

TYPE III STORM VARIANCE

OSU Multi-Species Animal Learning Center
29 July 2024

Facility

OSU Multi-Species Animal Learning Center
2548 Carmack Rd



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July 29, 2024

Greg Fedner, P.E.
City of Columbus, Division of Sewerage & Drainage
111 North Front Street
Columbus, Ohio 43215

RE: The Ohio State University Multi-Species Animal Learning Center (OSU MALC)
2548 Carmack Road
CC-20226

Mr. Fedner

Sands Decker would like to request a Type III Variance from the City of Columbus Stormwater and Drainage Manual (SWDM) Section 1.3.1 Stream Corridor Protection Zone Delineation, Section 1.3.2 Permanent Protection of the Stream Corridor and Section 1.3.3 Prohibited Uses in the Stream Corridor Protection Zone for The Ohio State University Multi-Species Animal Learning Center, CC-20226, on behalf of The Ohio State University. Specifically, we are seeking a variance for "where wetlands are located partially within the Stream Corridor Protection Zone, the Stream Corridor Protection Zone shall be extended to include the full extent of the wetland area including any required setback". Additionally, we are specifically seeking a variance for "land designated as a stream corridor protection zone shall be placed in a Conservation Easement with the City stated as the Grantee". Furthermore, we are specifically seeking a variance for the prohibited facilities and activities as described in Table 1-1 Facilities and Activities Prohibited in the Stream Corridor Protection Zone.

Although there is no direct documentation that the wetlands were constructed, the mention of the design for the wetlands is accredited to former students in a research study performed at The Ohio State University. Additionally, when using the history function of Google Earth, it is evident from aerial imagery that the wetlands were not present in March of 1995, then constructed prior to March of 2002. In November of 2023, the aerial imagery shows the monitoring boards that have been placed throughout the wetlands to conduct research. Due to the nature of the university as a research institute, and the purpose of Waterman Agricultural and Natural Resources Laboratory to serve as a research facility for the College of Food, Agricultural, and Environmental Sciences, certain facilities and activities are required to continue the daily operation and on-going research projects for the university that directly conflict with the prohibited facilities/activities stipulated in the storm water drainage manual.

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Stream Corridor Protection Zone

There is a stream, formerly referred to as Ackerman Run South, but recently renamed to Pleasant Run based on a recommendation of a volunteer with the Friends of the Lower Olentangy, that runs east/west across the site with well-defined banks that is home to stabilized vegetation. Based on available information provided by EMH&T, it was determined that the drainage and sewer-shed area for the downstream end of our project development adjacent to Pleasant Run is 204 acres or 0.319 square miles. According to the stream corridor protection zone calculations provided in the City of Columbus SWDM, $147(DA)^{0.38}$, the stream corridor protection zone adjacent to the project site is calculated to be $147(0.319)^{0.38} = 95'$.

The stream corridor protection zone is naturally vegetated. The vegetation consists of natural grasses, ryegrass, and ground cover along with Quenn Ann's Lace, Joe-pye weed, Cup plant, and various voluntary small diameter trees (1" – 6") that appear to be comprised of cotton wood, silver maple, and invasive honeysuckle. Refer to STONE Environmental stream/wetland delineation report in Appendix A for additional vegetation identification.

Located within the stream corridor protection zone are multiple pedestrian crossings, vehicular crossings, and livestock crossings. Additionally, there are multiple existing utilities crossing the stream and running parallel to the stream within the stream corridor protection zone. These utilities include but are not limited to, water, electricity, communication, gas, storm and sanitary. Furthermore, there is an existing asphalt parking lot and building located within the 95' wide stream corridor protection zone.

Fully Compliant Alternative

The fully compliant alternative would provide the 95' wide stream corridor protection zone centered on the centerline of the stream. It would also include the three wetlands north of the stream that partially lie within the 95' wide stream corridor protection zone. The Ohio State University would provide a conservation easement that encompasses the 95' wide stream corridor protection zone and the three wetlands north of the stream. The fully compliant alternative would provide hardship for the university when said pedestrian, vehicular and livestock crossings fail and need repaired and/or replaced. Also, this alternate would provide hardship when said utility infrastructure needs repaired and/or replaced, especially those that run parallel and within the stream corridor protection zone. The fully compliant alternate would provide hardship in

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maintaining the area around the asphalt parking lot and building. The building and parking lot would require maintenance and upkeep that may directly conflict with the prohibited facilities and activities. Finally, the fully compliant alternative would prevent future improvements in the stream corridor protection zone, prevent improved teaching capabilities, prevent research potential and opportunities, and prevent outreach programming that would also improve ecological services in the watershed.

Minimal Impact Alternative

The minimal impact alternative would provide the 95' wide stream corridor protection zone centered on the centerline of the stream. It would not include the three wetlands that were constructed for research purposes north of the stream that partially lie within the 95' wide stream corridor protection zone. The Ohio State University would provide a conservation easement that encompasses the 95' wide stream corridor protection zone except for where there is existing pedestrian, vehicular, and livestock crossings, as well as an exception for the existing asphalt parking lot and building that lie within the 95' wide stream corridor protection zone.

The Ohio State University will adhere to the prohibited facilities and activities to the best of their ability except where it inhibits research, daily operation and maintenance of existing underground and above ground infrastructure. The Ohio State University will use their discretion to determine whether the prohibited facility and/or activity is detrimental to the stream and stream ecosystem. Shall it be deemed detrimental, then the university agrees to follow the regulations of the storm water drainage manual prohibited facilities and activities. Shall it be deemed safe for the stream and stream ecosystem; the university will proceed with caution with the said prohibited facilities and/or activities within the conservation easement. While the minimal impact alternative provides more leniency for the university to maintain existing infrastructure and continue on-going research, it also provides hardship for future research and development at Waterman Agricultural and Natural Resources Laboratory. As technology and agricultural practices advance, there will need to be added infrastructure and future developments at Waterman Agricultural and Natural Resources Laboratory to continue to provide research opportunities for students and staff for agricultural advancements. The conservation easement will inhibit this development if not provided the ability for The Ohio State University to use their discretion as to whether a facility or activity should be located or performed within the stream corridor protection zone.

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Preferred Alternative

The preferred alternative is to not provide the 95' wide stream corridor protection zone. Additionally, The Ohio State University would not abide by the prohibited facilities/activities as stipulated in the City of Columbus SWDM. This alternative would eliminate hardship for The Ohio State University. The Ohio State University would be able to maintain and/or replace in-ground, including utilities running parallel to the stream, and above ground infrastructure. In addition, it would also provide the university with the ability to grant future research opportunities to staff and students. Furthermore, it would provide the university with the opportunity to add fencing and animal crossings as required to maintain their daily operational requirements. Lastly, it would allow the university to provide future pedestrian and vehicular access ways across the stream to achieve their vision for the Waterman Agricultural and Natural Resources Laboratory as a teaching and display/outreach facility for both students and visitors to flow through the site to learn about the multiple agricultural, ecosystem, and stormwater control devices throughout the land laboratory.

Conclusion

In conclusion, Sands Decker, on behalf of The Ohio State University, is seeking a Type III Variance from the City of Columbus Stormwater Drainage Manual (SWDM) Section 1.3.1 Stream Corridor Protection Zone Delineation, Section 1.3.2 Permanent Protection of the Stream Corridor and Section 1.3.3 Prohibited Uses in the Stream Corridor Protection Zone. The purpose of the variance request is for the continued use of Waterman Agricultural and Natural Resources Laboratory as a teaching and research institute. Due to daily operations, the necessity for stream crossings and utilities, and on-going and future anticipated research, The Ohio State University finds great hardship in the requirements set forth by the aforementioned sections of the City of Columbus stormwater and drainage manual as it pertains to the stream corridor protection zone and wetlands. Approval of this variance would still fulfill the spirit and intent of the manual, where stormwater management, water quality, minimizing erosion and sedimentation and improved ecological services are all ingrained in the mission of the Waterman Agricultural and Natural Resources Laboratory. This variance would not detract in protecting natural stormwater resources.

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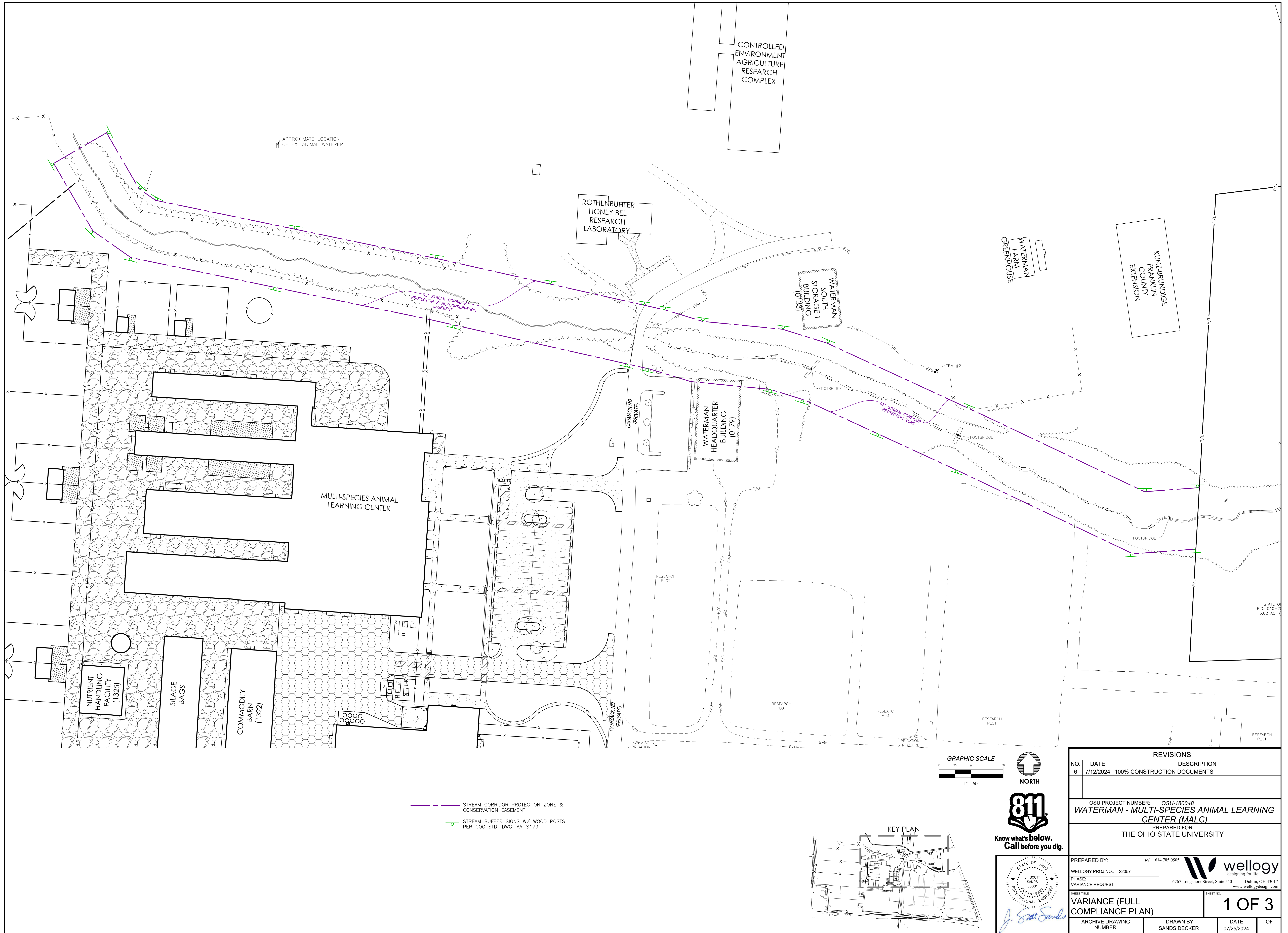
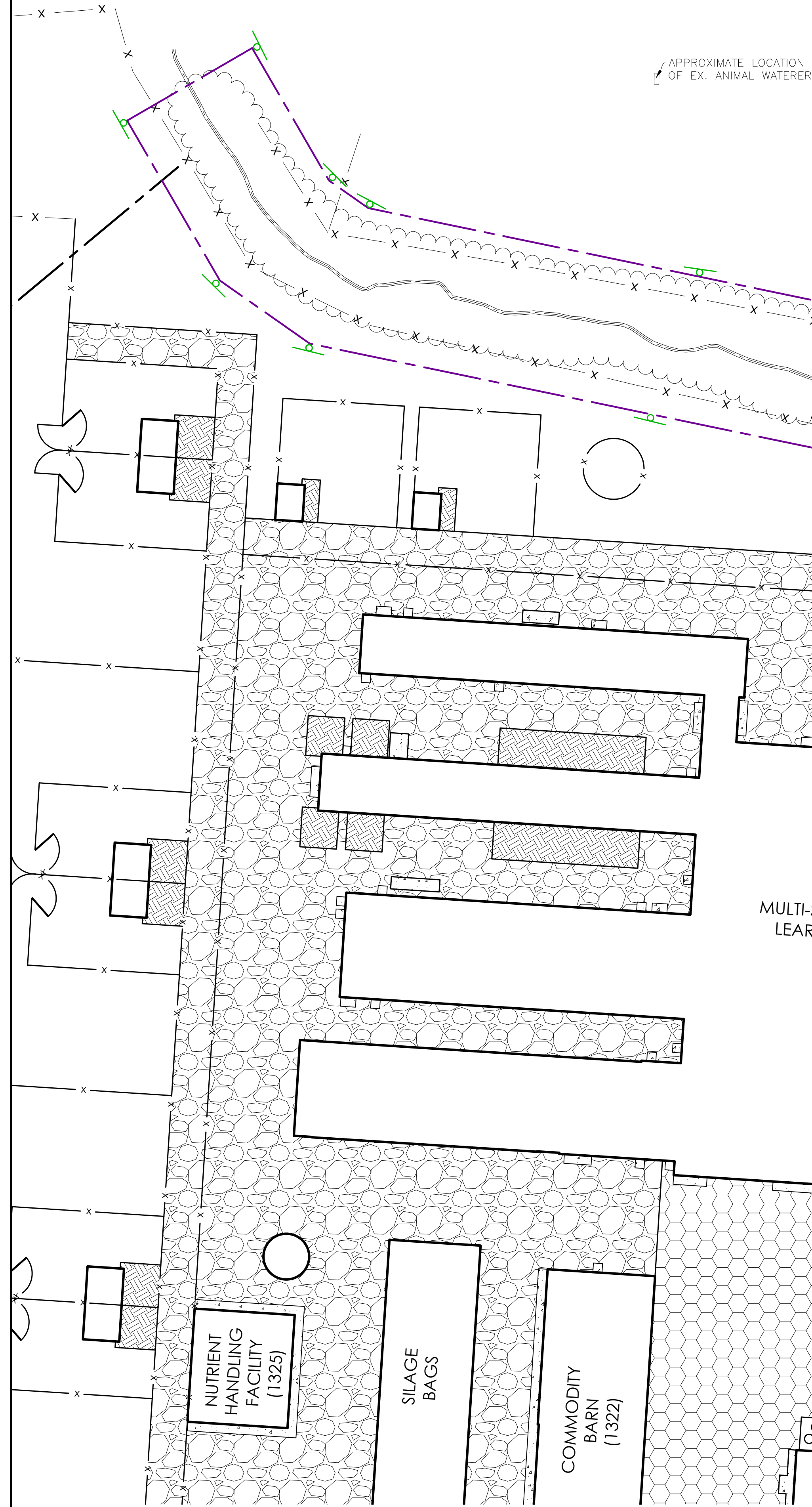
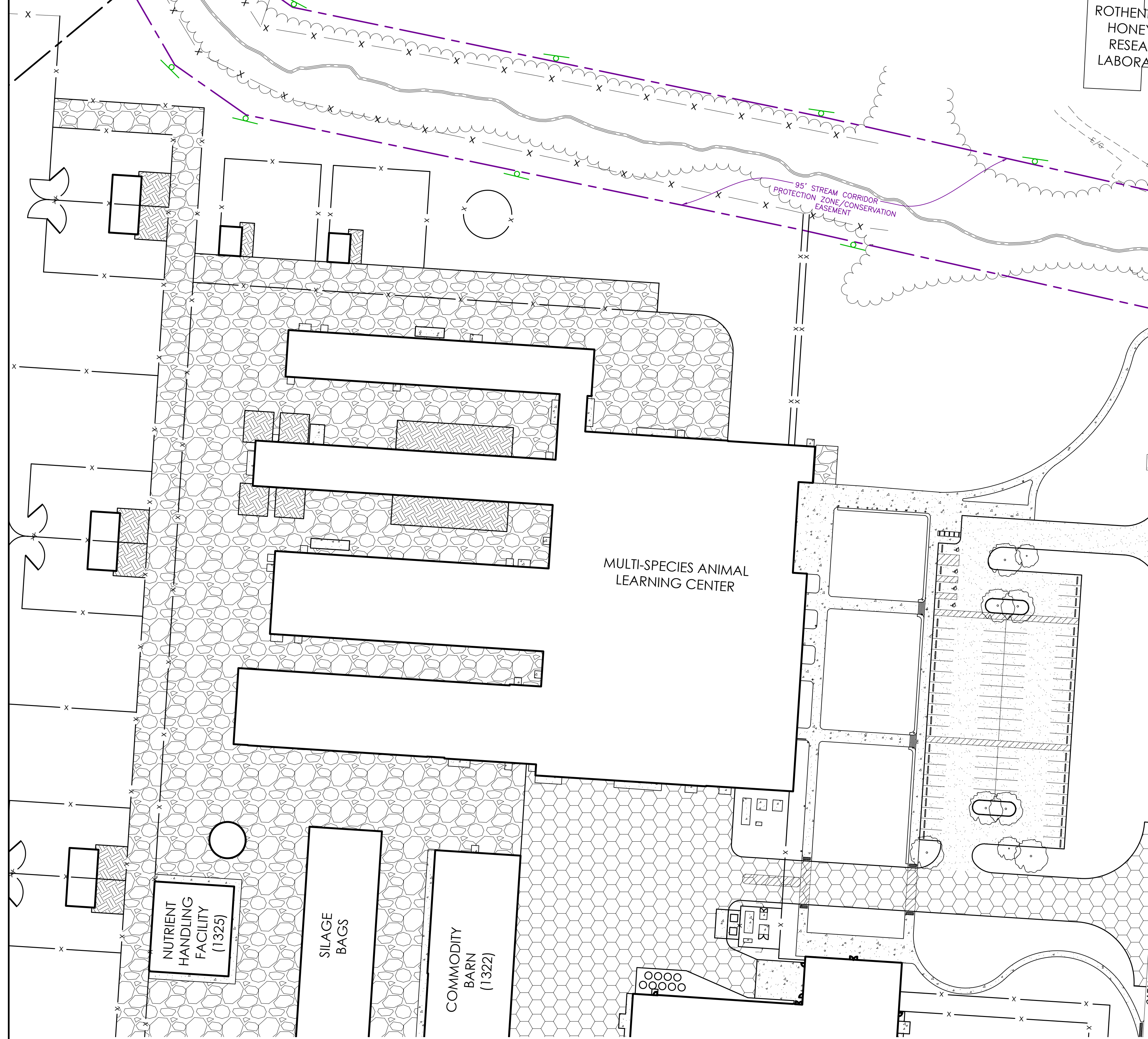
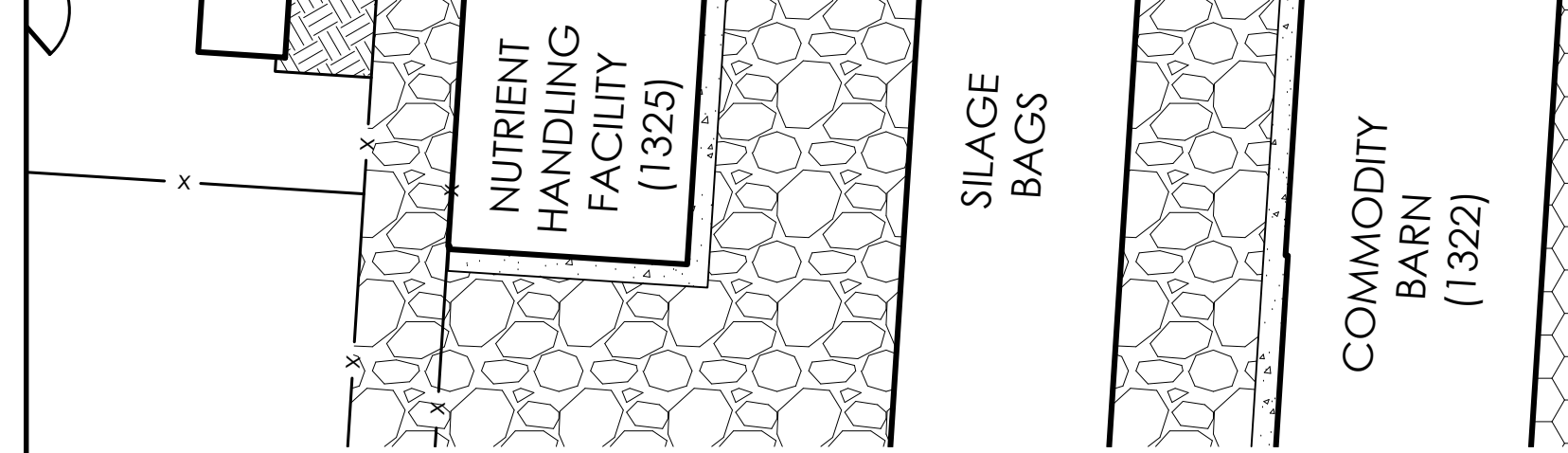
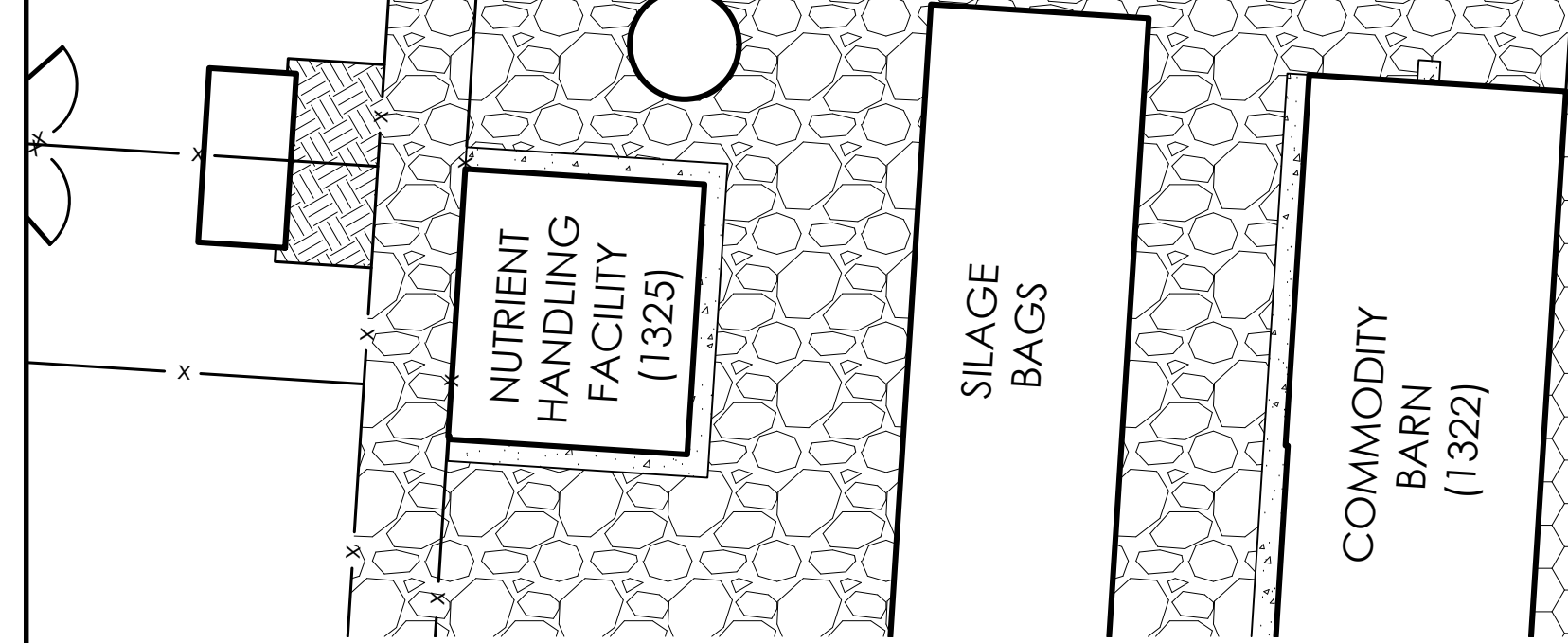
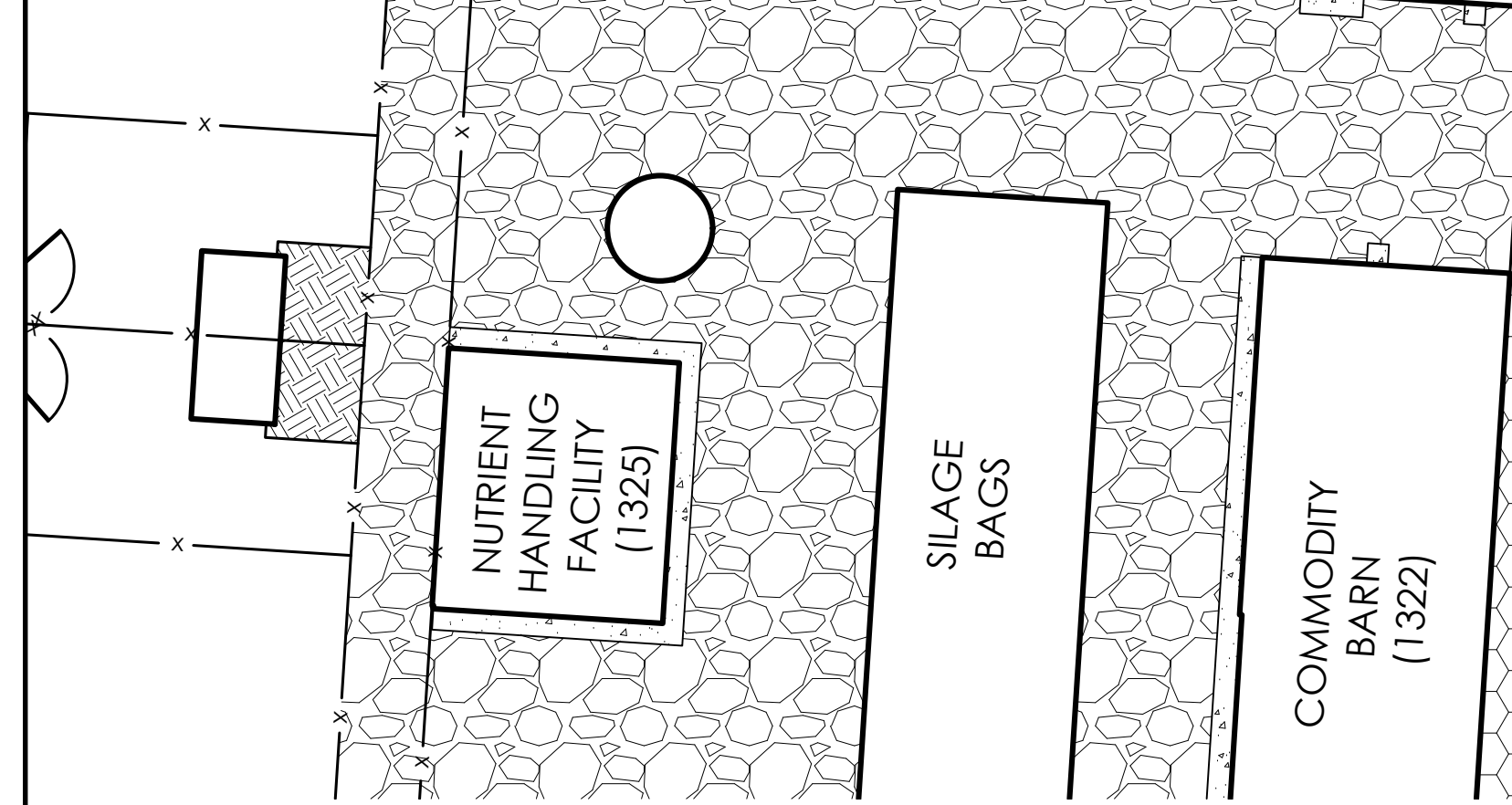
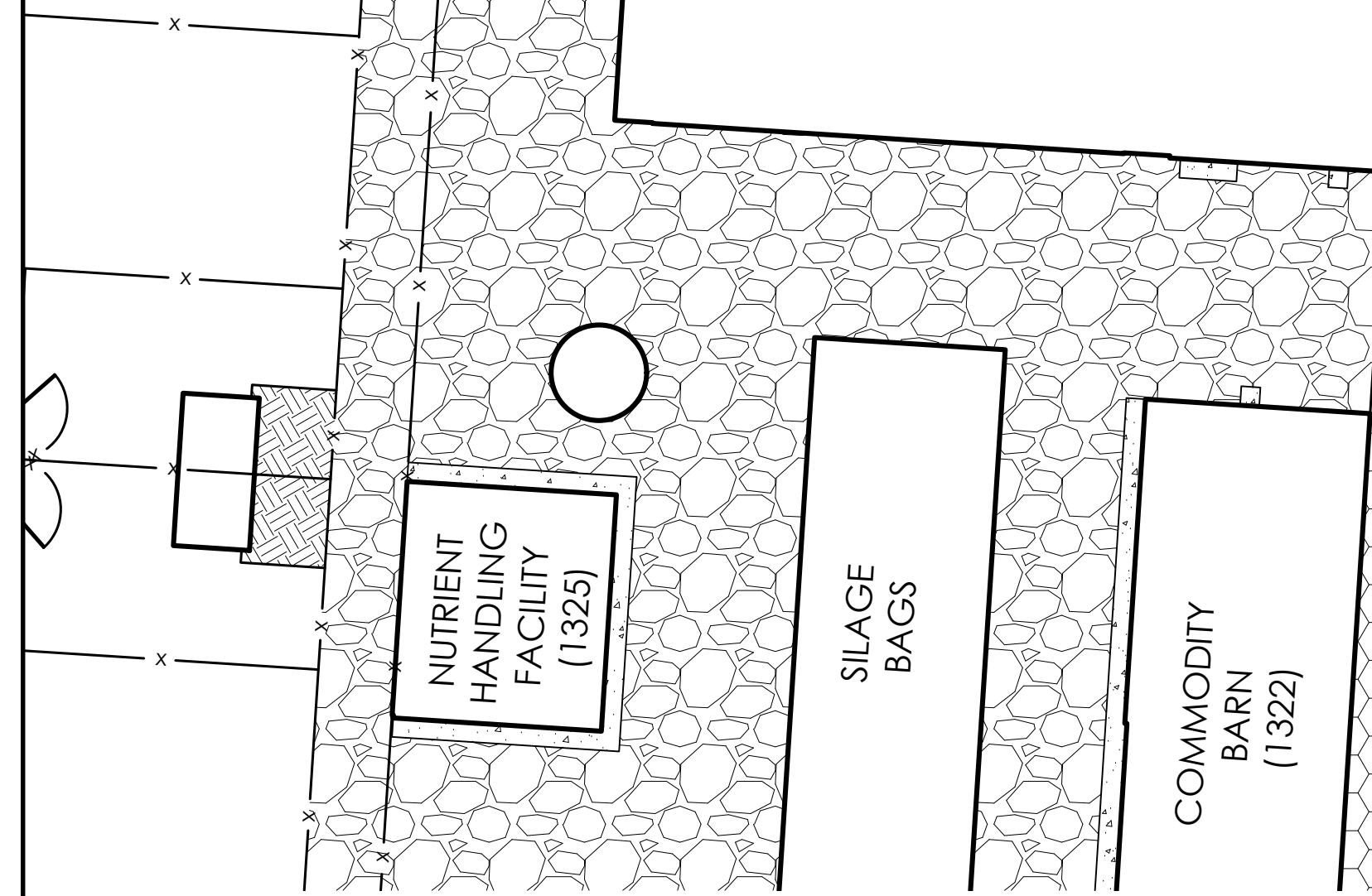
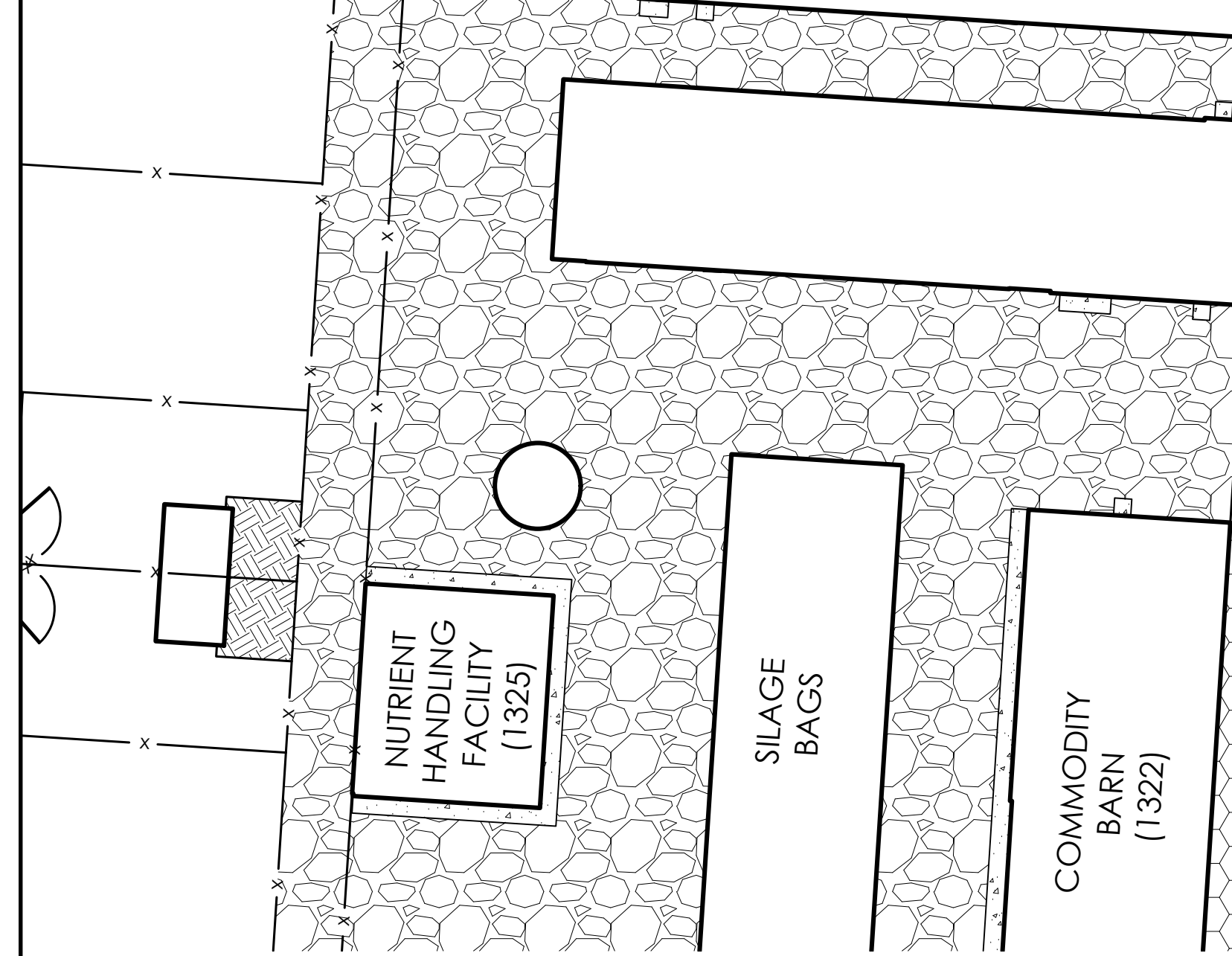
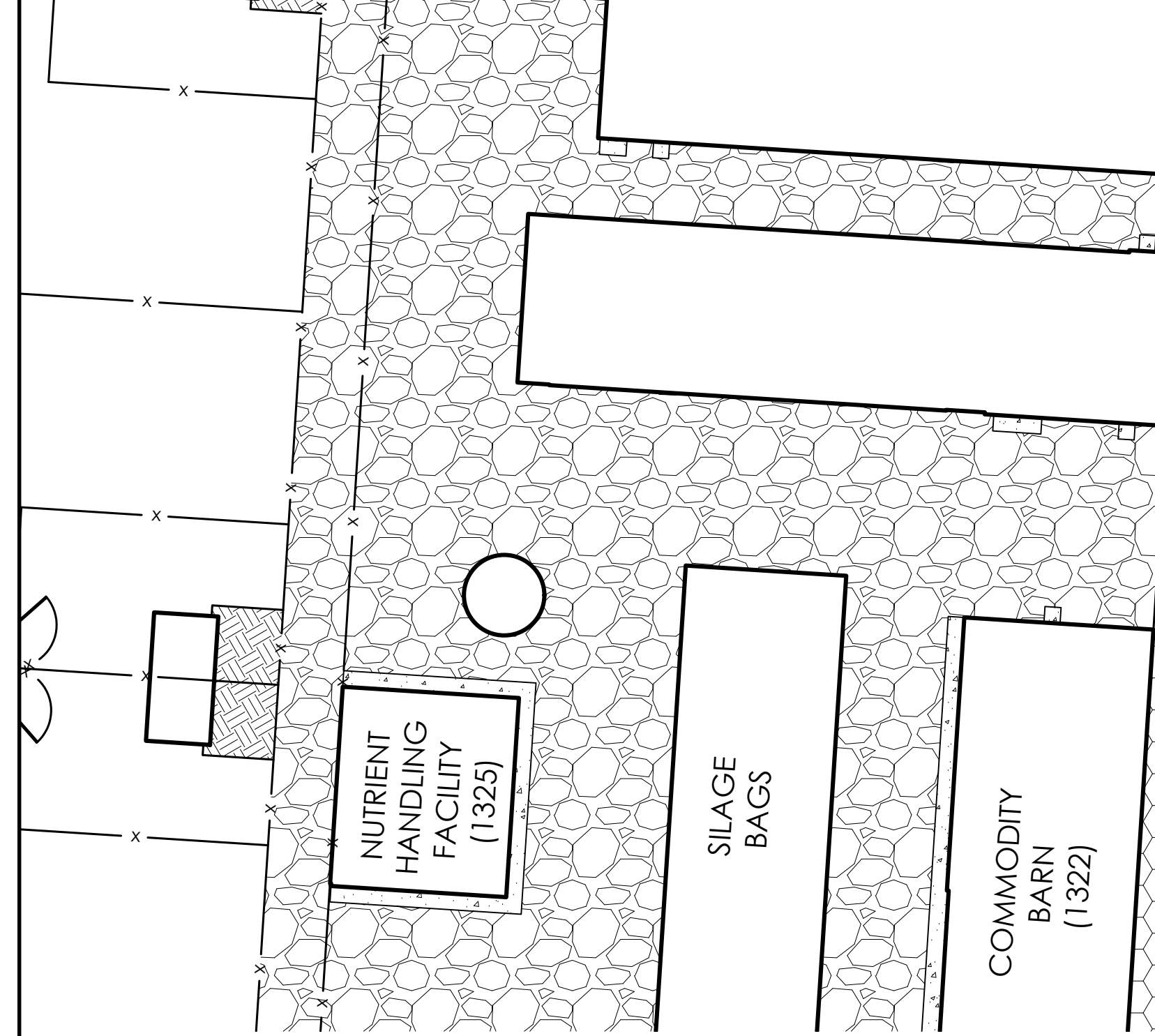
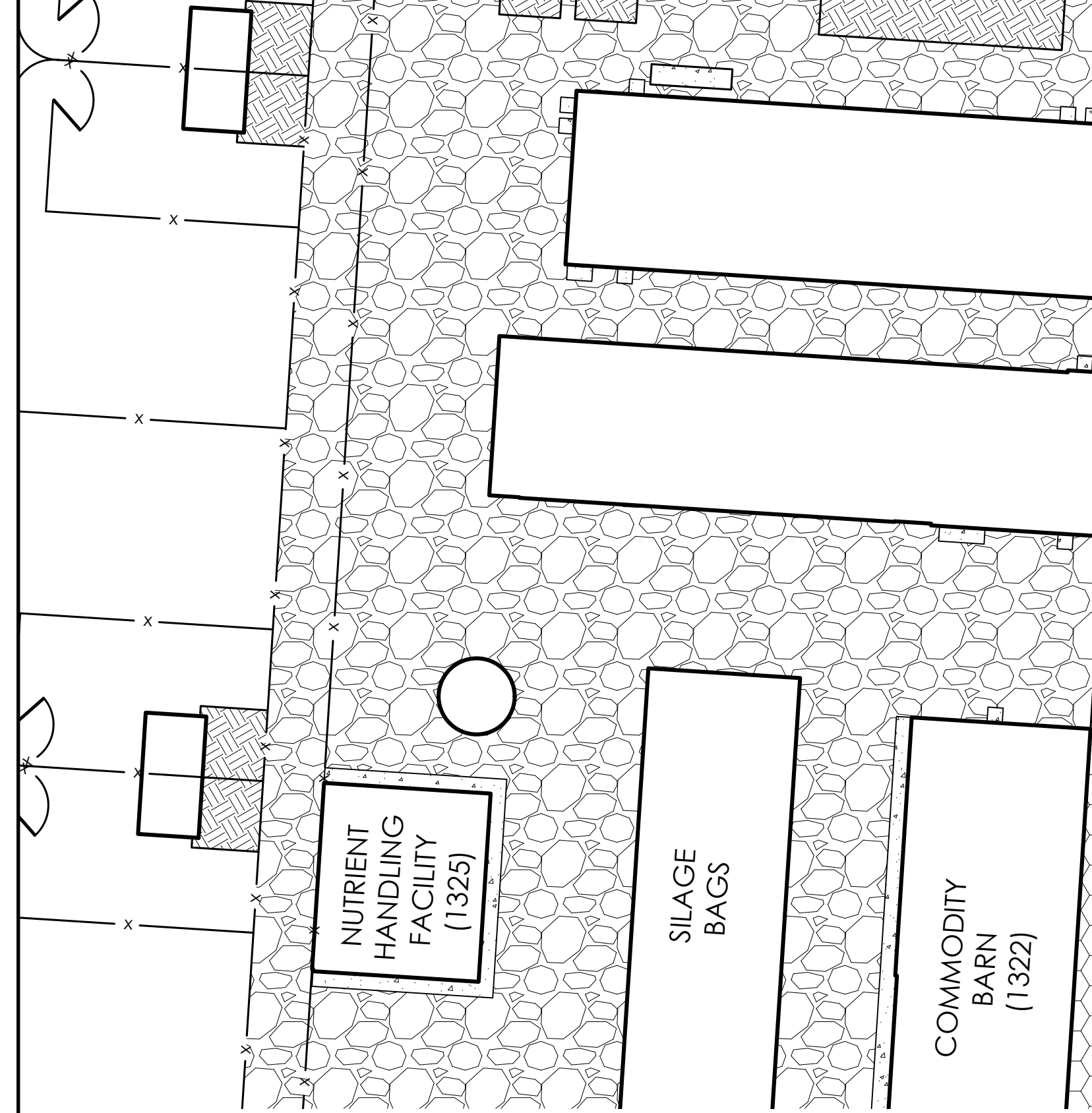
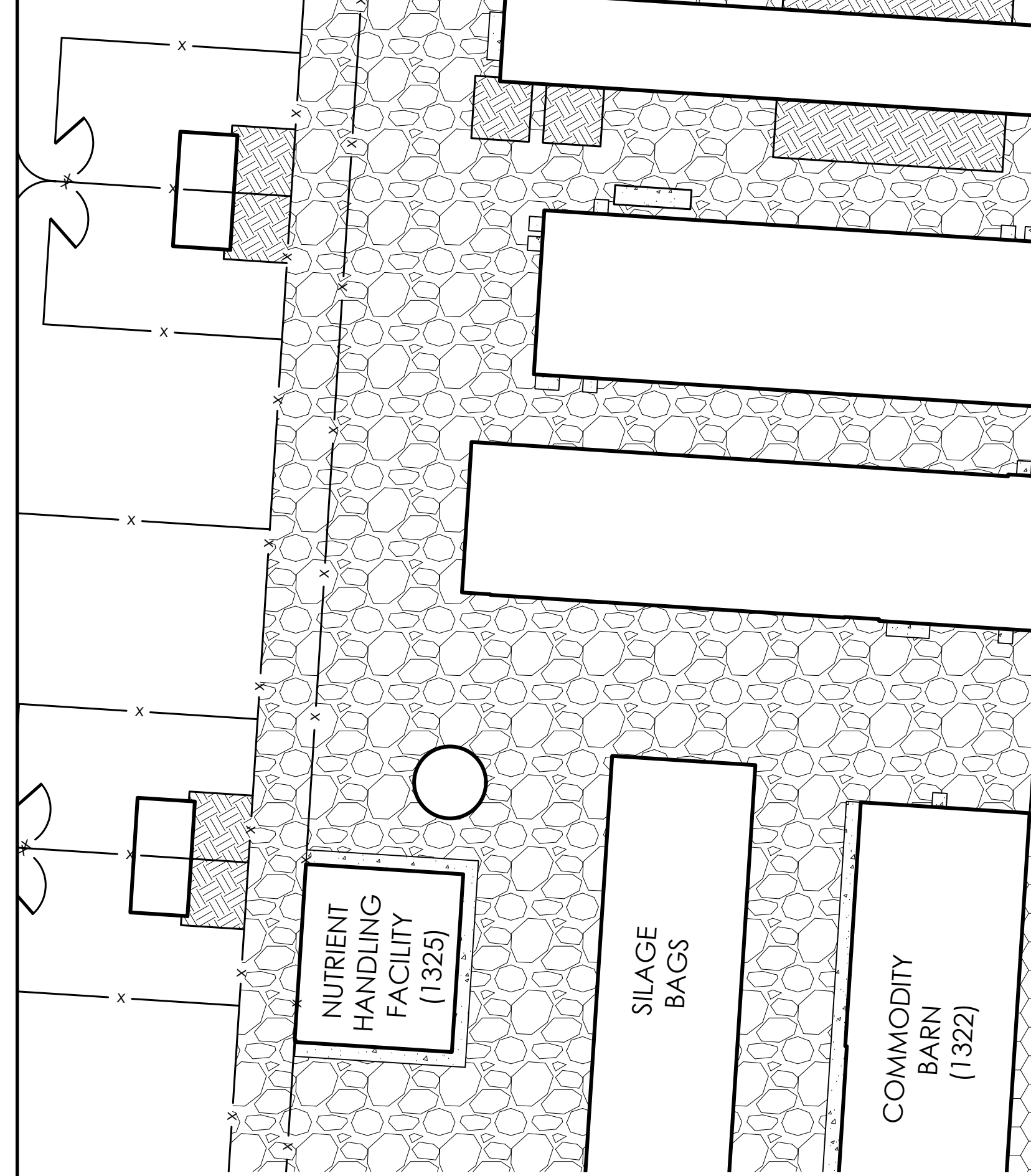
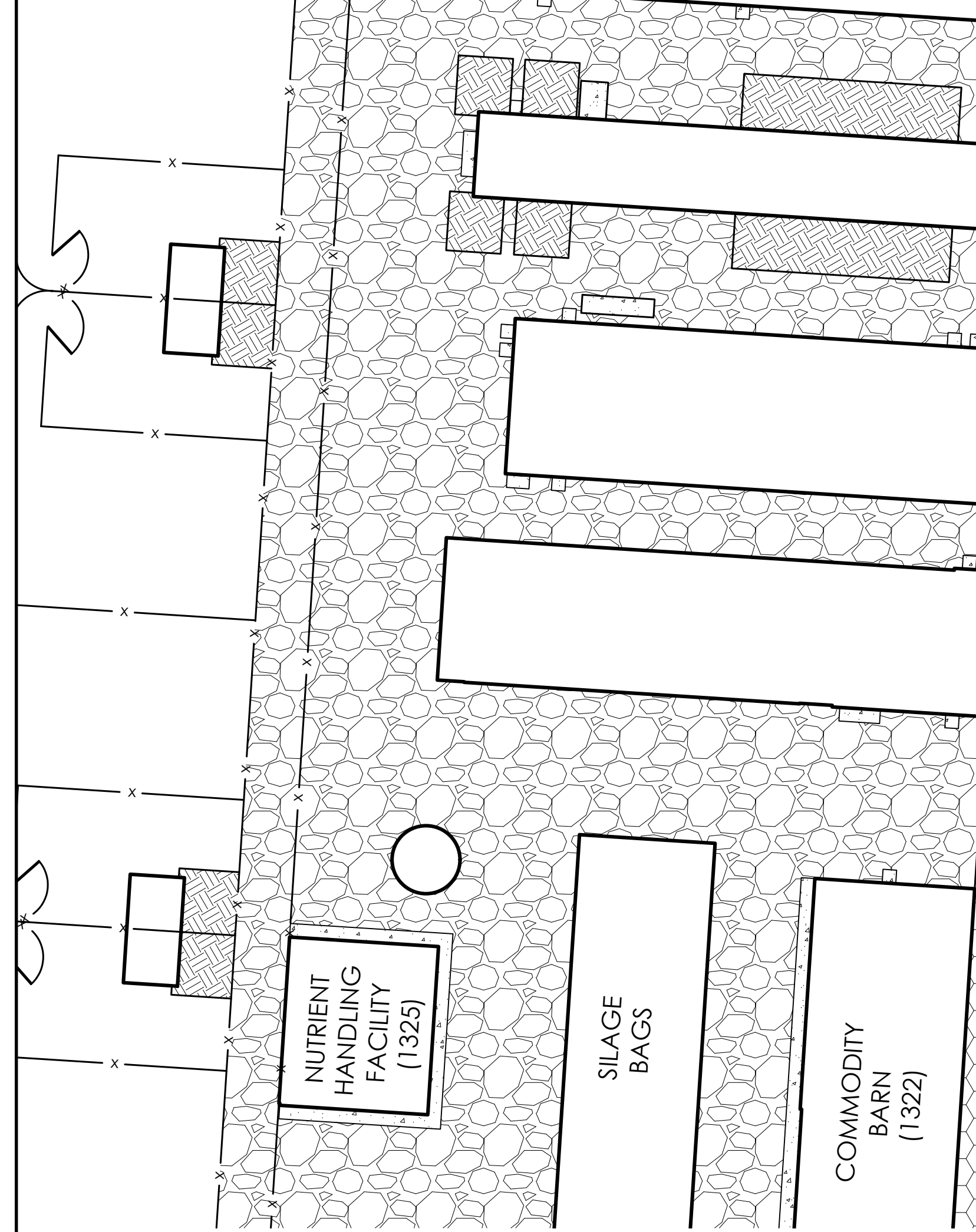
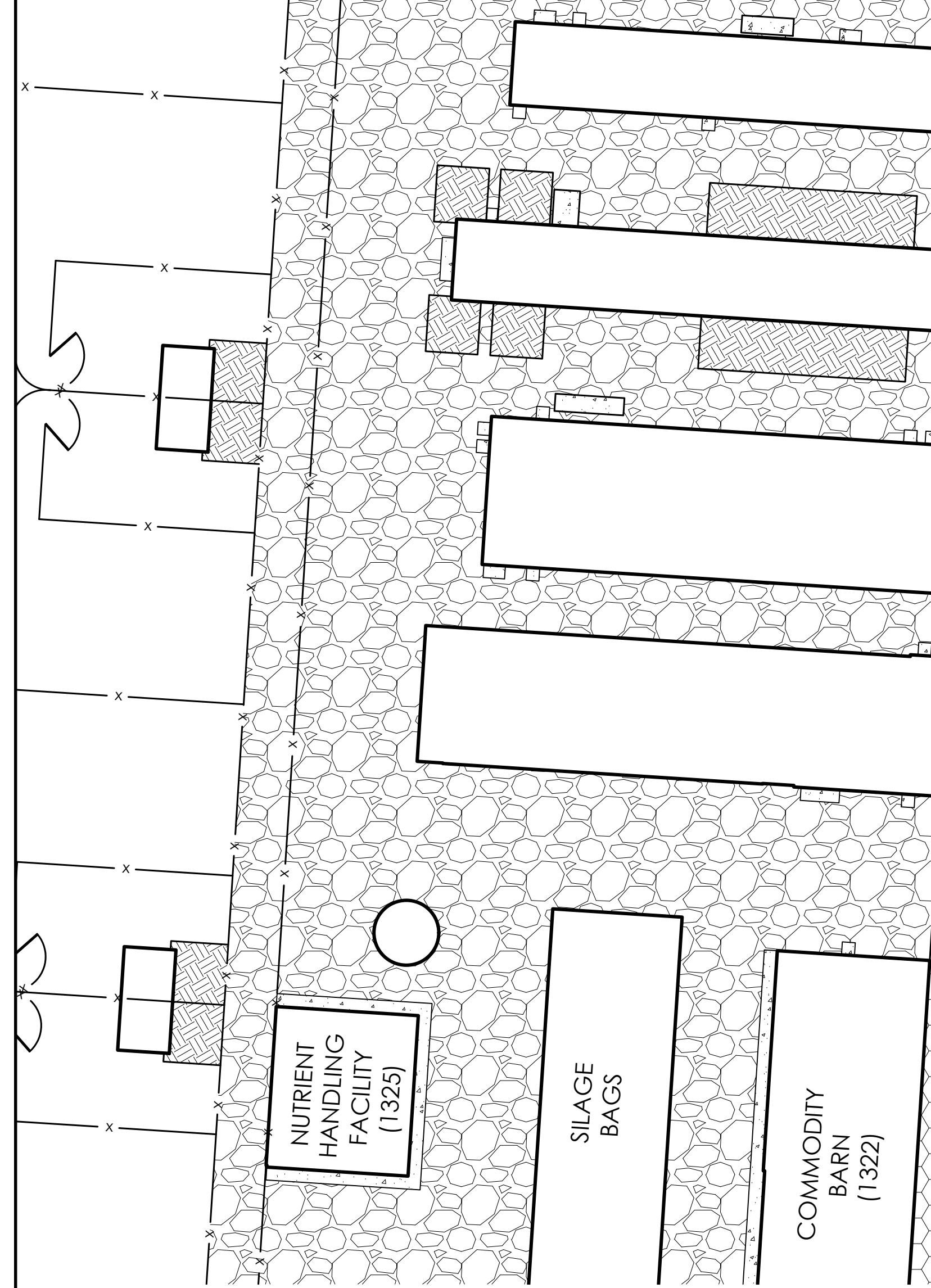
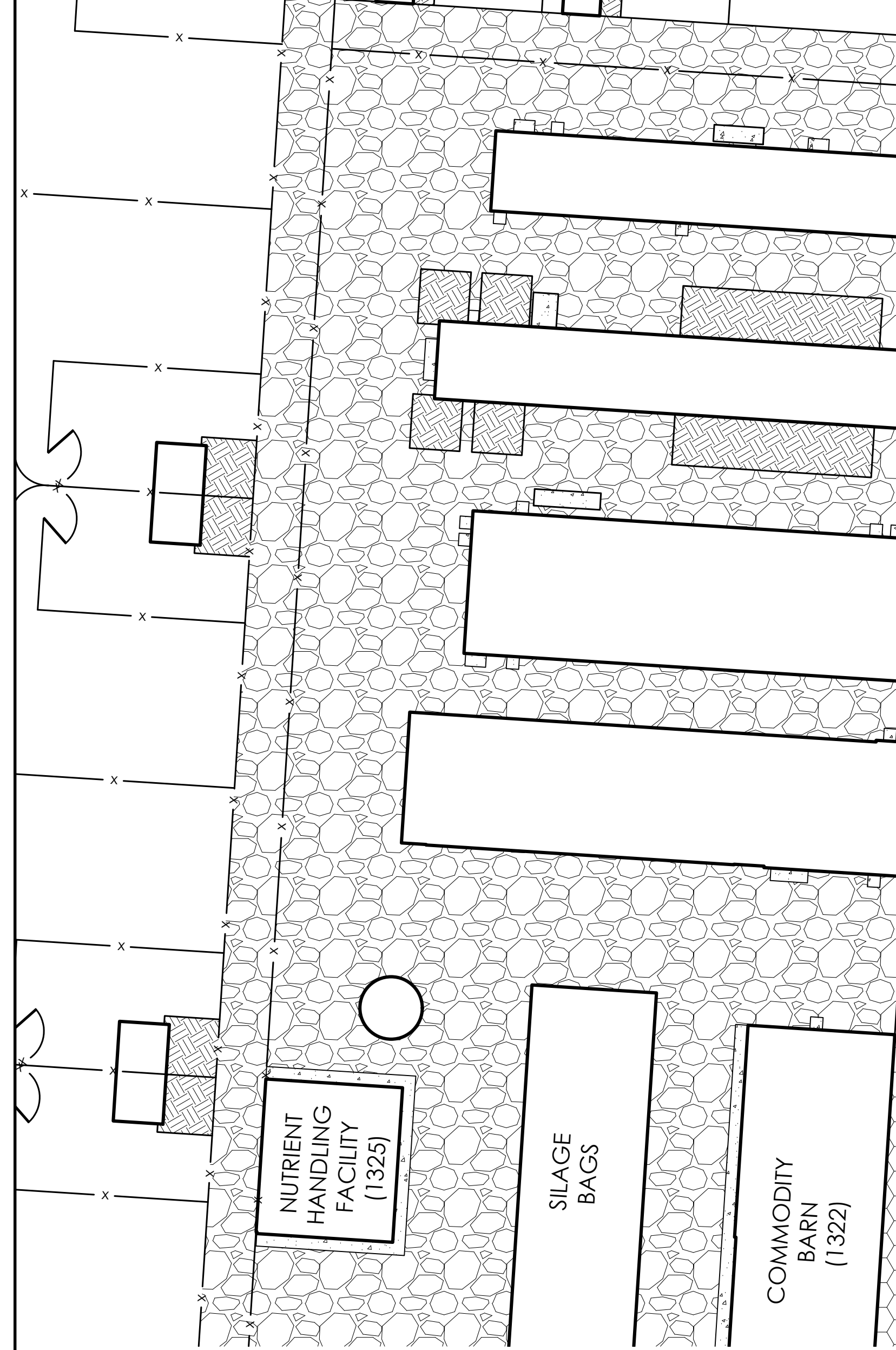
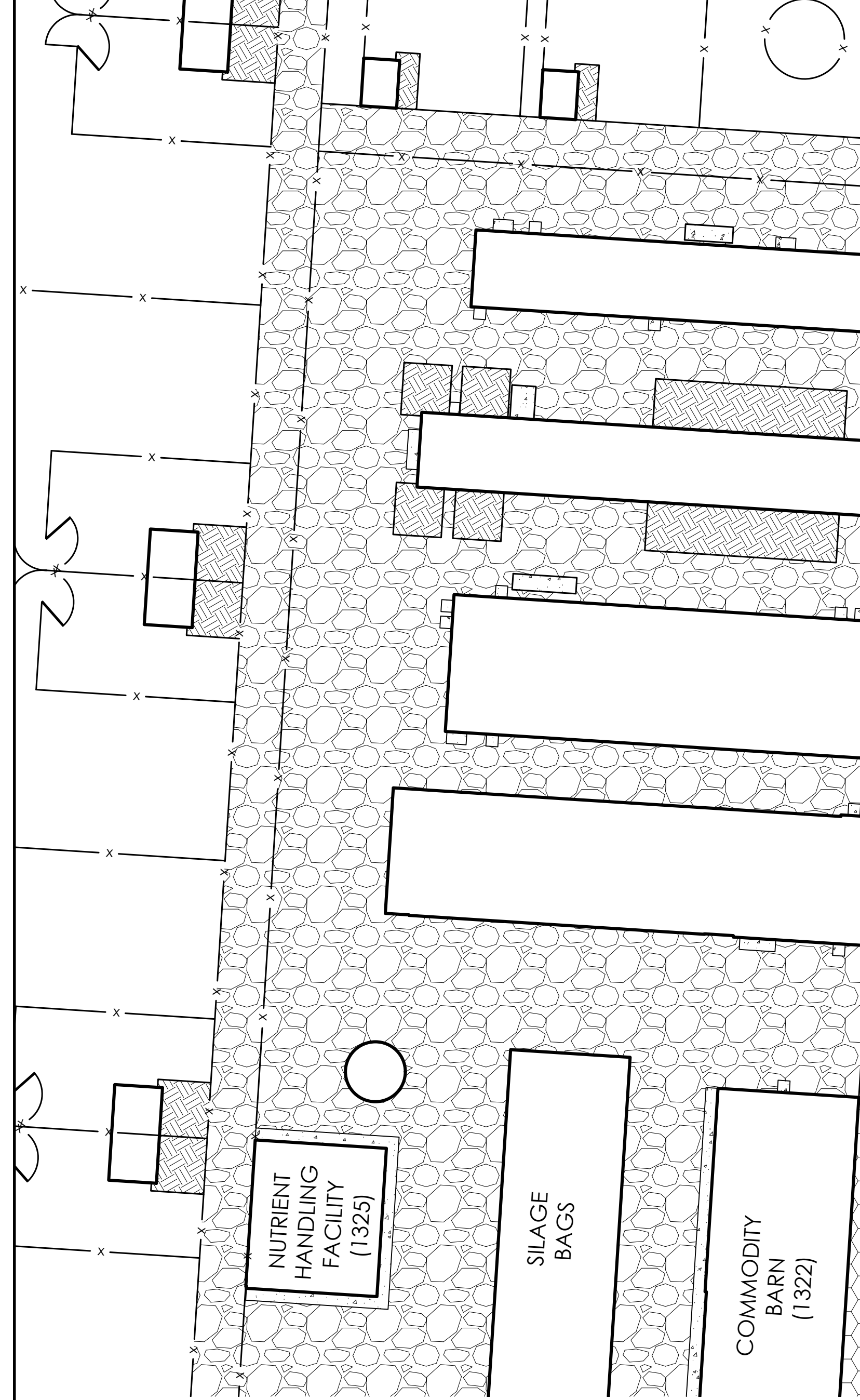
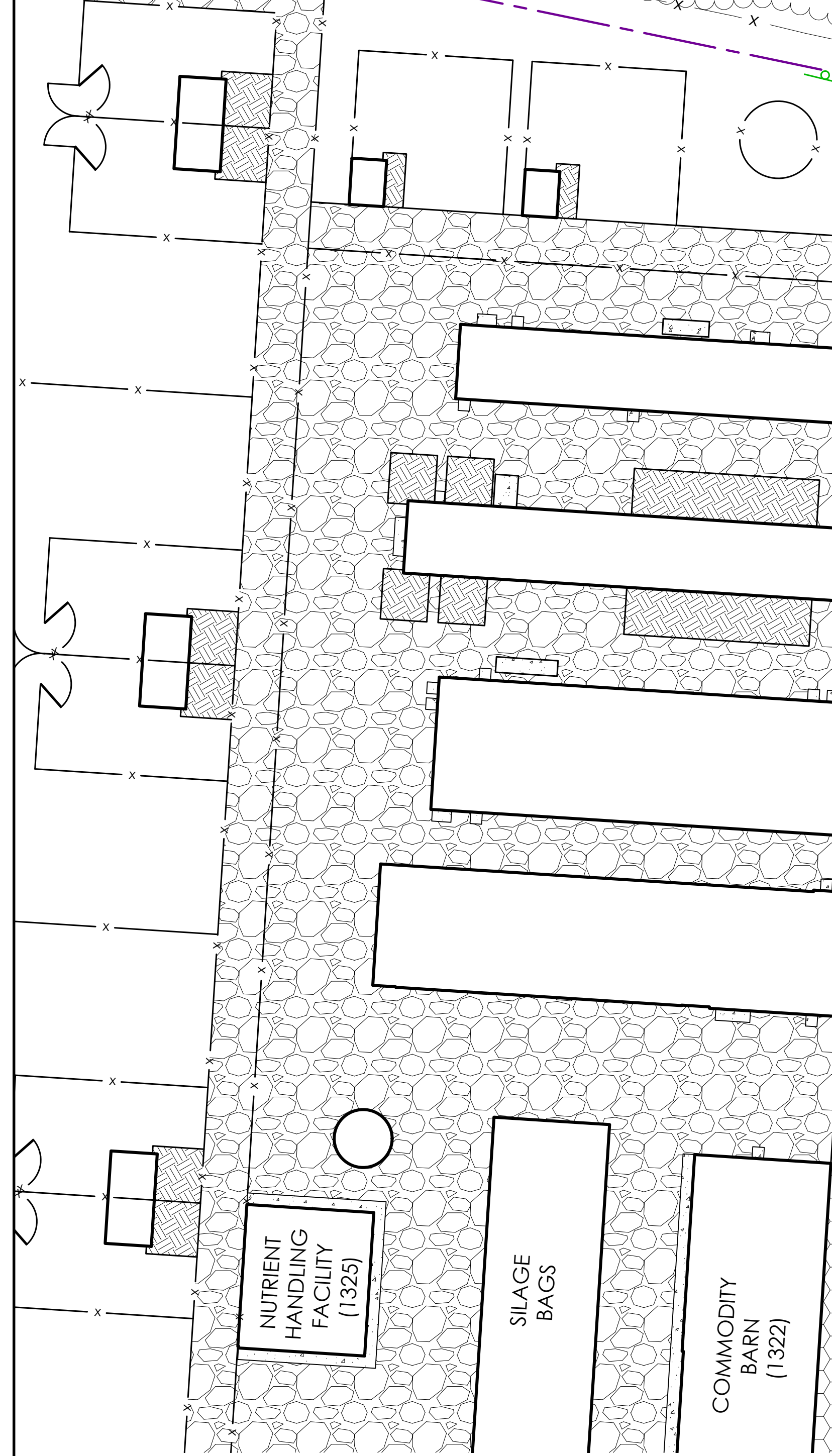
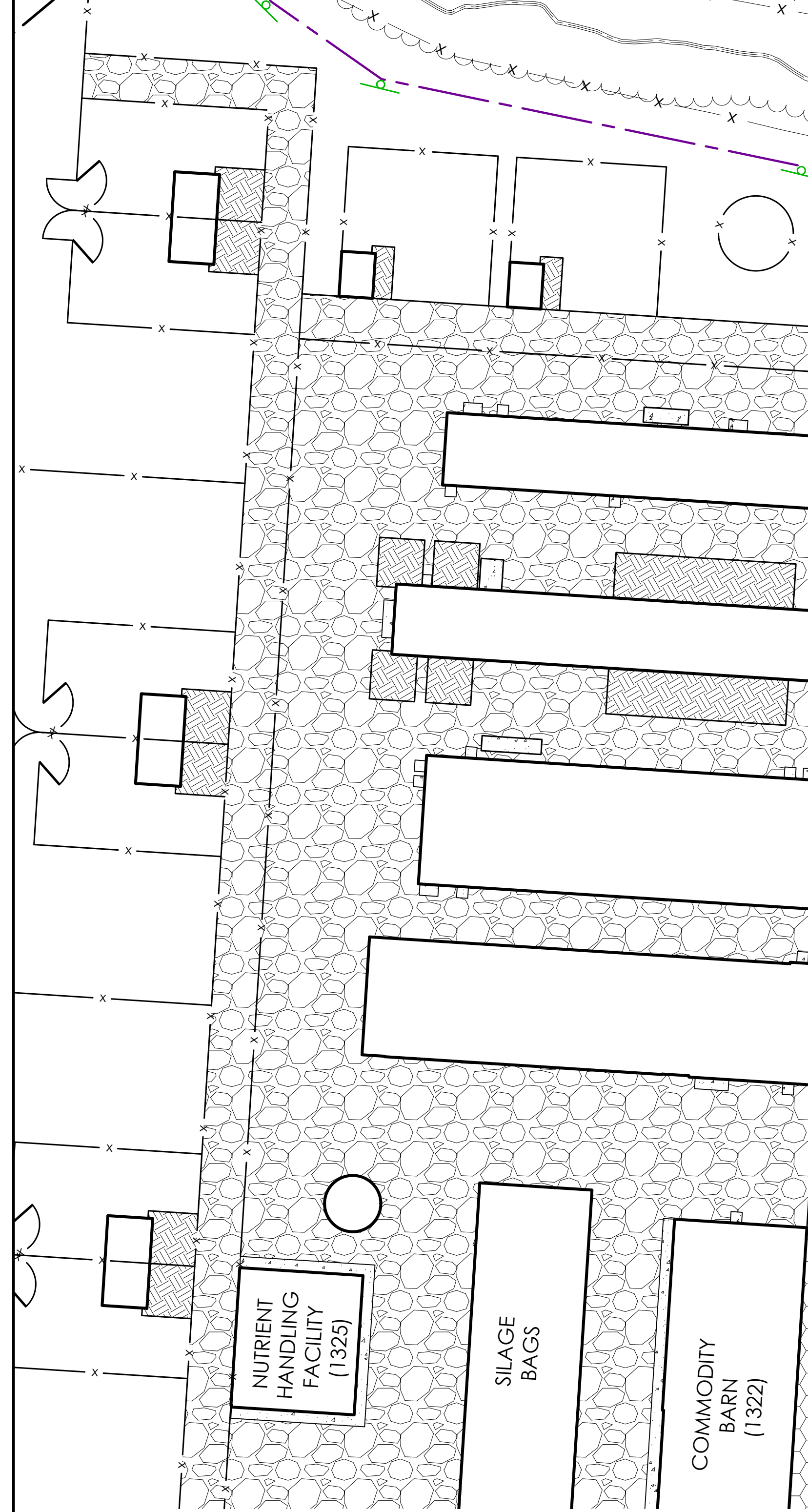
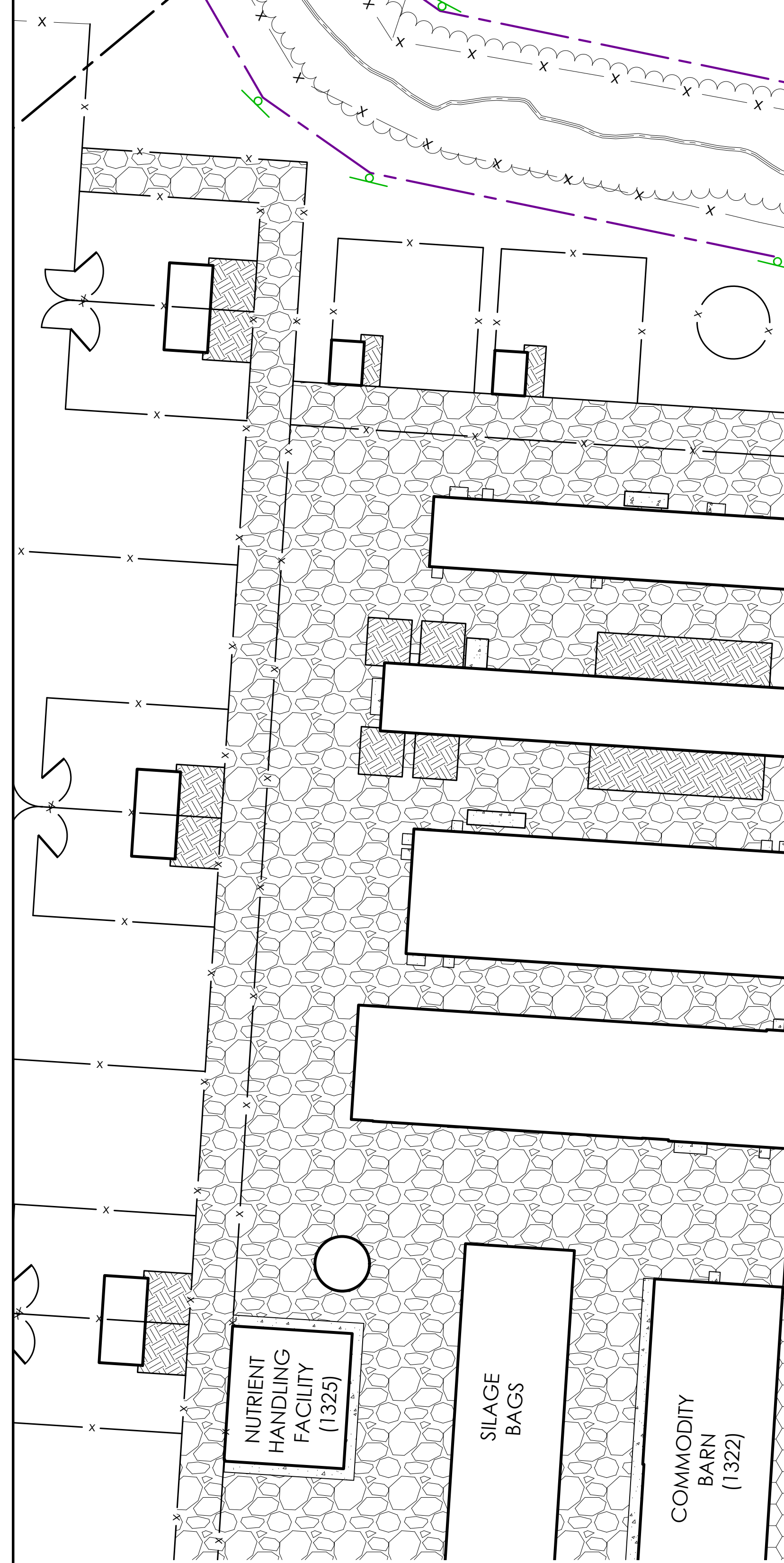
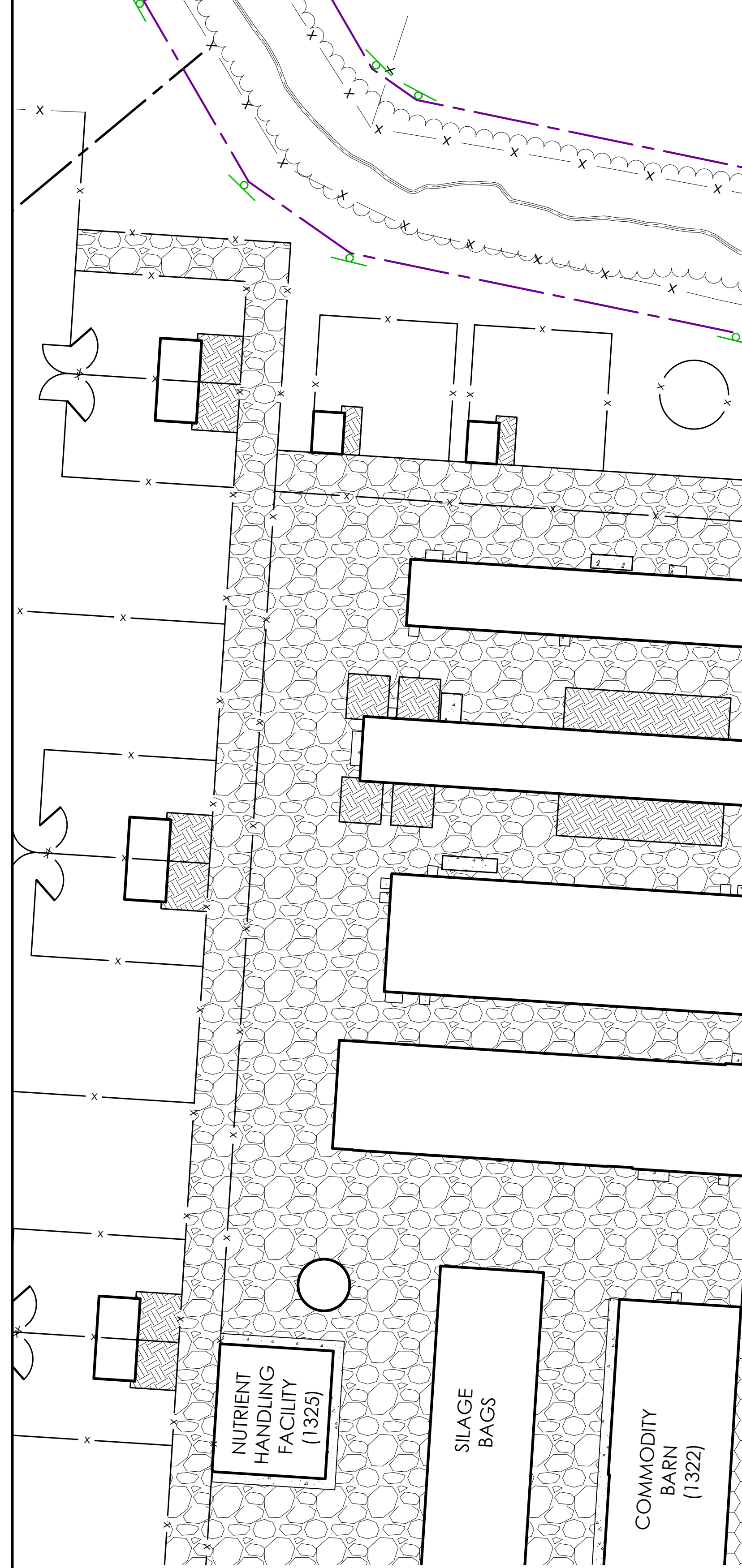
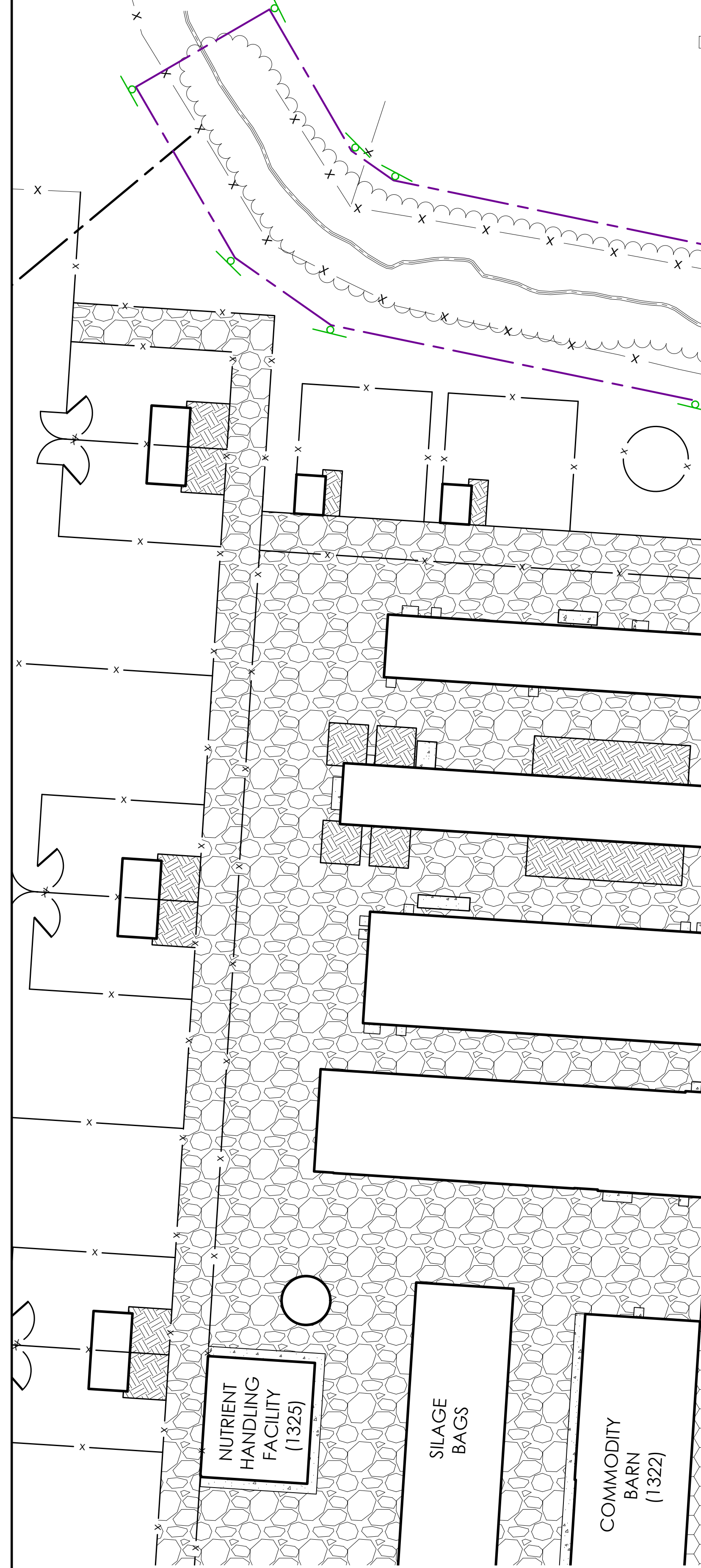
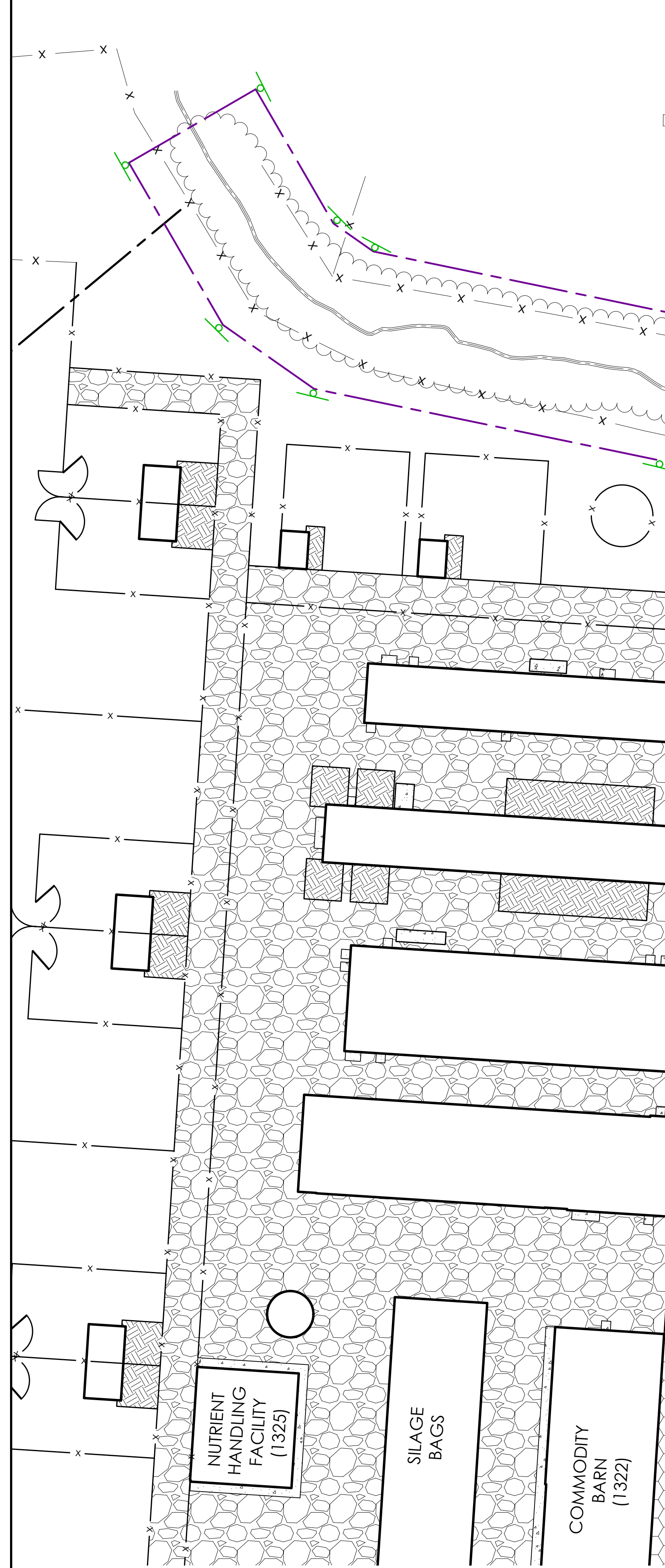
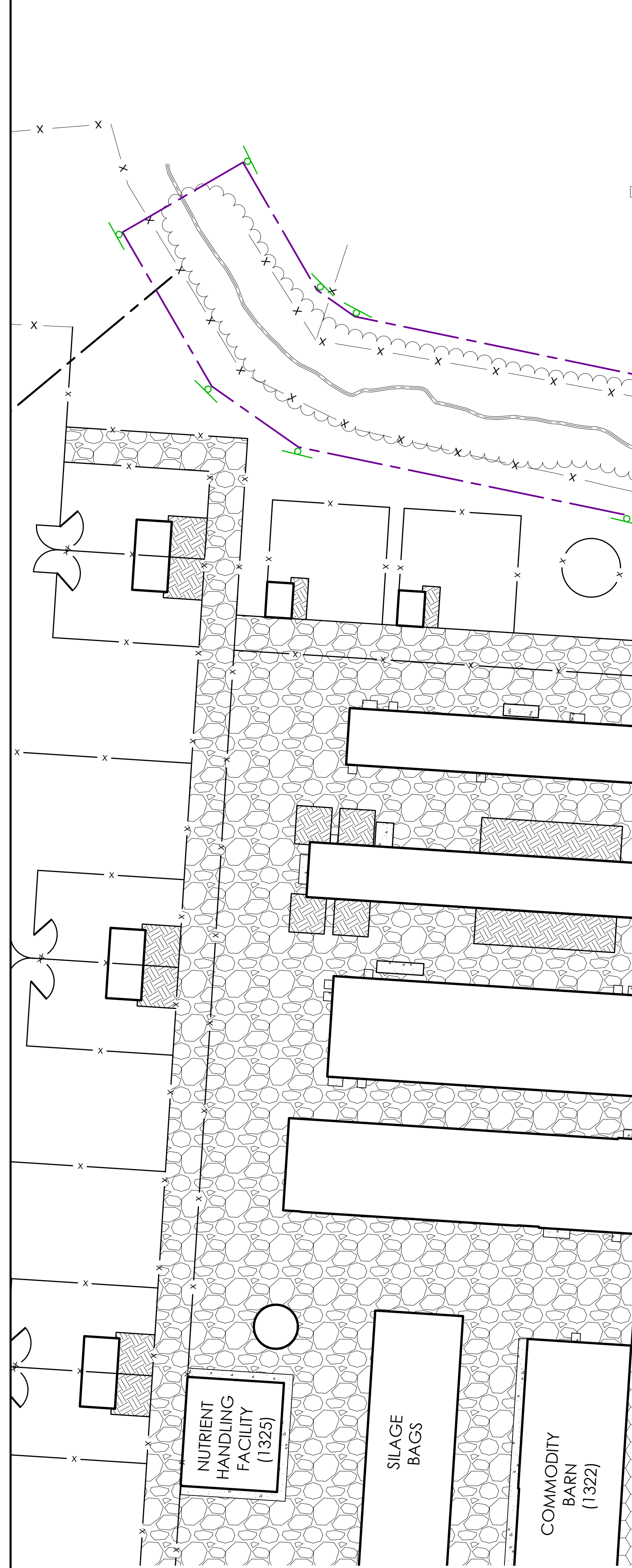
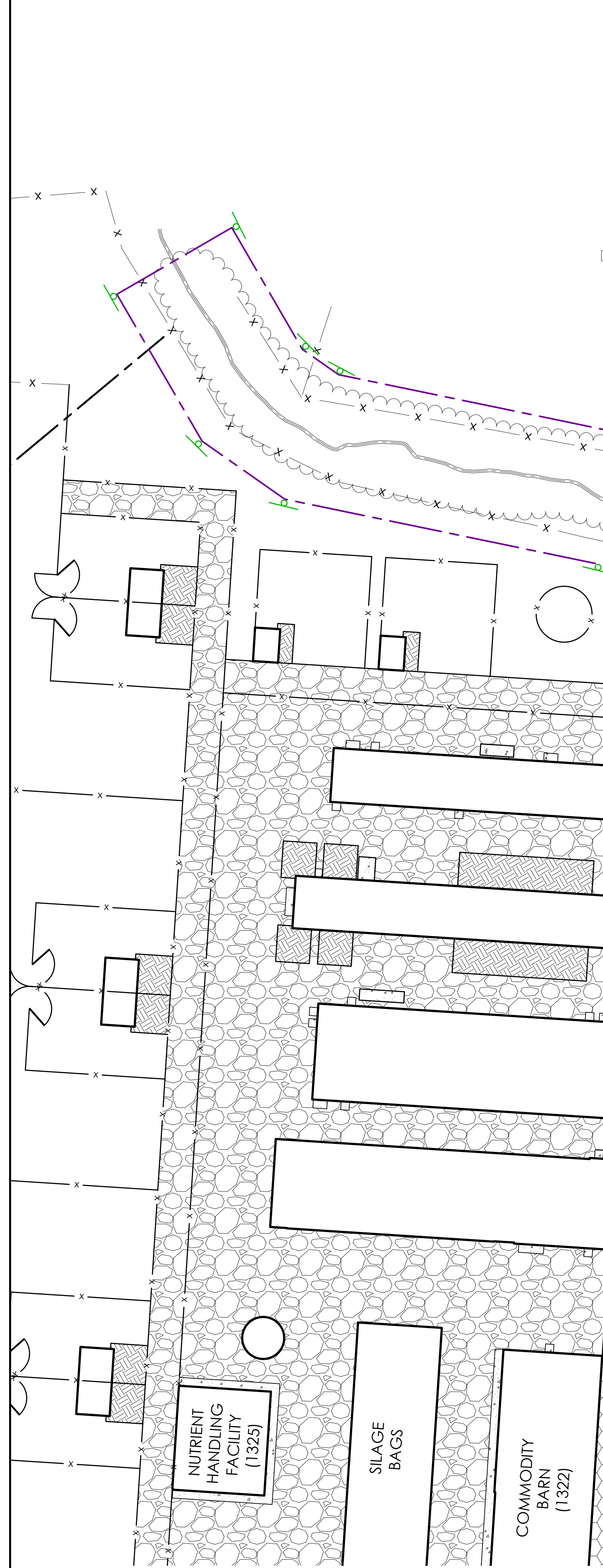
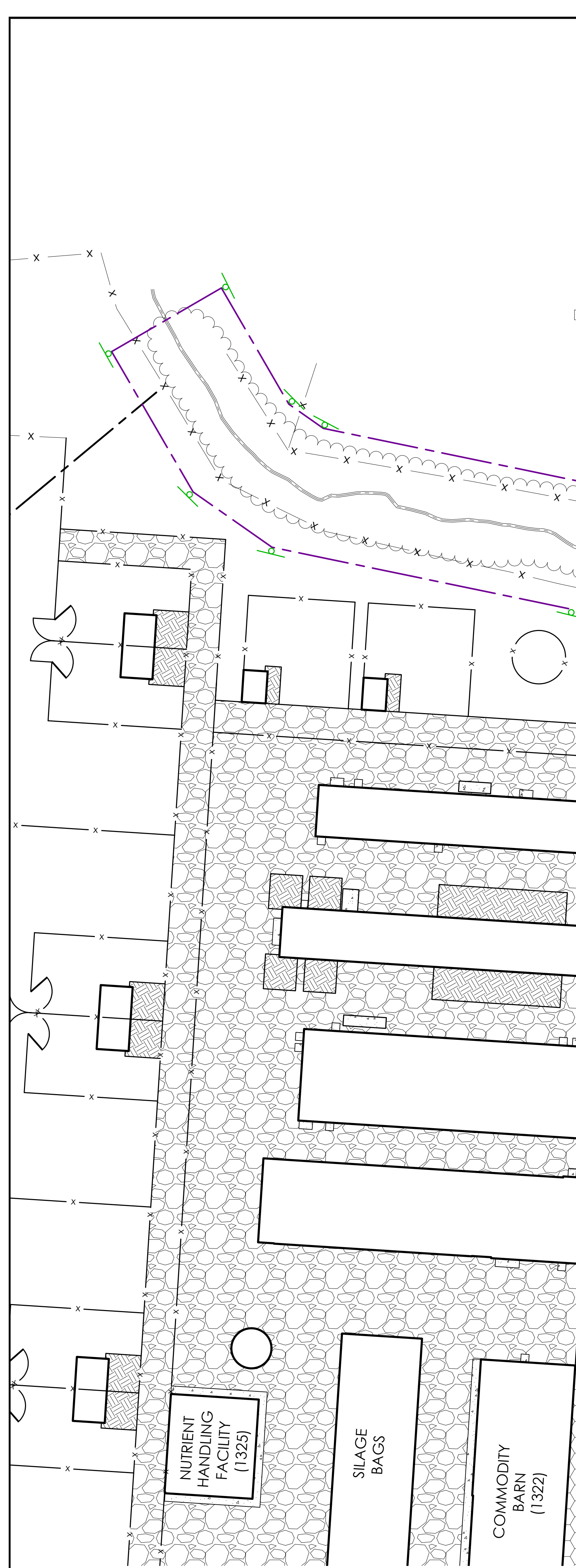
Please contact us with any further questions or concerns. We appreciate your consideration of the variance request for the re-development project at Waterman Agricultural and Natural Resources Laboratory.

Sincerely,
Sands Decker

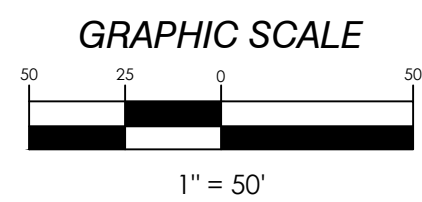
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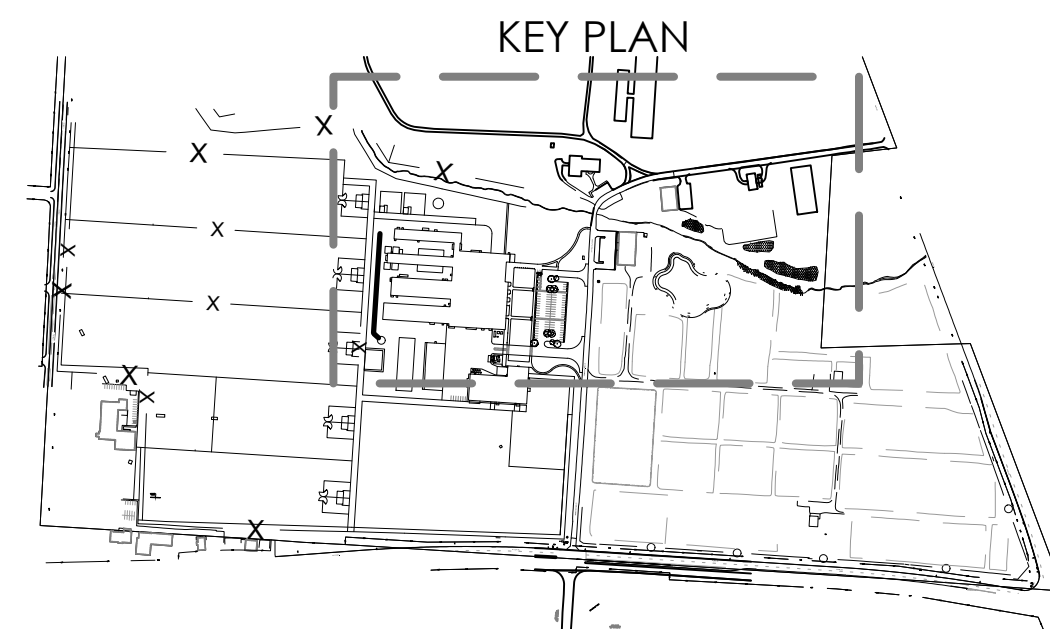
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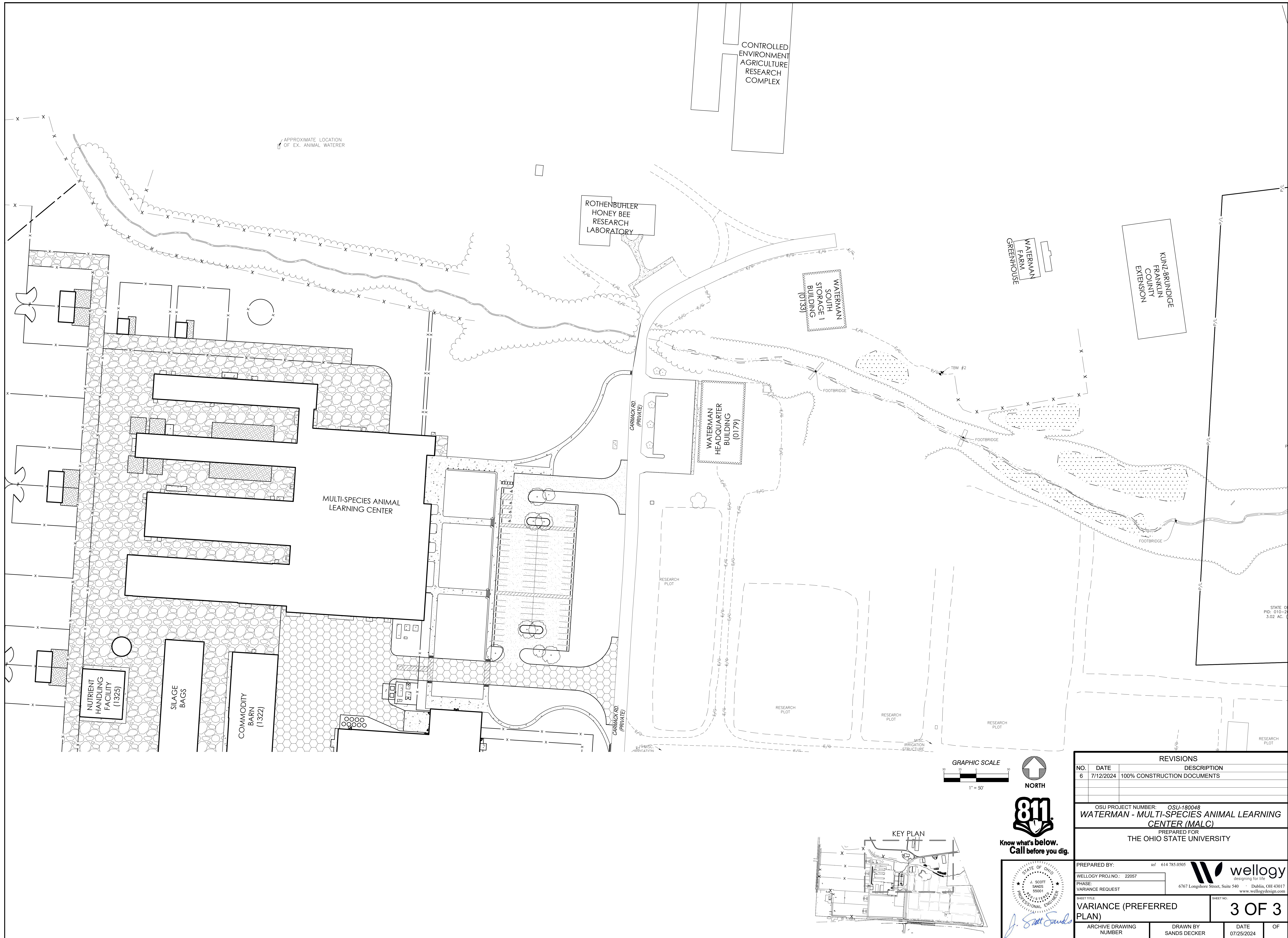
--- STREAM CORRIDOR PROTECTION ZONE & CONSERVATION EASEMENT
--- STREAM BUFFER SIGNS W/ WOOD POSTS PER COC STD. DWG. AA-5179.



811
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6	7/12/2024	100% CONSTRUCTION DOCUMENTS
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WATERMAN - MULTI-SPECIES ANIMAL LEARNING CENTER (MALC)		
PREPARED FOR THE OHIO STATE UNIVERSITY		
PREPARED BY: tel 614.785.0505		
WELLOGY PROJ. NO.: 22057		
PHASE: VARIANCE REQUEST		
SHEET TITLE: VARIANCE (FULL COMPLIANCE PLAN)		
ARCHIVE DRAWING NUMBER		
DRAWN BY: SANDS DECKER		
DATE: 07/25/2024		
OF		



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NO.	DATE	DESCRIPTION	
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WATERMAN - MULTI-SPECIES ANIMAL LEARNING CENTER (MALC)			
PREPARED FOR THE OHIO STATE UNIVERSITY			
PREPARED BY: tel 614.785.0505			
WELLOGY PROJ.NO.: 22057		 wellogy designing for life	
PHASE: VARIANCE REQUEST			
		6767 Longshore Street, Suite 540 · Dublin, OH 43017 www.wellogydesign.com	
SHEET TITLE:		SHEET NO.:	
VARIANCE (PREFERRED PLAN)		3 OF 3	
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PRELIMINARY JURISDICTIONAL WATERS DELINEATION

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio

Prepared for:

Sands Decker
1495 Old Henderson Road
Columbus, Ohio 43220

Prepared by:

CAP-STONE & Associates, Inc., dba
Stone Environmental Engineering and Science
3700 Corporate Drive, Suite 125
Columbus, Ohio 43231

February 29, 2024
24-1205-014

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APPENDICES

Appendix A

Figure 1 – Project Location Map

Figure 2 – Soil Map

Figure 3 – USFWS NWI and USGS NHD Map

Figure 4 – FEMA NFHZ Map

Figure 5 – Jurisdictional Waters Map

Figure 6 – Photo Location Map

Appendix B

Photo Log

Appendix C

HHEI Form

Wetland Determination Data Forms

ORAM Forms

Appendix D

USFWS IPaC Species List

ODNR Environmental Review Comments

1. INTRODUCTION

1.1 Project Location and Description

A Preliminary Jurisdictional Waters Delineation (PJWD) has been completed by CAP-STONE & Associates, Inc., dba Stone Environmental Engineering and Science (STONE) for the OSU MALC Storm Sewer project. The project study area is approximately 2 acres and is located at 2548 Carmack Road in Columbus, Franklin County, Ohio. (40.010535, -83.039466). The surrounding land use consists of cropland and commercial development. A Project Location Map (Figure 1) is included in Appendix A.

1.2 Limitations

The conclusions presented herein are professional opinions based on the information contained in this report and are specific to the study area investigated and information provided by others. The findings of this report are applicable and representative of the conditions encountered on the dates of this assessment and may not represent conditions subsequent to the field study. These conclusions represent STONE's professional opinion based on knowledge and experience with the United States Army Corps of Engineers (USACE) and Ohio Environmental Protection Agency (EPA) regulatory guidance documents and published methodology. These conclusions are subject to review and revision by the USACE and Ohio EPA.

2. REGULATORY BACKGROUND

Jurisdictional surface waters (e.g., streams, wetlands, ponds, lakes, etc.) are regulated by the USACE and Ohio EPA. Section 404 and Section 401 of the Clean Water Act (CWA) provide the framework for the aforementioned agencies to implement the regulatory programs.

Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or certain types of excavation, which may result in more than incidental fallback material, within Waters of the United States (WOTUS). Section 404 grants the Secretary of the Army, through the Chief of Engineers, regulatory authority to issue permits for these actions. WOTUS include territorial seas and traditional navigable waters, tributaries, lakes, ponds, and impoundments of jurisdictional waters and adjacent wetlands. Wetlands are defined by the CWA as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 401 of the CWA requires any applicant requesting a CWA permit for activities resulting in a discharge to WOTUS to provide the federal permitting agency with a Section 401 Water Quality Certification (WQC) from the state. The 401 WQC ensures that the federal permit meets the state water quality standards. A federal permit cannot be granted unless a Section 401 WQC is applied for, and received, from the state. Within the State of Ohio, the Ohio EPA Division of Surface Water's 401 WQC Section is the regulatory agency for this certification. State laws and rules have been created in order to implement Section 401 and regulate impacts to WOTUS and waters of the state, which includes isolated wetlands.

According to Section 404 of the CWA, a permit must be acquired from the USACE to authorize discharge of dredge or fill material into WOTUS. The USACE has established several Nationwide Permits (NWP) to expedite the permitting process for common discharges which have been determined to have minimal individual or cumulative impacts on the environment. Ohio EPA Section 401 water quality certifications have been pre-approved for the NWPs. The NWP process typically requires two to four months for completion. Several criteria/limitations are associated with NWPs and can be discussed in further detail if it is determined that the on-site jurisdictional waters will be impacted by future site development. If NWP limitations are exceeded, typically an individual Section 404/401 permit must be obtained. Surface water features that are determined to be isolated (not WOTUS) may be subject to Ohio laws and regulations (e.g., Ohio Revised Code, Section 6111 – Isolated Wetland Permitting).

3. LITERATURE REVIEW

3.1 Soils

The United States Department of Agriculture (USDA) Natural Resource Conversation Service (NRCS) soil survey data for the study area are listed below in Table 3-1. The Soil Map (Figure 2) is included in Appendix A.

Table 3-1: Soil Map Units Within the Study Area		
Soil Map Unit Symbol	Mapping Unit Name	Hydric Rating Percentage
CrB	Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	1% to 32%
MIC2	Miamian silty clay loam, 6 to 12 percent slopes, eroded	1% to 32%

3.2 USGS Topography

The study area is depicted on the Project Location Map (Appendix A – Figure 1) which includes the United States Geological Survey (USGS) topographic mapping. The topography of the study area is relatively flat with the exception of the stream banks. Elevations range from approximately 766 feet above mean sea level (MSL) in the eastern portion of the study area to 788 feet above MSL in the western portion of the study area.

3.3 National Wetlands Inventory Mapping

The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map displays riverine habitat (R4SBC) within the study area (Appendix A – Figure 3).

3.4 USGS NHD Mapping

The USGS National Hydrography Dataset (NHD) map depicts an intermittent stream within a majority of the study area that flows from west to east (Appendix A – Figure 3).

3.5 Ohio EPA Watershed & Designated Use Information

The study area is located within the Olentangy River Watershed (HUC 12: 050600011103). There are not any streams located within the study area that contain an Ohio EPA Aquatic Life Designated Use.

3.6 Floodplain Mapping

The Federal Emergency Management Agency (FEMA) National Flood Hazard Zones mapping does not depict any floodway or floodplain within the study area (Appendix A – Figure 4).

3.7 Threatened & Endangered Species

State Listed Species

STONE requested an Ohio Department of Natural Resources (ODNR) environmental review to identify potential threatened and endangered (T&E) species that could be impacted by the project. ODNR provided comments on February 22, 2024, as summarized below:

- The study area is within the range of two state and federally endangered bat species: Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*); and, two state endangered bat species: little brown bat (*Myotis lucifugus*) and tricolored bat (*Perimyotis subflavus*). ODNR recommends seasonal tree clearing (October 1 through March 31) for trees that will be removed for the project.
- The project is within the range of the black-crowned night-heron (*Nycticorax nycticorax*), a state threatened bird. Suitable habitat includes wetlands, shallow aquatic habitats, and roosts in neighboring trees/shrubs (or on the ground near bodies of water/wetlands). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species. There are no ODNR records of this species near the project location, however, potential suitable habitat (wetlands) is located in the project area. If wetlands will be impacted during the nesting period, ODNR coordination is recommended to determine if options are available (e.g., species survey prior to construction) that may allow for construction during this timeframe.
- The project is within the range of the following mussel species:
 - Federally Endangered
 - clubshell (*Pleurobema clava*)
 - rayed bean (*Villosa fabalis*)
 - northern riffleshell (*Epioblasma torulosa rangiana*)
 - snuffbox (*Epioblasma triquetra*)
 - purple cat's paw (*Epioblasma o. obliquata*)
 - Federally Threatened
 - rabbitsfoot (*Quadrula cylindrica cylindrica*)
 - State Endangered
 - elephant-ear (*Elliptio crassidens crassidens*)
 - pocketbook (*Lampsilis ovata*)
 - long solid (*Fusconaia maculata maculate*)
 - washboard (*Megaloniais nervosa*)
 - Ohio pigtoe (*Pleurobema cordatum*)

- State Threatened
 - pondhorn (*Uniomerus tetralasmus*)
 - Salamander Mussel (*Simpsonaias ambigua*)
- The project is within the range of the following fish species:
 - State Endangered
 - goldeye (*Hiodon alosoides*)
 - shortnose gar (*Lepisosteus platostomus*)
 - Iowa darter (*Etheostoma exile*)
 - spotted darter (*Etheostoma maculatum*)
 - northern brook lamprey (*Ichthyomyzon fossor*)
 - tonguetied minnow (*Exoglossum laurae*)
 - popeye shiner (*Notropis ariommus*)
 - State Threatened
 - lake chubsucker (*Erimyzon sucetta*)
 - paddlefish (*Polyodon spathula*)
- The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat.
- The Natural Heritage Database (NHD) has records for the following species within one mile of the project area:
 - Lark Sparrow (*Chondestes grammacus*) – State Endangered
 - Creek Heelsplitter (*Lasmigona compressa*) – State Species of Concern
 - Wavy-rayed Lampmussel (*Lampsilis fasciola*) – State Species of Concern
 - Elktoe (*Alasmidonta marginata*) – State Species of Concern

Due to the potential of impacts to federally listed species, as well as to state listed species, ODNR recommends that this project be coordinated with the USFWS if impacts will not be avoided. The ODNR comments and NHD Map are included in Appendix D.

Federally Listed Species

STONE obtained information from the USFWS Information for Planning and Consultation (IPaC) website to review federally listed species that may be affected by the proposed project. According to the IPaC information, dated January 23, 2024, federally listed species with known or expected ranges within the project area include:

- Indiana bat – Endangered
- Northern long-eared bat – Endangered
- tricolored bat – Proposed Endangered
- salamander mussel (*Simpsonaias ambigua*) – Proposed Endangered
- monarch butterfly (*Danaus plexippus*) – Candidate

No Critical Habitats were identified in the project area.

Suitable summer roosting habitat for the federally listed bats exists within the project area. If the project can adhere to the seasonal tree clearing timeframe (October 1 to March 31), it is anticipated that further bat studies will not be needed.

A copy of the IPaC letter (USFWS Project Code No. 2024-0039512), dated January 23, 2024, is included in Appendix D.

4. METHODOLOGY

STONE ecologists performed an on-site assessment of the study area on January 26, 2024. The study area is approximately 2 acres. A hand-held Global Positioning System (GPS) unit capable of submeter accuracy was used to record sampling points and determine boundaries of the aquatic resources.

The study area was evaluated using the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region. Sampling points were collected for each wetland and surrounding upland areas. During the field review, the Ohio EPA's ORAM was used to evaluate the wetlands identified within the study area and the Primary Headwater Habitat Evaluation Index (HHEI) was used to evaluate streams with drainage areas less than one square mile and/or with pools less than 40 centimeters deep (Appendix C).

5. RESULTS

STONE identified 0.404 acres of emergent wetlands, 0.060 acres of a forested wetland, and 833 linear feet of a perennial stream in the study area. Wetland and stream details are summarized in Tables 5-1 and 5-2, respectively. The locations of the wetlands and streams are depicted on Figure 5 (Appendix A). No other surface water features were observed in the study area. Representative photographs of the wetlands, streams, and study area are included in Appendix B. Wetland data forms and qualitative habitat assessment forms (HHEI and ORAM) are included in Appendix C.

Table 5-1: Wetlands Identified within Study Area						
Wetland ID	Cowardin Habitat Classification ¹	ORAM Category (Score)	Latitude	Longitude	Jurisdiction	Acreage within Study Area
W-1	PEM	1 (17)	40.010119	-83.037639	WOTUS	0.202
W-2	PEM	1 (15)	40.010329	-83.038423	WOTUS	0.084
W-3	PFO	1 (24)	40.010514	-83.039081	WOTUS	0.060
W-4	PEM	1 (24)	40.009910	-83.037860	WOTUS	0.118
TOTAL						0.464

¹PEM = Palustrine Emergent, PFO = Palustrine Forested

W-1 is an emergent wetland (PEM) located in the eastern portion of the study area and appeared to be hydrologically connected to WOTUS (S-1) via a culvert. Dominant plant species included narrow-leaf cat-tail (*Typha angustifolia*), sweet wood-reed (*Cinna arundinacea*), and late goldenrod (*Solidago gigantea*). The ORAM score for W-1 was 17 (category 1).

W-2 is an emergent wetland (PEM) located northwest of W-1 and appeared to be hydrologically connected to WOTUS (S-1) via a culvert. Dominant plant species included common reed (*Phragmites australis*) and narrow-leaf cat-tail. The ORAM score for W-2 was 15 (category 1).

Wetland W-3 (PFO) is located in the northcentral portion of the study area and appeared to be hydrologically connected to WOTUS (S-1) via a culvert. Dominant tree species included black willow (*Salix nigra*) and eastern cottonwood (*Populus deltoides*). The ORAM score for W-3 was 24 (category 1).

W-4 is an emergent wetland (PEM) located in the southeast portion of the study area and appeared to be hydrologically connected to WOTUS (abuts S-1). Dominant plant species included blue joint (*Calamagrostis canadensis*), late goldenrod, and lamp rush (*Juncus effusus*). The ORAM score for W-4 was 24 (category 1).

Table 5-2: Streams Identified within Study Area

Stream ID	Flow Regime ¹	HHEI Class (Score)	Latitude	Longitude	Average Width (Feet)	Length within Study Area (Feet) ²	Area (Acres)
S-1	Perennial (RPW)	Modified Class II (62)	40.01030	-83.03882	4.0	833	0.076
TOTAL						833	0.076

¹RPW – Relatively Permanent Water, NRPW – Non-Relatively Permanent Water

²Streams may extend outside the study area

S-1 is generally located in the central portion of the study area, flows from west to east/southeast, and continues flowing offsite. The stream substrate is predominantly composed of gravel, sand, and silt. The S-1 HHEI score was 62 (Modified, Class II perennial stream).

6. CONCLUSIONS

STONE identified 833 linear feet of a perennial stream, 0.404 acres of emergent wetlands, and 0.060 acres of a forested wetland in the study area. No other surface water features were observed during the on-site assessment.

Since the USACE has authority to determine and/or verify the geographical boundaries of wetlands and other WOTUS, this investigation is termed “preliminary.” USACE verification (also referred to as a Jurisdictional Determination “JD”) may be required for completion of CWA Section 404, Section 401, and/or isolated wetland permitting. It is the responsibility of any party that intends to discharge dredge or fill material into jurisdictional waters of the U.S. to comply with all applicable regulations.

7. REFERENCES

- Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Office of Biological Services, U.S. Fish and Wildlife Service, Washington, D.C.
- Environmental Laboratory. 1987. *U.S. Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station: Vicksburg, Mississippi.
- Federal Emergency Management Agency. 2023 *National Flood Hazard Layer (NFHL)*. <https://hazards.fema.gov/gis/nfhl/rest/services/public/NFHL/MapServer>
- Munsell Color. 2009. Revised Edition. *Munsell Soil-Color Charts*. Grand Rapids, MI.
- Ohio EPA. 2020. *Field Methods for Evaluating Primary Headwater Streams in Ohio*. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio.
- Ohio EPA. 2020. Water Quality Assessments Unit – 2020 Integrated Report. <http://www.wapp.epa.ohio.gov/gis/mapportal/IR2020.html>
- U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1 Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Army Corps of Engineers. 2020. National Wetland Plant List – Midwest Region. <http://rsgisias.crrel.usace.army.mil/NWPL/index.html>
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2023. Web Soil Survey (GIS Shapefile). <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.html>
- U.S. Fish and Wildlife Service. 2023. National Wetlands Inventory Branch of Resource and Mapping Service. <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>
- U.S. Geological Survey (USGS). 2023. National Hydrography Database by State (GIS Shapefile). <ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Hydrography/NHD/State/>

APPENDIX A

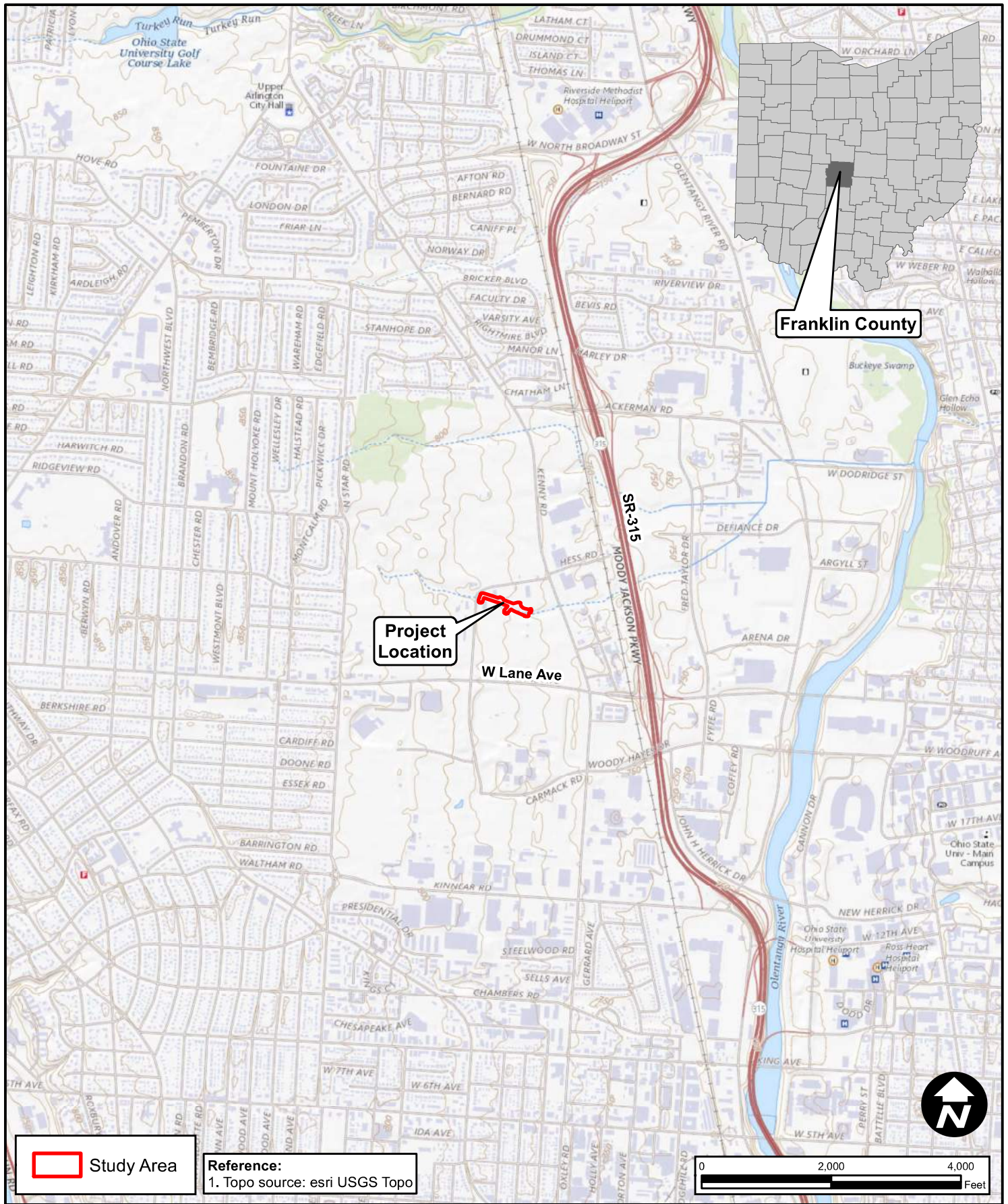


Figure 1

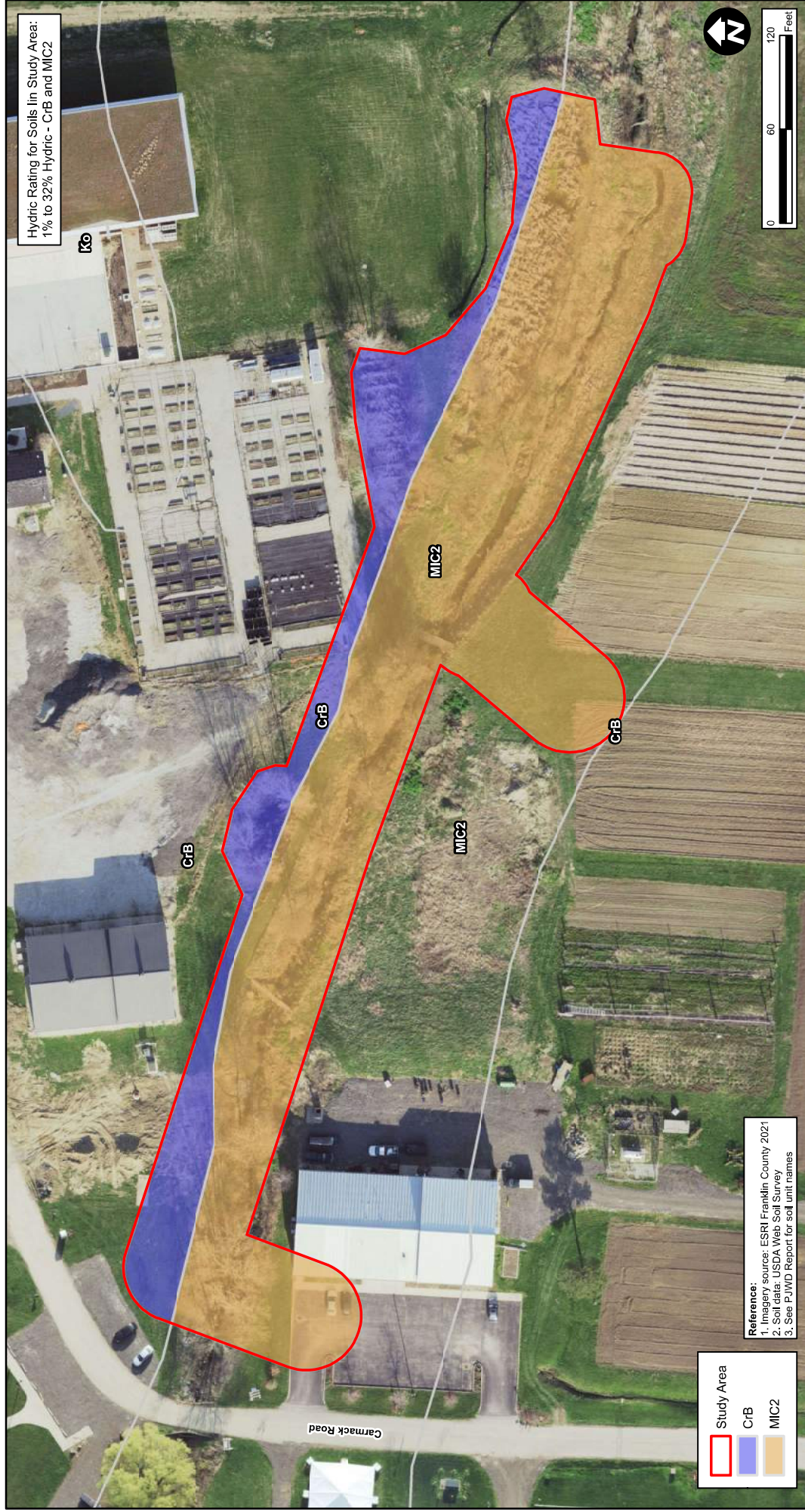
Project: 24-1205-014

PROJECT LOCATION MAP

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio



Date: February 13, 2024

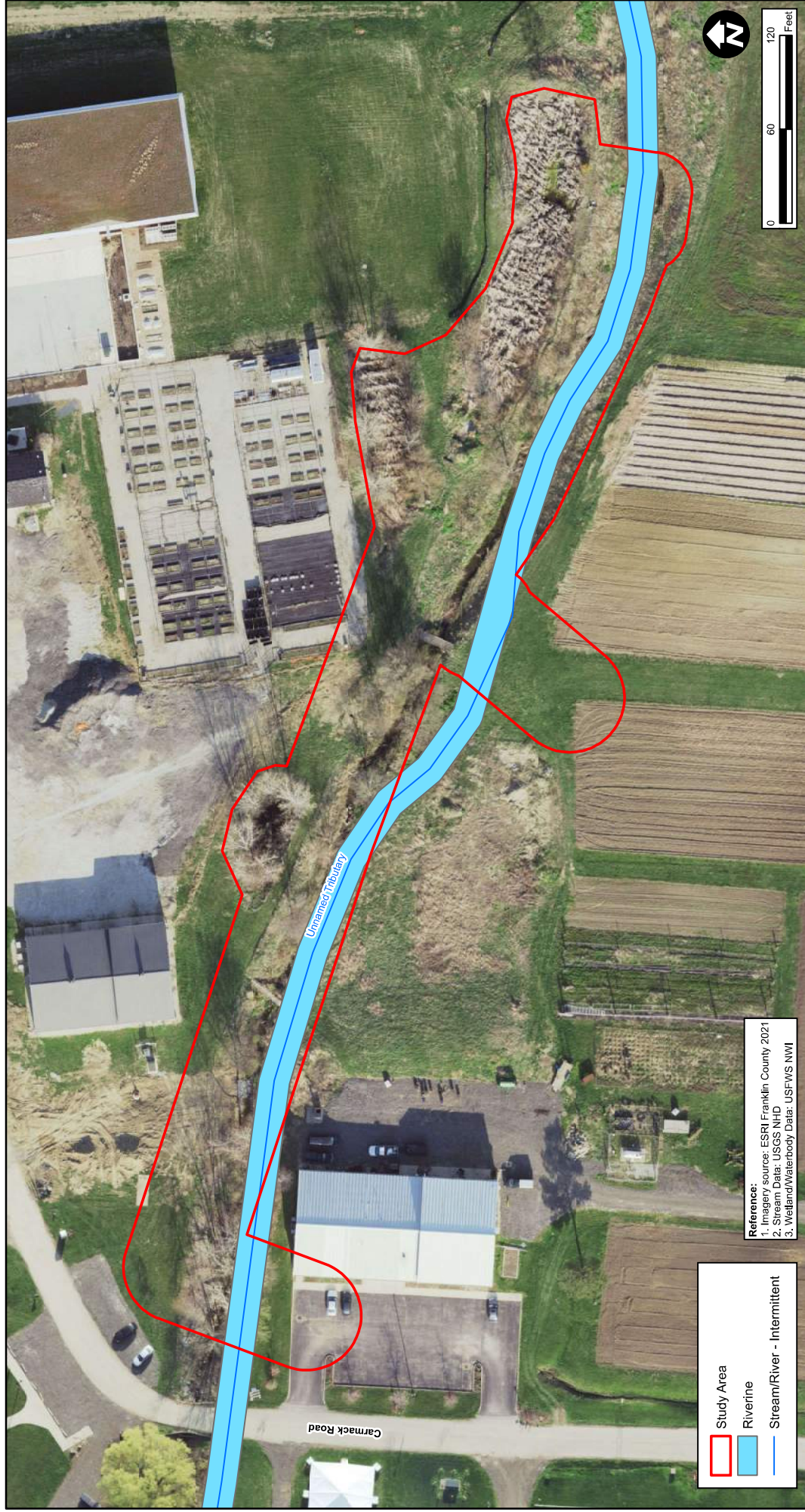


SOIL MAP

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio

Figure 2

Project: 24-1205-014



USFWS NWI AND USGS NHD MAP

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio

STONE
ENVIRONMENTAL ENGINEERING & SCIENCE

Date: February 13, 2024

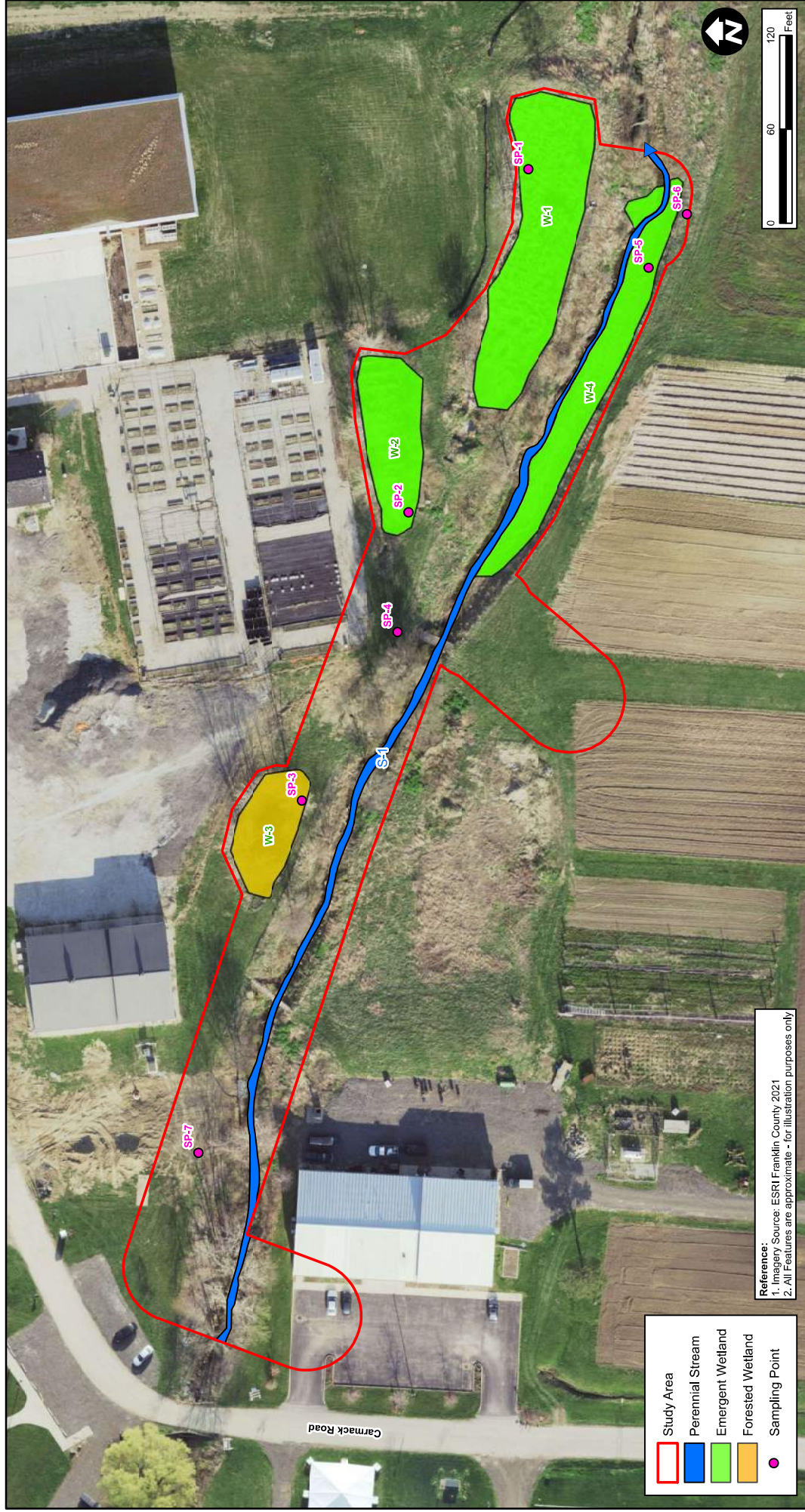
Figure 3

Project: 24-1205-014



FEMA NFHZ MAP OSU MALC Storm Sewer Columbus, Franklin County, Ohio

Figure 4



JURISDICTIONAL WATERS MAP

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio

STONE
ENVIRONMENTAL ENGINEERING & SCIENCE

Date: February 13, 2024

Figure 5

Project: 24-1205-014

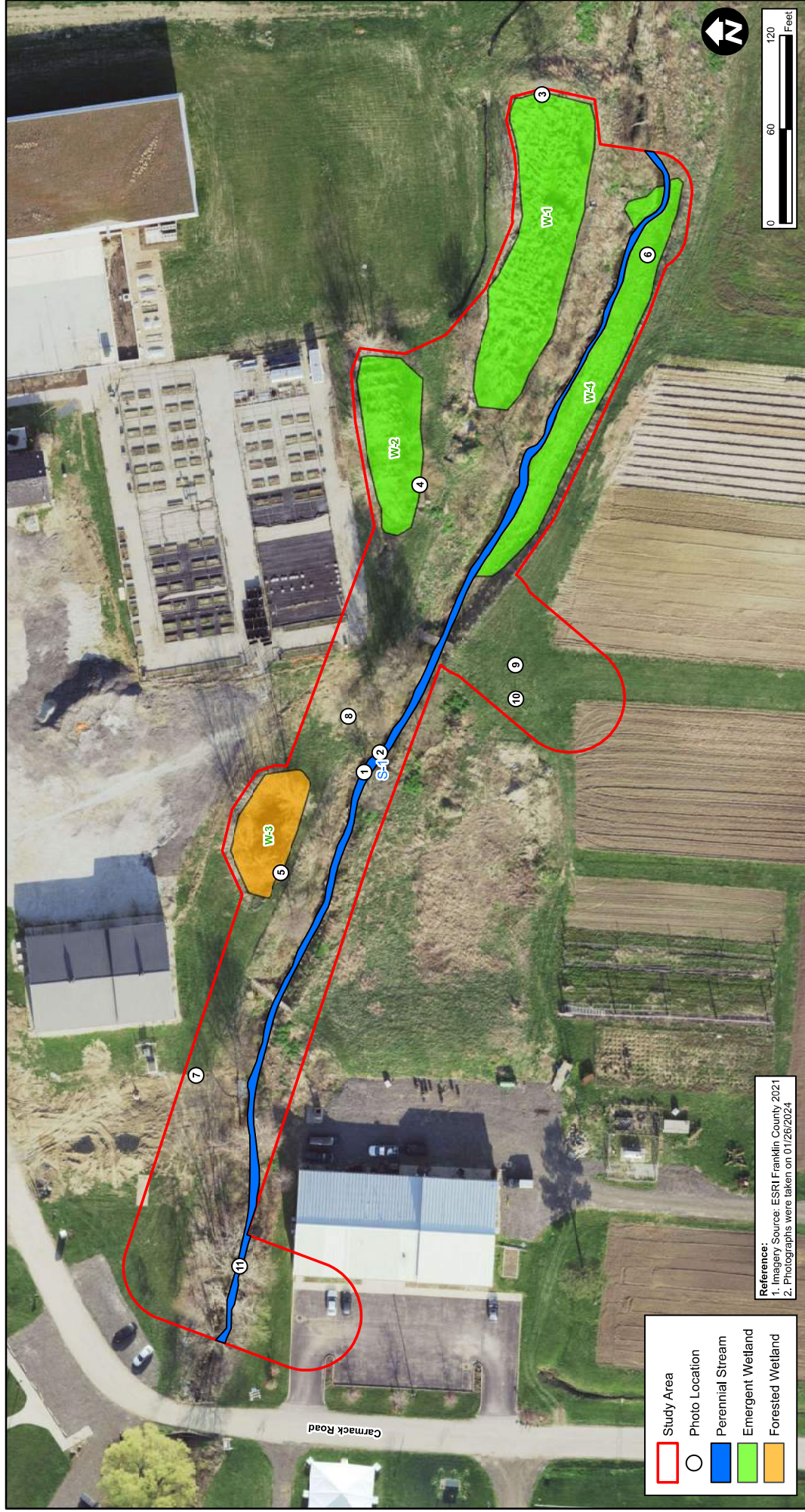


PHOTO LOCATION MAP

OSU MALC Storm Sewer
Columbus, Franklin County, Ohio

STONE
ENVIRONMENTAL ENGINEERING & SCIENCE

Date: February 29, 2024

Figure 6

Project: 24-1205-014

APPENDIX B



01 – Upstream view of S-1.



02 – Downstream view of S-1.



03 – W-1 (PEM) looking west.



04 – W-2 (PEM) looking northeast.



05 – W-3 (PFO) looking northeast.



06 – W-4 (PEM) looking west.



07 – View of the northwest portion of the study area.



08 – Study area near S-1 and W-3.



09 – Cropland and mowed lawn in the southern portion of the study area.



10 – Mowed lawn near S-1 in the southern portion of the study area.



11 – Upstream view of S-1, existing storm sewer line in the background.

APPENDIX C

SITE NAME/LOCATION OSU MALC Storm Sewer/Columbus, Franklin County, Ohio

SITE NUMBER S-1 RIVER BASIN Mouth Olentangy River RIVER CODE 02-400-000 DRAINAGE AREA (mi²) 0.38

LENGTH OF STREAM REACH (ft) 200.00 LAT 40.01030 LONG -83.03882 RIVER MILE 1.50

DATE 01/26/24 SCORER J. Brennan & A. Brown COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check ONLY two predominant substrate **TYPE** boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
☐ ☐ BLDR SLABS [16 pts]	0%	☐ ☐ SILT [3 pt]	15%
☐ ☐ BOULDER (>256 mm) [16 pts]	2%	☐ ☐ LEAF PACK/WOODY DEBRIS [3 pts]	5%
☐ ☐ BEDROCK [16 pts]	0%	☐ ☐ FINE DETRITUS [3 pts]	0%
☐ ☐ COBBLE (65-256 mm) [12 pts]	10%	☐ ☐ CLAY or HARDPAN [0 pt]	0%
☒ ☐ GRAVEL (2-64 mm) [9 pts]	35%	☐ ☐ MUCK [0 pts]	0%
☐ ☒ SAND (<2 mm) [6 pts]	30%	☐ ☐ ARTIFICIAL [3 pts]	3%

HHEI Metric Points

Substrate Max = 40

22

A + B

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 12% (A)

15

 (B)

7.00

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

☒ > 30 centimeters [20 pts]	☐ 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts]	☐ < 5 cm [5pts]
☐ > 10 - 22.5 cm [25 pts]	☐ NO WATER OR MOIST CHANNEL [0pts]

Pool Depth Max = 30

20

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

35

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check ONLY one box):

☐ > 4.0 meters (> 13') [30 pts]	☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]
☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

Bankfull Width Max=30

20

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters)

1.6

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
☐ ☐ Wide >10m		☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m		☐ ☐ Immature Forest, Shrub or Old Field	☒ ☐ Urban or Industrial
☒ ☒ Narrow <5m		☐ ☐ Residential, Park, New Field	☐ ☒ Open Pasture, Row Crop
☐ ☐ None		☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

☒ Stream Flowing	☐ Moist Channel, isolated pools, no flow (intermittent)
☐ Subsurface flow with isolated pools (interstitial)	☐ Dry channel, no water (ephemeral)

COMMENTS Perennial Stream

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Olentangy River Distance from Evaluated Stream 7,000+ feet
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Northwest Columbus NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Franklin Township/City: Clinton/Columbus

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 01/25/2024 Quantity: 0.51

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 35

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

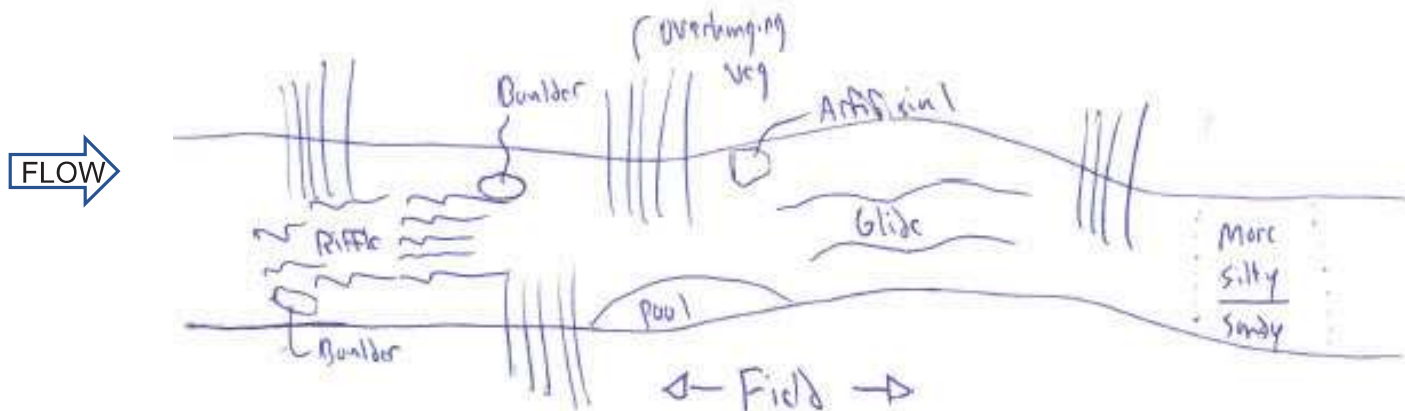
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 1
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): None
Slope (%): 1 Lat: 40.010119 Long: -83.037639 Datum: NAD83
Soil Map Unit Name: Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: W-1 PEM	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Absolute % Cover <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominant Species? <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)	
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Juglans nigra</u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u>5</u> =Total Cover	<u>5</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>70</u> x 1 = <u>70</u> FACW species <u>35</u> x 2 = <u>70</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>110</u> (A) <u>160</u> (B) Prevalence Index = B/A = <u>1.45</u>
Herb Stratum (Plot size: <u>5</u>) 1. <u>Typha angustifolia</u> 2. <u>Cinna arundinacea</u> 3. <u>Solidago gigantea</u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>105</u> =Total Cover	<u>70</u> <u>25</u> <u>10</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u>No</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>OBL</u> <u>FACW</u> <u>FACW</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>		
Woody Vine Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: 1

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☒ Surface Water (A1)	☒ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	<input type="text" value="12"/>
Water Table Present?	Yes ☒ No ☐	Depth (inches):	<input type="text" value="0"/>
Saturation Present?	Yes ☒ No ☐	Depth (inches):	<input type="text" value="0"/>
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 2
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): None
Slope (%): 1 Lat: 40.010329 Long: -83.038423 Datum: NAD83
Soil Map Unit Name: Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: W-2 PEM	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>) 1. <u>Populus deltoides</u> Absolute % Cover <u>50</u> Dominant Species? <u>Yes</u> Indicator Status <u>FAC</u> 2. <u> </u> <u> </u> <u> </u> <u> </u> 3. <u> </u> <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u> </u> <u>50</u> =Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Acer negundo</u> Absolute % Cover <u>5</u> Dominant Species? <u>Yes</u> Indicator Status <u>FAC</u> 2. <u> </u> <u> </u> <u> </u> <u> </u> 3. <u> </u> <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u> </u> <u>5</u> =Total Cover	
Herb Stratum (Plot size: <u>5</u>) 1. <u>Phragmites australis</u> Absolute % Cover <u>65</u> Dominant Species? <u>Yes</u> Indicator Status <u>FACW</u> 2. <u>Typha angustifolia</u> <u>10</u> <u>No</u> <u>OBL</u> 3. <u> </u> <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u> </u> 6. <u> </u> <u> </u> <u> </u> <u> </u> 7. <u> </u> <u> </u> <u> </u> <u> </u> 8. <u> </u> <u> </u> <u> </u> <u> </u> 9. <u> </u> <u> </u> <u> </u> <u> </u> 10. <u> </u> <u> </u> <u> </u> <u> </u> <u>75</u> =Total Cover	
Woody Vine Stratum (Plot size: <u> </u>) 1. <u> </u> <u> </u> <u> </u> <u> </u> 2. <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> =Total Cover	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>65</u> x 2 = <u>130</u> FAC species <u>55</u> x 3 = <u>165</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>130</u> (A) <u>305</u> (B) Prevalence Index = B/A = <u>2.35</u>
Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	
Remarks: (Include photo numbers here or on a separate sheet.)	

SOIL

Sampling Point: 2

[illegible]

HYDROLOGY

Primary Hydrology Indicators:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)				Secondary Indicators (minimum of two required)	
☒ Surface Water (A1)	☒ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)			
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)			
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)			
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)			
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)			
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)			
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)			
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)			
☒ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)				
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)				
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="2"/> Water Table Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="0"/> Saturation Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="0"/> (includes capillary fringe)				Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 3
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Flat
Slope (%): 1 Lat: 40.010514 Long: -83.039081 Datum: NAD83
Soil Map Unit Name: Miamian silty clay loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: W-3 PFO	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30</u>) 1. <u>Salix nigra</u> 40 Yes OBL 2. <u>Populus deltoides</u> 15 Yes FAC 3. <u> </u> <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u> </u> 55 =Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15</u>) 1. <u>Salix nigra</u> 25 Yes OBL 2. <u> </u> <u> </u> <u> </u> <u> </u> 3. <u> </u> <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u> </u> 25 =Total Cover		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>65</u> x 1 = <u>65</u> FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>145</u> (A) <u>270</u> (B) Prevalence Index = B/A = <u>1.86</u>
<u>Herb Stratum</u> (Plot size: <u>5</u>) 1. <u>Cinna arundinacea</u> 30 Yes FACW 2. <u>Symphytotrichum lateriflorum</u> 20 Yes FACW 3. <u>Festuca rubra</u> 10 No FACU 4. <u>Allium vineale</u> 5 No FACU 5. <u> </u> <u> </u> <u> </u> <u> </u> 6. <u> </u> <u> </u> <u> </u> <u> </u> 7. <u> </u> <u> </u> <u> </u> <u> </u> 8. <u> </u> <u> </u> <u> </u> <u> </u> 9. <u> </u> <u> </u> <u> </u> <u> </u> 10. <u> </u> <u> </u> <u> </u> <u> </u> 65 =Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u> </u>) 1. <u> </u> <u> </u> <u> </u> <u> </u> 2. <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> =Total Cover	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>		
Remarks: (Include photo numbers here or on a separate sheet.)		

SOIL

Sampling Point: 3

[illegible]

HYDROLOGY

Primary Hydrology Indicators:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)				Secondary Indicators (minimum of two required)	
☒ Surface Water (A1)	☒ Water-Stained Leaves (B9)			☐ Surface Soil Cracks (B6)	
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)			☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ True Aquatic Plants (B14)			☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)			☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)			☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)			☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)			☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)			☒ FAC-Neutral Test (D5)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)				
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)				
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="30"/> Water Table Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="0"/> Saturation Present? Yes ☒ No ☐ Depth (inches): <input type="text" value="0"/> (includes capillary fringe)				Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 4
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None
Slope (%): 1 Lat: 40.010346 Long: -83.038694 Datum: NAD83
Soil Map Unit Name: Miamian silty clay loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Upland Point for W-2 and W-3	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30</u>) 1. <u>Ulmus pumila</u> Absolute % Cover <u>40</u> Dominant Species? <u>Yes</u> Indicator Status <u>UPL</u> 2. <u> </u> <u> </u> <u> </u> 3. <u> </u> <u> </u> <u> </u> 4. <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u>40</u> =Total Cover <u>Sapling/Shrub Stratum</u> (Plot size: <u>15</u>) 1. <u>Ulmus pumila</u> <u>5</u> <u>Yes</u> <u>UPL</u> 2. <u>Morus alba</u> <u>5</u> <u>Yes</u> <u>FAC</u> 3. <u>Lonicera maackii</u> <u>5</u> <u>Yes</u> <u>UPL</u> 4. <u> </u> <u> </u> <u> </u> 5. <u> </u> <u> </u> <u> </u> <u>15</u> =Total Cover <u>Herb Stratum</u> (Plot size: <u>5</u>) 1. <u>Poa pratensis</u> <u>40</u> <u>Yes</u> <u>FAC</u> 2. <u>Festuca rubra</u> <u>35</u> <u>Yes</u> <u>FACU</u> 3. <u>Conium maculatum</u> <u>20</u> <u>No</u> <u>FACW</u> 4. <u>Carex blanda</u> <u>5</u> <u>No</u> <u>FAC</u> 5. <u>Oenothera biennis</u> <u>5</u> <u>No</u> <u>FACU</u> 6. <u>Cynanchum laeve</u> <u>5</u> <u>No</u> <u>FAC</u> 7. <u> </u> <u> </u> <u> </u> 8. <u> </u> <u> </u> <u> </u> 9. <u> </u> <u> </u> <u> </u> 10. <u> </u> <u> </u> <u> </u> <u>110</u> =Total Cover <u>Woody Vine Stratum</u> (Plot size: <u> </u>) 1. <u> </u> <u> </u> <u> </u> 2. <u> </u> <u> </u> <u> </u> <u> </u> =Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B) Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>20</u> x 2 = <u>40</u> FAC species <u>55</u> x 3 = <u>165</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>50</u> x 5 = <u>250</u> Column Totals: <u>165</u> (A) <u>615</u> (B) Prevalence Index = B/A = <u>3.73</u> Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Remarks: (Include photo numbers here or on a separate sheet.)	

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/4	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils³:		
☐ Histosol (A1)	☐	Sandy Gleyed Matrix (S4)	☐	Coast Prairie Redox (A16)	
☐ Histic Epipedon (A2)	☐	Sandy Redox (S5)	☐	Iron-Manganese Masses (F12)	
☐ Black Histic (A3)	☐	Stripped Matrix (S6)	☐	Red Parent Material (F21)	
☐ Hydrogen Sulfide (A4)	☐	Dark Surface (S7)	☐	Very Shallow Dark Surface (F22)	
☐ Stratified Layers (A5)	☐	Loamy Mucky Mineral (F1)	☐	Other (Explain in Remarks)	
☐ 2 cm Muck (A10)	☐	Loamy Gleyed Matrix (F2)			
☐ Depleted Below Dark Surface (A11)	☐	Depleted Matrix (F3)			
☐ Thick Dark Surface (A12)	☐	Redox Dark Surface (F6)			
☐ Sandy Mucky Mineral (S1)	☐	Depleted Dark Surface (F7)			
☐ 5 cm Mucky Peat or Peat (S3)	☐	Redox Depressions (F8)			

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> Water Table Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> Saturation Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 5
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Toe Slope Local relief (concave, convex, none): Concave
Slope (%): 1 Lat: 40.009910 Long: -83.037860 Datum: NAD83
Soil Map Unit Name: Miamian silty clay loam, 6 to 12 percent slopes, eroded NWI classification: R4SBC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: W-4 PEM	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
Sapling/Shrub Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Prevalence Index worksheet: <table><tr><td>Total % Cover of:</td><td>Multiply by:</td></tr><tr><td>OBL species <u>85</u></td><td>x 1 = <u>85</u></td></tr><tr><td>FACW species <u>35</u></td><td>x 2 = <u>70</u></td></tr><tr><td>FAC species <u>2</u></td><td>x 3 = <u>6</u></td></tr><tr><td>FACU species <u>0</u></td><td>x 4 = <u>0</u></td></tr><tr><td>UPL species <u>0</u></td><td>x 5 = <u>0</u></td></tr><tr><td>Column Totals: <u>122</u> (A)</td><td><u>161</u> (B)</td></tr><tr><td colspan="2">Prevalence Index = B/A = <u>1.32</u></td></tr></table>	Total % Cover of:	Multiply by:	OBL species <u>85</u>	x 1 = <u>85</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>2</u>	x 3 = <u>6</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>122</u> (A)	<u>161</u> (B)	Prevalence Index = B/A = <u>1.32</u>	
Total % Cover of:	Multiply by:																
OBL species <u>85</u>	x 1 = <u>85</u>																
FACW species <u>35</u>	x 2 = <u>70</u>																
FAC species <u>2</u>	x 3 = <u>6</u>																
FACU species <u>0</u>	x 4 = <u>0</u>																
UPL species <u>0</u>	x 5 = <u>0</u>																
Column Totals: <u>122</u> (A)	<u>161</u> (B)																
Prevalence Index = B/A = <u>1.32</u>																	
Herb Stratum (Plot size: <u>5</u>) 1. <u>Calamagrostis canadensis</u> 50 Yes OBL 2. <u>Solidago gigantea</u> 35 Yes FACW 3. <u>Juncus effusus</u> 20 No OBL 4. <u>Scirpus atrovirens</u> 10 No OBL 5. <u>Epilobium coloratum</u> 5 No OBL 6. <u>Vernonia gigantea</u> 2 No FAC 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>122</u> =Total Cover	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Woody Vine Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
Remarks: (Include photo numbers here or on a separate sheet.)																	

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	95	10YR 4/4	5	C	M	Loamy/Clayey	Distinct redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	
☐ Depleted Below Dark Surface (A11)	
☐ Thick Dark Surface (A12)	
☐ Sandy Mucky Mineral (S1)	
☐ 5 cm Mucky Peat or Peat (S3)	
☐ Sandy Gleyed Matrix (S4)	
☐ Sandy Redox (S5)	
☐ Stripped Matrix (S6)	
☐ Dark Surface (S7)	
☐ Loamy Mucky Mineral (F1)	
☐ Loamy Gleyed Matrix (F2)	
☒ Depleted Matrix (F3)	
☐ Redox Dark Surface (F6)	
☐ Depleted Dark Surface (F7)	
☐ Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): 4 Water Table Present? Yes ☒ No ☐ Depth (inches): 0 Saturation Present? Yes ☒ No ☐ Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 6
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): Concave
Slope (%): 3 Lat: 40.009843 Long: -83.037737 Datum: NAD83
Soil Map Unit Name: Miamian silty clay loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
Upland Point for W-1 and W-4

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
Sapling/Shrub Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Prevalence Index worksheet: <table><tr><td>Total % Cover of:</td><td>Multiply by:</td></tr><tr><td>OBL species <u>0</u></td><td>x 1 = <u>0</u></td></tr><tr><td>FACW species <u>70</u></td><td>x 2 = <u>140</u></td></tr><tr><td>FAC species <u>0</u></td><td>x 3 = <u>0</u></td></tr><tr><td>FACU species <u>20</u></td><td>x 4 = <u>80</u></td></tr><tr><td>UPL species <u>5</u></td><td>x 5 = <u>25</u></td></tr><tr><td>Column Totals: <u>95</u> (A)</td><td><u>245</u> (B)</td></tr><tr><td colspan="2">Prevalence Index = B/A = <u>2.58</u></td></tr></table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>95</u> (A)	<u>245</u> (B)	Prevalence Index = B/A = <u>2.58</u>	
Total % Cover of:	Multiply by:																
OBL species <u>0</u>	x 1 = <u>0</u>																
FACW species <u>70</u>	x 2 = <u>140</u>																
FAC species <u>0</u>	x 3 = <u>0</u>																
FACU species <u>20</u>	x 4 = <u>80</u>																
UPL species <u>5</u>	x 5 = <u>25</u>																
Column Totals: <u>95</u> (A)	<u>245</u> (B)																
Prevalence Index = B/A = <u>2.58</u>																	
Herb Stratum (Plot size: <u>5</u>) 1. <u>Conium maculatum</u> <u>70</u> Yes <u>FACW</u> 2. <u>Setaria faberi</u> <u>20</u> Yes <u>FACU</u> 3. <u>Lamium purpureum</u> <u>5</u> No <u>UPL</u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>95</u> =Total Cover	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Woody Vine Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/3	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	
☐ Depleted Below Dark Surface (A11)	
☐ Thick Dark Surface (A12)	
☐ Sandy Mucky Mineral (S1)	
☐ 5 cm Mucky Peat or Peat (S3)	
☐ Sandy Gleyed Matrix (S4)	
☐ Sandy Redox (S5)	
☐ Stripped Matrix (S6)	
☐ Dark Surface (S7)	
☐ Loamy Mucky Mineral (F1)	
☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Matrix (F3)	
☐ Redox Dark Surface (F6)	
☐ Depleted Dark Surface (F7)	
☐ Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: OSU MALC Storm Sewer City/County: Columbus/Franklin Sampling Date: 01/26/2024
Applicant/Owner: The Ohio State University State: OH Sampling Point: 7
Investigator(s): J. Brennan & A. Brown (STONE) Section, Township, Range: T1N R18W
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None
Slope (%): 2 Lat: 40.010690 Long: -83.039886 Datum: NAD83
Soil Map Unit Name: Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Upland Point	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Absolute % Cover <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominant Species? <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Ulmus pumila</u> 2. <u>Populus deltoides</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u>10</u> =Total Cover	<u>5</u> <u>5</u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u> </u> <u> </u> <u> </u>	<u>UPL</u> <u>FAC</u> <u> </u> <u> </u> <u> </u>	
Herb Stratum (Plot size: <u>5</u>) 1. <u>Festuca rubra</u> 2. <u>Conium maculatum</u> 3. <u>Sorghum halepense</u> 4. <u>Setaria faberi</u> 5. <u>Symphytotrichum ericoides</u> 6. <u>Cirsium arvense</u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>110</u> =Total Cover	<u>40</u> <u>20</u> <u>15</u> <u>15</u> <u>10</u> <u>10</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u>No</u> <u>No</u> <u>No</u> <u>No</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u>FACW</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u>	
Woody Vine Stratum (Plot size: <u> </u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>20</u> x 2 = <u>40</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>90</u> x 4 = <u>360</u> UPL species <u>5</u> x 5 = <u>25</u> Column Totals: <u>120</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>3.67</u>
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/4	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

Hydric Soil Indicators:

Histosol (A1)

Sandy Gleyed Matrix (S4)

Histic Epipedon (A2)

Sandy Redox (S5)

Black Histic (A3)

Stripped Matrix (S6)

Hydrogen Sulfide (A4)

Dark Surface (S7)

Stratified Layers (A5)

Loamy Mucky Mineral (F1)

2 cm Muck (A10)

Loamy Gleyed Matrix (F2)

Depleted Below Dark Surface (A11)

Depleted Matrix (F3)

Thick Dark Surface (A12)

Redox Dark Surface (F6)

Sandy Mucky Mineral (S1)

Depleted Dark Surface (F7)

5 cm Mucky Peat or Peat (S3)

Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

Coast Prairie Redox (A16)

Iron-Manganese Masses (F12)

Red Parent Material (F21)

Very Shallow Dark Surface (F22)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present?

YesNo

X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> Water Table Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> Saturation Present? Yes ☐ No ☒ Depth (inches): <input type="text"/> (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Background Information

Name:	Jordan Brennan and Alex Brown	
Date:	01/26/2024	
Affiliation:	STONE Environmental Engineering & Science, Inc.	
Address:	3700 Corporate Drive, Suite 125, Columbus, OH 43231	
Phone Number:	(614)-865-1874	
e-mail address:	JordanBrennan@StoneEnvironmental.com	
Name of Wetland:	W-1	
Vegetation Communit(ies):	PEM	
HGM Class(es):	Depression	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	<p>Refer to PJWD report</p>	
Lat/Long or UTM Coordinate	40.010119, -83.037639	
USGS Quad Name	Northwest Columbus	
County	Franklin	
Township	Clinton	
Section and Subsection		Refer to report
Hydrologic Unit Code		Refer to report
Site Visit		01/26/2024
National Wetland Inventory Map		Refer to report
Ohio Wetland Inventory Map		Refer to report
Soil Survey		Refer to report
Delineation report/map		Refer to report

Name of Wetland: W-1	
Wetland Size (acres, hectares):	0.202 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to PJWD report	
Comments, Narrative Discussion, Justification of Category Changes: Refer to PJWD report	
Final score : 17	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: OSU MALC Storm Sewer**Rater(s):** Jordan Brennan and Alex Brown**Date:** 01/26/2024**1****1****Metric 1. Wetland Area (size).**

max 6 pts.

subtotal

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☐ <0.1 acres (0.04ha) (0 pts)

1**2****Metric 2. Upland buffers and surrounding land use.**

max 14 pts.

subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average. **Please enter score.**

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

1.0

metric 2b average

11**13****Metric 3. Hydrology.**

max 30 pts.

subtotal

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

43e. Modifications to natural hydrologic regime. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (12)
☐ Recovered (7)
☒ Recovering (3)
☐ Recent or no recovery (1)

3

metric 3e average

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
☒ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☒ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☐ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☒ stormwater input

- ☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

7**20****Metric 4. Habitat Alteration and Development.**

max 20 pts.

subtotal

4a. Substrate disturbance. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

3

metric 4a average

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

Comments:

4c. Habitat alteration. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

3

metric 4c average

20

subtotal this page

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ woody debris removal
☐ toxic pollutants

- ☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☒ dredging
☐ farming
☐ nutrient enrichment
☐ other: _____

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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20

subtotal first page

Comments:

0

20

max 10 pts.
subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

-3

17

max 20 pts.
subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☒ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussucks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

Typha
angustifolia

17

Final Score

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

W-1

		circle answer or insert score		Result
Narrative Rating	Question 1. Critical Habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES ☐	NO ☒	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES ☐	NO ☒	If yes, Category 3.
	Question 4. Significant bird habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES ☐	NO ☒	If yes, Category 1.
	Question 6. Bogs	YES ☐	NO ☒	If yes, Category 3.
	Question 7. Fens	YES ☐	NO ☒	If yes, Category 3.
	Question 8a. Old Growth Forest	YES ☐	NO ☒	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES ☐	NO ☒	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES ☐	NO ☒	If yes, Category 3
	Question 11. Relict Wet Prairies	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	7		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	-3		
	TOTAL SCORE	17		Category based on score breakpoints: 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒ Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒ Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒ Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☐ Wetland is assigned to the appropriate category based on the scoring range	NO ☒ If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒ Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM. A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3
	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Jordan Brennan and Alex Brown
Date:	01/26/2024
Affiliation:	STONE Environmental Engineering & Science, Inc.
Address:	3700 Corporate Drive, Suite 125, Columbus, OH 43231
Phone Number:	(614)-865-1874
e-mail address:	JordanBrennan@StoneEnvironmental.com
Name of Wetland:	W-2
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	Refer to PJWD report
Lat/Long or UTM Coordinate	40.010329, -83.038423
USGS Quad Name	Northwest Columbus
County	Franklin
Township	Clinton
Section and Subsection	Refer to report
Hydrologic Unit Code	Refer to report
Site Visit	01/26/2024
National Wetland Inventory Map	Refer to report
Ohio Wetland Inventory Map	Refer to report
Soil Survey	Refer to report
Delineation report/map	Refer to report

Name of Wetland: W-2	
Wetland Size (acres, hectares):	0.084 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to PJWD report	
Comments, Narrative Discussion, Justification of Category Changes: Refer to PJWD report	
Final score : 15	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☐	☒
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☒	☐
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: OSU MALC Storm Sewer**Rater(s):** Jordan Brennan and Alex Brown**Date:** 01/26/2024

0

0

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☒ <0.1 acres (0.04ha) (0 pts)

1

1

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average. **Please enter score.**

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

1.0

metric 2b average

10

11

max 30 pts.

subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
☒ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☒ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☐ Seasonally saturated in upper 30cm (12in) (1)

4

3e. Modifications to natural hydrologic regime. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (12)
☐ Recovered (7)
☒ Recovering (3)
☐ Recent or no recovery (1)

3

metric 3e average

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☒ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

7

18

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.4a. Substrate disturbance. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

3

metric 4a average

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

Comments:

4c. Habitat alteration. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

3

metric 4c average

18

subtotal this page

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ woody debris removal
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☒ dredging
☐ farming
☐ nutrient enrichment
☐ other: _____

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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18

subtotal first page

Comments:

0	18
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

-3	15
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ 0 Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☒ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Phragmites
australis

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

15

Final Score

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

W-2

		circle answer or insert score		Result
Narrative Rating	Question 1. Critical Habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES ☐	NO ☒	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES ☐	NO ☒	If yes, Category 3.
	Question 4. Significant bird habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES ☐	NO ☒	If yes, Category 1.
	Question 6. Bogs	YES ☐	NO ☒	If yes, Category 3.
	Question 7. Fens	YES ☐	NO ☒	If yes, Category 3.
	Question 8a. Old Growth Forest	YES ☐	NO ☒	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES ☐	NO ☒	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES ☐	NO ☒	If yes, Category 3
	Question 11. Relict Wet Prairies	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	10		
	Metric 4. Habitat	7		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersions, microtopography	-3		
	TOTAL SCORE	15		Category based on score breakpoints: 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☐ Wetland is assigned to the appropriate category based on the scoring range	NO ☒	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3
	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Jordan Brennan and Alex Brown
Date:	01/26/2024
Affiliation:	STONE Environmental Engineering & Science, Inc.
Address:	3700 Corporate Drive, Suite 125, Columbus, OH 43231
Phone Number:	(614)-865-1874
e-mail address:	JordanBrennan@StoneEnvironmental.com
Name of Wetland:	W-3
Vegetation Communit(ies):	PFO
HGM Class(es):	Depression
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
Refer to PJWD report	
Lat/Long or UTM Coordinate	40.010514, -83.039081
USGS Quad Name	Northwest Columbus
County	Franklin
Township	Clinton
Section and Subsection	
Hydrologic Unit Code	
Site Visit	
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	

Name of Wetland: W-3	
Wetland Size (acres, hectares):	0.06 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to PJWD report	
Comments, Narrative Discussion, Justification of Category Changes: Refer to PJWD report	
Final score : 24	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

1	1
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average. **Please enter score.**

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

1.0
metric 2b average

12	13
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☒ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☐ <0.4m (<15.7in) (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☒ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☒ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

3
metric 3e average

Check all disturbances observed	
☐ ditch	☐ point source (nonstormwater)
☐ tile	☐ filling/grading
☐ dike	☐ road bed/RR track
☐ weir	☐ dredging
☒ stormwater input	☐ other _____

8	21
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

3
metric 4a average

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

Comments:

4c. Habitat alteration. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

3
metric 4c average

21
subtotal this page

Check all disturbances observed	
☐ mowing	☐ shrub/sapling removal
☐ grazing	☒ herbaceous/aquatic bed removal
☐ clearcutting	☒ sedimentation
☐ selective cutting	☒ dredging
☐ woody debris removal	☐ farming
☐ toxic pollutants	☐ nutrient enrichment
	☐ other: _____

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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21

subtotal first page

Comments:

0

21

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

3

24

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☒ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussucks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

24

Final Score

End of Quantitative Rating. Complete Categorization Worksheets.

		circle answer or insert score		Result
Narrative Rating	Question 1. Critical Habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES ☐	NO ☒	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES ☐	NO ☒	If yes, Category 3.
	Question 4. Significant bird habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES ☐	NO ☒	If yes, Category 1.
	Question 6. Bogs	YES ☐	NO ☒	If yes, Category 3.
	Question 7. Fens	YES ☐	NO ☒	If yes, Category 3.
	Question 8a. Old Growth Forest	YES ☐	NO ☒	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES ☐	NO ☒	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES ☐	NO ☒	If yes, Category 3
	Question 11. Relict Wet Prairies	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	8		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersions, microtopography	3		
	TOTAL SCORE	24		Category based on score breakpoints: 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒ Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒ Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒ Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☐ Wetland is assigned to the appropriate category based on the scoring range	NO ☒ If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒ Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM. A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3
	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Jordan Brennan and Alex Brown	
Date:	01/26/2024	
Affiliation:	STONE Environmental Engineering & Science, Inc.	
Address:	3700 Corporate Drive, Suite 125, Columbus, OH 43231	
Phone Number:	(614)-865-1874	
e-mail address:	JordanBrennan@StoneEnvironmental.com	
Name of Wetland:	W-4	
Vegetation Communit(ies):	PEM	
HGM Class(es):	Riverine	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	<p>Refer to PJWD report</p>	
Lat/Long or UTM Coordinate	40.009910, -83.037860	
USGS Quad Name	Northwest Columbus	
County	Franklin	
Township	Clinton	
Section and Subsection		Refer to report
Hydrologic Unit Code		Refer to report
Site Visit		01/26/2024
National Wetland Inventory Map		Refer to report
Ohio Wetland Inventory Map		Refer to report
Soil Survey		Refer to report
Delineation report/map		Refer to report

Name of Wetland: W-4	
Wetland Size (acres, hectares):	0.118 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to PJWD report	
Comments, Narrative Discussion, Justification of Category Changes: Refer to PJWD report	
Final score : 24	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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1	1	Metric 1. Wetland Area (size).
max 6 pts.	subtotal	

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

1	2	Metric 2. Upland buffers and surrounding land use.
max 14 pts.	subtotal	

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average. **Please enter score.**

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

1.0
metric 2b average

12	14	Metric 3. Hydrology.
max 30 pts.	subtotal	

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☒ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☒ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

5
metric 3e average

Check all disturbances observed	
☐ ditch	☒ point source (nonstormwater)
☒ tile	☐ filling/grading
☐ dike	☐ road bed/RR track
☐ weir	☐ dredging
☐ stormwater input	☐ other _____

7	21	Metric 4. Habitat Alteration and Development.
max 20 pts.	subtotal	

4a. Substrate disturbance. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

2
metric 4a average

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

Comments:

4c. Habitat alteration. Score one or double check and average. **Please enter score.**

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

3
metric 4c average

21
subtotal this page

Check all disturbances observed	
☐ mowing	☐ shrub/sapling removal
☐ grazing	☐ herbaceous/aquatic bed removal
☐ clearcutting	☐ sedimentation
☐ selective cutting	☐ dredging
☐ woody debris removal	☒ farming
☐ toxic pollutants	☒ nutrient enrichment
	☐ other: _____

Site: OSU MALC Storm Sewer	Rater(s): Jordan Brennan and Alex Brown	Date: 01/26/2024
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21

subtotal first page

Comments:

0	21
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

3	24
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☒ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussucks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

24

Final Score

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

W-4

		circle answer or insert score		Result
Narrative Rating	Question 1. Critical Habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES ☐	NO ☒	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES ☐	NO ☒	If yes, Category 3.
	Question 4. Significant bird habitat	YES ☐	NO ☒	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES ☐	NO ☒	If yes, Category 1.
	Question 6. Bogs	YES ☐	NO ☒	If yes, Category 3.
	Question 7. Fens	YES ☐	NO ☒	If yes, Category 3.
	Question 8a. Old Growth Forest	YES ☐	NO ☒	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES ☐	NO ☒	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES ☐	NO ☒	If yes, Category 3
	Question 11. Relict Wet Prairies	YES ☐	NO ☒	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	7		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersed, microtopography	3		
	TOTAL SCORE	24		Category based on score breakpoints: 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☐ Wetland is assigned to the appropriate category based on the scoring range	NO ☒	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX D



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

Phone: (614) 416-8993 Fax: (614) 416-8994



In Reply Refer To:

Project Code: 2024-0039512

Project Name: OSU MALC Storm Sewer

January 23, 2024

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

(614) 416-8993

PROJECT SUMMARY

Project Code: 2024-0039512
Project Name: OSU MALC Storm Sewer
Project Type: Drainage Project
Project Description: Storm sewer improvements.
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@40.010349250000004,-83.03868485920825,14z>



Counties: Franklin County, Ohio

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

CLAMS

NAME	STATUS
Salamander Mussel <i>Simpsonaias ambigua</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6208	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: STONE Environmental, Engineering, and Science
Name: Jordan Brennan
Address: 3700 Corporate Dr Suite 125
City: Columbus
State: OH
Zip: 43231
Email: jordanbrennan@stoneenvironmental.com
Phone: 5672773571



Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

Tara Paciorek, Chief

2045 Morse Road – Bldg. E-2

Columbus, Ohio 43229

Phone: (614) 265-6661

Fax: (614) 267-4764

February 22, 2024

Jordan Brennan
STONE Environmental Engineering & Science
3700 Corporate Drive, Suite 125
Columbus, Ohio 43231

Re: 24-0094_OSU MALC Storm Sewer

Project: The proposed project involves storm sewer improvements.

Location: The proposed project is located in Clinton Township, Franklin County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state, or federal agency nor relieve the applicant of the obligation to comply with any local, state, or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following data within one mile of the project area:

1. Lark Sparrow (*Chondestes grammacus*), E
2. Creek Heelsplitter (*Lasmigona compressa*), SC
3. Wavy-rayed Lampmussel (*Lampsilis fasciola*), SC
4. Elktote (*Alasmodonta marginata*), SC

Conservation status abbreviations are as follows: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; U = state status under review; X = presumed extirpated in Ohio; FE = federally endangered, and FT = federally threatened. The review was performed on the specified project area as well as an additional one-mile radius. Records searched date from 1980. Features searched include locations of rare and endangered plants and animals determined to be of value to the conservation of their species, high quality plant communities, animal breeding assemblages, and outstanding geological features.

Location records for the species listed above are provided in a pdf map attachment to this letter per your request. Locations are shown in blue, and labels correspond to the numbers above. Species location information will not be disclosed, published, or distributed beyond the scope of your project.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The project is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

In addition, the entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these bat species predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. The DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible.

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS “[RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES](#).” If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)

rayed bean (*Villosa fabalis*)

northern riffleshell (*Epioblasma torulosa rangiana*)

snuffbox (*Epioblasma triquetra*)

purple cat’s paw (*Epioblasma o. obliquata*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered

elephant-ear (*Elliptio crassidens crassidens*)
pocketbook (*Lampsilis ovata*)
long solid (*Fusconaia maculata maculate*)
washboard (*Megaloniaias nervosa*)
Ohio pigtoe (*Pleurobema cordatum*)

State Threatened

pondhorn (*Uniomereus tetralasmus*)
Salamander Mussel (*Simpsonaias ambigua*)

Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the following listed fish species.

State Endangered

goldeye (*Hiodon alosoides*)
shortnose gar (*Lepisosteus platostomus*)
Iowa darter (*Etheostoma exile*)
spotted darter (*Etheostoma maculatum*)
northern brook lamprey (*Ichthyomyzon fossor*)
tonguetied minnow (*Exoglossum laurae*)
popeye shiner (*Notropis ariommus*)

State Threatened

lake chubsucker (*Erimyzon sucetta*)
paddlefish (*Polyodon spathula*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the black-crowned night-heron (*Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The [local floodplain administrator](#) should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator

 OSU MALC Storm Sewer project area

