



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Wood is Good!

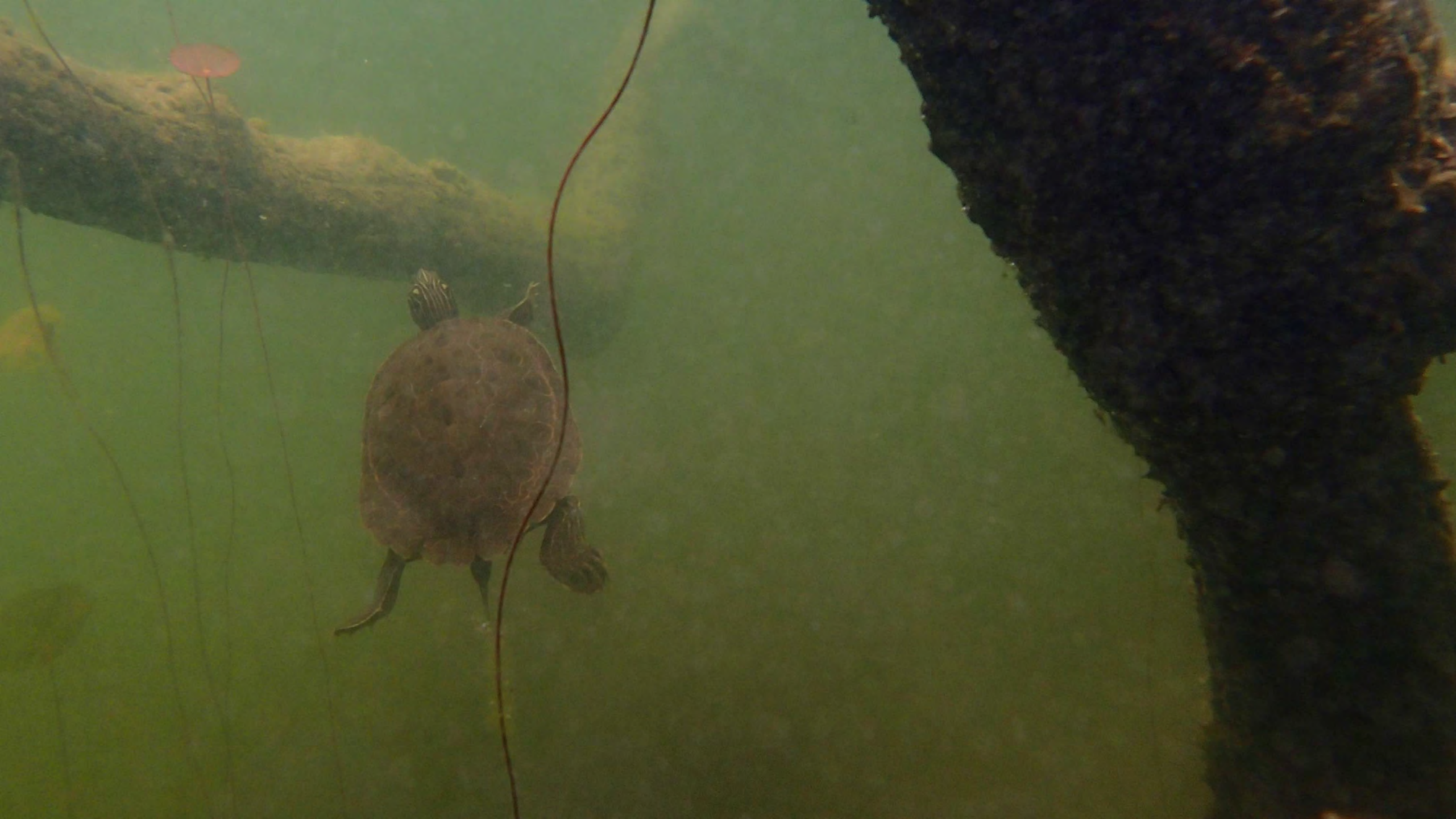
Woody habitat in lakes for fish and more

ERIC CALABRO, WETLANDS, LAKES, AND STREAMS PROGRAM

CALABROE@MICHIGAN.GOV







Design examples

DESIGNING YOUR PROJECT FOR SUCCESS

Project designs that mimic natural processes





WOODY STRUCTURE LENGTH INTO THE
WATER FROM ORDINARY HIGH WATER
MARK = ___ FEET

___ CUBIC
YARDS FILL

DISTANCE FROM WOODY
STRUCTURE TO ACCESS POINTS
AND/OR PROPERTY LINES

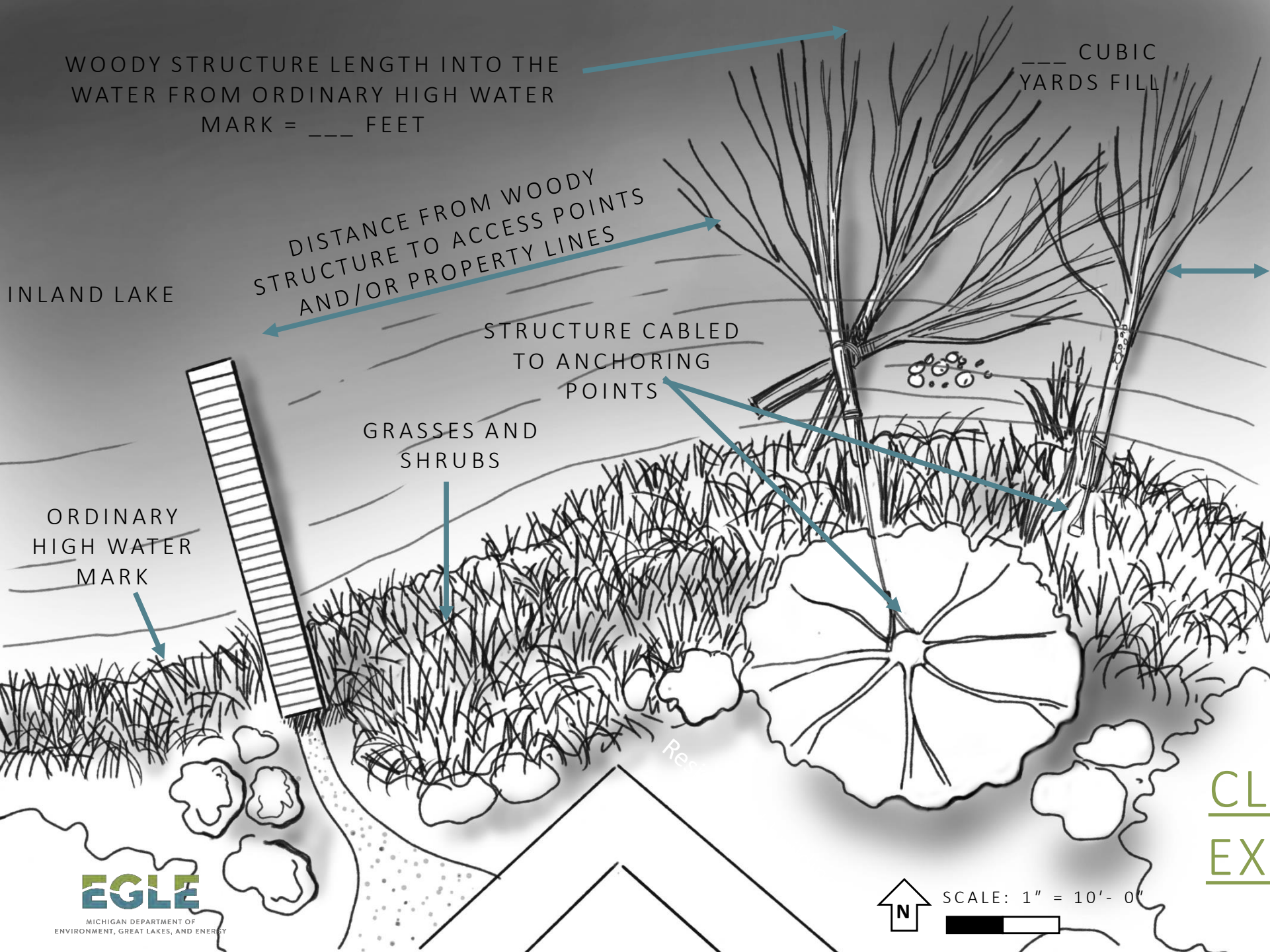
DISTANCE FROM
WOODY STRUCTURE TO
ACCESS POINTS
AND/OR PROPERTY
LINES

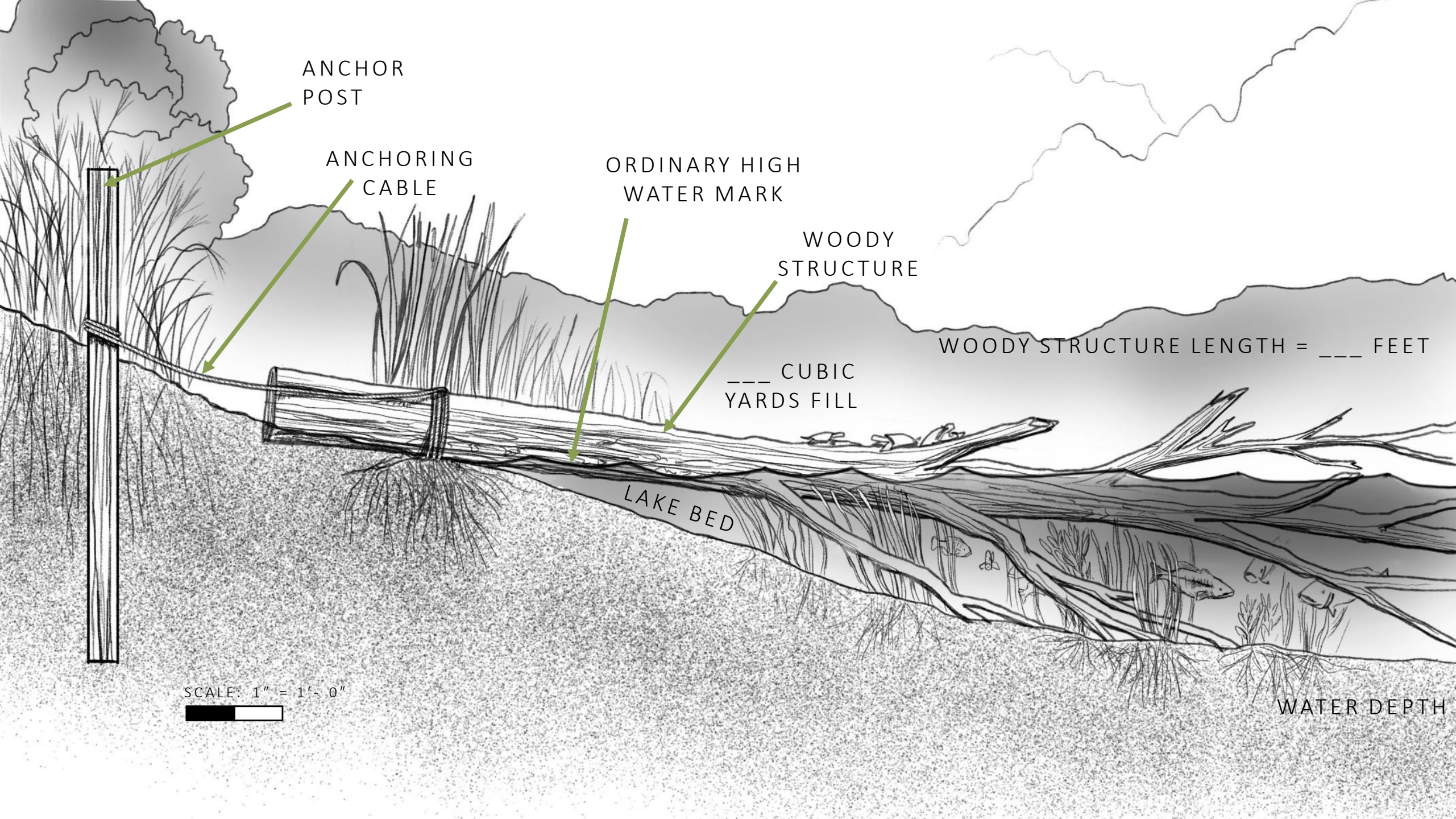
STRUCTURE CABLED
TO ANCHORING
POINTS

GRASSES AND
SHRUBS

ORDINARY
HIGH WATER
MARK

[CLICK HERE FOR
EXAMPLE PLANS](#)





ANCHOR
POST

ANCHORING
CABLE

ORDINARY HIGH
WATER MARK

WOODY
STRUCTURE

___ CUBIC
YARDS FILL

WOODY STRUCTURE LENGTH = ___ FEET

LAKE BED

SCALE: 1" = 1'-0"



WATER DEPTH

Example designs – Fish Sticks cluster





Freshly cut trees (within 3mo)

3-5 trees, 16" (or less)
diameter at base

Attached securely together
and to shoreline/bottomland

Do not use trees that are
currently along the shoreline!









Example designs – Single Fish Stick series





Freshly cut trees (within 3mo)

1 tree, 16" (or less) diameter
at base

Attached securely together
and to shoreline/bottomland

Do not use trees that are
currently along the shoreline!







Example designs – Turtle Log series



Example designs – Turtle Log series



Freshly cut logs (within 3mo)

Attached securely together
and to shoreline/bottomland

Do not use trees that are
currently along the shoreline!



Sat Jul 23 2022

Imagery © 2022 Nearmap, HERE

5ft

nearmap









Considerations

THINGS TO THINK THROUGH WHEN PLANNING YOUR PROJECT

Considerations

ENERGY LEVEL AND SECURE ATTACHMENT TO SHORELINE
NOT IMPEDING NAVIGATION, OTHER'S RIPARIAN RIGHTS, OR USE OF THE WATER BY OTHERS
DISTANCE AWAY FROM ACCESS POINTS, PROPERTY LINES, AND POTENTIAL HAZARDS

Energy level and secure attachment to shoreline

CABLE TO ANCHOR POST OR LIVE TREE

STAKE-IN TREES TO SHORELINE

KEY-IN TREES TO SHORELINE

DUCKBILL EARTH ANCHORS

USING NATURAL MATERIALS IS PREFERRED

DESIGN TO ENERGY LEVEL – HIGH VS LOW ENERGY DESIGNS

STAKING TREES INTO BOTTOMLAND AND SHORELINE





STAKING TREES INTO BOTTOMLAND AND SHORELINE



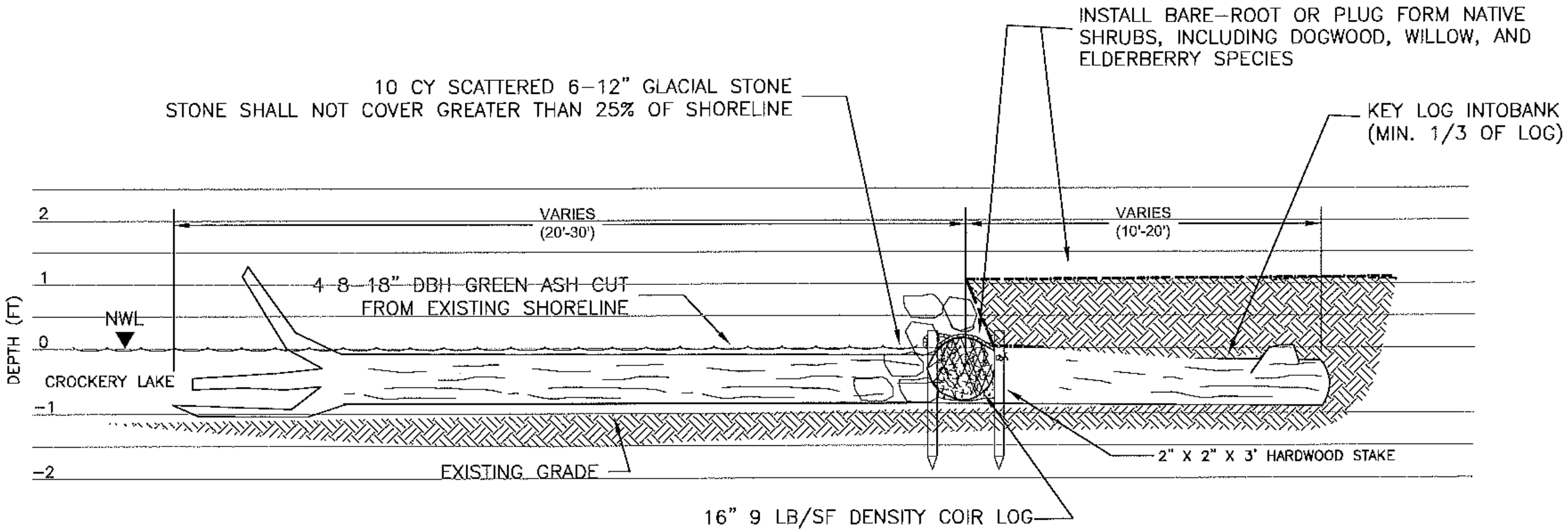


CABLING TREES INTO SECURE ANCHOR-
POINT ON SHORE



TREES KEYED-IN TO SHORELINE

HIGHER-ENERGY DESIGN





06/06/2012

Not impeding navigation



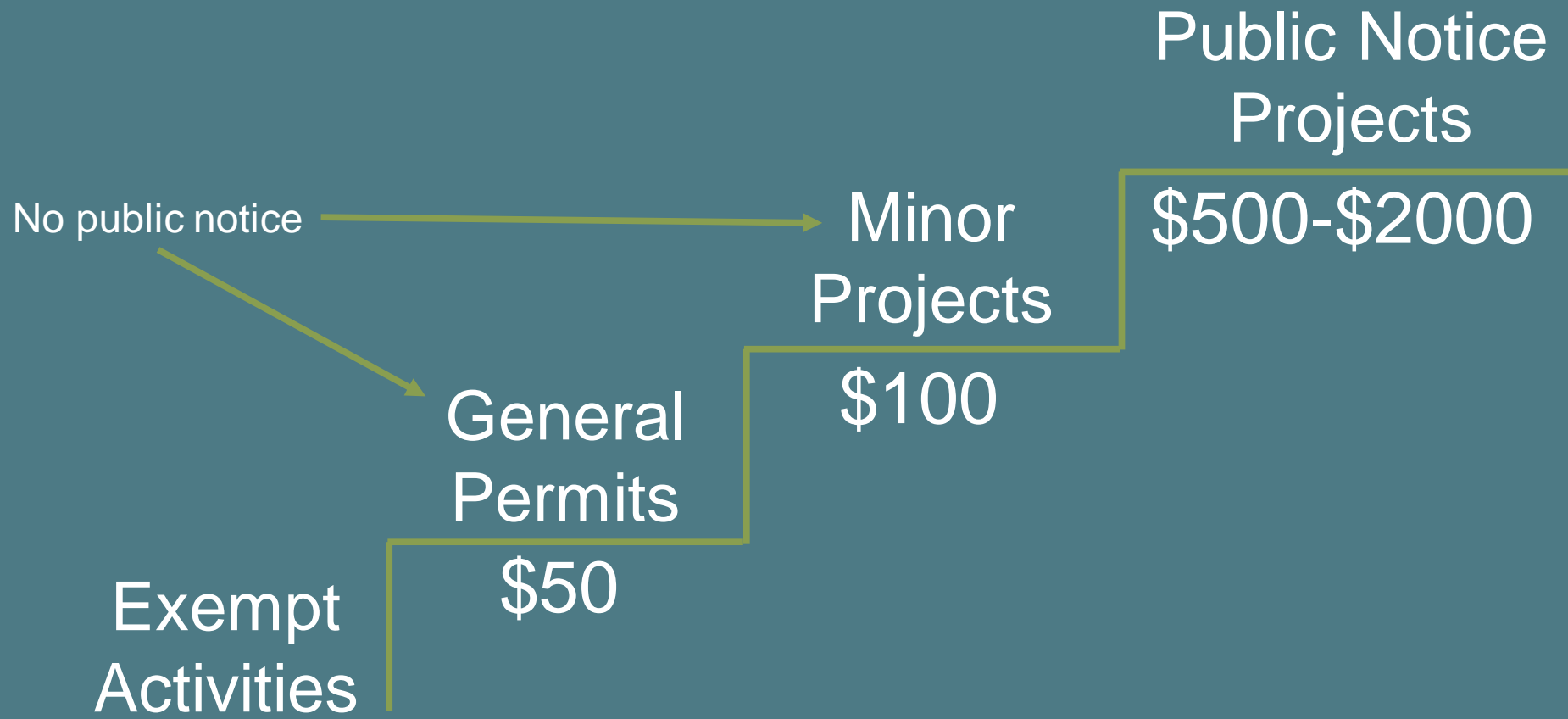
Staying within riparian interest area



Permitting

TIPS FOR COMPLETING YOUR PERMIT APPLICATION

3-Tiered Permitting System



Minor Project Category

FISH AND WILDLIFE HABITAT STRUCTURES | MP. 22

WRITTEN SUPPORT FROM DNR

STRUCTURE SHALL NOT INTERFERE WITH NAVIGATION OR BOATABILITY

STRUCTURE SHALL NOT INTERFERE WITH RIPARIAN RIGHTS OR USE OF THE WATER BY OTHERS

[CLICK HERE FOR CATEGORY DESCRIPTION AND CRITERIA](#)





WOODY STRUCTURE LENGTH INTO THE
WATER FROM ORDINARY HIGH WATER
MARK = ___ FEET

___ CUBIC
YARDS FILL

DISTANCE FROM WOODY
STRUCTURE TO ACCESS POINTS
AND/OR PROPERTY LINES

DISTANCE FROM
WOODY STRUCTURE TO
ACCESS POINTS
AND/OR PROPERTY
LINES

STRUCTURE CABLED
TO ANCHORING
POINTS

GRASSES AND
SHRUBS

ORDINARY
HIGH WATER
MARK

[CLICK HERE FOR
EXAMPLE PLANS](#)

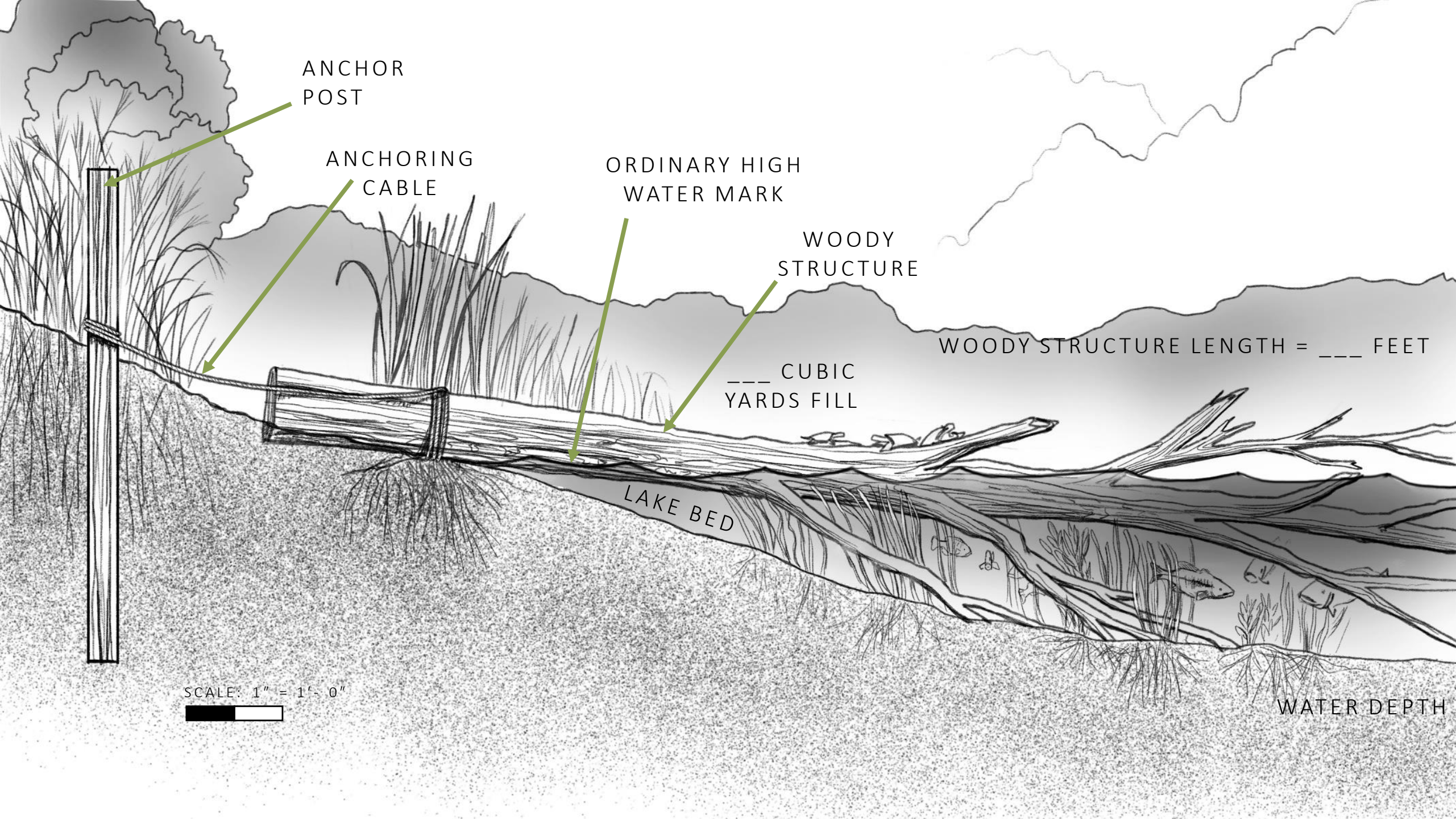


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SCALE: 1" = 10'- 0"





ANCHOR
POST

ANCHORING
CABLE

ORDINARY HIGH
WATER MARK

WOODY
STRUCTURE

___ CUBIC
YARDS FILL

WOODY STRUCTURE LENGTH = ___ FEET

LAKE BED

WATER DEPTH

SCALE: 1" = 1'-0"



Resources

WHERE TO GO FOR HELP

Website links for plans and information

[SHORELINE WOODY STRUCTURE FACT SHEET](#)

[SHORELINE WOODY STRUCTURE EXAMPLE PLANS](#)

[FISH STICKS IMPROVING LAKE HABITAT WITH WOODY
STRUCTURE](#)

[SHORELINE PROTECTION WEBSITE](#)

[PRE-APPLICATION MEETING INFORMATION](#)

[DISTRICT PERMITTING STAFF MAP](#)



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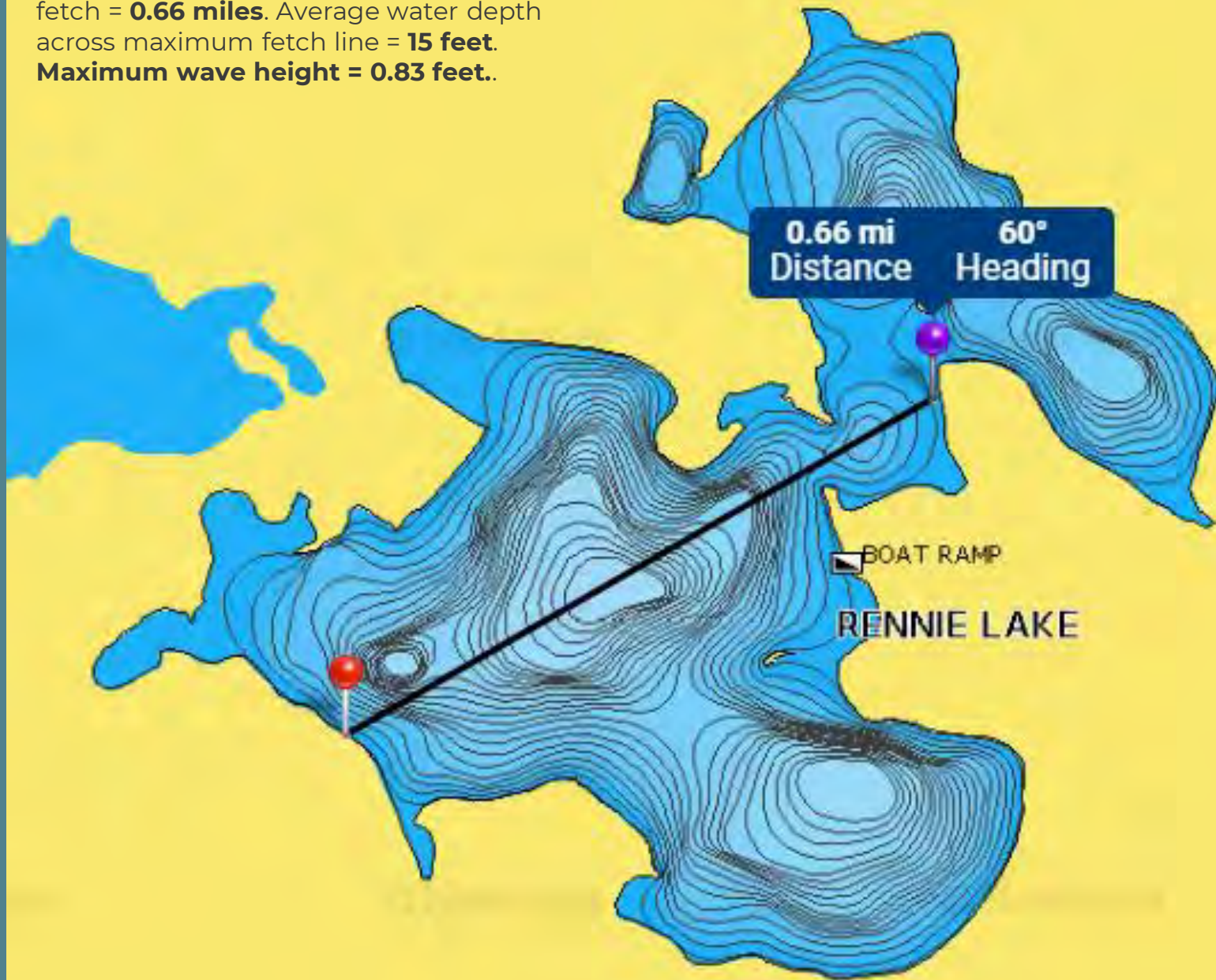
Project Example

RENNIE LAKE, GRAND TRAVERSE COUNTY

FISH STICKS CLUSTERS CABLED TO POSTS ON SHORELINE

LINK TO PERMIT: [WRP027079](#)

Fetch and boating activity: Maximum fetch = **0.66 miles**. Average water depth across maximum fetch line = **15 feet**. **Maximum wave height = 0.83 feet.**









Project Example

PORTAGE LAKE, LIVINGSTON COUNTY

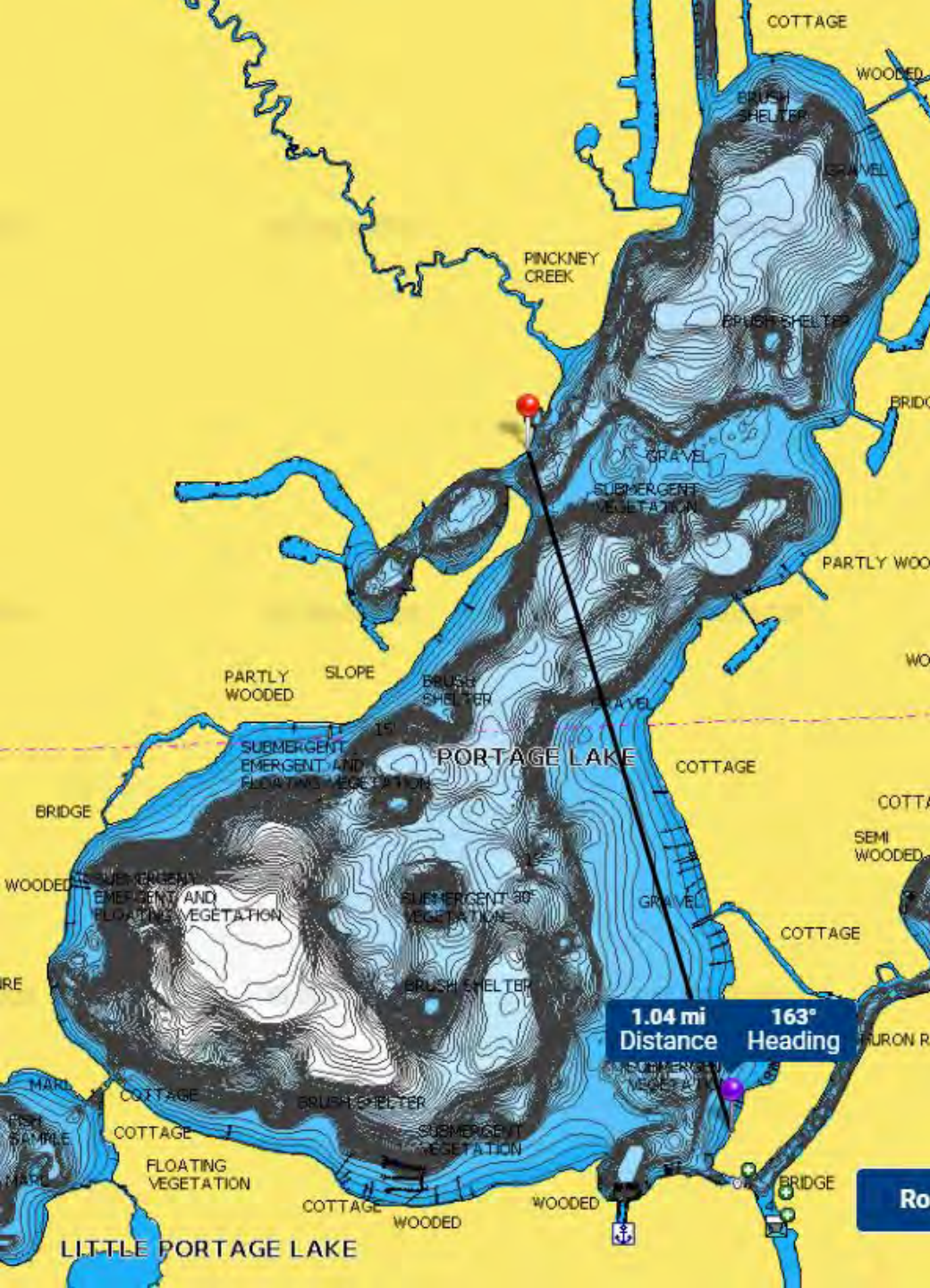
FISH STICKS CLUSTERS CABLED TO POSTS AND TREES ON SHORELINE

FISH STICKS CLUSTERS STAKED-IN TO SHORELINE

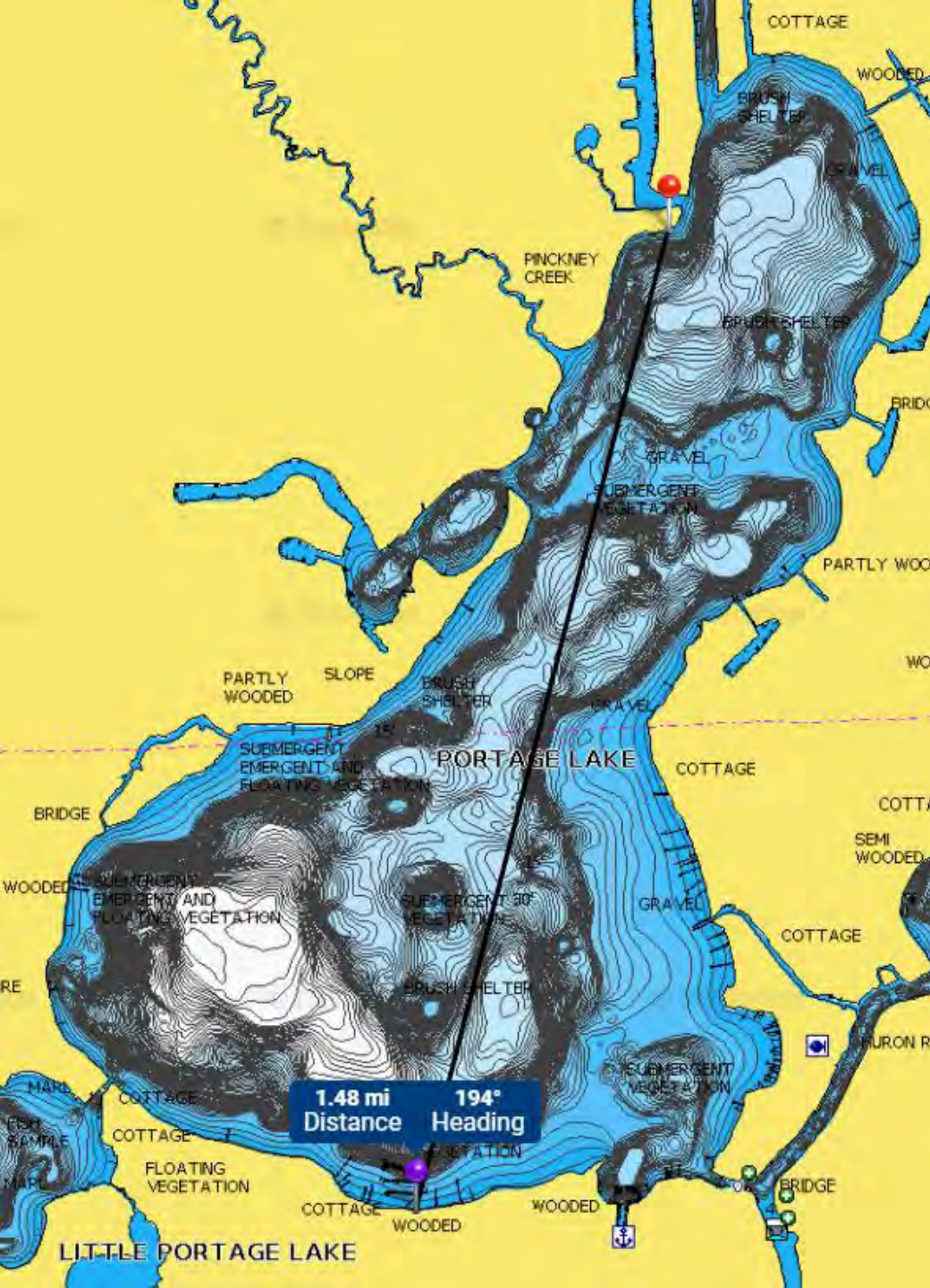
TURTLE LOGS STAKED-IN TO SHORELINE

ROOT WADS

LINK TO PERMIT: [WRP031615](#)



Fetch and boating activity: Maximum fetch = **1.04 miles**. Average water depth across maximum fetch line = **14.6 feet**. **Maximum wave height = 1.03 feet**. This site is located on a straight shoreline on a relatively long and narrow lake. Boat speeds are generally high and the lake is very busy in the summer. A wide variety of **larger watercraft** use this lake including many **wake boats** during the summer.



Fetch and boating activity: Maximum fetch = **1.48 miles**. Average water depth across maximum fetch line = **35.6 feet**. **Maximum wave height = 1.25 feet**. This site is located on a straight shoreline on a relatively long and narrow lake. Boat speeds are generally high and the lake is very busy in the summer. A wide variety of **larger watercraft** use this lake including many **wake boats** during the summer.



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1000 ft

nearmap

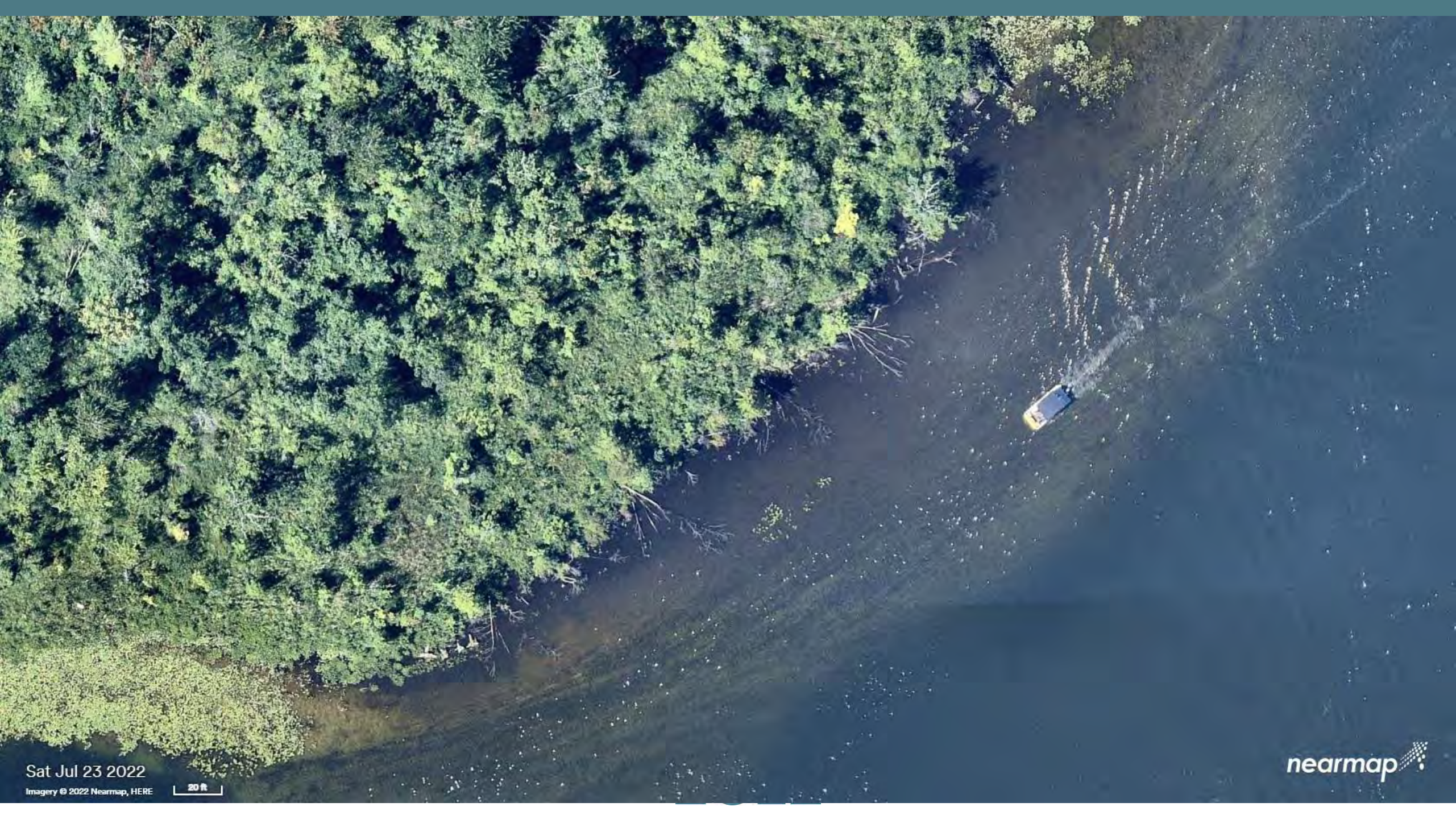


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Imagery © 2022 Nearmap, HERE

200 ft

nearmap



Sat Jul 23 2022

Imagery © 2022 Nearmap, HERE

20 ft

nearmap



Sat Jul 23 2022

Imagery © 2022 Nearmap, HERE

20 ft

nearmap











Project Example

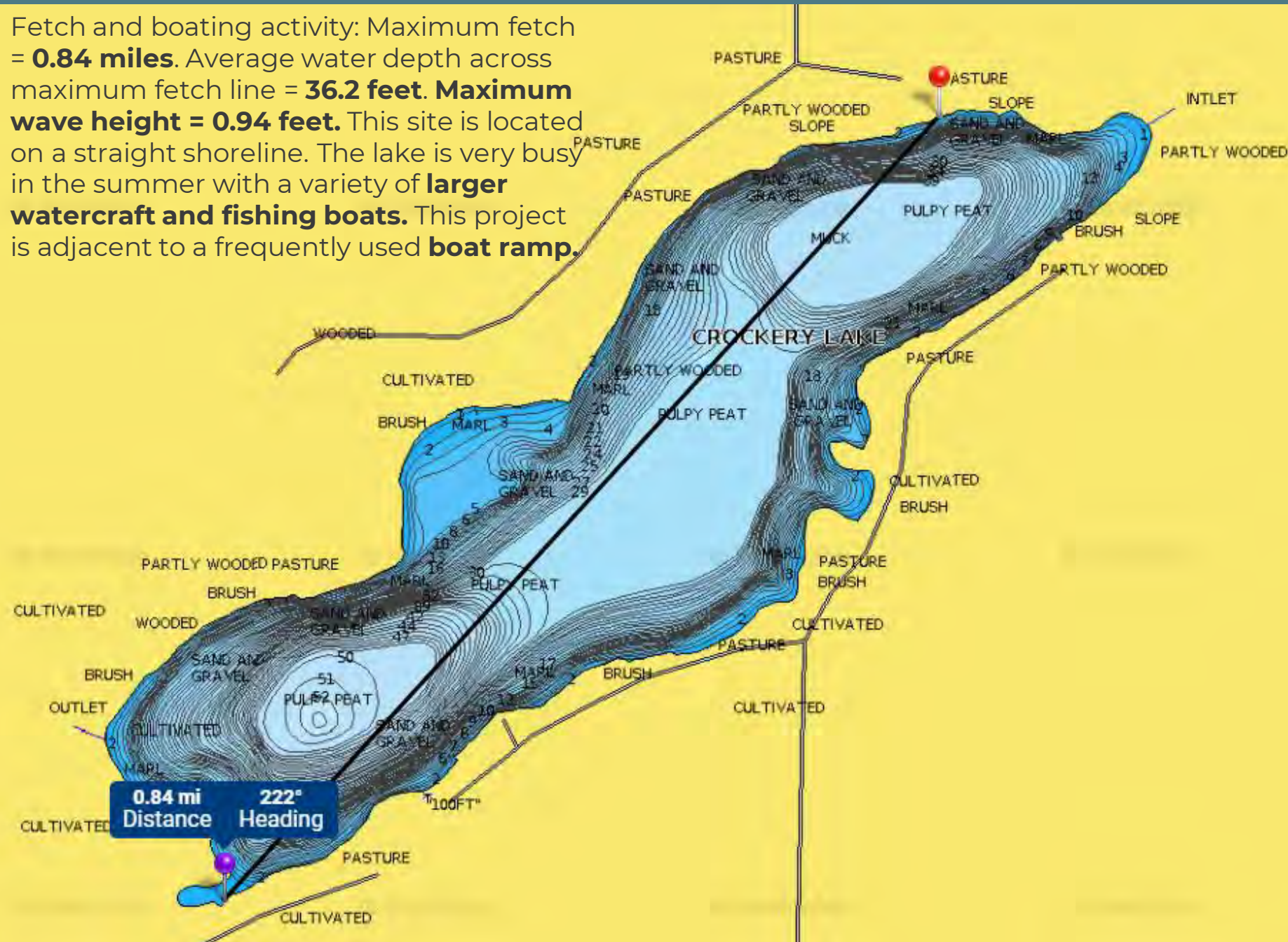
CROCKERY LAKE, OTTAWA COUNTY

SINGLE FISH STICK SERIES KEYED-IN TO SHORELINE

BIOENGINEERED SHORELINE PROTECTION

LINK TO PERMIT: [12-70-0088-P](#)

Fetch and boating activity: Maximum fetch = **0.84 miles**. Average water depth across maximum fetch line = **36.2 feet**. **Maximum wave height = 0.94 feet**. This site is located on a straight shoreline. The lake is very busy in the summer with a variety of **larger watercraft and fishing boats**. This project is adjacent to a frequently used **boat ramp**.







2012

08/01/2012



2018

Crockery Lake, Ottawa County



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