REQUEST FOR QUOTE (RFQ)

Chesapeake Conservancy is a non-profit organization that works with conservation partners and landowners to implement Best Management Practices (BMPs) on agricultural land. Chesapeake Conservancy and our Central PA Partnership were awarded a Regional Conservation Partnership Program (RCPP) grant through the USDA Natural Resources Conservation Service (NRCS). Funding for Technical Assistance for practice design and assistance with practice installation and verification is available through RCPP.

As part of the RCPP grant, Chesapeake Conservancy is soliciting quotes for the following services:

- Engineering Services to design a roofed heavy use area/waste storage facility and associated practices for a dairy operation.
- Project and Construction Oversight
- Quality Assurance Inspections and Final Certification with PE Stamp

RFQ OVERVIEW AND DESCRIPTION OF WORK

RFQ Release Date: October 1, 2024

Landowner Name: Jesse Glick

Project Location: 1057 West Valley Road
Loganton, PA 17747
Clinton County, Greene Township

RFQ Issuing Office: Chesapeake Conservancy
Email: paprograms@chesapeakeconservancy.org
Phone: 570-372-4075

RCPP Partners: Natural Resources Conservation Service (NRCS) and Clinton County Conservation District

RFQ Due Date: **All quotes must be submitted by:**
October 31, 2024 at 10:00 am EDT
Quotes will not be accepted after this date and time.

RFQ Submission: **All quotes must be submitted electronically, or hand delivered in-person.**
DO NOT MAIL QUOTES – QUOTES WILL NOT BE ACCEPTED THROUGH U.S. MAIL.

Email: paprograms@chesapeakeconservancy.org
Include "Glick RFQ Response – Engineering Services" in the subject line.

In Person: Chesapeake Conservancy
Attention: Kathy Rohrer/Glick RFQ Response – Engineering Services
Susquehanna University, Freshwater Research Institute Building
1250 West Sassafras Street, Selinsgrove, PA 17870
A drop box is located inside the main entrance and is accessible at any time.

Questions: All questions regarding this RFQ should be submitted to:
Email: paprograms@chesapeakeconservancy.org
Contact/Phone: Kathy Rohrer, 570-372-4075

Project Description:

The successful bidder will be responsible for providing engineering and professional services to design and oversee construction of a roofed heavy use area/waste storage facility on a dairy operation in Clinton County. The project involves construction of the roofed facility as well as a silo loading pad, underground outlets, diversion, access roads, trails and walkways and other Best Management Practices (BMPs). The new facility will be a stand-alone structure that is not attached to an existing building.

The design shall include all components needed for constructing the practices identified in the Engineering Evaluation (I&E) that will adequately address water quality. BMPs may include but are not limited to those identified in the landowner's I&E (Attachment A). Bidders should refer to the I&E for practices, estimated quantities and other important information about the project site. This information is provided for informational purposes only.

Fishing Creek flows through the south end of the property. Fishing Creek has a designated use of High Quality-Cold Water Fishes (HQ-CWF).

A Nutrient Management Plan has been developed for this operation.

This contract will include the following services:

Project Design

- Site survey(s) and engineering of planned BMPs
- Provide a concept plan for approval by NRCS after pre-design meeting
- Coordinate and communicate with NRCS staff to incorporate NRCS comments into final design
- Provide final design and drawings to NRCS for review and approval
    - The Engineer shall prepare all necessary design plans, drawings and specifications to be used for the construction of the BMPs. All information provided shall be complete in detail and contain all necessary information. Drawings shall conform with standard professional practice, including site plans, profiles and sections, erosion and sediment control plan, quality assurance/inspection plan, operation and maintenance plan and all details necessary to illustrate the complete scope of the work.
    - The Engineer shall include design calculations, documentation and cost estimate.
    - The design and drawings shall be signed and sealed by a qualified, licensed professional, and shall meet Pennsylvania Technical Guide Standards and Specifications.
- Provide NRCS approved design and drawings to the Conservancy, RCPP Partner (Conservation District) and landowner
- Provide NRCS technical standards and specifications of planned BMPs
    - Planned BMPs and estimated quantities are found in Attachment A.
- Provide printed sets of 11"x17" or larger drawings and designs for the site showing. Quantity will be determined based on number of attendees.

Project Permits

It is the responsibility of the bidder to determine what permits and plans (including stormwater management) are required for this project prior to submitting a bid. The successful bidder will be responsible for writing, submitting, overseeing and implementing any applicable permits and plans. Proposals should reflect these services and the cost associated with the permitting services should be broken out separately on the Contractor Quote Form. Bidders shall include with their proposal, a list of all required permits and plans. *The bidder is not responsible for any permit fees.*

The following are types of permits that are commonly needed on projects of this scope. Bidders should confirm which permits and plans are required, including any not listed here.

- General Permits per Pennsylvania Department of Environmental Protection (DEP) Chapter 105
- Erosion and Sediment Control per DEP Chapter 102
- Stormwater Management Plan and Permits per county and local municipality ordinances
    - Preliminary discussions with the township indicate that this project may be exempt from a stormwater management plan. However, since some of the runnoff from the improved areas would drain onto a neighbor's property before reaching Fishing Creek, the township would require the landowner to obtain a waiver from the neighbor. The landowner has talked to the neighbor and the neighbor has agreed to the waiver. The selected bidder would be required to work with the landowner to ensure the waiver is implemented to the satisfaction of the township.
- National Pollutant Discharge Elimination System (NPDES) Permit per U.S. Environmental Protection Agency
    - It is anticipated that less than 1 acre, as defined by DEP for agricultural BMP's will be disturbed for this project. Unless the scope of work changes, the project should not require a NPDES permit. Bidders should confirm this with the appropriate agencies.
- Zoning and Building Permits per local municipality and/or county

Project Meetings

Project meetings including but not limited to:

- Pre-design meeting on site
- Site showing for bids on site
- Bid opening or review of bids
- Pre-construction visit on site

Construction Oversight and Quality Assurance

The Engineer is expected to furnish customary engineering advice and assistance necessary to Chesapeake Conservancy, NRCS, landowner, contractors and other project partners to enable all parties to readily understand the project and design. The Engineer shall provide oversight of the project and shall coordinate with Chesapeake Conservancy, NRCS, landowner, contractors and other partners throughout the project. The Engineer is expected to work directly with NRCS and the landowner on such things as design reviews, edits and approvals, site visits and other aspects of the project. The Engineer shall visit the construction site to observe progress and quality of work, to determine if work is proceeding in accordance with the design, to keep Chesapeake Conservancy informed of progress, to guard against defects and deficiencies and to disapprove of work not in conformance with the design and NRCS specifications.

The Engineer will, at a minimum, conduct quality assurance inspections on site during construction for critical tasks including, but not limited to:

- Placing compacted fill or subgrade/stone preparation
- Checking materials (rebar, posts, etc.) before installation
- Check reinforcing steel before concrete pour (not same day as pour)
- Pouring any concrete
- Backfilling poured concrete walls or final grading
- Setting trusses and associated truss bracing (Trusses must be approved by the Engineer prior to ordering. Final truss design needs a P.E. seal.)
- Installing stormwater pipes and drop boxes
- Final inspection for conformity with design, concept and NRCS specifications

Contractor will complete a NRCS RCPP TA-I Practice Certification Sheet (included with Attachment B) for each practice (Contract Item Number-CIN) in the NRCS contract that is part of the engineering design. An example Practice Certification Sheet has been provided by NRCS. The Contractor shall send the completed Practice Certification Sheet(s) to the local NRCS District Conservationist (DC) for functional review and DC signature and copy the Conservancy. NRCS will complete its review and return the signed Practice Certification Sheet(s) to the Contractor. The signed Practice Certification Sheet(s) shall be submitted to the Conservancy with the Contractor's invoice.

When the project is complete, the Engineer will provide the following:

- "As Built" documentation consisting of final drawings of practices and quantities installed and certification statement signed by a professional engineer stating installed practices meet the PA Technical Guide Standards and Specifications.
    - One electronic copy to Chesapeake Conservancy and NRCS.

Bidding Process

Chesapeake Conservancy (lead RCPP partner) will be required to utilize a competitive bidding process for the implementation phase of the project. The Conservancy will be responsible for compiling a bid package following their procurement policy. The Engineer and NRCS will review the final bid package for accuracy and completeness. The Engineer shall be available to answer contractors' questions pertaining to the design and supply the Conservancy with addenda, if required. The Engineer shall be prepared to provide printed sets of 11"x17" or larger of the designs and drawings for the site showing.

RFQ TERMS AND CONDITIONS

CONSTRUCTION TIMELINE:

Designs shall be completed as soon as possible. Contractors shall include with their response when they can begin working on the design and their projected completion date of the design. Preference shall be given to contractors who can complete the designs in a timeframe which could allow construction to be completed before June 2026 as funding from the RCPP partner for implementation/construction needs to be spent within this timeframe.

If the contracted services are not completed within the designated time period (as specified in the resulting contract from this RFQ), the contract can be extended if agreed to in writing by Chesapeake Conservancy and the contractor.

PA ONE CALL:

Contractor shall follow all laws and regulations relating to the Pennsylvania One-Call System including submitting all required design notifications to the Pennsylvania One-Call System.

COMMUNICATION:

Communication between the Contractor, NRCS, Conservancy, the District and the landowner is crucial to a successful project. Contractor shall work closely with NRCS, Conservancy, the District and the landowner during the design and implementation phases of the project to ensure the project is completely timely.

PAYMENT INFORMATION:

Chesapeake Conservancy will pay Contractor when the design is completed and approved by NRCS and as practices are certified and NRCS reporting requirements are met. Payment(s) will be issued on a Net 30 schedule upon submission of an approved invoice and a completed Application for Payment form.

NRCS REPORTING REQUIREMENTS:

NRCS requires Contractor to complete Attachment B with each invoice. Attachment B includes a RCPP TA-I Certification by Practice Sheet and a RCPP TA-I Reimbursement Summary Sheet.

RCPP TA-I Certification by Practice Sheet

Contractor shall include on the Certification by Practice Sheet basic information about the conservation practice, who was involved, brief description of activities, completion date and the charge by Activity Type (Design or Installation). A separate Certification Practice Sheet is to be completed for each practice in the producer's RCPP contract that is associated with the engineering design.

RCPP TA-I Reimbursement Summary Sheet

For each invoice the Contractor submits to the Conservancy, Contractor shall complete the Reimbursement Summary Sheet by compiling the total reimbursement request for all completed Conservation Practice Sheets for the invoice period. The Reimbursement Summary Sheet shall include the invoice period start and end date, details from the Certification Practice Sheet as well as the total cost being invoiced by conservation practice. The staff position, hours worked and hourly rate associated with each conservation practice should be broken out at the bottom of the form.

EQUAL EMPLOYMENT OPPORTUNITY:

Chesapeake Conservancy is an equal opportunity employer. The successful bidder shall comply with all federal, state, and local equal employment opportunity requirements. Additional information can be found at https://www.ecfr.gov and searching 41 CFR 60-1.4(b).

SMALL BUSINESS AND SMALL DIVERSE BUSINESS:

Chesapeake Conservancy encourages the use of small and small diverse businesses when soliciting Requests for Quotes. Contractors are encouraged to register with the federal government at www.sam.gov and with the Pennsylvania Department of General Services at www.dgs.pa.gov (search Small Diverse Business Verification). Please note Pennsylvania Department of General Service registration is only valid for three years. Contractors are encouraged to verify that their registration is current.

Contractors and any subcontractors who register on Sam.gov and with the PA Dept of General Services and who qualify as a small and/or small diverse business should check the applicable boxes on the Contractor Response Form.

DEBARMENT AND TAX LIABILITY:

Contractors will be required to certify that they and any subcontractors are not listed on the Debarment and Suspension List maintained by the Pennsylvania Department of General Services (https://www.dgs.internet.state.pa.us/debarmentsearch/debarment/index) and the General Services Administration's List of Parties Excluded from Federal Procurement or Nonprocurement Programs (www.SAM.gov) in accordance with Executive Orders 12549 and 12689, "Debarment and Suspension" and have no outstanding tax liabilities. Contractors will also be required to certify that they and any subcontractors are not in default of a loan or funding agreement administered by any Commonwealth agency.

INSURANCE REQUIREMENTS:

Bidders shall include a copy of their current Certificate of Insurance (COI) that reflects their existing levels of liability insurance coverage. Chesapeake Conservancy will work with the successful bidder to ensure adequate levels of insurance are in place for the project prior to finalizing a contract.

Preferred levels of coverage include the following:

Type of Insurance Coverage	***Limit Required***
Workers Compensation and Employer's Liability -	Statutory
Bodily Injury, Each Accident:	State Minimum
Bodily Injury By Disease, Each Employee:	State Minimum
Bodily Injury/Disease, Policy Limit:	State Minimum
General Liability -	
Each Occurrence (Bodily Injury and Property Damage):	$1,000,000
General Aggregate:	$1,000,000
Excess or Umbrella Liability -	
Per Occurrence:	$1,000,000
General Aggregate:	$2,000,000
Automobile Liability -	
Combined Single Limit (Bodily Injury and Property Damage):	$1,000,000
Professional Liability – covering negligent acts, errors, and omissions in performance of professional services	
Each Claim Made	$5,000,000
Annual Aggregate	$5,000,000

It is preferred that all policies (except workers compensation) include a waiver of subrogation and list "**Chesapeake Conservancy"** and **"National Fish and Wildlife Foundation"** as additional insured.

Once Chesapeake Conservancy and the successful bidder have reached an agreement pertaining to insurance coverage, the successful bidder shall provide Chesapeake Conservancy with a current COI certified by a licensed insurance broker. The approved COI needs to be provided to Chesapeake Conservancy prior to signing a contract.

Note: Bidders do not need to add the additional insured to their policy when responding to the RFQ. Only the successful bidder will be required to name the additional insured on their policy after the bid is awarded. The Certificate Holder should be as follows: Chesapeake Conservancy, 1212 West Street, Suite 42, Annapolis, MD 21401.

GRANTS:

The terms and conditions of the RCPP Supplemental Agreement for Technical Assistance and Financial Assistance for Easement Due Diligence Entered Into By USDA Natural Resources Conservation Service and Chesapeake Conservancy apply to the contracts that result from this RFP. Copies of the Agreement are available upon request.

PREVAILING WAGE AND ENHANCED MINIMUM WAGE REQUIREMENTS:

Prevailing wage and enhanced minimum wage rates do not apply to this RFQ.

SUBMISSION OF QUOTES AND SELECTION CRITERIA

SUBMISSION OF QUOTES:

Quotes are requested for the items described in the Project Description. Any estimated quantities included in this RFQ are for information only. The successful bidder will be responsible for determining the final quantities and practices as part of the design process.

At a minimum each quote response must include:

- Contractor Quote Form
  - Price – Must follow NRCS Crosswalk format outlined below*
  - Proposed start date
  - Proposed completion date
  - List of exclusions and assumptions (if applicable)
  - Signed by authorized representative
- Contractor General Information Form and corresponding documents**
  - Three references
  - Debarment and tax liability certification
  - Current Certificate of Insurance
  - Signed by authorized representative

Contractors bidding on more than one 2024 RCPP Engineering Services RFQ, will only need to submit one Contractor General Information Form and corresponding documents. Contractors should note on the Contractor Quote Form whether they are including the Contractor General Information Form with this response or if they submitted it with a separate 2024 RCPP Engineering Services response.

All quotes must be submitted electronically, or hand-delivered to Chesapeake Conservancy by the RFQ due date specified on Page 1 of the RFQ.

***NRCS Crosswalk**

A Generalized Crosswalk: Aligning SA TA-I Practices to NRCS 9 Step Planning Process	
TA-I Practice Code and Name	**Implementation TA Tasks – Must be directly related to a potentially viable RCPP funded FA application or contract, and not be otherwise precluded like are TA-E items (per APF), and partner administrative expenses (per Statute.)**
RTIP001 – TA-I, Negotiated Pre-Application	Pre-application assistance may assistance to producers in completion of application, establishing FSA records, and or field work to support eligibility or screening. **(Reminder: this activity does NOT include outreach to producers or general meetings to raise producer awareness of project, which are TA-E or contribution tasks.)**
RTIP002 – TA-I, Negotiated Planning	Steps 1-7 Note: TA-I Planning, Design tasks require adherence to NRCS planning procedures and or practice standards as described for each agreement in Attachment 5 (and or valuation methods attached to individual deliverables). Where partners will not complete entity of a plan or design (e.g. partner will provide a range heath assessment in support of a grazing plan to be prepared by NRCS planner), Attachment 5 must also identify specific requirements of items partner will complete to earn payment.
RTIP003 – TA-I, Negotiated Design	Steps 5, 6, 8 (Design)
RTIP004 – TA-I, Negotiated Installation	Step 8 (Installation)
RTIP005 – TA-I, Negotiated Checkout	Step 8 (Checkout) Note: TA-I Checkout, requires NRCS job approval authority as checkout determines eligibility of completed work for FA payment. Not generally delegated to partners.
RTIP006 – TA-I, Negotiated Post-Application	For post-application assistance Note: Post application assistance is not outcome assessment or monitoring (which are TA-E/Contribution tasks); RTIP006 should be used only where NRCS FA policy requires follow-up e.g. easement monitoring, 5% spot checks (with appropriate separate of duties)

CONTRACTOR SELECTION CRITERIA:

Contractor will be evaluated on the following criteria:

- Quote price
- Proposed start date
- Proposed completion date
- References - Demonstrates experience by providing examples of at least three (3) similar projects in Pennsylvania. More than 3 references are allowed.
- Debarment and tax liability status
- Exclusions and assumptions (if applicable)
- Provided Certificate of Insurance with current levels of coverage

Quotes will be awarded to the most qualified economic bidder, as determined by Chesapeake Conservancy. Chesapeake Conservancy reserves the right to reject any or all quotes and/or cancel the quote for any reason.

CONTRACTOR QUOTE FORM

Contractor Name: _____

Project Name: Jesse Glick Engineering Services
Project Location: 1057 West Valley Road, Loganton, PA 17747, Clinton County

1. Price– Complete Contractor Quote Form Page 2 – ***Required***

   RCPP funding for Technical Assistance is provided through NRCS therefore we are using their categories for defining technical service categories. Include all Staff Position Titles that will be involved with the implementation of this project and Range Rate of staff for those positions, Estimated Number of Hours Per Activity and the Total Cost per Activity. The range of rates should account for the current staff rates and the expected pay increases for those positions over the next 3 years (term of the RCPP producer contract). Bidders may include overhead/admin expenses as a component of their claimed rate but that rate should be customary and reasonable and will be subject to review by NRCS and the Conservancy. Any cost associated with the 6 categories must be broken out. Activities 2-4 are the most typical for this type of project since we have producers with RCPP contracts in place already. Please include additional documentation if you are proposing costs associated with activity 5-6. **DO NOT include any costs associated with permitting on page 2. Please break out permitting costs below.**

   Total price to complete the services related to *permitting only* as outlined in the Project Description – ***Required***:

   Permitting Services $_____

2. Date on which design can be started - ***Required***: _____
3. Estimated completion date of the design - ***Required***: _____
4. Identify any permits required for this project - ***Required:*** _____

   _____
5. List any exclusions and assumptions associated with your proposal - _____

   _____

   _____

   _____
6. Please check whether you are submitting the Contractor General Information Form and supporting documents with this response or if you submitted them under a separate 2024 RCPP Engineering Services RFQ – ***Required:***

   ☐ I have included the Contractor General Information Form with this RFQ response.

   ☐ I submitted the Contractor General Information Form with a separate 2024 RCPP Engineering Services RFQ.

This quote is submitted in response to the RFQ for the project described above. The quote is based on my knowledge of the plans and specifications identified within. This quote will remain valid for 90 days after submission. If awarded the RFQ, I agree to sign a contract with the Chesapeake Conservancy.

Company Name:_____ Company Tax ID (EIN):_____

Company Address:_____

Representative's Name:_____ Telephone:_____

Email Address:_____

Signature:_____ Title:_____ Date:_____

CONTRACTOR QUOTE FORM

Page 2 of 2

			INSERT REQUIRED INFORMATION (Staff Position Titles, Rate Range, Estimated Hours and Total Cost)			
TA-I Activity Code	**Activities**	**Tasks**	**Staff Position Title(s)**	**Rate Range $xx-$xx/hr**	**Estimated # of hours per activity**	**Total Cost (using avg rates)**
RTIP-001	TA Implementation Payment Pre-Application Activity	RCPP related Farm Visits (Follow up visits with NRCS or the farmer to develop application, review documents prior to contract, updating CNMPs or I&Es during ranking, screening, and contracting)				
RTIP-002	Updates to CNMPs as Needed. Amount not to exceed $2,500/farm	Conservation and Nutrient Management Plan development according to NRCS planning procedures				
RTIP-003	TA Implementation Payment Design on FA Applications or Contracts	Design/Engineering (5. Form Alternatives, 6. Evaluate Alternatives, 8. Design to Std, permit design/app, land rights, surveys, final designs)				
RTIP-004	TA Implementation Payment Installation (TA) on FA Applications or Contracts	Installation (8. Installation, inspections for structural practices)				
					Total Cost	

CONTRACTOR GENERAL INFORMATION FORM

Chesapeake Conservancy released ten RFQs for RCPP Engineering Services. Each RFQ is for a different project within the Conservancy's central PA rapid stream delisting catchment areas.

Contractors may bid on one or more of the RFQs. Contractors bidding on multiple RFQs only need to complete and return the Contractor General Information Form and related supporting documents with one of their RFQ submissions.

Contractor Name: _____

Project Name: **2024 RCPP Engineering Services**

1. The following three references are provided with telephone numbers of projects completed of similar scope and size - ***Required***:

   Name:_____ Telephone:_____

   Name:_____ Telephone:_____

   Name:_____ Telephone:_____

2. Small Business or Small Diverse Business (See Terms and Conditions for details) - *Check all that Apply*
   I have registered with Sam.gov and my business (or any subcontractors listed above) qualifies as a ☐ Small Business and/or ☐ Small Diverse Business

   I have registered with the PA Dept of General Services and my business (or any subcontractors listed above) has been certified as a ☐ Small Business and/or ☐ Small Diverse Business.

3. Debarment and tax liability status (See Terms and Conditions for details) - ***Required***:
   ☐I certify that my business, and any subcontractors, are not debarred by the State of Pennsylvania or the federal government.
   ☐I certify that my business, and any subcontractors, have no tax liabilities and are not in default of a loan or funding agreement administered by the State of Pennsylvania.

7. Certificate of Insurance (See Terms and Conditions for details) - ***Required***:
   ☐I have included with my response a copy of my Certificate of Insurance with my current levels of coverage.

This quote is submitted in response to the RFQ for the project described above. The quote is based on my knowledge of the plans and specifications identified within. This quote will remain valid for 90 days after submission. If awarded the RFQ, I agree to sign a contract with the Chesapeake Conservancy.

Company Name:_____ Company Tax ID (EIN):_____

Company Address:_____

Representative's Name:_____ Telephone:_____

Email Address:_____

Signature:_____ Title:_____ Date:_____

ATTACHMENTS:

Attachment A – Engineering Evaluation Heavy Use Area Protection for Jesse Glick

Attachment B – NRCS Reporting Requirements (Certification by Practice Sheet and Reimbursement Summary Sheet)

Attachment A

CNMP Engineering Evaluation
Heavy Use Area Protection

PREPARED FOR:

Jesse Glick

1057 West Valley Rd
Loganton, PA 17754
570-725-3066
Greene Twp, Clinton County, PA

PREPARED BY:

Nathan Dewing, NM Specialist
July 6, 2023

APPROVED BY:

Rob Sweppenheiser, P.E.

Rob Sweppenheiser, PE
9/27/23

TeamAg Incorporated

120 Lake Street Ephrata, PA 17522

Telephone: (717) 721-6795 Fax: (717) 721-9275 Email: teamag@teamaginc.com

Table of Contents

APPENDIX:

STRUCTURE SIZING, CUT/FILL ESTIMATES, WATERWAY SIZING, SOILS, DRAWINGS

1 Introduction

Mr. Glick contracted TeamAg, Inc. through the Chesapeake Conservancy to prepare this engineering inventory and evaluation along with a conservation plan, which will be components of a Comprehensive Nutrient Management Plan (CNMP). Guidance documents from USDA NRCS Pennsylvania were followed in the preparation of this document. This element addresses the components and activities associated with manure storage and handling practices and storm water and runoff associated with this operation.

On February 2, 2023 Nathan Dewing, TeamAg Inc. NM Specialist, visited the farm and met with Jesse Glick, the farm owner and operator, and Lexie Jacobs, Clinton County Conservation District to perform the field work for this report.

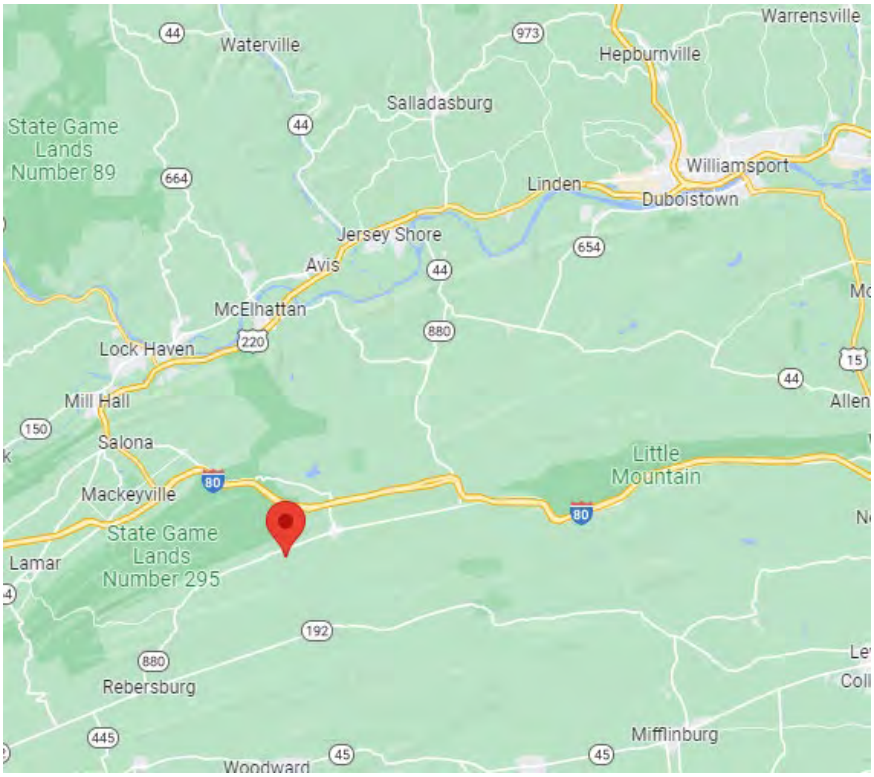
Mr. Glick owns an existing dairy and veal operation near Loganton, PA. Fishing Creek flows through the south end of the farm and later reaches Bald Eagle Creek and the West Branch Susquehanna River near Lock Haven, PA. Fishing Creek has a designated use of High Quality - Cold Water Fishes (HQ-CWF).

Livestock on the farm include 59 milk cows, 13 bred heifers, 10 calves, 280 veal calves, 6 draft horses, 5 driving horses, and 80 laying hens. This engineering inventory and evaluation includes the entire operation and the improvements planned are focused on a group of 13 dry cows and 13 bred heifers that use an outdoor animal concentration area (ACA). There are two existing circular concrete tanks for liquid manure – one for the dairy herd and one for the veal calves. Liquid manure is field applied in the fall and spring mostly on owned acres, with a small amount being exported to neighboring farms. Heifers and dry cows use an outdoor animal concentration area east of the dairy barn, otherwise all dairy animals are confined to the barns. Horses use pasture field H11 and H12 for 6 months of the year during the grazing season. Bedpack manure is spread in the spring and fall. A small amount of box stall manure is spread as needed year-round. Veal manure is collected in the concrete tank and is mostly exported for land application on neighboring farms. The chickens are housed in a coop and manure is mainly applied to the farm garden and some crop fields.

Owned land totals 139.4 acres including 48.1 acres of cropland, 8.0 acres of pasture, 9.0 acres of farmstead at two locations, 65.2 acres of forest, 7.4 acres of existing forested riparian buffer, and the remainder is other associated ag land. No additional crop land is rented. Crop land is used to grow primarily corn, hay, and tobacco. A typical rotation is 4 years of corn (grain or silage), 2 years of tobacco, followed by 2 years of alfalfa. Fields H11 and H12 are permanent pasture. Field V1 is permanent alfalfa, and V2-4 are continuous corn. Nearly all planting is done without tillage. The total animal units on the farm are approximately 176.5 AEU's and the operation is considered a concentrated animal operation (CAO). The farm operates with an Act 38 approved nutrient management plan.

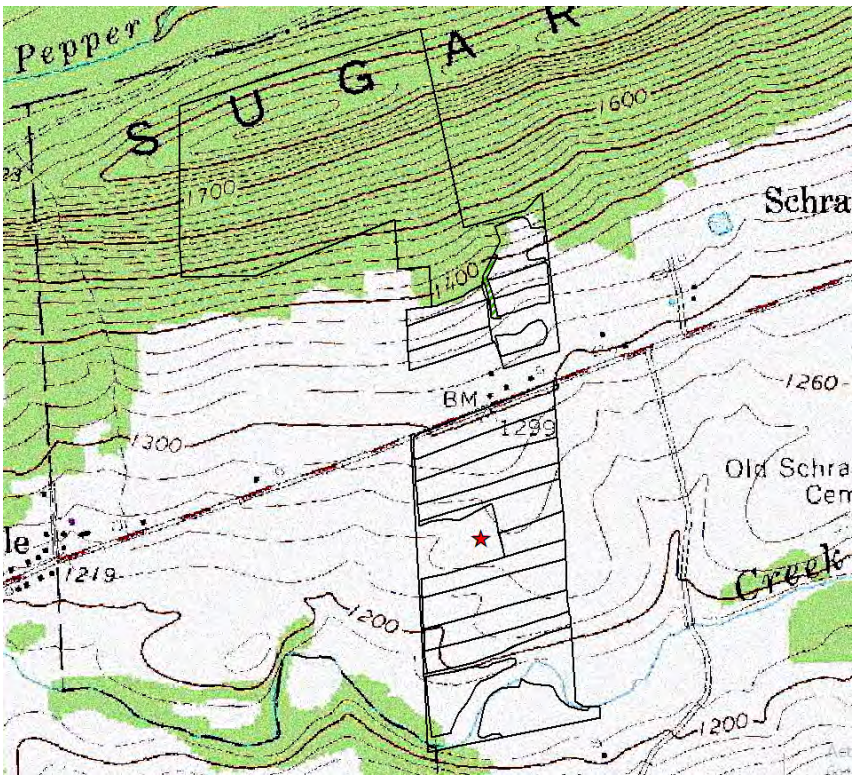
2 Site Data

FARM LOCATION MAP



AERIAL PHOTO OF THE DAIRY FARMSTEAD (HQ1)

USGS TOPOGRAPHIC MAP OF THE FARM



3 CNMP Engineering Inventory

3.1 Resource Concerns

Water quality from manure runoff and soils erosion are the main resource concerns. Significant manure accumulation on the outdoor ACA east of the dairy barn is difficult to collect. Runoff can carry nutrients and sediment to surface water. The silo loading area is unstable and traffic causes erosion. A field access lane starting south of the house at the dairy farmstead (HQ1) is actively eroding along the west end of fields H7 and H8 which can contribute sediment to surface water. A gully is actively eroding starting at the west edge of field V7 and continuing along the field access lane along the west end of fields V5 and V3. Runoff from this gully can carry sediment to surface water. There is a sinkhole at the east edge of HQ2, which receives runoff from fields V3, 5, and 7. The water source for grazing work horses on H11 and H12 is from the stream at the improved stream crossing.

3.2 Photos

1 – Start of the ACA at walkway from dairy barn – looking SW.

2 – ACA looking toward the greenhouse tobacco barn – looking SE. This waterer is the connection point for a new water line supplying the proposed HUAP.

3 – ACA looking NW from west end of greenhouse barn.

4 – ACA looking NE from west end of greenhouse barn.

5 – Existing diversion at dairy barn that receives runoff from the ACA looking SE. This water outlets toward the red barn in the background – toward the SE.

6 – ACA looking west.

7 – This section of walkway from dairy barn is concrete..

8 – Silo loading area. Concrete HUAP planned here to prevent erosion.

9 – Field access road at west end of H7 and H8 looking north. This section planned for reinforced gravel access road – looking north.

10 – Concrete manure storage at dairy barn.

11 – Existing stream crossing standing in H11 looking across creek into H12 – looking SE. Water tank and trough in this photo are not in use. Water source for grazing work horses is the stream at this crossing.

12 – Existing manure storage at veal barn (HQ2) – looking east.

13 – L – gully along W edge of V7. R – gully continues down field access lane along W edge V5 and V3.

14 – Grassed waterway to outlet here. Water will continue to flow along north side of veal barn.

15 – Existing outlet of runoff from gully in V3,5,7. Diversion planned here to achieve capacity for water.

3.3 Summary of Recommendations

ALTERNATIVE ANALYSIS

Soil on the farmstead is Buchanan (BuB – Hydrologic soil group D). Hagerstown soil (HeB – Hydrologic Soil Group B) is just south of the farmstead and could be considered suitable for a vegetated treatment area for runoff from an improved heavy use area protection (HUAP) for the dry cows and heifers. A roofed covering over the HUAP and manure stacking area is being considered the most cost-effective option to prevent nutrient and sediment runoff from the HUAP and to keep manure stackable.

Placement and orientation of the proposed HUAP was evaluated and this report recommends building the structure on fill to allow necessary entrances and to aid surface water drainage around the structure. A more detailed survey will further inform structure elevation.

The operator prefers to use the stream crossing as the water source for grazing work horses. The cost/benefit of installing water line and waterers is questionable. The plan, however, includes pressure water line from the house to freeze-proof waterers in H11 and H12 to eliminate the use of the stream as a livestock watering source. This is planned to comply with NRCS policy so that NRCS funding can remain an option.

The waterway at field V7 could be installed as a grassed waterway with approximate dimensions of 42’ wide x 0.75’ deep with a 14% channel slope. Since this waterway is so wide and steep, the recommendation is to construct using Turf Reinforced Mat (TRM). This will ensure stability and allow the waterway to be narrower.

SUMMARY OF PLANNED IMPROVEMENTS

A concrete heavy use area protection (HUAP) for dry cows and bred heifers and adjacent manure stacking area (WSF) are planned. A roof covering will cover both the HUAP and WSF. The storage is sized for 5 months with an additional 1 month of storage in bed pack. Reinforced gravel access road is planned for stable equipment access to the HUAP and WSF. Reinforced gravel cattle walkway is planned to provide stable livestock access between the dairy barn and HUAP. Roof gutters and underground outlets are planned for the new roof. Diversion is planned north of the HUAP to divert surface water. Concrete HUAP and gravel access road are planned to stabilize the silo loading area. Reinforced gravel access road is planned to stabilize the field lane at H7. Lined waterway and diversion are planned to prevent gully erosion at V3, 5, and 7. Pressure water line and two freeze-proof waterers are planned for H11 and H12 to eliminate the use of the stream as a water source for grazing livestock.

3.4 Best Management Practices (BMP's):

MANURE STACKING STRUCTURE (PA-313)

A roofed manure stacking area will be constructed adjacent to the proposed HUAP to store manure from the bred heifers and dry cows. The storage will be sized for 13 dry cows and 13 bred heifers for 5 months. Planned configuration is 5' walls on three sides with a concrete floor. Planned dimensions are 24' long x 50' wide = 1,200 sf. Capacity when stacking manure 6 ft high will be 6,257 cf.

CRITICAL AREA PLANTING (PA-342) AND MULCHING (PA-484)

After construction is complete, any disturbed ground will need to be seeded and mulched to prevent erosion. Approximately 0.5 acre of critical area seeding and mulching is estimated.

DIVERSION (PA-362), ROCK LINED WATERWAY AND OUTLET (PA-468), STREAM CROSSING (PA-578)

Diversion is planned in two locations. Diversion 1 planned length along the north side of HUAP/WSF is 200' to divert clean surface runoff from the proposed structure. Diversion 2 planned length along the north side of the veal barn is 375' to divert clean surface runoff from the proposed grassed waterway around north side of the veal barn. Diversion 1 may not be needed if final design accomplishes sufficient surface water control simply by grading the HUAP structure backfill. No new watershed will be added to the existing swale along NE side of dairy barn, and no new watershed will be added to the existing drainageway behind veal barn and along driveway to veal barn.

Turf Reinforced Mat (TRM) waterway is planned starting at the west edge of field V7 and carrying water south along fields V5 and V3. The waterway will transition to diversion 2 along the north side of the veal barn. This waterway is needed to prevent gully erosion. The waterway could be constructed with grass but given the steep slope and extensive width (14% x 42' x 0.75' approx) it is planned using TRM. Initial evaluation of the watershed has Q_{25} = 29 cfs and a waterway at 22' x 0.85' deep. Planned length = 510' = 11,220 sq ft = 0.26 acres. TRM is planned for 14' width in the center of the waterway = 14' x 510' = 7,140 sq ft.

Rock lined outlet is planned in two locations to prevent erosion at the diversion outlets. R4 rock is planned at the outlet of diversion 1 at the south side of the cattle walkway. Planned dimensions for diversion 1 outlet are 10' wide x 15' long x 1.5' deep = 15 ton. R5 rock is planned at the outlet of diversion 2 at the east end of the veal barn. Planned dimensions for diversion 2 outlet are 15' wide x 20' long x 2.5' deep = 50 ton.

Precast concrete slats are planned in the cattle walkway between the dairy barn and the proposed HUAP to prevent erosion from the outlet of diversion 1. This is being planned under the stream crossing item. Three precast concrete slats are planned. Concrete slat dimensions will likely be 4' or 5' wide x 12' long. The total planned area for concrete slats = 15' length of the walkway x 12' wide = 180 sf.

ROOFS AND COVERS (PA-367)

A new roof will be constructed over the proposed HUAP and WSF. Roof height is planned for 14 ft inside clearance. The roof will be a timber structure supported by and anchored to the concrete walls. Roof overhang along the NW side will be minimal while the SE side is planned to have an approximately 8 ft cantilever to cover the feed table. The NW side and SW end will likely be sided. The SE side and NE end will remain open. Overall planned roof dimensions are 60' wide x 82' long = 4,920 sf. The HUAP and WSF area that require cover measure 50' wide x 80' long = 4,000 sf.

FENCE (PA-382)

HUAP perimeter fence is planned to confine cattle to the HUAP. Planned length = 212 ft. There are many options for type of fence to be used and this decision will be made during design.

5-strand high tensile fence is planned along the cattle walkway between the dairy barn and HUAP. New fence will join existing fence along existing concrete walkway by dairy barn. Planned new fence length = 200 ft.

ROOF RUNOFF STRUCTURE (PA-558)

Approximately 164 linear feet of roof gutter is planned for the new roof.

ACCESS ROAD (PA-560)

Approximately 290 linear ft of reinforced gravel access road will be installed in two locations to prevent erosion from equipment traffic. 240 linear ft is planned to provide access to the cattle entrance, scrape lane, and for feeding along the SE side of the HUAP. 50 linear ft is planned to the silo loading area. These are planned as geotextile under 8" of compacted base rock and 4" of compacted surface stone. Care must be taken in selection of surface material to be compatible with hoof health of work horses. Width is generally planned at 15'. Total planned length for contracting purposes = 290 ft. Total area planned measures 3,750 ft^2.

LIVESTOCK PIPELINE (PA-516) AND WATERING FACILITY (PA-614)

HUAP water - Pressure water line buried below frost is planned to provide water to livestock while confined to the HUAP. Planned water line is 1.25" and planned length is 200'. This water line will tie into existing buried water line at the waterer in the ACA near the NE end of the dairy barn. Final pipe size will be determined during design. One freeze-proof water trough is planned to supply water to livestock while confined to the HUAP. There are many options for the type of trough to be used and this decision will be made during design.

Pasture water – Pressure water line buried below frost is planned to provide water livestock grazing fields H11 and H12. Currently these pastures are used only by the work horses. The operator prefers to continue using the stream as a water source. This water system is planned so that NRCS funding can remain an option for the project. The water source for this line will be the house. Planned water line is 1.25" and planned length is 1,300'. This includes installation of the water line under the stream bed. Final pipe size will be determined during design. Two freeze-proof water troughs are planned to supply water to livestock to facilitate prescribed grazing. There are many options for the type of trough to be used and this decision will be made during design.

HEAVY USE AREA PROTECTION (PA-561)

HUAP 1 – Livestock - Concrete heavy use area protection is planned to provide a stable location to confine dry cows and heifers. This will prevent nutrient and sediment runoff and allow manure collection for proper field application. The HUAP is sized for 13 dry cows and 13 bred heifers, which are actual animal numbers currently present. Planned size is based on the necessary bed-down area and the necessary feed rail length for all animals to eat at the same time. See the sizing calculations for details. Bed down area is planned at 38' wide. The scrape lane where cattle stand to eat is planned at 12' wide. The short curb along the feed rail will also serve as the roof foundation along the SE side. This is planned as a partially buried 4ft wall to provide frost protection for the wall footer. Total planned dimensions are 50' wide x 56' long = 2,800 sf. In addition, a concrete feed table is planned along the SE side with dimensions = 8' wide x 80' long = 640 sf.

HUAP 2 – Silo Loading Pad – A concrete pad is planned at the silo loading area to prevent erosion from traffic (along with associated access road). Planned dimensions are 20' x 20' = 400 sf.

HUAP 3 – Pasture water troughs – Reinforced gravel aprons will be installed at each of the two pasture water troughs to prevent erosion from livestock traffic. This is planned with same detail as access road and walkways. Planned dimensions are 20' x 20' = 400 sq ft each x 2 = 800 sq ft.

TRAILS AND WALKWAYS (PA-575)

Reinforced gravel cattle walkway is planned between the dairy barn and proposed HUAP to prevent erosion from cattle traffic. This is planned with the same construction detail as the access road with geotextile under 8" of compacted base rock and 4" of compacted surface stone. Care must be taken in selection of surface material to be compatible with cattle hoof health. Planned dimensions = 100' x 12' = 1,200 sf.

SUBSURFACE DRAIN (PA-606) AND UNDERGROUND OUTLETS (PA-620)

A subsurface drain is planned as a footer drain for the HUAP/WSF concrete structure. The drain is planned along the NE and SE sides. Drain elevation is planned at the base of footer. Planned outlet location is in the existing drainageway on east side of diary barn. Planned pipe is 4" perforated. Planned length is 150'. Planned outlet pipe for the footer drain is 4" PVC, length = 100'. Underground outlet for roof gutters is planned to divert clean roof water from manure sources and traffic areas. Planned outlet location is the same as the tile drain. Planned pipe is 6" PVC. Planned length is 220'.

4 Other Comments and Considerations

ANIMAL GROUP & MANURE PRODUCTION INFORMATION

Refer to attachments at the end of this report for manure volume calculations and documentation of the relevant AEUs. The calculated volumes used to size the manure storage should remain reliable. These will differ slightly from volumes calculated in the nutrient management plan. Designing engineer should review manure production volumes with the operator at time of design.

SAFETY ISSUES

Prioritize necessary safety precautions for construction and operation of all planned practices.

Operation and Maintenance Plans

An Operation and Maintenance Plan needs to be developed for the installed best management practices (BMPs). Refer to the final engineered design of the best management practices for specific operation and maintenance details.

Emergency Action Planning

Emergency response strategies for manure spills are necessary. Contact information for emergencies should be included in the Emergency Response section of the Nutrient Management Plan and in Operation and Maintenance Plans for Best Management Practices (BMPs).

Manure and Wastewater Not Stored

The roof structures will eliminate the stormwater contact with manure. At this site, all manure will be handled through the storage or applied directly to fields according to the nutrient management plan.

Silage Leachate

Silage leachate from the upright silo was evaluated. Leachate volume is low. There is no concentrated flow of leachate from the site.

Effects On Neighbor's Properties

The effects on neighboring properties are estimated to be low. There may be off-site odors when the stored manure is being handled and spread. Care should be taken while spreading manure since a large quantity of manure could be spread at one time. Manure spreading setbacks must be followed as outlined in the nutrient management plan.

Permitting

The scope of this project will likely require disturbing an area less than 1 acre as defined by DEP for agricultural BMP's. Unless the scope of work changes, the landowner would not need an NPDES permit. Building and zoning permits shall be acquired as needed. Township and county ordinances will need to be checked to verify if a storm water plan will be required for the proposed roofed structures. A general permit will be required to install the pressure water line under the stream bed.

Animal Mortality Facilities

Dead animals are buried, rendered, or taken to the landfill.

Pesticide and Fuel Storage

Fuel use is minimal. Spray chemicals are used seasonally on the farm and stored inside.

Staging of Best Management Practices

Diversion 2 and the grassed waterway north of the road could be installed independent of the other practices. The field access road and the farmstead practices are likely best thought of as one integrated project.

Verification of Best Management Practices

These planned quantities should be reliable for the development of any grant-related contracts. Quantities should be verified in the field with a more detailed survey at time of design.

5 Engineer's Estimate

Note: This is an estimate of actual construction costs and is unrelated to potential grant funds.

CODE	ITEM	UNIT	QUANTITY	UNIT COST ($)	COST($)
	E&S MEASURES	**$2,500.00**			
	E&S (seed and mulch incl below)	job	1	$2,500.00	$2,500.00
313	**WASTE STORAGE FACILITY - 50' x 56'**	**$29,660.00**			
	Concrete flat work	cy	20	$400.00	$8,000.00
	Concrete walls and curbs	cy	36	$475.00	$17,100.00
	Subgrade stone under floor and footer	tons	26	$35.00	$910.00
	Subgrade prep	job	1	$500.00	$500.00
	Fill and trucking	tons	95	$20.00	$1,900.00
	Compacted fill for subgrade prep	cy	50	$15.00	$750.00
	Backfill and final grading	job	1	$500.00	$500.00
342	**CRITICAL AREA PLANTING**	**$500.00**			
	Seed Disturbed Areas	ac	0.5	$1,000.00	$500.00
362	**DIVERSION**	**$3,000.00**			
	Diversion north of HUAP (200')	job	1	$1,000.00	$1,000.00
	Diversion north of veal barn (375')	job	1	$2,000.00	$2,000.00
367	**ROOFS AND COVERS**	**$88,560.00**			
	60' x 82' over new HUAP	sq.ft	4,920	$18.00	$88,560.00
382	**FENCE**	**$3,820.00**			
	High Tensile electric - 5 strand	ft	200	$3.20	$640.00
	HUAP Perimeter	ft	212	$15.00	$3,180.00
468	**LINED WATERWAY AND OUTLET**	**$17,798.00**			
	Waterway construction - 510' x 22'	sq ft	11220	$0.40	$4,488.00
	Turf Reinforced Mat - 510' x 14'	sq ft	7140	$1.50	$10,710.00
	Diversion 1 (HUAP) outlet - R4 rock	tons	15	$40.00	$600.00
	Diversion 2 outlet (veal barn) - R5 rock	tons	50	$40.00	$2,000.00
484	**MULCHING**	**$500.00**			
	Post-Construction	ac	0.5	$1,000.00	$500.00
516	**LIVEVSTOCK PIPELINE**	**$7,500.00**			
	1.25" water pipe buried - to HUAP	ft	200	$5.00	$1,000.00
	1.25" water pipe buried - to pasture	ft	1300	$5.00	$6,500.00
558	**ROOF RUNOFF CONTROLS**	**$2,296.00**			
	Roof Gutters	L.F.	164	$14.00	$2,296.00
560	**ACCESS ROAD - 3,750 sf**	**$14,005.00**			
	Stone Base Material (#4s)	tons	162	$35.00	$5,670.00
	Stone Topper (2A)	tons	81	$35.00	$2,835.00
	Geotextile	rolls	1.00	$1,000.00	$1,000.00
	Excavation	days	3	$1,500.00	$4,500.00
561	**HEAVY USE AREA PROTECTION - Livestock**	**$61,740.00**			
	Concrete flat work	cy	56	$400.00	$22,400.00
	Concrete walls and curbs	cy	62	$475.00	$29,450.00
	Subgrade stone under floor and footer	tons	74	$35.00	$2,590.00
	Subgrade prep	job	1	$1,000.00	$1,000.00
	Fill and trucking	tons	190	$20.00	$3,800.00
	Compacted fill for subgrade prep	cy	100	$15.00	$1,500.00

	Backfill and final grading	job	1	$1,000.00	$1,000.00
561	**HEAVY USE AREA PROTECTION - Silo Loading Area**	**$4,150.00**			
	Concrete flat work	cy	7	$400.00	$2,800.00
	Subgrade stone under floor and footer	tons	10	$35.00	$350.00
	Subgrade prep and backfill	job	1	$1,000.00	$1,000.00
561	**HEAVY USE AREA PROTECTION - Pasture Waterers**	**$2,820.00**			
	Stone Base Material (#4s)	tons	35	$35.00	$1,225.00
	Stone Topper (2A)	tons	17	$35.00	$595.00
	Geotextile	rolls	0.25	$1,000.00	$250.00
	Excavation	days	0.5	$1,500.00	$750.00
575	**WALKWAYS (Stone) - 1,200 sf**	**$4,730.00**			
	Stone Base Material (#4s)	tons	52	$35.00	$1,820.00
	Stone Topper (2A)	tons	26	$35.00	$910.00
	Geotextile	rolls	0.5	$1,000.00	$500.00
	Excavation	days	1.0	$1,500.00	$1,500.00
578	**STREAM CROSSING - for diversion**	**$2,090.00**			
	Pre-cast concrete slats 5x12	slats	3	$400.00	$1,200.00
	AASHTO #57 Stone under slats	tons	4	$35.00	$140.00
	Placing Slats	days	0.5	$1,500.00	$750.00
606	**SUBSURFACE DRAIN (4")**	**$1,050.00**			
	Footer drain for HUAP	ft	150	$7.00	$1,050.00
614	**WATERING FACILITY**	**$4,500.00**			
	Trough on HUAP	ea	1	$1,500.00	$1,500.00
	Troughs on pasture	ea	2	$1,500.00	$3,000.00
620	**UNDERGROUND OUTLETS**	**$4,300.00**			
	4" PVC Outlet - for footer drain	ft	100	$10.00	$1,000.00
	6" PVC Outlets - for roof gutters	ft	220	$15.00	$3,300.00
	SUBTOTAL				**$255,519.00**
	Contingency	%	5		$12,776.00
	CONSTRUCTION TOTAL				**$268,295.00**

HEAVY USE AREA LOT SIZING

COUNTY: Clinton
DATE: 7/6/2023
OWNER: Jesse Glick
ADDRESS: 1057 West Valley Rd, Loganton, PA 17754
PREPARER: Nate Dewing
TITLE:

Animal Group	# of Animals	Animal Weight, Avg. (lbs.)	Animal Units	Rest Area Sq. Ft./ Animal	Feeder Space (in/animal)	Rest Space Width based on Minimum Feed Bunk Length	Minimum Feed Bunk Length (Ft)	Selected Feed Bunk Length (Ft.)	Selected Rest Area Width (Ft.)	Minimum Rest Area Space (sq. ft.)	Selected Rest Area (sq. ft.)
Dry Cows	13	1450	18.9	90	26	41.5	28.2	32	38	1170	1216
Heifers	13	1000	13	70	22	38.2	23.8	24	38	910	912
			0			0	0		38	0	0
			0			0	0		38	0	0
			0			0	0		38	0	0
			0			0	0		38	0	0
			0			0	0		38	0	0
			0			0	0		38	0	0
			0			0	0		38	0	0
Sum =	26		31.9				52	56		2080	2128

Total Area Based on 65 sq. ft. per animal unit (Sq. Ft.) = 2073.5

Notes:

Feed Alley Width = 12 Ft. Plus Selected Rest Area Width = 38
(Use zero if separate feed alley not used)

Total Structure Width (ft.) =	50
Total Structure Length (ft.) =	56
Total Structure Area (Sq Ft.) =	2800

Manure Production for MSF sizing

COUNTY: Clinton
OWNER: Jesse Glick
PREPARER: Nate Dewing

DATE: 7/6/2023
ADDRESS: 1057 West Valley Rd, Loganton, PA 17754
TITLE:

Animal Group	# of Animals	Avg Wt (lb)	Animal Units
Dry Cows	13	1450	18.9
Heifers	13	1000	13
			0
			0
			0
			0
			0
			0
			0
Sum =	26		31.9

150 days	Planned Storage Duration (days)
1.0 cf	Daily manure production per AU (ft^3/AU/day)
4,785 cf	Manure Produced during storage period
1,700 cf	Bedding volume in storage during storage period

6,485 cf **Total Volume to be Stored**

Bedding Added to Manure

Material	Volume before use	Volume in storage (%)	Volume Stored
Straw	3,400 cf	50%	1,700 cf
			0 cf
			0 cf
		Sum =	1,700 cf

Notes:
- Planned storage duration 5 months (plus 1 month in bed pack).
- Bedding is planned based on what it will take to make the manure stackable. Bedding calculations for storage duration (150 days). 50% of manure is from scrape lane and planned to be bedded at 30% solids = 800 cf of bedding. 50% of manure will be in bed pack and is planned to be bedded at 50% solids = 2,600 cf of bedding. Total bedding for 150 days = 3,400 cf.

IS THE PRODUCT STACKABLE?

STACKABLE =	GREATER THA	25.00%	SOLDS CONTENT
NOT STACKABLE =	LESS THAN	25.00%	SOLIDS CONTENT

MOISTURE CONTENT OF MANURE %		SOLIDS CONTENT %
Dairy =	88	12
Veal =	96	4
Beef =	86	14

MOISTURE CONTENT OF BEDDING %		SOLIDS CONTENT %
Corn Tops (Shredded) =	16	84
Ground Limestone =		
Hay (Chopped) =	14	86
Hay (Loose) =	14	86
Hay (Bailed) =	14	86
Sand =		
Sawdust =	39	61
Newspaper =	8	92
Straw (Chopped) =	10	90
Straw (Loose) =	10	90
Straw (Bailed) =	10	90

MANURE VOLUME (Cu.Ft.)
4785

* BEDDING VOLUME (Cu.Ft.)
3400

ANIMAL TYPE
Dairy

BEDDING TYPE
Hay

MANURE SOLIDS CONTENT (%)
12

BEDDING SOLIDS CONTENT (%)
86

* NO REDUCTION FACTOR SHALL BE APPLIED TO BEDDING VOLUME,
THIS IS THE TOTAL VOLUME OF BEDDING BEING USED .

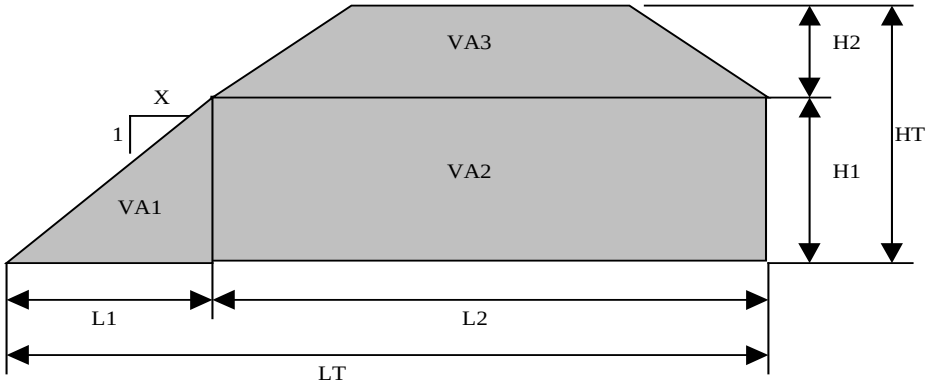
SOLIDS CONTENT = $\frac{\text{(Volume of Manure Solids) + (Volume of Bedding Solids)}}{\text{Total Volume of Manure + Bedding}}$

= 42.74%

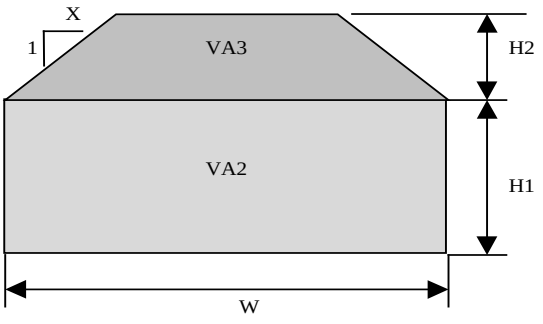
= STACKABLE

STACKING STRUCTURE CALCULATION SHEET
STRUCTURE WITH ONE END OPEN

COUNTY	Clinton	DATE	7/6/23		
OWNER	Jesse Glick	ADDRESS	1057 West Valley Rd, Loganton, PA 17754		
PREPARER	Nate Dewing	TITLE		DATE	
CHECKED		TITLE		DATE	



SIDE VIEW



FRONT VIEW

Storage Volume Required	6,485	cu. ft.
Storage Duration	150	days

STRUCTURE DIMENSIONS

X - Angle of repose for manure	1	:1 ratio, (1:1 suggested)
HT - Total Manure Height	6	ft.
H1 - Structure Wall Height -4 Ft. max.	5	ft.
H2 - Stackable Height above wall	1	ft.
LT - Total Structure Length	24	ft. (Recommend making length divisible by 8')
L1 - Length for VA1	5	ft.
L2 - Length for VA2	19	ft.
W - Structure Width	50	ft.

CALCULATED VOLUMES

VA1 =	625.0	cu. ft.	(V=.5*L1*W*H1)
VA2 =	4,750.0	cu. ft.	(V=L2*W*H1)
VA3 =	882.3	cu. ft.	(V=(L2*W*H2)-(X*L2*H2^2)-(X*W*H2^2)+(1.33*X^2*H2^3))
TOTAL VOLUME =	6,257.3	cu. ft.	6485 cu. Ft. = Required volume

CONCLUSION

Structure Length:	24	ft.
Structure Width:	50	ft.
Height of Manure Pile:	6	ft.
Storage Volume:	6,257	cu. ft.

Note: 24' length provides very clost to 5 month's capacity, so good. Structure planned at 56' for HUAP + 24' for WSF. Overall = 80' long x 50' wide.

Cut/Fill Report

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By user: NateD

Drawing: \\dc01\users\NateD\Documents\0 Current Projects\Chesapeake Conservancy\Glick, Jesse\Engineering\5235-23-02 - CNMP\Drawings\\\dc01\users\NateD\Documents\0 Current Projects\Chesapeake Conservancy\Glick, Jesse\Engineering\5235-23-02 - CNMP\Drawings\Glick - I+E.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
HUAP VOL SURFACE	full	1.00	1.00	4810.34	1.61	122.41	120.81<Fill>

Totals

	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total	4810.34	1.61	122.41	120.81<Fill>

* Value adjusted by cut or fill factor other than 1.0

PARABOLIC Inputs

Channel Data

Limiting BS, z:1	4.0	**Bed Slope:**	14.000%	**Freeboard:**	0.30 ft
Fixed Flow Depth:	NA	**Fixed Flow Width:**	20.36	**Discharge:**	29.0 cfs

Soil Data

Grain Roughness: 0.0156
Allowable Stress: 0.030 lb/sq.ft

Vegetal Data

	Stem Length	Density	Ret Curve Index	Vegetal Cover Factor
Stability			4.44 (D)	Tall Fescue (0.87)
Capacity			5.60 (C)	

Outputs

Flow Conditions with Minimum cover (Stability)

Manning's n	Average Velocity	Flow Depth	Effect. Soil Stress	Flow Width
0.0470	5.50 ft/sec	0.47 ft, 0.77 ft w/Fb	0.059 lb/sq.ft	16.7 ft
X-sect. Area	**Hydraulic Radius**	**Bank Slope z1**	**P-Channel Coeff**	**Flow Width w/Fb**
5.3 sq.ft	0.32 ft	8.78:1	0.00683 ft	19.3 ft

Capacity Flow Conditions

Manning's n	Average Velocity	Flow Depth		Flow Width
0.0649	4.40 ft/sec	0.55 ft, 0.85 ft w/Fb		18.0 ft
X-sect. Area	**Hydraulic Radius**	**Bank Slope z1**	**P-Channel Coeff**	**Flow Width w/Fb**
6.6 sq.ft	0.37 ft	8.15:1	0.00683	22.3 ft

Warning: Effective Soil Stress is greater than Allowable Stress
(Might re-check your fixed depth and fixed width values)
Design channel is 20.4 ft wide x 0.85 ft deep

USDA United States Department of Agriculture
Natural Resources Conservation Service

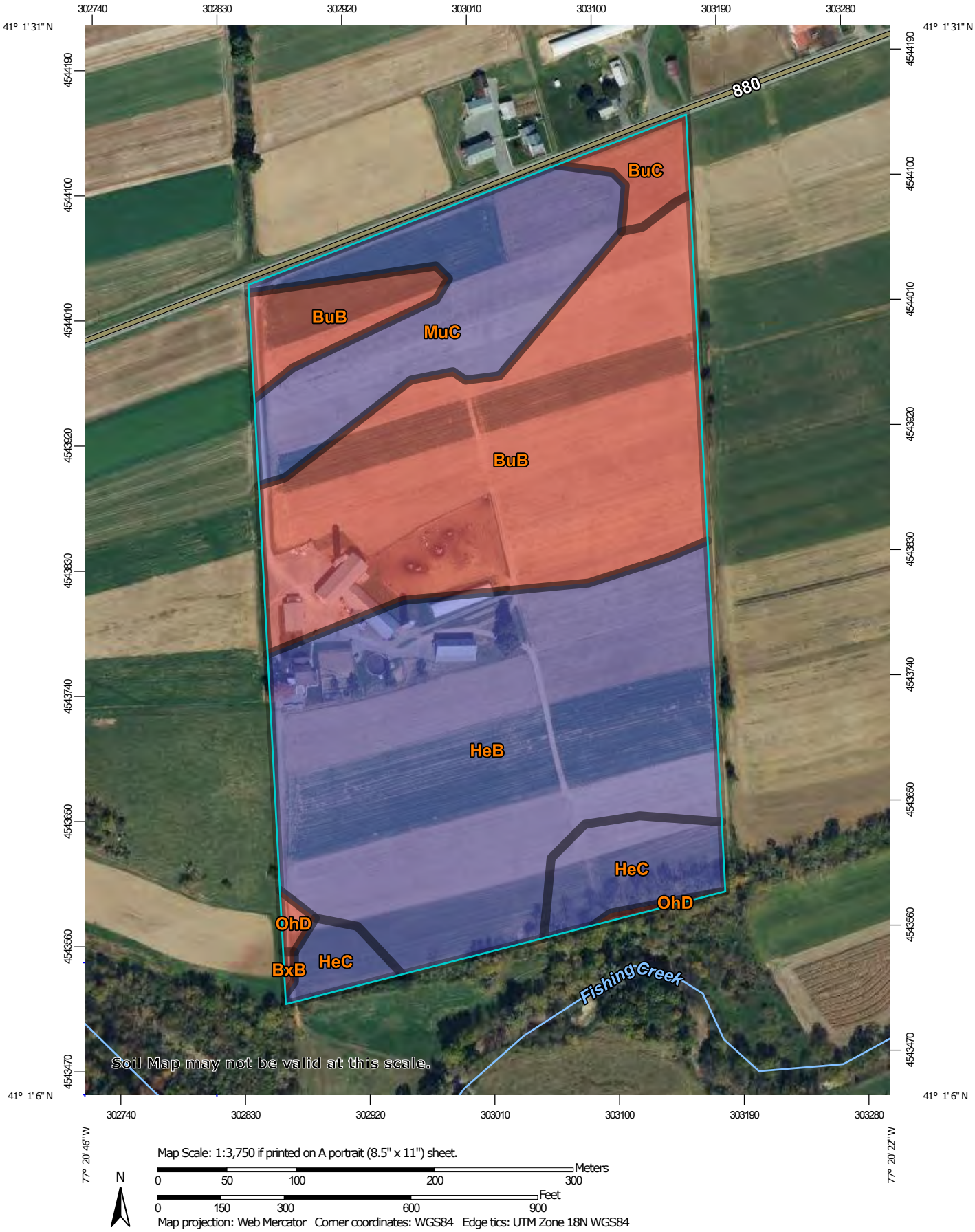
Reach Simulation Report
Jesse Glick
Waterway
West side of field V7

		Date
Designed	Nate Dewing	9/22/23
Drawn		
Checked		
Approved		

EFT Version 4.0.8.0

File Name
Wizard
Drawing Name
09/22/2023
Sheet _____ of _____

Planned using TRM for 2/3 or width in center of waterway - 22' wide x 0.85' deep



Map Scale: 1:3,750 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clinton County, Pennsylvania
Survey Area Data: Version 18, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 6, 2020—Nov 7, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuB	Buchanan-Andover gravelly loams, 3 to 8 percent slopes	D	15.6	36.2%
BuC	Buchanan-Andover gravelly loams, 8 to 15 percent slopes	D	0.9	2.1%
BxB	Buchanan-Andover gravelly loams, 0 to 8 percent slopes, extremely stony	D	0.0	0.1%
HeB	Hagerstown silt loam, 3 to 8 percent slopes	B	17.3	40.2%
HeC	Hagerstown silt loam, 8 to 15 percent slopes	B	2.7	6.3%
MuC	Murrill silt loam, 8 to 15 percent slopes	B	6.2	14.5%
OhD	Opequon-Hagerstown silty clay loams, 15 to 25 percent slopes	D	0.2	0.5%
Totals for Area of Interest			**42.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

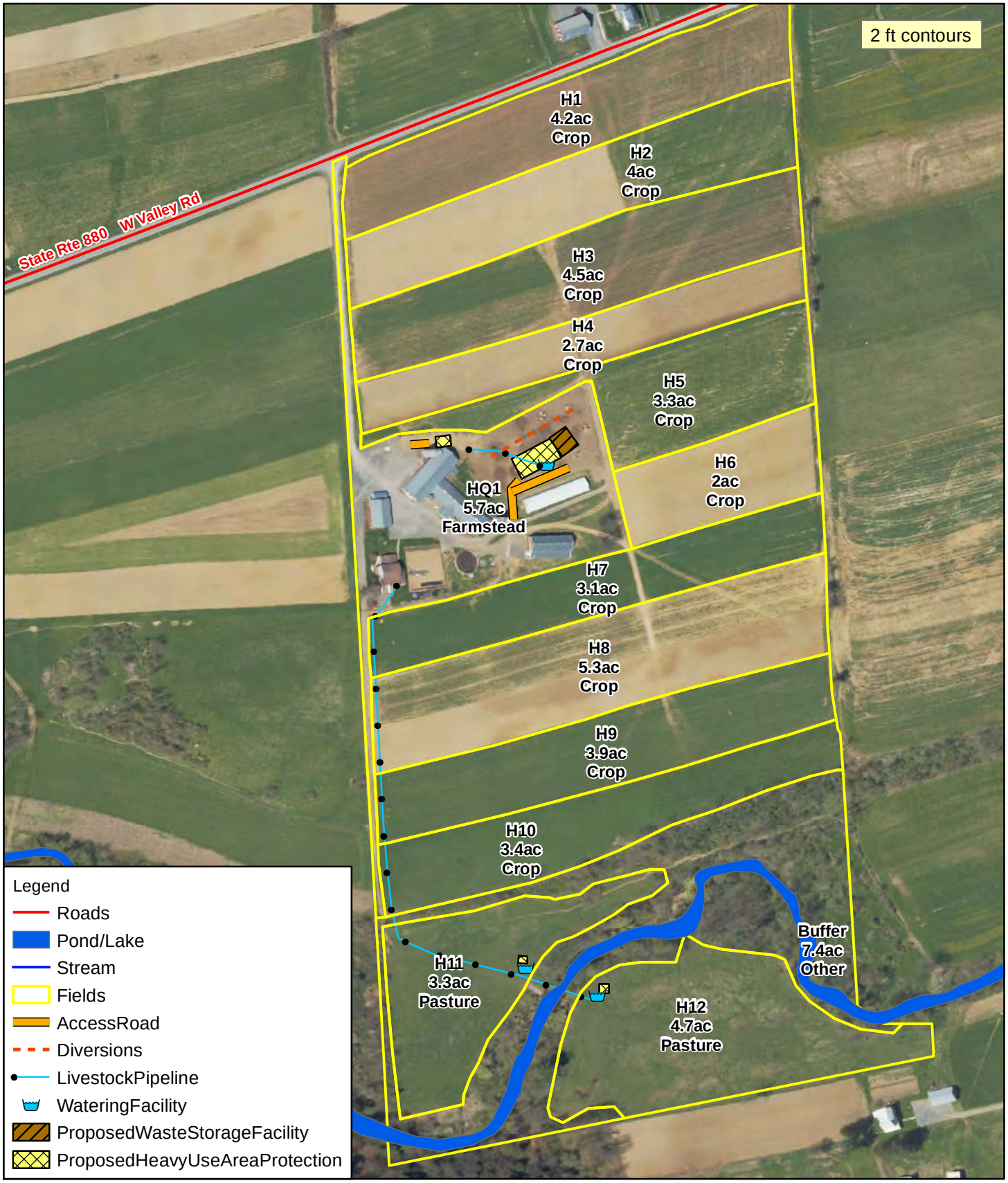
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Jesse Glick
Clinton County, PA

Planned Practices Map - South

July 6, 2023



TeamAg Incorporated

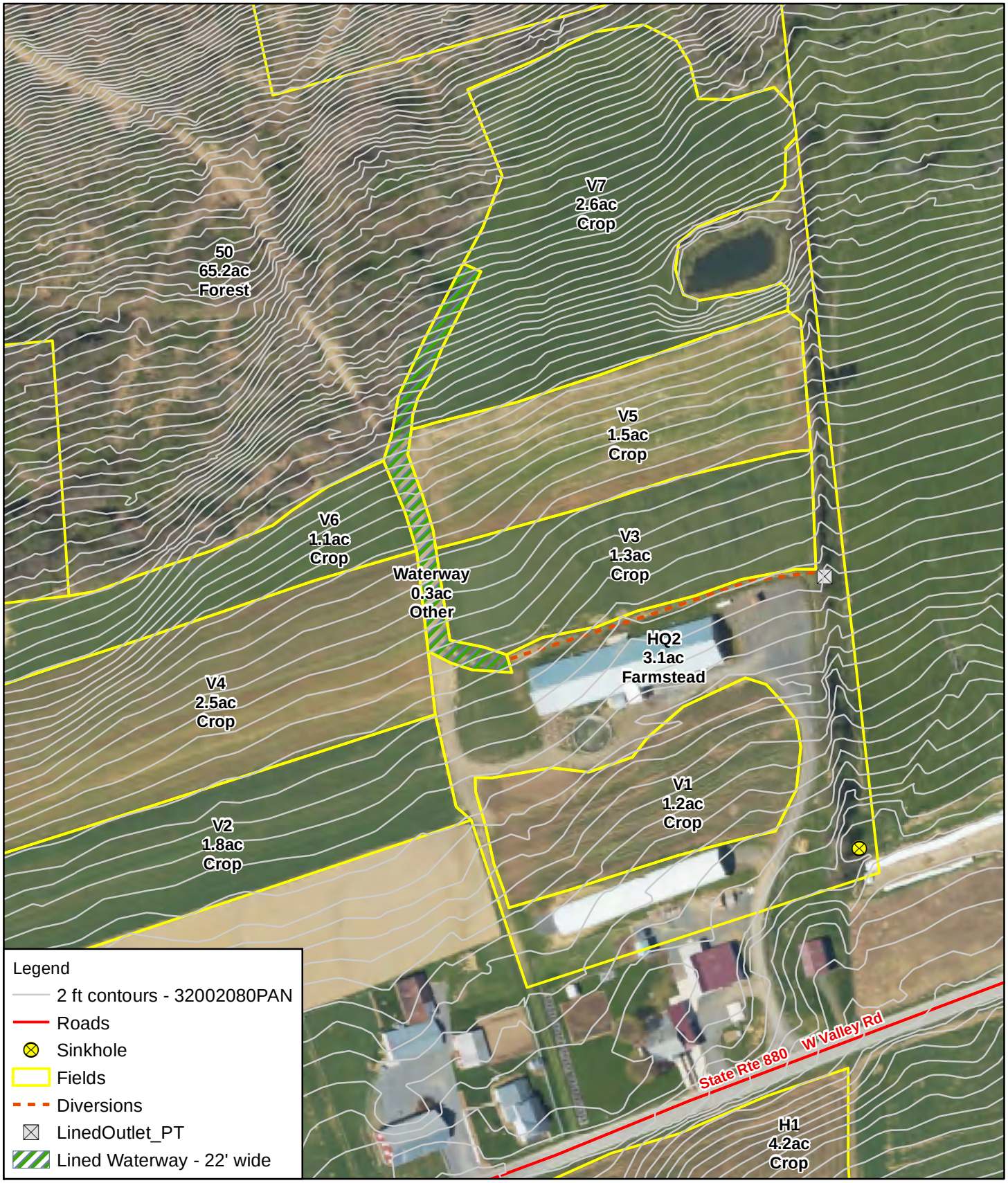
0 150 300 600 900 Feet

N
W E
S

Jesse Glick
Clinton County, PA

Planned Practices Map - North

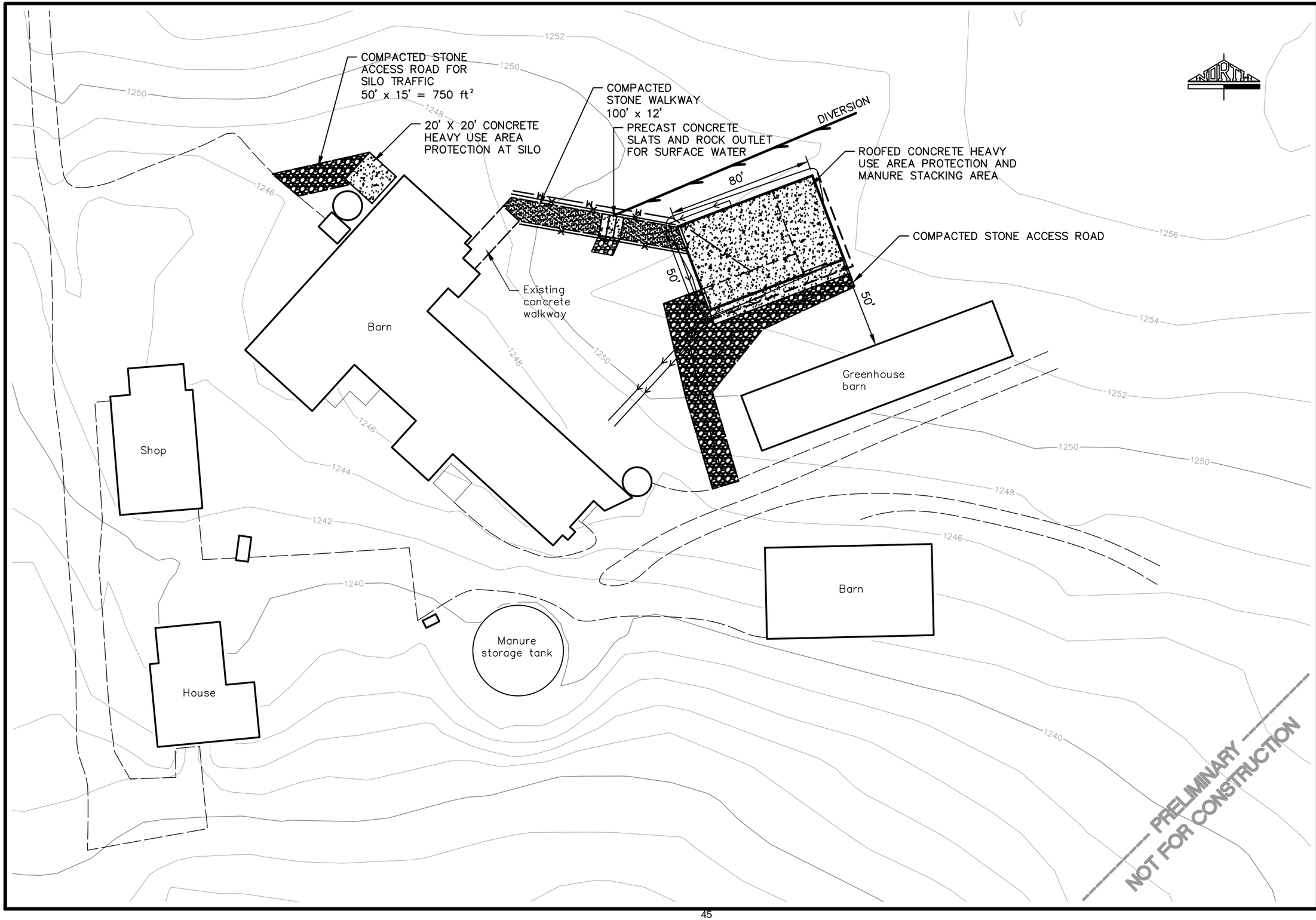
July 6, 2023



TeamAg Incorporated

0 70 140 280 420 Feet

N W E S



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570-725-3066

GREENE TOWNSHIP
CLINTON COUNTY

Project Manager:
NATE DEWING

Design By:

Drawn By: NAD

HEAVY USE AREA PROTECTION
PLAN VIEW

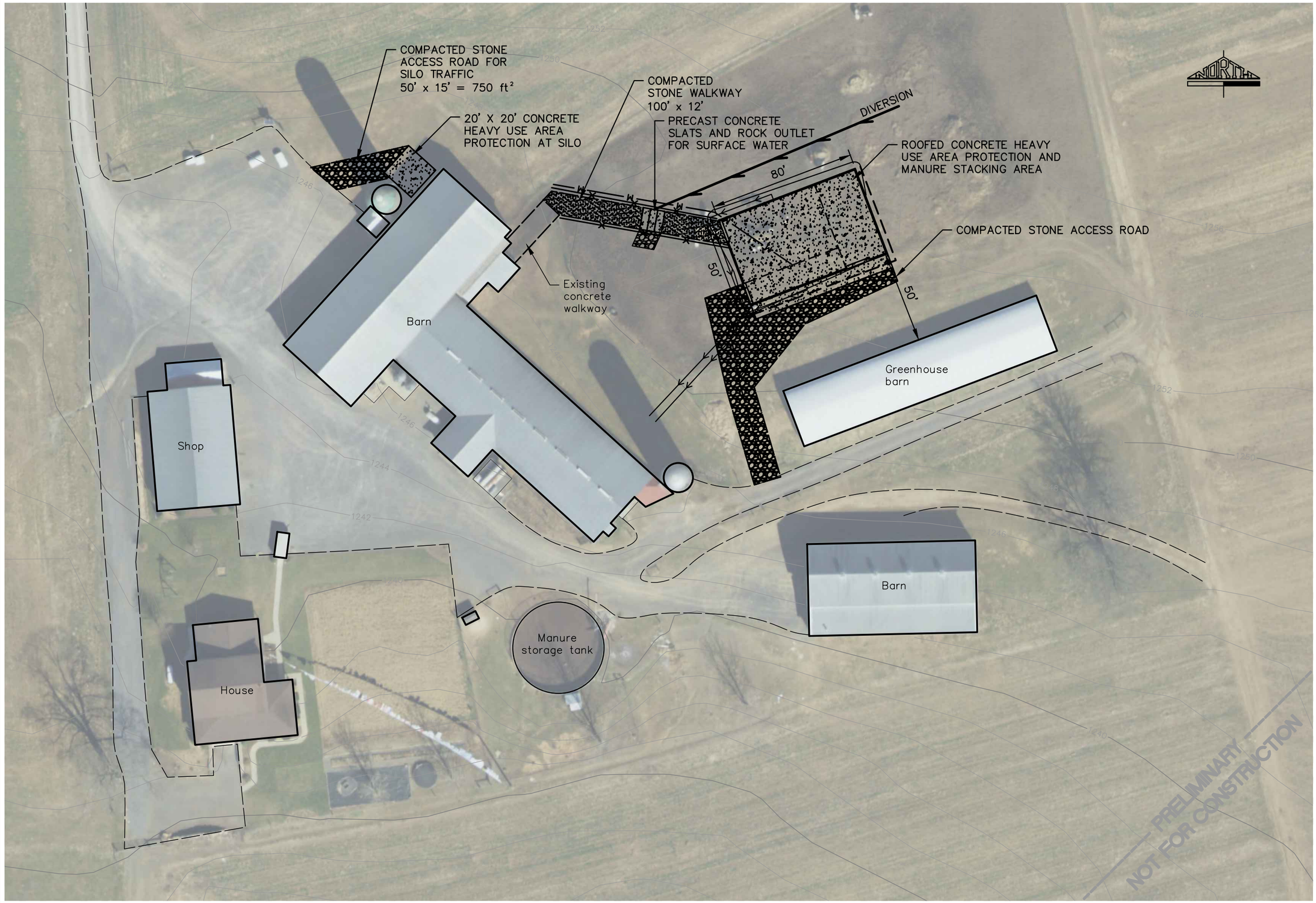
SCALE
1" = 50'
0' 50'

Proj.: 5235-23-02

Date: 7/2023

Rev.:

Sheet 1 of



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HEAVY USE AREA PROTECTION
PLAN VIEW

SCALE 1" = 50'
0' 50'

Proj.: 5235-23-02

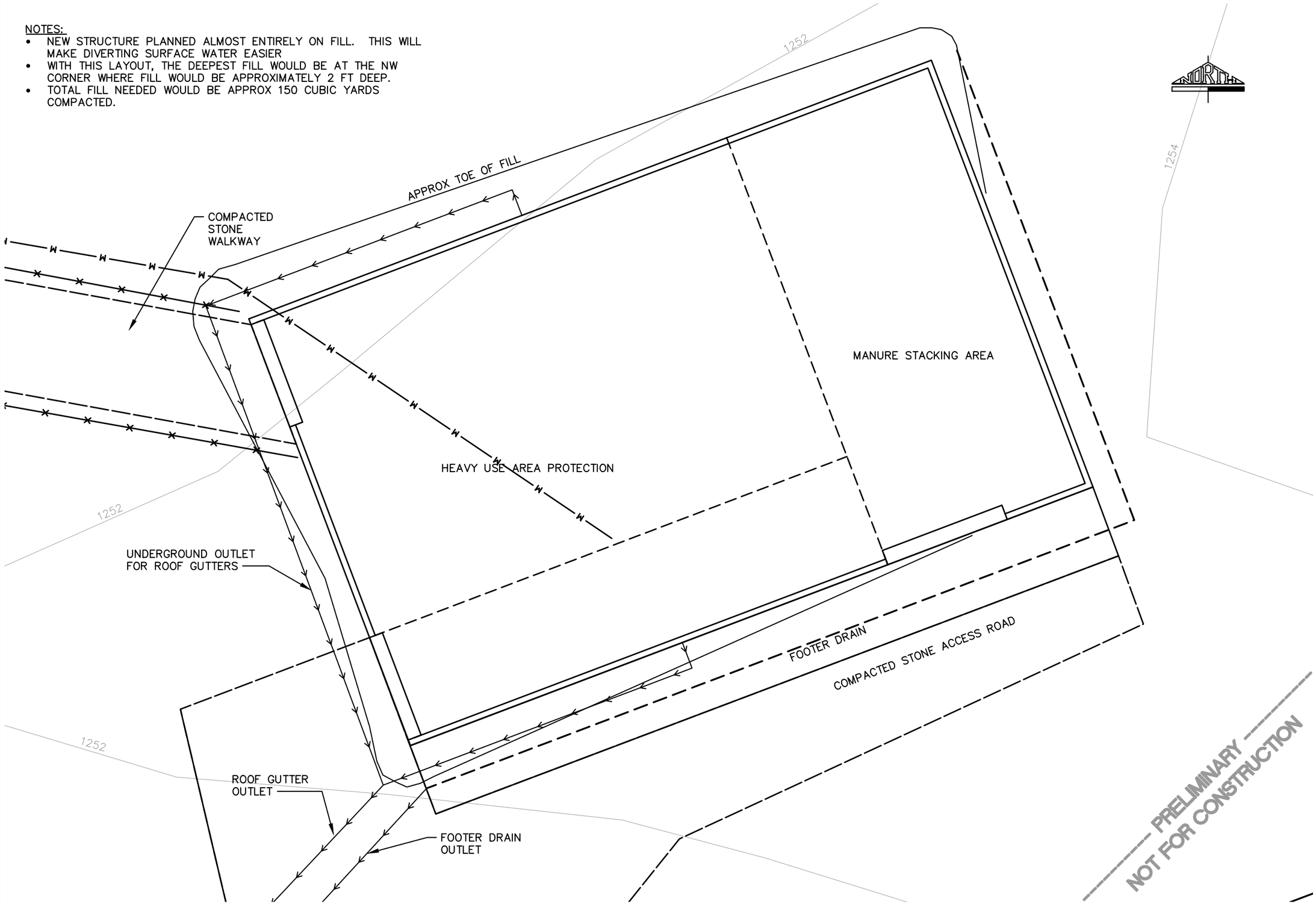
Date: 7/2023

Rev.:

Sheet 2 of

NOTES:

- NEW STRUCTURE PLANNED ALMOST ENTIRELY ON FILL. THIS WILL MAKE DIVERTING SURFACE WATER EASIER
- WITH THIS LAYOUT, THE DEEPEST FILL WOULD BE AT THE NW CORNER WHERE FILL WOULD BE APPROXIMATELY 2 FT DEEP.
- TOTAL FILL NEEDED WOULD BE APPROX 150 CUBIC YARDS COMPACTED.



PRELIMINARY
NOT FOR CONSTRUCTION

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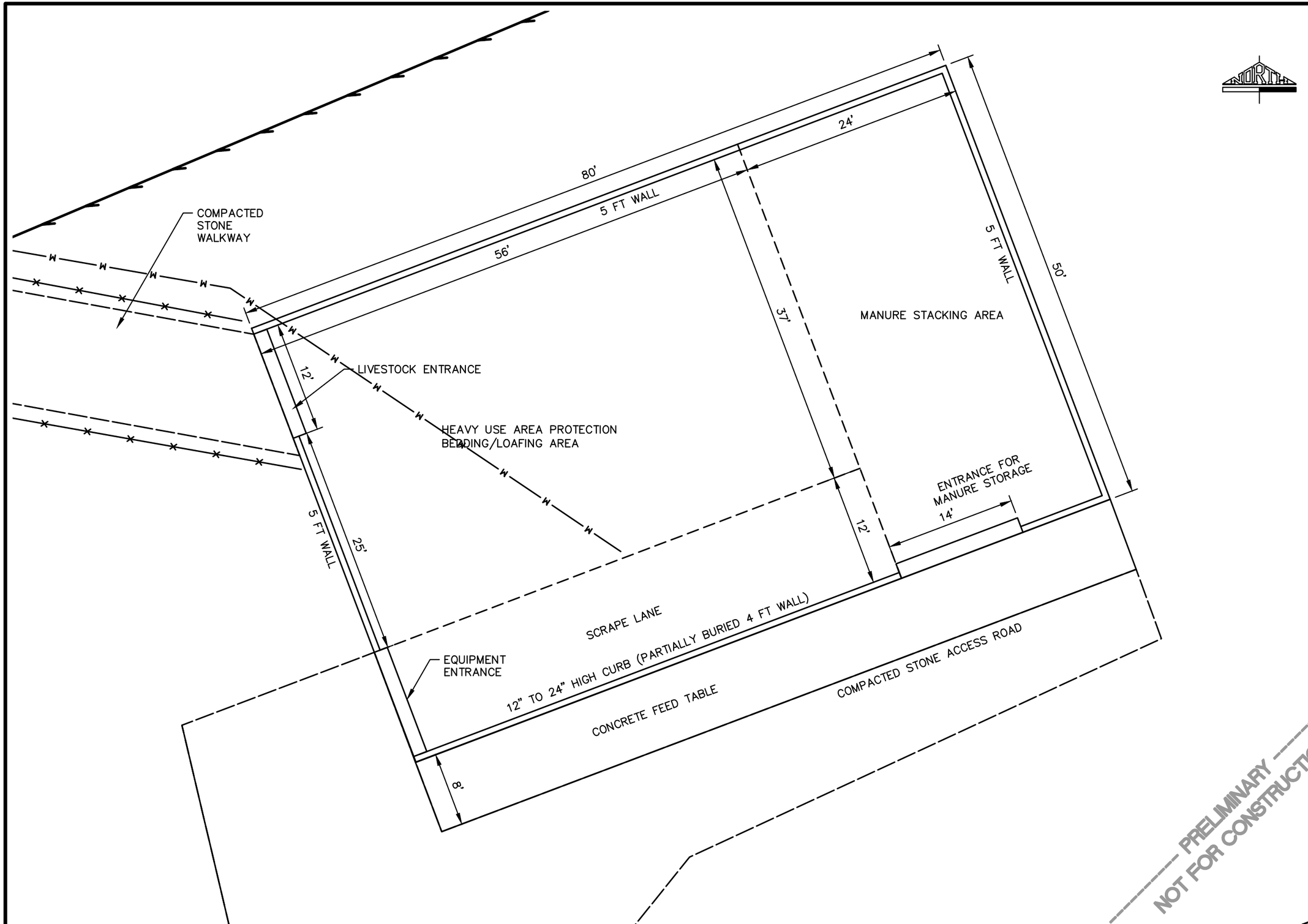
CLINTON COUNTY

Project Manager: NATE DEWING
Design By:
Drawn By: NAD

HEAVY USE AREA PROTECTION
PLAN VIEW

SCALE
1" = 10'
0' 10'

Proj.: 5235-23-02
Date: 7/2023
Rev.:
Sheet 3 of



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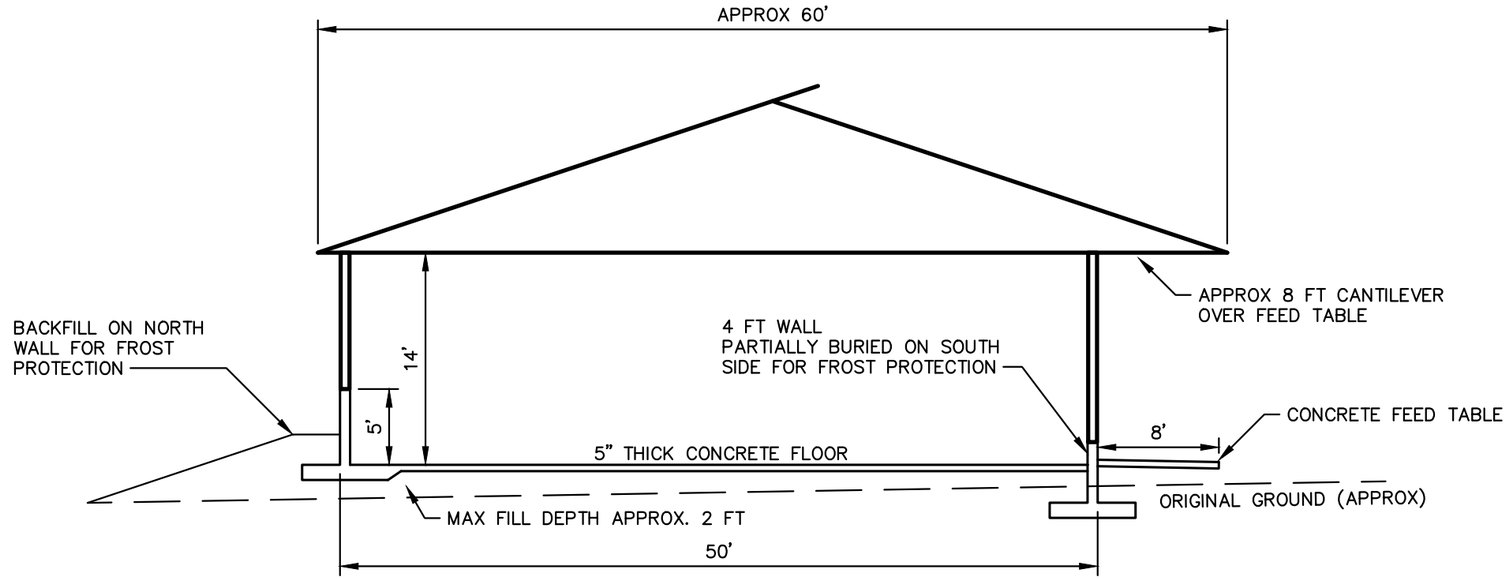
CLINTON COUNTY

Project Manager: NATE DEWING
Design By:
Drawn By: NAD

HEAVY USE AREA PROTECTION
HUAP LAYOUT

SCALE 1" = 10'
0' 10'

Proj.: 5235-23-02
Date: 7/2023
Rev.:
Sheet 4 of



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GREENE TOWNSHIP
CLINTON COUNTY

Project Manager: NATE DEWING
Design By:
Drawn By: NAD

HEAVY USE AREA PROTECTION
HUAP ELEVATION

SCALE
1" = 10'
0' 10'

Proj.: 5235-23-02
Date: 7/2023
Rev.:
Sheet 5 of

PRELIMINARY
NOT FOR CONSTRUCTION

Attachment B

RCPP TA-I Practice Certification Sheet

RCPP Project Name: Delisting Ag-Impaired Streams in Central PA
RCPP Project Number: 2761
RCPP Contract Participant and Contract Number:

Technical Assistance - Implementation (TA-I) Verification of Certification for Payment

Date:

					Activity Type ($)					Travel Expenses			
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Completed**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Mileage**	**IRS Rate**	**Total Travel Expenses**	**Reimbursement Request**

**Attach all invoices and travel logs (if applicable) associated with this practice, showing appliable hourly staff rates and detailed travel records (if applicable), and Design Cover Sheet showing certification*
Complete a separate sheet for each practice

I hereby certify that to the best of my knowledge this practice has been completed fully and to NRCS standards.

_____ _____

Functional Review w/JAA (if certified by consultant) Printed Name and Title:

_____ _____

NRCS DC - (signature, date) Printed Name:

EXAMPLE - RCPP TA-I Practice Certification Sheet

RCPP Project Name: XXXXXXXXXXXXXXX
RCPP Project Number: 1111
RCPP Contract Participant and Contract Number: Joe Smith, 111222333444

Technical Assistance - Implementation (TA-I) Verification of Certification for Payment

Date: 1/1/2024

					Activity Type ($)					Travel Expenses			
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Completed**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Mileage**	**IRS Rate**	**Total Travel Expenses**	**Reimbursement Request**
1	340 - Cover Crop	Joe Planner - Partner xyz	Cover crops planted on planned land units per conservation plan. Establishment verified.	12/1/23	$0.00	$0.00	$0.00	$0.00	$79.00	23	$0.63	$14.49	$93.49

*Attach all invoices and travel logs (if applicable) associated with this practice, showing appliable hourly staff rates and detailed travel records (if applicable), and Design Cover Sheet showing certification

I hereby certify that to the best of my knowledge this practice has been completed fully and to NRCS standards.

Functional Review w/JAA (if certified by consultant)

Printed Name and Title:

NRCS DC - (signature, date)

Printed Name:

Technical Assistance - Implementation (TA-I) Verification of Certification for Payment

Date: 1/1/2024

					Activity Type ($)					Travel Expenses			
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Completed**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Mileage**	**IRS Rate**	**Total Travel Expenses**	**Reimbursement Request**
2	313 - Waste Storage Facility	Ag, Inc	XXXX gallon waste storage completed. Supporting practices complete. Inspection and redline docs completed.	11/15/23			$4,000.00	$5,200.00	$2,200.00	0	$0.63	$0.00	$11,400.00

*Attach all invoices and travel logs (if applicable) associated with this practice, showing appliable hourly staff rates and detailed travel records (if applicable), and Design Cover Sheet showing certification

I hereby certify that to the best of my knowledge this practice has been completed fully and to NRCS standards.

Functional Review w/JAA (if certified by consultant)

Printed Name and Title:

NRCS DC - (signature, date)

Printed Name:

Technical Assistance - Implementation (TA-I) Verification of Certification for Payment

Date: 1/1/2024

					Activity Type ($)					Travel Expenses			
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Completed**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Mileage**	**IRS Rate**	**Total Travel Expenses**	**Reimbursement Request**
4	102 - CNMP	Ag, Inc	I&E, NMP, Conservation Plan components complete, CNMP done.	10/6/23		$3,252.50				0	$0.63	$0.00	$3,252.50

*Attach all invoices and travel logs (if applicable) associated with this practice, showing appliable hourly staff rates and detailed travel records (if applicable), and Design Cover Sheet showing certification

I hereby certify that to the best of my knowledge this practice has been completed fully and to NRCS standards.

Functional Review w/JAA (if certified by consultant)

Printed Name and Title:

NRCS DC - (signature, date)

Printed Name:

RCPP TA-I Reimbursement Summary Sheet

RCPP Project Name: Delisting Ag-Impaired Streams in Central PA
RCPP Project Number: 2761
RCPP Contract Participant and Contract Number:

Technical Assistance - Implementation (TA-I) Reimbursement Request Summary Sheet

Period Start: **Period End:**

					Activity Type ($)					Mileage ($)	
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Certification Date**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Total Travel Expenses**	**Reimbursement Request**
TOTAL					**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**

3rd Party or Partner Staff Information for Reimbursement				
Position	Organization	CIN	# of Hours	$/hr rate

*Staff rates must match rates in current TA-I Supplemental Agreement

EXAMPLE - RCPP TA-I Reimbursement Summary

RCPP Project Name: XXXXXXXXXXXXXXX
RCPP Project Number: 1111
RCPP Contract Participant and Contract Number: Joe Smith, 111222333444

Technical Assistance - Implementation (TA-I) Reimbursement Request Summary Sheet

Period Start: 1/1/2023 **Period End: 12/31/2023**

					Activity Type ($)					Mileage ($)	
CIN	**Practice Code and Name**	**Certified by:**	**Description**	**Certification Date**	**Pre-Application**	**Planning**	**Design**	**Installation**	**Checkout**	**Total Travel Expenses**	**Reimbursement Request**
1	340 - Cover Crop	Partner xyz	RCPP related Farm Visits (certification of practice)	12/1/23					$79.00	$14.49	$93.49
2	313 - Waste Storage Facility	Ag, Inc	RCPP related Farm Visits (Follow up visits for design and installation of contracted practices)	11/15/23			$4,000.00	$5,200.00	$2,200.00		$11,400.00
4	102 - CNMP	Ag, Inc	IE, NMP, Conservation Plan, CNMP attachments	10/6/23		$3,252.50					$3,252.50
TOTAL					**$0.00**	**$3,252.50**	**$4,000.00**	**$5,200.00**	**$2,279.00**	**$14.49**	**$14,745.99**

3rd Party or Partner Staff Information for Reimbursement				
Position	Organization	CIN	# of Hours	$/hr rate
Engineer	Team Ag	2	76	150
Conservation Planner	Team Ag	4	26.25	102
Drafter	Team Ag	4	5.75	100

*Staff rates must match rates in current TA-I Supplemental Agreement