacts*

Illinois Lake Finder

Click on any county below to view all the lakes in that county. You can also use the search form near the bottom of this page to refine your search.



Topographic Maps!
Coordinates: 40, 25, 20, 30
Lake-Link Members have access to 2,740 high-quality topographical lake maps from Illinois, Iowa, Minnesota, North Dakota, Ohio, South Dakota and Wisconsin online. Get GPS coordinates of any spot on the lake! More maps are on their way!
CLICK HERE FOR MORE INFORMATION

[Illinois fishing regulations](#)
[Buy a Illinois fishing license](#)
[Register your boat in Illinois](#)
[Illinois boating regulations](#)

Illinois Lake Search:

Lake Name:

County:

Fish Species:

Acreeage:

Rated By Lake-Linkers:

Only Show Lakes With Guides: no yes

Only Show Lakes With Maps: no yes

[reset form](#)

Wildlife and habitat

Rush Lake Project

- Restoration Update
- Rush Lake Facts
- Public Access
- Resource Inventory & Strategic Planning Report (PDF 146)
- Photos
- Partners

Rush Lake

A Restoration in Progress

Rush Lake is a 3,070-acre prairie pothole marsh bounded by two low hills in southwestern Winnebago County, Wisconsin. Its size makes it the largest prairie pothole east of the Mississippi River. Historically, Rush Lake had extensive stands of native aquatic vegetation and was home to a multitude of wetland birds, including several threatened and endangered species. Some of the rare birds that nest on the Lake include Wisconsin's largest nesting population of red-necked grebes, as well as Forster's terns, and black-crowned night herons. The emergent vegetation community is dominated by cattails and hardstem bulrush, for which Rush Lake was named. Average water depth of Rush Lake is 1.5 feet and water levels are affected by a small dam located in the northeast corner at the lake's outlet to Waukau Creek. View a [Rush Lake Depth Contour Map](#).



The past 30 years witnessed a dramatic decline in the lake's aquatic vegetation, water quality, and wildlife populations. Research has attributed these declines to artificially stable and high water levels, carp infestation, and nutrient/sediment runoff. View a comparison of [Rush Lake in 1937 and 2000](#) (PDF 1.25MB).

In order to tackle these problems and formulate a Lake restoration plan, a steering committee was formed in 1999 including government representatives, citizens, and user groups. The 15-member committee conducted monthly meetings from 1999-2005 and completed an extensive citizen involvement process. The committee developed a plan that addressed all the significant problems facing the lake and had strong public support garnered through citizen participation. This plan is now being implemented as a holistic lake restoration project.

Please click on the links to the left to learn more about Rush Lake!

For more information about Rush Lake, send email to: [DNIR Wildlife Biologists](mailto:DNIR.Wildlife.Biologists)

Questions for [Wildlife Management](#)

Last Revised: Friday, February 01, 2008



In-depth Desktop Evaluation

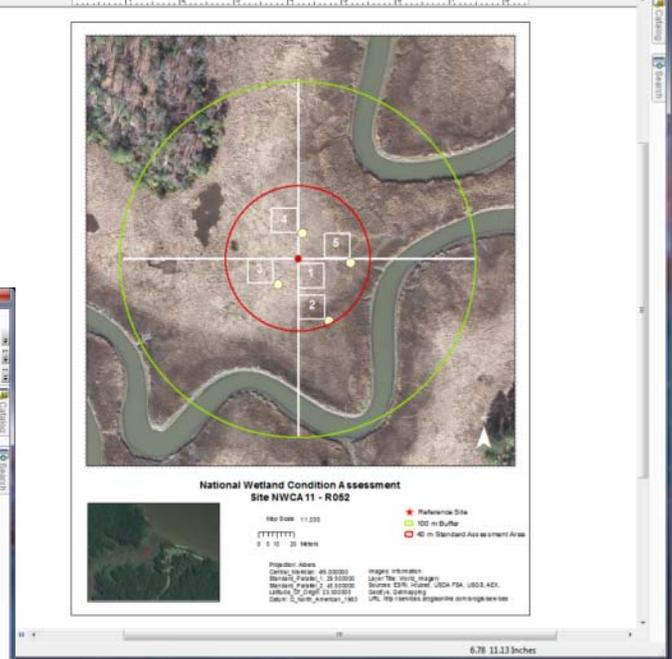
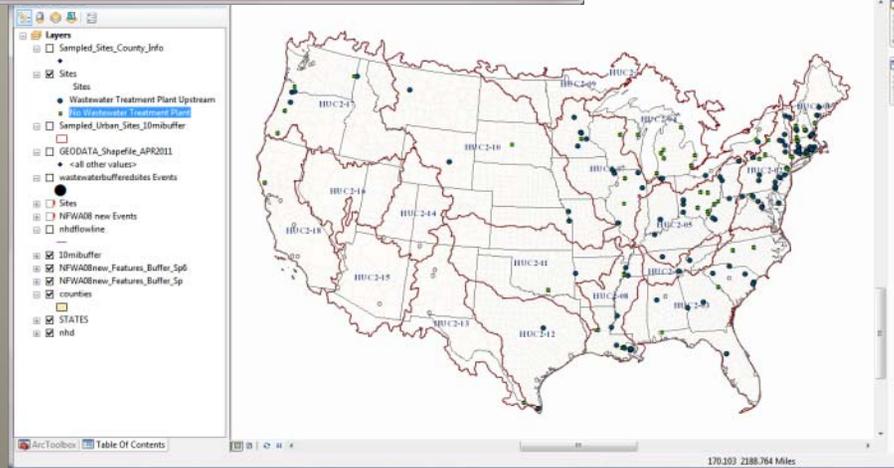
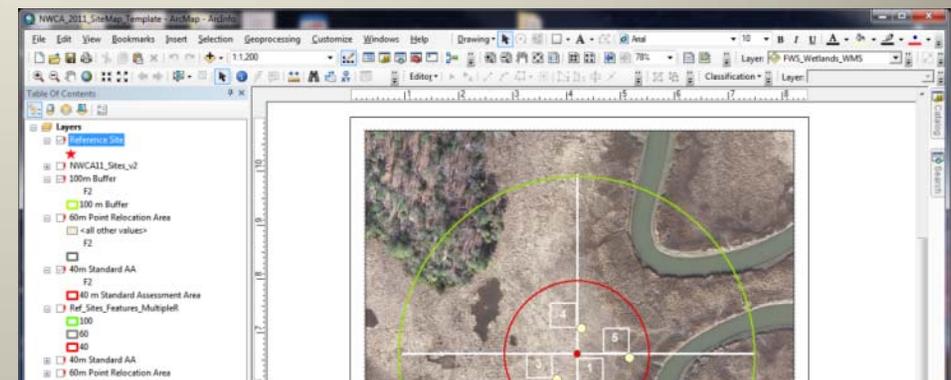
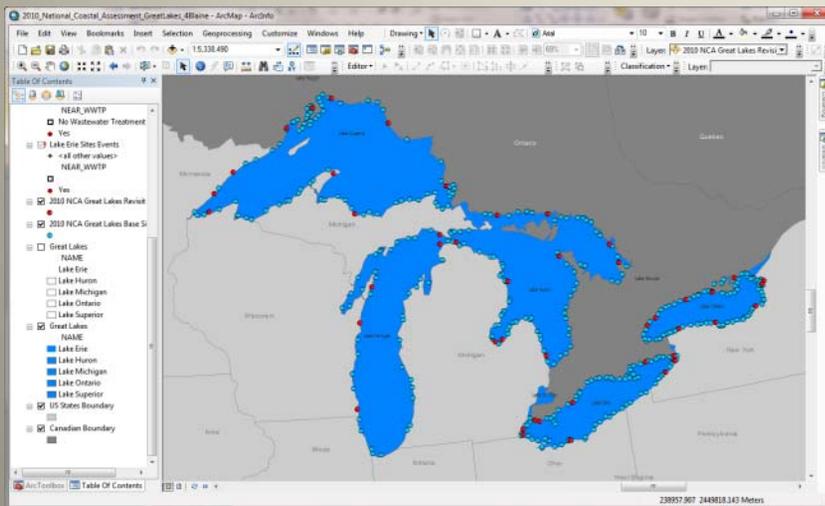
Use all available sources to find out more about the candidate site:

- Desktop imagery
- Ancillary data
- *Web searches*
- **Local Contacts**

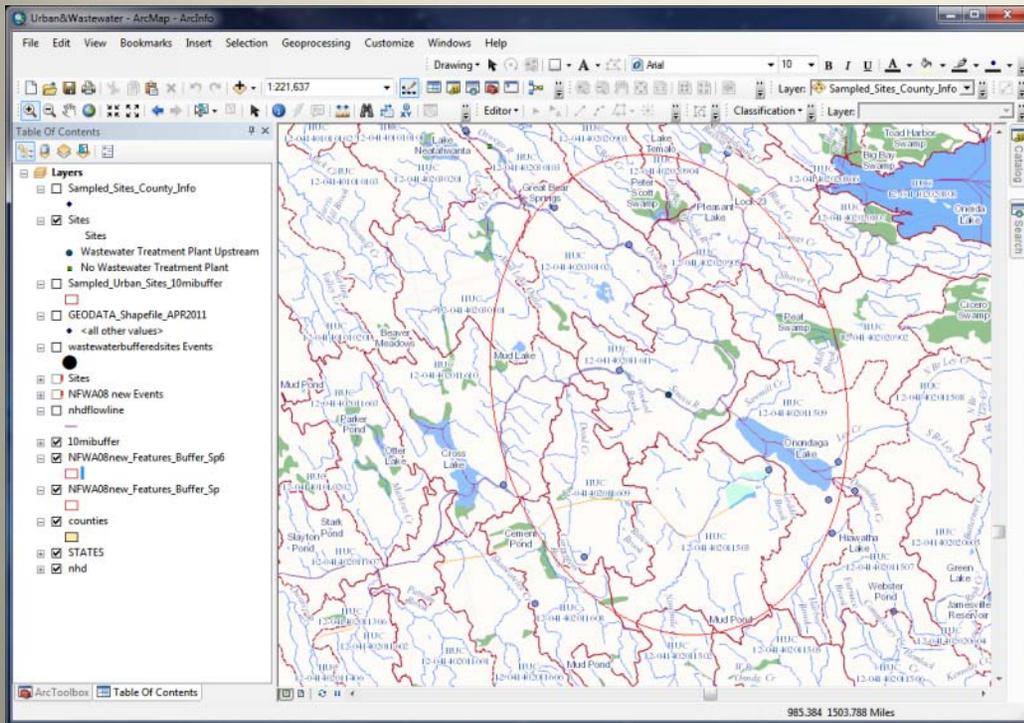


In-depth Desktop Evaluation: GIS

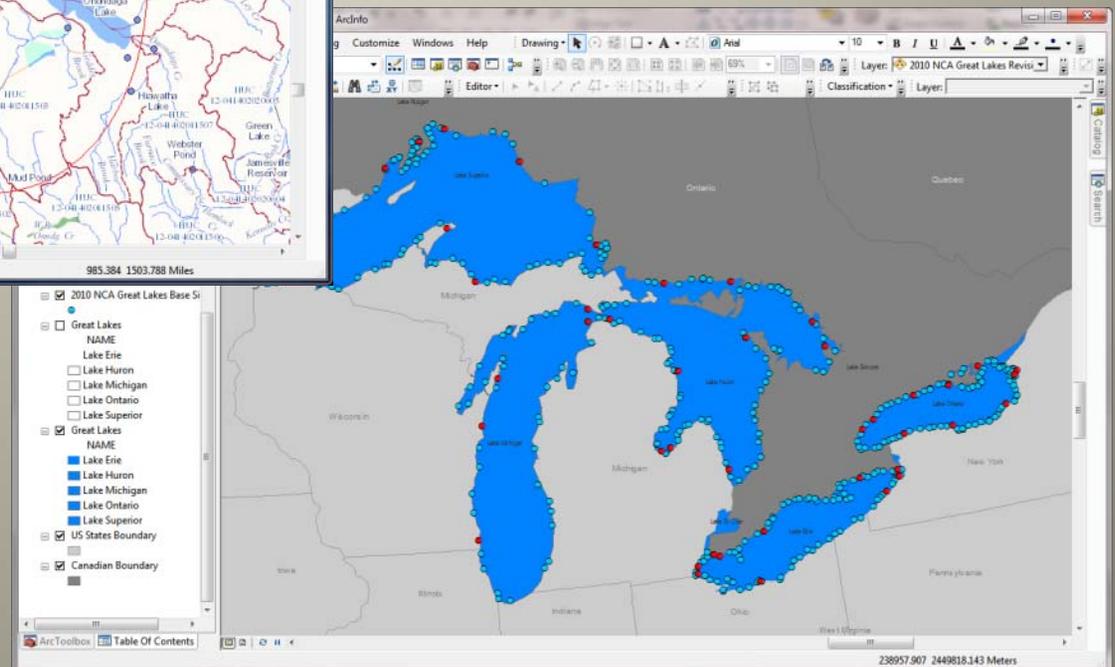
- In some cases an advanced desktop evaluation method such as GIS is needed for more detailed and specific sampling site characteristics



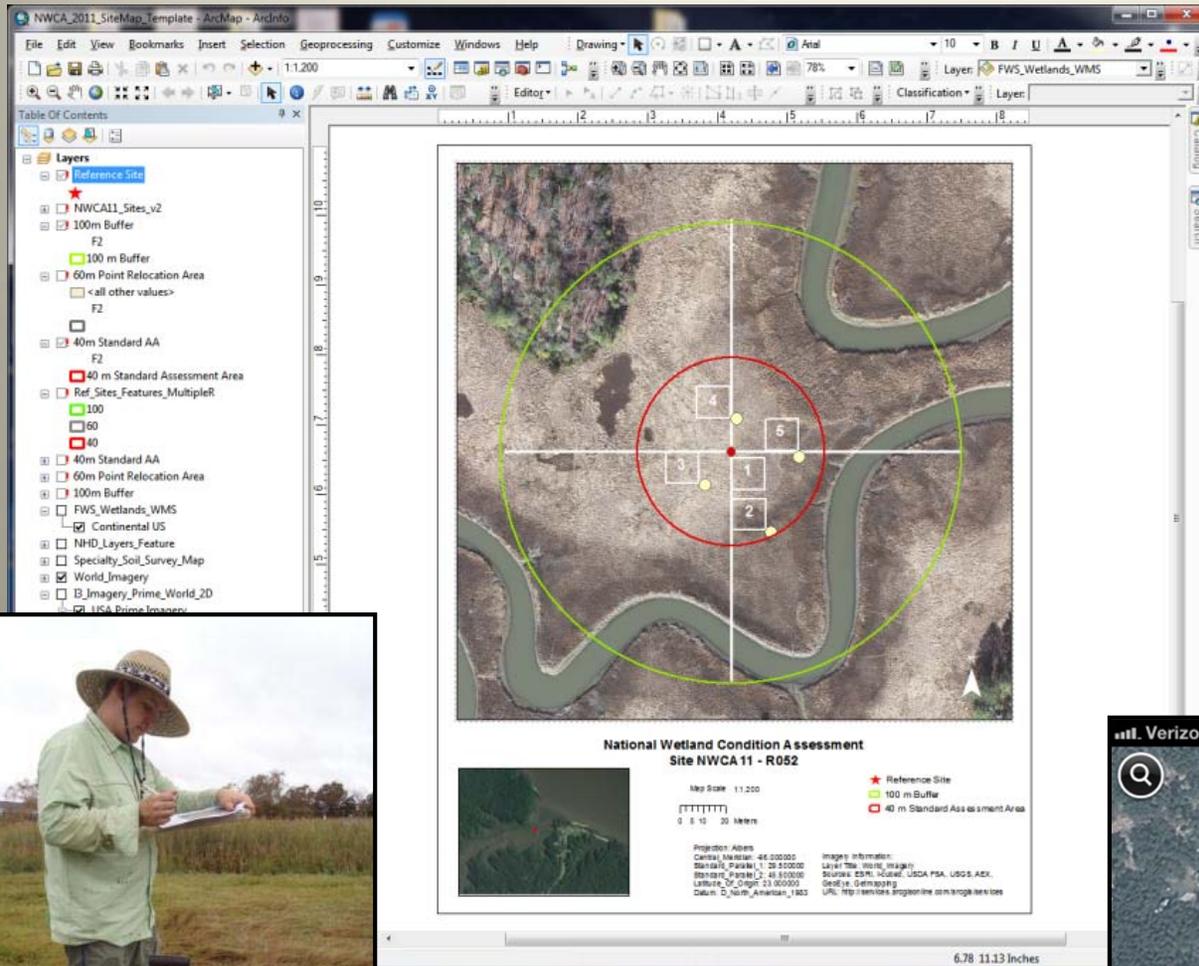
In-depth Desktop Evaluation: GIS



- Detailed analysis and geospatial characteristics



In-depth Desktop Evaluation: GIS



- Site layout and print maps for field investigation
- Layer creation for use in Google Earth, GPS units, or other portable field devices



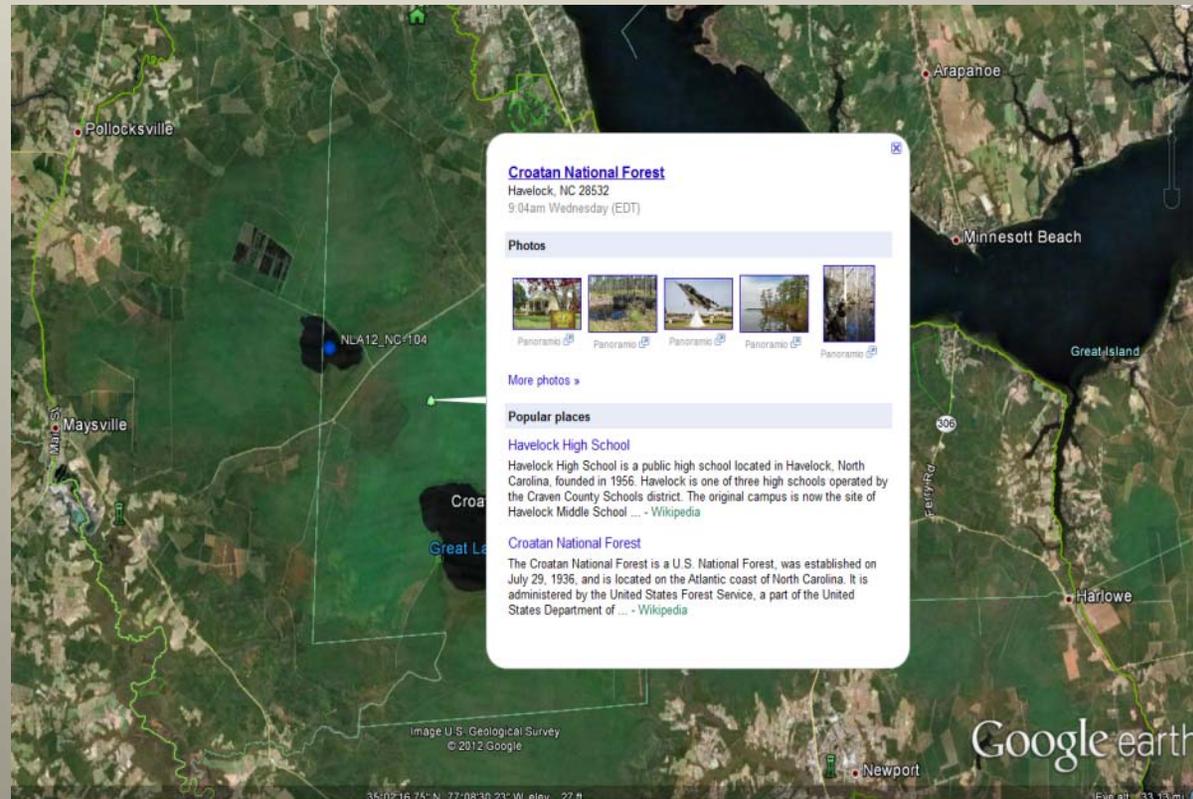
Research Property Ownership

- Finding property ownership can be the most difficult step in the site evaluation process.
- Some useful resources:
 - ✓ Google Earth
 - ✓ Assessor's websites
 - ✓ Real estate records
 - ✓ The Yellow Pages



Research Property Ownership – Check Google Earth

- Determine if the site is on public, private, state, tribal, or federal land.



Permits



552 Academy Avenue
Providence, RI 02908
401-521-6300
www.provwater.com

The Hon. Angel Tavoras
Mayor
Pamela M. Marchand, P.E.
Chief Engineer &
General Manager

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New England Water Works Assn.
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RELEASE OF LIABILITY

I, _____, hereby release and hold harmless the City of Providence, Providence Water Supply Board, Providence Public Building Authority, its officers, agents, employees and successors from any and all claims for injury or damages that may result from my actions on Providence Water Supply Board lands.

Signed _____ Witness _____
Date _____ Date _____

Valles Caldera National Preserve - Scientific Research Permit

Valles Caldera National Preserve

P.O. Box 359, Jemez Springs, NM 87025
Telephone: 505-428-7727 Fax: 505-829-46
Website: <http://www.vallescaldera.gov>

SCIENTIFIC RESEARCH PERMIT

Section A - Permittee Information			
1. Principal Investigator [PERMITTEE] (last-first-middle initial) Barbour-Chad-E			
2. Mailing Address (street/PO box, city, state, zip) 400 Red Brook Blvd, Suite 200 Owings Mills, MD 21117	Telephone: (410) 356-8993 Fax: (410) 356-9005 Email: Chad.Barbour@tetratech.com		
3. University/Department or Agency/Sponsor Tetra Tech Inc. - USEPA contractor			
4. Sub-Permittee/Assistant Name(s) and Contact Information: (attach additional pages if needed)			
NAME	INSTITUTION	TELEPHONE	E-MAIL
a. David Bressler	Tetra Tech Inc.	410-356-8993	David.B@tetratech.com
b. Janni Miller	Tetra Tech Inc.	410-356-8993	Janni.M@tetratech.com
c. Mike Compton	Tetra Tech Inc.	410-356-8993	mike.compton@tetratech.com
d.			
e.			
f.			
5. Project Title National Rivers and Streams Assessment - USEPA			
6. Applicant's Signature (permit must be signed to be valid): 	Date 04/6/08		
Approved by (permit must be signed to be valid): Robert R. Pamenter, Preserve Scientist	Date 28 July, 2008		
PERMIT NUMBER: VCT-2008-RIM-010	PERMIT ISSUE DATE: 28 July, 2008 EXPIRATION DATE: 31 December, 2008		

DISPLAY THIS PAGE OF SIGNED PERMIT ON YOUR VEHICLE DASHBOARD WHEN ON THE PRESERVE

Arkansas Game & Fish Commission
42 Natural Resources Drive Little Rock, Arkansas 72205

Scientific Collection Permit

Permit Number: 04100047 Expiration Date: 4/1/09

Permittee: John Jackson
AR Tech University
4 McEyer Building
1701 North Boulder Ave.
Rosedale, AR 72801

Sponsor: AR Tech University
4 McEyer Building
1701 North Boulder Ave.
Rosedale, AR 72801

of Traps: Up to 50
Location(s): Statewide

Species Type	Collection Method	Disposition	Returned
Fish	Electrofishing	Killed for study purposes	-50

This Permit grants the permittee listed above or the designated sub-permittee listed below with the privileges accorded under AGFC Code 15.15. This permit is issued on the conditions set forth herein and becomes effective on the date of issue. A Federal Permit is also required for Migratory and/or Threatened/Endangered Species.

Permittee must also possess a valid Arkansas hunting or fishing permit, as appropriate, to employ recreational hunting / fishing methods.

This permit does not allow collection of Species of Special Concern.

Please contact the nearest Arkansas Game and Fish Commission Regional Office prior to electrofishing.

This permit is not valid until signed in ink by the permittee. Signature constitutes acceptance of all rules and requirements pertaining to this permit. This permit may be suspended or revoked at the discretion of the Director of the Arkansas Game and Fish Commission. This permit is not transferable. This permit does not authorize trespass or collection on private or other agency lands. It is incumbent upon the individual collector to obtain appropriate permission to collect from the landowner, whether private or non-landowner.

Permittee Signature:

Sub-Permittee: Students & Nicholas Carreras

Sign here to Authenticate photography:

US Army Corps of Engineers
New England District

Permit for: Wetland Field Survey Sampling

On land administered by the US Army Corps of Engineers at: _____

Issued to: Organization: Tetra Tech Office Ph. 615.252.4726 (Contractor for EPA)

Organization Representative: Amy Tolley Phone (days/evenings): 731.431.7907 cell

Street or P.O. Box: 712 Melrose Avenue State: TN Zip: 37211

A special use permit is hereby granted for the period of August 15, 2011 to October 15, 2011, which is revocable at will by the Corps of Engineers and subject to the following conditions:

- That the exercise of the privileges hereby granted shall be under the general supervision of the Park Manager and Park Ranger and subject to Federal rules and regulations including Title 36, Chapter III, Part 327 of the U.S. Code of Federal Regulations (enclosed).
- That any property of the United States damaged or destroyed by the permittee shall be promptly repaired or replaced by the permittee to the satisfaction of the Park Manager or Park Ranger.
- That the Corps of Engineers shall not be responsible for damages to property or injuries to persons, which arise from or are incident to the exercise of the privileges herein granted and shall be held harmless from any and all such claims.
- That the permittee shall restore the premises to a condition satisfactory to the Park Manager or Park Ranger after completion of the permitted activity.
- That the permittee shall exercise due care in the use of the premises so as to minimize the impact on environmental and cultural resources.
- That no trees or vegetation be cut or removed from the reservoir unless authorized by the Park Manager or Park Ranger.
- That the permittee shall comply with all laws and regulations of the state and town where the permitted activity is located.
- That permission is granted to use the site only on the dates indicated above. Any additional request for use of Corps of Engineers areas for special activities must be received at least 60 days in advance.

Additional special conditions are listed on the reverse side if checked:

Organization Representative: _____ Date: _____
Operations Manager: Date: 9/2/11

Special Use Fee: UNPAID	Performance Bond: \$ 100
Check # _____ Dated: _____	Check # _____ Dated: 8/21/11
Bank: to ELL-PARGO	Bank: to ELL-PARGO
Date Received: _____	Date Received: 9/2/11
	Date Returned: _____
	Returned By: _____

NAE 681
Jan 1990

1975870

Special Use Permit
Wildlife Resources Commission

Chad Barbour
Tetra Tech, Inc.
400 Red Brook Blvd, Suite 200
Owings Mills, MD. 21117

Is authorized access and sampling as listed below under this Special Use Permit on the Commission-owned Lands by _____
LAND AUTHORIZED: Bertie Game Lands
Conditions of Permit:

- The purpose of this permit is limited to access and conducting sampling as part of the National Wetlands Condition Assessment contracted thru the EPA on the Bertie Game Lands. The site selected is a remote site down the Cashie River approximately 1.0 mile South of Johnson Mill Road. The site is on the West side of the river on WRC property.
- This permit also applies to individuals working under direction of Chad Barbour.
- The time period for this permit is July 1 thru July 15, 2011.
- This permit is valid for a one day sampling effort during the time period in # 3 that involves navigating to the site located at 35.9376, 76.8779 and establishing a 0.5 hectare assessment area and collecting water chemistry, soil chemistry, and algae samples. Collection of 5 vegetative samples from area is allowed by botanist for identification. Excavation of shallow soil pits for soil profiles is allowed and pits must be filled back in after soil profiles are obtained.
- The NCWRC will not be held responsible for any accidents or injuries that occur during the access period.
- This permit must be kept on person while engaged in access and activities on the Game Lands.
- The WRC reserves the right to terminate this agreement at anytime.
- Access after permit expires requires coordination with Dale Davis (252)482-1808 or David Turner (252)792-3868 with NCWRC so as not to interfere with hunting and management activities.

DATE PERMIT ISSUED: June 09, 2011
DATE PERMIT EXPIRES: July 15, 2011

AUTHORIZED BY: _____

Dale J. Davis
Northern Coastal Management Biologist
Coastal Region
132 Marine Drive
Edenton, NC 27932
252-482-1808-Office
252-340-0110-Cell

Research Property Ownership – Assessor's Websites

http://qpublic5.qpublic.net/sc_search.php?county=sc_kershaw&s

Kershaw County Assessors Office

Mailing Address Search

For more successful matches, enter the location address (start with street name without the street number) . i.e. leave off directionals (norths & souths, "n", "NW" etc.) and street type (Road, Street) you wish from the resulting list of matches.
[CLICK HERE FOR RECORD CARD TERMS ASSISTANCE.](#)

Street Number **Street Name**

Website Updated: April 11, 2012

[Kershaw Home](#) [Feedback](#)

Error on page. Internet | Protected Mode: On

http://qpublic5.qpublic.net/sc_alsearch2.php

Kershaw County Assessors Office

Search Criteria: Address Search= 1 Chancefield Plantation

Search produced the following results. Select one by clicking the parcel number link in the first column below.

Parcel Number	Owner Name	Address	Legal Information	GIS Map
227-00-00-001	BROOKS HILLARY R	1 CHANCEFIELD PLANTATION L	135-061 IT-1585 CHANCEFIELD	Map It

The Kershaw County Tax Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll.

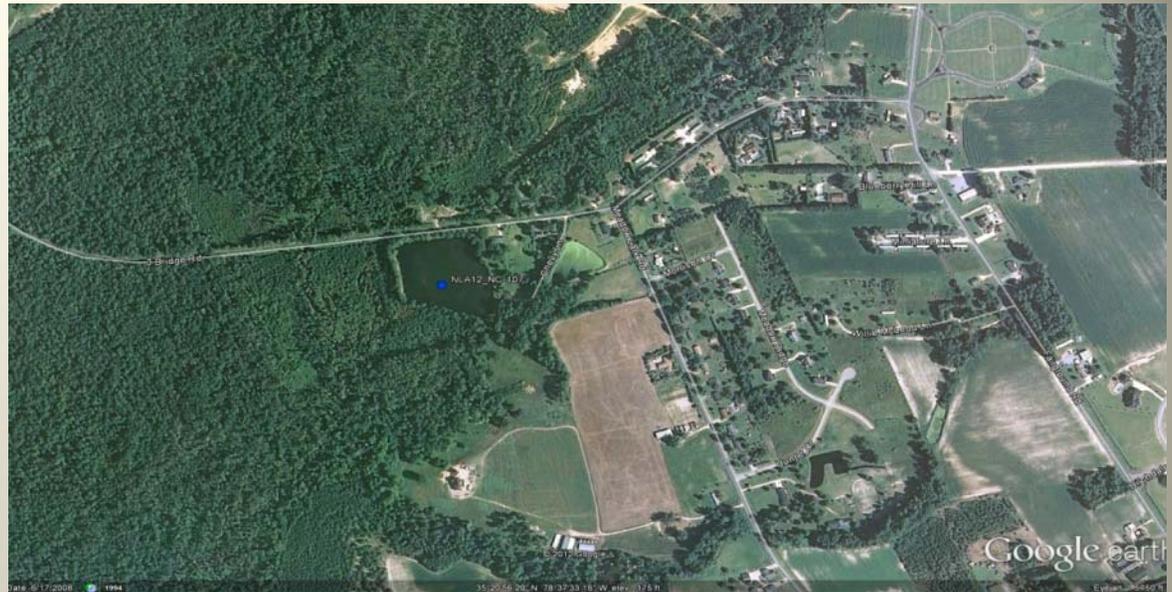
[Return to Main Search](#) [Kershaw Home](#)

© 2006 by the County of Kershaw, SC | Website design by [qpublic.net](#)

Done Internet | Protected Mode: On 100%

These are a valuable source of property ownership information. They are most often divided up by county.

- Comparison of Google Earth map to interactive GIS map from a Tax Assessor's website.
- This interactive tool gave us the landowner's name and her address.



HARNETT COUNTY

Owner Information	
NAME	LEE BETTY TYNDALL
ADDR1	
ADDR2	1194 THREE BRIDGE RD
CITY	DUIN
STATE	NC
ZIP	0

Parcel Information	
PIN	1518-31-0792-000
PARCEL ID	021518 0215
REID	0015278
SITUS ADDRESS	THREE BRIDGE RD 001194 X
LEGAL_1	17.308ACS JAMES L LEE JR
LEGAL_2	
LAND_UNITS-TYPE	17.31AC
CALC_ACRES	16.62273144

Deed Information	
DEED BOOK	02538
DEED PAGE	0659
DEED_DATE	20080801
SALES PRICE	125000

Assessment Information	
BUILD_VALUE	47510
LAND_VALUE	91260
ASSESSVAL	139070

Structure Data	
YEAR BUILT	1955
HEATED SQ FT	1299

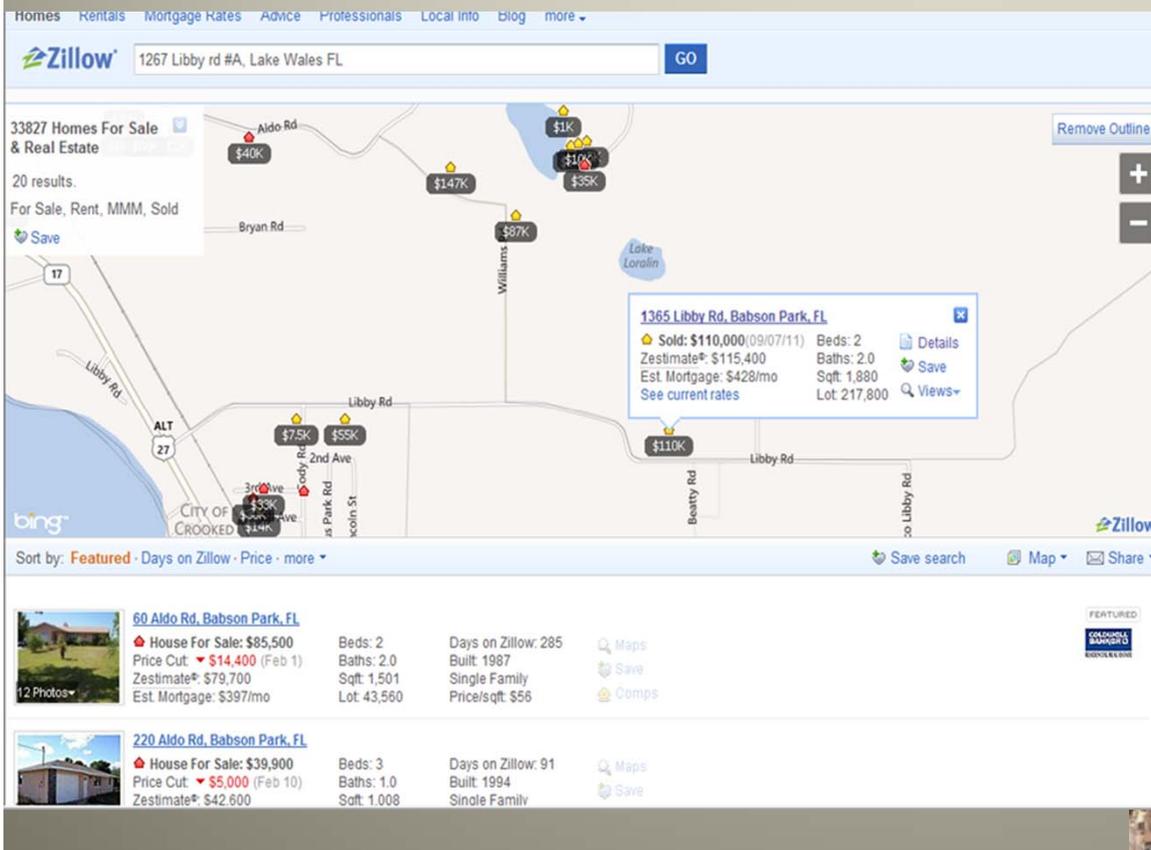
Map Tool Options
 The current cursor mode is set to 'Select/Identify'. Click on a map feature to select it. Clicking on a map feature that has already been selected will unselect. Dragging on the map will create a window that selects multiple features. Use the drag select for better accuracy when selecting points. The selectable theme can be set to the right.

Map Layer: Parcels

Site Information
 Active Tool: Select Feature

Research Property Ownership– Real Estate Records

- As a last resort, Zillow.com may be helpful in obtaining an approximate address
- If the property or neighboring properties have changed owners or been for sale in the past few years you may find useful information



Homes Rentals Mortgage Rates Advice Professionals Local Info Blog more

Zillow 1267 Libby rd #A, Lake Wales FL GO

33827 Homes For Sale & Real Estate
20 results.
For Sale, Rent, MMM, Sold
Save

Remove Outline
+
-

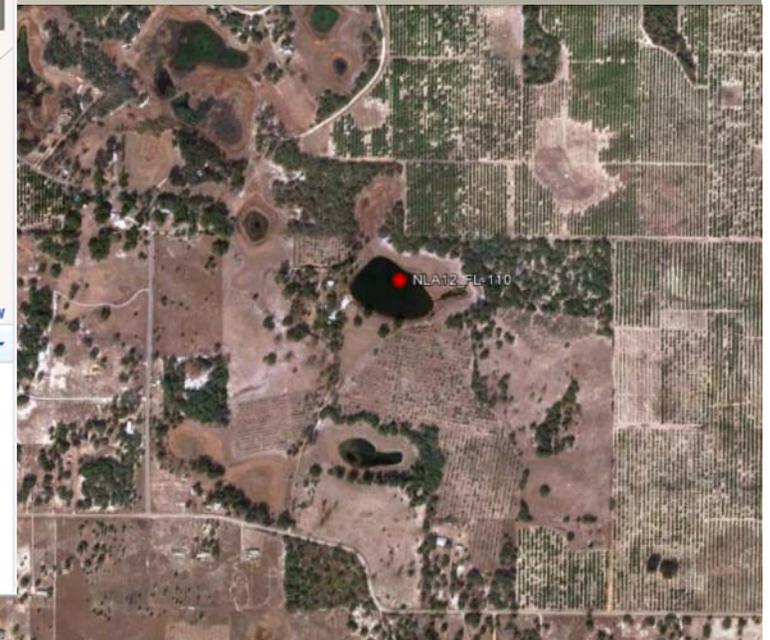
1365 Libby Rd, Babson Park, FL
Sold: \$110,000 (09/07/11) Beds: 2
Zestimate®: \$115,400 Baths: 2.0
Est. Mortgage: \$428/mo Sqft: 1,880
See current rates Lot: 217,800
Details Save Views

Sort by: Featured · Days on Zillow · Price · more

Save search Map Share

60 Aldo Rd, Babson Park, FL
House For Sale: \$85,500
Price Cut: ▼ \$14,400 (Feb 1)
Zestimate®: \$79,700
Est. Mortgage: \$397/mo
Beds: 2
Baths: 2.0
Sqft: 1,501
Lot: 43,560
Days on Zillow: 285
Built: 1987
Single Family
Price/sqft: \$56
Maps Save Comps

220 Aldo Rd, Babson Park, FL
House For Sale: \$39,900
Price Cut: ▼ \$5,000 (Feb 10)
Zestimate®: \$42,600
Beds: 3
Baths: 1.0
Sqft: 1,008
Days on Zillow: 91
Built: 1994
Single Family
Maps Save



Request Permission to Access

I grant permission to the biological field crew from Tetra Tech, Inc. to access the river/stream sampling site (Site FW08FL033) located on my property as part of the EPA's Rivers and Streams Assessment project.

Do grant permission
 Do grant permis
 Do not grant

Following restrictions:
*Enter water at
 stay on road
 be care to
 or go out*

Landowner Name (Please print):
 Landowner Signature:
 Date:
 Phone Number:
 Address:

I grant permission to the biological field crew from Tetra Tec river/stream sampling site (Site FW08FL045) located on my the EPA's Rivers and Streams Assessment project.

Do grant permission
 Do grant permission but with the followin
 Do not grant permission

Landowner Name (Please print): *Northwe*
 Landowner Signature: *[Signature]*
 Date: *2/9/09*
 Phone Number: *51*
 Address:

*If the operator is different than the landowner, please number below so that we may contact the operator before the

Other Comments (How to access site, etc):
Access By Boat! If by land, call me

I grant permission to the biological field crew from Tetra Tech river/stream sampling site (FW08SC016) located on my property as part of the EPA's Rivers and Streams Assessment project.

Do grant permission
 Do grant permission but with
 Do not grant permission

Landowner Name (Please print): *Randy Lee*
 Landowner Signature: *[Signature]*
 Date: *1/19/09*
 Phone Number: *843-893-76*
 Address: *P.O. Box 380
 Walterboro S.C.*

*If the operator is different than the landowner, please list the number below so that we may contact the operator before the s

Other Comments (How to access site, etc):

I grant permission to the biological field crew from Tetra Tech, Inc. to access the stream sampling site (FW08SC016) located on my property as part of the EPA's Rivers and Streams Assessment project.

Do grant permission
 Do grant permission but with the following restrictions:
 Do not grant permission

Landowner Name (Please print): *SARA P. WHITE*
 Landowner Signature: *[Signature]*
 Date: *2/26/09*
 Phone Number: *843-893-4444*
 Address: *P.O. Box 753
 Walterboro S.C. 29488*

*If the operator is different than the landowner, please list the name and phone number below so that we may contact the operator before the site visit.

Other Comments (How to access site, etc):

Research Property Ownership – The Yellow Pages

- Yellowpages.com can be used to locate phone numbers and addresses when the assessor's office has only provided the name of the property owner.
- Go to “Find a Person” and search for the name or the address.

The screenshot shows a web browser window displaying the Yellow Pages website. The search criteria are "Deer run road" and "87714 NM". The results list five individuals:

Name	Address	Phone Number
David L. Kenneke	22 Deer Run Rd, Cimarron, NM 87714	575-376-2706
Janice A. Clark	10 Deer Run Rd, Cimarron, NM 87714	575-376-2014
John H. Clark	10 Deer Run Rd, Cimarron, NM 87714	575-376-2014
Robert E. Sanchez	20 Deer Run Rd, Cimarron, NM 87714	575-376-2359
Shelley O'Neill	14 Deer Run Rd, Cimarron, NM 87714	575-376-9332

The page also features a sidebar with "More information from Intelius" for each individual, including links for "Email and Other Phone Lookup", "Get Detailed Background Information", "Get Public Records", "View Property & Area Information", and "View Social Network Profile".

Request Permission to Access



Denied access!

Sample?

If the site still appears to be accessible and sampleable, you can either confirm with a site visit, or confirm (hopefully!) on the day of sampling.

Rats! Perfectly accessible & sampleable site, but you probably don't want to test this mother moose.



Temporarily inaccessible

Replacing Sites

Sites can be rejected for many reasons:

- Non-target
 - ✓ Does not meet the study definition
- Inaccessible
 - ✓ Physical access or safety concerns
 - ✓ Excessive amount of resources
- Permission denied
 - ✓ Landowner denial to access private property
 - ✓ Access or permit denied on state, tribal, or federal property

When a site is rejected, a site from an “oversample” list is evaluated to replace it.

Replacing Sites

nca_2010 GreatLakes sites.xls [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Add-Ins

Clipboard Font Alignment Number Styles Cells

U45

	A	B	C	H	I	J	K	M	P	Q	R	S
	siteID	LON_DD	LAT_DD	stratum	panel	EvalSt	EvalRe	lake_n	depth_s	cour	st_prov	geo_st_d
6	NCAGL10-1005	-91.622243	46.770510	Lake Superior_USA	Revisit	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
10	NCAGL10-1009	-90.846024	46.958171	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
14	NCAGL10-1013	-90.816963	46.672803	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
20	NCAGL10-1019	-91.787980	46.729253	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
29	NCAGL10-1028	-91.335551	46.819426	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
34	NCAGL10-1033	-90.781025	46.678147	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
42	NCAGL10-1041	-91.990207	46.717009	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
45	NCAGL10-1044	-90.551698	46.615941	Lake Superior_USA	Base	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
48	NCAGL10-1047	-87.093383	45.029147	Lake Michigan_USA	Revisit	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
49	NCAGL10-1048	-87.810577	42.614701	Lake Michigan_USA	Revisit	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
50	NCAGL10-1049	-87.525081	44.342135	Lake Michigan_USA	Revisit	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
54	NCAGL10-1053	-87.370221	44.996365	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
60	NCAGL10-1059	-87.864071	43.328918	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
64	NCAGL10-1063	-87.994567	44.668440	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
67	NCAGL10-1066	-87.698607	44.948027	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
71	NCAGL10-1070	-86.956190	45.336088	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
72	NCAGL10-1071	-87.657049	43.719069	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
76	NCAGL10-1075	-87.768151	44.693068	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
82	NCAGL10-1081	-87.861512	43.041336	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
83	NCAGL10-1082	-87.626770	44.014824	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
87	NCAGL10-1086	-87.148046	44.894325	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
90	NCAGL10-1089	-86.954638	45.216366	Lake Michigan_USA	Base	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
407	NCAGL10-2001	-92.011059	46.699114	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
409	NCAGL10-2003	-90.877757	46.630517	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
417	NCAGL10-2011	-90.838798	46.732673	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
423	NCAGL10-2017	-91.887622	46.719700	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
426	NCAGL10-2020	-90.556730	46.601226	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
444	NCAGL10-2040	-91.386181	46.787717	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
445	NCAGL10-2044	-90.604541	46.697787	Lake Superior_USA	OverSamp	NotEval		Lake Superior	Shallow Nearshore	USA	Wisconsin	Open Water
454	NCAGL10-2050	-87.080110	45.031875	Lake Michigan_USA	OverSamp	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water
459	NCAGL10-2055	-87.486954	44.423460	Lake Michigan_USA	OverSamp	NotEval		Lake Michigan	Shallow Nearshore	USA	Wisconsin	Open Water

GL_Design_Summary NCA_GL_Sites_20090309

Ready 43 of 810 records found

Site Rejection Rates

After analyzing data from several national surveys (Fish Tissue Survey, WSA, NLA, NRSA, NCCA, & NWCA), we expect certain rejection rates for different types of waterbodies:

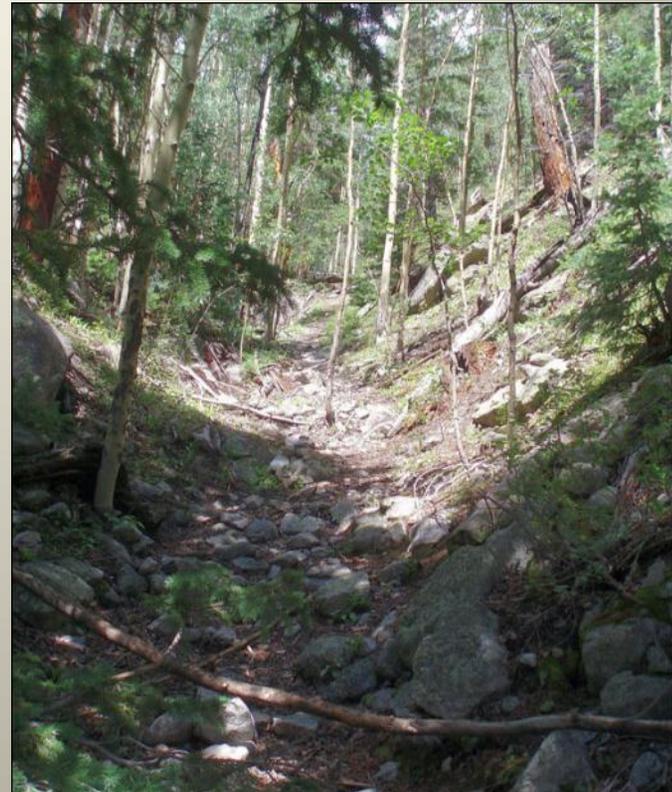
- We expect to evaluate approximately twice as many wadeable stream or wetland sites as we need to sample.
- Rejection rates are significantly lower for the higher order streams, rivers, and lakes, with approximately 1/3 of these sites being rejected.
- Rejection rates are very low for coastal sites, with about 12% of these sites being rejected.



Site Rejection

Why do wadeable streams and wetlands have such a high rate of attrition?

- Many sites fall on private property.
- More likely to be ephemeral or inaccessible.
- Desktop reconnaissance is difficult.



WSA

959 sites evaluated to sample 551 target sites 43% rejected

NRSA

1747 sites evaluated to sample 958 target sites 45% rejected

Site Rejection

Why is there more success with lakes and non-wadeable rivers?

- Many sites on large lakes and rivers will have public access.
- These waterbodies are more stable.
- It is easier to conduct desktop recon, or to find a local contact that knows about the waterbody.



NRSA

1365 sites evaluated to sample 964 target sites 29% rejected

NLA

1634 sites evaluated to sample 1163 target sites 29% rejected

Site Rejection

Why the high rate of success with coastal sites?

- Most sites will have public access.
- It is easier to conduct desktop recon or to find a local contact that knows about the waterbody.



NCCA

1266 sites evaluated to sample 1115 target sites 12% rejected

Site Rejection

Are there possible geographic patterns for site rejection?

Regions 1 and 10: A high percentage were inaccessible.

- Sites required special boats/equipment, and were often too dangerous to access.
- Sites in remote or Wilderness areas where access was nearly impossible.

Regions 3 and 4: A high percentage did not meet the physical criteria for the studies.

- Wetlands or tidally influenced.
- Impounded.
- Physically altered by human activities.



Site Rejection

Regions 5, 8, and 9: A high percentage were dry or did not meet size criteria.

- Small farm ponds that are very shallow or dry in the summer.
- Small, ephemeral sites in the arid western and southwestern states



Regions 6 and 7: A high percentage were denied access.

- Sites on farms & ranches.
- Sites on large tracts of land with out-of-town landowners.



In Conclusion....

- Access, property rights, & permitting issues all need to be addressed well ahead of time.
- It is important to anticipate a realistic rate of site rejection.
- There are some geographic patterns for site rejection.
- Beginning site reconnaissance as early as possible will provide sufficient time and increase your success rate.

