USDA United States Department of Agriculture
Natural Resources Conservation Service

WISCONSIN STANDARD
DRAWING NO. WI-001C 03/16

CONSTRUCTION PLAN

PRACTICE(S) 580 STREAMBANK & SHORELINE PROTECTION

LANDOWNER RICK & SANDRA TJUGUM

SITE ADDRESS W6417 CAMP RICE POINT RD TOMAHAWK, WI 54487

LANDOWNER PHONE NO. _____ COUNTY Lincoln

TOWNSHIP BRADLEY T 35 N, R 06 E, Sec. 04

FIELD OFFICE Lincoln County TELEPHONE NO. 715-539-1087

DIGGERS HOTLINE

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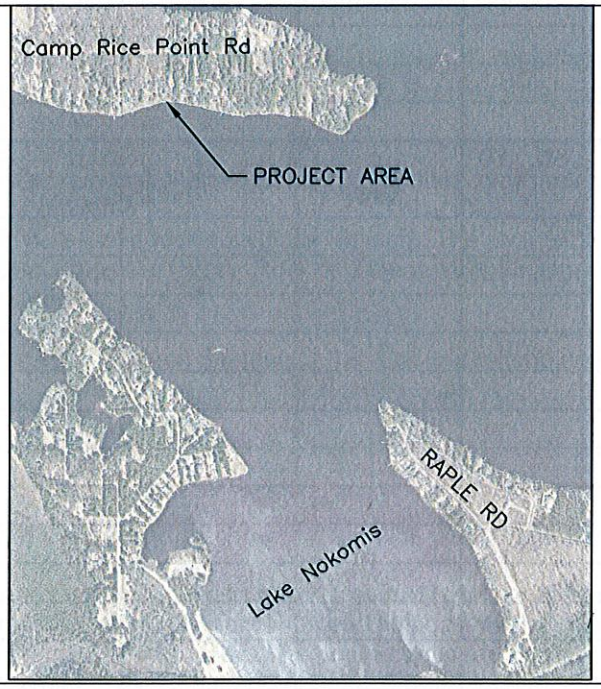

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Not to Scale

LOCATION MAP

NOTICE TO LANDOWNERS AND EXCAVATORS

Any representation made by the USDA, Natural Resources Conservation Service, or the LINCOLN County LCD, as to the approximate location or nonexistence of above or under ground hazards does not relieve the owner of the property or the excavator that is hired to complete construction, from notifying Diggers Hotline of the pending construction. You will be liable for damages resulting from construction activities.
Call Diggers Hotline! Ticket Number _____

CONSTRUCTION DRAWINGS AND SPECIFICATIONS ACCEPTANCE

I have reviewed and understand the construction plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any continued NRCS technical assistance or program cost sharing applied for. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these construction plans or specifications must be approved by the NRCS before installation. I assume all responsibility for negotiations and contract agreements with the construction contractors.

Landowner Signature: _____ Date: _____

Designed by: [signature] McCarty Date: 10-11-19

Checked by: Stacy D. Dehne Date: 10-11-19

Approved by: Stacy D. Dehne Date: 10-11-19

The installed practices comply with applicable NRCS technical standards and specifications. The "redlined" construction plans (as-built drawings) reflect changes made during construction.

Construction Approved by: _____ Date: _____

Job Approval Class II

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	SHEET NUMBER	WI CONSTRUCTION SPEC. OR JOB SHEET NUMBER
MOBLIIZATION & DEMOBILIZATION	JOB	1		007 – MOBILIZATION
POLLUTION CONTROL	JOB	1		005 – POLLUTION CONTROL
EXCAVATION/SEA WALL REMOVAL	JOB	1		002 – EXCAVATION
EARTHFILL	JOB	1		003 – EARTHFILL
CLASS I NONWOVEN GEOTEXTILE	SQ. YD	304		013 – GEOTEXTILES
d50 6" ROCK RIPRAP	CU. YD.	87		009 – ROCK RIPRAP
SEEDING DISTURBED AREAS	JOB	1		WI–710 SEEDING ESTAB.

Quantities are estimated to the neat lines and grades of in–place materials shown on the construction plan unless otherwise stated. Truck yardage, loose fill, shrinkage, etc., must be calculated and compensated for by the contractor preparing a bid or constructing the project.

CONSTRUCTION NOTES

All necessary permits shall be acquired before construction begins.

1. It is the landowner's and contractor's responsibility to notify the owners of any utility, such as buried cable or pipelines, that may be present in the construction area, before the start of construction so that they may locate and stake such utilities.

2. Lincoln County and DATCP offices must be contacted at least 3 days before the start of construction, to stake the project and review the plans with the foreman. No work will be performed prior to the contract and the operation and maintenance agreement being signed.

3. Follow Wisconsin Construction Specifications 2 (Excavation), 5 (Site Pollution Control) 7 (Mobilization & Demobilization), 9 (Rock riprap), 13 (Geotextiles) 710 Seeding establishment, and WI Biology Tech Note 1 attached for related aspects of the project.

4. Earthwork shall consist of removal of any garbage (i.e. bottles, glass, metals, etc) encountered.

5. Rock to be placed will have a d50 rock size of six (6) inch. The rock for the riprap will be placed on top of Class I non woven geotextile fabric. Rock and Geotextile shall meet WI Construction specs 9 and 13 attached to this plan.

6. The riprap shall not exceed a 1.5:1 slope on the face of the rock and extend no further than 8 feet waterward.

7. Lakebed will be excavated the entire length to create a 2' X 2' trench to be filled with rock. Taper ends to shore.

8. Vegetated planting shall be installed as shown on the plan along the entire frontage.

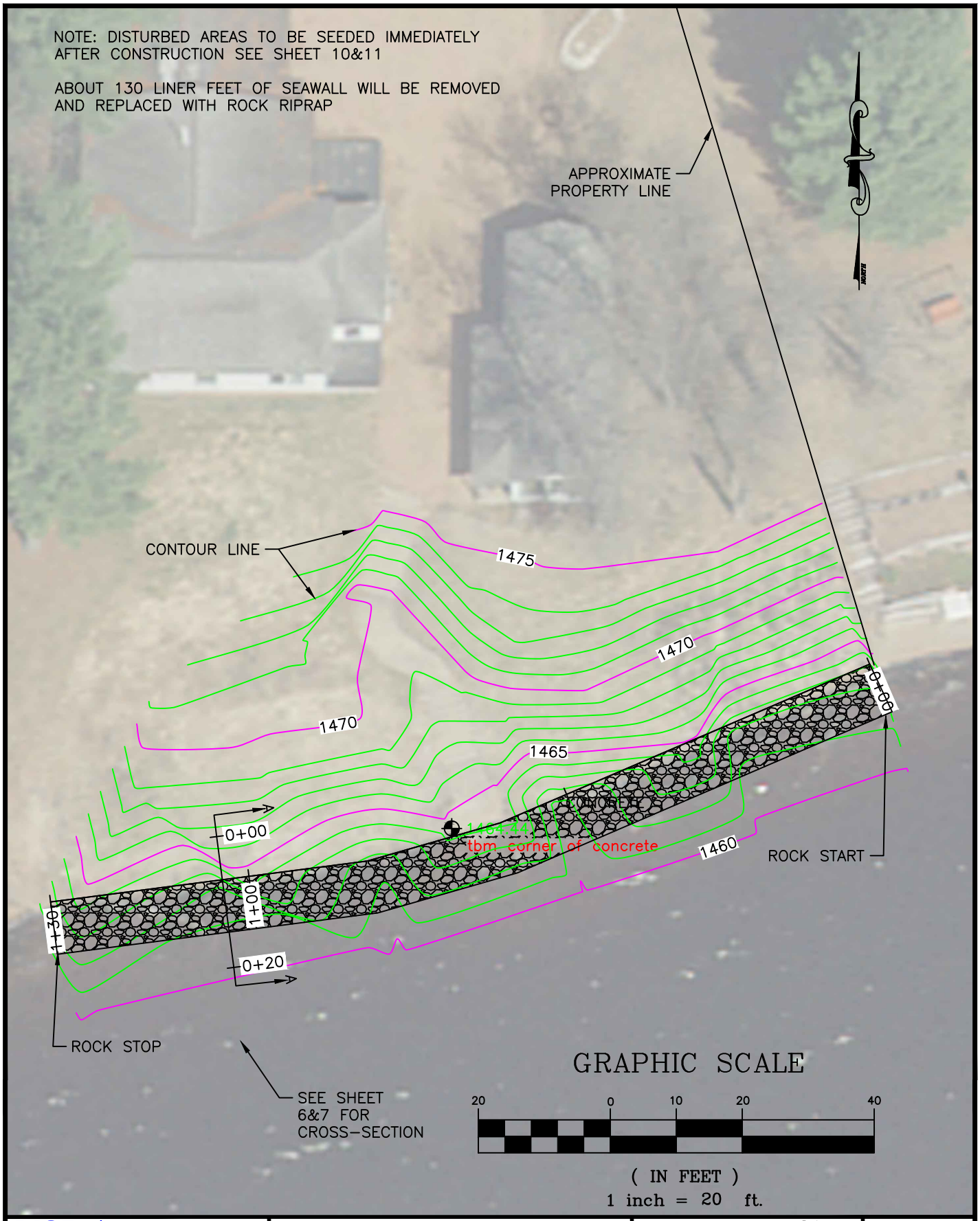
9. All heavy equipment used within the construction site shall be clean to prevent spread of invasive species and well maintained. All equipment lines and fittings shall be checked on a daily basis to ensure that they are in good working order. The contractor is responsible for all aspects of cleanup from accidental spills. Refer to WI Construction Spec. 5 (attached) for details on Construction Site Pollution Control.

10. If a significant archaeological or historical site is found, cease construction immediately and relocate, redesign, or delete the cost share practice, as needed, to prevent damage to the archaeological or historical site.

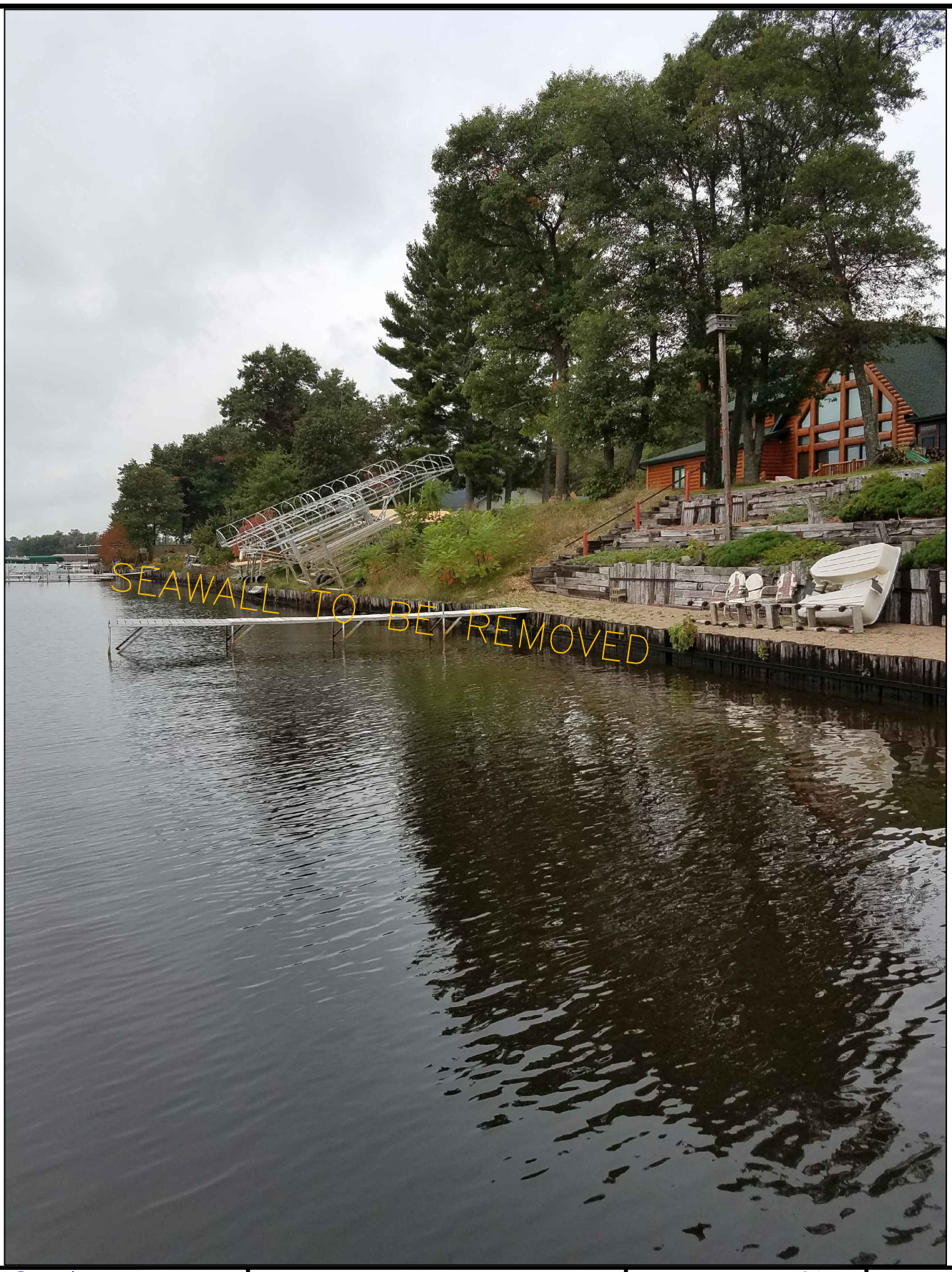
11. Immediately seed disturbed areas along the bank following construction activities.

NOTE: DISTURBED AREAS TO BE SEEDED IMMEDIATELY AFTER CONSTRUCTION SEE SHEET 10&11

ABOUT 130 LINER FEET OF SEAWALL WILL BE REMOVED AND REPLACED WITH ROCK RIPRAP



USDA United States Department of Agriculture Natural Resources Conservation Service	PLAN VIEW CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 10-2019 Drawn MRM 10-2019 Checked Approved	File Name WI-002 Date 08/14 Sheet 4 of 11



United States Department of Agriculture

Natural Resources Conservation Service

SEAWALL PHOTO

CLIENT: TJUGUN, RICK

COUNTY: Lincoln

		Date
Designed	MRM	10–2019
Drawn	MRM	10–2019
Checked		
Approved		

File Name WI–002

Date 08/14

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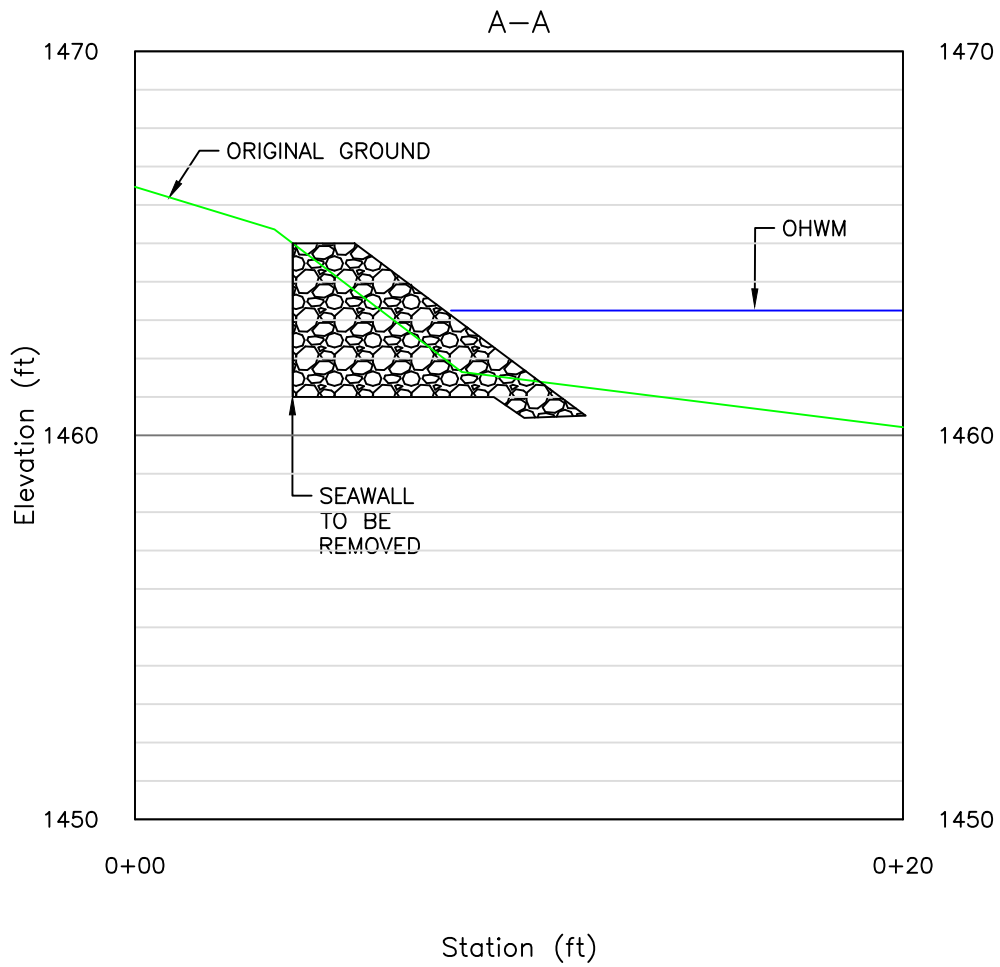

SECTION A–A VIEW

CLIENT: TJUGUN, RICK

COUNTY: Lincoln

		Date
Designed	MRM	10–2019
Drawn	MRM	10–2019
Checked		
Approved		

File Name WI–007

Date 08/14

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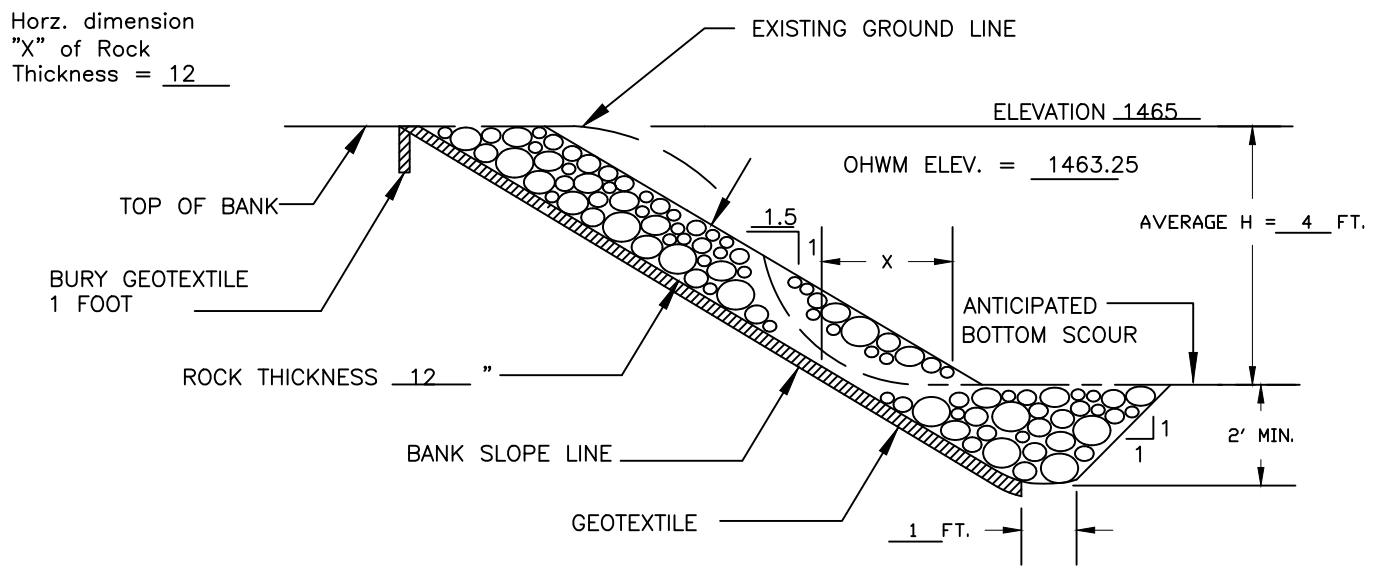
Natural Resources Conservation Service



TYPICAL CROSS SECTION

GRADATION OF ROCK

PERCENT PASSING BY WEIGHT	SIZE (INCHES)
100	12
60–85	9
25–50	6
5–20	3
0–5	1.2

QUANTITY ESTIMATE*

BANK SLOPING FOR RIPRAP		LIN. FT.
BANK SLOPING (SEEDING ONLY)		LIN. FT.
ROCK FOR RIPRAP (WI CONST. SPEC. 9)	87	CU. YD.
GEOTEXTILE (WI CONST. SPEC. 13) CLASS I NONWOVEN	304	SQ. YD.
SEEDING	DISTURBED AREAS	

*ESTIMATED TO THE NEAT LINES AND GRADE

NOTES:

1. DOUBLE THE ROCK THICKNESS FOR A DISTANCE OF 3 FEET AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE RIPRAP. BLEND THE ROCK SURFACE TO MATCH THE EXISTING STABLE BANK SURFACE.

THIS STANDARDIZED DESIGN MUST BE ADAPTED TO THE SPECIFIC SITE.

SITE _____

EXCAVATED KEYWAY

USDA United States Department of Agriculture Natural Resources Conservation Service	SHORELINE PROTECTION WITH GEOTEXTILE (FULL BANK HEIGHT) CLIENT: TJUGUN, RICK COUNTY: LINCOLN	Designed MRM Date 10–2019 Drawn MRM 10–2019 Checked Approved	File Name WI–404D Date 07/14 Sheet 7 of 11

Native Tree and Shrub List for WVIC Owned Lands

Native Shrubs-Partial Shade to Full Sun

Serviceberry-*Amelanchier spp.*
Bush Honeysuckle- *Diervilla lonicera*
American Fly Honeysuckle-*Lonicera canadensis*
Mapleleaved Viburnum- *Viburnum acerfolium*
Mountain Maple- *Acer spicatum*
Downy Arrowwood- *Viburnum rafinesquianum*
Nannyberry-*Viburnum lentago*
American Hazelnut-*Corylus americana*
Beaked Hazelnut-*Corylus cornuta*
Gray Dogwood- *Cornus racemosa*
Pagoda Dogwood-*Cornus alternifolia*
Round leaved Dogwood-*Cornus rugosa*
Hawthorn-*Crataegus sp.*
Snowberry-*Symphoricarpos alba*
Witch Hazel- *Hamamelis virginiana*
American/Canadian yew-*Taxus Canadensis*
Red Elderberry-*Sambucus pubens/racemosa*
Trailing Arbutus-*Epigaea repens*
Prairie Willow *Salix humilis*
#Pussy Willow-*Salix discolor*
#American Elderberry-*Sambucus canadensis*
#Black Chokeberry- *Aronia melanocarpa*
#Mountain Holly- *Illex mucronata*
#Various Native Willows: *Salix lucida, interior, bebbiana etc*

Native Shrubs-Full Sun

Sweet Fern-*Comptonia peregrinea*
Staghorn Sumac- *Rhus thypina*
Wild Rose-*Rosa blanda*
Pasture Rose-*Rosa carolina*
Prairie Willow-*Salix humilis*
American/Canadian Plum-*Prunus americana/ nigra*
Sand Cherry-*Prunus pumila*
#Red Osier Dogwood-*Cornus stolonifera*
#High Bush Cranberry-*Viburnum opulus/trilobum*
#Winterberry-*Ilex verticillata*
#Silky Dogwood- *Cornus amomum*
#Swamp Rose- *Rosa palustris*
#Meadowsweet- *Spirea alba*
#Steeplebush-*Spirea tomentosa*
#Sweet Gale-*Myrica gale*
#Pussy Willow-*Salix discolor*
#Speckled alder-*Alnus incana/rugosa*
#Leatherleaf-*Chamaedphne calyculata*
#Bog Rosemary- *Andromeda glaucophylla*

Questions Regarding Plants on this List, Erosion Control, Bioengineering etc. Contact:

Ben Niffenegger
Manager of Environmental Affairs
Wisconsin Valley Improvement Company
2301 N. Third St.
Wausau, WI 54403
(715) 848-2976 ext. 304
ben@wvic.com

Found near shore, wetlands, or low-lying areas with moderate soil moisture

USDA United States Department of Agriculture Natural Resources Conservation Service	UPLAND PLANTING PLAN CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 10–2019 Drawn MRM 10–2019 Checked Approved	File Name WI–002 Date 08/14 Sheet 8 of 11

Native Tree and Shrub List for WVIC Owned Lands

Native Trees

Red Oak-*Quercus rubra*
Northern Pin Oak- *Quercus ellipsoidalis*
Bur Oak-*Quercus macrocarpa*
Red Maple-*Acer rubrum*
Sugar Maple-*Acer saccharum*
Black Cherry-*Prunus serotina*
Choke Cherry-*Prunus virginiana*
Pin Cherry-*Prunus pennsylvanica*
Mountain Ash- *Sorbus americana*
Showy Mountain Ash- *Sorbus decora*
Yellow Birch-*Betula alleghaniensis*
White Birch-*Betula papyrifera*
Bitternut Hickory- *Carya cordiformis*
Big-tooth Aspen-*Populus grandidentata*
Quaking Aspen-*Populus tremloides*
Balsam Poplar- *Populus balsamifera*
Basswood-*Tilia americana*
Butternut-*Juglans cinerea*
American Elm-*Ulmus americana*
Rock Elm-*Ulmus thomasii*
Ironwood-*Carpinus caroliniana*
Eastern Hop Hornbeam-*Ostrya virginiana*
White Pine-*Pinus strobus*
Red Pine-*Pinus resinosa*
Jack Pine- *Pinus banksiana*
White Spruce-*Picea glauca*
Balsam Fir-*Abies balsamea*
Eastern Hemlock-*Tsuga canadensis*
Northern White Cedar-*Thuja occidentalis*
#Silver Maple-*Acer saccharinum*
#Black Spruce- *Picea mariana*
#Tamarack-*Larix larcina*
#Black Willow-*Salix nigra*)
#Bog Willow-*Salix humilis*

Found near shore, wetlands, or low-lying areas with moderate soil moisture

Native Woodland Plants, Wildflowers, & Groundcovers

-Too numerous to list. Call for site specific recommendations.

USDA United States Department of Agriculture Natural Resources Conservation Service	UPLAND PLANTING PLAN CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 9–2018 Drawn MRM 9–2018 Checked Approved	File Name WI–002 Date 08/14	Sheet 9 of 11

SEEDING DATES NORTH

TIME PERIOD	DATES			TYPE OF SEEDING
Spring	May 1	through	June 15	Permanent
Summer	June 16	through	see WI-710ss pg 2	Temporary *
Late Summer	July 15	through	August 10	Permanent
Fall	August 11	through	see WI-710ss pg 2	Temporary *
Late Fall	November 1	through	Snow Cover	Dormant
Winter	Snow Cover	through	April 30	Not Allowed

MATERIALS

If no soil test is available, apply a minimum of 150 pounds of 20-10-10 fertilizer per acre. This is equivalent to 30 pounds nitrogen (N), 15 pounds phosphate (P205), and 15 pounds potash (K2O) per acre. Apply two tons of 80-89 lime or equivalent.

* Seed a temporary cover crop of _____ at #N/A # /ac (#N/A bu/ac)
A permanent seeding shall be completed during the next acceptable time period following a temporary seeding.

MINIMUM PURE LIVE SEED (PLS)[1] RATE PER ACRE AND TOTAL POUNDS OF SEED NEEDED

SEEDING MIX (DESIGN) 6	LOCATION: 1 / ACRES: 0.50	
SPECIES	RATE	POUNDS
Smooth Bromegrass	7.0	3.5
Timothy	2.0	1.0
Creeping Red Fescue	1.0	0.5
Kentucky Bluegrass	1.0	0.5
Perennial Ryegrass	3.0	1.5
Red Clover	3.0	1.5
**	#N/A	#N/A

SEEDING MIX (AS-BUILT)	LOCATION / ACRES	
SPECIES	RATE	POUNDS

[1] PLS lbs. = [total % Germination / 100 * % Purity / 100] * Net Weight (lbs.)

** Companion Crop

ADDITIONAL SEED PERCENT: _____ %

Mulching Required: No

Total % Germination may also be termed *Total %* Viable Seed on a tag. If a tag only shows % Germination, the user must *include percentage of the seed that germinated during the lab test* (% Germination) **plus** the *percentage of hard and/or dormant seed.* Hard seed and dormant seed are seeds that are still capable of germinating and producing a plant but did not germinate under the conditions of the test in the lab.

Additional native seeds may be required by permitting agencies. These addition are allowed.

Seed mixture shall meet all requirements of the WI weed laws.

Species identified as restricted or prohibited by law shall not be planted.

Certified seed shall be used, and the seeding rates will be based on pure live seed.

For dormant seedings, increase the seeds per square foot by 15%.

SEEDBED PREPARATION

Seedbed preparation shall immediately follow construction activities.

Prepare a fine, firm seedbed to a minimum depth of three inches. A seedbed is considered firm when a footprint penetrates 1/4 to 1/2 inch deep.

SEEDING

Inoculate legumes with the specific inoculum for the species in accordance with the manufacturer's recommendations. When using a hydroseeder, five times the recommended rate of inoculant shall be added to the hydroseeder. Inoculant shall not be mixed with liquid fertilizer.

Seed may be broadcast or drilled as appropriate to the site.
Seed, fertilize, and lime as soon as possible after construction.
Seeding perpendicular to direction of flow is required to limit erosion.

Seed grasses and legumes no more than 1/4 inch deep.

Consider seeding at a lower rate and making 2 passes to ensure more uniform distribution.

TEMPORARY SEEDING OPTIONS

Select one of the following species for temporary cover if:

1) The required seeds or plant stock are not available or the normal permanent seeding period for the species has passed
   - Forage Sorghum - 1/2 bushel per acre (May 15-July 15)
   - Sorghum - Sudangrass Hybrid - 1 bushel per acre (May 15-July 15)
   - Sudangrass - 1 bushel per acre (May 15-July 15)
   - Winter Wheat - 2 bushels per acre (Aug 1-Oct 1)
   - Winter Cereal Rye - 2 bushels per acre (Aug 1-Oct 15)
   - Oats - 2 bushels per acre (Apr 1-Sept 1)
   - Annual Ryegrass - 20 Pounds per acre (Apr 1-Sept 1)

2) Triazine herbicide carryover will not allow establishment of permanent cover immediately.
   - Forage Sorghum - 1/2 Bushel per acre (May 15-July 15)
   - Sorghum - Sudangrass Hybrid - 1 Bushel per acre (May 15-July 15)
   - Sudangrass - 1 Bushel per acre (May 15-July 15)

   Mulching not required

DORMANT SEEDING

Seed is broadcast and incorporated, no-tilled, or drilled into the seedbed .
Seedbed preparations and conditions are similar to conventional seeding.

MULCHING Mulching not required

Operation and Maintenance Plan
Streambank Protection (Riprap)

Cooperator: TJUGUN, RICK

Date: October 2019

By: Mitchell McCarthy

Title: Conservation Program Manager

Project Location: W6417 CAMP RICE POINT RD TOMAHAWK, WI 54487

The owner or sponsor of this project is responsible for the rock riprap shoreline protection. It must be recognized that any project needs to be properly operated and maintained including periodic inspection. The following guidelines have been prepared for the operation and maintenance of this protection measure.

1. Inspect the project regularly, especially following strong winds and spring break–up of the ice, for erosion or displacement of rock. Repair damage immediately by replacing any dislodged rock, removing debris, and filling and/or reseeding as necessary. Be especially careful to cover all exposed filter material (granular or geotextile).

2. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and re–vegetated as soon as possible.

3. Equipment used on the shoreline (for dock removal, boat launching, yard maintenance, etc.) must be kept away from the project to avoid damage to the project and the soil it is protecting.

4. Maintain vegetated areas in adequate cover to reduce the potential for erosive velocities of water moving on bare soils – particularly on the slope toward the lake.

5. Maintain and water installed plants.

6. Vegetation Removal
   a) Weeding: weeds may be pulled for the first 3 years to promote native plants.
   b) Trees and shrubs: remove dead or windblown trees only if they pose a safety hazard, otherwise they provide habitat for fish and wildlife
   c) Exotic/invasive species control: control exotic plants and monitor annually.

7. Eliminate access or foot traffic over the planting area to the shoreline slope with the exception of a designated pathway area.

8. Protect against deer and other animals browsing in the "no–mow" zone and planted area with the use of fencing and/or landscape products available to spray on plants to deter them (such as red pepper spray).

9.. Notify County within two weeks if issues arise.

I have read the guidelines for the maintenance of the lakeshore stabilization project and agree to follow the guidelines for 10 years.

Cooperator's signature: _____ Date: _____

I have discussed the maintenance guidelines with the above cooperator.

Conservationist's signature: _____ Date: _____

USDA United States Department of Agriculture Natural Resources Conservation Service	OPERATIONS & MAINTENANCE PLAN CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 10–2019 Drawn MRM 10–2019 Checked Approved	File Name Date 08/14 Sheet 1 of 1

Construction Quality Assurance Plan
Streambank Protection

LANDOWNER: TJUGUN, RICK

LOCATION OF PRACTICE OR PLAN ID: W6417 CAMP RICE POINT RD TOMAHAWK, WI 54487

INSPECTOR: Mitchell McCarthy APPROVER: _____ Date: _____

ENGINEERING JOB CLASS: II

Initial and date items as completed. Date all additional documentation and keep in construction file.

PRE–CONSTRUCTION

- ☐ Verify that the landowner or contractor notified all utilities prior to construction. Document DIGGERS HOTLINE Ticket Number _____.
- ☐ Obtain copies of PERMITS, or documentation that they aren't needed.
- ☐ Inspect EROSION CONTROL PRACTICES (silt fence, etc.) Document proper installation with photographs or diary notation.

MATERIALS

- ☐ ROCK RIPRAP MATERIAL. Verify that the material meets the soundness requirements in Wisconsin Construction Specification 9; obtain a document for the case file or record observations in writing. Verify the gradation using the Wisconsin Engineering Spreadsheets and Wisconsin Construction Specification 9 and the Wisconsin Supplement to the USDA Engineering Field Handbook Chapter 17. Print the spreadsheet for documentation.
- ☐ GEOTEXTILE MATERIALS. Verify that the material meets the requirements in Wisconsin Construction Specification 13, Table 2, geotextile. Attach a copy of the manufacturer's material specifications. Record observations in the job diary and take photographs of the material tag.
- ☐ SEED. Document species, quantities of pure live seed, and date seeded. Verify that it meets requirements of WI–710 drawing. Place seed tag in construction documentation file.

CONSTRUCTION

- ☐ STAKE the location of the Shoreline protection at each end.

USDA United States Department of Agriculture Natural Resources Conservation Service	QUALITY ASSURANCE PLAN CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 10–2019 Drawn MRM 10–2019 Checked Approved	File Name Date 08/14 Sheet 1 of 1

Construction Quality Assurance Plan
Streambank Protection

(page 2 of 2)

- ☐ OBSERVE that topsoil stripping and stockpiling is accomplished according to plans / Wisconsin Construction Specification 2. Document the observation in the job diary.
- ☐ Verify that EXCAVATED MATERIALS are used / disposed of according to sections 2 and 3 of Wisconsin Construction Specification 2. Document the observation in the job diary.
- ☐ STAKE STREAM BANK. STAKE the location and sub–grades of the slope. Record the staking notes in the engineering field book.
- ☐ SURVEY CROSS–SECTIONS of completed streambank excavation PRIOR TO RIP RAP placement. Minimum is one cross–section for each 300'. Verify:
  - _____ Slopes – Planned slopes are 1.5:1
  - _____ Final Length – Planned length is 130'
- ☐ OBSERVE THE GEOTEXTILE PLACEMENT. Verify correct overlap and anchorage per plans and Wisconsin Construction Specification 13. Obtain photographs and record observations in the job diary.
- ☐ OBSERVE THE ROCK RIPRAP PLACEMENT. Verify that geotextile material is not damaged or displaced during riprap placement. Note height of rock drop onto geotextile. Obtain photographs and record observations in the job diary.

FINAL INSPECTION

- ☐ SURVEY FINAL CROSS–SECTIONS of completed stream bank AFTER RIPRAP placement. Minimum is one cross–section for each 300'. Verify:
  - _____ Slopes – Planned slopes are 1.5:1
  - _____ Riprap thickness – Compare with sub–grade survey. Planned riprap thickness is 12"
  - _____ Final Length – Planned length 1.5:1
- ☐ Verify that all disturbed areas not to be cropped are SEEDED, FERTILIZED, LIMED AND MULCHED. Document seeding date.

Document installed quantities (payment units) of the practices.

Document all of the above with photographs, data in engineering field book and job diary.

I have reviewed this plan and understand my responsibilities in the quality assurance needed for my project.

Landowner's Signature: _____ Date: _____

USDA United States Department of Agriculture Natural Resources Conservation Service	QUALITY ASSURANCE PLAN CLIENT: TJUGUN, RICK COUNTY: Lincoln	Designed MRM Date 10–2019 Drawn MRM 10–2019 Checked Approved	File Name Date 08/14 Sheet 1 of 1