MSA Memo

To: Town of Arlington

From: MSA Professional Services

Subject: Blue Star Dairy Farms – Livestock Siting Application Supplement

Date: August 21, 2025

Property Information:
Parcel Number: 11002-390.1
Property Owner: Blue Star Dairy Farms
Property Address: N1399 County Rd Q, Arlington, WI 53911
Tax District: 11002 – Town of Arlington
Zoning: A-1 Agricultural
Sec-Twp-Rng: S21, T10N, R9E
Legal Description: PRT SW ¼ of SE ¼ & SE ¼ of SE ¼

Supplement to Livestock Siting Application:
This memo is to serve as a supplement to the Livestock Facilities Licensing Application previously submitted to the Town of Arlington, as requested by the township planning commission, marking the complete final application by the applicant.

The planning commission has requested more information on the following topics:
1. Traffic information
2. Stormwater management
3. Fire protection
4. Property lines and preliminary CSM
5. Well information
6. Permitting
7. Updated Site Layouts

1. Traffic Information
Most driveways on the farm are proposed to be paved to reduce dust. The major driveways with access to CTH-Q on the north and south side of the farm will certainly be paved. These two major driveways measure between 20’ – 30’ wide.

Traffic in and out of the northern driveway will likely include semi tanker milk trucks and employees. It is estimated that a maximum of 7 trucks would be entering and leaving the facility daily when the farm is at full capacity. With the numbers proposed through 2029, there is only 5

trucks estimated daily. There may be additional maintenance and delivery vehicles, though not daily.

Traffic in and out of the southern proposed driveway will include all feeding and harvesting equipment along with manure equipment. These vehicles and machinery will most often be traveling south to other fields and properties owned and/or operated by Blue Star Dairy Farms, most notably to the “DeForest Site”.

It is estimated that 36 loads of commodity feed products will be trucked into the site monthly.

During the majority of the year, it is estimated that vehicles and machinery involved in the harvest of the 16,000 tons of haylage will pass through this driveway this will be divided between approximately 4-5 occurrences of a few days at a time. This will be significantly higher during corn silage harvest time, which may occur for 2-3 weeks in the fall. There will be approximately 36,000 tons of corn silage harvested yearly. Traffic involved with the harvest of 500 tons of straw will also pass through this driveway, likely once per year, lasting a couple days at a time. Manure hauling will mainly occur two to three times per year, in the spring and fall and occasionally in the summer. The harvest and manure hauling activities may last multiple days per event.

Additional traffic that is not included in harvest or manure hauling may include: planters, fertilizers, and sprayers.

During the spring and fall when crops are not on the field, much of the manure hauling is going to be carried out through the use of a dragline system, pumping manure over land and under roads through culverts. This drastically reduces the traffic load on roads. During the summer (1-3 days), the farm tries to pump manure where possible, but with the growing crops on some fields, they will need to use trucks to haul manure.

Additional traffic that is not included in harvest or manure hauling include, but are not limited to: plantes, fertilizers, sprayers, and crop and field monitoring.

A list of the township roads that may be traveled on by vehicles, equipment include but are not limited to the following:

- Bullen Road
- Desert Fox Road
- Goose Pond Road
- Hill Road
- Kampen Road
- Kohn Road
- Meek Road
- Patton Road
- Pine Hollow Road
- Prairie Lane
- Richards Road
- Schutz Road
- Smokey Hollow Road
- WIBU Road

Blue Star Diary Farms has the land available to spread manure on in their Nutrient Management Plan for the animal numbers being projected through 2029. No fields, anywhere, will experience a greater manure application than outlined in their Nutrient Management Plan, regardless of animal numbers. Additionally, the farm is already currently farming the fields that are traveled to

and from via the listed township roads. There will likely not be much greater use than what is currently experienced.

It is important to note that these are the most accurate estimates that can be given at this time. Actual traffic in and out of the site may vary.

2. Stormwater Management

Under the direction of Town Engineer Rob Roth, due to the best interest of the public and the exemptions and leniency given to Agricultural projects, we are basing our stormwater management design on the Columbia County Erosion Control and Stormwater Management Standards (Section 12.140.09 of the Columbia County Zoning Ordinance). It is likely that the Columbia County requirements, will meet or exceed the Town of Arlington requirements for agricultural sites. The Columbia County Stormwater Permit will be required prior to the construction and earthwork of the facilities.

The site will meet Columbia county requirements for peak flow control and TSS removal and WDNR requirements for erosion control. The intent of the proposed stormwater wet pond is to provide 80% TSS removal from newly developed sites and 40% TSS removal from redeveloped sites as well as provide peak flow control. Peak flow rates on the site will be controlled up to the 2-, 10-year storm events, and safely pass the 100-year storm event. Stormwater on the site will be conveyed through a series of ditches and culverts, with areas routing to the stormwater pond. This is currently a wet pond, but this practice may be changed, trying to get away from the wet pond. However, the listed requirements will be met. The existing waste storage facility, proposed silage bunkers, and process wastewater collection will have 100% capture of stormwater. The flow paths and a preliminary stormwater calculation package are included in **Attachment #1**.

3. Emergency Services Safety and Protection

MSA has reached out to the Arlington Fire Department and discussed the site layout from a fire and emergency services perspective. The Arlington Fire Department Chief Nate Phillips had no notable comments relating to the site layout. He is going to try and stop by the next planning commission meeting (9/3/2025).

All wells, existing and proposed, are located on the north side of the property. Additional water sources are located on the southern side of the property in the process wastewater storage and the stormwater wet pond. The idea of providing these as a water source for the fire department have been discussed with Fire Chief Nate Phillips. Further discussion is needed between the fire department and farm in order to adequately use the noted water sources.

All driveways range between 20’ wide and 30’ wide, providing plenty of room for two-way traffic, ensuring emergency service vehicles have access around the farm. There are also two proposed entrances to the farm, accessible from main roads, in case of emergency.

4. Property Lines and Preliminary CSM

An exhibit to serve as the preliminary Certified Survey Map (CSM) has been provided to Town Engineer Rob Roth and is included as **Attachment #2**.

Blue Star Dairy Farms is purchasing entire parcels, so no division of existing parcels is necessary. It is proposed to combine all four parcels that are to be purchased with the existing parcel to make a single parcel of 161.32 acres. 109.85 of those acres are being purchased from neighboring land owner, Thomas Klahn. The proposed parcel is outlined in pink in the attachment.

5. Well Information

There are two proposed wells on the farm, for a total of 4 wells. The proposed water usage at the full build-out is approximately 274,280 gallons/day. This requires a minimum well-supply capacity of 190.47 gallons/minute. Due to the necessity water plays in the operation of the farm and the life of cows, the farm needs to have back ups in case one or two wells fail. The reason for the 4 wells is to provide redundancy, so the farm can continue to operate in case of emergency.

All wells will be drilled and sited in accordance with WI NR 812 – Well Construction and Pump Installation and WI NR 243 – Animal Feeding Operations. The wells will be Non-Community Non-Transient wells.

An exhibit with the proposed wells sited is included as **Attachment #3**.

6. Permitting

Blue Star Dairy Farms will need to get numerous licenses and permits from different reviewing agencies for this project. The Livestock Facilities Licensing with the Town of Arlington is just the first step.

The licenses and permits needed for this project, in the order they will likely be applied for, are:

a. Town of Arlington Livestock Facilities License – This application process has already been started.
b. WPDES Permit – WPDES stands for Wisconsin Pollutant Discharge Elimination System. This program is regulated by the Wisconsin DNR. The purpose of this program is regulate the discharge of any pollutants to the waters of the state. Requirements of this permit for Blue Star Dairy Farms include zero discharge of polluted water from the site and regulated manure application to fields outlined in the farm's Nutrient Management Plan. The regulation of manure application includes the testing of manure to determine the nutrient quantities, soil test to determine the nutrient availability and needs in the soil, and logs of any manure application to fields. The farm is only allowed to apply manure on fields when conditions are favorable and are only allowed to apply at rates that the crops would uptake the nutrients. Conditions where the farm cannot apply manure include snow covered ground, rain over 1-inch in the forecast for the next 24 hours, and fields of too much slope. Generally, as the slope of a field increases, the allowed application rate is reduced. Smaller, un-permitted farms do not have these restrictions and, therefore, can and do apply manure at greater risk than Blue Star Dairy Farms is permitted to. This application process has been started and will continue once the Livestock Facilities License and Setback Variance is approved.

c. High Capacity Well Permits – Blue Star Dairy Farms will get necessary permits as part of the High Capacity Well requirements, outlined in the previous section.
d. Columbia County Stormwater & Erosion Control with the Columbia County Zoning Permit – This permit dictates the stormwater and erosion control practices outlined in the previous stormwater section. The zoning permit also dictates property line setbacks and building heights, which are less restrictive than what is required by the Town of Arlington and the Livestock Facilities License.
e. WI DNR Conditional Approval of Construction Plans – This is required by all WPDES Permit holders, in order to construct new facilities involved with the storage or handling of manure and feed runoff and waste. The DNR reviews all engineering aspects of the plans, especially the design and separation distances from wells, bedrock, and groundwater.
f. Columbia County Animal Waste Storage Permit – Columbia County Land & Water department requires this permit for any construction, alteration, or closure of an animal manure storage facility. This review process ensures the structure was designed and constructed to applicable NRCS technical standards, the proper separation distances from wells, bedrock, and groundwater are achieved, and also that the farm's nutrient management plan is correct and includes the fields required to spread that manure.
g. WI DNR Stormwater Permit (Notice of Intent – NOI) – This permit is required by the WI DNR for any land disturbance in excess of 1 acre. This permit takes into account stormwater and erosion control practices and the earthwork plan, to ensure minimal impacts from stormwater or soil erosion.

7. Updated Site Layouts

Attached as **Attachment #4** is an updated site layout as shown at the Public Hearing and the alternative layout, with round waste storages compared to rectangular.

This layout does include some changes to the requested property line setback variance request. The layout was adjusted to make the western barns no closer than 80' to the western property line. The Calf Barns and northern property line setbacks remain as requested in the submitted variance request.

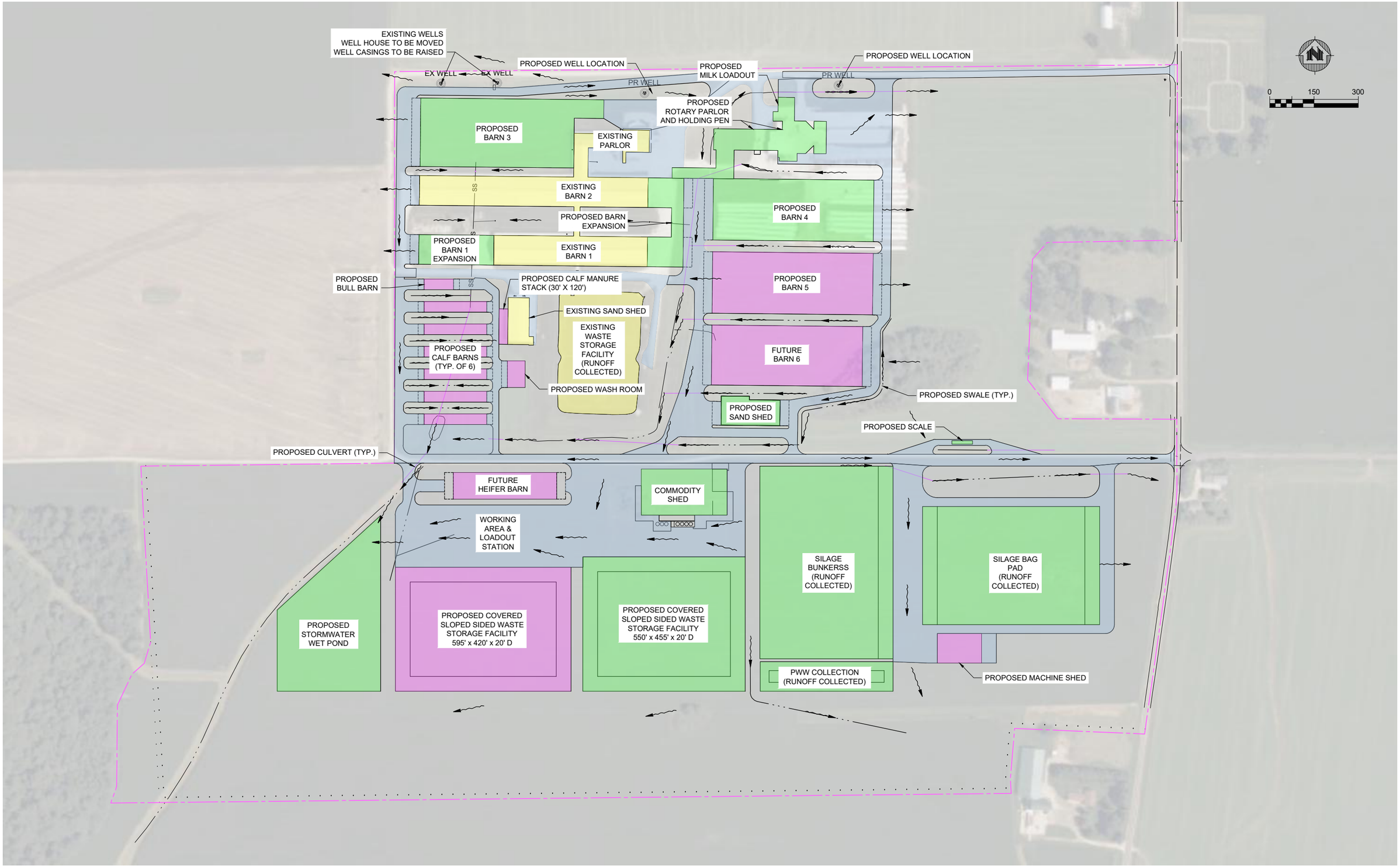
The plan is not 100% final. Any changes will all be within the required setbacks per the Town of Arlington Livestock Facilities License and any other permit or standard, with the exception of the requested variance to the property line setbacks in the Livestock Facilities License. The number and size of the facilities will likely remain the same, the only things that would change would be their orientation and location.

Regardless of the shape of the manure storages, the newly constructed storages will be covered.

Attachments:

1. Stormwater Flow Exhibit & Preliminary Stormwater Calculation Package
2. Preliminary CSM and Proposed Property Modifications
3. Well Exhibit
4. Updated Site Layout Options

Attachment 1



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BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
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TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Stormwater Exhibit

PROJECT NO. 08558004
SHEET ----

Blue Star Dairy - Stormwater Memo

To: Town of Arlington Planning Commission

From: Kassandra Fritz, Engineer, MSA Professional Services, Inc.

Subject: Blue Star Dairy – Farmstead Planning Stormwater Improvements

Date: September 2, 2025

Introduction

This memorandum summarizes the performance of the proposed stormwater management system for Blue Star Dairy Farms in the Town of Arlington WI. The site is located in the Town of Arlington, Columbia County, WI (SWSE & SESE, Section 21; NENW, NWNE, & NENE, Section 28; T10N, R09E).

The entire combined parcel area is approximately 161.12 acres. It is anticipated that 110 acres will be disturbed by construction activity. The proposed project includes the addition of approximately 57 acres of impervious area including barn additions and expansions, new silage storage areas, and new driveway areas.

Runoff from the existing site is routed to existing stormwater swales/ditches. Most of the runoff from the site is conveyed to a stormwater ditch which runs along the western edge of the property and flows to the south. The existing east side of the site flows to an existing roadway ditch which runs along CTY Rd Q. Site exhibits showing existing and proposed conditions can be found in **Appendix A**.

The USDA Web Soil Survey shows that the soils in the project area consist of silt loams of hydrologic soil group Type B. The proposed improvements will not disturb any wetlands, a Surface Water Data viewer (SWDV) map of the site can be found in **Appendix B**. A summary of the curve numbers used for stormwater calculations can be seen below:

Land Use Type	CN
Pavement - Asphalt/Concrete	98
Pavement - Gravel	96
Roofs	98
Greenspace/Crop Field Areas (Silt Loams, group B)	69
Wet Pond Permanent Pool	100

Stormwater Management Requirements

This site is subject to the following post construction standards of Columbia County (Chapter 12 Planning & Zoning, Section 12.140.08(4)):

> **Peak Discharge Rate Control –** Post-development peak discharge rates leaving the site under the 2-yr & 10-yr rainfall events must not exceed pre-development rates for the same rainfall events and the site must safely pass the 100-yr, 24-hr rainfall event using an emergency spillway.

Water Quality Treatment – Stormwater runoff from the site must be treated such that there is an 80% reduction in Total Suspended Solids (TSS) from newly developed sites and a 40% TSS reduction in redeveloped sites.

Proposed Stormwater Improvements

Peak discharge rate control and water quality treatment will be provided for the site through a series of stormwater swales and culverts which ultimately route to stormwater ponds. Most of the runoff from the site will be routed to a proposed stormwater pond on the west side of the site which outlets to an existing stormwater swale running along the west side of the property. Runoff on the northeast and southeast of the site will be routed through two dry ponds and ultimately east of the site to an existing roadway ditch. A summary of the existing site HydroCAD model can be found in **Appendix C** and a summary of the proposed site HydroCAD model can be found in **Appendix D**.

Peak Discharge Rate Control – The table below provides a summary comparison of peak discharge rate control for the site. Peak discharge rates were modelled for existing conditions and the proposed site with BMP improvements.

Event	Existing Site (cfs)	Proposed Site (cfs)
1-year	38.14	34.52
2-year	45.48	42.81
10-year	94.78	80.44
100-year	249.11	234.91

Water Quality Treatment – The proposed site will utilize multiple measures to reduce TSS on site. Both proposed silage areas ("WB" and "WC" on site map) will have 100% stormwater capture. The existing waste lagoon ("WA" on site map) will maintain its 100% stormwater capture. The proposed stormwater pond will receive runoff from improvements for TSS removal. In order for the site to achieve 80% TSS reduction for newly developed areas and 40% TSS reduction for redeveloped areas, a minimum of 20,155.3 lbs of TSS removal is required. The proposed stormwater pond, existing waste lagoon, and proposed silage areas collectively provide 24,480.9 lbs of TSS removal. A summary of TSS removal and modeling can be found in **Appendix E,** the table below provides a summary of the TSS removal for the site.

Control Practice	TSS Removed (lbs)
WA – Existing Waste Lagoon	161.9
WB – Proposed Silage Bunker	5699
WC – Proposed Silage Pad	4021
P2 – Propose Stormwater Pond	14599
Total	**24480.9**

Construction Phase Erosion Control

Various erosion control measures are included to reduce erosion onsite during construction and after construction is complete.

- Stone Tracking Pad
  A tracking pad will be installed at the entrance to the construction area. The tracking pad will measure a minimum of 20-feet wide by 50-feet long according to WDNR technical standard 1057.
- Erosion Mat
  Channel erosion mat will be utilized in all areas with side slopes greater than 4:1. Erosion mat shall be installed according to WDNR technical standard 1052 and 1053.
- Silt Fence
  Silt fence will be utilized along project construction limits that slope away from the project area. The silt fence will be utilized to prevent soil and other material from leaving the site.
- Sediment Log
  Sediment logs will be used along all ditches with concentrated flows.
- Seeding and Mulching
  Disturbed soil within the project will be restored with seed, and mulch according to the MSA seeding specification. All fill areas shall be seeded within seven days of the last land disturbing activity at the fill site.

LEGEND

- EX BUILDING
- EX GRAVEL
- EX ASPHALT
- EX CONCRETE
- EX WASTE LAGOON (100% CAPTURE)
- TC FLOW PATH
- SUBWATERSHED BOUNDARY

MAX TC FLOW PATH
SHEET FLOW - 230' @ 4.0%
SHALLOW CONCENTRATED - 500 @ 0.6%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 1.3%
SHALLOW CONCENTRATED - 182 @ 1.9%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 7.5%
SHALLOW CONCENTRATED - 1275 @ 2.7%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 7.4%
SHALLOW CONCENTRATED - 2440 @ 0.9%

PROPERTY LINE, TYP.

MAX TC FLOW PATH
SHEET FLOW - 300' @ 8.0%
SHALLOW CONCENTRATED - 2330 @ 1.2%

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STORMWATER EXHIBIT - EXISTING SITE

PROJECT NO. 08558004
SHEET SW1

LEGEND

- EX BUILDING
- PROPOSED BUILDING
- PROP SILAGE BUNKER/PAD (100% CAPTURE)
- PAVEMENT
- CONCRETE
- EX WASTE LAGOON (100% CAPTURE)
- TC FLOW PATH
- SUBWATERSHED BOUNDARY
- EXISTING IMPERVIOUS AREAS

MAX TC FLOW PATH
SHEET FLOW - 85' @ 10%

MAX TC FLOW PATH
SHEET FLOW - 115' @ 25%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 1.5%

PROP STORMWATER DRY POND

REDEVELOPMENT AREA BOUNDARY

MAX TC FLOW PATH
SHEET FLOW - 300' @ 4.0%
SHALLOW CONCENTRATED - 590 @ 2.5%

MAX TC FLOW PATH
SHEET FLOW - 104' @ 25%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 11.7%
SHALLOW CONCENTRATED - 640 @ 2.5%

MAX TC FLOW PATH
SHEET FLOW - 40' @ 5.0%
SHALLOW CONCENTRATED - 1780 @ 1.2%

PROPERTY LINE, TYP.

MAX TC FLOW PATH
SHEET FLOW - 300' @ 0.4%
SHALLOW CONCENTRATED - 855 @ 0.4%

PROP STORMWATER POND

PROP STORMWATER DRY POND

MAX TC FLOW PATH
SHEET FLOW - 228' @ 25%

MAX TC FLOW PATH
SHEET FLOW - 276' @ 1.0%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 0.5%
SHALLOW CONCENTRATED - 313 @ 0.5%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 1.0%
SHALLOW CONCENTRATED - 155 @ 1.0%

MAX TC FLOW PATH
SHEET FLOW - 300' @ 6.7%
SHALLOW CONCENTRATED - 1320 @ 1.4%

1 2.1 2.2 3 4.1 4.2 4.3 4.4 WA WB WC

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STORMWATER EXHIBIT - PROPOSED SITE

PROJECT NO. 0858004
SHEET SW2

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Legend: (some map layers may not be displayed)

- Wetland Indicators
- County Boundaries

County and Local Roads

- County HWY
- Local Road

Latest Leaf Off Imagery

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

N

Map: 0 550 1,100 Feet
0 160 320 Meters

Service Layer Credits:
Wetland Indicators & Soils^: Surface Water Data Viewer Team, Latest Leaf Off: , Cities, Roads & Boundaries: , Surface Water (Cached): WiDNR, USGS, and other data

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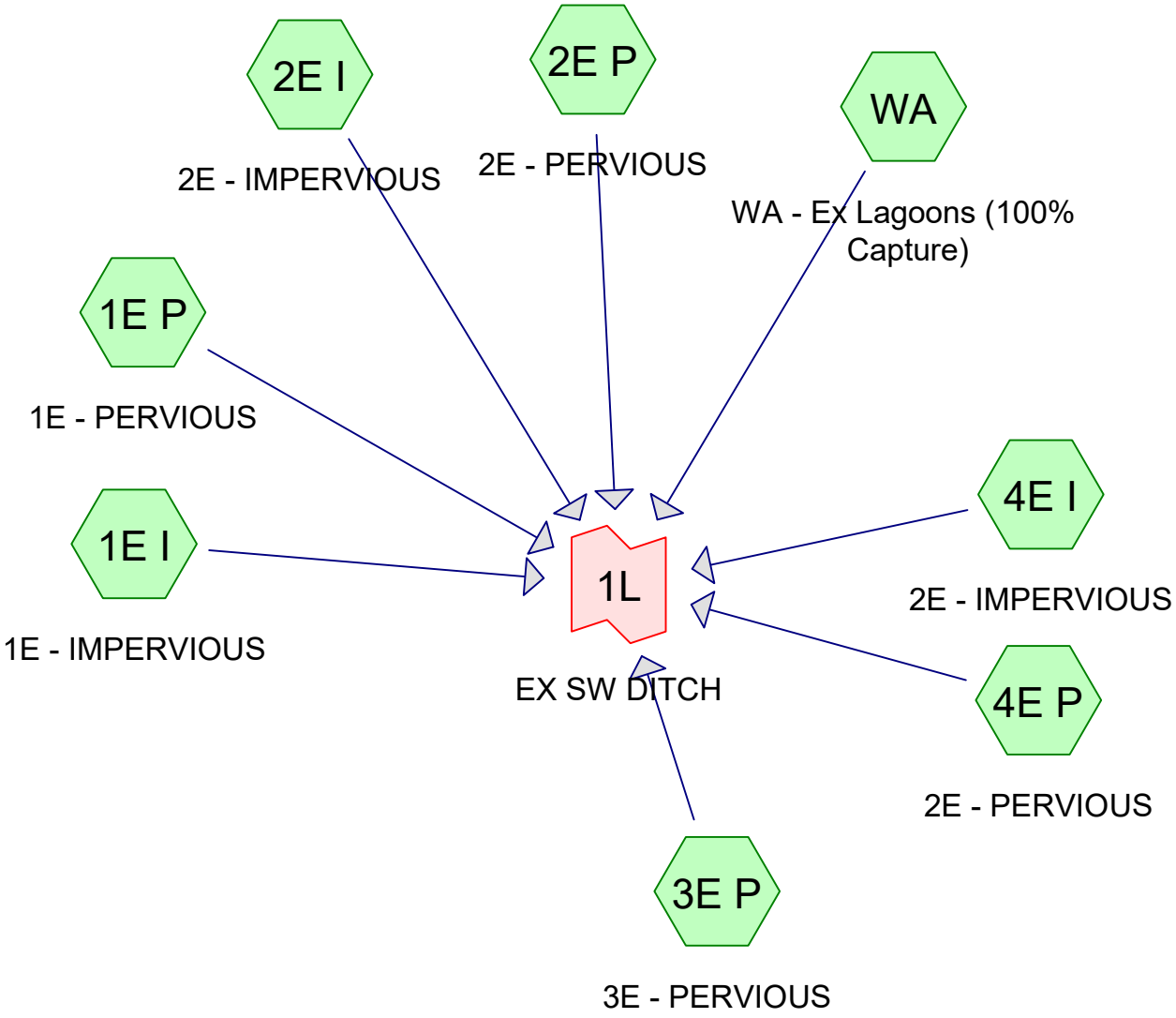


Subcat Reach Pond Link

Routing Diagram for 08558004 Existing_08.29.25 KEF
Prepared by MSA Professional Services, Printed 8/29/2025

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1E I: 1E - IMPERVIOUS Runoff Area=1.632 ac 53.80% Impervious Runoff Depth>2.01"
Tc=6.0 min CN=97 Runoff=4.81 cfs 0.273 af

Subcatchment 1E P: 1E - PERVIOUS Runoff Area=6.587 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=730' Tc=29.2 min CN=69 Runoff=1.55 cfs 0.192 af

Subcatchment 2E I: 2E - IMPERVIOUS Runoff Area=9.840 ac 56.55% Impervious Runoff Depth>2.01"
Flow Length=482' Tc=6.0 min CN=97 Runoff=29.01 cfs 1.647 af

Subcatchment 2E P: 2E - PERVIOUS Runoff Area=29.762 ac 0.00% Impervious Runoff Depth>0.34"
Flow Length=2,740' Tc=63.5 min CN=69 Runoff=4.43 cfs 0.847 af

Subcatchment 3E P: 3E - PERVIOUS Runoff Area=41.882 ac 0.00% Impervious Runoff Depth>0.34"
Flow Length=2,630' Tc=55.7 min CN=69 Runoff=6.77 cfs 1.198 af

Subcatchment 4E I: 2E - IMPERVIOUS Runoff Area=1.063 ac 58.70% Impervious Runoff Depth>2.01"
Tc=6.0 min CN=97 Runoff=3.13 cfs 0.178 af

Subcatchment 4E P: 2E - PERVIOUS Runoff Area=55.939 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=1,575' Tc=30.9 min CN=69 Runoff=12.74 cfs 1.626 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.667 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Link 1L: EX SW DITCH Inflow=38.14 cfs 5.961 af
Primary=38.14 cfs 5.961 af

Total Runoff Area = 150.372 ac Runoff Volume = 5.961 af Average Runoff Depth = 0.48"
95.30% Pervious = 143.305 ac 4.70% Impervious = 7.067 ac

Summary for Subcatchment 1E I: 1E - IMPERVIOUS

Runoff = 4.81 cfs @ 12.13 hrs, Volume= 0.273 af, Depth> 2.01"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.878	98	Roofs
*	0.754	96	Gravel
	1.632	97	Weighted Average
	0.754		46.20% Pervious Area
	0.878		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1E P: 1E - PERVIOUS

Runoff = 1.55 cfs @ 12.51 hrs, Volume= 0.192 af, Depth> 0.35"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	6.587	69	Ex Cropland
	6.587		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	230	0.0400	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
12.0	500	0.0060	0.70		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.2	730	Total			

Summary for Subcatchment 2E I: 2E - IMPERVIOUS

Runoff = 29.01 cfs @ 12.13 hrs, Volume= 1.647 af, Depth> 2.01"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	3.047	98	Roofs
*	0.116	98	Asph Driveway
*	2.402	98	Concrete
*	4.275	96	Gravel
	9.840	97	Weighted Average
	4.275		43.45% Pervious Area
	5.565		56.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	300	0.0129	1.17		**Sheet Flow, Concrete Pad** n= 0.013 P2= 2.76"
1.1	182	0.0193	2.82		**Shallow Concentrated Flow, Concrete** Paved Kv= 20.3 fps
5.4	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2E P: 2E - PERVIOUS

Runoff = 4.43 cfs @ 13.04 hrs, Volume= 0.847 af, Depth> 0.34"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	29.762	69	Ex Cropland
	29.762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	300	0.0739	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
46.9	2,440	0.0093	0.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
63.5	2,740	Total			

Summary for Subcatchment 3E P: 3E - PERVIOUS

Runoff = 6.77 cfs @ 12.92 hrs, Volume= 1.198 af, Depth> 0.34"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	41.882	69	Ex Cropland
	41.882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	300	0.0801	0.31		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
39.6	2,330	0.0119	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
55.7	2,630	Total			

Summary for Subcatchment 4E I: 2E - IMPERVIOUS

Runoff = 3.13 cfs @ 12.13 hrs, Volume= 0.178 af, Depth> 2.01"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.559	98	Asph Driveway
*	0.065	98	Concrete
*	0.439	96	Gravel
	1.063	97	Weighted Average
	0.439		41.30% Pervious Area
	0.624		58.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4E P: 2E - PERVIOUS

Runoff = 12.74 cfs @ 12.54 hrs, Volume= 1.626 af, Depth> 0.35"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	55.939	69	Ex Cropland
	55.939		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	300	0.0754	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
14.4	1,275	0.0267	1.47		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,575	Total			

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	2.568	1	Pond Area
*	0.058	1	Concrete
*	0.041	1	Gravel
*	1.000	1	Greenspace
	3.667	1	Weighted Average
	3.667		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link 1L: EX SW DITCH

Inflow Area = 150.372 ac, 4.70% Impervious, Inflow Depth > 0.48" for 1-Year event
Inflow = 38.14 cfs @ 12.13 hrs, Volume= 5.961 af
Primary = 38.14 cfs @ 12.13 hrs, Volume= 5.961 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1E I: 1E - IMPERVIOUS Runoff Area=1.632 ac 53.80% Impervious Runoff Depth>2.32"
Tc=6.0 min CN=97 Runoff=5.51 cfs 0.316 af

Subcatchment 1E P: 1E - PERVIOUS Runoff Area=6.587 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=730' Tc=29.2 min CN=69 Runoff=2.39 cfs 0.271 af

Subcatchment 2E I: 2E - IMPERVIOUS Runoff Area=9.840 ac 56.55% Impervious Runoff Depth>2.32"
Flow Length=482' Tc=6.0 min CN=97 Runoff=33.23 cfs 1.902 af

Subcatchment 2E P: 2E - PERVIOUS Runoff Area=29.762 ac 0.00% Impervious Runoff Depth>0.48"
Flow Length=2,740' Tc=63.5 min CN=69 Runoff=6.72 cfs 1.200 af

Subcatchment 3E P: 3E - PERVIOUS Runoff Area=41.882 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=2,630' Tc=55.7 min CN=69 Runoff=10.31 cfs 1.697 af

Subcatchment 4E I: 2E - IMPERVIOUS Runoff Area=1.063 ac 58.70% Impervious Runoff Depth>2.32"
Tc=6.0 min CN=97 Runoff=3.59 cfs 0.206 af

Subcatchment 4E P: 2E - PERVIOUS Runoff Area=55.939 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=1,575' Tc=30.9 min CN=69 Runoff=19.62 cfs 2.300 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.667 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Link 1L: EX SW DITCH Inflow=45.48 cfs 7.891 af
Primary=45.48 cfs 7.891 af

Total Runoff Area = 150.372 ac Runoff Volume = 7.891 af Average Runoff Depth = 0.63"
95.30% Pervious = 143.305 ac 4.70% Impervious = 7.067 ac

Summary for Subcatchment 1E I: 1E - IMPERVIOUS

Runoff = 5.51 cfs @ 12.13 hrs, Volume= 0.316 af, Depth> 2.32"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.878	98	Roofs
*	0.754	96	Gravel
	1.632	97	Weighted Average
	0.754		46.20% Pervious Area
	0.878		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1E P: 1E - PERVIOUS

Runoff = 2.39 cfs @ 12.48 hrs, Volume= 0.271 af, Depth> 0.49"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	6.587	69	Ex Cropland
	6.587		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	230	0.0400	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
12.0	500	0.0060	0.70		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.2	730	Total			

Summary for Subcatchment 2E I: 2E - IMPERVIOUS

Runoff = 33.23 cfs @ 12.13 hrs, Volume= 1.902 af, Depth> 2.32"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	3.047	98	Roofs
*	0.116	98	Asph Driveway
*	2.402	98	Concrete
*	4.275	96	Gravel
	9.840	97	Weighted Average
	4.275		43.45% Pervious Area
	5.565		56.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	300	0.0129	1.17		**Sheet Flow, Concrete Pad** n= 0.013 P2= 2.76"
1.1	182	0.0193	2.82		**Shallow Concentrated Flow, Concrete** Paved Kv= 20.3 fps
5.4	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2E P: 2E - PERVIOUS

Runoff = 6.72 cfs @ 13.00 hrs, Volume= 1.200 af, Depth> 0.48"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	29.762	69	Ex Cropland
	29.762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	300	0.0739	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
46.9	2,440	0.0093	0.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
63.5	2,740	Total			

Summary for Subcatchment 3E P: 3E - PERVIOUS

Runoff = 10.31 cfs @ 12.88 hrs, Volume= 1.697 af, Depth> 0.49"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	41.882	69	Ex Cropland
	41.882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	300	0.0801	0.31		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
39.6	2,330	0.0119	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
55.7	2,630	Total			

Summary for Subcatchment 4E I: 2E - IMPERVIOUS

Runoff = 3.59 cfs @ 12.13 hrs, Volume= 0.206 af, Depth> 2.32"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.559	98	Asph Driveway
*	0.065	98	Concrete
*	0.439	96	Gravel
	1.063	97	Weighted Average
	0.439		41.30% Pervious Area
	0.624		58.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4E P: 2E - PERVIOUS

Runoff = 19.62 cfs @ 12.51 hrs, Volume= 2.300 af, Depth> 0.49"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	55.939	69	Ex Cropland
	55.939		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	300	0.0754	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
14.4	1,275	0.0267	1.47		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,575	Total			

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	2.568	1	Pond Area
*	0.058	1	Concrete
*	0.041	1	Gravel
*	1.000	1	Greenspace
	3.667	1	Weighted Average
	3.667		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link 1L: EX SW DITCH

Inflow Area = 150.372 ac, 4.70% Impervious, Inflow Depth > 0.63" for 2-Year event
Inflow = 45.48 cfs @ 12.13 hrs, Volume= 7.891 af
Primary = 45.48 cfs @ 12.13 hrs, Volume= 7.891 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1E I: 1E - IMPERVIOUS Runoff Area=1.632 ac 53.80% Impervious Runoff Depth>3.45"
Tc=6.0 min CN=97 Runoff=8.04 cfs 0.469 af

Subcatchment 1E P: 1E - PERVIOUS Runoff Area=6.587 ac 0.00% Impervious Runoff Depth>1.14"
Flow Length=730' Tc=29.2 min CN=69 Runoff=6.26 cfs 0.628 af

Subcatchment 2E I: 2E - IMPERVIOUS Runoff Area=9.840 ac 56.55% Impervious Runoff Depth>3.45"
Flow Length=482' Tc=6.0 min CN=97 Runoff=48.45 cfs 2.829 af

Subcatchment 2E P: 2E - PERVIOUS Runoff Area=29.762 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=2,740' Tc=63.5 min CN=69 Runoff=17.52 cfs 2.792 af

Subcatchment 3E P: 3E - PERVIOUS Runoff Area=41.882 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=2,630' Tc=55.7 min CN=69 Runoff=26.92 cfs 3.945 af

Subcatchment 4E I: 2E - IMPERVIOUS Runoff Area=1.063 ac 58.70% Impervious Runoff Depth>3.45"
Tc=6.0 min CN=97 Runoff=5.23 cfs 0.306 af

Subcatchment 4E P: 2E - PERVIOUS Runoff Area=55.939 ac 0.00% Impervious Runoff Depth>1.14"
Flow Length=1,575' Tc=30.9 min CN=69 Runoff=51.43 cfs 5.331 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.667 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Link 1L: EX SW DITCH Inflow=94.78 cfs 16.301 af
Primary=94.78 cfs 16.301 af

Total Runoff Area = 150.372 ac Runoff Volume = 16.301 af Average Runoff Depth = 1.30"
95.30% Pervious = 143.305 ac 4.70% Impervious = 7.067 ac

Summary for Subcatchment 1E I: 1E - IMPERVIOUS

Runoff = 8.04 cfs @ 12.13 hrs, Volume= 0.469 af, Depth> 3.45"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.878	98	Roofs
*	0.754	96	Gravel
	1.632	97	Weighted Average
	0.754		46.20% Pervious Area
	0.878		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1E P: 1E - PERVIOUS

Runoff = 6.26 cfs @ 12.45 hrs, Volume= 0.628 af, Depth> 1.14"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	6.587	69	Ex Cropland
	6.587		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	230	0.0400	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
12.0	500	0.0060	0.70		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.2	730	Total			

Summary for Subcatchment 2E I: 2E - IMPERVIOUS

Runoff = 48.45 cfs @ 12.13 hrs, Volume= 2.829 af, Depth> 3.45"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	3.047	98	Roofs
*	0.116	98	Asph Driveway
*	2.402	98	Concrete
*	4.275	96	Gravel
	9.840	97	Weighted Average
	4.275		43.45% Pervious Area
	5.565		56.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	300	0.0129	1.17		**Sheet Flow, Concrete Pad** n= 0.013 P2= 2.76"
1.1	182	0.0193	2.82		**Shallow Concentrated Flow, Concrete** Paved Kv= 20.3 fps
5.4	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2E P: 2E - PERVIOUS

Runoff = 17.52 cfs @ 12.92 hrs, Volume= 2.792 af, Depth> 1.13"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	29.762	69	Ex Cropland
	29.762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	300	0.0739	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
46.9	2,440	0.0093	0.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
63.5	2,740	Total			

Summary for Subcatchment 3E P: 3E - PERVIOUS

Runoff = 26.92 cfs @ 12.82 hrs, Volume= 3.945 af, Depth> 1.13"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	41.882	69	Ex Cropland
	41.882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	300	0.0801	0.31		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
39.6	2,330	0.0119	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
55.7	2,630	Total			

Summary for Subcatchment 4E I: 2E - IMPERVIOUS

Runoff = 5.23 cfs @ 12.13 hrs, Volume= 0.306 af, Depth> 3.45"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.559	98	Asph Driveway
*	0.065	98	Concrete
*	0.439	96	Gravel
	1.063	97	Weighted Average
	0.439		41.30% Pervious Area
	0.624		58.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4E P: 2E - PERVIOUS

Runoff = 51.43 cfs @ 12.47 hrs, Volume= 5.331 af, Depth> 1.14"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	55.939	69	Ex Cropland
	55.939		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	300	0.0754	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
14.4	1,275	0.0267	1.47		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,575	Total			

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	2.568	1	Pond Area
*	0.058	1	Concrete
*	0.041	1	Gravel
*	1.000	1	Greenspace
	3.667	1	Weighted Average
	3.667		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link 1L: EX SW DITCH

Inflow Area = 150.372 ac, 4.70% Impervious, Inflow Depth > 1.30" for 10-Year event
Inflow = 94.78 cfs @ 12.54 hrs, Volume= 16.301 af
Primary = 94.78 cfs @ 12.54 hrs, Volume= 16.301 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1E I: 1E - IMPERVIOUS Runoff Area=1.632 ac 53.80% Impervious Runoff Depth>5.85"
Tc=6.0 min CN=97 Runoff=13.37 cfs 0.796 af

Subcatchment 1E P: 1E - PERVIOUS Runoff Area=6.587 ac 0.00% Impervious Runoff Depth>2.93"
Flow Length=730' Tc=29.2 min CN=69 Runoff=16.68 cfs 1.607 af

Subcatchment 2E I: 2E - IMPERVIOUS Runoff Area=9.840 ac 56.55% Impervious Runoff Depth>5.85"
Flow Length=482' Tc=6.0 min CN=97 Runoff=80.63 cfs 4.798 af

Subcatchment 2E P: 2E - PERVIOUS Runoff Area=29.762 ac 0.00% Impervious Runoff Depth>2.89"
Flow Length=2,740' Tc=63.5 min CN=69 Runoff=47.03 cfs 7.163 af

Subcatchment 3E P: 3E - PERVIOUS Runoff Area=41.882 ac 0.00% Impervious Runoff Depth>2.90"
Flow Length=2,630' Tc=55.7 min CN=69 Runoff=72.11 cfs 10.112 af

Subcatchment 4E I: 2E - IMPERVIOUS Runoff Area=1.063 ac 58.70% Impervious Runoff Depth>5.85"
Tc=6.0 min CN=97 Runoff=8.71 cfs 0.518 af

Subcatchment 4E P: 2E - PERVIOUS Runoff Area=55.939 ac 0.00% Impervious Runoff Depth>2.93"
Flow Length=1,575' Tc=30.9 min CN=69 Runoff=137.07 cfs 13.635 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.667 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Link 1L: EX SW DITCH Inflow=249.11 cfs 38.628 af
Primary=249.11 cfs 38.628 af

Total Runoff Area = 150.372 ac Runoff Volume = 38.628 af Average Runoff Depth = 3.08"
95.30% Pervious = 143.305 ac 4.70% Impervious = 7.067 ac

Summary for Subcatchment 1E I: 1E - IMPERVIOUS

Runoff = 13.37 cfs @ 12.13 hrs, Volume= 0.796 af, Depth> 5.85"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.878	98	Roofs
*	0.754	96	Gravel
	1.632	97	Weighted Average
	0.754		46.20% Pervious Area
	0.878		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1E P: 1E - PERVIOUS

Runoff = 16.68 cfs @ 12.42 hrs, Volume= 1.607 af, Depth> 2.93"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	6.587	69	Ex Cropland
	6.587		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	230	0.0400	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
12.0	500	0.0060	0.70		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.2	730	Total			

Summary for Subcatchment 2E I: 2E - IMPERVIOUS

Runoff = 80.63 cfs @ 12.13 hrs, Volume= 4.798 af, Depth> 5.85"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	3.047	98	Roofs
*	0.116	98	Asph Driveway
*	2.402	98	Concrete
*	4.275	96	Gravel
	9.840	97	Weighted Average
	4.275		43.45% Pervious Area
	5.565		56.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	300	0.0129	1.17		**Sheet Flow, Concrete Pad** n= 0.013 P2= 2.76"
1.1	182	0.0193	2.82		**Shallow Concentrated Flow, Concrete** Paved Kv= 20.3 fps
5.4	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2E P: 2E - PERVIOUS

Runoff = 47.03 cfs @ 12.89 hrs, Volume= 7.163 af, Depth> 2.89"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	29.762	69	Ex Cropland
	29.762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	300	0.0739	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
46.9	2,440	0.0093	0.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
63.5	2,740	Total			

Summary for Subcatchment 3E P: 3E - PERVIOUS

Runoff = 72.11 cfs @ 12.78 hrs, Volume= 10.112 af, Depth> 2.90"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	41.882	69	Ex Cropland
	41.882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	300	0.0801	0.31		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
39.6	2,330	0.0119	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
55.7	2,630	Total			

Summary for Subcatchment 4E I: 2E - IMPERVIOUS

Runoff = 8.71 cfs @ 12.13 hrs, Volume= 0.518 af, Depth> 5.85"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.559	98	Asph Driveway
*	0.065	98	Concrete
*	0.439	96	Gravel
	1.063	97	Weighted Average
	0.439		41.30% Pervious Area
	0.624		58.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4E P: 2E - PERVIOUS

Runoff = 137.07 cfs @ 12.45 hrs, Volume= 13.635 af, Depth> 2.93"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	55.939	69	Ex Cropland
	55.939		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	300	0.0754	0.30		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
14.4	1,275	0.0267	1.47		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,575	Total			

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 1L : EX SW DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

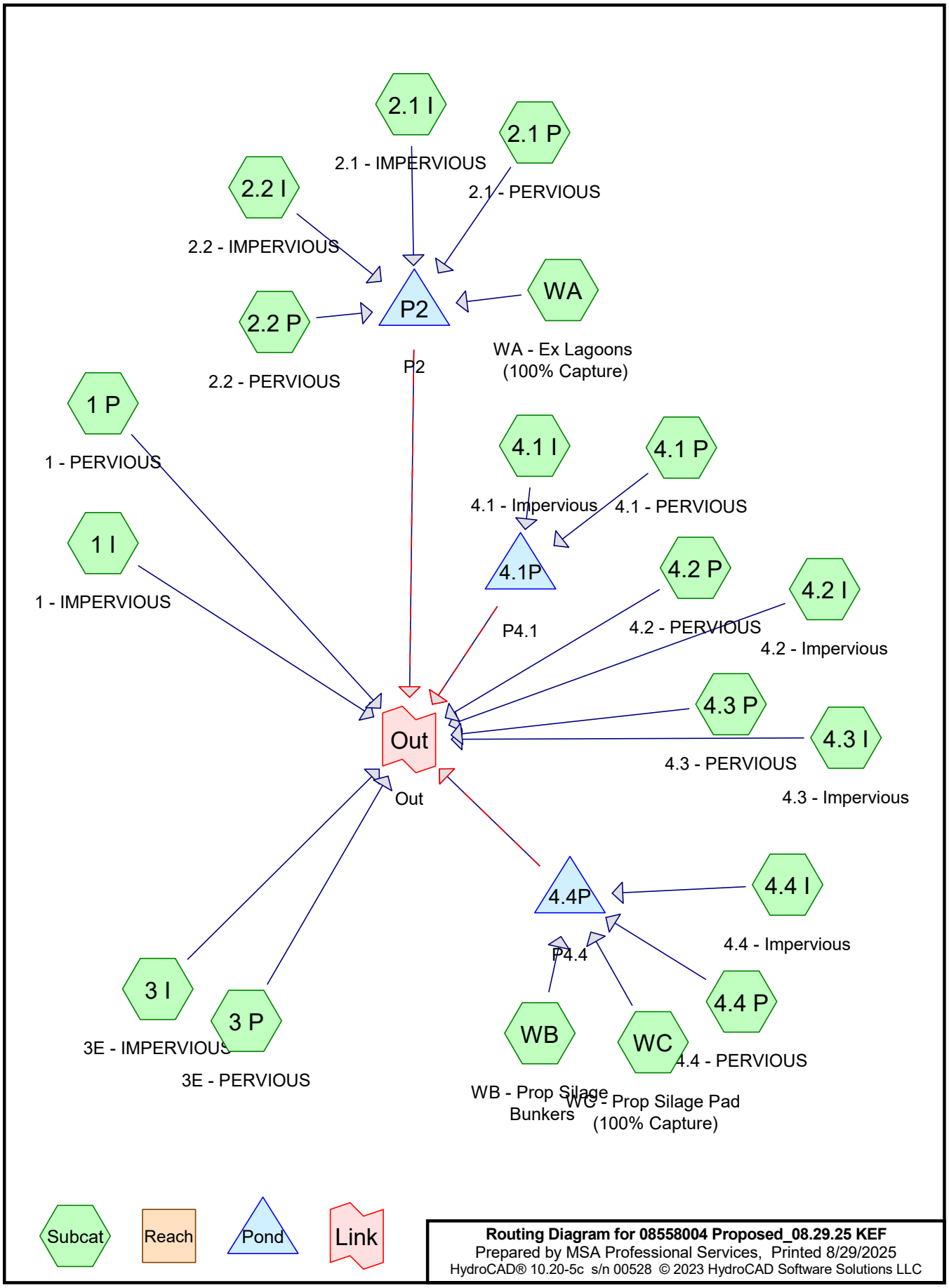
	Area (ac)	CN	Description
*	2.568	1	Pond Area
*	0.058	1	Concrete
*	0.041	1	Gravel
*	1.000	1	Greenspace
	3.667	1	Weighted Average
	3.667		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link 1L: EX SW DITCH

Inflow Area = 150.372 ac, 4.70% Impervious, Inflow Depth > 3.08" for 100-Year event
Inflow = 249.11 cfs @ 12.52 hrs, Volume= 38.628 af
Primary = 249.11 cfs @ 12.52 hrs, Volume= 38.628 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Routing Diagram for 08558004 Proposed_08.29.25 KEF
Prepared by MSA Professional Services, Printed 8/29/2025

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 I: 1 - IMPERVIOUS Runoff Area=1.470 ac 100.00% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=4.43 cfs 0.258 af

Subcatchment 1 P: 1 - PERVIOUS Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=85' Slope=0.1000 '/' Tc=6.0 min CN=69 Runoff=0.81 cfs 0.048 af

Subcatchment 2.1 I: 2.1 - IMPERVIOUS Runoff Area=24.790 ac 100.00% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=74.71 cfs 4.347 af

Subcatchment 2.1 P: 2.1 - PERVIOUS Runoff Area=13.290 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=1,820' Tc=34.2 min CN=69 Runoff=2.86 cfs 0.385 af

Subcatchment 2.2 I: 2.2 - IMPERVIOUS Runoff Area=17.750 ac 100.00% Impervious Runoff Depth>2.10"
Flow Length=1,155' Slope=0.0040 '/' Tc=17.9 min CN=98 Runoff=37.19 cfs 3.108 af

Subcatchment 2.2 P: 2.2 - PERVIOUS Runoff Area=5.240 ac 65.65% Impervious Runoff Depth>1.32"
Tc=6.0 min CN=89 Runoff=11.35 cfs 0.578 af

Subcatchment 3 I: 3E - IMPERVIOUS Runoff Area=0.900 ac 100.00% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=2.71 cfs 0.158 af

Subcatchment 3 P: 3E - PERVIOUS Runoff Area=29.520 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=1,620' Tc=38.4 min CN=69 Runoff=5.95 cfs 0.854 af

Subcatchment 4.1 I: 4.1 - Impervious Runoff Area=6.270 ac 100.00% Impervious Runoff Depth>2.10"
Flow Length=300' Slope=0.0015 '/' Tc=10.1 min CN=98 Runoff=16.43 cfs 1.099 af

Subcatchment 4.1 P: 4.1 - PERVIOUS Runoff Area=4.220 ac 0.00% Impervious Runoff Depth>0.24"
Flow Length=125' Slope=0.0800 '/' Tc=8.0 min CN=65 Runoff=0.97 cfs 0.085 af

Subcatchment 4.2 I: 4.2 - Impervious Runoff Area=1.070 ac 96.26% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=3.22 cfs 0.188 af

Subcatchment 4.2 P: 4.2 - PERVIOUS Runoff Area=14.540 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=890' Tc=25.4 min CN=69 Runoff=3.68 cfs 0.424 af

Subcatchment 4.3 I: 4.3 - Impervious Runoff Area=0.850 ac 100.00% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=2.56 cfs 0.149 af

Subcatchment 4.3 P: 4.3 - PERVIOUS Runoff Area=6.980 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=940' Tc=18.4 min CN=69 Runoff=2.08 cfs 0.204 af

Subcatchment 4.4 I: 4.4 - Impervious Runoff Area=3.220 ac 100.00% Impervious Runoff Depth>2.10"
Flow Length=615' Slope=0.0050 '/' Tc=11.2 min CN=98 Runoff=8.16 cfs 0.564 af

Subcatchment 4.4 P: 4.4 - PERVIOUS Runoff Area=1.550 ac 92.90% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=98 Runoff=4.67 cfs 0.272 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.670 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WB: WB - Prop Silage Runoff Area=7.810 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=455' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WC: WC - Prop Silage Pad Runoff Area=5.510 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=276' Slope=0.0100 '/' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Pond 4.1P: P4.1 Peak Elev=1,102.72' Storage=9,096 cf Inflow=17.37 cfs 1.184 af
Primary=11.70 cfs 1.169 af Secondary=0.00 cfs 0.000 af Outflow=11.70 cfs 1.169 af

Pond 4.4P: P4.4 Peak Elev=1,077.59' Storage=2,340 cf Inflow=12.27 cfs 0.836 af
Primary=10.38 cfs 0.834 af Secondary=0.00 cfs 0.000 af Outflow=10.38 cfs 0.834 af

Pond P2: P2 Peak Elev=1,074.28' Storage=300,416 cf Inflow=112.14 cfs 8.419 af
Primary=2.34 cfs 1.597 af Secondary=0.00 cfs 0.000 af Outflow=2.34 cfs 1.597 af

Link Out: Out Inflow=34.52 cfs 5.884 af
Primary=34.52 cfs 5.884 af

Total Runoff Area = 150.280 ac Runoff Volume = 12.722 af Average Runoff Depth = 1.02"
59.30% Pervious = 89.120 ac 40.70% Impervious = 61.160 ac

Summary for Subcatchment 1 I: 1 - IMPERVIOUS

Runoff = 4.43 cfs @ 12.13 hrs, Volume= 0.258 af, Depth> 2.10"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	1.240	98	Asph
*	0.230	98	Conc
	1.470	98	Weighted Average
	1.470		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1 P: 1 - PERVIOUS

Runoff = 0.81 cfs @ 12.15 hrs, Volume= 0.048 af, Depth> 0.35"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

Area (ac)	CN	Description
1.630	69	50-75% Grass cover, Fair, HSG B
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	85	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
4.9	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2.1 I: 2.1 - IMPERVIOUS

Runoff = 74.71 cfs @ 12.13 hrs, Volume= 4.347 af, Depth> 2.10"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	3.520	98	Ex Roofs
*	13.590	98	Roofs
*	1.500	98	Asphalt (Ex Gravel)
*	4.850	98	Asphalt
*	0.020	98	Ex Concrete
*	1.310	98	Concrete
	24.790	98	Weighted Average
	24.790		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 2.1 P: 2.1 - PERVIOUS

Runoff = 2.86 cfs @ 12.59 hrs, Volume= 0.385 af, Depth> 0.35"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

Area (ac)	CN	Description
13.290	69	50-75% Grass cover, Fair, HSG B
13.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.0500	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
30.3	1,780	0.0118	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
34.2	1,820	Total			

Summary for Subcatchment 2.2 I: 2.2 - IMPERVIOUS

Runoff = 37.19 cfs @ 12.26 hrs, Volume= 3.108 af, Depth> 2.10"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	11.850	98	Roofs
*	5.740	98	Asphalt
*	0.160	98	Concrete
	17.750	98	Weighted Average
	17.750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	300	0.0040	0.73		**Sheet Flow, Asphalt** n= 0.013 P2= 2.76"
11.1	855	0.0040	1.28		**Shallow Concentrated Flow, Asphalt** Paved Kv= 20.3 fps
17.9	1,155	Total			

Summary for Subcatchment 2.2 P: 2.2 - PERVIOUS

Runoff = 11.35 cfs @ 12.13 hrs, Volume= 0.578 af, Depth> 1.32"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
	1.800	69	50-75% Grass cover, Fair, HSG B
*	3.440	100	Wet Pond
	5.240	89	Weighted Average
	1.800		34.35% Pervious Area
	3.440		65.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 I: 3E - IMPERVIOUS

Runoff = 2.71 cfs @ 12.13 hrs, Volume= 0.158 af, Depth> 2.10"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.170	98	Roofs
*	0.730	98	Asphalt
	0.900	98	Weighted Average
	0.900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 P: 3E - PERVIOUS

Runoff = 5.95 cfs @ 12.65 hrs, Volume= 0.854 af, Depth> 0.35"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	29.520	69	Ex Cropland
	29.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	300	0.0666	0.29		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
21.0	1,320	0.0136	1.05		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
38.4	1,620	Total			

Summary for Subcatchment 4.1 I: 4.1 - Impervious

Runoff = 16.43 cfs @ 12.17 hrs, Volume= 1.099 af, Depth> 2.10"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.200	98	Ex Roof
*	2.410	98	Prop Roof
*	1.520	98	Ex Asph
*	2.120	98	Asph
*	0.020	98	Ex Conc
	6.270	98	Weighted Average
	6.270		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	300	0.0015	0.49		**Sheet Flow,** n= 0.013 P2= 2.76"

Summary for Subcatchment 4.1 P: 4.1 - PERVIOUS

Runoff = 0.97 cfs @ 12.20 hrs, Volume= 0.085 af, Depth> 0.24"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
	3.970	69	50-75% Grass cover, Fair, HSG B
*	0.250	1	Prop Dry Basin
	4.220	65	Weighted Average
	4.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	125	0.0800	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"

Summary for Subcatchment 4.2 I: 4.2 - Impervious

Runoff = 3.22 cfs @ 12.13 hrs, Volume= 0.188 af, Depth> 2.10"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.330	98	Ex Asph
*	0.040	96	Ex Gravel
*	0.410	98	Prop Asph
*	0.290	98	Prop Conc
	1.070	98	Weighted Average
	0.040		3.74% Pervious Area
	1.030		96.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.2 P: 4.2 - PERVIOUS

Runoff = 3.68 cfs @ 12.45 hrs, Volume= 0.424 af, Depth> 0.35"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	14.540	69	Ex Cropland
	14.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0400	0.23		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.1	590	0.0254	2.39		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.4	890	Total			

Summary for Subcatchment 4.3 I: 4.3 - Impervious

Runoff = 2.56 cfs @ 12.13 hrs, Volume= 0.149 af, Depth> 2.10"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.080	98	Asph
*	0.750	98	Prop Asph
*	0.020	98	Prop Conc
	0.850	98	Weighted Average
	0.850		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.3 P: 4.3 - PERVIOUS

Runoff = 2.08 cfs @ 12.33 hrs, Volume= 0.204 af, Depth> 0.35"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

Area (ac)	CN	Description
6.980	69	50-75% Grass cover, Fair, HSG B
6.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	300	0.1166	0.36		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.5	640	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.4	940	Total			

Summary for Subcatchment 4.4 I: 4.4 - Impervious

Runoff = 8.16 cfs @ 12.18 hrs, Volume= 0.564 af, Depth> 2.10"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	0.170	98	Prop Roof
*	0.220	98	Ex Pavement
*	2.830	98	Prop Pavement
	3.220	98	Weighted Average
	3.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	300	0.0050	0.80		**Sheet Flow,** n= 0.013 P2= 2.76"
4.9	315	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.2	615	Total			

Summary for Subcatchment 4.4 P: 4.4 - PERVIOUS

Runoff = 4.67 cfs @ 12.13 hrs, Volume= 0.272 af, Depth> 2.10"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
	0.110	69	50-75% Grass cover, Fair, HSG B
*	1.440	100	Prop Dry Basin
	1.550	98	Weighted Average
	0.110		7.10% Pervious Area
	1.440		92.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	2.570	1	Pond Area
*	0.060	1	Concrete
*	0.040	1	Asphalt
*	1.000	1	Greenspace
	3.670	1	Weighted Average
	3.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WB: WB - Prop Silage Bunkers

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	5.580	1	Concrete (100% Captured)
*	2.230	1	Concrete - 100% Captured
	7.810	1	Weighted Average
	7.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	300	0.0180	1.33		**Sheet Flow,** n= 0.013 P2= 2.76"
1.3	155	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment WC: WC - Prop Silage Pad (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.43"

	Area (ac)	CN	Description
*	4.520	1	Concrete (100% Captured)
*	0.990	1	Concrete (100% Captured)
	5.510	1	Weighted Average
	5.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	276	0.0100	1.04		**Sheet Flow,** n= 0.013 P2= 2.76"
4.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 4.1P: P4.1

Inflow Area = 10.490 ac, 59.77% Impervious, Inflow Depth > 1.35" for 1-Year event
Inflow = 17.37 cfs @ 12.17 hrs, Volume= 1.184 af
Outflow = 11.70 cfs @ 12.27 hrs, Volume= 1.169 af, Atten= 33%, Lag= 6.1 min
Primary = 11.70 cfs @ 12.27 hrs, Volume= 1.169 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,102.72' @ 12.27 hrs Surf.Area= 6,722 sf Storage= 9,096 cf

Plug-Flow detention time= 22.1 min calculated for 1.169 af (99% of inflow)
Center-of-Mass det. time= 16.4 min (770.0 - 753.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,101.00'	47,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,101.00	3,000	0	0
1,102.00	6,000	4,500	4,500
1,103.00	7,000	6,500	11,000
1,104.00	8,000	7,500	18,500
1,105.00	9,000	8,500	27,000
1,106.00	10,000	9,500	36,500
1,107.00	11,000	10,500	47,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,101.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,101.00' / 1,100.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,104.00'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.56 cfs @ 12.27 hrs HW=1,102.71' (Free Discharge)
1=Culvert (Barrel Controls 11.56 cfs @ 5.44 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,101.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4.4P: P4.4

Inflow Area = 18.090 ac, 25.76% Impervious, Inflow Depth > 0.55" for 1-Year event
Inflow = 12.27 cfs @ 12.15 hrs, Volume= 0.836 af
Outflow = 10.38 cfs @ 12.22 hrs, Volume= 0.834 af, Atten= 15%, Lag= 3.8 min
Primary = 10.38 cfs @ 12.22 hrs, Volume= 0.834 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,077.59' @ 12.22 hrs Surf.Area= 3,671 sf Storage= 2,340 cf

Plug-Flow detention time= 4.5 min calculated for 0.834 af (100% of inflow)
Center-of-Mass det. time= 3.5 min (748.7 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,076.00'	123,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,076.00	400	0	0
1,077.00	1,330	865	865
1,078.00	5,300	3,315	4,180
1,079.00	11,960	8,630	12,810
1,080.00	20,115	16,038	28,848
1,081.00	28,100	24,108	52,955
1,082.00	35,580	31,840	84,795
1,083.00	42,085	38,833	123,628

Device	Routing	Invert	Outlet Devices
#1	Primary	1,076.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,076.00' / 1,075.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,079.60'	**60.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.26 cfs @ 12.22 hrs HW=1,077.58' (Free Discharge)
1=Culvert (Barrel Controls 10.26 cfs @ 5.30 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,076.01' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: P2

Inflow Area = 64.740 ac, 71.02% Impervious, Inflow Depth > 1.56" for 1-Year event
Inflow = 112.14 cfs @ 12.14 hrs, Volume= 8.419 af
Outflow = 2.34 cfs @ 17.39 hrs, Volume= 1.597 af, Atten= 98%, Lag= 314.9 min
Primary = 2.34 cfs @ 17.39 hrs, Volume= 1.597 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,074.28' @ 17.39 hrs Surf.Area= 137,059 sf Storage= 300,416 cf

Plug-Flow detention time= 359.9 min calculated for 1.591 af (19% of inflow)
Center-of-Mass det. time= 194.8 min (948.9 - 754.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,072.00'	690,852 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,072.00	126,655	0	0
1,073.00	131,167	128,911	128,911
1,074.00	135,757	133,462	262,373
1,075.00	140,426	138,092	400,465
1,076.00	145,174	142,800	543,265
1,077.00	150,000	147,587	690,852

Device	Routing	Invert	Outlet Devices
#1	Primary	1,072.00'	**30.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 1,072.00' / 1,071.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	1,075.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,072.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,076.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.34 cfs @ 17.39 hrs HW=1,074.28' (Free Discharge)
└**1=Culvert** (Passes 2.34 cfs of 23.99 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 2.34 cfs @ 6.72 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,072.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link Out: Out

Inflow Area = 150.280 ac, 40.70% Impervious, Inflow Depth > 0.47" for 1-Year event
Inflow = 34.52 cfs @ 12.19 hrs, Volume= 5.884 af
Primary = 34.52 cfs @ 12.19 hrs, Volume= 5.884 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 I: 1 - IMPERVIOUS Runoff Area=1.470 ac 100.00% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=5.05 cfs 0.296 af

Subcatchment 1 P: 1 - PERVIOUS Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>0.50"
Flow Length=85' Slope=0.1000 '/' Tc=6.0 min CN=69 Runoff=1.23 cfs 0.068 af

Subcatchment 2.1 I: 2.1 - IMPERVIOUS Runoff Area=24.790 ac 100.00% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=85.21 cfs 4.989 af

Subcatchment 2.1 P: 2.1 - PERVIOUS Runoff Area=13.290 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=1,820' Tc=34.2 min CN=69 Runoff=4.40 cfs 0.545 af

Subcatchment 2.2 I: 2.2 - IMPERVIOUS Runoff Area=17.750 ac 100.00% Impervious Runoff Depth>2.41"
Flow Length=1,155' Slope=0.0040 '/' Tc=17.9 min CN=98 Runoff=42.45 cfs 3.567 af

Subcatchment 2.2 P: 2.2 - PERVIOUS Runoff Area=5.240 ac 65.65% Impervious Runoff Depth>1.60"
Tc=6.0 min CN=89 Runoff=13.63 cfs 0.700 af

Subcatchment 3 I: 3E - IMPERVIOUS Runoff Area=0.900 ac 100.00% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=3.09 cfs 0.181 af

Subcatchment 3 P: 3E - PERVIOUS Runoff Area=29.520 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=1,620' Tc=38.4 min CN=69 Runoff=9.14 cfs 1.208 af

Subcatchment 4.1 I: 4.1 - Impervious Runoff Area=6.270 ac 100.00% Impervious Runoff Depth>2.41"
Flow Length=300' Slope=0.0015 '/' Tc=10.1 min CN=98 Runoff=18.74 cfs 1.261 af

Subcatchment 4.1 P: 4.1 - PERVIOUS Runoff Area=4.220 ac 0.00% Impervious Runoff Depth>0.36"
Flow Length=125' Slope=0.0800 '/' Tc=8.0 min CN=65 Runoff=1.77 cfs 0.127 af

Subcatchment 4.2 I: 4.2 - Impervious Runoff Area=1.070 ac 96.26% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=3.68 cfs 0.215 af

Subcatchment 4.2 P: 4.2 - PERVIOUS Runoff Area=14.540 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=890' Tc=25.4 min CN=69 Runoff=5.70 cfs 0.600 af

Subcatchment 4.3 I: 4.3 - Impervious Runoff Area=0.850 ac 100.00% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=2.92 cfs 0.171 af

Subcatchment 4.3 P: 4.3 - PERVIOUS Runoff Area=6.980 ac 0.00% Impervious Runoff Depth>0.50"
Flow Length=940' Tc=18.4 min CN=69 Runoff=3.25 cfs 0.289 af

Subcatchment 4.4 I: 4.4 - Impervious Runoff Area=3.220 ac 100.00% Impervious Runoff Depth>2.41"
Flow Length=615' Slope=0.0050 '/' Tc=11.2 min CN=98 Runoff=9.31 cfs 0.648 af

Subcatchment 4.4 P: 4.4 - PERVIOUS Runoff Area=1.550 ac 92.90% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=5.33 cfs 0.312 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.670 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WB: WB - Prop Silage Runoff Area=7.810 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=455' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WC: WC - Prop Silage Pad Runoff Area=5.510 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=276' Slope=0.0100 '/' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Pond 4.1P: P4.1 Peak Elev=1,102.93' Storage=10,505 cf Inflow=20.54 cfs 1.389 af
Primary=13.72 cfs 1.372 af Secondary=0.00 cfs 0.000 af Outflow=13.72 cfs 1.372 af

Pond 4.4P: P4.4 Peak Elev=1,077.71' Storage=2,826 cf Inflow=14.00 cfs 0.960 af
Primary=11.61 cfs 0.958 af Secondary=0.00 cfs 0.000 af Outflow=11.61 cfs 0.958 af

Pond P2: P2 Peak Elev=1,074.66' Storage=352,638 cf Inflow=128.88 cfs 9.801 af
Primary=2.56 cfs 1.764 af Secondary=0.00 cfs 0.000 af Outflow=2.56 cfs 1.764 af

Link Out: Out Inflow=42.81 cfs 7.121 af
Primary=42.81 cfs 7.121 af

Total Runoff Area = 150.280 ac Runoff Volume = 15.177 af Average Runoff Depth = 1.21"
59.30% Pervious = 89.120 ac 40.70% Impervious = 61.160 ac

Summary for Subcatchment 1 I: 1 - IMPERVIOUS

Runoff = 5.05 cfs @ 12.13 hrs, Volume= 0.296 af, Depth> 2.41"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	1.240	98	Asph
*	0.230	98	Conc
	1.470	98	Weighted Average
	1.470		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1 P: 1 - PERVIOUS

Runoff = 1.23 cfs @ 12.15 hrs, Volume= 0.068 af, Depth> 0.50"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

Area (ac)	CN	Description
1.630	69	50-75% Grass cover, Fair, HSG B
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	85	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
4.9	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2.1 I: 2.1 - IMPERVIOUS

Runoff = 85.21 cfs @ 12.13 hrs, Volume= 4.989 af, Depth> 2.41"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	3.520	98	Ex Roofs
*	13.590	98	Roofs
*	1.500	98	Asphalt (Ex Gravel)
*	4.850	98	Asphalt
*	0.020	98	Ex Concrete
*	1.310	98	Concrete
	24.790	98	Weighted Average
	24.790		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 2.1 P: 2.1 - PERVIOUS

Runoff = 4.40 cfs @ 12.56 hrs, Volume= 0.545 af, Depth> 0.49"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

Area (ac)	CN	Description
13.290	69	50-75% Grass cover, Fair, HSG B
13.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.0500	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
30.3	1,780	0.0118	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
34.2	1,820	Total			

Summary for Subcatchment 2.2 I: 2.2 - IMPERVIOUS

Runoff = 42.45 cfs @ 12.26 hrs, Volume= 3.567 af, Depth> 2.41"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	11.850	98	Roofs
*	5.740	98	Asphalt
*	0.160	98	Concrete
	17.750	98	Weighted Average
	17.750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	300	0.0040	0.73		**Sheet Flow, Asphalt** n= 0.013 P2= 2.76"
11.1	855	0.0040	1.28		**Shallow Concentrated Flow, Asphalt** Paved Kv= 20.3 fps
17.9	1,155	Total			

Summary for Subcatchment 2.2 P: 2.2 - PERVIOUS

Runoff = 13.63 cfs @ 12.13 hrs, Volume= 0.700 af, Depth> 1.60"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
	1.800	69	50-75% Grass cover, Fair, HSG B
*	3.440	100	Wet Pond
	5.240	89	Weighted Average
	1.800		34.35% Pervious Area
	3.440		65.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 I: 3E - IMPERVIOUS

Runoff = 3.09 cfs @ 12.13 hrs, Volume= 0.181 af, Depth> 2.41"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.170	98	Roofs
*	0.730	98	Asphalt
	0.900	98	Weighted Average
	0.900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 P: 3E - PERVIOUS

Runoff = 9.14 cfs @ 12.62 hrs, Volume= 1.208 af, Depth> 0.49"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	29.520	69	Ex Cropland
	29.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	300	0.0666	0.29		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
21.0	1,320	0.0136	1.05		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
38.4	1,620	Total			

Summary for Subcatchment 4.1 I: 4.1 - Impervious

Runoff = 18.74 cfs @ 12.17 hrs, Volume= 1.261 af, Depth> 2.41"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.200	98	Ex Roof
*	2.410	98	Prop Roof
*	1.520	98	Ex Asph
*	2.120	98	Asph
*	0.020	98	Ex Conc
	6.270	98	Weighted Average
	6.270		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	300	0.0015	0.49		**Sheet Flow,** n= 0.013 P2= 2.76"

Summary for Subcatchment 4.1 P: 4.1 - PERVIOUS

Runoff = 1.77 cfs @ 12.18 hrs, Volume= 0.127 af, Depth> 0.36"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
	3.970	69	50-75% Grass cover, Fair, HSG B
*	0.250	1	Prop Dry Basin
	4.220	65	Weighted Average
	4.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	125	0.0800	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"

Summary for Subcatchment 4.2 I: 4.2 - Impervious

Runoff = 3.68 cfs @ 12.13 hrs, Volume= 0.215 af, Depth> 2.41"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.330	98	Ex Asph
*	0.040	96	Ex Gravel
*	0.410	98	Prop Asph
*	0.290	98	Prop Conc
	1.070	98	Weighted Average
	0.040		3.74% Pervious Area
	1.030		96.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.2 P: 4.2 - PERVIOUS

Runoff = 5.70 cfs @ 12.42 hrs, Volume= 0.600 af, Depth> 0.49"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	14.540	69	Ex Cropland
	14.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0400	0.23		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.1	590	0.0254	2.39		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.4	890	Total			

Summary for Subcatchment 4.3 I: 4.3 - Impervious

Runoff = 2.92 cfs @ 12.13 hrs, Volume= 0.171 af, Depth> 2.41"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.080	98	Asph
*	0.750	98	Prop Asph
*	0.020	98	Prop Conc
	0.850	98	Weighted Average
	0.850		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.3 P: 4.3 - PERVIOUS

Runoff = 3.25 cfs @ 12.32 hrs, Volume= 0.289 af, Depth> 0.50"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

Area (ac)	CN	Description
6.980	69	50-75% Grass cover, Fair, HSG B
6.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	300	0.1166	0.36		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.5	640	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.4	940	Total			

Summary for Subcatchment 4.4 I: 4.4 - Impervious

Runoff = 9.31 cfs @ 12.18 hrs, Volume= 0.648 af, Depth> 2.41"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	0.170	98	Prop Roof
*	0.220	98	Ex Pavement
*	2.830	98	Prop Pavement
	3.220	98	Weighted Average
	3.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	300	0.0050	0.80		**Sheet Flow,** n= 0.013 P2= 2.76"
4.9	315	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.2	615	Total			

Summary for Subcatchment 4.4 P: 4.4 - PERVIOUS

Runoff = 5.33 cfs @ 12.13 hrs, Volume= 0.312 af, Depth> 2.41"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
	0.110	69	50-75% Grass cover, Fair, HSG B
*	1.440	100	Prop Dry Basin
	1.550	98	Weighted Average
	0.110		7.10% Pervious Area
	1.440		92.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	2.570	1	Pond Area
*	0.060	1	Concrete
*	0.040	1	Asphalt
*	1.000	1	Greenspace
	3.670	1	Weighted Average
	3.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WB: WB - Prop Silage Bunkers

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	5.580	1	Concrete (100% Captured)
*	2.230	1	Concrete - 100% Captured
	7.810	1	Weighted Average
	7.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	300	0.0180	1.33		**Sheet Flow,** n= 0.013 P2= 2.76"
1.3	155	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment WC: WC - Prop Silage Pad (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.76"

	Area (ac)	CN	Description
*	4.520	1	Concrete (100% Captured)
*	0.990	1	Concrete (100% Captured)
	5.510	1	Weighted Average
	5.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	276	0.0100	1.04		**Sheet Flow,** n= 0.013 P2= 2.76"
4.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 4.1P: P4.1

Inflow Area = 10.490 ac, 59.77% Impervious, Inflow Depth > 1.59" for 2-Year event
Inflow = 20.54 cfs @ 12.17 hrs, Volume= 1.389 af
Outflow = 13.72 cfs @ 12.27 hrs, Volume= 1.372 af, Atten= 33%, Lag= 6.1 min
Primary = 13.72 cfs @ 12.27 hrs, Volume= 1.372 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,102.93' @ 12.27 hrs Surf.Area= 6,929 sf Storage= 10,505 cf

Plug-Flow detention time= 21.0 min calculated for 1.367 af (98% of inflow)
Center-of-Mass det. time= 15.7 min (769.0 - 753.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,101.00'	47,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,101.00	3,000	0	0
1,102.00	6,000	4,500	4,500
1,103.00	7,000	6,500	11,000
1,104.00	8,000	7,500	18,500
1,105.00	9,000	8,500	27,000
1,106.00	10,000	9,500	36,500
1,107.00	11,000	10,500	47,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,101.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,101.00' / 1,100.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,104.00'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=13.57 cfs @ 12.27 hrs HW=1,102.91' (Free Discharge)
1=Culvert (Barrel Controls 13.57 cfs @ 5.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,101.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4.4P: P4.4

Inflow Area = 18.090 ac, 25.76% Impervious, Inflow Depth > 0.64" for 2-Year event
Inflow = 14.00 cfs @ 12.15 hrs, Volume= 0.960 af
Outflow = 11.61 cfs @ 12.22 hrs, Volume= 0.958 af, Atten= 17%, Lag= 4.0 min
Primary = 11.61 cfs @ 12.22 hrs, Volume= 0.958 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,077.71' @ 12.22 hrs Surf.Area= 4,164 sf Storage= 2,826 cf

Plug-Flow detention time= 4.5 min calculated for 0.958 af (100% of inflow)
Center-of-Mass det. time= 3.5 min (747.1 - 743.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,076.00'	123,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,076.00	400	0	0
1,077.00	1,330	865	865
1,078.00	5,300	3,315	4,180
1,079.00	11,960	8,630	12,810
1,080.00	20,115	16,038	28,848
1,081.00	28,100	24,108	52,955
1,082.00	35,580	31,840	84,795
1,083.00	42,085	38,833	123,628

Device	Routing	Invert	Outlet Devices
#1	Primary	1,076.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,076.00' / 1,075.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,079.60'	**60.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.47 cfs @ 12.22 hrs HW=1,077.70' (Free Discharge)
1=Culvert (Barrel Controls 11.47 cfs @ 5.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,076.02' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: P2

Inflow Area = 64.740 ac, 71.02% Impervious, Inflow Depth > 1.82" for 2-Year event
Inflow = 128.88 cfs @ 12.14 hrs, Volume= 9.801 af
Outflow = 2.56 cfs @ 17.88 hrs, Volume= 1.764 af, Atten= 98%, Lag= 344.6 min
Primary = 2.56 cfs @ 17.88 hrs, Volume= 1.764 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,074.66' @ 17.88 hrs Surf.Area= 138,827 sf Storage= 352,638 cf

Plug-Flow detention time= 366.3 min calculated for 1.756 af (18% of inflow)
Center-of-Mass det. time= 192.5 min (945.7 - 753.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,072.00'	690,852 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,072.00	126,655	0	0
1,073.00	131,167	128,911	128,911
1,074.00	135,757	133,462	262,373
1,075.00	140,426	138,092	400,465
1,076.00	145,174	142,800	543,265
1,077.00	150,000	147,587	690,852

Device	Routing	Invert	Outlet Devices
#1	Primary	1,072.00'	**30.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 1,072.00' / 1,071.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	1,075.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,072.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,076.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.56 cfs @ 17.88 hrs HW=1,074.66' (Free Discharge)
└**1=Culvert** (Passes 2.56 cfs of 28.04 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 2.56 cfs @ 7.34 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,072.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link Out: Out

Inflow Area = 150.280 ac, 40.70% Impervious, Inflow Depth > 0.57" for 2-Year event
Inflow = 42.81 cfs @ 12.27 hrs, Volume= 7.121 af
Primary = 42.81 cfs @ 12.27 hrs, Volume= 7.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 I: 1 - IMPERVIOUS Runoff Area=1.470 ac 100.00% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=7.31 cfs 0.434 af

Subcatchment 1 P: 1 - PERVIOUS Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>1.16"
Flow Length=85' Slope=0.1000 '/' Tc=6.0 min CN=69 Runoff=3.10 cfs 0.157 af

Subcatchment 2.1 I: 2.1 - IMPERVIOUS Runoff Area=24.790 ac 100.00% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=123.23 cfs 7.314 af

Subcatchment 2.1 P: 2.1 - PERVIOUS Runoff Area=13.290 ac 0.00% Impervious Runoff Depth>1.14"
Flow Length=1,820' Tc=34.2 min CN=69 Runoff=11.53 cfs 1.265 af

Subcatchment 2.2 I: 2.2 - IMPERVIOUS Runoff Area=17.750 ac 100.00% Impervious Runoff Depth>3.54"
Flow Length=1,155' Slope=0.0040 '/' Tc=17.9 min CN=98 Runoff=61.45 cfs 5.232 af

Subcatchment 2.2 P: 2.2 - PERVIOUS Runoff Area=5.240 ac 65.65% Impervious Runoff Depth>2.66"
Tc=6.0 min CN=89 Runoff=22.02 cfs 1.162 af

Subcatchment 3 I: 3E - IMPERVIOUS Runoff Area=0.900 ac 100.00% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=4.47 cfs 0.266 af

Subcatchment 3 P: 3E - PERVIOUS Runoff Area=29.520 ac 0.00% Impervious Runoff Depth>1.14"
Flow Length=1,620' Tc=38.4 min CN=69 Runoff=23.91 cfs 2.804 af

Subcatchment 4.1 I: 4.1 - Impervious Runoff Area=6.270 ac 100.00% Impervious Runoff Depth>3.54"
Flow Length=300' Slope=0.0015 '/' Tc=10.1 min CN=98 Runoff=27.12 cfs 1.849 af

Subcatchment 4.1 P: 4.1 - PERVIOUS Runoff Area=4.220 ac 0.00% Impervious Runoff Depth>0.93"
Flow Length=125' Slope=0.0800 '/' Tc=8.0 min CN=65 Runoff=5.76 cfs 0.327 af

Subcatchment 4.2 I: 4.2 - Impervious Runoff Area=1.070 ac 96.26% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=5.32 cfs 0.316 af

Subcatchment 4.2 P: 4.2 - PERVIOUS Runoff Area=14.540 ac 0.00% Impervious Runoff Depth>1.15"
Flow Length=890' Tc=25.4 min CN=69 Runoff=14.91 cfs 1.389 af

Subcatchment 4.3 I: 4.3 - Impervious Runoff Area=0.850 ac 100.00% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=4.23 cfs 0.251 af

Subcatchment 4.3 P: 4.3 - PERVIOUS Runoff Area=6.980 ac 0.00% Impervious Runoff Depth>1.15"
Flow Length=940' Tc=18.4 min CN=69 Runoff=8.50 cfs 0.669 af

Subcatchment 4.4 I: 4.4 - Impervious Runoff Area=3.220 ac 100.00% Impervious Runoff Depth>3.54"
Flow Length=615' Slope=0.0050 '/' Tc=11.2 min CN=98 Runoff=13.47 cfs 0.950 af

Subcatchment 4.4 P: 4.4 - PERVIOUS Runoff Area=1.550 ac 92.90% Impervious Runoff Depth>3.54"
Tc=6.0 min CN=98 Runoff=7.70 cfs 0.457 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.670 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WB: WB - Prop Silage Runoff Area=7.810 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=455' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WC: WC - Prop Silage Pad Runoff Area=5.510 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=276' Slope=0.0100 '/' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Pond 4.1P: P4.1 Peak Elev=1,103.78' Storage=16,757 cf Inflow=32.86 cfs 2.176 af
Primary=19.57 cfs 2.155 af Secondary=0.00 cfs 0.000 af Outflow=19.57 cfs 2.155 af

Pond 4.4P: P4.4 Peak Elev=1,078.13' Storage=4,916 cf Inflow=20.26 cfs 1.407 af
Primary=15.58 cfs 1.405 af Secondary=0.00 cfs 0.000 af Outflow=15.58 cfs 1.405 af

Pond P2: P2 Peak Elev=1,075.75' Storage=507,254 cf Inflow=190.87 cfs 14.973 af
Primary=8.27 cfs 3.913 af Secondary=0.00 cfs 0.000 af Outflow=8.27 cfs 3.913 af

Link Out: Out Inflow=80.44 cfs 13.758 af
Primary=80.44 cfs 13.758 af

Total Runoff Area = 150.280 ac Runoff Volume = 24.841 af Average Runoff Depth = 1.98"
59.30% Pervious = 89.120 ac 40.70% Impervious = 61.160 ac

Summary for Subcatchment 1 I: 1 - IMPERVIOUS

Runoff = 7.31 cfs @ 12.13 hrs, Volume= 0.434 af, Depth> 3.54"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	1.240	98	Asph
*	0.230	98	Conc
	1.470	98	Weighted Average
	1.470		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1 P: 1 - PERVIOUS

Runoff = 3.10 cfs @ 12.14 hrs, Volume= 0.157 af, Depth> 1.16"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

Area (ac)	CN	Description
1.630	69	50-75% Grass cover, Fair, HSG B
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	85	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
4.9	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2.1 I: 2.1 - IMPERVIOUS

Runoff = 123.23 cfs @ 12.13 hrs, Volume= 7.314 af, Depth> 3.54"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	3.520	98	Ex Roofs
*	13.590	98	Roofs
*	1.500	98	Asphalt (Ex Gravel)
*	4.850	98	Asphalt
*	0.020	98	Ex Concrete
*	1.310	98	Concrete
	24.790	98	Weighted Average
	24.790		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 2.1 P: 2.1 - PERVIOUS

Runoff = 11.53 cfs @ 12.52 hrs, Volume= 1.265 af, Depth> 1.14"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

Area (ac)	CN	Description
13.290	69	50-75% Grass cover, Fair, HSG B
13.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.0500	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
30.3	1,780	0.0118	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
34.2	1,820	Total			

Summary for Subcatchment 2.2 I: 2.2 - IMPERVIOUS

Runoff = 61.45 cfs @ 12.26 hrs, Volume= 5.232 af, Depth> 3.54"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	11.850	98	Roofs
*	5.740	98	Asphalt
*	0.160	98	Concrete
	17.750	98	Weighted Average
	17.750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	300	0.0040	0.73		**Sheet Flow, Asphalt** n= 0.013 P2= 2.76"
11.1	855	0.0040	1.28		**Shallow Concentrated Flow, Asphalt** Paved Kv= 20.3 fps
17.9	1,155	Total			

Summary for Subcatchment 2.2 P: 2.2 - PERVIOUS

Runoff = 22.02 cfs @ 12.13 hrs, Volume= 1.162 af, Depth> 2.66"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
	1.800	69	50-75% Grass cover, Fair, HSG B
*	3.440	100	Wet Pond
	5.240	89	Weighted Average
	1.800		34.35% Pervious Area
	3.440		65.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 I: 3E - IMPERVIOUS

Runoff = 4.47 cfs @ 12.13 hrs, Volume= 0.266 af, Depth> 3.54"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.170	98	Roofs
*	0.730	98	Asphalt
	0.900	98	Weighted Average
	0.900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 P: 3E - PERVIOUS

Runoff = 23.91 cfs @ 12.58 hrs, Volume= 2.804 af, Depth> 1.14"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	29.520	69	Ex Cropland
	29.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	300	0.0666	0.29		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
21.0	1,320	0.0136	1.05		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
38.4	1,620	Total			

Summary for Subcatchment 4.1 I: 4.1 - Impervious

Runoff = 27.12 cfs @ 12.17 hrs, Volume= 1.849 af, Depth> 3.54"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.200	98	Ex Roof
*	2.410	98	Prop Roof
*	1.520	98	Ex Asph
*	2.120	98	Asph
*	0.020	98	Ex Conc
	6.270	98	Weighted Average
	6.270		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	300	0.0015	0.49		**Sheet Flow,** n= 0.013 P2= 2.76"

Summary for Subcatchment 4.1 P: 4.1 - PERVIOUS

Runoff = 5.76 cfs @ 12.16 hrs, Volume= 0.327 af, Depth> 0.93"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
	3.970	69	50-75% Grass cover, Fair, HSG B
*	0.250	1	Prop Dry Basin
	4.220	65	Weighted Average
	4.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	125	0.0800	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"

Summary for Subcatchment 4.2 I: 4.2 - Impervious

Runoff = 5.32 cfs @ 12.13 hrs, Volume= 0.316 af, Depth> 3.54"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.330	98	Ex Asph
*	0.040	96	Ex Gravel
*	0.410	98	Prop Asph
*	0.290	98	Prop Conc
	1.070	98	Weighted Average
	0.040		3.74% Pervious Area
	1.030		96.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.2 P: 4.2 - PERVIOUS

Runoff = 14.91 cfs @ 12.39 hrs, Volume= 1.389 af, Depth> 1.15"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	14.540	69	Ex Cropland
	14.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0400	0.23		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.1	590	0.0254	2.39		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.4	890	Total			

Summary for Subcatchment 4.3 I: 4.3 - Impervious

Runoff = 4.23 cfs @ 12.13 hrs, Volume= 0.251 af, Depth> 3.54"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.080	98	Asph
*	0.750	98	Prop Asph
*	0.020	98	Prop Conc
	0.850	98	Weighted Average
	0.850		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.3 P: 4.3 - PERVIOUS

Runoff = 8.50 cfs @ 12.29 hrs, Volume= 0.669 af, Depth> 1.15"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

Area (ac)	CN	Description
6.980	69	50-75% Grass cover, Fair, HSG B
6.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	300	0.1166	0.36		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.5	640	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.4	940	Total			

Summary for Subcatchment 4.4 I: 4.4 - Impervious

Runoff = 13.47 cfs @ 12.18 hrs, Volume= 0.950 af, Depth> 3.54"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	0.170	98	Prop Roof
*	0.220	98	Ex Pavement
*	2.830	98	Prop Pavement
	3.220	98	Weighted Average
	3.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	300	0.0050	0.80		**Sheet Flow,** n= 0.013 P2= 2.76"
4.9	315	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.2	615	Total			

Summary for Subcatchment 4.4 P: 4.4 - PERVIOUS

Runoff = 7.70 cfs @ 12.13 hrs, Volume= 0.457 af, Depth> 3.54"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
	0.110	69	50-75% Grass cover, Fair, HSG B
*	1.440	100	Prop Dry Basin
	1.550	98	Weighted Average
	0.110		7.10% Pervious Area
	1.440		92.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	2.570	1	Pond Area
*	0.060	1	Concrete
*	0.040	1	Asphalt
*	1.000	1	Greenspace
	3.670	1	Weighted Average
	3.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WB: WB - Prop Silage Bunkers

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	5.580	1	Concrete (100% Captured)
*	2.230	1	Concrete - 100% Captured
	7.810	1	Weighted Average
	7.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	300	0.0180	1.33		**Sheet Flow,** n= 0.013 P2= 2.76"
1.3	155	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment WC: WC - Prop Silage Pad (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.96"

	Area (ac)	CN	Description
*	4.520	1	Concrete (100% Captured)
*	0.990	1	Concrete (100% Captured)
	5.510	1	Weighted Average
	5.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	276	0.0100	1.04		**Sheet Flow,** n= 0.013 P2= 2.76"
4.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 4.1P: P4.1

Inflow Area = 10.490 ac, 59.77% Impervious, Inflow Depth > 2.49" for 10-Year event
Inflow = 32.86 cfs @ 12.17 hrs, Volume= 2.176 af
Outflow = 19.57 cfs @ 12.29 hrs, Volume= 2.155 af, Atten= 40%, Lag= 7.4 min
Primary = 19.57 cfs @ 12.29 hrs, Volume= 2.155 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,103.78' @ 12.29 hrs Surf.Area= 7,779 sf Storage= 16,757 cf

Plug-Flow detention time= 18.8 min calculated for 2.147 af (99% of inflow)
Center-of-Mass det. time= 14.4 min (767.0 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,101.00'	47,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,101.00	3,000	0	0
1,102.00	6,000	4,500	4,500
1,103.00	7,000	6,500	11,000
1,104.00	8,000	7,500	18,500
1,105.00	9,000	8,500	27,000
1,106.00	10,000	9,500	36,500
1,107.00	11,000	10,500	47,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,101.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,101.00' / 1,100.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,104.00'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=19.50 cfs @ 12.29 hrs HW=1,103.77' (Free Discharge)
1=Culvert (Barrel Controls 19.50 cfs @ 6.21 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,101.01' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4.4P: P4.4

Inflow Area = 18.090 ac, 25.76% Impervious, Inflow Depth > 0.93" for 10-Year event
Inflow = 20.26 cfs @ 12.15 hrs, Volume= 1.407 af
Outflow = 15.58 cfs @ 12.24 hrs, Volume= 1.405 af, Atten= 23%, Lag= 5.0 min
Primary = 15.58 cfs @ 12.24 hrs, Volume= 1.405 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,078.13' @ 12.24 hrs Surf.Area= 6,155 sf Storage= 4,916 cf

Plug-Flow detention time= 4.5 min calculated for 1.400 af (99% of inflow)
Center-of-Mass det. time= 3.6 min (743.6 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,076.00'	123,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,076.00	400	0	0
1,077.00	1,330	865	865
1,078.00	5,300	3,315	4,180
1,079.00	11,960	8,630	12,810
1,080.00	20,115	16,038	28,848
1,081.00	28,100	24,108	52,955
1,082.00	35,580	31,840	84,795
1,083.00	42,085	38,833	123,628

Device	Routing	Invert	Outlet Devices
#1	Primary	1,076.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,076.00' / 1,075.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,079.60'	**60.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=15.49 cfs @ 12.24 hrs HW=1,078.12' (Free Discharge)
1=Culvert (Barrel Controls 15.49 cfs @ 5.79 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,076.03' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: P2

Inflow Area = 64.740 ac, 71.02% Impervious, Inflow Depth > 2.78" for 10-Year event
Inflow = 190.87 cfs @ 12.14 hrs, Volume= 14.973 af
Outflow = 8.27 cfs @ 14.66 hrs, Volume= 3.913 af, Atten= 96%, Lag= 151.3 min
Primary = 8.27 cfs @ 14.66 hrs, Volume= 3.913 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,075.75' @ 14.66 hrs Surf.Area= 143,991 sf Storage= 507,254 cf

Plug-Flow detention time= 326.0 min calculated for 3.910 af (26% of inflow)
Center-of-Mass det. time= 186.9 min (938.1 - 751.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,072.00'	690,852 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,072.00	126,655	0	0
1,073.00	131,167	128,911	128,911
1,074.00	135,757	133,462	262,373
1,075.00	140,426	138,092	400,465
1,076.00	145,174	142,800	543,265
1,077.00	150,000	147,587	690,852

Device	Routing	Invert	Outlet Devices
#1	Primary	1,072.00'	**30.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 1,072.00' / 1,071.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	1,075.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,072.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,076.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.27 cfs @ 14.66 hrs HW=1,075.75' (Free Discharge)
└**1=Culvert** (Passes 8.27 cfs of 37.38 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 5.17 cfs @ 1.64 fps)
└**3=Orifice/Grate** (Orifice Controls 3.11 cfs @ 8.90 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,072.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link Out: Out

Inflow Area = 150.280 ac, 40.70% Impervious, Inflow Depth > 1.10" for 10-Year event
Inflow = 80.44 cfs @ 12.35 hrs, Volume= 13.758 af
Primary = 80.44 cfs @ 12.35 hrs, Volume= 13.758 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 I: 1 - IMPERVIOUS Runoff Area=1.470 ac 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=12.09 cfs 0.726 af

Subcatchment 1 P: 1 - PERVIOUS Runoff Area=1.630 ac 0.00% Impervious Runoff Depth>2.95"
Flow Length=85' Slope=0.1000 '/' Tc=6.0 min CN=69 Runoff=7.99 cfs 0.401 af

Subcatchment 2.1 I: 2.1 - IMPERVIOUS Runoff Area=24.790 ac 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=203.93 cfs 12.248 af

Subcatchment 2.1 P: 2.1 - PERVIOUS Runoff Area=13.290 ac 0.00% Impervious Runoff Depth>2.92"
Flow Length=1,820' Tc=34.2 min CN=69 Runoff=30.75 cfs 3.235 af

Subcatchment 2.2 I: 2.2 - IMPERVIOUS Runoff Area=17.750 ac 100.00% Impervious Runoff Depth>5.93"
Flow Length=1,155' Slope=0.0040 '/' Tc=17.9 min CN=98 Runoff=101.77 cfs 8.766 af

Subcatchment 2.2 P: 2.2 - PERVIOUS Runoff Area=5.240 ac 65.65% Impervious Runoff Depth>5.03"
Tc=6.0 min CN=89 Runoff=39.85 cfs 2.196 af

Subcatchment 3 I: 3E - IMPERVIOUS Runoff Area=0.900 ac 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=7.40 cfs 0.445 af

Subcatchment 3 P: 3E - PERVIOUS Runoff Area=29.520 ac 0.00% Impervious Runoff Depth>2.92"
Flow Length=1,620' Tc=38.4 min CN=69 Runoff=63.82 cfs 7.175 af

Subcatchment 4.1 I: 4.1 - Impervious Runoff Area=6.270 ac 100.00% Impervious Runoff Depth>5.93"
Flow Length=300' Slope=0.0015 '/' Tc=10.1 min CN=98 Runoff=44.89 cfs 3.097 af

Subcatchment 4.1 P: 4.1 - PERVIOUS Runoff Area=4.220 ac 0.00% Impervious Runoff Depth>2.57"
Flow Length=125' Slope=0.0800 '/' Tc=8.0 min CN=65 Runoff=16.82 cfs 0.904 af

Subcatchment 4.2 I: 4.2 - Impervious Runoff Area=1.070 ac 96.26% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=8.80 cfs 0.529 af

Subcatchment 4.2 P: 4.2 - PERVIOUS Runoff Area=14.540 ac 0.00% Impervious Runoff Depth>2.93"
Flow Length=890' Tc=25.4 min CN=69 Runoff=39.71 cfs 3.551 af

Subcatchment 4.3 I: 4.3 - Impervious Runoff Area=0.850 ac 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=6.99 cfs 0.420 af

Subcatchment 4.3 P: 4.3 - PERVIOUS Runoff Area=6.980 ac 0.00% Impervious Runoff Depth>2.94"
Flow Length=940' Tc=18.4 min CN=69 Runoff=22.50 cfs 1.709 af

Subcatchment 4.4 I: 4.4 - Impervious Runoff Area=3.220 ac 100.00% Impervious Runoff Depth>5.93"
Flow Length=615' Slope=0.0050 '/' Tc=11.2 min CN=98 Runoff=22.30 cfs 1.591 af

Subcatchment 4.4 P: 4.4 - PERVIOUS Runoff Area=1.550 ac 92.90% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=12.75 cfs 0.766 af

Subcatchment WA: WA - Ex Lagoons (100% Runoff Area=3.670 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WB: WB - Prop Silage Runoff Area=7.810 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=455' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Subcatchment WC: WC - Prop Silage Pad Runoff Area=5.510 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=276' Slope=0.0100 '/' Tc=6.0 min CN=1 Runoff=0.00 cfs 0.000 af

Pond 4.1P: P4.1 Peak Elev=1,104.71' Storage=24,414 cf Inflow=61.57 cfs 4.002 af
Primary=24.89 cfs 3.540 af Secondary=32.06 cfs 0.432 af Outflow=56.96 cfs 3.972 af

Pond 4.4P: P4.4 Peak Elev=1,078.91' Storage=11,804 cf Inflow=33.54 cfs 2.356 af
Primary=20.57 cfs 2.353 af Secondary=0.00 cfs 0.000 af Outflow=20.57 cfs 2.353 af

Pond P2: P2 Peak Elev=1,076.89' Storage=674,312 cf Inflow=325.12 cfs 26.445 af
Primary=45.09 cfs 12.944 af Secondary=43.56 cfs 2.098 af Outflow=88.65 cfs 15.043 af

Link Out: Out Inflow=234.91 cfs 36.324 af
Primary=234.91 cfs 36.324 af

Total Runoff Area = 150.280 ac Runoff Volume = 47.760 af Average Runoff Depth = 3.81"
59.30% Pervious = 89.120 ac 40.70% Impervious = 61.160 ac

Summary for Subcatchment 1 I: 1 - IMPERVIOUS

Runoff = 12.09 cfs @ 12.13 hrs, Volume= 0.726 af, Depth> 5.93"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	1.240	98	Asph
*	0.230	98	Conc
	1.470	98	Weighted Average
	1.470		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1 P: 1 - PERVIOUS

Runoff = 7.99 cfs @ 12.13 hrs, Volume= 0.401 af, Depth> 2.95"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

Area (ac)	CN	Description
1.630	69	50-75% Grass cover, Fair, HSG B
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	85	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
4.9	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2.1 I: 2.1 - IMPERVIOUS

Runoff = 203.93 cfs @ 12.13 hrs, Volume= 12.248 af, Depth> 5.93"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	3.520	98	Ex Roofs
*	13.590	98	Roofs
*	1.500	98	Asphalt (Ex Gravel)
*	4.850	98	Asphalt
*	0.020	98	Ex Concrete
*	1.310	98	Concrete
	24.790	98	Weighted Average
	24.790		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 2.1 P: 2.1 - PERVIOUS

Runoff = 30.75 cfs @ 12.49 hrs, Volume= 3.235 af, Depth> 2.92"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

Area (ac)	CN	Description
13.290	69	50-75% Grass cover, Fair, HSG B
13.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.0500	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
30.3	1,780	0.0118	0.98		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
34.2	1,820	Total			

Summary for Subcatchment 2.2 I: 2.2 - IMPERVIOUS

Runoff = 101.77 cfs @ 12.26 hrs, Volume= 8.766 af, Depth> 5.93"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	11.850	98	Roofs
*	5.740	98	Asphalt
*	0.160	98	Concrete
	17.750	98	Weighted Average
	17.750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	300	0.0040	0.73		**Sheet Flow, Asphalt** n= 0.013 P2= 2.76"
11.1	855	0.0040	1.28		**Shallow Concentrated Flow, Asphalt** Paved Kv= 20.3 fps
17.9	1,155	Total			

Summary for Subcatchment 2.2 P: 2.2 - PERVIOUS

Runoff = 39.85 cfs @ 12.13 hrs, Volume= 2.196 af, Depth> 5.03"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
	1.800	69	50-75% Grass cover, Fair, HSG B
*	3.440	100	Wet Pond
	5.240	89	Weighted Average
	1.800		34.35% Pervious Area
	3.440		65.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 I: 3E - IMPERVIOUS

Runoff = 7.40 cfs @ 12.13 hrs, Volume= 0.445 af, Depth> 5.93"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.170	98	Roofs
*	0.730	98	Asphalt
	0.900	98	Weighted Average
	0.900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3 P: 3E - PERVIOUS

Runoff = 63.82 cfs @ 12.54 hrs, Volume= 7.175 af, Depth> 2.92"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	29.520	69	Ex Cropland
	29.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	300	0.0666	0.29		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
21.0	1,320	0.0136	1.05		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
38.4	1,620	Total			

Summary for Subcatchment 4.1 I: 4.1 - Impervious

Runoff = 44.89 cfs @ 12.17 hrs, Volume= 3.097 af, Depth> 5.93"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.200	98	Ex Roof
*	2.410	98	Prop Roof
*	1.520	98	Ex Asph
*	2.120	98	Asph
*	0.020	98	Ex Conc
	6.270	98	Weighted Average
	6.270		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	300	0.0015	0.49		**Sheet Flow,** n= 0.013 P2= 2.76"

Summary for Subcatchment 4.1 P: 4.1 - PERVIOUS

Runoff = 16.82 cfs @ 12.16 hrs, Volume= 0.904 af, Depth> 2.57"
Routed to Pond 4.1P : P4.1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
	3.970	69	50-75% Grass cover, Fair, HSG B
*	0.250	1	Prop Dry Basin
	4.220	65	Weighted Average
	4.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	125	0.0800	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"

Summary for Subcatchment 4.2 I: 4.2 - Impervious

Runoff = 8.80 cfs @ 12.13 hrs, Volume= 0.529 af, Depth> 5.93"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.330	98	Ex Asph
*	0.040	96	Ex Gravel
*	0.410	98	Prop Asph
*	0.290	98	Prop Conc
	1.070	98	Weighted Average
	0.040		3.74% Pervious Area
	1.030		96.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.2 P: 4.2 - PERVIOUS

Runoff = 39.71 cfs @ 12.37 hrs, Volume= 3.551 af, Depth> 2.93"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	14.540	69	Ex Cropland
	14.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0400	0.23		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.1	590	0.0254	2.39		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.4	890	Total			

Summary for Subcatchment 4.3 I: 4.3 - Impervious

Runoff = 6.99 cfs @ 12.13 hrs, Volume= 0.420 af, Depth> 5.93"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.080	98	Asph
*	0.750	98	Prop Asph
*	0.020	98	Prop Conc
	0.850	98	Weighted Average
	0.850		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4.3 P: 4.3 - PERVIOUS

Runoff = 22.50 cfs @ 12.28 hrs, Volume= 1.709 af, Depth> 2.94"
Routed to Link Out : Out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

Area (ac)	CN	Description
6.980	69	50-75% Grass cover, Fair, HSG B
6.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	300	0.1166	0.36		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.76"
4.5	640	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.4	940	Total			

Summary for Subcatchment 4.4 I: 4.4 - Impervious

Runoff = 22.30 cfs @ 12.18 hrs, Volume= 1.591 af, Depth> 5.93"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	0.170	98	Prop Roof
*	0.220	98	Ex Pavement
*	2.830	98	Prop Pavement
	3.220	98	Weighted Average
	3.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	300	0.0050	0.80		**Sheet Flow,** n= 0.013 P2= 2.76"
4.9	315	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.2	615	Total			

Summary for Subcatchment 4.4 P: 4.4 - PERVIOUS

Runoff = 12.75 cfs @ 12.13 hrs, Volume= 0.766 af, Depth> 5.93"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
	0.110	69	50-75% Grass cover, Fair, HSG B
*	1.440	100	Prop Dry Basin
	1.550	98	Weighted Average
	0.110		7.10% Pervious Area
	1.440		92.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WA: WA - Ex Lagoons (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond P2 : P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	2.570	1	Pond Area
*	0.060	1	Concrete
*	0.040	1	Asphalt
*	1.000	1	Greenspace
	3.670	1	Weighted Average
	3.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment WB: WB - Prop Silage Bunkers

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	5.580	1	Concrete (100% Captured)
*	2.230	1	Concrete - 100% Captured
	7.810	1	Weighted Average
	7.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	300	0.0180	1.33		**Sheet Flow,** n= 0.013 P2= 2.76"
1.3	155	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment WC: WC - Prop Silage Pad (100% Capture)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4.4P : P4.4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.52"

	Area (ac)	CN	Description
*	4.520	1	Concrete (100% Captured)
*	0.990	1	Concrete (100% Captured)
	5.510	1	Weighted Average
	5.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	276	0.0100	1.04		**Sheet Flow,** n= 0.013 P2= 2.76"
4.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 4.1P: P4.1

Inflow Area = 10.490 ac, 59.77% Impervious, Inflow Depth > 4.58" for 100-Year event
Inflow = 61.57 cfs @ 12.16 hrs, Volume= 4.002 af
Outflow = 56.96 cfs @ 12.21 hrs, Volume= 3.972 af, Atten= 7%, Lag= 3.0 min
Primary = 24.89 cfs @ 12.21 hrs, Volume= 3.540 af
Routed to Link Out : Out
Secondary = 32.06 cfs @ 12.21 hrs, Volume= 0.432 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,104.71' @ 12.21 hrs Surf.Area= 8,708 sf Storage= 24,414 cf

Plug-Flow detention time= 15.5 min calculated for 3.958 af (99% of inflow)
Center-of-Mass det. time= 12.0 min (763.6 - 751.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,101.00'	47,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,101.00	3,000	0	0
1,102.00	6,000	4,500	4,500
1,103.00	7,000	6,500	11,000
1,104.00	8,000	7,500	18,500
1,105.00	9,000	8,500	27,000
1,106.00	10,000	9,500	36,500
1,107.00	11,000	10,500	47,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,101.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,101.00' / 1,100.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,104.00'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=24.75 cfs @ 12.21 hrs HW=1,104.68' (Free Discharge)
1=Culvert (Inlet Controls 24.75 cfs @ 7.88 fps)

Secondary OutFlow Max=30.07 cfs @ 12.21 hrs HW=1,104.68' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 30.07 cfs @ 2.22 fps)

Summary for Pond 4.4P: P4.4

Inflow Area = 18.090 ac, 25.76% Impervious, Inflow Depth > 1.56" for 100-Year event
Inflow = 33.54 cfs @ 12.15 hrs, Volume= 2.356 af
Outflow = 20.57 cfs @ 12.28 hrs, Volume= 2.353 af, Atten= 39%, Lag= 7.5 min
Primary = 20.57 cfs @ 12.28 hrs, Volume= 2.353 af
Routed to Link Out : Out
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,078.91' @ 12.28 hrs Surf.Area= 11,386 sf Storage= 11,804 cf

Plug-Flow detention time= 5.4 min calculated for 2.345 af (100% of inflow)
Center-of-Mass det. time= 4.6 min (741.4 - 736.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,076.00'	123,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,076.00	400	0	0
1,077.00	1,330	865	865
1,078.00	5,300	3,315	4,180
1,079.00	11,960	8,630	12,810
1,080.00	20,115	16,038	28,848
1,081.00	28,100	24,108	52,955
1,082.00	35,580	31,840	84,795
1,083.00	42,085	38,833	123,628

Device	Routing	Invert	Outlet Devices
#1	Primary	1,076.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 1,076.00' / 1,075.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,079.60'	**60.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=20.51 cfs @ 12.28 hrs HW=1,078.90' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 20.51 cfs @ 6.53 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=1,076.07' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P2: P2

Inflow Area = 64.740 ac, 71.02% Impervious, Inflow Depth > 4.90" for 100-Year event
Inflow = 325.12 cfs @ 12.14 hrs, Volume= 26.445 af
Outflow = 88.65 cfs @ 12.62 hrs, Volume= 15.043 af, Atten= 73%, Lag= 28.9 min
Primary = 45.09 cfs @ 12.62 hrs, Volume= 12.944 af
Routed to Link Out : Out
Secondary = 43.56 cfs @ 12.62 hrs, Volume= 2.098 af
Routed to Link Out : Out

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1,076.89' @ 12.62 hrs Surf.Area= 149,467 sf Storage= 674,312 cf

Plug-Flow detention time= 183.1 min calculated for 15.036 af (57% of inflow)
Center-of-Mass det. time= 106.5 min (855.4 - 749.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,072.00'	690,852 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,072.00	126,655	0	0
1,073.00	131,167	128,911	128,911
1,074.00	135,757	133,462	262,373
1,075.00	140,426	138,092	400,465
1,076.00	145,174	142,800	543,265
1,077.00	150,000	147,587	690,852

Device	Routing	Invert	Outlet Devices
#1	Primary	1,072.00'	**30.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 1,072.00' / 1,071.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	1,075.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,072.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,076.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=45.08 cfs @ 12.62 hrs HW=1,076.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 45.08 cfs @ 9.18 fps)
  └**2=Orifice/Grate** (Passes < 67.17 cfs potential flow)
  └**3=Orifice/Grate** (Passes < 3.59 cfs potential flow)

Secondary OutFlow Max=43.18 cfs @ 12.62 hrs HW=1,076.89' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 43.18 cfs @ 1.59 fps)

Summary for Link Out: Out

Inflow Area = 150.280 ac, 40.70% Impervious, Inflow Depth > 2.90" for 100-Year event
Inflow = 234.91 cfs @ 12.50 hrs, Volume= 36.324 af
Primary = 234.91 cfs @ 12.50 hrs, Volume= 36.324 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

TSS Removal Calculations **Blue Star Dairy - PROPOSED SITE**

	Area (Ac.)	TSS Generated (lbs)	Required Removal	TSS Removal Req'd (lbs)
WA - Ex Lagoons (100% Capture)				
Pavement - EXISTING	0.04	29.2	0%	0.0
Concrete - EXISTING	0.06	43.8	0%	0.0
Pond - EXISTING	2.57	0.0	0%	0.0
Greenspace	1.00	89.0	0%	0.0
Total	**3.67**	**161.9**		**0.0**
1 North (Flows Offsite)				
Pavement - REDEVELOPMENT	0.15	9.1	40%	3.6
Pavement - NEW DEVELOPMENT	1.09	65.8	80%	52.6
Concrete - REDEVELOPMENT	0.07	24.9	40%	10.0
Concrete - NEW DEVELOPMENT	0.16	56.9	80%	45.5
Greenspace	1.63	145.0	0%	0.0
Total	**3.09**	**301.6**		**111.7**
2.1 Central - to Pond P2				
Roof - EXISTING	3.52	631.9	0%	0.0
Roof - REDEVELOPMENT	4.15	745.0	40%	298.0
Roof - NEW DEVELOPMENT	9.44	1695.0	80%	1356.0
Pavement - EXISTING	1.50	1095.0	0%	0.0
Pavement - REDEVELOPMENT	0.85	620.3	40%	248.1
Pavement - NEW DEVELOPMENT	4.00	2919.0	80%	2335.2
Concrete - EXISTING	0.02	7.1	0%	0.0
Concrete - REDEVELOPMENT	0.35	124.4	40%	49.8
Concrete - NEW DEVELOPMENT	0.96	341.2	80%	273.0
Greenspace	13.29	1182.0	0%	0.0
Total	**38.09**	**9360.9**		**4560.0**
2.2 Central - to Pond P2				
Roof - NEW DEVELOPMENT	11.85	2127.0	80%	1701.6
Pavement - NEW DEVELOPMENT	5.74	4189.0	80%	3351.2
Concrete - NEW DEVELOPMENT	0.16	56.9	80%	45.5
PROPOSED WET POND - P2	3.44	0.0	0%	0.0
Greenspace	1.80	160.1	0%	0.0
Total	**22.99**	**6533.0**		**5098.3**
3 South (Flows Offsite)				
Roof - NEW DEVELOPMENT	0.17	2.0	80%	1.6
Pavement - NEW DEVELOPMENT	0.73	44.1	80%	35.2
Greenspace	29.52	2626.0	0%	0.0
Total	**30.42**	**2672.1**		**36.8**
4.1 East - to Pond 4.1				
Roof - EXISTING	0.20	35.9	0%	0.0
Roof - REDEVELOPMENT	0.88	158.0	40%	63.2
Roof - NEW DEVELOPMENT	1.53	274.7	80%	219.8
Asphalt - EXISTING	0.36	21.7	0%	0.0
Pavement - EXISTING	1.16	70.0	0%	0.0
Pavement - REDEVELOPMENT	1.65	1204.0	40%	481.6
Pavement - NEW DEVELOPMENT	0.46	27.8	80%	22.2
Concrete - EXISTING	0.02	7.1	0%	0.0
PROPOSED Dry Basin - 4.1	0.25	0.0	0%	0.0
Greenspace	3.97	353.2	0%	0.0
Total	**10.49**	**2152.4**		**786.8**
4.2 East (Flows Offsite)				
Asphalt - EXISTING	0.33	19.9	0%	0.0
Pavement - EXISTING	0.04	2.4	0%	0.0
Pavement - REDEVELOPMENT	0.27	16.3	40%	6.5
Pavement - NEW DEVELOPMENT	0.14	8.4	80%	6.8
Concrete - REDEVELOPMENT	0.14	49.8	40%	19.9
Concrete - NEW DEVELOPMENT	0.14	49.8	80%	39.8
Greenspace	14.54	1293.0	0%	0.0
Total	**15.61**	**1439.6**		**73.0**
4.3 East (Flows Offsite)				

Pavement - EXISTING	0.08	4.8	0%	0.0
Pavement - NEW DEVELOPMENT	0.75	45.3	80%	36.2
Concrete - NEW DEVELOPMENT	0.02	7.1	80%	5.7
Greenspace	6.98	620.9	0%	0.0
Total	**7.83**	**673.3**		**41.9**
4.4 East - to Pond 4.4				
Roof - NEW DEVELOPMENT	0.17	30.5	80%	24.4
Pavement - EXISTING	0.22	160.5	0%	0.0
Pavement - NEW DEVELOPMENT	2.82	2058.0	80%	1646.4
PROPOSED Dry Basin - 4.4	1.44	0.0	0%	0.0
Greenspace	0.11	9.8	0%	0.0
Total	**4.76**	**2258.8**		**1670.8**
WB - Silage Bunkers				
Concrete - 100 % Capture	7.81	5699.0	80%	4559.2
Total	**7.81**	**5699.0**		**4559.2**
WC - Silage Pad				
Concrete - 100 % Capture	5.51	4021.0	80%	3216.8
Total	**5.51**	**4021.0**		**3216.8**
TOTAL	**150.27**	**35273.5**		**20155.3**

Wet Pond - P2:		
TSS In	15893.0	lbs
TSS Out	1294.0	lbs
TSS Removed	**14599.0**	**lbs**

TSS Removal Summary

Control Practice	TSS Removed lbs)	
WA - 100% Captured	161.9	
WB - 100% Captured	5699.0	
WC - 100% Captured	4021.0	
Proposed Wet Pond - P2	14599.0	
Total Prop TSS Removal	**24480.9**	**lbs**
Total required TSS Removal	**20155.3**	**lbs**

24480.94	**>**	**20155.3**

TSS CALCULATIONS – 08558004 Blue Star Dairy

Data file name: G:\08\08558\08558004\Permits\Storm Water\WinSLAMM\08558004 Proposed WinSLAMM_08.04.2025.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 08-29-2025 Time: 12:50:51
Site information:

LU# 1 - Industrial: WA - Ex Lagoon Total area (ac): 3.670
25 - Concrete: 0.060 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Asphalt: 0.040 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.000 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 2.570 ac. Source Area PSD File:
LU# 2 - Industrial: 1 - North Total area (ac): 3.100
25 - Pavement - RD: 0.150 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Pavement - ND: 1.090 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Concrete - RD: 0.070 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Concrete - ND: 0.160 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.630 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Industrial: 2.1 - Central   Total area (ac): 38.080
     1 - Roofs - EX: 3.520 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs - RD: 4.150 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     3 - Roofs - ND: 9.440 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Pavement - EX: 1.500 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     26 - Pavement - RD: 0.850 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     27 - Pavement - ND: 4.000 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Concrete - EX: 0.020 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Concrete - RD: 0.350 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     33 - Concrete - ND: 0.960 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 13.290 ac.   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 4 - Industrial: 2.2 - Central   Total area (ac): 22.990
     1 - Roof - ND: 11.850 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Pavement - ND: 5.740 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Concrete - ND: 0.160 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 1.800 ac.   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     70 - Water Body Areas: 3.440 ac.   Source Area PSD File:
LU# 5 - Industrial: 3 - South   Total area (ac): 30.420
     1 - Roofs - ND: 0.170 ac.   Pitched   Disconnected   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Pavement - ND: 0.730 ac.   Disconnected   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 29.520 ac.   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Industrial: 4.1 - East   Total area (ac): 10.480
     1 - Roofs - EX: 0.200 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs - RD: 0.880 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     3 - Roofs - ND: 1.530 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Asphalt - EX: 0.360 ac.   Disconnected   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     26 - Pavement - EX: 1.160 ac.   Disconnected   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     27 - Pavement - RD: 1.650 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     28 - Pavement - ND: 0.460 ac.   Disconnected   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

31 - Concrete - EX: 0.020 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 3.970 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.250 ac. Source Area PSD File:
LU# 7 - Industrial: 4.2 - East Total area (ac): 15.600
25 - Asphalt - EX: 0.330 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Pavement - EX: 0.040 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
27 - Pavement - RD: 0.270 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
28 - Pavement - ND: 0.140 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Concrete - RD: 0.140 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Concrete - ND: 0.140 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 14.540 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 8 - Industrial: 4.3 - East Total area (ac): 7.830
25 - Pavement - EX: 0.080 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Pavement - ND: 0.750 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Concrete - ND: 0.020 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 6.980 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 9 - Industrial: 4.4 - East Total area (ac): 4.760
1 - Roof - ND: 0.170 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Pavement - EX: 0.220 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Pavement - ND: 2.820 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.110 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.440 ac. Source Area PSD File:
LU# 10 - Industrial: WB - Silage Bunker (CAPTURED) Total area (ac): 7.810
25 - Concrete - 100% Capture: 7.810 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 11 - Industrial: WC - Silage Pad (CAPTURED) Total area (ac): 5.510
25 - Concrete - 100% Capture: 5.510 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - P2 - Prop Wet Pond
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1
1. Orifice diameter (ft): 0.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2
1. Orifice diameter (ft): 0.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 7

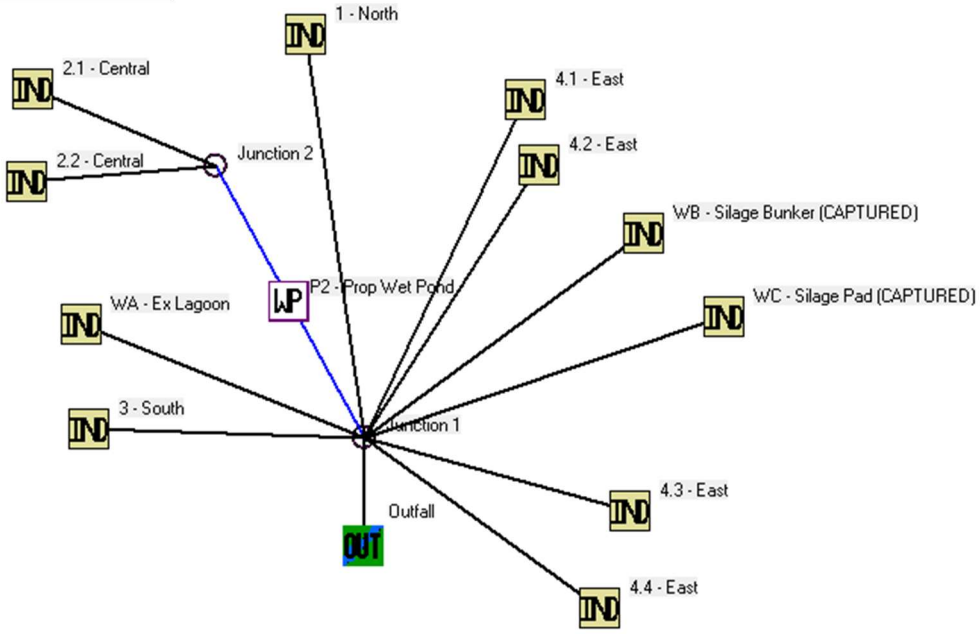
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 50
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9

Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 8.5

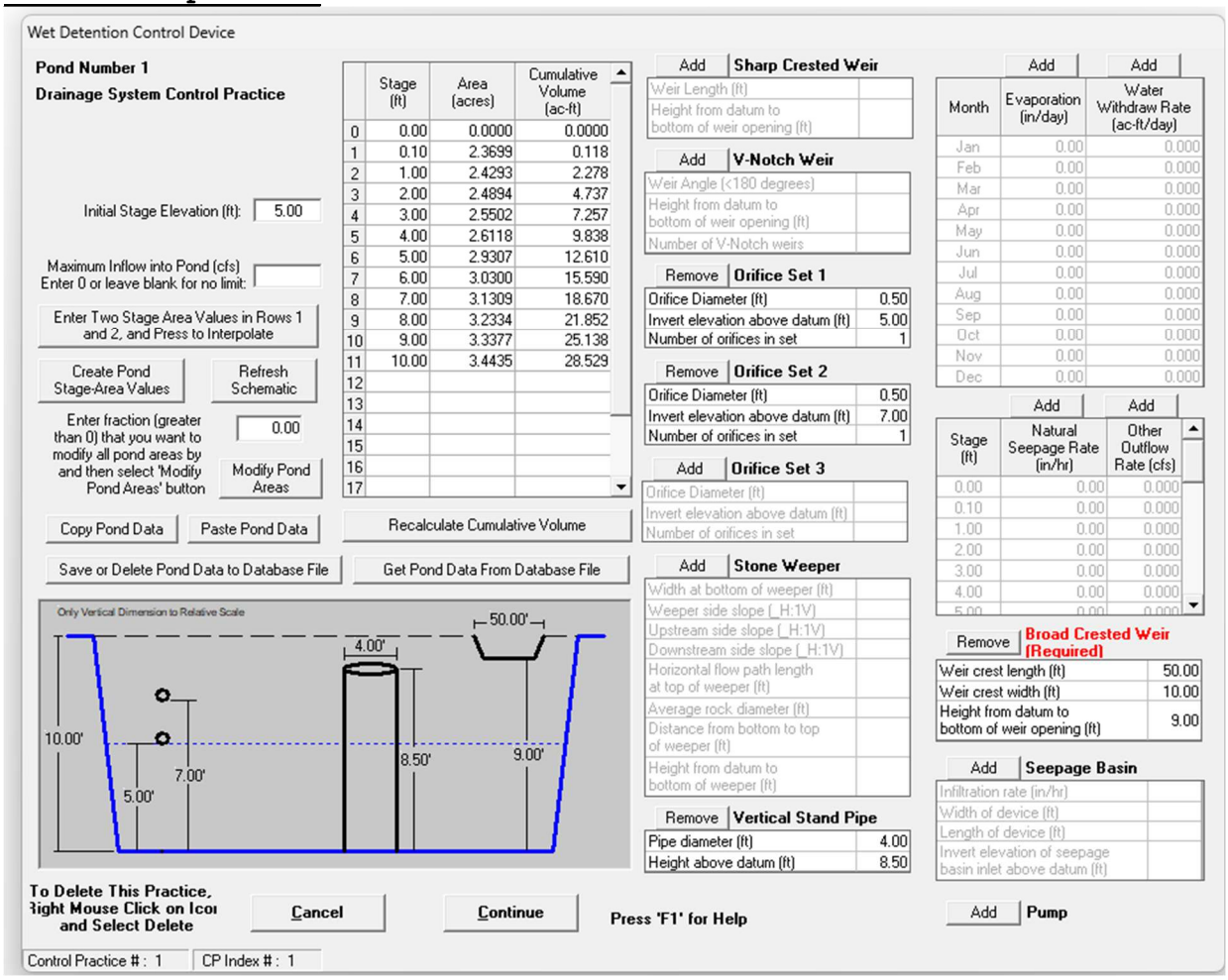
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	2.3699	0.00	0.00
2	1.00	2.4293	0.00	0.00
3	2.00	2.4894	0.00	0.00
4	3.00	2.5502	0.00	0.00
5	4.00	2.6118	0.00	0.00
6	5.00	2.9307	0.00	0.00
7	6.00	3.0300	0.00	0.00
8	7.00	3.1309	0.00	0.00
9	8.00	3.2334	0.00	0.00
10	9.00	3.3377	0.00	0.00
11	10.00	3.4435	0.00	0.00

Routing Diagram



Wet Pond Input Data



	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.0000	0.0000
1	0.10	2.3699	0.118
2	1.00	2.4293	2.278
3	2.00	2.4894	4.737
4	3.00	2.5502	7.257
5	4.00	2.6118	9.838
6	5.00	2.9307	12.610
7	6.00	3.0300	15.590
8	7.00	3.1309	18.670
9	8.00	3.2334	21.852
10	9.00	3.3377	25.138
11	10.00	3.4435	28.529
12			
13			
14			
15			
16			
17			

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00	0.00	0.000
0.10	0.00	0.000
1.00	0.00	0.000
2.00	0.00	0.000
3.00	0.00	0.000
4.00	0.00	0.000
5.00	0.00	0.000

BMP Output Data

Data File: G:\08\08558\085580\3558004 Proposed WinSLAMM_08.04.2025.mdb
Rain File: WisReg - Madison WI
Date: 08-29-25 Time: 2:04:04 PM
Site Description:

Col. #:	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Control Practice No.	Control Practice Type	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction	Flow Weighted Influent Conc (mg/L)	Flow Weighted Effluent Conc (mg/L)	Percent Conc. Reduction	Influent Median Part. Size (microns)	Effluent Median Part. Size (microns)	Notes	Maximum Flushing Ratio	Maximum Peak Reduction Factor	Maximum Stage (ft)	Hydraulic Volume Out (cf)	Minimum Volume (cf)
1	Wet Detention Pond	4.261E+06	4.273E+06	-0.282	15893	1294	91.86	59.75	4.850	91.883	7.80	1.13	No Pond Overflows	0.8	0.99	8.01	4272815	549910

Output Summary

File Name:

G:\08\08558\08558004\Permits\Storm Water\WinSLAMM\08558004 Proposed WinSLAMM_08.04.2025.mdb

Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	6.788E+06		0.39	83.25	35278	
Outfall Total with Controls	6.800E+06	-0.18 %	0.39	48.72	20680	41.38 %
Current File Output: Annualized Total After Outfall Controls	6.818E+06	Years in Model Run:	1.00		20737	

Print Output Summary to .csv File

Print Output Summary to Text File

Print Output Summary to Printer

Total Area Modeled (ac): 150.250

Total Control Practice Costs

Capital Cost	N/A
Land Cost	N/A
Annual Maintenance Cost	N/A
Present Value of All Costs	N/A
Annualized Value of All Costs	N/A

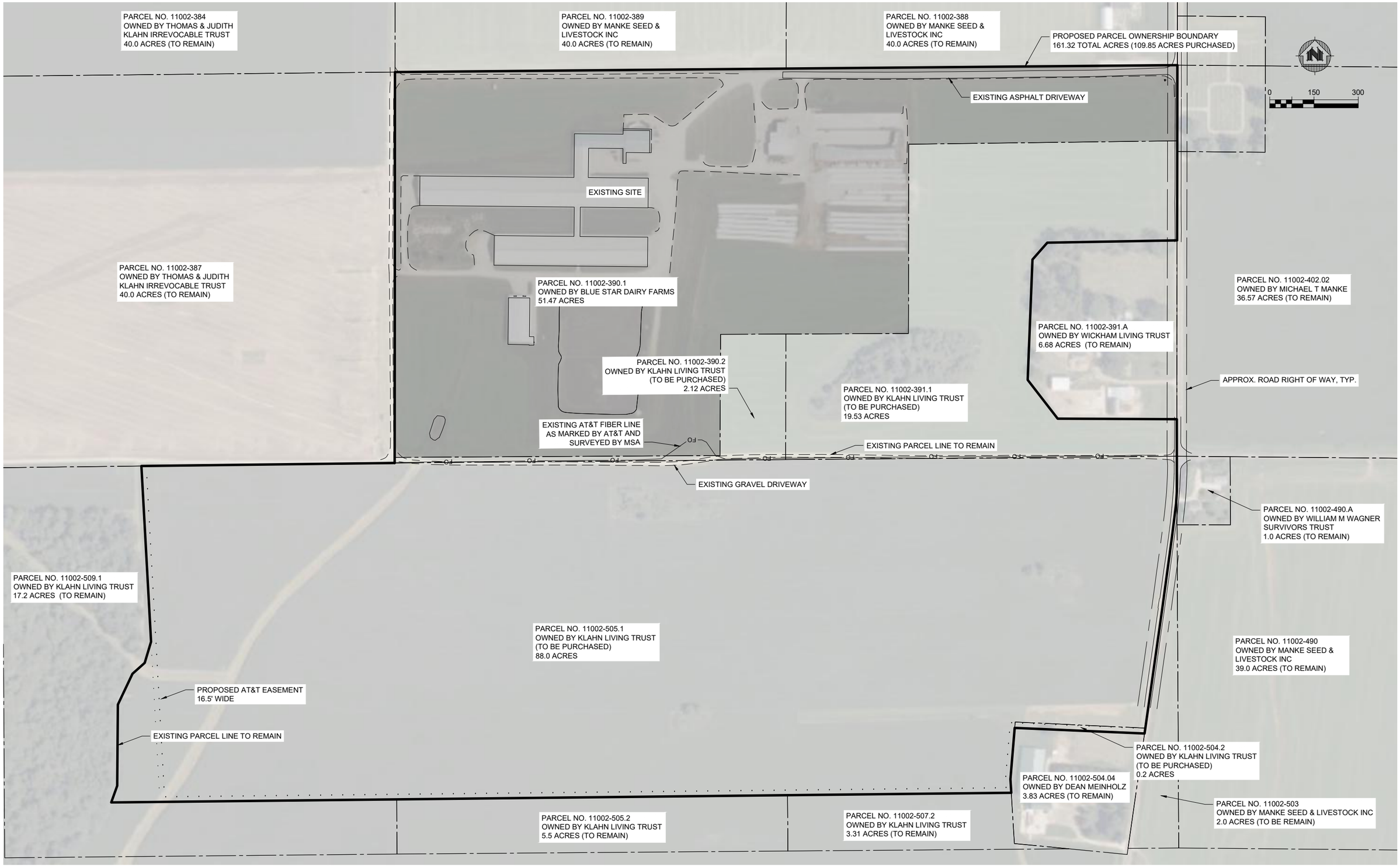
Perform Outfall Flow Duration Curve Calculations

Receiving Water Impacts Due To Stormwater Runoff

(CWP Impervious Cover Model)

	Calculated Rv	Approximate Urban Stream Classification
Without Controls	0.39	Poor
With Controls	0.39	Poor

Attachment 2



		NO.	DATE	REVISION	BY
PROJECT DATE: .	DRAWN BY: Init	.	.	PRELIMINARY	.
	DESIGNED BY: Init	.	.		.
	CHECKED BY: Init	.	.		.

PLOT DATE: 8/27/2025 5:06 PM, G:\08\08558\08558004\CADD\Construction Documents\Farmstead Planning\Exhibits\08558004 - BSD Grading Plan.dwg

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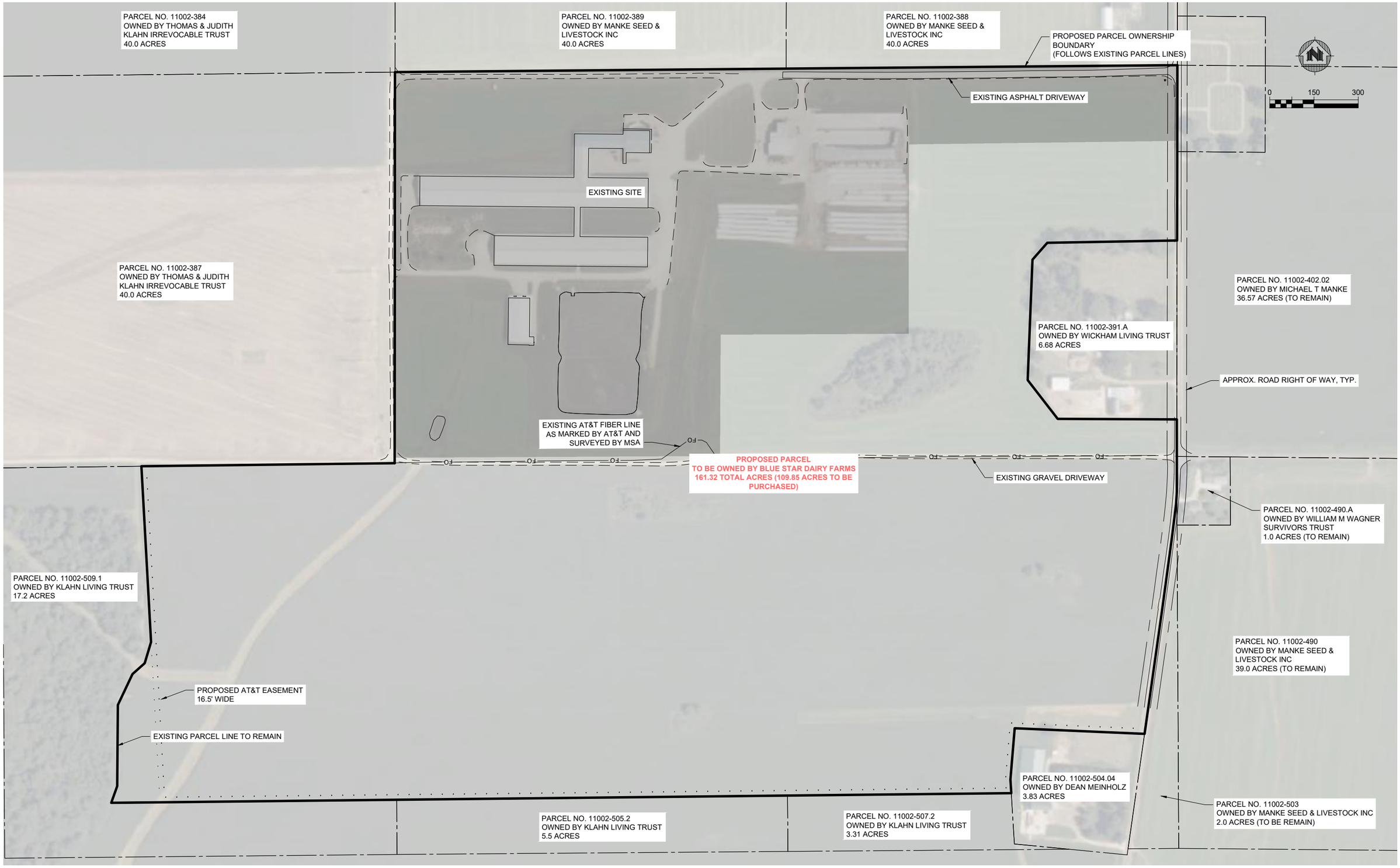
(608) 356-2771 www.msa-ps.com

BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
BLUE STAR DAIRY FARMS
TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Existing Parcel Exhibit

PROJECT NO. 08558004
SHEET ----



		NO.	DATE	REVISION	BY
PROJECT DATE: .	DRAWN BY: Init	.	.	PRELIMINARY	.
	DESIGNED BY: Init	.	.		.
	CHECKED BY: Init	.	.		.

PLOT DATE: 8/27/2025 5:06 PM, G:\08\08558\08558004\CADD\Construction Documents\Farmstead Planning\Exhibits\08558004 - BSD Grading Plan.dwg

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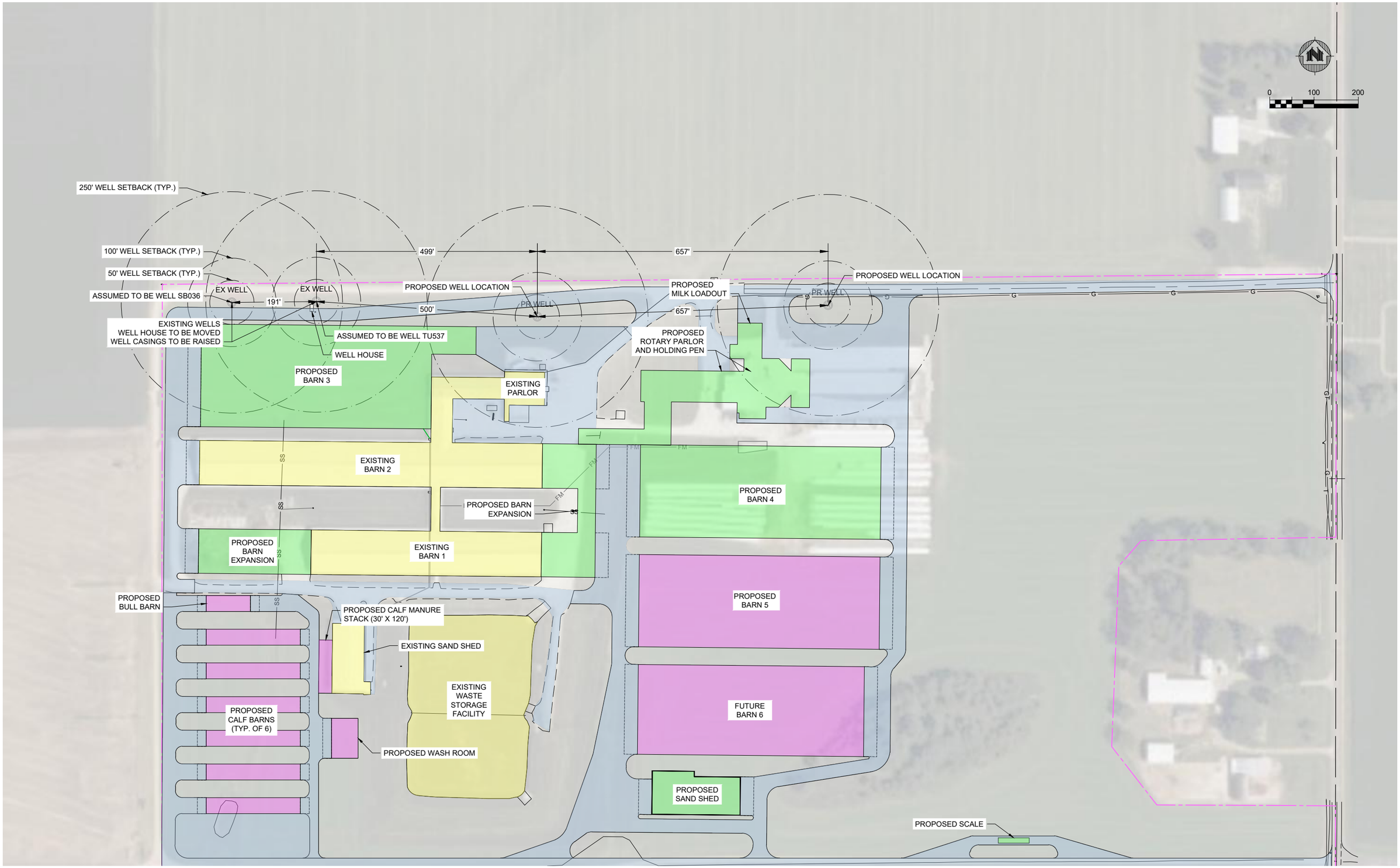
BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
BLUE STAR DAIRY FARMS
TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Proposed Parcel Exhibit

PROJECT NO. 08558004
SHEET ----

Attachment 3



		NO.	DATE	REVISION	BY
PROJECT DATE: .	DRAWN BY: Init	.	.	PRELIMINARY	.
	DESIGNED BY: Init	.	.		.
	CHECKED BY: Init	.	.		.

PLOT DATE: 8/24/2025 7:02 PM, G:\08\08558\08558004\CADD\Construction Documents\Farmstead Planning\Exhibits\08558004 - BSD Grading Plan.dwg

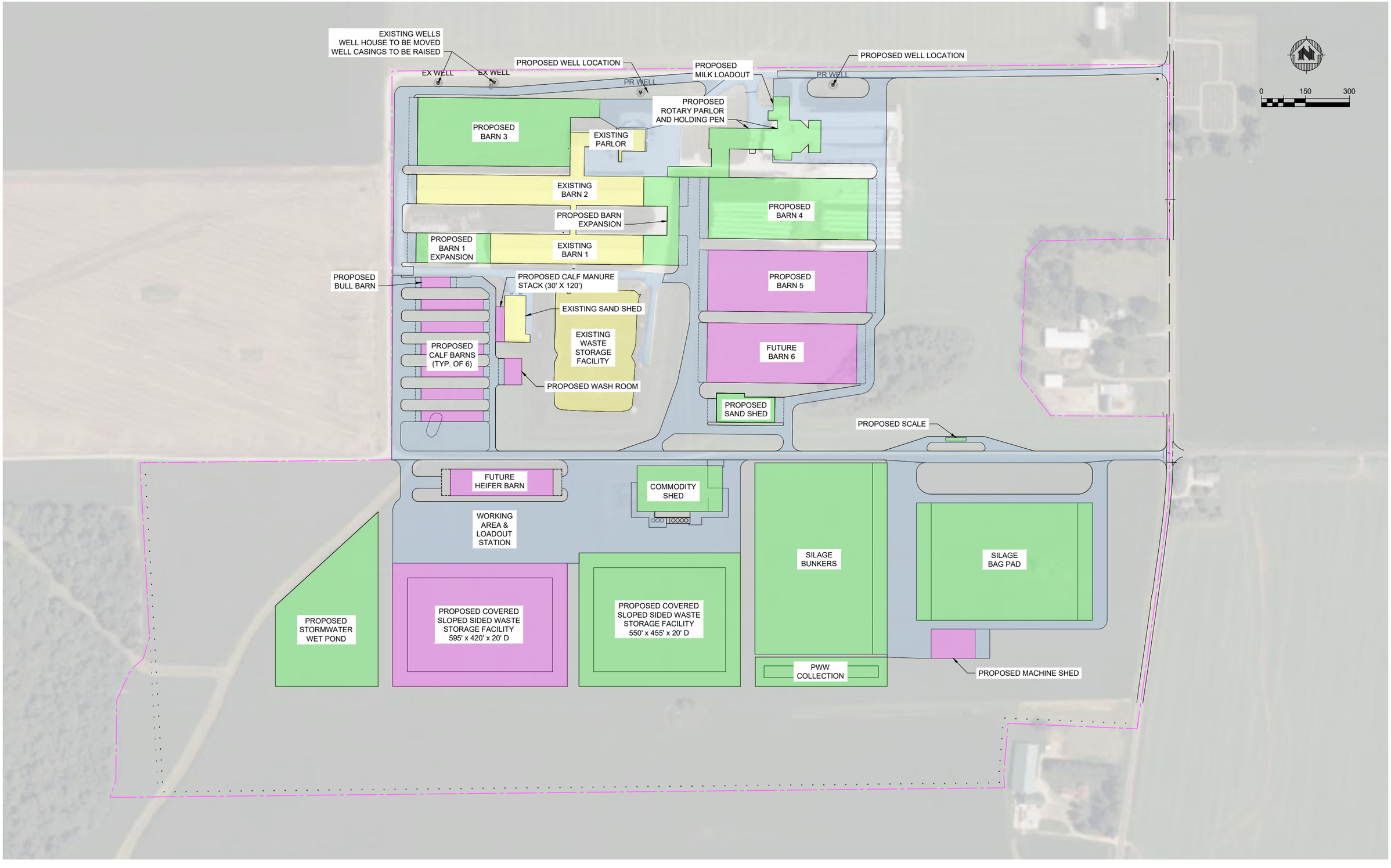
MSA
ENGINEERING | ARCHITECTURE | SURVEYING
FUNDING | PLANNING | ENVIRONMENTAL
1230 South Boulevard, Baraboo WI 53913
(608) 356-2771 www.msa-ps.com

BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
BLUE STAR DAIRY FARMS
TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Well Exhibit

PROJECT NO. 08558004
SHEET ----

Attachment 4



		NO.	DATE	REVISION	BY
PROJECT DATE: .	DRAWN BY: Init	.	.		.
	DESIGNED BY: Init	.	.		.
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PRELIMINARY

PLOT DATE: 8/22/2025 12:41 PM, G:\08\08558\08558004\CADD\Construction Documents\Farmstead Planning\Exhibits\08558004 - BSD Grading Plan.dwg

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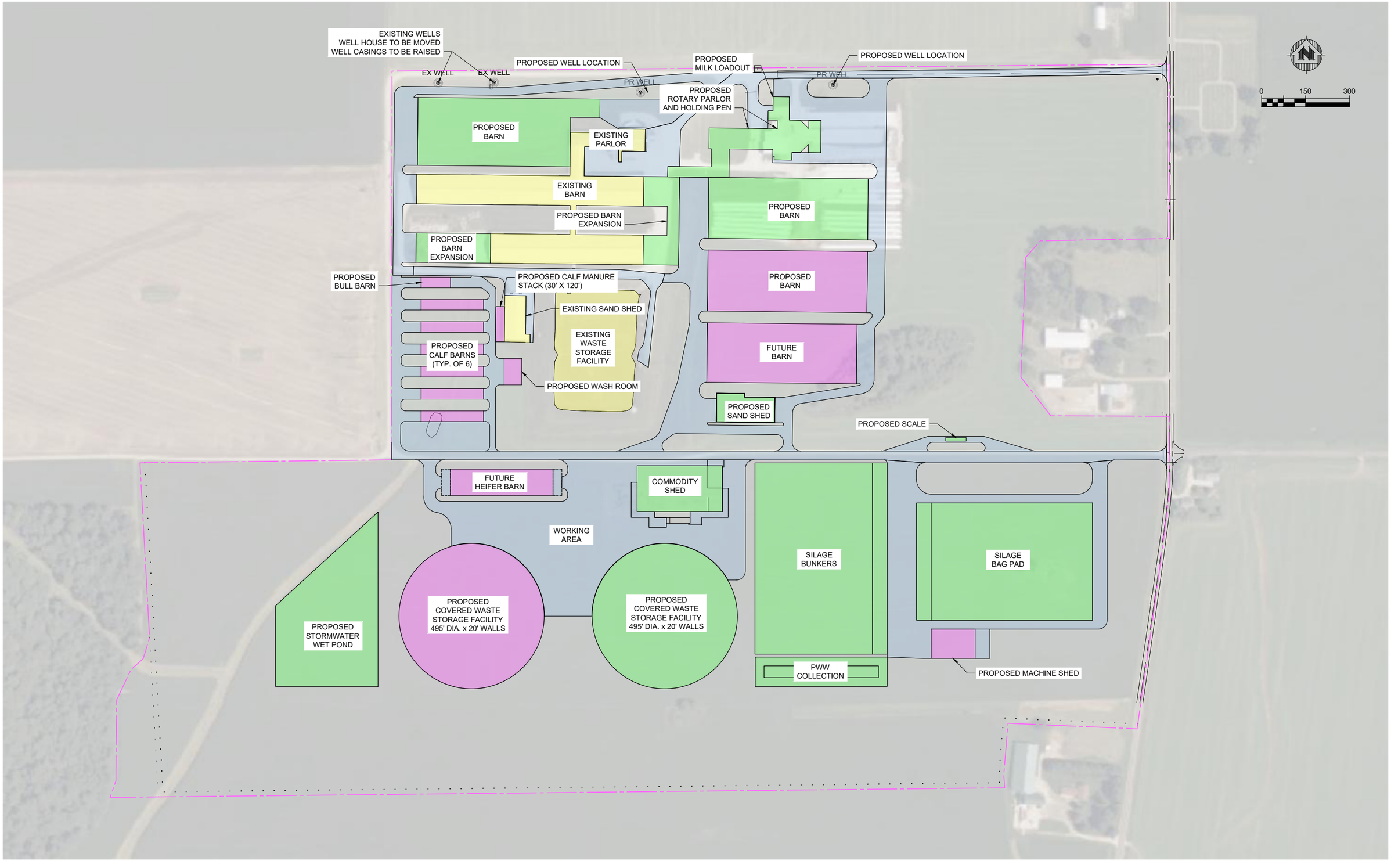
BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
BLUE STAR DAIRY FARMS
TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Updated Layout

PROJECT NO. 08558004

SHEET ----



		NO.	DATE	REVISION	BY
PROJECT DATE: .	DRAWN BY: Init	.	.	PRELIMINARY	.
	DESIGNED BY: Init	.	.		.
	CHECKED BY: Init	.	.		.

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BLUE STAR DAIRY FARMS - FARMSTEAD PLANNING
BLUE STAR DAIRY FARMS
TOWN OF ARLINGTON, COLUMBIA COUNTY, WISCONSIN

Updated Alt Site Layout

PROJECT NO. 08558004
SHEET ----