

VILLAGE AT AUTUMN LAKE – OUTLOT 64 SWM

Project: 14929, Contract: 9534

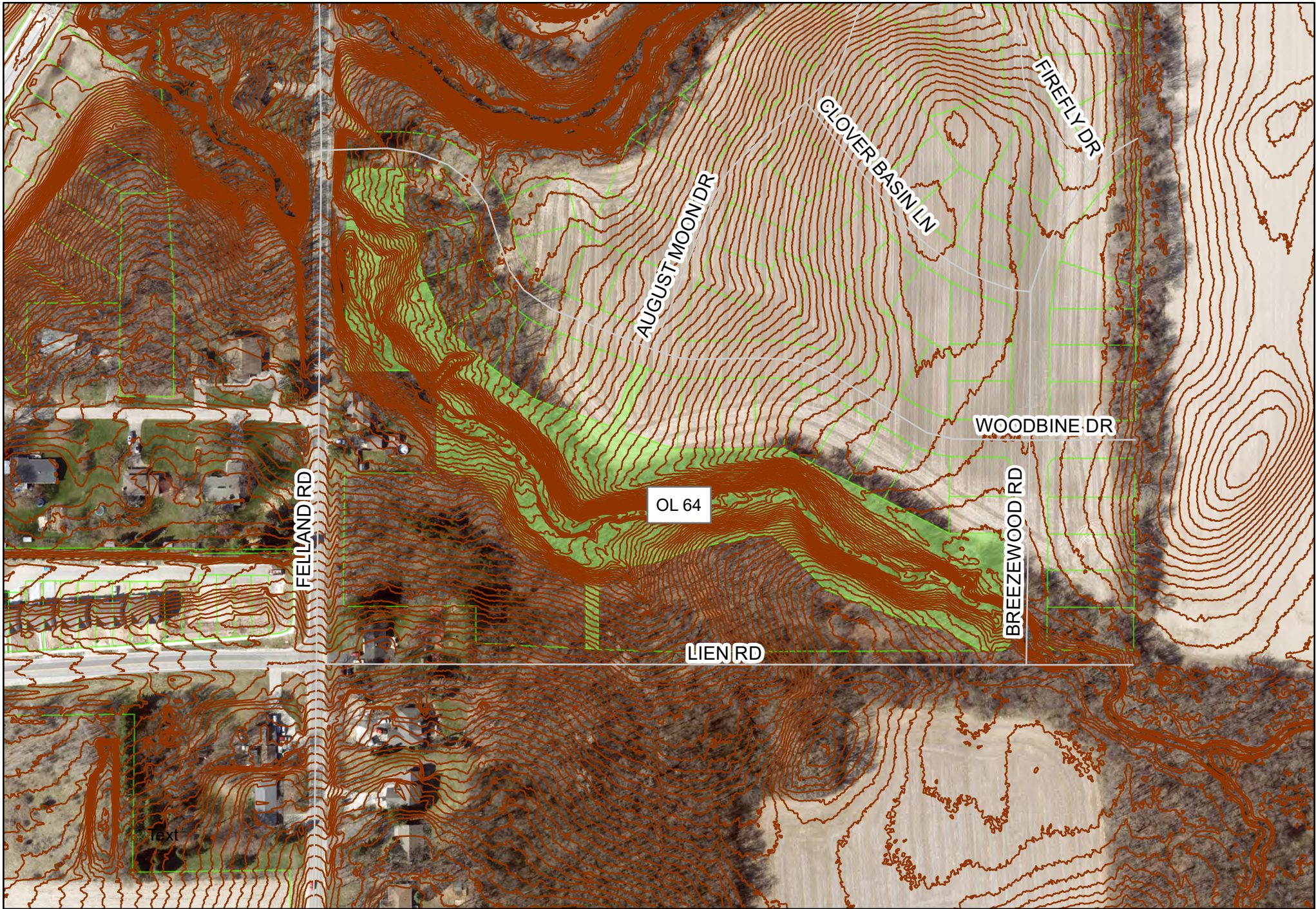
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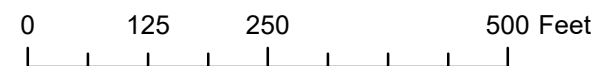
Waterway Improvements to Outlot 64 in Village at Autumn Lake

Dedicated to the Public for Stormwater Management and Drainage Purposes

- Clearing trees through the drainage way
- Grading drainage way
- Six areas of erosion that will require work to stabilize

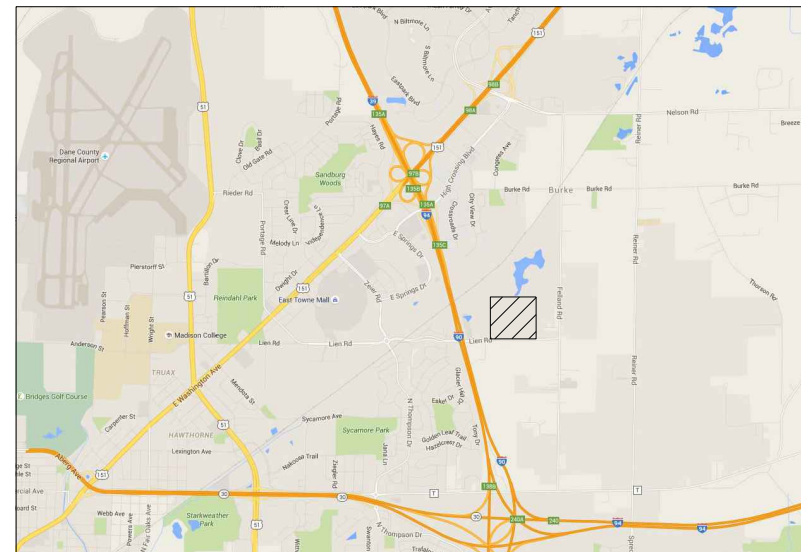


Village of Autumn Lake
Outlot 64



VILLAGE AT AUTUMN LAKE - OUTLOT 64


WATERWAY IMPROVEMENT PLAN CITY OF MADISON DANE COUNTY, WISCONSIN



PROJECT LOCATION

INDEX OF SHEETS

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D'ONOFRIO KOTTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
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**PLANS FOR
REVIEW**

FN: 23-05-138

ISSUE DATE: 10-16-24

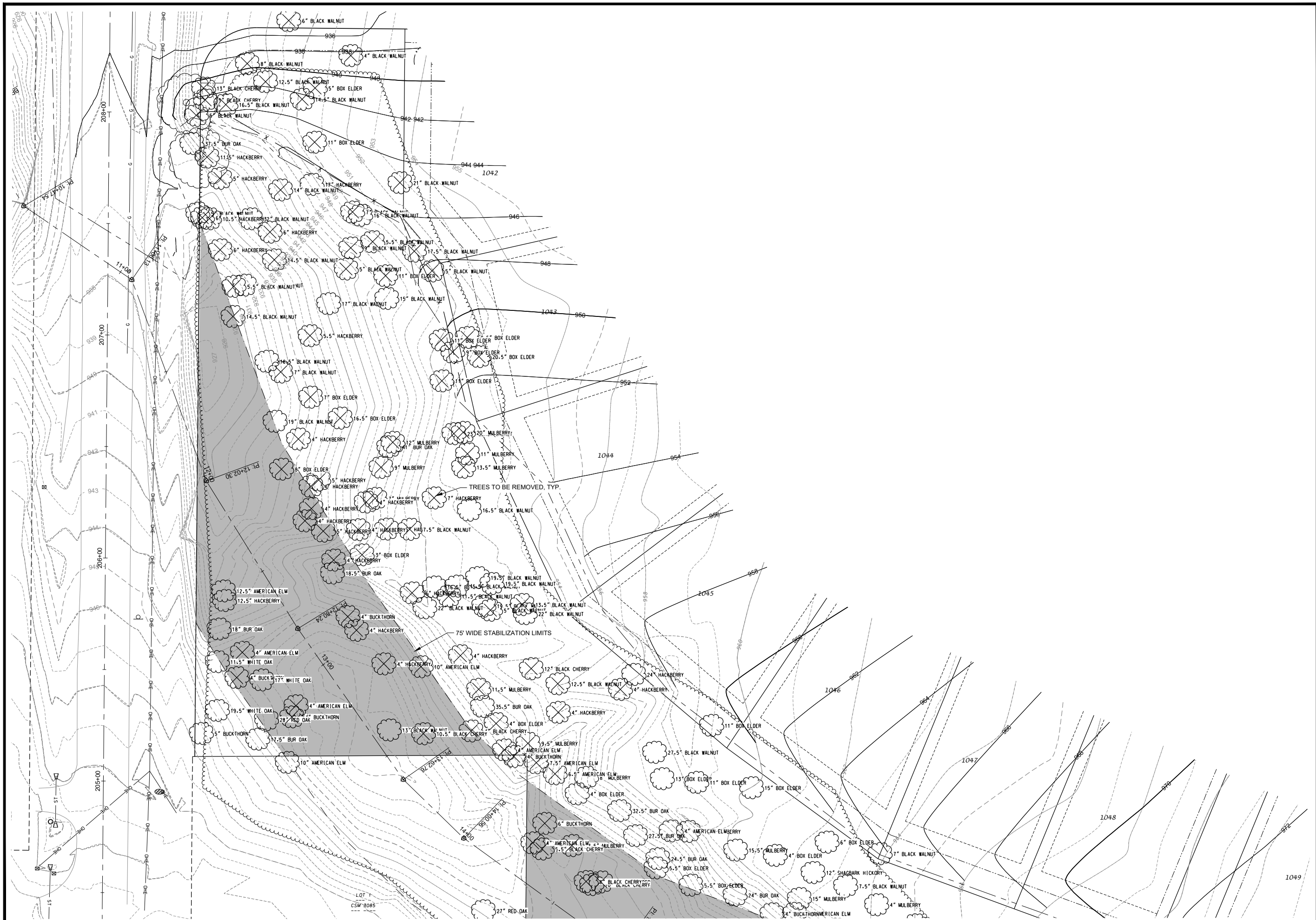
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COVER SHEET
VILLAGE AT AUTUMN LAKE - OUTLOT 64
CITY OF MADISON, DANE COUNTY, WISCONSIN

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REVISED:

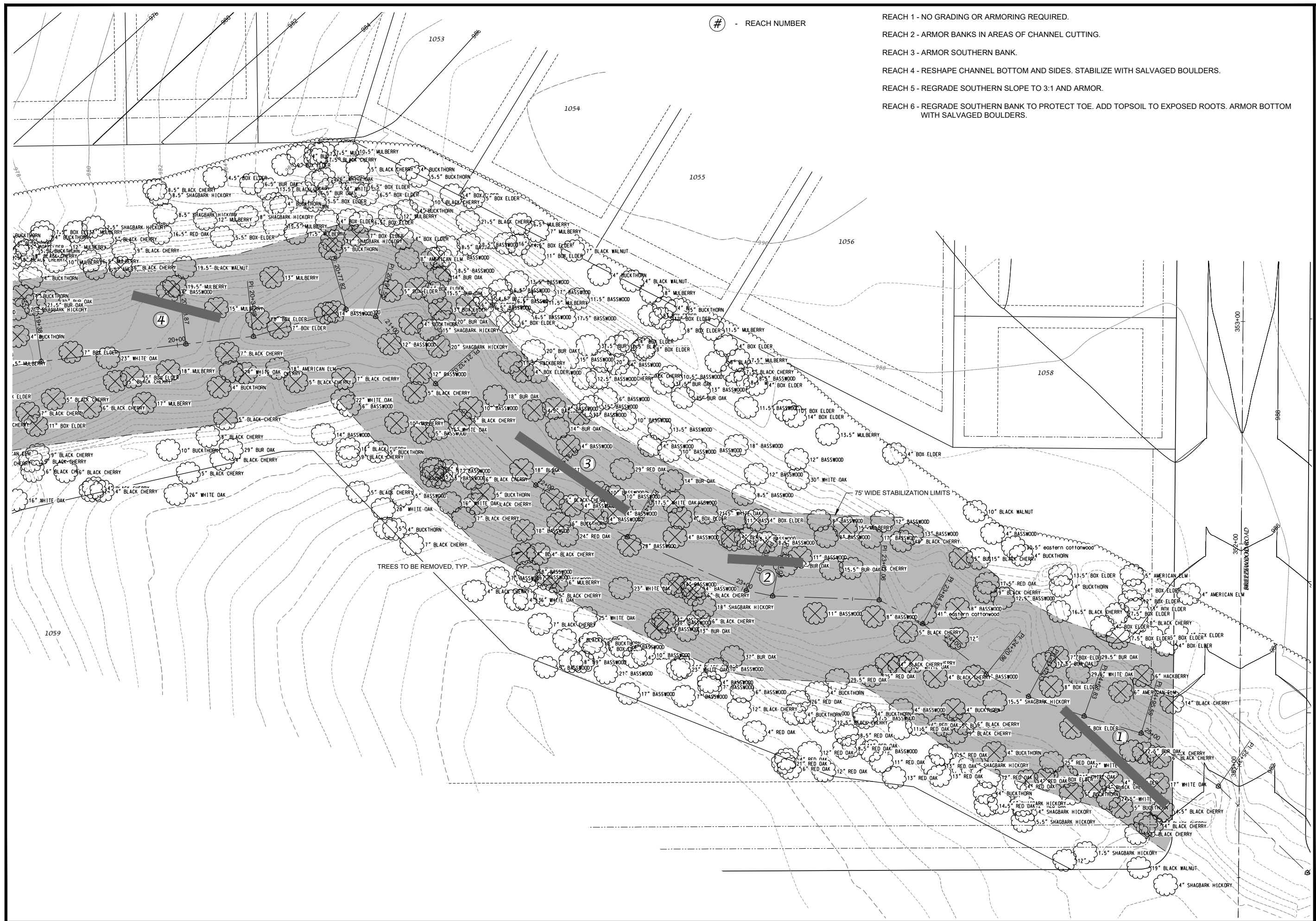
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WATERWAY IMPROVEMENT PLAN
VILLAGE AT AUTUMN LAKE - OUTLOT 64
 CITY OF MADISON, DANE COUNTY, WISCONSIN


 SCALE: 1" = 40'
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- REACH NUMBER

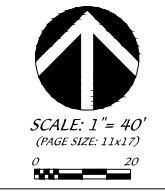
- REACH 1 - NO GRADING OR ARMORING REQUIRED.
- REACH 2 - ARMOR BANKS IN AREAS OF CHANNEL CUTTING.
- REACH 3 - ARMOR SOUTHERN BANK.
- REACH 4 - RESHAPE CHANNEL BOTTOM AND SIDES. STABILIZE WITH SALVAGED BOULDERS.
- REACH 5 - REGRADE SOUTHERN SLOPE TO 3:1 AND ARMOR.
- REACH 6 - REGRADE SOUTHERN BANK TO PROTECT TOE. ADD TOPSOIL TO EXPOSED ROOTS. ARMOR BOTTOM WITH SALVAGED BOULDERS.

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WATERWAY IMPROVEMENT PLAN

VILLAGE AT AUTUMN LAKE - OUTLOT 64

CITY OF MADISON, DANE COUNTY, WISCONSIN



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CHANNEL STABILIZATION PLAN

THE FOLLOWING SECTIONS PROVIDE ACTIONS TO IMPROVE CHANNEL STABILITY. ACTIONS INCLUDE DOWNED TREE REMOVAL, SELECTIVE WOODY CLEARING WITHIN A BUFFER AROUND THE CHANNEL, SELECT IN-CHANNEL REACH WORK, AND REVEGETATION MEASURES FOR SLOPE STABILIZATION.

DOWNED TREE REMOVAL

REMOVE DEAD AND DOWNED WOODY MATERIAL FROM WITHIN THE CHANNEL AND ALONG THE BANKS TO IMPROVE CHANNEL FLOW WITHIN THE ENTIRE OUTLOT. REMOVE STANDING DEAD TREES THAT ARE LIKELY TO FALL IN THE CHANNEL, IF SAFE TO DO SO. DEPENDING ON THE LOCATION IN THE CHANNEL, SOME SMALL TO MEDIUM-SIZED WOODY MATERIAL (E.G., BRUSH, TREE BRANCHES, TRUNKS <12 INCHES DBH) MAY BE CUT WITH CHAINSAWS AND BURNED IN PILES IN THE CHANNEL.

UTILIZE TREE TRUNKS AND WOODY MATERIAL AS FEASIBLE TO PROVIDE GENTLE ARMORING ALONG MEANDER BENDS OR TO ENCOURAGE CHANNEL REALIGNMENT BACK TO THE CENTER OF THE CHANNEL. THE REMAINING LARGE TREE TRUNKS SHALL BE REMOVED FROM THE CHANNEL. USE SMALL EQUIPMENT TO MOVE TRUNKS AND WOODY MATERIAL WITHIN THE CHANNEL TO AREAS WHERE LOGS CAN GET PULLED UP SLOPE BY WINCHES AND CHAINS. CHIP REMOVED WOODY MATERIAL OUTSIDE OF THE WOODLANDS AND STOCKPILE FOR FUTURE LANDSCAPING USE OR HAUL FROM SITE.

UTILIZE SMALL EQUIPMENT IN THE CHANNEL TO REDISTRIBUTE SEDIMENT THAT HAS BUILT UP BEHIND THE WOODY DEBRIS.

CLEARING WORK IS RECOMMENDED TO BE COMPLETED IN THE FALL PRIOR TO ICY CONDITIONS THAT MAY RESULT IN EQUIPMENT ACCESS ISSUES.

SELECTIVE WOODY CLEARING

WOODY VEGETATION SHALL BE SELECTIVELY CLEARED FROM A 75-FT WIDE AREA BUFFERED ALONG THE APPROXIMATE CHANNEL CENTERLINE, AS DEPICTED ON THE PLAN. THE SELECTIVE WOODY CLEARING AREA IS APPROXIMATELY 2.14 ACRES.

THE FOLLOWING WOODY VEGETATION SHALL BE REMOVED FROM WITHIN THIS BUFFER:

- ALL SHRUBS THAT ARE NOT NATIVE TO DANE COUNTY INCLUDING, BUT NOT LIMITED TO, COMMON BUCKTHORN (*RHAMNUS CATHARTICA*), GLOSSY BUCKTHORN (*FRANGULA ALNUS*), INVASIVE BUSH HONEYSUCKLE (*LONICERA* SPP.), PRIVET (*LIGUSTRUM* SPP.), BURNING BUSH (*EUONYMUS* SPP.), AND BARBERRY (*BERBERIS* SPP.)
- TREES <6 INCHES DBH EXCEPT FOR OAK (*QUERCUS* SPP.) AND SHAGBARK HICKORY (*CARYA OVATA*)
- ALL DEAD TREES THAT ARE SAFE TO REMOVE. NOTE THAT THERE ARE NUMEROUS DEAD TREES IN OTHER WOODLAND PORTIONS OF THE OUTLOT THAT WILL BE PRESERVED FOR WILDLIFE HABITAT.
- ALL COMMON AND GLOSSY BUCKTHORN (ALSO LISTED ABOVE AS INVASIVE SHRUBS)
- ALL WHITE MULBERRY (*MORUS ALBA*)
- ALL BLACK LOCUST (*ROBINIA PSEUDOACACIA*)
- ALL BOX ELDER (*ACER NEGUNDO*)
- ALL NORWAY MAPLE (*ACER PLATANOIDES*)
- ALL CATALPA (*CATALPA* SPP.)
- ALL GREEN ASH (*FRAXINUS PENNSYLVANICA*)
- BLACK WALNUT (*JUGLANS NIGRA*) <12 INCHES DBH

IN ADDITION TO THE TREES AND SHRUBS LISTED ABOVE, SEVERAL AMERICAN ELM (*ULMUS AMERICANA*) AND AMERICAN BASSWOOD (*TILIA AMERICANA*) HAVE BEEN SELECTED FOR REMOVAL THAT ARE CROWDING OAK TREES OR ARE CONTRIBUTING TO REDUCED LIGHT LEVELS IN AREAS OF SELECT IN-CHANNEL REACH WORK.

SELECTIVE CLEARING METHODS

TREES AND SHRUBS TO BE REMOVED SHOULD BE MARKED IN THE FIELD BY A QUALIFIED BIOLOGIST, RESTORATION ECOLOGIST, OR ARBORIST THAT CAN ACCURATELY IDENTIFY THE TREE AND SHRUB SPECIES IN THE PROJECT AREA PRIOR TO REMOVAL. FORESTRY MOWING AND HAND CLEARING ARE BOTH ACCEPTABLE METHODS FOR WOODY REMOVAL. HOWEVER, DUE TO THE STEEP SLOPES AND SELECTIVE NATURE OF THE CLEARING, IT IS ANTICIPATED THAT MOST OF THE WORK IN AND ALONG THE CHANNEL SLOPES WILL REQUIRE HAND CLEARING WITH CHAINSAWS AND BRUSHCUTTERS. STUMPS SHALL BE CUT AS LOW TO THE GROUND AND AS LEVEL AS FEASIBLE. CUT STUMPS SHALL BE TREATED WITH HERBICIDE. IF FORESTRY MOWING IS UTILIZED, RESPROUTS SHALL BE FOLIAR TREATED WITH HERBICIDE THE FOLLOWING GROWING SEASON. SEVERAL HERBICIDES MAY BE SUITABLE FOR CONTROL OF CUT WOODY VEGETATION SUCH AS TRICLOPYR AND GLYPHOSATE; HOWEVER, HERBICIDE WITH AMINOPYRALID OR CLOPYRALID IS REQUIRED FOR CONTROL OF BLACK LOCUST TREES.

CARE SHALL BE TAKEN TO MINIMIZE DAMAGE TO SAVE TREES DURING FELLING AND REMOVAL OPERATIONS. IF TREES SELECTED FOR REMOVAL CANNOT BE REMOVED SAFELY OR ARE ANTICIPATED TO DAMAGE SAVE TREES DURING FELLING, CHAINSAW GIRDLING MAY BE UTILIZED.

IT IS RECOMMENDED THAT THE SELECTIVE WOODY CLEARING BE CONDUCTED AT THE SAME TIME AS THE DOWNED TREE REMOVAL FOR EFFICIENCY. SELECTIVELY CLEARED WOODY MATERIAL CAN BE DISPOSED OF WITH THE FOLLOWING METHODS AS FEASIBLE: STACKED IN PILES AND BURNED, REMOVED FROM THE WOODLAND AND CHIPPED, AND/OR HAULED AWAY FROM SITE TO A DISPOSAL FACILITY.

SELECT IN-CHANNEL REACH WORK

CHANNEL STABILIZATION ENHANCEMENTS AT IDENTIFIED REACHES DEPICTED SHALL BE COMPLETED AFTER REMOVAL OF WOODY MATERIAL WITHIN THE CHANNEL AND SELECTIVE TREE REMOVAL ALONG THE SLOPES. IN SEVERAL INSTANCES, THERE ARE NO PRESCRIPTIONS FOR THE REACHES BEYOND WOODY REMOVAL, LIGHT GRADING/REDISTRIBUTION OF SEDIMENT AND BOULDERS WITHIN THE CHANNEL BOTTOM, AND SEED INSTALLATION ALONG THE SLOPES. HOWEVER, THESE AREAS SHOULD BE EVALUATED FOLLOWING COMPLETION OF THESE TASKS TO ASSESS IF FURTHER ACTIONS SHOULD BE TAKEN. ARMORING MAY CONSIST OF TREE REVETMENTS, RIP RAP, OR BOULDER REVETMENTS UTILIZING EXISTING BOULDERS ON SITE. BANK SHAPING BY REMOVING SOIL TO REDUCE SLOPE STEEPNESS IS LIMITED DUE TO THE OVERALL SLOPE STEEPNESS ABOVE AND BEYOND THE CHANNEL.

THE FOLLOWING DESCRIBES ACTIONS TO BE COMPLETED AT EACH REACH BEYOND WOODY REMOVALS AND REDISTRIBUTION OF SEDIMENT IN THE CHANNEL BOTTOM:

REACH 1: NO GRADING OR ARMORING IS CURRENTLY PRESCRIBED. SLOPES IN THIS AREA ARE STEEP AND SEED MAY NEED TO BE APPLIED VIA HYDROMULCHING/HYDROSEEDING.

REACH 2: ARMOR THE BANKS WHERE THERE HAS BEEN CHANNEL CUTTING, COMPLETE LIGHT GRADING WITHIN THE CHANNEL TO STABILIZE BANKS.

REACH 3: ARMOR THE SOUTHERN BANK THAT HAS CUTTING.

REACH 4: NO ARMORING IS CURRENTLY PRESCRIBED. RESHAPE THE CHANNEL BOTTOM FOLLOWING SEDIMENT REMOVAL AND MOVE BOULDERS TO STABILIZE THE BANKS.

REACH 5: LAY BACK THE SOUTH BANK TO A 3:1 SLOPE AND ARMOR THE BANK.

REACH 6: REGRADE THE SOUTH BANK. ARMOR THE BEND ON THE NORTH BANK TO PROTECT THE TOE AND ADD IN TOPSOIL TO COVER EXPOSED OAK TREE ROOTS. PLACE EROSION BLANKET OR HYDROMULCH DISTURBED AREAS FOLLOWING SEEDING. PLACE BOULDERS TO REALIGN THE CHANNEL IN THE UPSTREAM TOE.

SLOPE STABILIZATION

CHANNEL STABILITY WILL BE IMPROVED BY TAKING MEASURES TO STABILIZE SOIL ON THE SLOPES ABOVE THE CHANNEL. THIS WILL PRIMARILY CONSIST OF THE ESTABLISHMENT OF PERENNIAL, HERBACEOUS VEGETATION. THE MAIN OBJECTIVE OF THE SELECTIVE WOODY CLEARING IS TO REDUCE CANOPY COVER AS FEASIBLE TO GET MORE SUNLIGHT TO THE GROUND SURFACE FOR HERBACEOUS VEGETATION TO GROW.

CONDUCT A PRESCRIBED BURN DURING THE FALL OR SPRING BURN WINDOW, AS FEASIBLE, TO REDUCE THE LEAF LITTER PRIOR TO SEED INSTALLATION. IN LIEU OF A PRESCRIBED BURN, DENSE LEAF LITTER COULD BE DISPERSED WITH A LEAF BLOWER PRIOR TO SEEDING.

FOLLOWING WOODY CLEARING, SEED THE UNDERSTORY WITH A MIX OF GRASSES AND SEDGES THAT PROVIDE STABILIZATION AND CAN TOLERATE AT LEAST PARTIAL SHADE. INCLUDE A TEMPORARY COVER CROP TO STABILIZE SOILS AS THE PERENNIAL VEGETATION ESTABLISHES. SOIL BINDING POLYMERS AND/OR HYDROSEEDING SHOULD BE CONSIDERED TO GET SEED CONTACT AND ATTACHMENT ALONG VERY STEEP AREAS.

CONDUCT FOLLOW-UP VEGETATION MANAGEMENT THE GROWING SEASON AFTER SEED INSTALLATION TO REDUCE HERBACEOUS WEED GROWTH AND RESPROUTS OF WOODY VEGETATION. CONDUCT SPOT HERBICIDE TREATMENTS TO TARGET SMALL WOODY VEGETATION AS WELL AS HERBACEOUS WEEDS, SUCH AS GARLIC MUSTARD (*ALLIARIA PETIOLATA*), THAT MAY OUTCOMPETE THE SEEDED VEGETATION.

SELECTIVE WOODY CLEARING

TREES TO BE REMOVED ARE DEPICTED ON THE PLAN. IT IS RECOMMENDED THAT TREE AND SHRUB CLEARING IN THIS RESTORATION AREA OCCUR CONCURRENTLY WITH WOODY CLEARING ACTIVITIES FOR THE CHANNEL AND THAT TREES ARE MARKED BY A QUALIFIED PERSON PRIOR TO CLEARING. MOST DOWNED WOODY MATERIAL SHOULD BE REMOVED FROM THE UNIT TO ALLOW FOR INVASIVE SPECIES TREATMENTS AND NATIVE SEED INSTALLATION. FORESTRY MOWING MAY BE UTILIZED TO MULCH UP SHRUBS, SMALL SAPLINGS, AND WOODY DEBRIS IN AREAS WITH EQUIPMENT ACCESS AND WHERE THERE ARE NOT STEEP SLOPES. REMAINING TREES AND SHRUBS SHOULD BE REMOVED WITH HAND TOOLS (CHAINSAWS AND BRUSHCUTTERS). CUT WOODY MATERIAL, EXCEPT FOR WHAT IS CHIPPED/MULCHED BY THE FORESTRY MOWER, SHOULD BE BURNED IN PILES OR REMOVED FROM THE AREA.

SEED BED PREPARATION

CONDUCT INVASIVE SPECIES TREATMENTS DURING THE GROWING SEASON AFTER WOODY CLEARING TO REMOVE EXISTING WEEDY HERBACEOUS VEGETATION AND TO TARGET RESPROUTS AND SEEDLINGS OF UNDESIRABLE WOODY VEGETATION. IT IS RECOMMENDED THAT A MINIMUM OF THREE HERBICIDE TREATMENTS BE CONDUCTED AND TIMED BASED ON INVASIVE SPECIES PHENOLOGY INCLUDING AN EARLY SPRING TREATMENT EVENT TO TARGET EARLY BLOOMING SPECIES SUCH AS GARLIC MUSTARD. HERBICIDE MAY BE APPLIED VIA BACKPACK SPRAYERS OR ATV/UTV MOUNTED BOOM SPRAYERS OR PISTOL SPRAYERS. DESIRABLE NATIVE SPECIES IN THE UNDERSTORY SHOULD BE SPRAYED AROUND AS FEASIBLE. IF THERE ARE EROSION CONCERNS FOLLOWING HERBICIDE TREATMENTS, A TEMPORARY COVER CROP MAY BE INSTALLED TO STABILIZE SOIL BETWEEN TREATMENT EVENTS.

SEEDING

INSTALL A NATIVE SEED MIX DURING THE FALL OR SPRING NATIVE SEEDING WINDOW ONCE THERE IS SUFFICIENT CONTROL OF WEEDY SPECIES IN THE HERBACEOUS LAYER. AGRECOL'S 'SAVANNA/WOODLAND EDGE' MIX OR A SIMILAR SEED MIX FROM A REPUTABLE NATIVE PLANT NURSERY IS RECOMMENDED. THE SEED MIX SHOULD CONTAIN A VARIETY OF GRASS, SEDGE, AND WILDFLOWER SPECIES NATIVE TO DANE COUNTY THAT THRIVE IN MESIC TO DRY SOILS AND THAT CAN TOLERATE A RANGE OF LIGHT CONDITIONS FROM FULL SUN TO FULL SHADE SINCE THERE WILL BE OPEN PRAIRIE/SAVANNA POCKETS AS WELL AS SHADIER AREAS UNDER THE BLACK WALNUT CLUSTERS. INSTALL THE NATIVE SEED MIX WITH A NURSE CROP.



NOTES
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 CITY OF MADISON, DANE COUNTY, WISCONSIN



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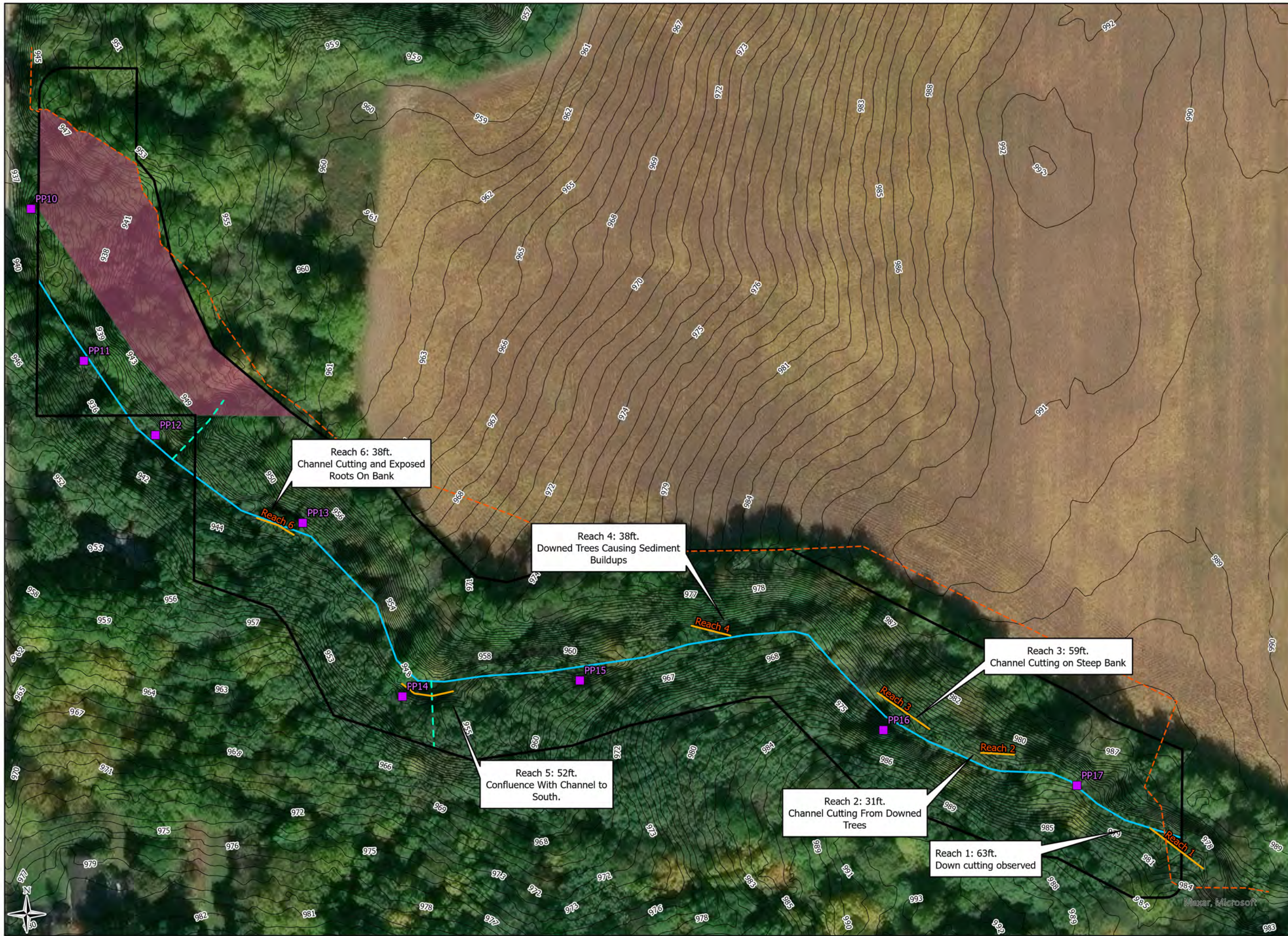
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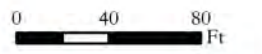
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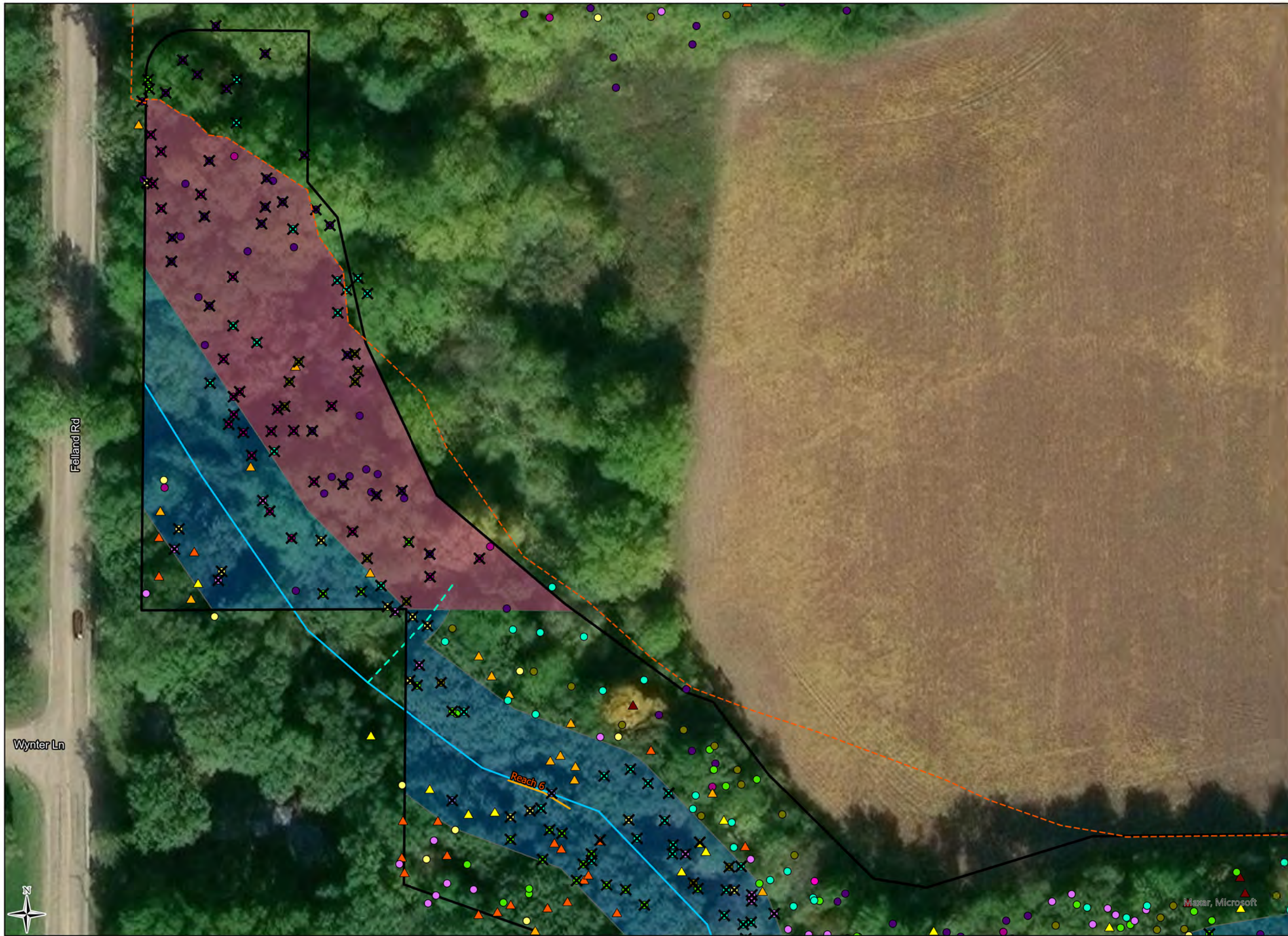


- Outlot 64 Study Area (4.76 ac)
- Dane Co 1' Contours
- Approx. Grading Limits
- Approx. Channel Centerline
- Approx. Secondary Channel Centerline
- Channel Improvement Locations
- Channel Photo Points
- Woodland Restoration Area (0.56 ac)



Heartland
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Figure 2. Channel Assessment
 Outlot 64 Channel Stabilization
 Project #20231162
 T8N, R10E, S26
 C Madison, Dane Co



- Outlot 64 Study Area (4.76 ac)
- Approx. Grading Limits
- Channel Improvement Locations
- Approx. Channel Centerline
- Approx. Secondary Channel Centerline
- Woodland Restoration Area (0.56 ac)
- Selective Woody Clearing Area (2.14 ac)

- Surveyed Trees**
- Acer negundo
 - Acer platinoides
 - Acer saccharum
 - Carya ovata
 - Catalpa bignoides
 - Celtis occidentalis
 - Fraxinus pennsylvanica
 - Juglans nigra
 - Juniperus virginiana
 - Morus alba
 - Populus deltoides
 - Prunus serotina
 - Quercus alba
 - Quercus macrocarpa
 - Quercus rubra
 - Quercus vellutina
 - Rhamnus cathartica
 - Robinia pseudoacacia
 - Tilia americana
 - Ulmus americana
 - Unknown
 - Remove

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Figure 3a. Selective Woody Clearing Plan

Outlot 64 Channel Stabilization
 Project #20231162
 T8N, R10E, S26
 C Madison, Dane Co

2022 Maxar
 Dane Co, HEG

7 of 9 LRR: NCNE

Figure Created: 8/1/2024



- Outlot 64 Study Area (4.76 ac)
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 - Ulmus americana
 - Unknown
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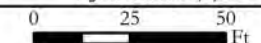
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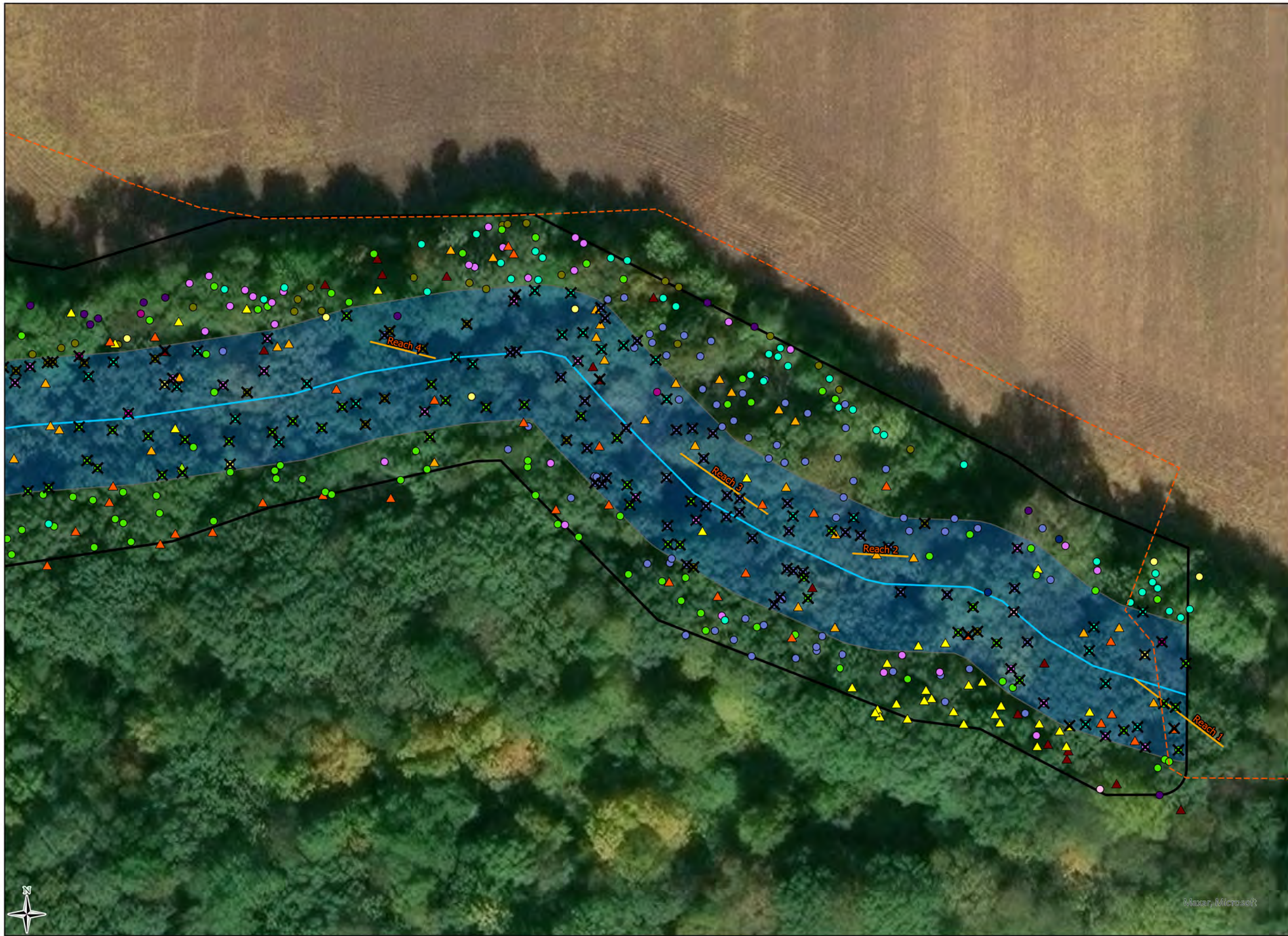
Figure 3b. Selective Woody Clearing Plan

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 Project #20231162
 T8N, R10E, S26
 C Madison, Dane Co

2022 Maxar
 Dane Co, HEG **8 of 9** LRR: NCNE

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Heartland
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Figure 3c. Selective Woody Clearing Plan

Outlot 64 Channel Stabilization
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 T8N, R10E, S26
 C Madison, Dane Co

2022 Maxar
 Dane Co, HEG

9 of 9 LRR: NCNE

Figure Created: 8/1/2024

