



Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration

Algal Bloom Response

Sample Types and Survey 123

May 18, 2017





Bloom Season

- 2016
 - 402 Site Visits to monitor the South Florida Algal Bloom
 - Understanding the importance of effective communication and coordination to respond to large scale events.
- 2017
 - Training in preparation
 - Review of algal bloom sample types
 - Representative Sampling
 - Introduction of Survey 123



DEP Bloom Response

The message:

If there is an algal bloom present (discolored water or scum), then stay out.

- Public messaging is not based on a toxin value.
 - Waterbody condition changes rapidly
 - Sampling methods affect results
 - Analytical method variability
 - Analytical time lapse
- Desire to know potential risk of exposure to cyanotoxins
- Therefore, need to collect a sample representative of the majority of the waterbody.

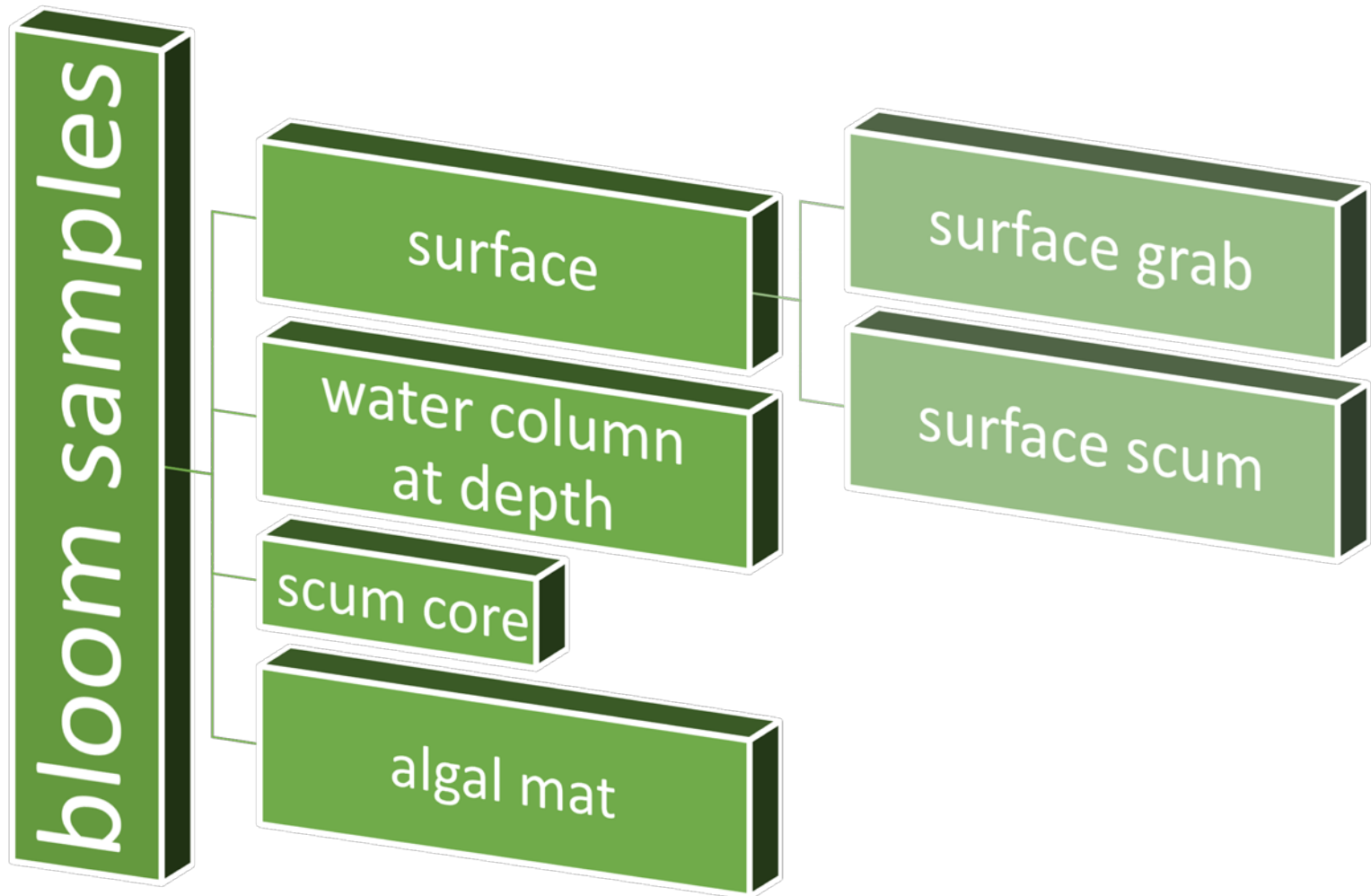


Bloom SOPs

- FS 7000. GENERAL BIOLOGICAL COMMUNITY SAMPLING
 - FS 7110. PHYTOPLANKTON BLOOM SAMPLING
 - FS 7240. ALGAL MAT SAMPLING FOR TAXONOMIC IDENTIFICATION OR TOXIN ANALYSIS
- AB-17 Algal Bloom Response
 - Appendix A: Cyanobacteria Bloom Response Field Data Sheet



Types of Bloom Samples





Bloom Sample Types: Surface Grab

- Algae may or may not be visible.
- Scum **not** present.
- Collect the sample within the top 0.3m.





Bloom Sample Types: Surface Scum

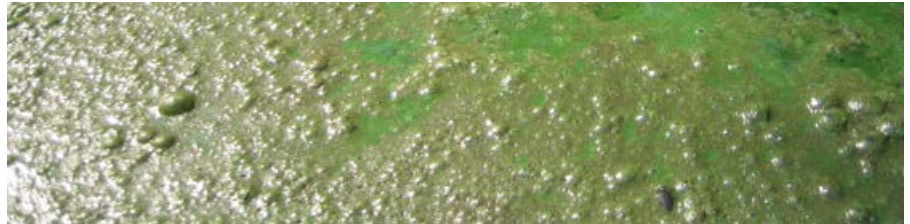
- Mix the surface scum of a 0.5 m area with the underlying water to mimic recreational exposure.
 - For example, swimming or jet skiing would mix the upper scum layer into the underlying water
- Collected in the top 5-10 centimeters of the water column.
- Do not collect the sample by skimming the surface.





What is Scum?

- A **scum** is a consolidated layer of algae floating on the water's surface.
- It is not streaks or specks.
- It is not thick, green "soup".





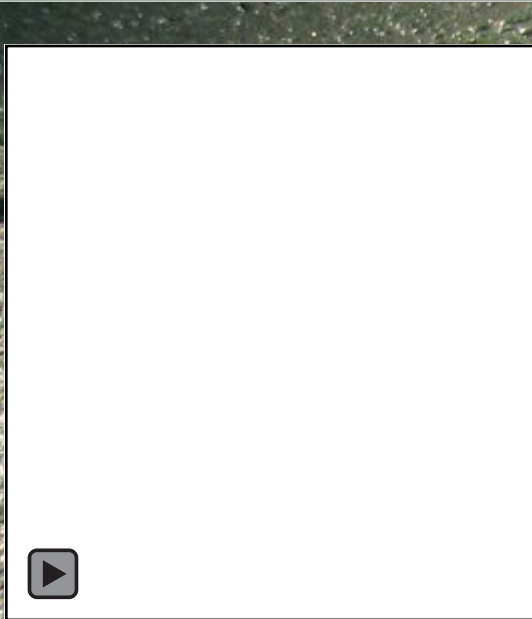
Bloom Sample Types: Water Column at Depth

- Used for determining the algal content of the water column below the surface.
 - Is the algal community homogenous?
 - Is the algal community suspended below the surface?
- Collected at depths greater than 0.3 meters.
- Intermediate sampling device such as Niskin/Alpha Bottle/Van Dorn Water samplers or Coliwasa tube would be used.

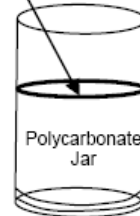




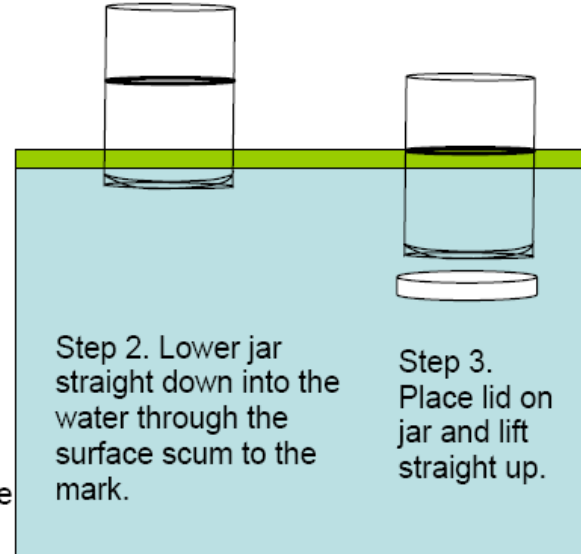
Bloom Sample Types: Scum Sample Core



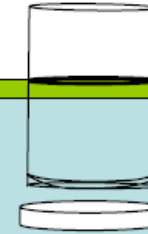
"Fill line"



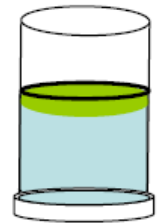
Step 1.
Mark
Wide-mouth
polycarbonate
bottle.



Step 2. Lower jar
straight down into the
water through the
surface scum to the
mark.



Step 3.
Place lid on
jar and lift
straight up.



Final sample to be
transferred to
sample bottle after
homogenizing.

- To date, there has not been a need for quantitative sampling of a scum.
- Recall that DEP does not use any particular values to determine public messaging.
- This method will be phased out for algal bloom response.



Algal Mat Sampling (1)

- Not true “Bloom” sampling.
Some algae can form mats.
Others form blooms.
- When collecting for identification, pull filaments from different substrates if attached or pull from a representative area of a floating mat.
- Place all aliquots into a container with enough site water to keep the algae submerged.





Algal Mat Sampling (2)





Sample submittals

- Label the samples with the appropriate locational information.
- If the field ID does not indicate which type of bloom samples were collected, please indicate this on the samples submittal sheet comments section and/or on the Survey 123 app in the “Sample Depth Description” field.

Latitude	☐ dd ☐ dms	Longitude	☐ dd ☐ dms	Salinity (ppt)	Comments			
Location	South Florida Waterbody			☐ Comp ☒ Grab	Collection (comp begin or grab) Date 05/18/17 Time 9:00AM	☒ Eastern ☐ Central	Composite end Date Time	Bottle Group(s)
Field ID	Green Canal XYZ			Matrix (type, e.g., Salt, Fresh, etc) Fresh	Diss. Oxygen 1.7	☒ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	A, B, C
STORET #				Temp (C) 39.0	pH 7.8	Sample Depth 0.1	☐ ft ☒ m	Sp. Conductance (umho/cm) 319
Latitude	☒ dd ☐ dms	Longitude	☒ dd ☐ dms	Salinity (ppt)	Comments			
32.976237		-97.858688			Surface Scum sample - Bloom-ID			
Location				☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	☐ Eastern ☐ Central	Composite end Date Time	Bottle Group(s)



Bloom Response Representative Sampling

- Determine Representative
 - Is the waterbody experiencing a bloom?
 - What proportion of the waterbody is affected?
 - Is there a scum present? If so, what is the scum's coverage?
- In cases where recreational exposure is possible, we are collecting a sample to capture the condition representative of the majority of the waterbody.



Bloom Response Representative Sampling Scenario 1

Waterbody

- Majority of waterbody is affected by bloom.
- Scum, if present, not covering majority of waterbody.
- Collect a Surface Grab sample anywhere in the waterbody.





Bloom Response Representative Sampling Scenario 2

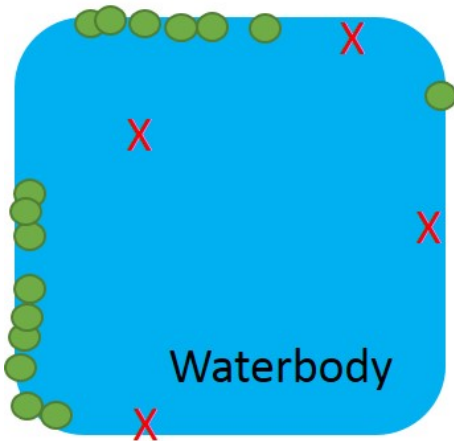


- Majority of waterbody is affected by bloom.
- Scum present over majority of waterbody.
- Collect a Surface Scum sample anywhere in the waterbody.





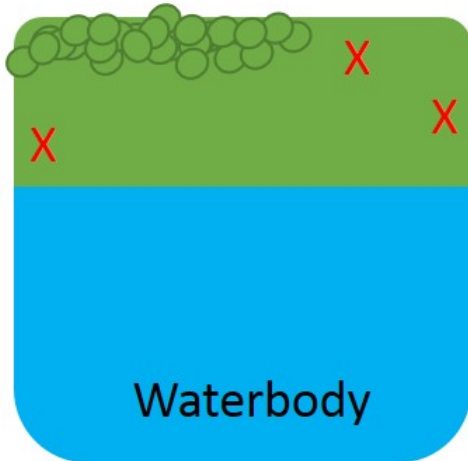
Bloom Response Representative Sampling Scenario 3



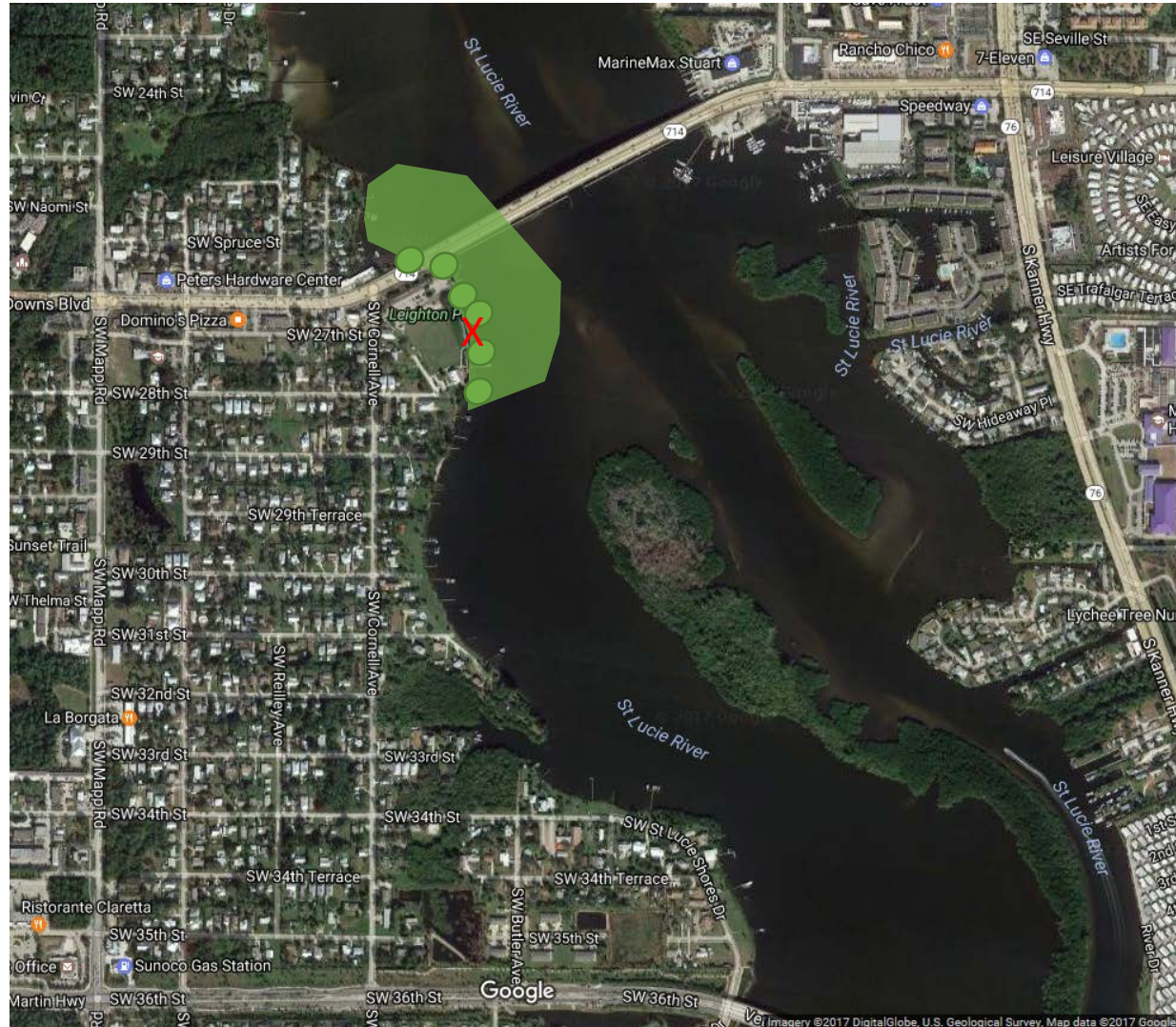
- Surface scum present on edges of water body.
- Depends on extent of bloom and size of waterbody.
- Collect a Surface Grab sample in an area where scum is not present.



Bloom Response Representative Sampling Scenario 4

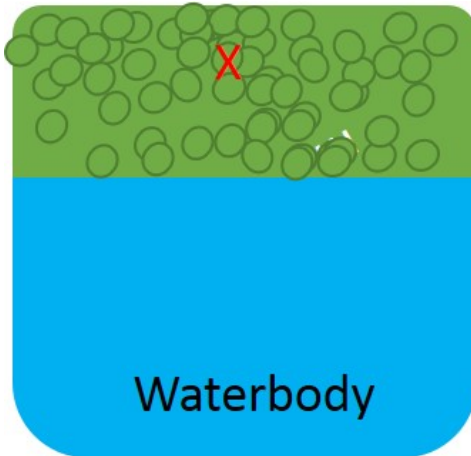


- 1/3 of waterbody is green with a surface scum blown to shoreline.
- Where to collect the sample is dependent on the size of the waterbody and practical ability to collect the sample.
- Collect Surface Grab sample in area where scum is not present.

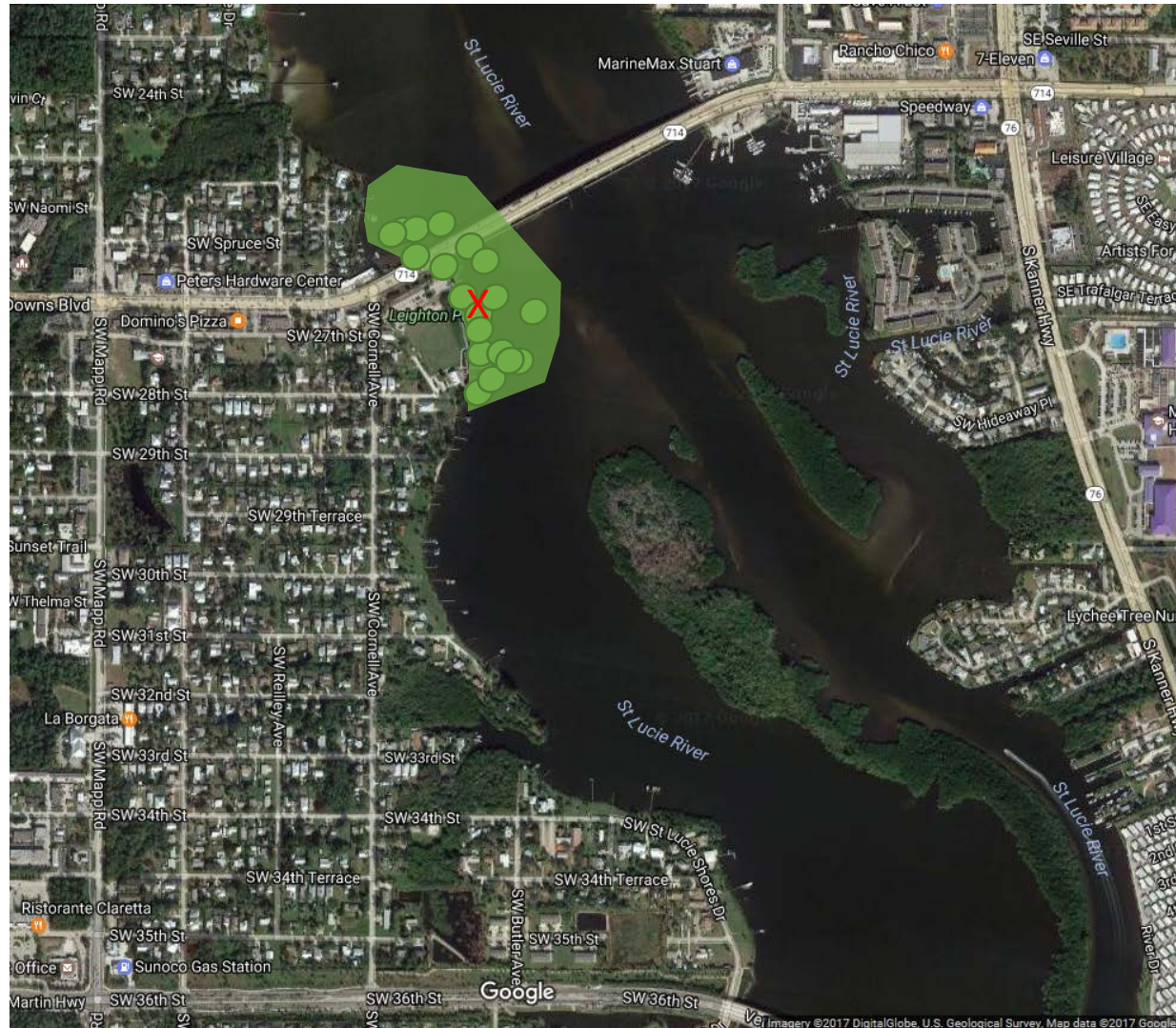




Bloom Response Representative Sampling Scenario 5



- 1/3 of waterbody is green and covered with a green scum.
- Where to collect the sample is dependent on the size of the waterbody and practical ability to collect the sample.
- If this represents the majority of the waterbody, collect Surface Scum sample.





Survey 123

- Survey 123 allows field staff to upload sampling information while in the field.
- Field photos are attached to the sampling point.
- Lab results entered with the sampling point.
- Public can more quickly view the site visit information.
- To be completed in addition to the Cyanobacteria Bloom Response Field Data Sheet



Installs

Survey123 Connect

Download Survey123 Connect to create and share a survey.

Windows x86	Size: 83 MB
macOS	Size: 130 MB
Linux	Size: 121 MB

Survey123 for ArcGIS

Download Survey123 for ArcGIS to complete a survey and get answers.

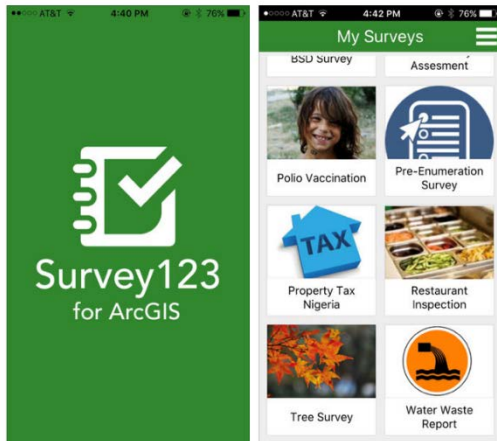
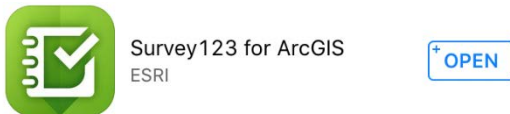
Windows x86	Size: 82 MB
macOS	Size: 130 MB
Linux	Size: 121 MB



On desktop, go to:

<http://doc.arcgis.com/en/survey123/download/>

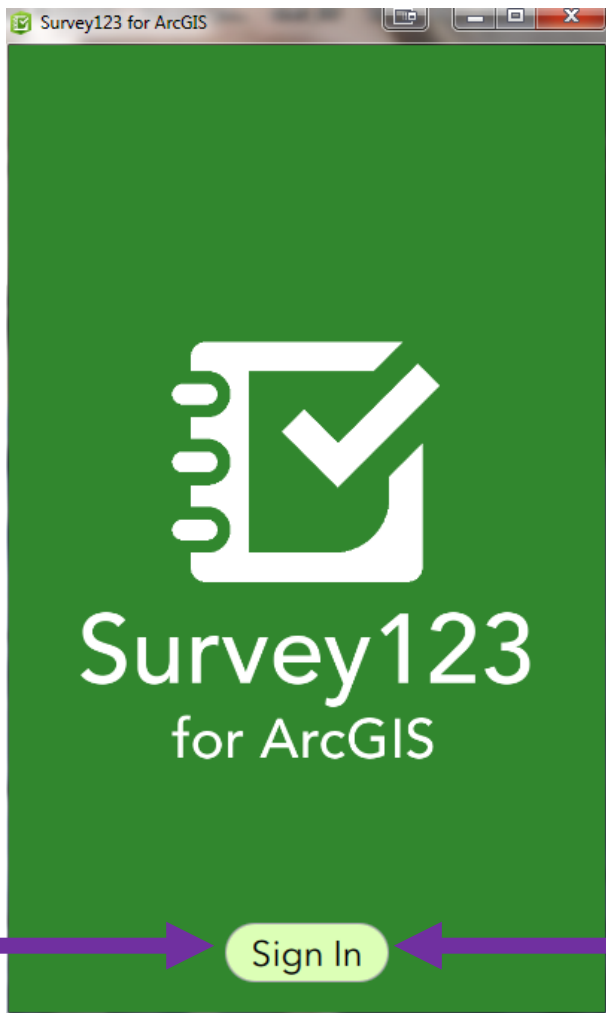
Select Survey 123 for ArcGIS Windowsx86. Follow install wizard set-up.



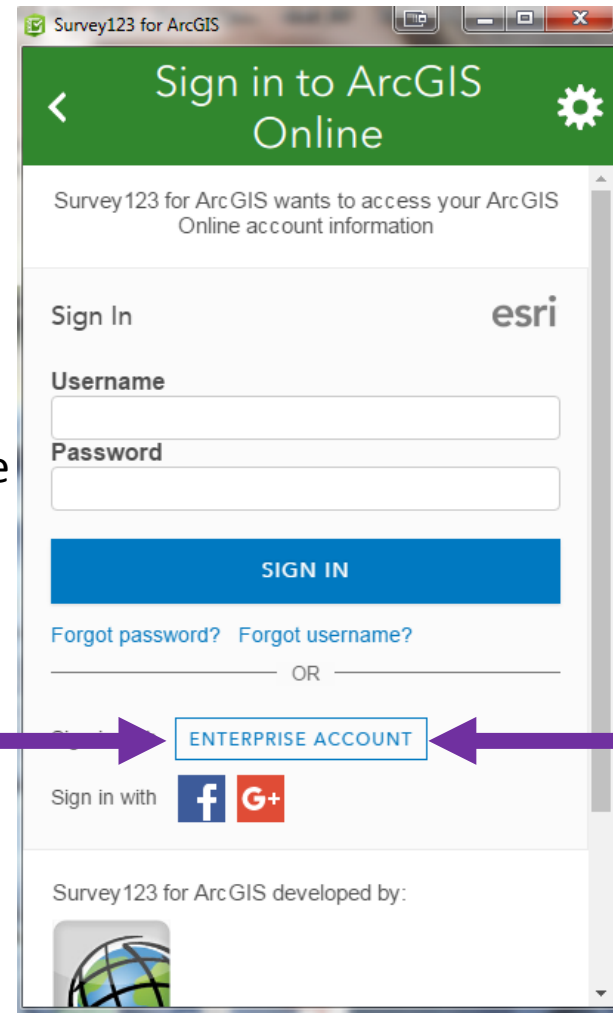
On cell, go to google play and download Survey 123 for ArcGIS.



Login (1)



Open the app or program.
Click sign in and then select
ENTERPRISE ACCOUNT on the
next screen.





Login (2)

Survey123 for ArcGIS

Sign in to ArcGIS Online

Survey123 for ArcGIS wants to access your ArcGIS Online account information

Sign in 

Enter your ArcGIS organization's URL below

fdep .maps.arcgis.com

< BACK CONTINUE

Survey123 for ArcGIS developed by:



Esri

Esri publishes a set of ready-to-use maps and apps that are available as part of ArcGIS. ArcGIS is a mapping platform that enables you to create interactive maps and apps to share within your organization or publicly.

Type **fdep** into the ArcGIS organization's URL.

Click Sign in to Florida Department of Environmental Protection "USING YOUR FLORIDADEP ACCOUNT."

Survey123 for ArcGIS

Sign in to ArcGIS Online

Survey123 for ArcGIS wants to access your ArcGIS Online account information

Sign in to Florida Department of Environmental Protection 

USING YOUR FLORIDADEP ACCOUNT

OR

USING YOUR ARCGIS ACCOUNT

Survey123 for ArcGIS developed by:

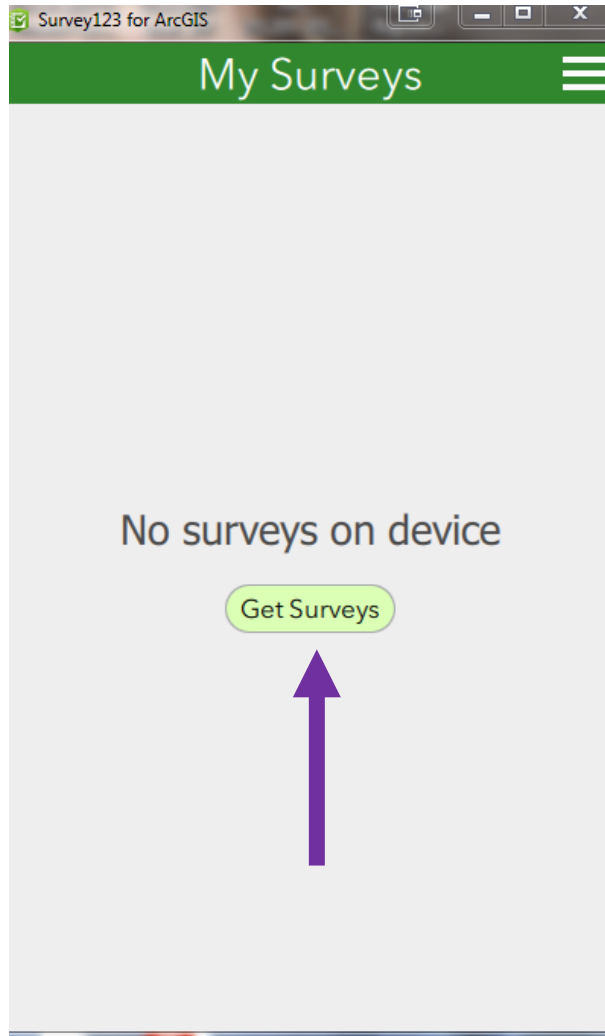


Esri

Esri publishes a set of ready-to-use maps and apps that are available as part of ArcGIS. ArcGIS is a mapping platform that enables you to create interactive maps and apps to share within your organization or publicly.

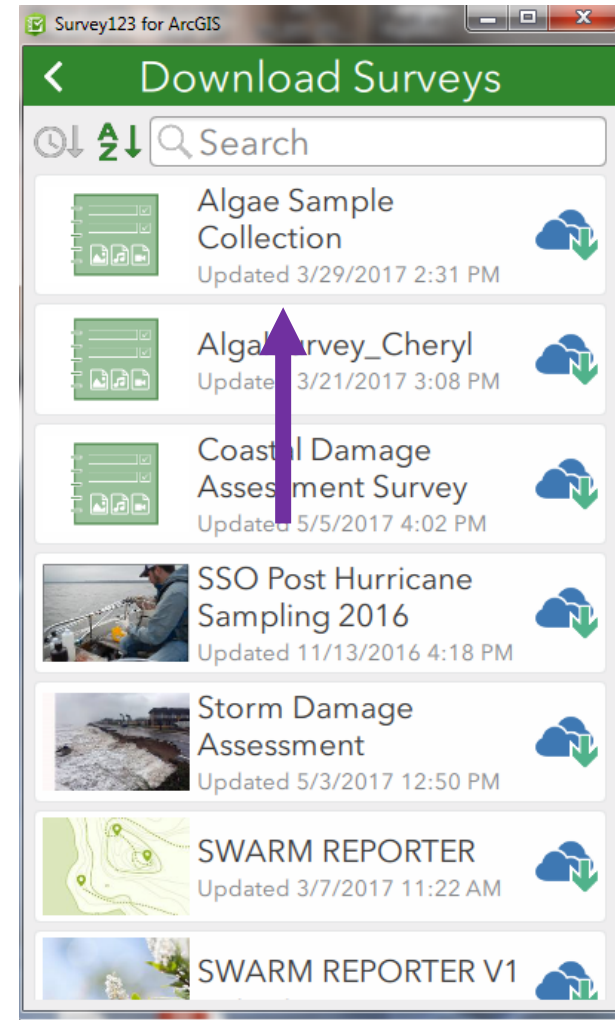


Login(3)



Click on “Get Surveys”
and then select the Algae
Sample Collection Survey.

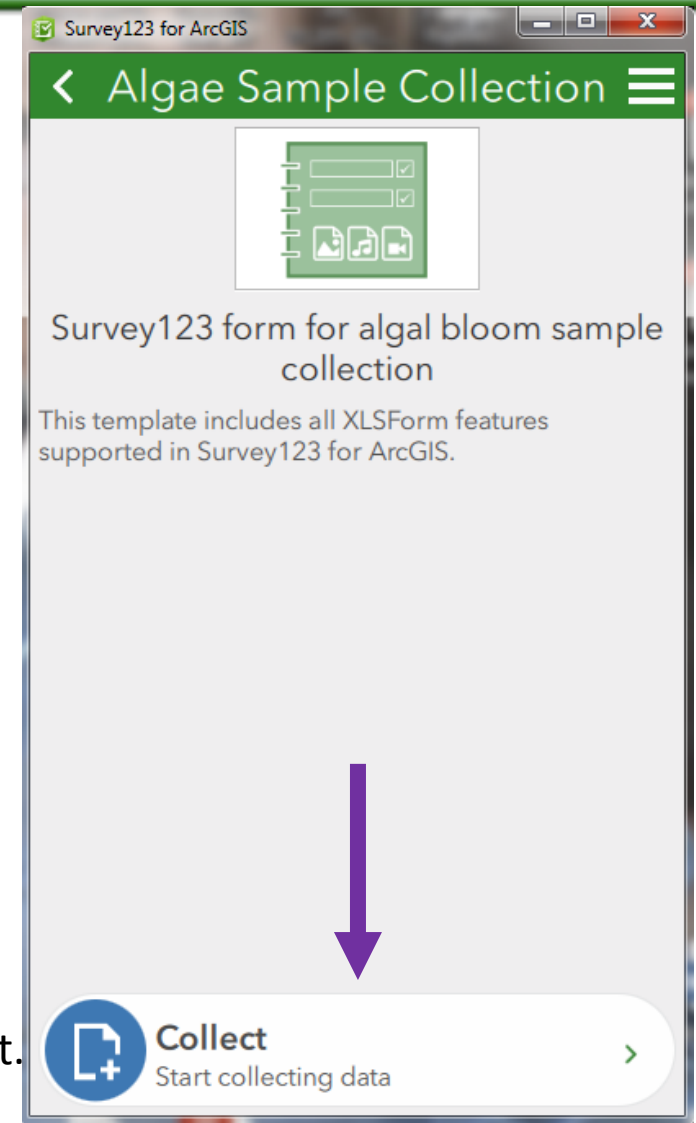
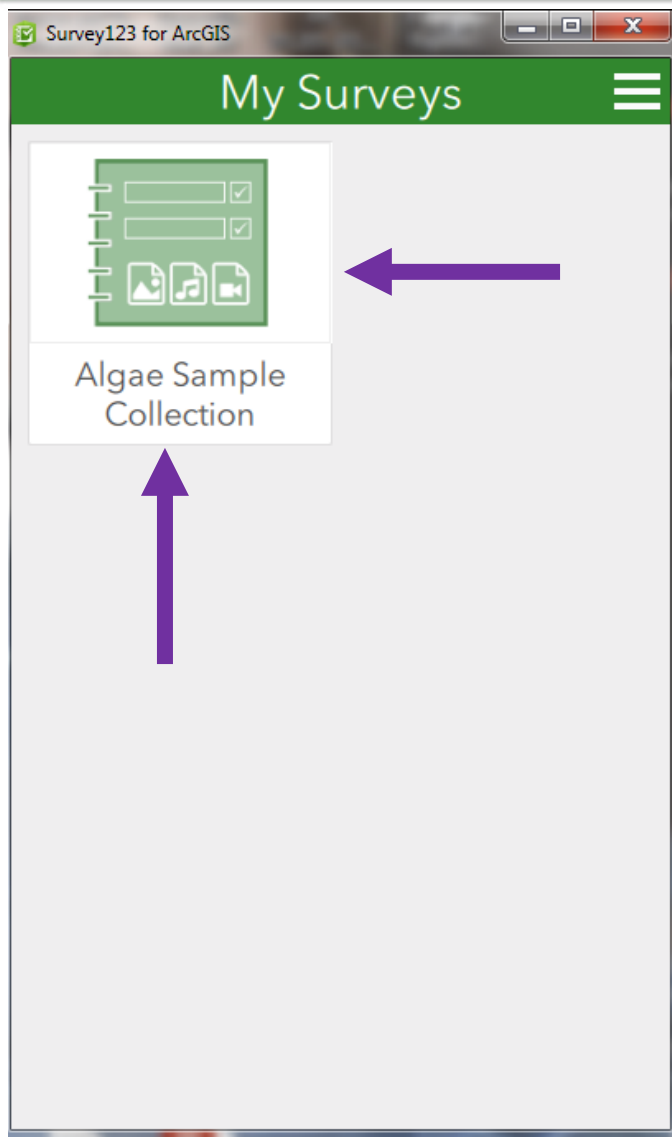
Press the back arrow to
get back to the
downloaded survey.





Survey Entry (1)

To enter a Site Visit or Sample Collection, click on the Algae Sample Collection Survey.



Select Collect.



Survey Entry (2)

Survey123 for ArcGIS

Algal Bloom Sample Information

Site Visit Date and Time *
5/18/2017 9:01 AM

Sample Location *
Big Green Canal XYZ

County *
Leon

Site Visited By *
DEP-TLH ROC

Sample Taken? *
☒ Yes ☐ No

If Sample Taken

Sampler Name *
Jennifer Walters

Sample Depth Description *

✓

Enter date, time, sample location name, county, site visited by, sample taken, and the sampler name.

Enter the sample depth description/sample type, sample depth, analyzed by, comments and comments internal.

Survey123 for ArcGIS

Algal Bloom Sample Information

Sample Depth Description *
Surface grab

Sample Depth (meters) *
0.3

Analyzed By *
☒ DEP ☐ OTHER

Comments
No surface scum present. Water was

Comments Internal
Sample collected in a larger tube.

Take Picture 1

✓



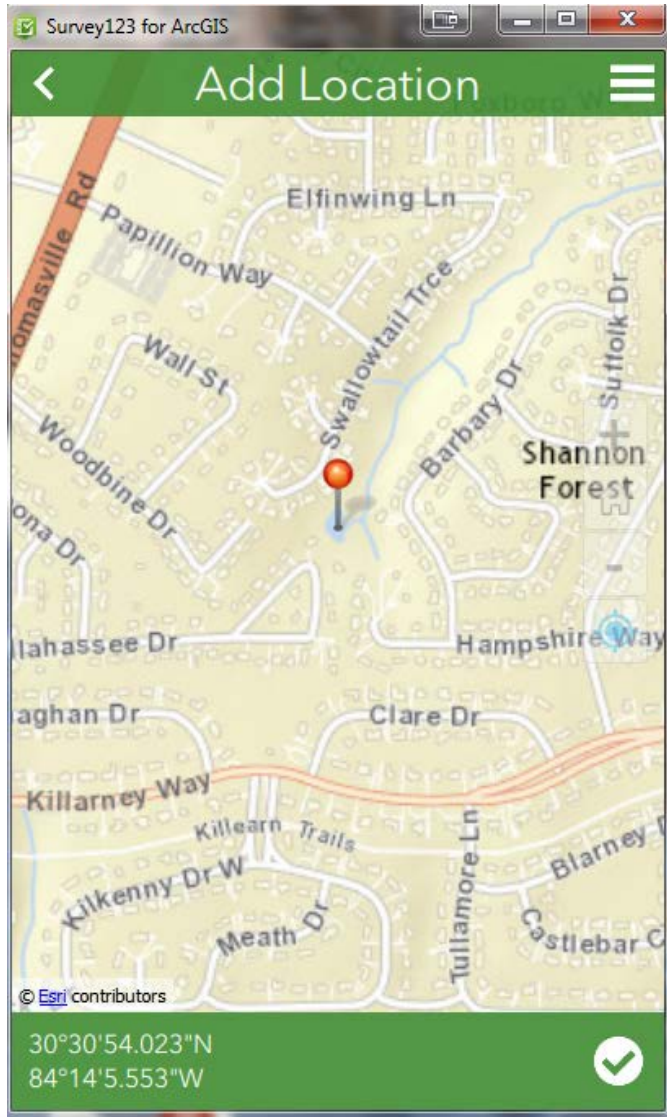
Survey Entry (3)

Take some pictures and upload them. Up to 3 can be added. A close-up and a landscape would be ideal.

The screenshot shows the 'Survey123 for ArcGIS' mobile application interface. The title bar at the top reads 'Survey123 for ArcGIS'. Below it, the form title is 'Algal Bloom Sample Information'. The form contains three sections for taking pictures, each with a camera icon and a gallery icon. The first section, 'Take Picture 1', shows a photo of a green algal bloom with the filename 'Image1-31c0f36931004e13aab0dc9d2592c4ee.jpg'. The second section, 'Take Picture 2', and the third section, 'Take Picture 3', are currently empty. Below the picture sections is an 'Add Location *' section with a text input field showing the coordinates '30°31'N 84°14'W' and a map view showing a red location pin. A green checkmark icon is visible in the bottom right corner of the form.

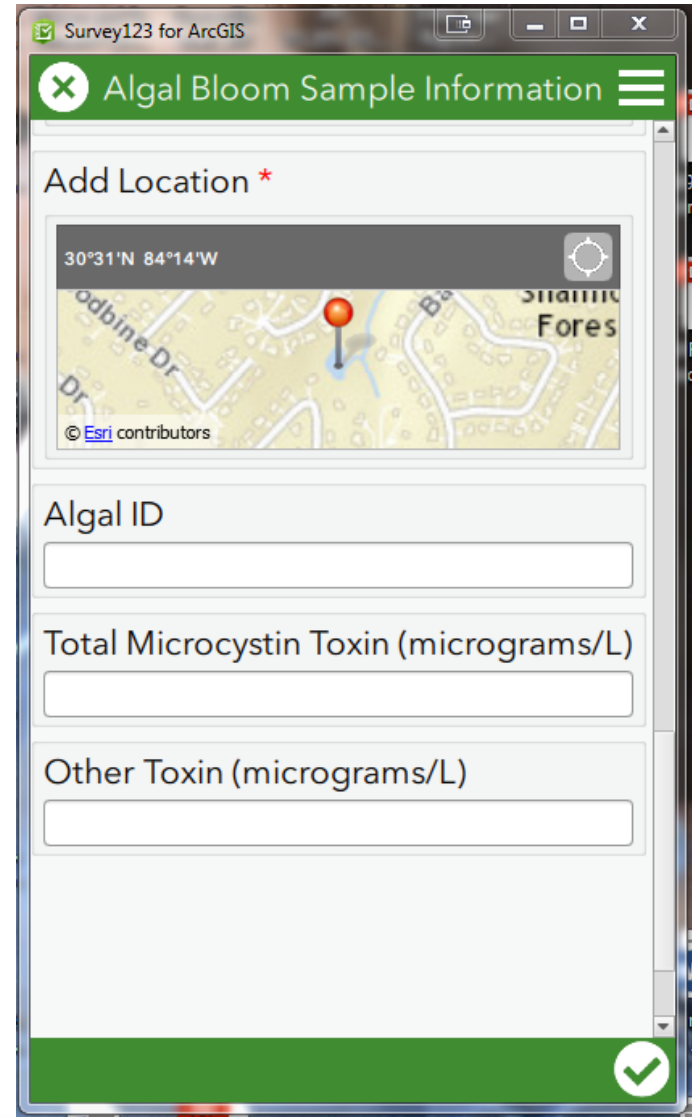


Survey Entry (4)



Move the map to place the dropped pin on your sampling location. Can zoom in for accuracy.

Algal ID, Total Microcystin Toxin and Other Toxin will be filled in by the lab. Leave this blank in Survey 123.





Instant Point Upload

Survey123 for ArcGIS

< Algae Sample Collection Outbox

SiteVisitDate:5/18/2017 9:01 AM, Location:Big Green Canal XYZ, County:Leon...
Modified 5/8/2017 1:10 PM

Sending SiteVisitDate:
5/18/2017 9:01 AM,
Location:Big Green Canal
XYZ, County:Leon,
Visitor:FDEP_TLH_ROC,
SampleTaken:Yes
Adding Attachment 1 of 1

List Map Send

Survey123 for ArcGIS

< Algae Sample Collection

Survey123 form for algal bloom sample collection

This template includes all XLSForm features supported in Survey123 for ArcGIS.

Collect
Start collecting data

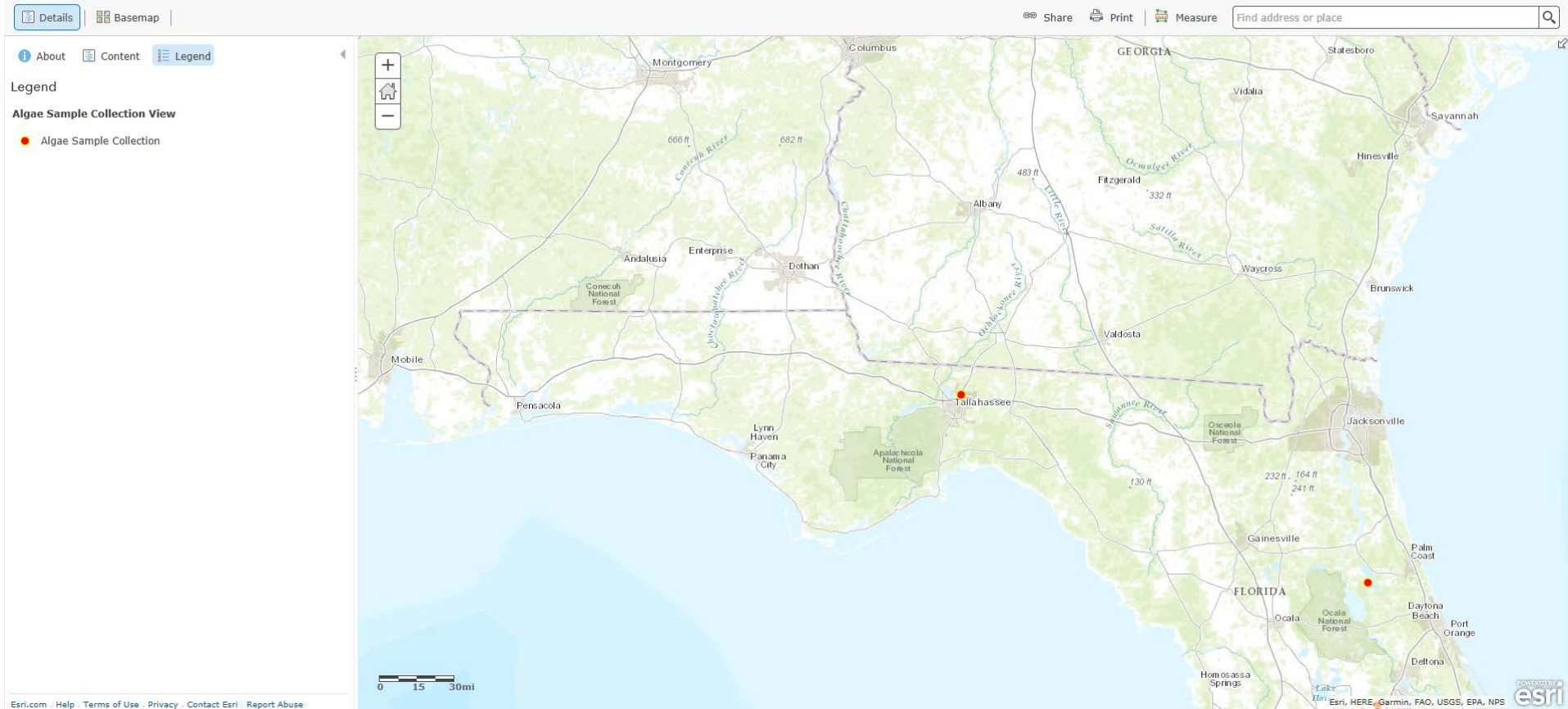
Sent
Review sent survey data



Mapped Sampling Point

ArcGIS ▾ Florida Algal Bloom Sample Collection View

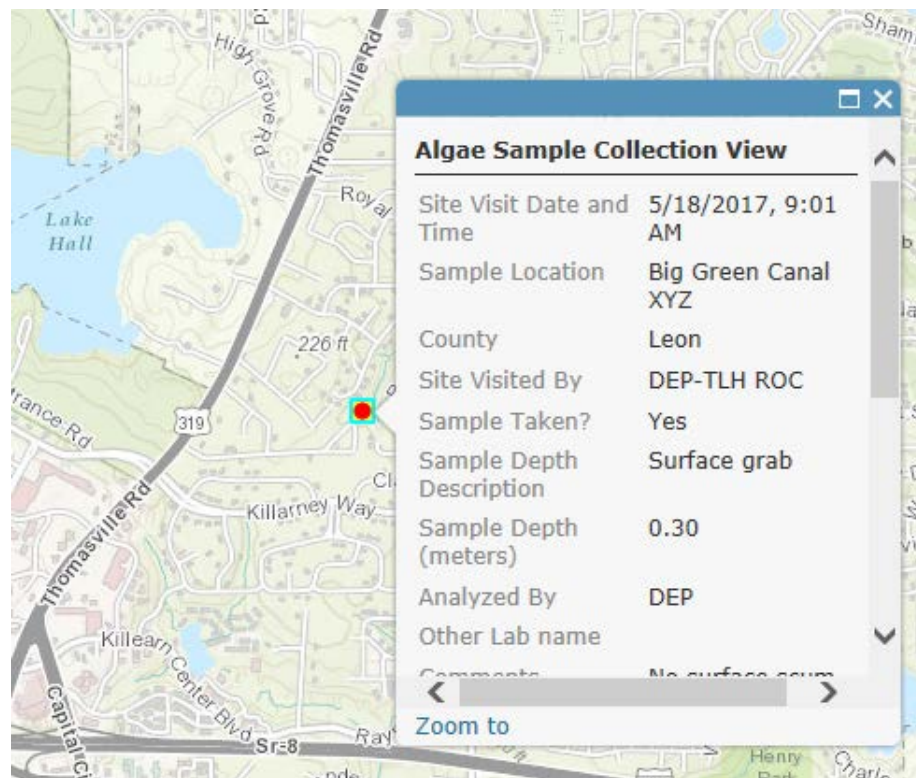
Modify Map Sign In



[Algal Bloom Monitoring and Response Website](#)
[Florida Algal Bloom Sample Collection Map](#)



Mapped Sampling Point – Detailed View



Algae Sample Collection View

Site Visit Date and Time	5/18/2017, 9:01 AM
Sample Location	Big Green Canal XYZ
County	Leon
Site Visited By	DEP-TLH ROC
Sample Taken?	Yes
Sample Depth Description	Surface grab
Sample Depth (meters)	0.30
Analyzed By	DEP
Other Lab name	
Comments	No surface scum present. Water was light green in color.
Latitude	30.5150
Longitude	-84.2349
Algal ID	
Total Microcystin Toxin (micrograms/L)	
Other Toxin (micrograms/L)	
Attachments:	
	Image1-31c0f36931004e13aab0dc9d2592c4ee.jpg



Summary

- Types of Bloom Samples
 1. SURFACE GRAB
 2. SURFACE SCUM
 3. WATER COLUMN at DEPTH
 4. SCUM SAMPLE CORE
 5. ALGAL MAT
- Survey 123
 - Installs, Login, Survey Entry, Viewing points on the map
- Next Steps
 - Revising the cyanobacteria bloom form reporting sheet.



Questions

Jennifer Walters

DEAR

Biology Program

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