

Aerial Monitoring



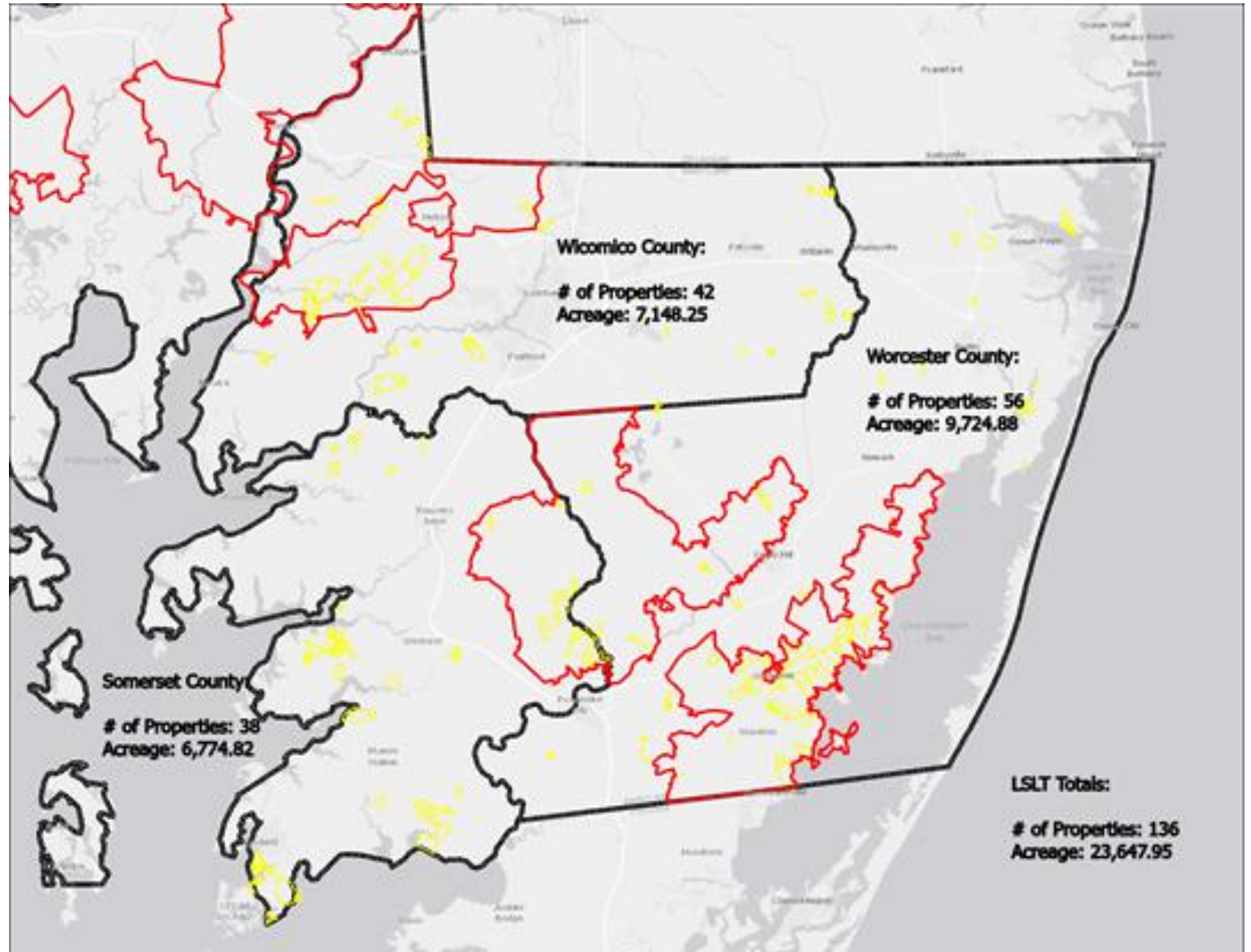
The Nature
Conservancy
Protecting nature. Preserving life.™



Land Trust Alliance

Together, conserving the places you love

Lower Shore Land Trust Service Area



Why Go Remote?





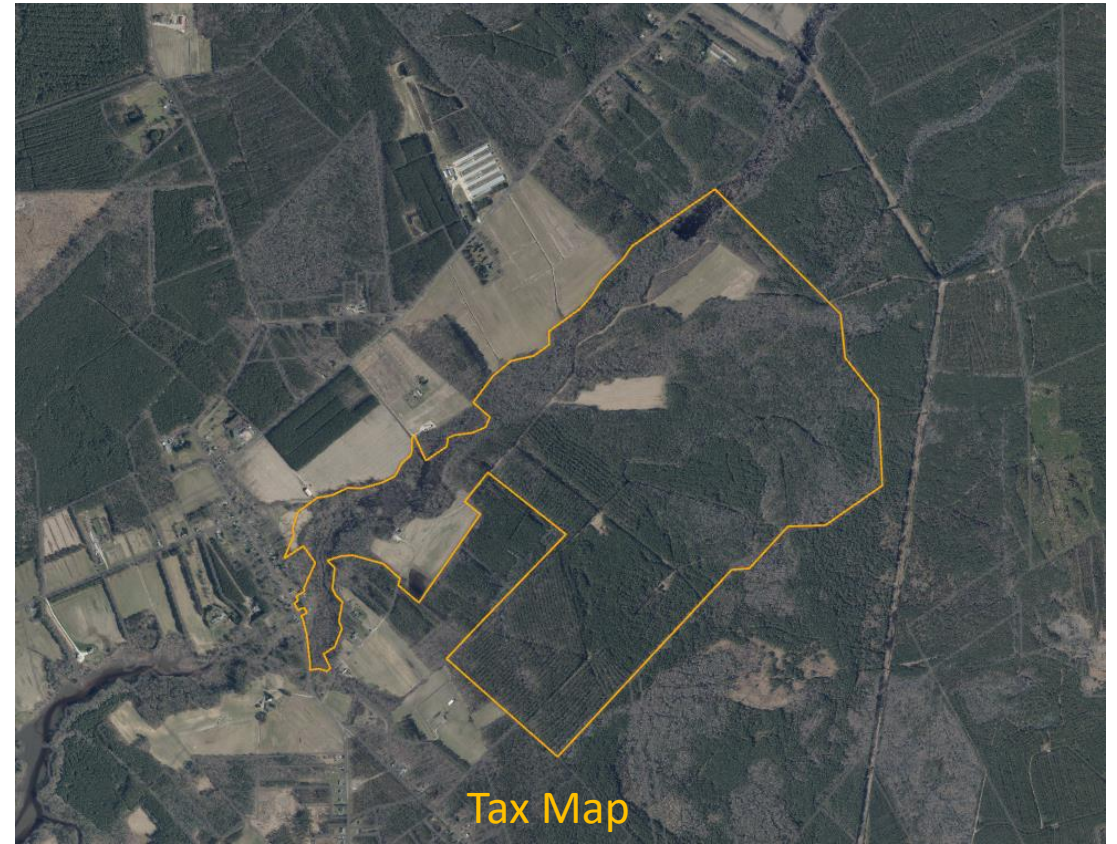
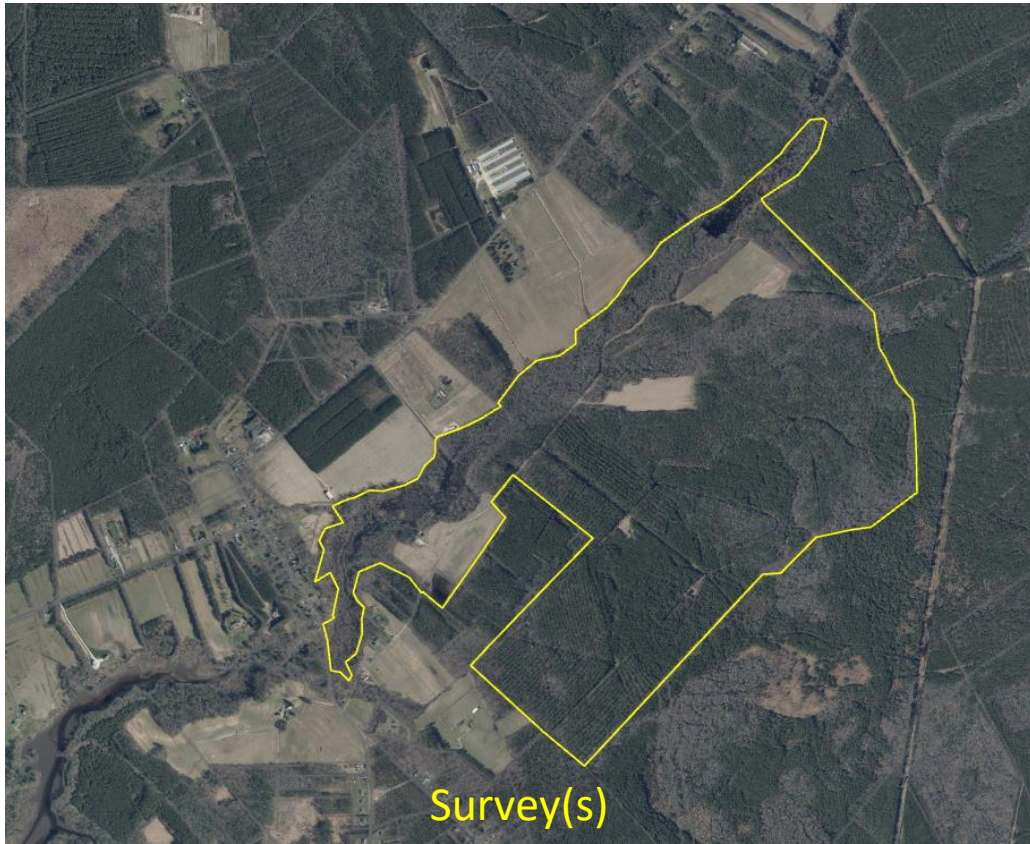
LSLT Demographics

- Worcester, Somerset, and Wicomico Counties on Maryland's Eastern Shore
- Currently 136 Easements
- Total Acres: 22901 acres
- Forested: 12254 acres
- Cropland: 4393 acres
- Wildlife and Marsh Habitat: 5565 acres

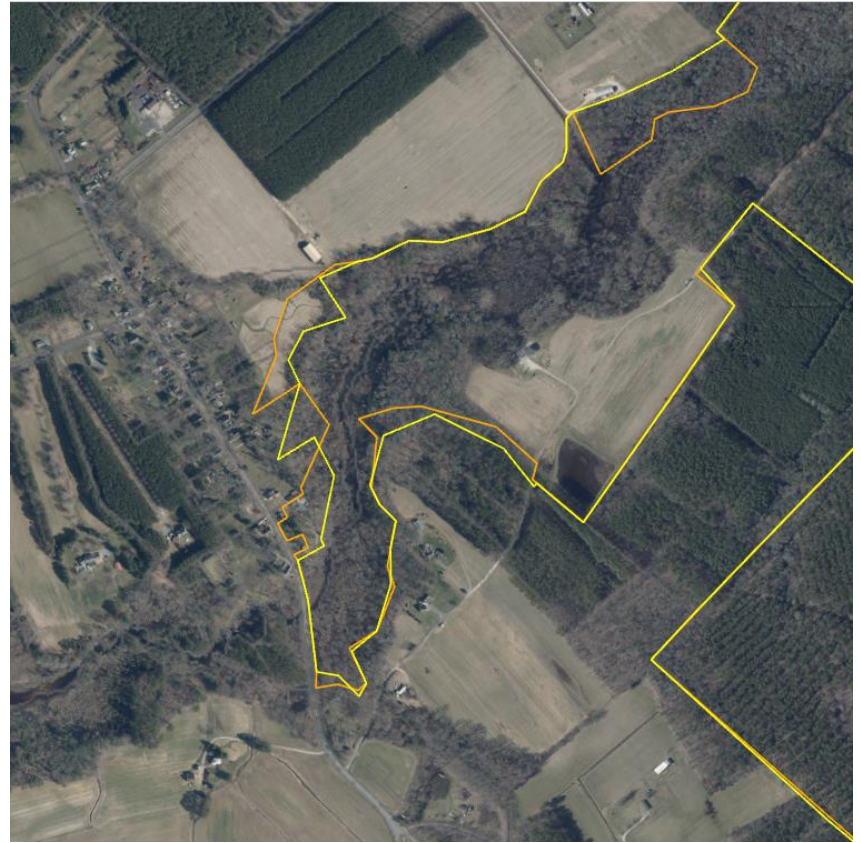
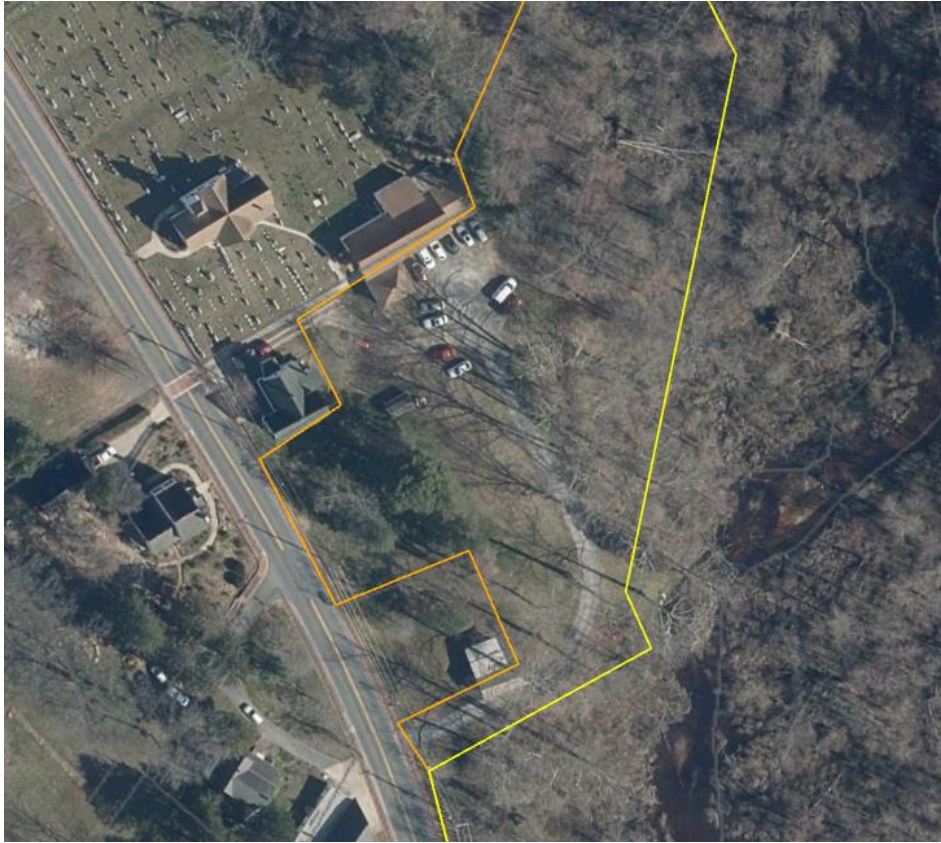


Coastal Flooding

The Importance of Good GIS Shape Files



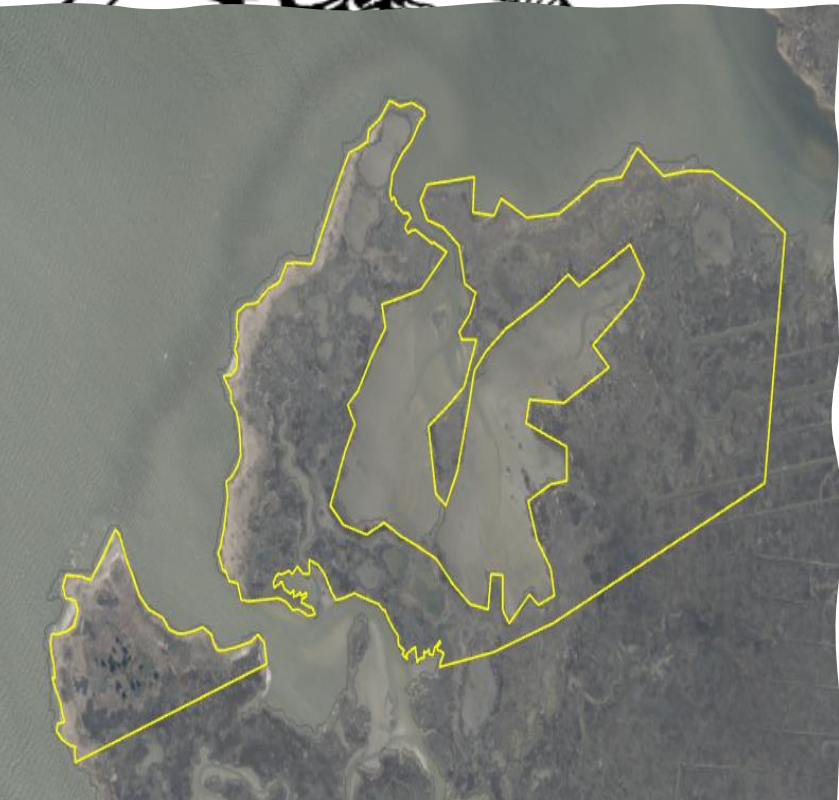
The Importance of Good GIS Shape Files





Coastal Marsh

- Sea Level Rise
- Land Subsistence
- WE ARE LOSING LAND!



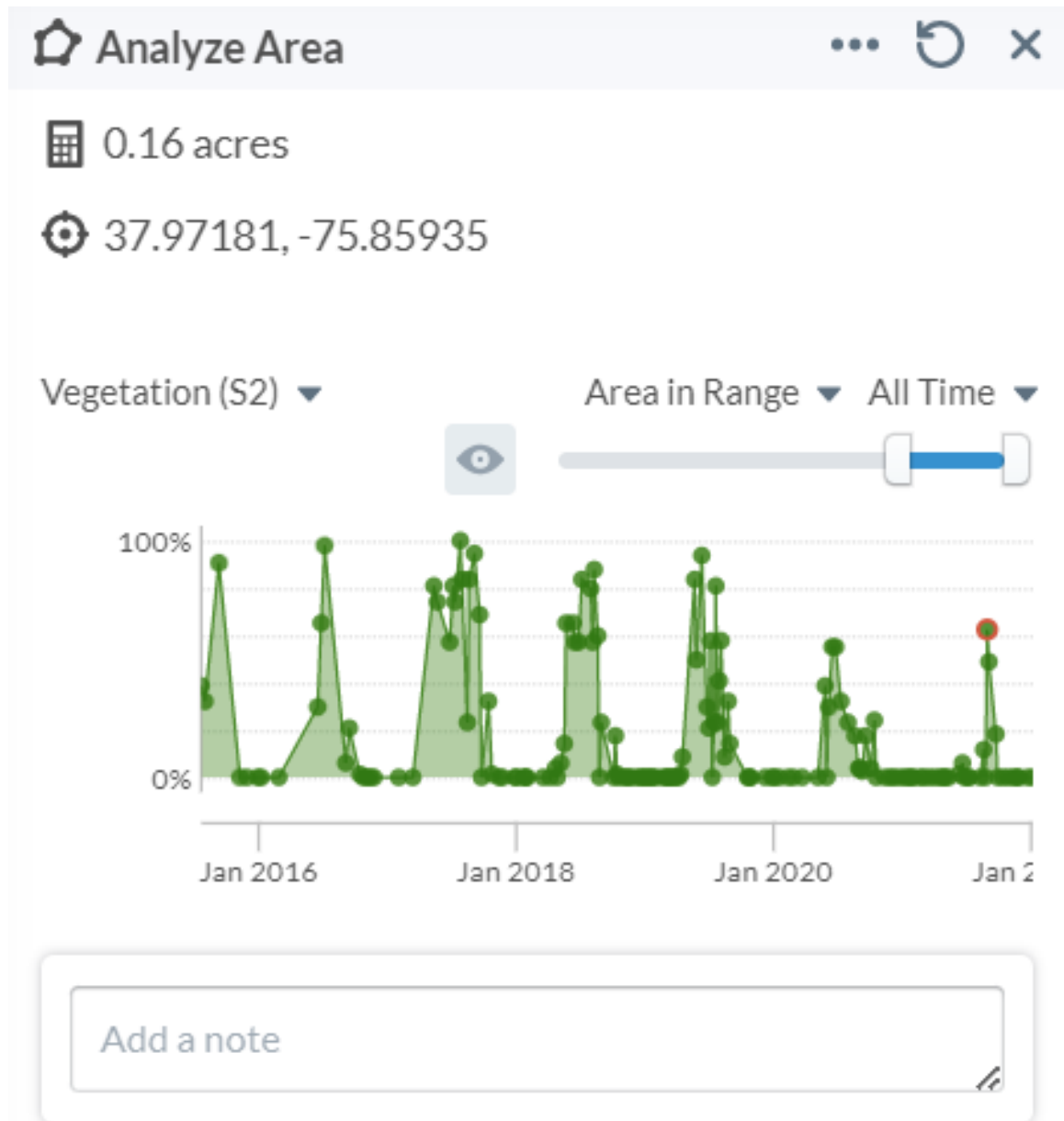
Top: Survey From 1969
Bottom: Present Image; Loss of 102 Acres
From 341.78 Acres

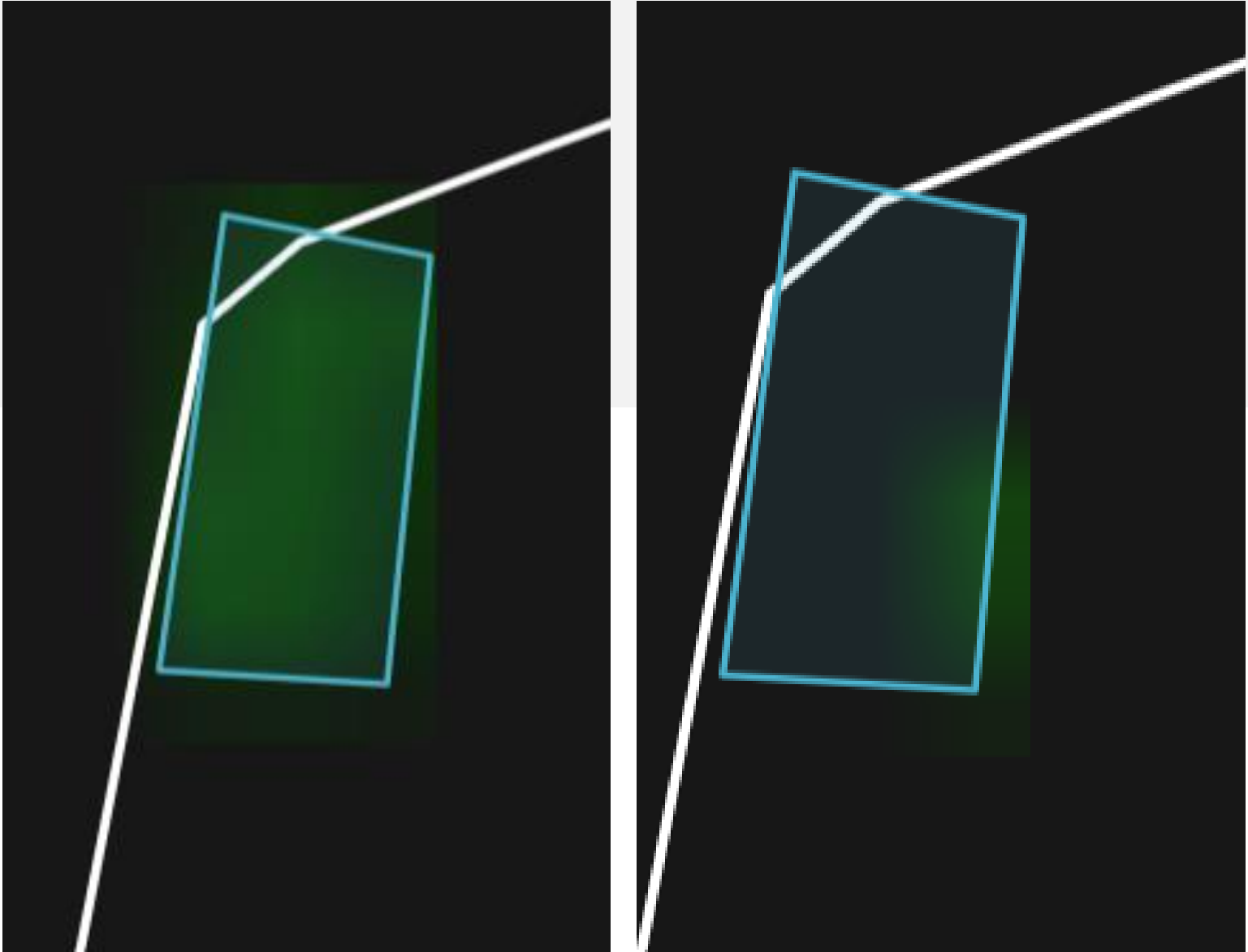


Lens Live
Demonstrations



Vegetation Tool





Vegetation Tool

- August 2017 VS. August 2021

Interpretation of Image

- Land Use
- Structures
- Buffers (and water features)
- Overall Impressions
- “Notes”
 - If nothing notable, added surface water/moisture
- No definitive statements



Conservation Easement Monitoring Report – Joyner/Monroe

Lower Shore Land Trust
100 River Street, Snow Hill, Maryland 21863

Profile

Conservation Easement Name: Joyner/Monroe
LSLT Easement Number: 021JOY00.WOR

MET #: 0563JOY00.WORC
RL #: RL-0043
FRPP #: N/A

Type of Easement: CBRL
Partners: LSLT, MET, DNR
Easement Address: 6020 Pike Lane, ~~Girdletree~~, MD 21829

County: Worcester

Tax Map(s): 86 Parcel(s): 119

Total Easement Acreage: 29.19

Current Landowner: Harkins Farm, LLC. c/o David Harkins
Mailing Address: 31400 Winterplace Parkway, Suite 400, Salisbury, MD 21804
Phone Number: 410-546-5239
Email: david@harkinsgroup.net
Ownership Date: 9/18/2015
New Owner: No Welcome Letter Date: N/A

Previous Landowner: Fred Joyner; Paula Monroe

Existing Structures: None Structures Allowed Under Easement: 0

Conservation Values: Rural Legacy Area, Worcester County Comprehensive Plan, buffers, habitat, scenic value

Management Plans: N/A

Unique features and Attributes: N/A

Buffer: Yes

Hunting: None Deer Turkey Waterfowl Other

Hunting Note: Hunting s

021JOY00.WOR – Joyner/Monroe

Remote Monitoring Report

Lower Shore Land Trust

December 2, 2021

Profile

Conservation Easement Name: Joyner/Monroe
LSLT Easement Number: 021JOY00.WOR
MET #: 0563JOY00.WORC
RL #: RL-0043
FRPP #: N/A
Type of Easement: CBRL
Partners: LSLT, MET, DNR

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Email: david@harkinsgroup.net
Ownership Date: 9/18/2015
New Owner: No
Welcome Letter Date: N/A
Previous Landowner: Fred Joyner; Paula Monroe
Existing Structures: None
Structures Allowed Under Easement: 0
Conservation Values: Rural Legacy Area, Worcester County Comprehensive Plan, buffers, habitat, scenic value
Management Plans: N/A
Unique features and Attributes: N/A
Buffer: Yes
Hunting: None Deer Turkey Waterfowl Other
Hunting Note: Hunting s

Monitoring Information

Date: 12/2/2021
Type of Monitoring: Aerial Monitoring
Reporter: Frank Deuter, Staff



Property Overview



CAPTURE DATE
January 9, 2021

SOURCE
Maxar WorldView (0.5m)
Includes copyrighted material of Maxar Technologies Inc. 2021

Observation 1



■ Building footprints ■ Flowlines

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 2, 2021

NOTE
Land Use: Mostly Pine Forest, Marsh on Eastern part of property. Homestead in Southern central section. CREP in center of property as well, different easement.

Image

CAPTURE DATE
January 9, 2021

SOURCE
Maxar WorldView (0.5m)
Includes copyrighted material of
Maxar Technologies Inc. 2021

Observation 2



■ Building footprints ■ Flowlines

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 2, 2021

NOTE
Structures: 2 footprints observed. Some objects that are not clear around structures. No concerns.

Image

CAPTURE DATE
January 9, 2021

SOURCE
Maxar WorldView (0.5m)
Includes copyrighted material of
Maxar Technologies Inc. 2021

Observation 3



■ Building footprints ■ Flowlines

Image

CAPTURE DATE
January 9, 2021

SOURCE
Maxar WorldView (0.5m)
Includes copyrighted material of
Maxar Technologies Inc. 2021

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 2, 2021

NOTE

Buffer: All buffers around flowlines seem to be adequate. CREP area seems fully intact. No concerns.

Observation 4



■ Building footprints ■ Flowlines

Image, top

CAPTURE DATE
March 1, 2019

SOURCE
Maryland Environmental Trust
Imagery
Maryland Environmental Trust

Image, bottom

CAPTURE DATE
January 9, 2021

SOURCE
Maxar WorldView (0.5m)
Includes copyrighted material of
Maxar Technologies Inc. 2021

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 2, 2021

NOTE

Overall Impressions: No concerns observed. Very little changes except for land loss due to sea level rise from 2019 to 2021. Between 5-25ft from 2019-2021. 2005-2019 up to 50ft.

Observation 5



■ Building footprints ■ Flowlines

Dry Water

Image

CAPTURE DATE
August 14, 2018

SOURCE
Surface Water (NAIP)
USDA NAIP (1m)
U.S. Department of Agriculture, Farm
Service Agency.

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 2, 2021

NOTE
Notes: Most of property seems fairly wet. Sea level land loss.

Observation 6



■ Building footprints ■ Flowlines

Image

CAPTURE DATE
March 1, 2019

SOURCE
Maryland Environmental Trust
Imagery
Maryland Environmental Trust

Interpretation

CENTER
38.06685, -75.37328

AREA
559.80 acres

INTERPRETER
Frank Deuter

INTERPRETATION DATE
December 23, 2021

NOTE
Note #2: Joyner/Monroe 067JOY04.WOR also done on this aerial. No concerns observed with CREP.

Summary of Methods and Grant Deliverables

- 134 Properties Aerial
- 58 Properties Ground

- Averages
- Used the 58 Properties for direct comparison

Return on Investment Calculator

Property Information			Monitoring Event Details							
Organization name	Property name	Property acreage	Monitoring year	Multiple monitoring methods used?	Monitoring method	Technology	Data sources (list e.g. Sentinel, NAIP, Spot, Near Space Labs, PlanetScope, etc.)	Imagery Resolution	Acres monitored using this approach	Estimated % of property observed
Lower Shore Land Trust	Adkins	785	2021	Yes	Remote	Lens	Maxar	0.5m	785	100%
Lower Shore Land Trust	Adkins	785	2021	Yes	In-Person	Automobile	Ground Images		39	5%
Lower Shore Land Trust	Banks	114	2021	Yes	Remote	Lens	Maxar	0.5m	114	100%
Lower Shore Land Trust	Banks	114	2021	Yes	In-Person				34	30%
Lower Shore Land Trust	Beauchamp, Jimmy	66.26	2021	No	Remote	Lens	Maxar	0.5m	66	100%
Lower Shore Land Trust	Beauchamp, Larry	102.39	2021	No	Remote	Lens	Maxar	0.5m	102	100%
Lower Shore Land Trust	Bowman	98	2021	No	Remote	Lens	Maxar	0.5m	98	100%
Lower Shore Land Trust	Breeding	144	2021	No	Remote	Lens	Maxar	0.5m	144	100%
Lower Shore Land Trust	Breeding-Hall	272	2021	Yes	Remote	Lens	Maxar	0.5m	272	100%
Lower Shore Land Trust	Breeding-Hall	272	2021	Yes	In-Person				14	5%
Lower Shore Land Trust	Brokaw	288	2021	No	Remote	Lens	Airbus	1.5m	288	100%
Lower Shore Land Trust	Brummitt	82	2021	Yes	Remote	Lens	Maxar	0.5m	82	100%
Lower Shore Land Trust	Brummitt	82	2021	Yes	In-Person				12	15%
Lower Shore Land Trust	Burnett-1990	26	2021	Yes	Remote	Lens	Airbus	1.5m	26	100%
Lower Shore Land Trust	Burnett-1990	26	2021	Yes	In-Person				26	100%
Lower Shore Land Trust	Burnett-2001	68	2021	Yes	Remote	Lens	Airbus	1.5m	68	100%

Return on Investment Calculator

Labor						Expenses							Qualitative		
Preparation hours	Travel hours	Monitoring hours	Reporting hours	Total hours	Portion of hours completed by volunteer	Personnel costs	Volunteer value contributed	Contractor costs	Imagery costs (not including platform costs)	Travel cost	Miles traveled	Other expenses	Met monitoring obligations using this approach?	Satisfaction with this approach	# of violations or threats to conserved land detected
0.1	0	0.45	0.4	0.95	0	\$ 23.75	\$ -		\$ 62.75	\$ -	0		No	Very satisfied	1
1	1	3	2	7	0	\$ 175.00	\$ -	\$ -	\$ -	\$ 33.04	59		Yes	Somewhat satisfied	0
0.1	0	0.15	0.4	0.65	0	\$ 16.25	\$ -		\$ 9.60	\$ -	0		No	Very satisfied	0
1	1	0.5	4	6.5	0	\$ 325.00	\$ -	\$ -	\$ -	\$ 19.60	35	\$ -	Yes	Somewhat satisfied	\$ -
0.1	0	0.25	0.4	0.75	0	\$ 18.75	\$ -		\$ 5.28	\$ -	0		Yes	Very satisfied	0
0.1	0	0.15	0.4	0.65	0	\$ 16.25	\$ -		\$ 8.16	\$ -	0		Yes	Very satisfied	0
0.1	0	0.25	0.4	0.75	0	\$ 18.75	\$ -		\$ 7.84	\$ -	0		Yes	Somewhat satisfied	0
0.1	0	0.15	0.4	0.65	0	\$ 16.25	\$ -		\$ 11.44	\$ -	0	\$ -	Yes	Very satisfied	0
0.1	0	0.3	0.4	0.8	0	\$ 20.00	\$ -		\$ 21.76	\$ -	0		No	Somewhat satisfied	
1	0.5	0.4	2	3.9	2.7	\$ 97.50	\$ 67.50			\$ 5.60	10	\$ -	Yes	Somewhat satisfied	0
0.1	0	0.5	0.4	1	0	\$ 25.00	\$ -		\$ 14.30	\$ -	0	\$ -	Yes	Very satisfied	0
0.1	0	0.1	0.4	0.6	0	\$ 15.00	\$ -		\$ 6.84	\$ -	0		No	Very satisfied	0
1	0.5	0.2	2	3.7	0	\$ 185.00	\$ -	\$ -		\$ 5.60	10	\$ -	Yes	Very satisfied	0
0.1	0	0.2	0.4	0.7	0	\$ 17.50	\$ -		\$ 1.25	\$ -	0	\$ -	No	Somewhat Dissatisfied	0
1	1	0.5	2	4.5	0	\$ 225.00	\$ -			\$ 14.00	25	\$ -	Yes	Somewhat satisfied	0
0.1	0	0.15	0.4	0.65	0	\$ 16.25	\$ -		\$ 2.45	\$ -	0	\$ -	No	Somewhat satisfied	0
1.5	1	1.15	2	5.65	0	\$ 282.50	\$ -			\$ 0.56	1	\$ -	Yes	Somewhat satisfied	
0.1	0	0.1	0.4	0.6	0	\$ 15.00	\$ -		\$ 3.65	\$ -	0	\$ -	No	Somewhat satisfied	0
1	1	1.5	4	7.5	0	\$ 375.00	\$ -	\$ -	\$ -	\$ 33.60	60		Yes	Somewhat dissatisfied	0
0.1	0	0.35	0.4	0.85	0	\$ 42.50	\$ -		\$ 5.68	\$ -	0	\$ -	No	Very satisfied	0
1	0.3	0.3	2	3.6	0	\$ 180.00	\$ -			\$ 0.84	15		Yes	Somewhat satisfied	0

Cost of LENS

Plans designed for your organization

Monitor landscapes with ease and efficiency

Non-profit

Commercial

LENS FOCUS

\$210 USD / mo
Billed yearly (\$2500)

Get started with Lens Focus

All our standard features for monitoring and reporting

Up to 5 user seats

LENS PLUS

\$500 USD / mo
Billed yearly (\$6000)

Get started with Lens Plus

Advanced features

Tailored set-up and training

Priority support

Up to 15 user seats

ENTERPRISE & GOVERNMENT

Contact us

Let's chat

Discounts for multiple organizations and business units

Dedicated technical account manager

Custom integrations and data migration

Unlimited users for your organization

LSLT Findings All Properties (Not Including Imagery Base Price)

- Ground 58 Properties:
 - Expenses: \$11,731.82
 - Average: \$202.27
 - **Multiplied by 136 Properties: \$27,509.09**
 - Average Time: 4.98 Hours
 - Multiplied by 136 Properties: 677.68 Hours
- Aerial 134 Properties:
 - Expenses: \$7,307.81
 - Average: \$54.54
 - **Multiplied by 136 Properties: \$7,416.88**
 - Average Time: 0.81 Hours
 - Multiplied by 136 Properties: 110.10 Hours

LSLT Findings Direct Comparison of 58 Properties (Not Including Imagery Base Price)

- Ground 58 Properties:

- Expenses: \$11,731.82
- Expenses Average: \$202.27

- Time: 289 Hours
- Time Average: 4.98 Hours

- Aerial 58 Properties:

- Expenses: \$3,184.83
- Expenses Average: \$54.91

- Time: 48 Hours
- Time Average: 0.82 Hours



Year 2

- There is a Savings!
- Timing and Availability of Imagery Availability of High Resolution
 - 0.5m or Better!
- Need to Change Monitoring Year???
- Policies and Procedures
- Learn From “Office Hours”

Landowner relations



**Reduced
Engagement Year to
Year With
Landowners.**



**Sent Landowners
Printout of Page 2 of
Reports.**

Property Overview



**Considering Other
Engagement
Methods**

Inviting Landowners to
office

Remote Monitor With
Landowner

Landowner Workshops



Volunteers

- Hidden Cost/Benefit
 - Cost That Isn't Paid
- We Require at Least 2 People Per Visit
- Remote Uses Less Staff Time and a Lot Less Volunteer Time



Volunteers

- Not All Volunteers are Comfortable With Technology
- We Are Trying to Engage New Volunteers
 - Training Those Who Are Interested



1.5m VS. MD 6in Imagery



0.5m VS. MD 6in Imagery



LTA Standards

- 1 Ground Out of Every 5 Years
- Monitoring Fiscal Year VS. Calendar Year





Scheduling

- Multiple Grantees
- Last Year 58 Required Ground Visits
- This Year, 72 Require Ground Visits

Must figure out best way to incorporate remote while fulfilling the program requirements



Change in LSLT Policies

- New Stewardship and Monitoring Policy
 - Conforms to LTA Standards and LSLT's Existing Policies
 - Incorporates Remote Monitoring
- Incorporate Landowners
- Utilize Volunteers



Questions Or Comments?

Contact Info

- Jared Parks-Land Programs Manager
 - jparks@lowershorelandtrust.org
- Frank Deuter-Stewardship Coordinator
 - fdeuter@lowershorelandtrust.org

