Preliminary Engineering Report

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Hornell Intermunicipal Sewer Evaluation
Preliminary Engineering Report

City of Hornell, Village of North Hornell, Town of Hornellsville

Steuben County, New York

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1. EXECUTIVE SUMMARY

Public sewer infrastructure in the Hornell region extends throughout the City of Hornell (City), Village of North Hornell (Village) and a portion of the Town of Hornellsville (Town). The sanitary collection system collects and conveys sanitary flow to a Water Pollution Control Plant (WPCP) owned and operated by the City. The system serves approximately 8,049 residents in the City, 780 residents in the Village, and 314 residents in the Town, while also serving a variety of commercial and institutional facilities and four (4) identified significant industrial users. The three municipalities have undertaken the present evaluation, with a scope including four pump stations north of the City, trunk lines north of the City, and four City pump stations, to assess existing conditions, determine recommended improvements, and establish an implementation plan.

The engineering evaluation documented in this Preliminary Engineering Report (PER) has identified numerous significant deficiencies including but not limited to: undersized wet wells, pumping equipment that is aging, in poor condition, and undersized, and main collection system trunk lines that have aged beyond their useful life and, in certain instances, lack capacity for design flows.

This PER presents full evaluation results and an alternatives analysis, identifies recommended improvements, and presents a suggested asset investment schedule, based upon estimated life-cycle costs (including existing debt service, capital costs, and operational, maintenance, and short-lived asset costs), to allow the communities to plan investments and maintain overall system viability.

Although an intermunicipal effort, alternatives were separated by ownership. After consideration of feasible alternatives to address the identified deficiencies, LaBella recommends the following alternatives:

- Town: Alternative 2.1 including replacement of three pump stations (new wet wells and pumping equipment) and replacement of aging trunk line piping.
- Village: Alternative 3.1 including replacement of one pump station (new wet well and pumping equipment) and lining of trunk main piping
- City: Alternative 4.1 including repair of four existing wet wells and replacement of aging pumping equipment

The municipalities initially anticipate submitting an application for project funding through the New York State Environmental Facilities Corporation (NYSEFC) Intermunicipal Grant (IMG) program. The opinion of probable cost to complete the recommended improvements is $16,782,000, assuming a construction midpoint of late 2028.

This PER is prepared in accordance with the New York State Engineering Facilities (NYS EFC) Engineering Report Outline for New York State Wastewater Infrastructure Projects, October 1, 2024. This PER is prepared, stamped, and signed by a qualified professional licensed to practice in New York State and was developed in accordance with the latest editions of the following standards where appropriate:

- Recommended Standards for Wastewater Facilities - Policies for the Design, Review, and Approval of Plans and Specifications for Wastewater Collection and Treatment Facilities (commonly known as the Ten States Standards);

- TR-16 Guides for the Design of Wastewater Treatment Works - New England Interstate Water Pollution Control Commission; and
- New York State Design Standards for Intermediate Sized Wastewater Treatment Systems Statewide and Lake George Design Standards.

2. PROJECT BACKGROUND AND HISTORY

The City of Hornell owns and operates an activated sludge Water Pollution Control Plant (WPCP). The WPCP and its collection system serve the City of Hornell the Village of North Hornell, and parts of the Town of Hornellsville. Additionally, four (4) significant industrial users (SIUs), HP Hood, UR. St James hospital, Stern & Stern, and Alstom Plant#1, discharge wastewater to the collection system for treatment at the WPCP.

The Hornell Intermunicipal Sewer Evaluation Study aims to evaluate a total of eight (8) sanitary sewer pump stations (PS) in the City, Town, and Village. The four (4) sanitary sewer pump stations located in the City of Hornell (Mays Ave PS, Madison Ave PS, Walmart PS, and Ice Haus Rd PS) will be assessed for their condition in accordance with Ten State Standards requirements. The four (4) sanitary sewer pump stations located in the Village (Seneca PS) and Town (Joe Jones PS, Industrial Park PS, and Bowling Alley PS) will be assessed for their current capacity and condition to receive and convey wastewater from the pump stations, forcemains between the pump stations, and the 12" asbestos cement pipe (ACP) main trunk line (including manholes) through the Village of North Hornell.

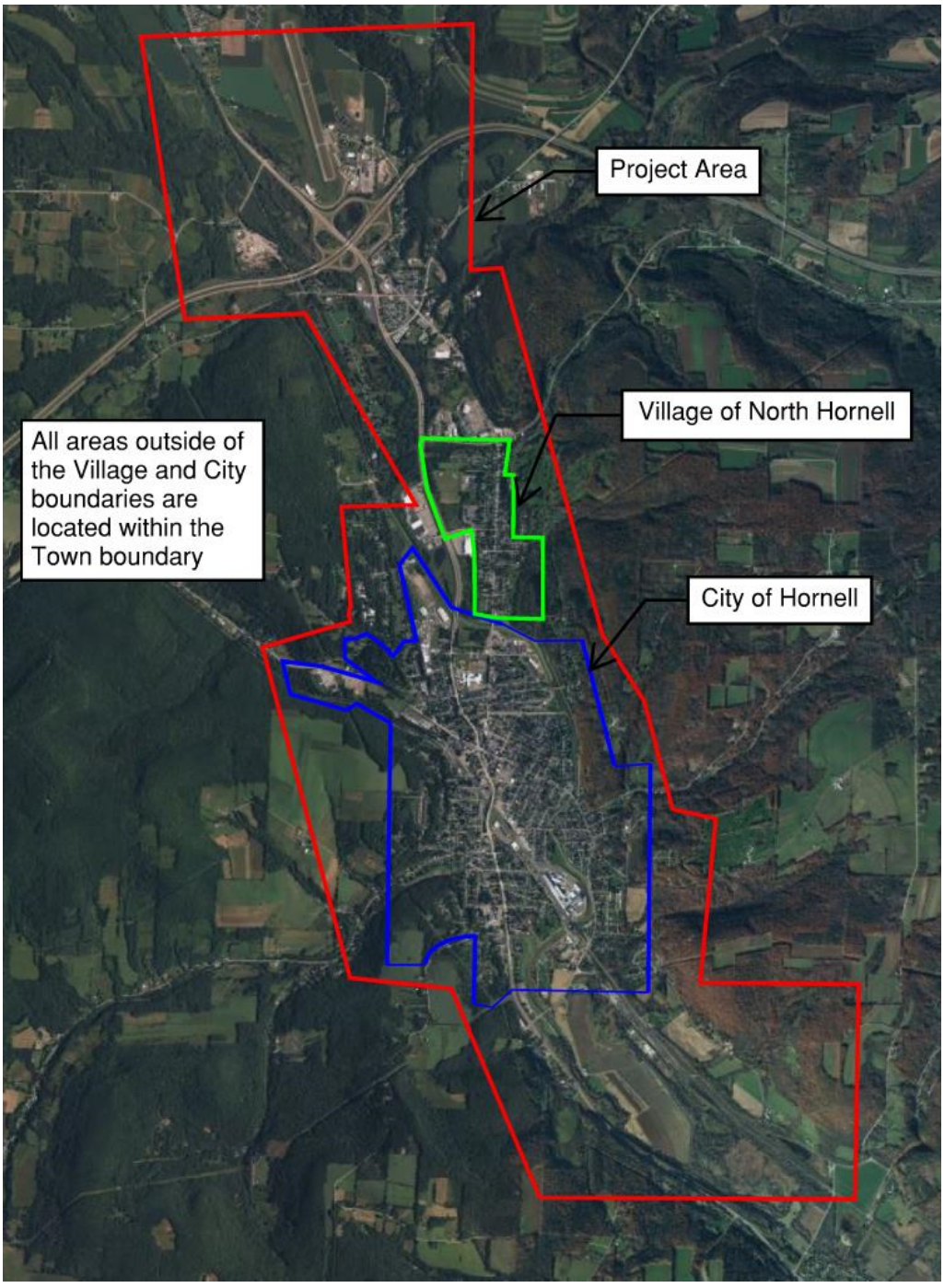
2.1 Site Information

2.1.1 Location

The City of Hornell, Village of North Hornell and Town of Hornellsville are located near the western border of Steuben County, bordering Allegany County. The four (4) identified SIUs are located within Steuben County. The City of Hornell is home to 8,049 residents (2023 census data), the Village of North Hornell is home to 780 residents (2022 New York State Office of the State Comptroller) and the Town of Hornellsville is home to 3,986 residents (2022 New York State Office of the State Comptroller), where only 314 persons within the Town are served by the WPCP (2023 annual water quality report).

The City of Hornell WPCP and collection system serves the City, Village, and parts of the Town. The City of Hornell WPCP is located at 69 Park Dr Hornell, NY 14843. A map representing the project area is presented in Figure 2.1. Based on review of the City of Hornell, Village of North Hornell, and Town of Hornellsville sewer maps, the project area includes the entire City, entire Village, and parts of the Town of Hornellsville that is located within a sewer system. Several maps representing the location and surrounding areas of the City of Hornell WPCP and the eight sanitary sewer pump stations are presented in Appendix A (Figure A-1, A-2, A-3 and A-4).

Figure 2.1–Project Area



2.1.2 Geologic Conditions

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey was utilized to identify geological conditions in the project sites. The table below provides predominant soil type, depth to bedrock and groundwater, and representative slope for soil systems compromising 3.3%-6.8% of the project site. Remaining soil systems, including a full web Soil Survey report, are provided in Appendix B (Figure B-1).

In general, the City, Village and Town soils have the following characteristics:

- Predominately a form of silt loam (Fremont, Volusia channery Schuyler, etc.) and a form of gravelly loam (Castille, Valois, Varysburg, etc.).
- Depth to bedrock varies, with some areas generally greater than 200cm
- Depth to groundwater varies, with some areas having groundwater depth exceeding 200cm
- Slopes range from flat to steep (0% to 70%)
- Some soil areas are susceptible to frequent flooding

Table 2-1:
USDA Soil Data

Soil Type	Depth to Bedrock (centimeters)	Depth to Groundwater (centimeters)	Slope (%)	Percent of Project Study Area
Fremont silt loam	>200	43	2 to 8	4.8
Mardin channery silt loam	66	61	8 to 15	6.8
Volusia channery silt loam	58	46	8 to 15	4.9
Mardin channery silt loam	66	61	15 to 25	3.7
Lordstown- Arnot complex, very steep, very rocky	>100	>200	15 to 60	3.3

2.1.3 Environmental Resources

2.1.3.1 Surface Waterbodies

Based on review of the New York State Department of Environmental Conservation (NYS DEC) Environmental Resource Mapper (Waterbody Inventory/ Priority Waterbodies List), Canisteo River, Middle and Minor Tribs, Canisteo River, Upper and Minor Tribs, Big Creek and Tribs, Canacadea Creek and Tribs and Seeley/Carrington Cr, Lower and Tribes are located within the vicinity of the project site. A description of each regulated waterbody, within the project site, is provided in Table 2-2. Appendix B (Figure B-2 through B-2E) which presents the mapping and fact sheets of each waterbody listed below. The City of Hornell WPCP is permitted to discharge to one outfall on Canisteo River. The current State Pollution Discharge Elimination System (SPDES) permit is provided in Appendix C (Figure C-1).

Table 2-2:
Surface Waters

Waterbody Name	PWL-ID	Drainage Basin	Waterbody Classification	Segment Type	Assessment Factor	Water Quality Criterion
Canisteo River, Middle, and Minor Tribs	0503-0001	Chemung River	C	Impaired Segment IR Category 4c	6	18
Canisteo River, Upper, and Minor Tribs	0503-0013	Chemung River	C	Needs Verification IR Category 3	3	9
Big Creek and Tribs	0503-0028	Chemung River	C	Needs Verification IR Category 3	3	9
Canacadea Creek, Lower, and Tribs	0503-0008	Chemung River	C	Needs Verification IR Category 3	3	9
Seeley/Carrington Cr, Lower and Tribes	0503-0029	Chemung River	C	Unassessed Segment IR Category 3	No Data Available	No Data Available

$$Water\ Quality\ Criterion = Classification\ Points\ Factor\ x\ Assessment\ Factor$$

$$WQC = CPF\ x\ AS$$

Where:

Classification Points Factor	
8	*A, A-Special, A(T), A(TS), AA, AA-Special, AA(T), AA(TS), SA, GA), GSA*
6	*B, SB, C(T), C (TS)*
3	*C, SC, I*
2	*D, SD, GSB*
1	*Impact on resource which have important environmental quality impacts such as odor, sludge disposal, sewer maintenance equipment, etc*

And where:

Assessment Factor	
6	*Impaired/Restricted: Water quality standards are not attained and best use(s) are not supported.*
3	*Stressed/Impacted: Water quality standards are attained but data or information indicate a potential impact to best use(s).*
1	*None: Water quality standards are attained and best use(s) are supported.*

2.1.3.2 Wetlands

A search of the NYSDEC Environmental Resource Mapper on February 2, 2025, determined that there are State regulated and Federally regulated wetlands located on or in the vicinity of the project area. The wetlands within the project area consist of Freshwater Emergent Wetland, Freshwater Forested/Shrub Wetland, Previously Mapped Freshwater Wetlands (outside of the Adirondack Park), Freshwater Pond and Riverine. Appendix B (Figure B-3) presents the Wetland mapping of the project area.

2.1.3.3 Aquifer Designation

The project area is not located on or within proximity to a Sole Source Aquifer as defined by the United States Environmental Protection Agency (USEPA). Appendix B (Figure B-4) presents Sole Source Aquifer mapping of the project area.

The project area is located within a Principal Aquifer as defined by the United States Geological Survey (USGS). Appendix B (Figure B-5) presents Principal Aquifer mapping of the project area.

2.1.3.4 Listed Threatened and Endangered Species

A search was performed on the US Fish and Wildlife Service Information for Planning and Consultation (IPaC) on February 4, 2025, and determined that the project area includes Northern Long-eared bat listed as endangered, Tricolored Bat which is proposed as endangered, Green Floater (clams) which is proposed as threatened, and Monarch Butterfly which is proposed as threatened. A full report and mapping of the listed endangered or threatened species is provided in Appendix B (FigureB-6). The NYSDEC Environmental Resource Mapper (Appendix B, Figure B-7) indicates that animals listed as endangered are located South of the project area, within the vicinity of the City of Hornell. The proposed construction activities, for this project, will consider the impacts to the identified endangered and/or threatened species prior to mobilization.

2.1.4 Environmental Justice and Disadvantaged Communities

Environmental Justice is the fair and meaningful treatment of all people, regardless of race, income, national origin or color, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Commissioner Policy 29 provides guidance for incorporating environmental justice into review and identifies potential environmental justice areas. A Potential Environmental Justice Area means a minority or low-income community that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The project's water service area (within the City of Hornell) does include DEC defined Potential Environmental Justice Areas (Table 2-3).

Table 2-3: Environmental Justice Areas			
Census Block Group	**Percentage Below Poverty Level**	**Percentage Minority Population**	**Rural/Urban**
361019608002	34.81	2.12	Urban
361019608004	34.02	14.75	Urban
361019609003	37.58	7.91	Urban
361019609001	23.12	5.64	Urban
361019607004	39.96	2.25	Urban

The project area is not within a NYS Draft Disadvantaged Community, disadvantaged communities (DACs) are often overlooked in climate policy initiatives and to ensure they directly benefit from the State's historic transition to cleaner, greener sources of energy, reduced pollution and cleaner air, and economic opportunities.

2.1.5 Floodplains Consideration

According to the National Flood Insurance Program Flood Insurance Rate Map (FIRM) for the City of Hornell, Village of North Hornell and the Town of Hornellsville New York, community Panel Number 360777 0010B and 360777 0020B, effective date July 16, 1980, the project could involve construction within Flood Zones B, C, A4, A6 and A7. A map providing the location of each flood zone, within the project area, and a description is provided in Appendix B (Figures B10.1 and B10.2). Generally, parts of the Town of Hornellsville is located in areas of 100-year flood (base flood elevations and flood hazard factors are determined), The Village of North Hornell is located in areas between 100- year to 500- year flood, and the City of Hornell is located in areas of 100-year flood, areas between 100-year to 500-year flood, and areas of minimal flooding. This project will consider flood protection requirements, at each pump station, within the 100-year flood zone.

2.2 Ownership and Service Area

Table 2-4 provides a summary of ownership, service area, and maintenance responsibilities for the City, Town, and Villages collection systems and pump stations. Both the Town and Village collection systems are registered with the New York State Department of Environment Conservation (NYSDEC) Publicly Owned Sewer System (POSS). Appendix A (Figures A-1, A-2, A-3 and A-4) presents aerial maps of the location and surrounding area of the Hornell WPCP, and the eight pump stations evaluated in this study.

Table 2-4:
Ownership and Service Area

Community	SPDES or POSS Number	Collection System Ownership and Maintenance	Pump Station Ownership and Maintenance
City of Hornell	SPDES No.: NY0023647	• City owns and maintains its WPCP and collection system	• City owns and maintains its pump stations (Total of 5 in the City, 4 considered in this evaluation) • Four (4) Pump stations considered for this evaluation are as follows: Mays Ave PS, Madison Ave PS, Walmart PS and Ice Haus Rd PS
Village of North Hornell	POSS No.: NYS800060	• Village owns and maintains its collection system	• Village owns and maintains its pump station (Seneca PS)
Town of Hornellsville	POSS No.: NYS800059	• Town owns its collection system • City maintains Town collection system through Intermunicipal Agreement (IMA) and Operation and maintenance agreement (O&M)	• Town owns its pump stations (Joe Jones PS, Industrial Park PS and Bowling Alley PS) in the Town • City maintains Town pump stations through IMA and O&M

2.2.1 City of Hornell Sewer System Management

City Code, Chapter 184 sewer systems, includes legislation through December 18, 2023, and as amended as needed and to date, in order that the sewer system may be properly maintained, improved and extended, primarily for the benefit of the users and taxpayers within the service area. Under the code, the City Department of Public Works has control and manages the sewer, or system of sewers, in public places within the City of Hornell. The City code can be accessed at the Municipal office and online. The WPCP and sewer system is operated by the City Sewer Department; the management team is provided in Table 2-5.

Table 2-5: Certifications of Wastewater Operators		
Title	**Name**	**Certification Level**
Mayor	John Buckley	N/A
Chief Operator	Richard Dunning	4A
Operator	Robert McLaughlin	4A

2.2.2 Village of North Hornell Sewer System Management

Village Code, Chapter 96 sewer, was adopted by the Board of Trustees and enacted in November 1970 and as amended as needed and to date, in order that the sewer system may be properly maintained, improved and extended, primarily for the benefit of the users and taxpayers within the service area. The Village code can be accessed at the Village Department of Public Works and online. The sewer system is operated by the Village Department of Public Works; the management team is provided in Table 2-6.

Table 2-6: Sewer System Management Team		
Title	**Name**	**Certification Level**
Mayor	Joe Ingalls	N/A
Superintendent of Public Works	Charles Harrison	N/A
Trustee	Joe Flint	N/A

2.2.3 Town of Hornellsville Sewer System Management

The Town of Hornellsville does not hold its own Town codes for sewer system management. According to Town officials, the Town follows the City or Hornell's sewer system code as the City maintains the Town of Hornellsville sewer system and pump stations.

2.2.4 Sewer District Boundaries

The City of Hornell, Village of North Hornell, and Town of Hornellsville have separate sewer districts. The City of Hornell's sewer district, within the City boundaries, includes residential district (R1, R-2, and R-3), business district (B-1, and B-2) and Industrial district (I-1 and I-2). The Village of North Hornell sewer district, within the Village boundary, includes residential district (R) and commercial district (C). The Town of Hornellsville sewer district, within the Town boundary, includes business district (B-1 and B-2), residential district (R-1A, R-1B and R-3) and industrial district (I-1 and I-2). Figure 2.2, in section 2.1 of this report, presents the City, Town and Village municipal boundaries within the project area.

The City, Village and Town sewage is conveyed to the City WPCP. An Intermunicipal Agreement (IMA) between the City and Village, and an IMA and operation and maintenance (O&M) agreement between the City and Town is provided in Appendix C (Figure C-2 and Figure C-3). A summary of the City and Village, and the City and Town agreements are provided in Table 2-7 and Table 2-8.

Table 2-7:
Intermunicipal Agreement between the City of Hornell and Village of North Hornell

Item	City Responsibilities	Village Responsibilities
Execution Date	**2016 (originally executed in 1976; extended in 2007 and 2016)**	
Expiration Date	**2031**	
Treatment	• City treats Village wastewater at no cost, subject to limitations. • City responsible for maintaining and keeping the WPCP in good operating condition	• Village to pay City $0.20 per one thousand gallons of wastewater treated over and above 50 million gallons per year for the first 5 years. • Charge subject to renegotiation every 5 years.
Metering	• City responsible for installing, maintaining and operating the flow meter at the Southern terminus of Village sewer line. • Meter readings to be available to Village upon request.	• Village to maintain meter recording located at Village Pump station. • Meter readings to be available to City upon request
Public Health & Nuisance	• City to control odors from industrial parks or other sources	• Village to do due diligence in preventing discharge of waste dangerous to the public health.
Maintenance and Repair	• City to replace 1 pump at the Village pump station if average daily flow approaches 600,000 GPD for any one-year period • City to replace second pump at Village pump station if the average daily flow approaches 800,000 GPD for any one-year period. • City responsible for repairs of meter at Southern terminus of Village sewer line.	• Village is responsible to repair any ruptures or broken sewer lines within the Village. • Village responsible for meter repairs at Village Pump station.
Shared Responsibility for forcemain repair/replacement	• In the event repairs or modifications are needed to the intercepting sewer line, pump station or forcemain of the Village in excess of $1,000, then repairs or modifications will be shared by the City and Village in proportion to flows from the Village and from sources outside the Village % Flows from the Village – Village responsibility: 9.9% (2023-2024 PS data) % Flow from outside the Village – City responsibility: 90.1% (2023-2024 PS data)	

Limitations	• City to withhold flow to Village sewer interceptor line if peak flows reach 1,250,000 GPD. If peak flow is reached, flows outside the Village are not permitted to enter the interceptor sewer line.	

Table 2-8:
Intermunicipal Agreement between the City of Hornell and Town of Hornellsville

Item	City of Hornell Responsibilities	Town of Hornellsville Responsibilities
Execution Date	**2001**	
Expiration Date	**2026**	
Cost responsibilities	• City to charge the Town no more than 150% of the rate charged for water and sewer services in the City. • City waives the right to collect separate capital contribution for water and sewer districts formed in the future. • City waives the right to collect costs of treatment plant upgrades other than normal rates or assessments.	• Town to reimburse City for any individual water or sewer bills unpaid by any user for a period excess 60 days. • Town is responsible for costs of any improvements or extensions of the water and sewer systems in the Town, including replacement of damaged or deteriorated lines.
Ownership	• City owns and controls all water and sewer systems within the City and assumes all costs of repairs and replacement.	• Town to regulate water and sewage systems in accordance with all applicable laws and regulations. • Town is responsible for obtaining approvals, resolutions and required permits.
Operation, Maintenance and Repair	• City is responsible for repairing and replacing pumps or pump stations within the Town. Annual fees are included in Town costs.	• Town is responsible for operation, maintenance and repair of the sewage and water collection system within the Town. (This is contracted out to the City)
Water and Sewer Service capacity	• City is not liable for any interruption in the receipt of water or sewer services due to nature, strikes, or other labor disputes, mechanical breakdown, or events beyond the control of the City. • City not liable for any broken water or sewer lines, flooding, roily water, or other reasonable failure to supply water.	• If at any point the water or sewer system cannot handle capacity at the closest connection point from City to Town, Town is responsible for installation of pipelines and appurtenances to connect to the City lines that can handle additional capacity.
Monitoring authorized and unauthorized discharges		• Town requires all connections to have water meters. • Town to monitor and control all authorized and unauthorized use of water and sewer service within the Town. • If prohibited discharge from the City causes damage to the City WPCP or pipelines, Town will pay for repairs.
Additional Connections		• Town prohibited to sell water outside the Town without written permission from City.

		• If the Town obtains additional commercial or industrial facilities, Town will pay City additional 25% of real property tax liability for each new addition.

2.2.5 Industrial Discharges and Hauled Waste

The City of Hornell WPCP currently receives industrial discharge from three of the four (4) identified SIUs: HP Hood (Permitted Maximum Monthly Average of 330,000 Gallons per day (GPD), Ur. St James Hospital (Permitted Maximum Monthly Average of 75,000 GPD), and Stern and Stern (Permitted Maximum Monthly Average of 53,000 GPD). At present, given variations in production cycles, Alstom Plant 1 (Permitted Maximum Monthly Average of 15,000 GPD) is not discharging any industrial waste to the collection system. The SIUs each hold a permit from the City and are monitored through a mini-industrial pretreatment program, under the City of Hornell WPCP SPDES Permit. A copy of each SIU permit is provided in Appendix C (Figures C-4, C-5 C-6 and C-7).

Historically, the WPCP has not accepted septage due to WPCP bar screen operational issues. The WPCP has replaced the bar screen and accepts approximately 3,000 gallons of septage per week from Butler excavation and concrete company, since Fall of 2024. According to Article 8 section 801 of the City of Hornell Sewer Use law (Appendix C-8), discharge of trucked or hauled waste into the City's sewer system requires written approval (licensure) from the City of Hornell's superintendent. The discharge location of the septage, at the WPCP, will be subject to the day of week, season, and time of day and is at the discretion of the superintendent.

2.2.6 Population Growth Trends

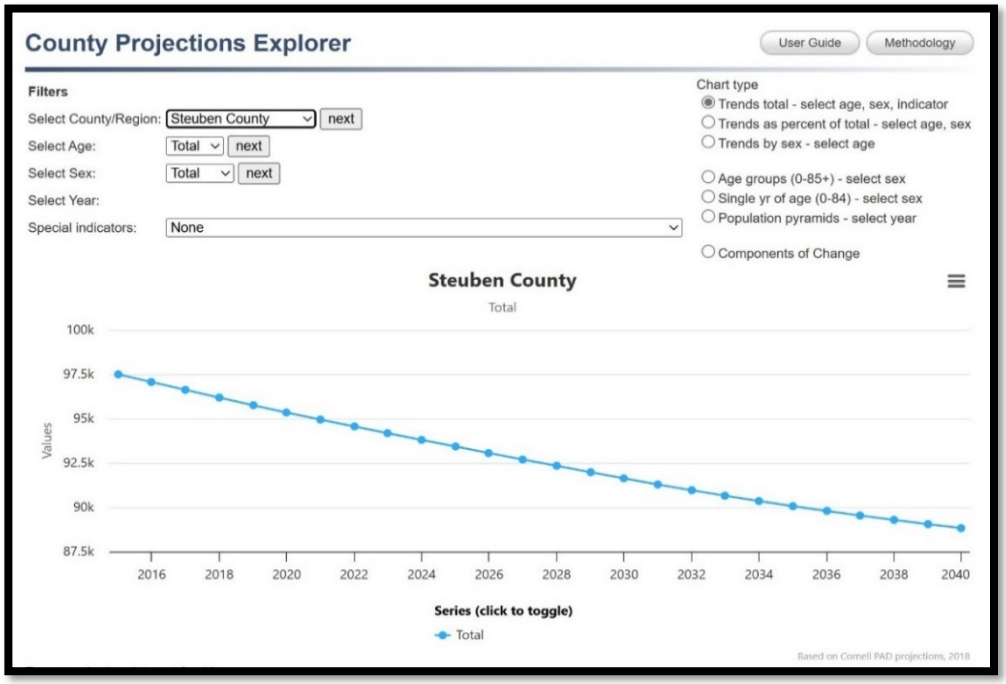
Table 2-9 presents the population growth and/or decline for the City of Hornell, Village of North Hornell and the Town of Hornellsville for the year 2000, 2010, and 2022. From the year 2010 to 2022, the City's population declined by 5.5%, the Village's population increased by 0.25% and the Town's population declined by 4%. According to the Cornell University County Projections Explorer (projections are included up to the year 2040), Steuben County's population is expected to continue to decline, as shown in Figure 2.2. Despite the population decline shown for the City and Town, and the projected population decline in Steuben County, it is not recommended to reduce the WPCP capacity, nor collection system capacity.

HP Hood, a significant industrial user discharging to the collection system, is currently permitted to discharge a Maximum Monthly Average of 330,000 GPD to the collection system. As discussed in Section 2.3.4, HP Hood officials have indicated planned expansion of its industry in the next 30 years, with a projected increase in daily discharge to the collection system to 600,000 GPD. Please refer to Section 2.3.4 for further discussion.

Table 2-9: Population Data				
	City of Hornell	**Village of North Hornell**	**Town of Hornellsville**	**Overall**
Year 2000	9,019[1]	851[1]	4,042[1]	13,912
Year 2010	8,563[2]	778[2]	4,151[2]	13,492
Year 2022	8,093[3]	780[3]	3,986[3]	12,859
Change since 2010	-470	+2	-165	-633
%Change since 2010	-5.5%	+0.25%	-4.0%	-4.7%

[1]2000 Census of Population and Housing (phc-2-34); issued September 2003
[2]2010 Census of Population and Housing (cph-2-34); issued June 2012
[3]2022 Office of New York State Comptroller

Figure 2.2–Steuben County Population Projection



2.2.7 Services and Debt Responsibility

The sewer service area consists of approximately 3,897 total active residential service connections between the City, Village and Town. The number of Equivalent Dwelling Units (EDUs) that will pay debt service for a project is determined to adequately assess a project. Table 2-10 provides a breakdown of the type of use. To calculate equivalent dwelling units

(EDUs) served by the collection system for residential and commercial properties, the tax parcel assessor was used to identify parcels within each municipality served by the City WPCP. the 2023 WPCP Flow data, and Ten State Standards. DEC fast reports for SIUs were used to determine the average daily SIU flows. The EDU calculation summarized below is as accurate as possible given available records from each municipality. Further coordination with each municipality's officials is recommended. Please note the following:

- Town tax assessor roles provide a number of units which correspond with EDUs. Certain properties, which appear to be exempt (e.g. a school), introduces uncertainty as they are assigned a unit of zero. In these cases, sanitary discharge was estimated.
- Village documentation includes class code information but not taxable units. Additionally, public services categories are challenging to estimate given the information available. Where necessary, sanitary discharge was estimated.
- City documentation includes certain categories (e.g. "Res Multiple" and "Apartments") that are known to include multiple units, but no exact value is given. Discharge data from commercial users is also lacking. Where necessary, sanitary discharge was estimated.

Table 2-10:
Service Type and Flow

Description	Value	Units
(1) Total City Residential EDUs	3,708	EDU
(2) Total Village Residential EDUs	340	EDU
(3) Total Town Residential EDUs	260	EDU
(4) City Residential Flow	797,220	GPD
(5) Town Residential Flow	58,760	GPD
(6) Village Residential Flow	73,440	GPD
(7) Total City Commercial/Institutional EDUs	1,671	EDU
(8) Total Town Commercial/Institutional EDUs	287	EDU
(9) Total Village Commercial/Institutional EDUs	53	EDU
(10) Total City Commercial/Institutional Flow	359,331	GPD
(11) Total Town Commercial/Institutional Flow	78,380	GPD
(12) Total Village Commercial/Institutional Flow	11,444	GPD
(13) Total City Vacant EDUs	263	EDU
(14) Total Town Vacant EDUs	14	EDU

(15) Total Village Vacant EDUs	41	EDU
(13) Total Significant Industrial Flow	346,000	GPD
(14) Total Significant Industrial User EDUs	1,582	EDU
(15) Total System EDUs	**8,219**	**EDU**

The sewer system is comprised of residential users, commercial/institutional users, industrial users, and vacant lots. There are a total of 4,308 residential EDUs, 318 vacant EDUs, 1,582 industrial EDUs and 2,011 commercial/institutional EDUs. **The total number of EDUs served by the collection system is 8,219 EDUs.**

Table 2-11 presents City Sewer Rates. Sewer rates vary for customers inside the City and outside of the City. Residential, commercial/institutional, and industrial facilities are billed quarterly. Per the City and Village IMA, the Village of North Hornell is not billed for sewer usage from the City. The Village of North Hornell bills its residents and commercial properties (nursing facility, doctor offices, grade schools, real estate agencies, insurance agency, and beauty salons) directly. Table 2-12 presents the Villages sewer rates.

Table 2-11:
City of Hornell Quarterly Sewer Rates

Inside the City of Hornell	Outside the City of Hornell
0-20,000 gallons = $12	0-10,000 gallons = $36
20,001 gallons & above = $0.54 per thousand gallons	10,001 - 50,000 = $3.6 per thousand gallons
----------	50,001 gallons & above =$2.16 per thousand gallons

Table 2-12:
Village of North Hornell Quarterly Sewer Rates

Village Residents	Commercial Properties
Homeowners are billed $35	Hospital or nursing facility: Each ¼ hospital bed= 1 unit
Vacant parcel with access to sewer hookup are billed $11.66	School: Each 15 pupils and/or staff= 1 unit
	All other businesses are billed $35

2.3 Existing Facilities and Present Condition

The Town of Hornellsville, Village of North Hornell, and City of Hornell collection systems consist of multiple wet well mounted pump stations, associated forcemains, and gravity sewers. Much of the collection system infrastructure was installed within the late 20th century to early 21st century. Recent performance indicates that the infrastructure may not be able to effectively withstand residential and industrial capacity development. In particular, the potential for industrial growth from the City's largest industrial user, HP Hood, is not possible without repair and replacement to pump stations and piping that convey flow from HP Hood. These pump stations include the three pump stations in the Town of Hornellsville (Joe Jones, Industrial Park, Bowling Alley) and the sole pump station in the Village of North Hornell (Seneca Street). Joe Jones is the Northernmost of these pump stations and directly receives all flow from HP Hood. See Appendix A for a map of the collection system infrastructure described within this section.

Table 2-13:
Existing Conditions

Pump Station	Original Design Flow (GPM@ ft. of TDH)	Type	Manufacturer	Pumps Model No.	Existing Average Flow (GPM)	Existing Wet Well Size (ft)	Installed
Joe Jones (Town)	Two pumps, each 350@21	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc.	4B2X	229	I.D= 4' Depth= 21'	2002
Industrial Park (Town)	Two pumps, each 490@26	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B2B	233	I.D= 6' Depth= 21'	1999
Bowling Alley (Town)	Two pumps, each 550@40	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B3B	246	I.D= 6' Depth= 21'	1996
Seneca St (Village)	Two pumps, each 900@56	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	6C3B	367	Unknown	2001
Walmart (City)	Two pumps, each 275@19	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B2B	Unknown	I.D= 6' Depth= 21'	1994
Madison Ave (City)	Two pumps, each 60@16	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B2B	Unknown	I.D= 5' Depth= 21'	1979
Mays Ave (City)	Two pumps, each 315@22	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B2B	Unknown	I.D= 5' Depth= 19'	1993
Ice Haus Road (City)	Two pumps, each 200@34.5	Standard Duplex Wet Well Mounted	Smith & Loveless, Inc	4B2X	Unknown	I.D= 5' Depth= 21'	2004

Pumpstation equipment was originally designed to convey the flows stated above. However due to aging infrastructure, the pump stations currently convey significantly less than their respective design capacities. For example, in February 2025, a drawdown test at the Joe Jones PS indicated that the current PS could pump only 150 GPM, less than half of its design capacity.

On February 28, 2025, LaBella Associates assessed the conditions of all eight (8) pump stations. Photos of the condition of each pump station are provided in Appendix D (Figures D-1 to D-8). Because the Town and Village wet wells require replacement to provide sufficient hydraulic capacity (see Section 2.3.10), evaluation of existing wet well condition focused on existing City pump station wet wells. The following structural observations were noted for the existing wet well conditions at each pump station in the City:

May's Ave Wet well:

- The surface of the concrete wet well is in good condition.
- There is minor corrosion of the steel at the top of the well.
- The outside of the steel ring may be re-painted (at grade level) and all steel around cap and equipment skid.

Madison Ave Wet well:

- Has moderate corrosion of the steel at the top of the well.
- The precast roof cap of the building needs to be completely replaced
- It appears that there is debris and scale covering the inside of the concrete surface.

Walmart Wet Well:

- The surface of the concrete well appears to be in good condition.
- It appears that at least one of the embedded steel ladder rungs at the bottom of the wet well is missing.
- The steel cover requires rust removal and re-painting.

Ice Haus Wet Well:

- The surface of the concrete wet well appears to be in good condition.
- No deficiencies noted.

2.3.1 Current or Future Projects on the Same Site

I. Current Work:

- City of Hornell WPCP Improvements Phase 1B: Upgrading raw sewage pumps and sludge return pumps, implementing a variety of other improvements at the WPCP.
- City of Hornell Phosphorous Removal System Optimization: City is working to optimize the WPCP's existing phosphorous removal process to improve removal efficiency.
- City of Hornell Whole Effluent Toxicity: In coordination with NYSDEC, City developed a Toxicity Identification/Reduction Evaluation (TI/RE) procedure and has been working to understand sources of toxicity to prevent WPCP passthrough and discharge of toxicity to Canisteo River.

I. Potential Future Projects:

- City of Hornell WPCP improvements recommended in recent preliminary engineering reports include upgrades related to primary clarification, high-strength waste receiving, anaerobic digestion, grit removal, dewatering and sludge storage, and WPCP building systems upgrades. The City anticipates

advancing portions of this work as project funding (including grants and loans) become available.

- City of Hornell WPCP Sludge Dewatering and Disposal Evaluation – City is considering applying for a NYSEFC Engineering Planning Grant to fund a technical evaluation of existing sludge dewatering and disposal methods, with the goal of identifying improvements recommended and a long-term strategy.

2.3.2 State Pollution Discharge Elimination System (SPDES) Permit

The City of Hornell owns and operates its WPCP and POSS under SPDES Permit No. NY0023647, in compliance with applicable regulatory requirements. An abridged version of the SPDES Permit is provided in Table 2-14. Appendix C-1 provides the full SPDES permit.

Table 2-14:
SPDES Permit (effective on 11/2/2021, latest modification issued on 5/1/2023)

Parameter	Effluent Limit Jun. 1 – Oct. 31	Effluent Limit Nov. 1 – May 31	Type
pH (SU)	6.0 – 9.0		Range
Dissolved Oxygen (mg/L)	7.0		Daily Minimum
BOD_5 (mg/L) BOD_5 (lb/d)	11 370	30 1000	7-day Average
TSS (mg/L) TSS (lb/d)	30 1000		Monthly Average
TSS (mg/L) TSS (lb/d)	45 1500		7-day Average
Settleable Solids (mL/L)	0.1		Daily Maximum
Ammonia (as N) (mg/L) Ammonia (as N) (lb/d)	1.5 50	4.2 140	Monthly Average
Total Nitrogen (as N) (lb /yr)	117,000		12 Month Rolling Load
Total Phosphorus (as P) (mg/L)	0.5		Monthly Average
Total Phosphorus (as P) (lb/yr)	6,088		12 Month Rolling Load
Mercury (ng/L)	50		Daily Maximum
Mercury (ng/L)	12		12 MRA
Coliform, Fecal (No./ 100 mL)	200		30-Day Geometric Mean
Coliform, Fecal (No./ 100 mL)	400		7-Day Geometric Mean
Total Residual Chlorine (mg/L)	0.03		Daily Maximum

Footnotes:

- Effluent shall not exceed 15% of influent concentration values for CBOD5 & TSS.
- Total Nitrogen (as N) = [Total Kjeldahl Nitrogen (TKN), as N] + [Nitrite (NO_2), as N] + [Nitrate (NO_3), as N].
- Total Nitrogen (as N), 12-month rolling load (lb/yr) is calculated as the current month load added to the month loads from the previous eleven months.
- Total Phosphorus (as P), 12-month rolling load (lb/yr) is calculated as the current month load added to the month loads from the previous eleven months.
- Quarterly samples shall be reported as calendar quarters (Q1 – January 1st to March 31st; Q2 – April 1st to June 30th; Q3 – July 1st to September 30th; Q4 – October 1st to December 31st).
- Reporting for Total Residual Chlorine is only applicable if chlorine is used for disinfection, elsewhere in the treatment process, or the facility otherwise has reasonable potential to discharge chlorine.

Publicly Owned Sewer System (POSS) Identification Number: NY80060

2.3.3 Compliance Issues

City, Village and Town have not recently received, and are not currently under, any consent orders, notices of violation, judicial orders, or EPA orders, as related to the sanitary collection system.

2.3.4 Design Parameters

As previously stated, the Town of Hornellsville and Village of North Hornell pump stations were assessed for their capacity and condition (Condition assessment completed on February 28, 2025, Appendix D). The City of Hornell pump stations were assessed for their condition, as these pump stations do not have known or recorded capacity issues and additional future flow contributions to the pump stations are not anticipated. It should be noted that the existing Peak Hourly Flow (PHF) design flows for all pump stations in the City of Hornell (May Ave PS, Madison Ave PS, Walmart PS and Ice Haus PS) will remain the same.

To determine the design capacity of each pump station in the Town (Joe Jones PS, Industrial Park PS, and Bowling Alley PS) and Village (Seneca PS) the following steps were taken:

1) Determine average existing flow contribution to each pump station:
    - Using the Steuben county parcel map, the existing flows contributing to the Joe Jones, Industrial Park and Bowling Alley pump station were calculated. Flows were determined based on existing infrastructure within each parcel. Existing 2023-2024 Hornell water consumption data (if available) and NYS Design Standards for Intermediate Sized Wastewater Treatment Systems (Table B-3) were used to determine the total existing flows that contribute to each pump station. Appendix E-1 provides detailed information and flow calculations on existing parcels contributing to each pump station. Figure E-2 in Appendix E provides the areas in the Town or Village that currently contribute to the flow to each pump station. It should be noted that the Joe Jones PS currently only receives flow from HP Hood, a significant industrial user.
    - The Seneca PS existing flows were calculated by using flow meter data (10/23- 10/24) to this station.
2) Determine potential development area flows contribution to each pump station:

- Figure E-2 in Appendix E presents vacant land within the Town and Village. According to Village and Town officials, the areas presented in the figure have the potential for future development. Using the Steuben County parcel map, the Town of Hornellsville Zoning map, and NYS Design Standards for Intermediate Sized Wastewater Treatment Systems (Table B-3), future flow from potential development areas were estimated. The estimated potential development area flows were accounted for in the design Average Daily Flow (ADF) and design PHF.

3) Determine population projections contribution to flow:
    - As provided in Table 2-9, the City and Town population is expected to continue to decline. The Villages population increased by 0.25% from 2010 to 2022. For the purpose of design flow calculations for the Seneca PS, the projected continued increase in population of 0.25% in the Village is negligible and hence was not accounted for in the design ADF and design PHF.
4) Determine potential future growth from SIU contribution to flow to each pump station:
    - Currently, HP Hood is permitted to discharge 330,000 GPD. During the study, HP Hood provided a projection of future discharge from its facility based on HP Hood's anticipated growth, as follows. Information provided was taken into account when establishing design parameters.

	Daily Flow (gpd)	Avg. Flow (gpm)	Peak Instantaneous Flow (gpm)
Current (2025)	330,000	229	344
Short-Term (2030-2035)	400,000	278	556
Long-Term (2055)	600,000	417	833

- Flow from other SIUs discharging to the collection system does not pass through these pump stations.

After projecting flow through each Town and Village PS as outlined above, a peaking factor of 2 was used for industrial flows and a peaking factor of approximately 4.0, per Ten States, for non-industrial flows, each where applicable, was used to estimate PHF based on ADF. Table 2-15 summarizes the resulting design parameters. A summary of the calculated/estimated design ADF and design PHF for the Joe Jones PS, Industrial Park PS, Bowling Alley PS and Seneca PS is provided in Table 2-15. Table 2-15 also provides the design PHF for the City's pump stations (Mays Ave PS, Madison Ave PS, Walmart PS and Ice Haus PS).

Ten States requirements state that online pumping equipment is to have sufficient capacity to pump PHF with the largest pump offline and that wet well filling time shall not exceed 30 minutes at ADF. The design parameters summarized in the table below will result in sizing pumping equipment with sufficient capacity to convey projected flows over the next 25 years and sizing the wet well for the projected flow in 30 years. Although pumping equipment would typically require replacement after 25 to 30 years of operation, the intended result of using anticipated ADF in the year 2055 to design the wet well is to preclude the need for full wet well replacement at that time in favor of less expensive rehabilitation.

Note that design Total Dynamic Head (TDH) values are excluded below. Refer to Section 3 for discussion of design TDH values for feasible alternatives.

Table 2-15:
Pumping Equipment and Wet Well Design

	Pumping Equipment Design Flows		Wet Well
Pump Station	**Design ADF[2] (gpm)**	**Design PHF[2] (gpm)**	**Design ADF[3] (gpm)**
Joe Jones (Town)	278	556	418
Industrial Park (Town)	281	563	435
Bowling Alley (Town)	295	589	459
Seneca Street (Village)	416	1109	587
Walmart[1] (City)	Unknown	275[1]	N/A
Madison Ave[1] (City)	Unknown	60[1]	N/A
Mays Ave[1] (City)	Unknown	315[1]	N/A
Ice Haus Road[1] (City)	Unknown	200[1]	N/A

[1] Based on available record information and the design intent to match existing.
[2] Based on projected flows between the year 2030 and 2050.
[3] Based on projected flows in the year 2055.

2.3.5 Sewer Hydraulic Capacity and Condition

Existing trunk mains between the HP Hood Pretreatment Facility and the north end of the Village at McKinley Avenue are presented in the following table.

Table 2-16:
Existing Trunk mains

Location	Pipe Diameter (in)	Segment Length (ft)	Pipe Material	Flow Type
Discharge from HP Hood Pretreatment Facility				
	12	773	VCP	Gravity
	12	1577	VCP	Gravity
	12	290	Uncertain	Gravity
Flow enters Joe Jones PS				
Discharge from Joe Jones PS				
	8	1180	Unknown	Forcemain
	8	1679	Unknown	Forcemain
	8	1348	Unknown	Forcemain
Flow enters MH 19				
	12	332	VCP	Gravity
	12	550	VCP	Gravity
Flow enters Industrial Park PS				
Discharge from Industrial Park PS				
	8	1233	Unknown	Forcemain
	8	1358	Unknown	Forcemain
Flow enters Bowling Alley PS				
Discharge from Bowling Alley PS				

	8	454	Unknown	Forcemain
	8	1774	Unknown	Forcemain
Flow enters MH 16				
	12	1639	VCP	Gravity
	12	1648	VCP	Gravity
	12	1738	VCP	Gravity
Flow enters Existing MH at north end of McKinley Ave. (in Village of North Hornell)				

Sections of sewer between the HP Hood discharge and WPCP influent are either forcemains or gravity trunk sewers. Please refer to Section 2.3.10 for the capacity of each pipe segment and its sufficiency for design flows.

2.3.6 Analyses of Production Rates for Processing and/or Manufacturing Operations

Section 2.3.4 outlines HP Hood's projection of wastewater to be discharged into the collection system based on their anticipated production operations over the next 30 years.

2.3.7 Current Energy Consumption

No recent energy audits have been completed.

2.3.8 Photographs

Photographic documentation of the existing conditions can be found in the Photolog located in Appendix D.

2.3.9 Storm or Flood Impact Damage

No documented history of damage due to storm or flood impacts

2.3.10 Process Capacity Evaluation

Based on the design parameters established in Section 2.3.4 and information about existing pumping equipment and wet wells in Section 2.3 and existing piping in Section 2.3.5, the following summarizes the sufficiency of existing facilities' capacity to receive and convey design flows.

Per Ten States, the capacity of a sanitary pump stations pumping equipment and wet well is evaluated based upon pumping capacity and redundancy provided at design PHF and wet well filling time. Ten States recommends the following:

- Pumping system must have sufficient capacity to pump design PHF with the largest pump offline.
- Wet well working volume must be large enough to prevent over-cycling of the pumps and small enough to ensure filling time given ADF does not exceed 30 minutes.

The following table summarizes the pumping equipment and wet well capacity evaluation.

Table 2-17:
Pumping equipment and wet well capacity evaluation

Pump Station	Pumps Design Flow (GPM@ ft. of TDH)	Design PHF (gpm)	Capacity	Wet Well Design ADF (gpm)	Existing Wet Well Working Capacity (gal)	Filling Time (mins)	Capacity
Joe Jones (Town)	Two pumps, each 350@21	556	Insufficient	418	*376	*0.90	Insufficient
Industrial Park (Town)	Two pumps, each 490@26	563	Insufficient	435	*2115	*4.87	Insufficient
Bowling Alley (Town)	Two pumps, each 550@40	589	Insufficient	459	*973	*2.19	Insufficient
Seneca St (Village)	Two pumps, each 900@56	1109	Insufficient	587	**1090	**1.87	Insufficient
Walmart (City)	Two pumps, each 275@19	275	Sufficient	N/A	N/A	N/A	Sufficient
Madison Ave (City)	Two pumps, each 60@16	60	Sufficient	N/A	N/A	N/A	Sufficient
Mays Ave (City)	Two pumps, each 315@22	315	Sufficient	N/A	N/A	N/A	Sufficient
Ice Haus Road (City)	Two pumps, each 200@34.5	200	Sufficient	N/A	N/A	N/A	Sufficient

*Existing wet well capacity calculations are estimated. Estimate of wet well operating depth was determined using a 365 camera. Wet well filling time calculation is, therefore, also an estimate.
** Seneca PS diameter, depth, and operating depth are estimated, based on visual inspection with the 365 camera.

Per Ten States, the capacity of a forcemain is evaluated based upon velocity and diameter. Ten States recommends the following:

- Velocity within the forcemain shall be between 2 and 8 feet per second.
- The minimum nominal diameter of a forcemain shall not be less than 4 inches.

Per Ten States, the capacity of a gravity sewer is evaluated based upon a minimum diameter, velocity, and slope. Ten States recommends the following:

- Mean velocity, when flowing full, within the gravity sewer shall not be less than 2 feet per second, based on Manning's formula using an "n" value of 0.013.
- The minimum nominal diameter of a gravity sewer shall not be less than 8 inches.

The following table summarizes the piping capacity evaluation

Table 2-18:
Suitability of existing piping

Existing Pipe Diameter (in)	Length (ft)	Flow type	Slope (ft/ft)	Flowrate (2055) (GPM)	Velocity (ft/s)	Capacity	Flow Rate Capability (full pipe) (GPM)	Capacity
HP Hood Treatment Facility								
12	2640	Gravity	0.003	836	2.49	Adequate	870	Adequate
Joe Jones Pump Station								
8	4207	Forcemain	0	836	5.34	Adequate		
Manhole across from Harley Center								
12	882	Gravity	0.002	836	2.12	Adequate	739	**Inadequate**
Industrial Park Pump Station								
8	2591	Forcemain	0	871	5.56	Adequate		
Bowling Alley Pump Station								
8	2228	Forcemain	0	919	5.87	Adequate		
Manhole across from Michael Johns Mini Mart								
12	5025	Gravity	0.003	919	2.68	Adequate	937	Adequate
Manhole at McKinley Ave								
12	3061	Gravity	0.008	919	3.97	Adequate	1,387	Adequate
Seneca Street Pump Station								
8	344	Forcemain	0	1,515	9.67	**Inadequate**		
Manhole across from Italian Villa								
12	771	Gravity	0.0049	1,515	3.19	Adequate	1,113	**Inadequate**
15	929	Gravity	0.0023	1,515	2.55	Adequate	1,392	**Inadequate**
16	587	Gravity	0.002	1,515	2.49	Adequate	1,546	Adequate
18	2933	Gravity	0.0012	1,515	2.06	Adequate	1,622	Adequate
20	2712	Gravity	0.0013	1,515	2.29	Adequate	2,221	Adequate
24	3899	Gravity	0.0011	1,515	2.45	Adequate	3,418	Adequate
WPCP Influent								

The table above shows that velocities and diameters within the associated sections of sewers investigated are largely adequate. However, the forcemains from Joe Jones Pump Station and from Industrial Park Pump Station are not adequately sized for **current** conditions (velocity is less than 2 ft/s). Further, the Seneca Street Pump Station forcemain is too small for presumed 2055 flow of 1,515 GPM. Finally, under full-pipe flow, several sections of sewer within the Town of Hornellsville and City of Hornell could be of a lower capacity than necessary.

Furthermore, a drawdown test performed by Koester Associates in early Spring 2025, indicated approximate pumping capacity at Joe Jones Pump Station has deteriorated significantly to around 150 GPM (equivalent to 216,000 GPD when pumping 24 hours/day). This is much lower than what is expected of the station, considering that HP Hood's IUP allows for the SIU to discharge up to 330,000 GPD.

The Village of North Hornell's 12" asbestos cement pipe (ACP) main trunk line, which conveys wastewater flow from the City, Village and Town to the WPCP, has undergone camera inspection in 2022. A majority of the main trunk line, and manholes between the pipes, were installed over 50 years ago. Twenty-seven (27%) percent of the sewer lines inspected are in poor condition (deteriorating, pipe interior spalling and delamination due to exposure to corrosive conditions) and are in need of rehabilitation or replacement. As the pipes continue to age and continue to deteriorate, they are more likely to crack, deform, and degrade which may lead to wastewater leaking outside of the sewer lines and into the environment. The full inspection report is attached in Appendix E-3.

2.3.11 O&M History, Current Work and Challenges

The City of Hornell is responsible for all O&M for pump stations and sewermains outside of the Village of North Hornell. The City is also responsible for maintaining and developing its own Sewer Use Law (SUL), Pretreatment Program Procedures & Protocols Guidance, and Industrial Sewer Use Program, since it holds the SPDES permit for its WPCP. The City recently updated and developed these documents and the following summarizes the most recent history of the City's efforts in better regulating its Significant Industrial Users (SIUs) and ensuring compliance with its SPDES permit:

Revising Pretreatment Program & Sewer Use Law

- 2021: The City received an updated SPDES permit effective 11/01/2021, which required the City to collect Industrial Chemical Surveys from potential SIUs, develop procedures for regulation of SIUs, collect FROSI forms from all SIUs, update their SUL, and implement all new procedures for the regulation of SIUs. These requirements included submission of a draft of these documents April 30, 2023, and finalization April 30, 2024.
- 2023: The City collected ICS forms, developed a Procedures & Protocols document for regulation of SIUs, updated the City's SUL and put forth significant effort to meet WET and total phosphorous effluent limits.
- 2024: The City submitted all required Industrial User Program related materials to NYSDEC (ICS, FROSI, Procedures & Protocols, SUL, and new Industrial User Permits).
- 2025: Each SIU within the City of Hornell sewer system received a new IUP from the City which became effective January 1, 2025. No industrial users were added to the City's program. However, the oldest permit which the City updated was for HP Hood, which had not been updated since 1989. It should be noted that HP Hood and the remainder of the City's SIUs were given interim loading-based limits for Total Phosphorus of roughly double their final effluent limits. The final effluent limits for Total Phosphorus will become effective January 1, 2027. Since the effective date of these permits, the City and many of its industrial users have not had compliance issues. However, for a single industrial user (HP Hood), many compliance issues have been reported. HP Hood violations of Total Phosphorus, to date, have been cited as

being due to a combination of factors – namely operator inexperience and challenges with temporary and permanent pretreatment facilities. The following summarizes these issues:

- HP Hood has notified the City of nine (9) Total Phosphorous violations, three (3) pH violations, five (5) BOD5 violations, and one (1) Ammonia violation between January 1, 2025 and June 1, 2025.

<u>WET & TP Effluent Limits</u>

- 2018: In 2018, the City became responsible for conducting toxicity (WET) testing due to a modification of its SPDES permit.
- 2021: The City received an updated SPDES permit effective 11/01/2021, which included a new limit for Total Phosphorous of 0.5 mg/L at its effluent discharge, originally effective April 30, 2023. However, the City successfully petitioned the extension of this deadline twice; to April 30, 2024, and January 1, 2025, finally.
  - The City has exceeded its Total Phosphorus SPDES permit limit twice (as of the date of publication of this document) since it became effective January 1, 2025.
  - The City has conducted surveillance sampling of the HP Hood effluent for ammonia due to a suspected lack of adequate sampling and transparency. The City recorded a slug load of ammonia coming from HP Hood in early April, 2025, which is believed to have caused a SPDES permit Ammonia violation for the City.

<u>Odor Concerns</u>

- 2025 Spring: Community leaders began to receive public complaints about sewer odor throughout the Town, Village, and City. The City began an investigation into odor issues along the sewer sections coming from HP Hood's pretreatment facilities. These sections consist of:
  - 12" gravity sewer from HP Hood pretreatment to Joe Jones Pump Station (JJPS)
  - 8" forcemain from JJPS to manhole across from the Harley Center
  - 12" gravity sewer from manhole across from the Harley Center to the Industrial Park Pump Station (IPPS)
  - 8" forcemain from IPPS to Bowling Alley Pump Station (BAPS)
  - 8" forcemain from BAPS to manhole across from Michael John's mini-mart
  - 12" gravity sewer from manhole across from Michael John's mini mart along Seneca Road to Northmost manhole on McKinley Ave.
  - 12" gravity sewer from manhole on McKinley Ave, through the Village of North Hornell to the Seneca Street Pump Station (SSPS)
  - 8" forcemain from SSPS to the manhole across from the Italian Villa in the City of Hornell
  - 12", 15", 16", 18", 20", and 24" gravity sewer from the manhole across from the Italian Villa, through the City of Hornell, to the WPCP influent manhole.

The sections were investigated using a hand-held Hydrogen Sulfide (H2S) sensor, which repeatedly exceeded its measurement limit (600 PPM) when measurements were taken within pump station wet wells by WPCP operations staff during periods with noxious odor complaints by municipal residents. Eventually, the City began paying for the use of an odor treatment chemical called Totalox (blend of 40% Calcium Nitrate and 1% Sodium Permanganate). In early April, HP Hood began utilization of its own odor treatment in the form of hydrogen peroxide injection at its pretreatment facility effluent, which eliminated the need for City injection of Totalox. This chemical has been injected into the sewer at the HP Hood pretreatment facility and, since its introduction into the system, public complaints have stopped and municipal leaders agree that objectionable odors have been absent.

It is suspected that several factors have contributed to the formation of these odors. Foremost among them are the low pH non-compliance events which took place in mid-March. Low pH is associated with an increased rate of Sulfide generation, which eventually forms Hydrogen Sulfide gas. HP Hood reported a pretreatment plant upset during the week of March 17, where its biotower became largely non-operational. The biotower being offline has had a significant impact on HP Hood's effluent quality and can be tied directly to the non-compliance event which took place on April 1, 2025. HP Hood made significant repairs to its biotower between March 30, 2025 and April 15, 2025 where the biotower has been taken completely offline. Since the industry has made these repairs to its biotower, and begun odor treatment, no non-compliances from the industry have been reported nor have odors been present in the sewer system according to municipal leaders.

- 2025 Spring: The City has continued to issue Notices of Violation to HP Hood to penalize its non-compliance events. The City has successfully followed its Pretreatment Program Procedures & Protocols, specifically its Enforcement Response Plan (ERP) guide. The City and HP Hood are successfully working towards eventual compliance with HP Hood's IUP.
- 2025 Spring: With JJPS being incapable of pumping an adequate flow from HP Hood's discharge (see Section 2.3.10), it is suspected that forcemain velocity between this station and the manhole across from Harley Center are significantly lower than what is required for scouring. It is anticipated that this insufficient velocity has likely deteriorated this forcemain over time and has led to a buildup of solids which are likely a contributor to odor issues.

2.3.12 Planned, Current, or Future Improvements Outside of the Project Scope

There is no additional plan for improvements outside of the project scope at this time.

2.4 Definition of the Problem

2.4.1 Health, sanitation, and/or security

The City of Hornell, Village of North Hornell and Town of Hornellsville collection system presently poses an odor nuisance and health and sanitation risk to the public. Each municipality has received odor complaints from residents in various locations throughout the collection system. Detailed instances of odor complaints are provided in section 2.3.11. Exposure to odors could result in health effects which can range from mild discomfort to more severe symptoms such as eye, throat or lung irritation. One of the goals of this study is to implement/assist in the ongoing effort of odor control.

The Village of North Hornell occasionally experiences sewage backups into residents' homes. Per system operators, when the daily flow approaches 1 million gallons a day (MGD) to the Seneca PS, the system cannot keep up with the high flows which leads to sewage backups into residential homes. Exposure to untreated wastewater, which contains a range of harmful bacteria, viruses and pathogens, can lead to illnesses such as skin infections, eye irritations, and respiratory issues. One of the goals of this study is to provide adequate capacity at each pump station to prevent sewage backup events into residential homes.

2.4.2 Aging infrastructure

As documented throughout Section 2.3, existing pumping equipment, wet wells, and pipes (forcemains and gravity sewers) throughout the portion of the collection system that is the focus of the present evaluation has aged beyond its respective useful life. An assessment and detailed explanation of each pump station's continued use is provided in Table 2-19 Table 2and Section 3.0 highlights feasible alternatives to address aged infrastructure.

2.4.3 Reasonable Growth

As discussed in section 2.2.6 of this report, population trends do not indicate short-term growth in the City, Village or Town. Additionally, population is projected to decrease overall, in Steuben County, from 2025 up to the 2040 projection. The City, Village, and Town are not anticipating significant population growth over the next 30 years, however, there is potential residential, commercial and industrial development within the Village and Town, which could potentially increase the population in these areas and hence increase the production of sewage discharge to the collection system. Additionally, HP Hood, a significant industrial user, is projecting to expand its facilities as outlined in Section 2.3.4.

2.4.4 Regional Planning Efforts

The collection, conveyance, and treatment of sanitary waste generated from users within the Town, Village, and City is a significant intermunicipal effort intended to maintain reliable service at low user cost. The present evaluation represents a significant regional planning effort by the involved municipalities to study this critical infrastructure, identify deficiencies requiring improvement, and work together to advance infrastructure improvements.

2.4.5 Water, energy and/or waste considerations

The improvements recommended within this sewer evaluation study are not anticipated to significantly modify the City, Village, or Town water or waste streams. However, the projected significant increase in HP Hood discharge by 2055 would be anticipated to lead to increased energy consumption at the Town and Village pump stations and additional sludge production at the WPCP.

2.4.6 Suitability for Continued Use

A summary assessment of each pump station's suitability for continued use is provided in Table 2-19.

Pumps:

As shown in Table 2-19, all eight pump station's pumps require replacement or upgrade to be suitable for continued use (current and/or future use). Excluding Seneca St. PS, generally the pump stations north of the City of Hornell (Joe Jones PS, Industrial Park PS, Bowling Alley PS, and Seneca PS) and the pump stations located in the City of Hornell (Mays Ave PS, Madison Ave PS, Walmart PS and Ice Haus PS), are at the end of their useful life and require replacement or upgrades. In addition to requiring replacement due to aging infrastructure, the Joe Jones PS, Industrial Park PS, and Bowling Alley PS require upgraded pumps to handle the future projected design ADF and design PHF. The Seneca PS pumps were replaced in 2018/2019. Although the PS can handle high flows and all flows under normal operating conditions, the PS lacks the capacity for design ADF and design PHF .

Wet Wells:

Based on the condition assessment conducted on February 28th, the City of Hornell pump stations wet wells (Mays Ave PS, Madison Ave PS, Walmart PS and Ice Haus PS) require rehabilitation, but once repaired, will be adequate for continued use. A summary of repairs is provided in Section 2.3.

A capacity assessment of the Joe Jones PS, Industrial Park PS, Bowling Alley PS and Seneca PS, as provided in Table 2.17, determined that the current wet wells are undersized and will require upsizing for future pump station operation. The recommended upsizing of each wet well is provided in section 3.3 and 3.4 of this report.

Forcemains:

Section 2.3.10 provides a hydraulic analysis of the existing forcemains, at the Town and Village pump stations, ability to meet current and future flow conditions. The hydraulic analysis is based on Ten state standards velocity requirements of 2ft/s-8ft/s (Ten State Standards, Section 49,1) through a forcemain, as necessary to provide scouring and prevent buildup within the pipe. Forcemain current and future continued use was also based on the age of the pipes and presumed condition. Please refer to section 2.3.10 and table 2-18 for forcemain current and future use assessment.

Collection System Trunk Mains:

Section 2.3.5 provides a hydraulic analysis of several sections of Town and Village gravity mains ability to meet full pipe flow capacity required by 2055. As provided in Table 2-18, several sections of gravity mains indicate that the pipes are inadequate and hence unsuitable

for future continued use. The following sections of piping are unsuitable for continued use and require replacement.

- Town Trunk Main: 882 LF section of 12" piping between Harley Service Center manhole and Industrial Park PS with HDPE

The following piping has reached the end of its useful life and requires CCTV footage during detail design to confirm pipe condition:

- Town Trunk Main: 5025 LF section of 12" piping between Michael Johns Mini mart manhole and McKinley Ave manhole with HDPE

As discussed in section 2.3.5 of this report, the Village of North Hornell's 12" asbestos cement pipe (ACP) main trunk line has undergone camera inspection in 2022. Based on the inspection, several sections of the trunk line are inadequate for existing and future continued use and require significant rehabilitation or replacement. Details on recommended repairs are provided in the alternatives section and Appendix E-3.

Table 2-19:
Pump Stations Continued Use

Equipment	Joe Jones PS	Industrial Park PS	Bowling Alley PS	Seneca PS	Mays Ave PS	Madison Ave PS	Walmart PS	Ice Haus Rd PS
Pumps	Needs upgrade due to age and inability to meet current flows	Needs upgrade due to age and to meet future design flows	Needs upgrade due to age and to meet future design flows	Needs upgrade to meet future design flows	Replace in-Kind due to aging infrastructure	Replace in-Kind due to aging infrastructure	Replace in-Kind due to aging infrastructure	Replace in-Kind due to aging infrastructure
Wet well	Requires Upsizing to meet future design flows	Requires Upsizing to meet future design flows	Requires Upsizing to meet future design flows	Requires Upsizing to meet future design flows	Continued use with recommended repairs outlined in section 2.3	Continued use with recommended repairs outlined in section 2.3	Continued use with recommended repairs outlined in section 2.3	Good condition
Piping	Requires replacement of 8" forcemain with new 6" forcemain to meet current and future conditions Requires replacement of 12" 882LF gravity piping (Table 2-	Requires replacement of 8" forcemain with new 6" forcemain to meet current and future conditions	Requires replacement of 8" forcemain with new 8" forcemain due to aging infrastructure Possible replacement/rehab of 5025 LF gravity piping and camera inspection (Table 2-16) due to unknown existing conditions	Requires replacement of 8" forcemain with new 10" forcemain to meet future conditions Rehab/replacement/repairs of several sections of piping in trunk main	Continued Use	Continued Use	Continued Use	Continued Use

	18) due to sloping							
Back-Up Generator	Does not Exist	Does not Exist	Does not Exist	Good condition	Does not Exist	Back-up generator does not work	Does not Exist	Does not Exist
Flow Meter	Located before PS Did not Inspect	Does not Exist, Required to Install a Flow Meter	Does not Exist, Required to Install a Flow Meter	Good condition	Does not Exist	Does not Exist	Does not Exist	Does not Exist

2.4.7 Storm and Flood resiliency

According to City, Village, and Town officials, the eight (8) pump stations do not have a history of flooding. Additionally, there are no existing records of flood-related damage to the collection systems within the project area.

The City, Village and Town pump stations and associated collection system include areas within the 100-year flood plain and suspected high groundwater. According to Ten State Standards (Section 41.1), wastewater pump station structures and electrical and mechanical equipment shall be protected from physical damage by the 100- year flood and remain fully operational and accessible during the 25-year flood. The eight (8) pump stations listed in this evaluation meet the requirements of flood protection in accordance with Ten State Standards.

2.4.8 Compliance with accepted standards

Table 2-20 summarizes pump station items documented during the present evaluation as failing to meet accepted regulatory standards.

Table 2-20:
Pump Stations Compliance with accepted standards

Reference Standard	Reference Description	Pump Station Failing to meet requirements
10 States 42.31	• Units shall have capacity such that with any unit out of service, the remaining units will have capacity to handle design peak hourly flow	Joe Jones PS
10 States 42.8	• Suitable devices for measuring wastewater flow shall be provided at all pump stations. Indicating, totalizing, and recording flow measurement shall be provided at pumping stations with a 350 gpm (22 L/s) or greater design peak hourly flow, determined in accordance with Paragraph 11.24, or pumping stations with variable frequency drives or screw pumps.	Joe Jones PS Industrial Park PS Bowling Alley PS Mays Ave PS Madison Ave PS Walmart PS Ice Haus PS

10 State 47.2 TR-16 1.3.3.5	• Emergency pumping capability is required unless on-system overflow prevention is provided. • For power outages, stationary or portable generators should be furnished.	Joe Jones PS Industrial Park PS Bowling Alley PS Mays Ave PS Madison Ave PS Walmart PS Ice Haus PS
10 State 49.1	• At design pumping rates, a cleansing velocity of at least 2 feet per second should be maintained. • A maximum velocity of 8 ft/s is recommended to avoid high head loss and protect valves	Joe Jones PS Industrial Park PS

2.5 Financial Status

2.5.1 Sources of Income

Costs related to the City of Hornell sewer are expended from the City's General Fund. The Fiscal Year 2024-2025 summary of the General Fund's major revenue and appropriations is provided below.

City of Hornell General Fund Major Revenue Sources and Appropriations	
Revenue	**FY 2024-2025 Budget Amount**
Total Estimated Revenues	$11,781,590
Appropriations	**FY 2025-2025 Budget Amount**
Total Appropriations less Revenues other than Real Property Tax	$11,781,590

The charge levied to sewer users differs based upon user type (residential, commercial, industrial) and location (inside and outside the City boundaries). All revenues are collected in tax levies, with the exception of two annual flat user fees charged to sewer users.

The City budgeted the following appropriations for sewer during Fiscal Year 2024-2025:

City of Hornell General Fund Sewer Appropriations	
Appropriations	**FY 2025-2025 Budget Amount**
A-8120 Sanitary Sewers	$167,974
A-8130 Sewage Treatment & Disposal	$803,839

2.5.2 Debt Service

The current sewer related debt service includes for the year ended March 31, 2024:

City of Hornell Sewer Debt Service					
Description	**Original Issue Amount**	**Year of Issue/ Maturity**	**Interest Rate**	**Balance 4/1/2023**	**Balance 3/31/2024**

WPCP Improvements	$2,463,432	2016/2024	0.2-4.3%	$1,805,000	$1,735,000
WPCP Improvements	$2,343,470	2016/2028	0.6-2.2%	$145,000	$120,000
EFC Notes 2021-EPCP	$5,858,200	2021/2026	0.00%	$1,357,142	$2,076,689

3. ALTERNATIVES ANALYSIS

3.1 Alternatives Description

Table 3-1 provides a description of each alternative evaluated in this study. The alternatives are divided by ownership of infrastructure for each community.

Table 3-1:
Alternatives Assessed

Alt. 2: Town of Hornellsville	Alt. 3: Village of North Hornell	Alt. 4: City of Hornell
Alternative 1: Null Alternative: No Action		
Alternative 2.1: • Replace existing pumps with suction lift pumps • Replace existing wet well with larger wet well • Replace piping Alternative 2.2: • Replace existing pumps with submersible pumps • Replace existing wet well with larger wet well • Replace piping	Alternative 3.1: • Replace existing pumps with suction lift pumps • Replace existing wet well with larger wet well • Replace or rehabilitation of piping Alternative 3.2: • Replace existing pumps with submersible pumps • Replace existing wet well with larger wet well • Replace or rehabilitation of piping	Alternative 4.1: • Replace existing pumps in-kind with suction lift pumps • Recommended repairs on existing wet wells
Pump Stations: • Joe Jones PS • Industrial Park PS • Bowling Alley PS	Pump Stations: • Seneca St. PS	Pump Stations: • Mays Ave PS • Madison Ave PS • Walmart PS • Ice Haus PS

3.2 Alternative 1: Null Alternative- No Action

This alternative provides a baseline comparison for all other alternatives and consists of the "do nothing" alternative. This "no action" alternative entails making no changes to the collection system. This alternative provides the lowest initial cost, however, taking no action will not address the current problems each community faces. Such action is expected to result in continued capacity and condition issues, which can lead to the following short-term and long-term problems:

- Continued public health hazards such as sewage backups into residential homes in the Village of North Hornell,
- Failure for pump stations to handle current and/or projected future flows due to capacity issues, which can lead to surcharge of sewage into the environment,

- Failure for pump stations to operate as designed due to aging infrastructure. Pump stations may continue to fail and require power backups or a portable pump on site on a regular basis to pump sewage throughout the collection system,
- Prevention of regional growth, as sanitary facilities are unable to collect and convey anticipated flows,
- Continued inability to operate per Ten States and TR-16 requirements and recommendations.

Taking no action to rectify deficiencies identified during the present evaluation risks continued degradation of the City, Town and Villages collection system. Deferring infrastructure improvements often leads to emergency repairs which incur greater expenses than if such work were completed proactively. Continued non-compliance and violations could result in environmental and public health concerns, as well as possible enforcement actions from the authorized regulatory agency. Therefore, the "no action" alternative is not a feasible alternative for this project.

3.3 Alternative 2: Town of Hornellsville Improvements

Alternative 2, Town of Hornellsville Improvements, entails evaluation of two sub-alternatives, as provided in Table 3-1. The pump stations evaluated in this alternative are the Joe Jones PS, Industrial Park PS and Bowling Alley PS. All three pump stations are located in and owned by the Town of Hornellsville.

3.3.1 **Alternative 2.1:** Replace existing pumps with suction lift pumps; Upsize Wet well; Replace piping

3.3.1.1 Description

Alternative 2.1 includes replacing existing pump stations with new pumps, upsizing the wet wells, replacing piping within the Town's collection system and implementing a continuous flow meter and on-site backup generator at each pump station. This alternative addresses existing and future capacity and condition issues at the Town pump stations and collection system. The following list provides a description of improvements recommended under this alternative:

- Replace existing pumps with new pumps: Under this alternative, each pump station will be replaced with new suction lift pumps (conceptually Smith & Loveless equipment) to meet the design ADF and design PHF provided in Table 2-14. Examples of Smith & Loveless PS equipment (both rectangular recessed wet well mounted and above grade wet well mounted) are provided in Appendix E, Figure E-4 and Figure E-5. The following set-up and features are recommended for pump replacement at each PS:

Table 3-2:
Proposed Suction Lift Pump stations

	Joe Jones PS	Industrial Park PS	Bowling Alley PS

Suction Lift PS Set-up	Rectangular Recessed (Below Grade) Wet well mounted	Rectangular Recessed (Below Grade) Wet well mounted	Above Grade Wet well Mounted
Pumps Set Up	Duplex Pump	Duplex Pump	Duplex Pump
Function	Vacuum Prime	Vacuum Prime	Vacuum Prime
Horsepower	50 HP	40 HP	40 HP
Pumps Access	Grade level access	Grade level access	Above grade access

It should be noted that the suction head at the JJPS and IPPS is greater than 20', which will require the rectangular recessed (below grade) Smith & Loveless PS set up. Although the pumps will be below grade, the pumps can be accessed at grade level. The rectangular recessed configuration allows for the service of deeper wet wells, as proposed at the JJPS and IIPS.

The Bowling Alley PS suction head of 20' and proposed shallow wet well will allow for an above grade wet well mounted PS configuration. This is the only pump station that will allow for a standard Smith & Loveless suction lift PS configuration under this alternative.

- Upsize Wet wells: Existing wet wells are insufficient for future anticipated increased flow, as provided in Table 2-17. In accordance with Ten State Standards, wet well working volume must be large enough to prevent over-cycling of pumps (<= 10 cycles/hr) and small enough to ensure filling time given ADF does not exceed 30 minutes. Wet well design was advanced such that filling time at design ADF will be between 10 and 30 minutes. The following wet well sizing is recommended for each PS. Concept plans and design calculations of upsized wet wells are provided in Appendix E, Figures 7, 8, and 9.

Table 3-3:
Proposed new wet well sizing

	Joe Jones PS	**Industrial Park PS**	**Bowling Alley PS**
Design Wet Well Inner Diameter (ft)	10	10	10
Design Wet Well Depth (ft)	28	26.5	20

It is anticipated that the precast wet wells would be constructed using a dense, less permeable (5,000 psi) concrete mix. Coating is not recommended due to the desire to avoid a situation where moisture is trapped in the concrete leading to accelerated deterioration.

- Replace piping: Table 2-18 provides an evaluation of suitability of existing piping within the Town of Hornellsville collection system based on velocity requirements (forcemains and gravity mains), as provided in Ten States and flow capacity requirements under full pipe flow (gravity mains) by 2055. It should be noted that information about existing piping from record drawings is limited, therefore, the following replacement of piping are recommended to address existing and future capacity issues within the Towns collection system:

    1) Replacement of Joe Jones PS forcemain with a new 6" HDPE pipe

    The existing forcemain at the Joe Jones PS is an 8" pipe with unknown pipe material. Although the existing pipe appears to be adequate to meet future flow requirements, the existing pipe is not adequately sized for existing conditions. Therefore, it is recommended to replace the existing Joe Jones PS forcemain with a 6" forcemain, parallel to the existing forcemain, to meet existing conditions and hence future conditions.

    2) Replacement of Industrial Park PS forcemain with a new 6" HDPE pipe

    The existing forcemain at the Industrial Park PS is an 8" pipe with unknown pipe material. Although the existing pipe appears to be adequate to meet future flow requirements, the existing pipe is not adequately sized for existing conditions. Therefore, it is recommended to replace the existing Industrial Park PS forcemain with a 6" forcemain, parallel to the existing forcemain, to meet existing conditions and hence future conditions.

    3) Replacement of Bowling Alley PS forcemain with new 8" HDPE pipe

    The existing forcemain at the Bowling Alley PS is an 8" pipe with unknown pipe material. Due to aging infrastructure and unknown pipe condition, it is recommended to replace the existing forcemain with an 8" forcemain, parallel to the existing forcemain.

    4) Replacement of 882 LF section of 12" piping between Harley Service Center manhole and Industrial Park PS with HDPE

    The existing 882 LF piping is inadequate to meet the full pipe flow capacity required by 2055 due to the sloping of the pipe. It is recommended to replace the 882 LF 12" pipe and provide sufficient slope to allow for enough flow through the pipe.

    5) Replacement of 5025 LF section of 12" piping between Michael Johns Mini mart manhole and McKinley Ave manhole with HDPE

    Existing conditions in this section of piping are unknown; however, this pipe is VCP and has aged beyond the typical useful life of a pipe of that material. This alternative is based upon replacing this piping with new 12" HDPE piping. During detailed design, it is recommended to inspect the pipe by CCTV to either confirm the need for full replacement or identify a less expensive option that provides the same level of infrastructure improvement.

- Addition of flow meter and on-site backup generator: As provided in Table 2-19 and Table 2-20 the Joe Jones PS, Industrial Park PS and Bowling Alley PS currently do not have a flow meter or on-site backup generator. It is recommended to implement a continuous flow meter and on-site backup generator at all pumping stations.

3.3.1.2 Impact on Existing Facility

The proposed project would impact State, County and local roadways where trenching and excavation are necessary for piping replacement. For work in roadways, the appropriate authority (NYS Department of Transportation (DOT), county DOT, and/or local authority) will be consulted to ensure that the proposed impacts are acceptable. Additionally, the project will require consultation and a permit from the US Army Corps of Engineers (USACE) as one section of piping will require horizontal directional drilling under a swamp (Appendix E, Figure 13). The project may also require consultation with the New York State Department of Environmental Protection Agency (NYSDEC) for additional requirements for proposed environmental impacts to a waterbody.

3.3.1.3 Outfall Configuration

This alternative does not impact the existing City WPCP outfall.

3.3.1.4 Land Requirements

This alternative does not require additional land acquisition.

3.3.1.5 Environmental Impacts and Mitigation Measures

For all portions of the proposed work, it is recommended to proceed in a manner that includes all involved stakeholders, thoroughly considers environmental impacts, and seeks the best available mitigation measures to minimize environmental impacts related to water quality and supply, noise levels, air quality, population growth, wetlands, flood plains and other sensitive areas.

This alternative includes work in areas within the 100-year flood zone, near/in the vicinity of a waterbody, near/in the vicinity of state or federal wetlands, and in the vicinity of listed threatened or endangered species (section 2.1.3.4). Appropriate permits, consultation with regulatory agencies and mitigation measures, where appropriate, will be applied to ensure minimal environmental impacts.

3.3.1.6 Seasonal Limitations, Challenges and Requirements

Peak construction periods range from late Spring (May) through early Fall (September) as the project site typically experiences high temperatures and low seasonal groundwater that combine to present optimal construction conditions for the work of this alternative; therefore, these are the recommended periods for completing the majority of the work of this alternative.

Construction during the winter and early spring (October- April) pose several challenges which include the following: freezing of pipes and pumps, difficulty excavating, and difficulty accessing the construction site, among other things. Work during colder temperatures would lengthen the time of construction and hence lower construction efficiency.

3.3.1.7 Discharge Permit Requirements

This alternative does not impact the City's SPDES permit requirements.

3.3.1.8 Efficiency Measures

This alternative has the potential to increase pump performance and reduce energy consumption and costs at each of the pump stations. As pumps age, performance decreases, which lowers a pump station's efficiency and increases energy consumption and costs. Warn out equipment will tend to require the pumps to put in more energy and work to pump the same amount of sewage that new pumps/equipment can pump using less work and energy. Once the pumps are replaced under this alternative, and the recommended gravity and forcemains are replaced, the conveyance of wastewater to the Hornell WPCP is expected to improve.

3.3.1.9 Storm and Flood Resiliency

This alternative addresses storm and flood resiliency for work within the 100-year flood plain. The addition of back-up generators for pump station power failure, sealed manhole covers and wet well covers, sealed joints for construction of new piping, as well as elevated pump station equipment from the 100-year Base Flood Elevation (BFE) will provide protection of pumping equipment during a storm or flood event.

3.3.1.10 Constructability and Schedule

Constructability considerations for the work of this alternative include the following:

- It is expected that a Maintenance and Protection of Traffic (MPoT) plan would be required, as some proposed work on piping is within, or immediately adjacent to roadways.
- Several sections of piping throughout the collection system will require Jack and Bore, Horizonal Directional Drilling or Excavation. It is expected that a permit from USACE would be required for the proposed work under a waterbody.
- Excavation includes shoring, dewatering, backfill. Compaction and repaving.
- For the construction of upsized wet wells, installation of new pumps, and the replacement of several forcemains or gravity mains throughout the collection system, bypass pumping may be necessary to allow residents to continue to use the system throughout construction.
- For the replacement of forcemains and/or gravity mains with new piping, the existing pipping will be abandoned in place and filled with flowable fill.
- For the installation of an on-site back-up generator, coordination with the electrical team and utility provider is anticipated.

The improvements described within this alternative would initiate with a detailed engineering and permitting effort spanning approximately 1 year. Once engineering is completed and all stakeholders consulted, the bidding and construction effort can be expected to cover approximately 2 years Appendix E-11 to E-16 provide detailed mapping information on the proposed construction at the Joe Jones, Industrial Park, and Bowling Alley PS.

3.3.1.11 Cost Estimate

A cost estimate is presented in Appendix F.

3.3.1.12 Non- Monetary Factors

The improvements described in this alternative may decrease the frequency of operation and maintenance requirements at each of the pump stations and the collection system within the Town. These improvements will allow for sewage to be collected and conveyed to the WPCP with little to no operation disruptions such as pump failure, power outages, and sewage backups within the collection system. Such improvements will ensure public health safety and protection from sewage and odor exposure. As WPCP operators are often assisting the Town with their pump stations and collection system, via an IMA and O&M agreements, such improvements may allow WPCP operators to focus more of their attention at the WPCP, thus improving their ability to operate, maintain, and proactively address issues at the WPCP.

3.3.2 **Alternative 2.2:** Replace existing pumps with submersible pumps; Upsize Wet well; Replace piping

3.3.2.1 Description

Alternative 2.2 includes the same recommended replacements listed in alternative 2.1. The difference between each alternative is alternative 2.1 includes replacing pumps with suction lift pumps and alternative 2.2 includes replacing pumps with submersible pumps (conceptually Flygt or Vaughan equipment) at each pump station. As with alternative 2.1, alternative 2.2 is a feasible alternative for the Town of Hornellsville.

The following list provides a description of improvements recommended under this alternative:

- Replace existing pumps with new pumps: Under this alternative, each pump station will be replaced with new Flygt or Vaughan pumps, via a submersible pump station, to meet the design ADF and design PHF provided in Table 2-14. An example of a Flygt submersible PS set up is provided in Appendix E, Figure E-6. The following set-up and features are recommended for pumps replacement at each PS:

Table 3-4:
Proposed Submersible Pump stations

	Joe Jones PS	**Industrial Park PS**	**Bowling Alley PS**
Submersible Pump Station Flygt	Semi- Permanent, Wet well mounted, below grade	Semi- Permanent, Wet well mounted, below grade	Semi- Permanent, Wet well mounted, below grade
Vaughan	Wet well mounted, below grade	Wet well mounted, below grade	Wet well mounted, below grade
Pumps Type	Duplex Pump	Duplex Pump	Duplex Pump
Function Flygt			

Vaughan	Self-monitoring anti-clogging, self priming Self-Priming Chopper Pump	Self-monitoring anti-clogging, self priming Self-Priming Chopper Pump	Self-monitoring anti-clogging, self priming Self-Priming Chopper Pump
Horsepower Flygt Vaughan	 15 13.4-17.54	 12 10.95-13.76	 20 14.79-19
Pumps Access Flygt & Vaughan	Lifting chain to attach to lift equipment at grade level	Lifting chain to attach to lift equipment at grade level	Lifting chain to attach to lift equipment at grade level

- Upsize Wet wells: Same recommendations as alternative 2.1 (Refer to section 3.3.1.1)
- Replace piping: Same recommendations as alternative 2.1 (Refer to section 3.3.1.1)
- Addition of flow meter and on-site backup generator: Same recommendations as alternative 2.1 (Refer to section 3.3.1.1)

3.3.2.2 Impact on Existing Facility

The impact on existing facility is expected to be the same as described in section 3.3.1.2.

3.3.2.3 Outfall Configuration

This alternative does not impact the existing City WPCP outfall.

3.3.2.4 Land Requirements

This alternative does not require additional land acquisition.

3.3.2.5 Environmental Impacts and Mitigation Measures

The environmental impacts and mitigation measures are the same as described in section 3.3.1.5.

3.3.2.6 Seasonal Limitations, Challenges and Requirements

The seasonal limitations, challenges and requirements are the same as described in section 3.3.1.6.

3.3.2.7 Discharge Permit Requirements

This alternative does not impact the City's SPDES permit requirements.

3.3.2.8 Efficiency Measures

The efficiency measures are the same as described in section 3.3.1.8.

3.3.2.9 Storm and Flood Resiliency

The storm and flood resiliency are the same as described in section 3.3.1.9.

3.3.2.10 Constructability and Schedule

The constructability and schedule are the same as described in section 3.3.1.10

3.3.2.11 Cost Estimate

A cost estimate is presented in Appendix F.

3.3.2.12 Non- Monetary Factors

The non-monetary factors are the same as described in section 3.3.1.12.

3.4 Alternative 3: Village of North Hornell Improvements

Alternative 3, Village of North Hornell Improvements, entails evaluation of two sub-alternatives, as provided in Table 3-1. The pump station evaluated in this alternative is the Seneca PS, located and owned by the Village.

3.4.1 **Alternative 3.1:** Replace existing pumps with suction lift pumps; upsize wet well; rehabilitation and replacement of select piping sections within the Village collection system

3.4.1.1 Description

Alternative 3.1 includes replacing existing pump stations with new suction lift pumps (conceptually Smith & Loveless equipment), upsizing the wet wells, and replacing or rehabilitation of various sections of piping within the Villages collection system. This alternative addresses existing and future capacity and condition issues at the Villages pump station and collection system. Therefore, this alternative is a feasible alternative for the Village of North Hornell.

The following list provides a description of improvements recommended under this alternative:

- Replace existing pumps with new pumps: Under this alternative, the Seneca PS will be replaced with new Smith & Loveless suction lift pumps to meet the design ADF and design PHF provided in Table 2-14. An example of a Smith & Loveless PS rectangular recessed wet well mounted set up is provided in Appendix E, Figure E-4. The following set-up and features are recommended for pumps replacement at the Seneca PS:

Table 3-5:
Proposed Suction Lift Pump stations

	Seneca PS
Suction Lift PS Set-up (Smith & Loveless)	Rectangular Recessed (Below Grade) Wet well Mounted
Pumps Set Up	Duplex Pump
Function	Vacuum Prime
Horsepower	20 (*estimated*)
Pumps Access	Grade level access

- Upsize Wet well: As provided in Table 2-13, the existing wet well sizing is unknown for this PS. The 365-camera used during the February 28 inspection indicated that the existing wet well is sized to have an internal diameter of approximately 8'. To meet the proposed design ADF, the proposed design PHF, the 2055 design ADF, and to be in compliance with Ten State Standards wet well filling time and pumps cycling time, the recommended wet well sizing is as follows: depth of 30' and diameter of 10'. Concept plan and design calculations of the upsized wet well is provided in Appendix E, Figures E-10. It is anticipated that the precast wet wells would be constructed using a dense, less permeable (5,000 psi) concrete mix. Coating is not recommended due to the desire to avoid a situation where moisture is trapped in the concrete leading to accelerated deterioration.
- Replacement and Rehabilitation of piping: Table 2-18 provides an evaluation of suitability of existing piping within the Village of North Hornell collection system. Existing piping suitability was based on velocity requirements (forcemains and gravity mains), as provided in Ten States, and flow capacity requirements under full pipe flow (gravity mains) by 2055. The following replacement and rehabilitation of piping are recommended to address existing and future capacity issues within the Villages collection system:

    1) Replacement of Seneca St. PS forcemain with a new 10" HDPE pipe

       The existing forcemain at the Seneca PS is an 8" pipe of unknown pipe material. The existing pipe is inadequate to meet future flow capacity requirements. It is recommended to replace the existing 8" forcemain with a 10" forcemain, parallel to the existing forcemain, to meet future conditions.

    2) Rehabilitation to various sections of the Villages main trunk line

       In 2022, the Village conducted an evaluation of its main sanitary trunk line. The study included video inspection of 17,302 linear foot (LF) of 8" sewers pipes, 6,349 LF of 12" sewer pipes, and 45 LF of 15" sewer pipes. The full inspection report, with detailed inspection results and recommendations, is provided in Appendix E-3. The inspection report's recommendations are included within this alternative, generally summarized as follows:

- Line pipe with Cured-in-place pipe (CIPP): General locations include Park, 4th Alley, 1st Alley, Maplewood, Rural, Country club, Avondale, Cleveland, Wells, 2nd Alley, 3rd Alley, Euclid, Chambers, Mc Kinley exit, and Richland.
- Test and grout pipe: General locations include Park, 4th Alley, Maplewood, Wightman, Country club, Second, Mckinley, and Seneca).
- Spot repair: General locations include Elmwood and Forth Exit.

3.4.1.2 Impact on Existing Facility

The proposed project would impact local roadways where excavation is necessary for piping replacement and rehabilitation. For work in roadways, the appropriate authority (NYS Department of Transportation (DOT), county DOT, and/or local authority) will be consulted to ensure that the proposed impacts are acceptable.

3.4.1.3 Outfall Configuration

This alternative does not impact the existing City WPCP outfall.

3.4.1.4 Land Requirements

This alternative does not require additional land acquisition.

3.4.1.5 Environmental Impacts and Mitigation Measures

For all portions of the proposed work, it is recommended to proceed in a manner that includes all involved stakeholders, thoroughly considers environmental impacts, and seeks the best available mitigation measures to minimize environmental impacts related to water quality and supply, noise levels, air quality, population growth, wetlands, flood plains and other sensitive areas.

This alternative includes work in areas near/in the vicinity of a waterbody, near/in the vicinity of state or federal wetlands, and in the vicinity of listed threatened or endangered species (section 2.1.3.4). Appropriate permits, consultation with regulatory agencies and mitigation measures, where appropriate, will be applied to ensure minimal environmental impacts.

3.4.1.6 Seasonal Limitations, Challenges and Requirements

Peak construction periods range from late Spring (May) through early Fall (September) as the project site typically experiences high temperatures and low seasonal groundwater that combine to present optimal construction conditions for the work of this alternative; therefore, these are the recommended periods for completing the majority of the work of this alternative.

Construction during the winter and early spring (October- April) pose several challenges which include the following: freezing of pipes and pumps, difficulty excavating, and difficulty accessing the construction site, among other things. Work during colder temperatures would lengthen the time of construction and hence lower construction efficiency.

3.4.1.7 Discharge Permit Requirements

This alternative does not impact the City's SPDES permit requirements.

3.4.1.8 Efficiency Measures

This alternative has the potential to increase the efficiency of conveyance of wastewater to the Hornell WPCP. Once construction of the recommended improvements has been completed, a reduction of sewage backups, and hence a reduction of untreated sewage in the environment (water loss, contamination, public health concerns), is expected. Overall, the improvements will allow the WPCP to operate efficiently and reduce disruptions with treatment at the plant due to pump station/collection system deficiencies within the Village.

3.4.1.9 Storm and Flood Resiliency

The proposed construction within the Village is not within the 100-year flood plain; however, the addition of sealed manhole covers and wet well covers, and sealed joints for construction of new piping will provide protection of infrastructure during a storm or flood event.

3.4.1.10 Constructability and Schedule

Constructability considerations for the work of this alternative include the following:

- It is expected that a Maintenance and Protection of Traffic (MPoT) plan would be required, as some proposed work on piping is within, or immediately adjacent to roadways.
- Several sections of piping throughout the collection system will require Excavation. Excavation includes shoring, dewatering, backfill. compaction and repaving.
- For the construction of upsized wet wells, installation of new pumps, and the replacement or rehabilitation of several forcemains or gravity mains throughout the collection system, bypass pumping may be necessary to allow residents to continue to use the system throughout construction.
- For the replacement of forcemains and/or gravity mains with new piping, the existing pipping will be abandoned in place and filled with flowable fill.

The improvements described within this alternative would initiate with a detailed engineering and permitting effort spanning approximately 1 year. Once engineering is completed and all stakeholders consulted, the bidding and construction effort can be expected to cover approximately 2 years. Appendix E-17 provides detailed mapping information on the proposed construction at the Seneca PS.

3.4.1.11 Cost Estimate

A cost estimate is presented in Appendix F.

3.4.1.12 Non-Monetary Factors

The improvements described in this alternative may decrease the frequency of operation and maintenance requirements at the Seneca PS and the collection system, within the Village,



specifically during high rainfall events. These improvements will allow for sewage to be collected and conveyed to the WPCP with little to no sewage backups throughout the collection system and into residential homes. Such improvements will ensure public health safety and protection from sewage and odor exposure.

3.4.2 **Alternative 3.2:** Replace existing pumps with submersible pumps; Upsize Wet wells; rehabilitation and replacement of select piping sections within the Village collection system

3.4.2.1 Description

Alternative 3.2 includes the same recommended replacement and rehabilitation listed in alternative 3.1. The difference between each alternative is alternative 3.1 includes replacing pumps with suction lift pumps and alternative 3.2 includes replacing pumps with submersible pumps (conceptually Flygt or Vaughan equipment) at the Seneca PS. As with alternative 3.1, alternative 3.2 is a feasible alternative for the Village of North Hornell.

The following list provides a description of improvements recommended under this alternative:

- Replace existing pumps with new pumps: Under this alternative, the Seneca PS will be replaced with new Flygt or Vaughan pumps, via a submersible pump station, to meet the design ADF and design PHF provided in Table 2-14. An example of a Flygt pump station set up is provided in Appendix E, Figure E-6. The following set-up and features are recommended for pumps replacement at the Seneca PS:

Table 3-6:
Proposed Submersible Pump Station

	Seneca PS
Submersible Pump Station	
Flygt	Semi- Permanent, Wet well mounted, below grade
Vaughan	Wet well mounted, below grade
Pumps Type	Duplex Pump
Function	
Flygt	Self-monitoring anti-clogging; self priming
Vaughan	Self-priming Chopper pump
Horsepower	
Flygt	15
Vaughan	14.24-16.88
Pumps Access	

Flygt & Vaughan	Lifting chain to attach to lift equipment at grade level

- Upsize Wet wells: Same recommendations as alternative 3.1 (Refer to section 3.4.1.1)
- Replacement and Rehabilitation of piping: Same recommendations as alternative 3.1 (Refer to section 3.4.1.1)

3.4.2.2 Impact on Existing Facility

The impact on existing facility is expected to be the same as described in section 3.4.1.2.

3.4.2.3 Outfall Configuration

This alternative does not impact the existing City WPCP outfall.

3.4.2.4 Land Requirements

This alternative does not require additional land acquisition.

3.4.2.5 Environmental Impacts and Mitigation Measures

The environmental impacts and mitigation measures are the same as described in section 3.4.1.5.

3.4.2.6 Seasonal Limitations, Challenges and Requirements

The seasonal limitations, challenges and requirements are the same as described in section 3.4.1.6.

3.4.2.7 Discharge Permit Requirements

This alternative does not impact the City's SPDES permit requirements.

3.4.2.8 Efficiency Measures

The efficiency measures are the same as described in section 3.4.1.8.

3.4.2.9 Storm and Flood Resiliency

The storm and flood resiliency is the same as described in section 3.4.1.9.

3.4.2.10 Constructability and Schedule

The constructability and schedule are the same as described in section 3.4.1.10

3.4.2.11 Cost Estimate

A cost estimate is presented in Appendix F.

3.4.2.12 Non- Monetary Factors

The non-monetary factors are the same as described in section 3.4.1.12.

3.5 Alternative 4: City of Hornell Improvements

3.5.1 **Alternative 4.1:** Pump Stations Replacement In-Kind; recommended repairs to existing wet wells

3.5.1.1 Description

Alternative 4.1 includes pump stations replacement in-kind, recommended repairs to the existing wet wells at each PS, and the implementation of flow meters and on-site backup generators at each PS. The pump stations evaluated in this alternative are the Mays Ave PS, Madison Ave PS, Walmart PS and Ice Haus PS, located and owned by the City of Hornell. This alternative addresses the pump stations condition concerns, due to aging infrastructure, as identified in this evaluation. Therefore, this alternative is a feasible alternative for the City of Hornell.

The following list provides a description of improvements recommended under this alternative. Note that City collection system hydraulic modeling was not completed during the present evaluation, thus recommendations for replacement-in-kind are based upon City DPW officials' observations that existing equipment has sufficient capacity, but has aged beyond its useful life.

- Replacement In Kind: Replace each pump station's pumps with new suction lift pumps (conceptually Smith & Loveless equipment) that are identical or functionally equivalent to the original pumps at the pump station. The new pumps are intended to be able to handle the same design flow capacity and be similar in size as the existing pumps. Under this alternative, other equipment/structures at each pump station, such as the wet wells and forcemains, shall remain the same with the addition of recommended repairs to the wet wells.
- Recommended repairs to existing wet wells: Section 2.3 provides existing wet well conditions and recommended repairs to each pump stations wet well.
- Addition of flow meter and on-site backup generator: As provided in Table 2-19 and Table 2-20, the Mays Ave PS, Walmart PS and Ice Haus Rd PS currently do not have a flow meter or on-site backup generator. The Madison Ave PS currently does not have a flow meter but has an on-site backup generator that has not worked for the past 2 years. It is recommended to implement a continuous flow meter and on-site backup generator at all pumping stations.

3.5.1.2 Impact on Existing Facility

This alternative does not impact the existing pump stations or surrounding areas.

3.5.1.3 Outfall Configuration

This alternative does not impact the existing City WPCP outfall.

3.5.1.4 Land Requirements

This alternative does not require additional land acquisition.

3.5.1.5 Environmental Impacts and Mitigation Measures

For all portions of the proposed work, it is recommended to proceed in a manner that includes all involved stakeholders, thoroughly considers environmental impacts, and seeks the best available mitigation measures to minimize environmental impacts related to water quality and supply, noise levels, air quality, population growth, wetlands, flood plains and other sensitive areas.

This alternative includes work in areas that are in the vicinity of a waterbody, state or federal wetlands, and listed threatened or endangered species (section 2.1.3.4). Appropriate permits, consultation with regulatory agencies and mitigation measures, where appropriate, will be applied to ensure minimal environmental impacts.

3.5.1.6 Seasonal Limitations, Challenges and Requirements

Peak construction periods range from late Spring (May) through early Fall (September) as the project site typically experiences high temperatures and low seasonal groundwater that combine to present optimal construction conditions for the work of this alternative; therefore, these are the recommended periods for completing the majority of the work of this alternative.

Construction during the winter and early spring (October- April) pose several challenges which include the following: freezing of pipes and pumps, and difficulty accessing the construction site, among other things. Work during colder temperatures would lengthen the time of construction and hence lower construction efficiency.

3.5.1.7 Discharge Permit Requirements

This alternative does not impact the City's SPDES permit requirements.

3.5.1.8 Efficiency Measures

This alternative has the potential to increase pump performance and reduce energy consumption and costs at each of the pump stations. As pumps age, performance decreases, which lowers a pump station's efficiency and increases energy consumption and costs. Warn out equipment will tend to require the pumps to put in more energy and work to pump the same amount of sewage that new pumps/equipment can pump using less work and energy. Once the pumps are replaced in-kind under this alternative, and the recommended wet well repairs are completed, the conveyance of wastewater to the Hornell WPCP is expected to improve.

3.5.1.9 Storm and Flood Resiliency

The proposed construction within the City is not within the 100-year flood plain; however, the addition of back-up generators during pump station power failure will allow pump stations to continue to function during storm events, when power failure is most likely to occur.

3.5.1.10 Constructability and Schedule

Constructability considerations for the work of this alternative include the following:

- For the, installation of new pumps and the recommended repairs to the wet wells, bypass pumping may be necessary to allow residents to continue to use the system throughout construction.
- For the installation of an on-site back-up generator, coordination with the electrical team and utility provider is anticipated.

At present, given that this alternative involves replacement-in-kind, it is anticipated that it could be advanced (if the City so chooses) along an expedited design and construction timeline. Nonetheless, review of collection system hydraulics is recommended during the detailed design phase of this alternative.

3.5.1.11 Cost Estimate

A cost estimate is presented in Appendix F.

3.5.1.12 Non- Monetary Factors

The improvements described in this alternative may decrease the frequency of operation and maintenance requirements at each of the pump station. The improvements will allow for sewage to be collected and conveyed to the WPCP with little to no operation disruptions, such as pump station failure, due to aging infrastructure, and power outages. Additionally, such improvements may allow WPCP operators to focus more of their attention elsewhere at the WPCP, thus improving their ability to operate, maintain and proactively address issues at the WPCP.

3.6 Engineer's Opinions of Probable Construction Costs

The total project cost, with associated alternatives outlined in this PER, are divided by each community, The total project cost with construction costs, non-construction costs and contingency include the following:

- Non-construction may include land/easement acquisition, legal, engineering, construction management, financial advisor, grant/loan administrator, etc.
- Contingency up to 30% is acceptable

Annual operation and maintenance (O&M) cost include personnel, administration, water purchase or waste treatment costs, insurance, energy cost (fuel or electric), process chemical, monitoring and testing, short-lived asset maintenance and replacement, professional services, and residuals disposal.

Please refer to Appendix F for opinions of probable construction costs and life-cycle cost comparisons for the feasible alternatives considered.

4. SUMMARY AND COMPARISON OF ALTERNATIVES

If field investigations and further design work during detailed design reveal that significant modifications are necessary, this analysis and the recommendation of an alternative must be re-evaluated. At the present level of investigation, the summary and comparison of alternatives for each community follow. Summary tables of technically feasible alternatives identifying major differences, pros and cons, non-monetary factors, and costs are provided below. The summary and comparison of alternatives are divided by ownership of infrastructure for each community (City, Town and Village).

Table 4-1:
Town of Hornellsville Alternatives

	Alternative 2.1	**Alternative 2.2**
Major Differences	Replace pumps with Suction Lift Pumps (Conceptually Smith & Loveless equipment)	Replace pumps with Submersible Pumps (Conceptually Flygt or Vaughan)
Pros	• Existing pump stations are suction lift pumps with Smith & Loveless equipment - Familiarity with equipment reduces operators' time to learn to operate and maintain pump stations • Grade level access to pumps facilitates O&M • Continued standardization on suction lift pumps across the City, Town, and Village facilitates sharing of O&M personnel and spare parts	• Lower capital and life-cycle cost
Cons	• Higher capital and life-cycle cost	• Communities' operators are unfamiliar with the operation and maintenance of submersible pump stations. • Pump access for inspection or maintenance requires removal of pump from its submerged state within wet well.
Summary of Life Cycle Cost Analysis	• Estimated Capital Cost: $10,710,500 • Estimated life-cycle costs: o Total cost (2025 present value) over 30-year planning period: $14,088,000 o Simple annual average total cost per EDU (using the EDU total for all users across all municipalities) over 30-year planning period: $57.14	• Estimated Capital Cost: $9,228,700 • Estimated life-cycle costs: o Total cost (2025 present value) over 30-year planning period: $11,230,000 o Simple annual average total cost per EDU (using the EDU total for all users across all municipalities) over 30-year planning period: $45.54

Table 4-2: Village of North Hornell Alternatives		
Alternatives	**Alternative 3.1**	**Alternative 3.2**
Major Differences	Replace pumps with Suction Lift Pumps (Conceptually Smith & Loveless equipment)	Replace pumps with Submersible Pumps (Conceptually Flygt or Vaughan)
Pros	• Existing pump stations are suction lift pumps with Smtih & Loveless equipment - Familiarity with equipment reduces operators time to learn to operate and maintain pump stations • Grade level access to pumps • Continued standardization on suction lift pumps across the City, Town, and Village facilitates sharing of O&M personnel and spare parts	• Lower capital and life-cycle cost
Cons	• Higher capital and life-cycle cost	• Communities' operators are unfamiliar with the operation and maintenance of submersible pump stations • Pump access for inspection or maintenance requires removal of pump from its submerged state within wet well.
Summary of Life Cycle Cost Analysis	• Estimated Capital Cost: $3,503,000 • Estimated life-cycle costs: o Total cost (2025 present value) over 30-year planning period: $4,754,000 o Simple annual average total cost per EDU (using the EDU total for all users across all municipalities) over 30-year planning period: $19.28	• Estimated Capital Cost: $2,991,500 • Estimated life-cycle costs: o Total cost (2025 present value) over 30-year planning period: $3,664,000 o Simple annual average total cost per EDU (using the EDU total for all users across all municipalities) over 30-year planning period: $14.86

Table 4-3: City of Hornell Alternatives		
Alternatives	**Null Alternative**	**Alternative 4.1**
Major Differences	Do nothing to existing infrastructure	Pump station replacement in kind with suction lift pumps (Conceptually Smith & Loveless)

Pros	• Does not pose a cost to the community	• Replaces aging infrastructure in need of replace due to condition
Cons	• Does not address aging infrastructure replacement/repairs needed. • If future emergency repairs/replacement are needed, that will pose a higher cost to the community than if the community remains proactive to address infrastructure deficiencies when they occur	• Requires capital expenditure
Summary of Life Cycle Cost Analysis	• No capital costs or life-cycle costs	• Estimated Capital Cost: $2,568,350 • Estimated life-cycle costs: o Total cost (2025 present value) over 30-year planning period: $5,094,000 o Simple annual average total cost per EDU (using the EDU total for all users across all municipalities) over 30-year planning period: $20.66

4.1 Life- Cycle Costs Analysis

Appendix F presents a life-cycle cost analysis for each feasible alternative considered within each community. Please refer to Section 5.3 for a proposed asset investment schedule.

5. RECOMMENDED ALTERNATIVE

5.1 Basis of Selection

Given the technical evaluation results and ongoing engagement with various stakeholders during the evaluation, preference for pumpstations similar to those which are currently operating was stated. Furthermore, given that the City pump stations are configured for suction lift and pumping equipment is recommended to be replaced in-kind, it is advantageous for the Town and Village to continue use of similar suction lift equipment. Given the marginal cost difference between pump types considered and the efficiencies gained by standardization, Alternatives 2.1, 3.1, and 4.1 are recommended.

5.2 Capital Cost Estimate

Appendix F presents a detailed capital cost estimate for the recommended alternatives. The total estimated capital cost (including Alternatives 2.1, 3.1, and 4.1) is $16,782,000 assuming a construction midpoint of late 2028.

5.3 Asset Investment Schedule

The following table presents an asset investment schedule associated with the recommended alternative, and which includes the following:

- Capital costs for the proposed project.
- Operational costs, including energy costs, related to new equipment and processes as recommended for the capital improvements. It is assumed that other costs, such as employee benefits, interfund transfers, special items, and any administrative costs associated with system operation will continue at the same rate and have been excluded.
- Maintenance costs, including typical activities such as lubrication of moving equipment, and replacement of wear items.
- Short-lived asset costs, including replacement of components critical to process operation, but do not require a full equipment replacement or rehabilitation. Short-lived assets typically would be replaced at least once within the planning period, falling in the 5 year to 20 year timeframe. An ongoing short-lived asset reserve fund is established such that operating revenue can be collected to address these specific needs without issuing new debt.

Debt service, operating, maintenance, and short-lived asset present value costs are compiled into an overall annual costs table, escalated by an average amount per year to account for long-term inflation. An assessment can then be made regarding accelerating or delaying certain investments to either consolidate expenditures (for the purpose of creating a viable capital project), or deferring activities to years where fewer expenditures would be required according to the typical replacement or O&M schedule. This allows a possible annual budget to be developed that avoids significant annual deviations.

The following table summarizes the suggested asset investment schedule.

Year	Total Debt Service	O&M Costs	Short Lived Asset Cost	Annual Total	Annual Total EDU	Annual Total Cost per EDU
2025	$193,826	$ 87,000	$ 150,000	$430,826	8219	$ 52
2026	$193,826	$ 90,000	$ 150,000	$433,826	8219	$ 53
2027	$193,826	$ 92,000	$ 150,000	$435,826	8219	$ 53
2028	$1,104,826	$ 125,869	$ 150,000	$1,380,695	8219	$ 168
2029	$1,104,826	$ 129,718	$ 150,000	$1,384,545	8219	$ 168
2030	$1,078,624	$ 133,568	$ 175,000	$1,387,192	8219	$ 169
2031	$1,078,624	$ 137,418	$ 175,000	$1,391,042	8219	$ 169
2032	$1,078,624	$ 159,417	$ 175,000	$1,413,041	8219	$ 172
2033	$1,078,624	$ 145,117	$ 175,000	$1,398,741	8219	$ 170
2034	$1,078,624	$ 149,966	$ 175,000	$1,403,590	8219	$ 171
2035	$1,078,624	$ 153,816	$ 200,000	$1,432,440	8219	$ 174
2036	$1,078,624	$ 157,666	$ 200,000	$1,436,290	8219	$ 175
2037	$1,078,624	$ 182,915	$ 200,000	$1,461,539	8219	$ 178
2038	$1,078,624	$ 167,365	$ 200,000	$1,445,989	8219	$ 176
2039	$1,078,624	$ 172,214	$ 200,000	$1,450,838	8219	$ 177
2040	$1,078,624	$ 177,064	$ 225,000	$1,480,688	8219	$ 180
2041	$1,078,624	$ 181,914	$ 225,000	$1,485,538	8219	$ 181
2042	$1,078,624	$ 209,413	$ 225,000	$1,513,037	8219	$ 184
2043	$1,078,624	$ 191,613	$ 225,000	$1,495,237	8219	$ 182
2044	$1,078,624	$ 197,462	$ 250,000	$1,526,086	8219	$ 186
2045	$1,078,624	$ 202,312	$ 250,000	$1,530,936	8219	$ 186
2046	$971,000	$ 208,162	$ 250,000	$1,429,162	8219	$ 174
2047	$971,000	$ 238,911	$ 250,000	$1,459,911	8219	$ 178
2048	$971,000	$ 219,861	$ 250,000	$1,440,861	8219	$ 175
2049	$971,000	$ 225,710	$ 250,000	$1,446,710	8219	$ 176
2050	$971,000	$ 231,560	$ 250,000	$1,452,560	8219	$ 177
2051	$971,000	$ 238,410	$ 250,000	$1,459,410	8219	$ 178
2052	$971,000	$ 271,409	$ 250,000	$1,492,409	8219	$ 182
2053	$971,000	$ 251,109	$ 250,000	$1,472,109	8219	$ 179
2054	$971,000	$ 257,958	$ 250,000	$1,478,958	8219	$ 180
2055	$971,000	$ 264,808	$ 250,000	$1,485,808	8219	$ 181

5.4 Project Schedule

The Town, Village and City plan to proceed with the proposed project per the following schedule:

Table 5-1:
Project Proposed Schedule

Project Task:	Date
Complete Preliminary Engineering Report	May 2025
Submit CWSRF Intended Use Plan Listing	May 2025
Environmental Review (SEQR, SHPO)	June- July 2025
Intermunicipal Agreement Development	Summer 2025
Bond Municipal Resolution	Summer 2025
EFC IMG Grant Submission	Summer 2025
Preparation & Submission of Other Funding Applications	Summer 2025

Funding Award	Late 2025
RFQ for Engineering Consulting Services	Early 2026
Detailed Design & Permitting	Spring 2026- Summer 2027
CDBG Grant Application Submission	Summer 2026
Regulatory Approval	Fall 2027
Bidding	Late 2027
Construction Start	Spring 2028
Construction Complete	Late 2029

5.5 Next Steps

5.5.1 Community Engagement

The proposed project will provide public notification during the following steps: Town, Village, and City Board meetings, SEQR review, Bond Financing, Intended Use Plan listing, and required public hearings and publications.

5.5.2 SEQR and SHPO Review

The recommended alternative is anticipated to utilize NYS Environmental Facilities Corporation (EFC) financing. As such, the State Environmental Quality Review (SEQR) review requires State Environmental Review Process (SERP), which may be more stringent than the requirements under SEQR. As such, an Unlisted Action generally must be treated as a Type I Action under SEQR. Therefore, review will include completion of Full Environmental Assessment Forms Part 1 through 3 and coordinated review.

Consultation with New York's State Historic Preservation Office (SHPO), within the New York State Office of Parks, Recreation and Historic Preservation is anticipated. The proposed design will be submitted through the online Cultural Resource Information System (CRIS) to obtain a letter from SHPO stating that based upon its review, it is SHPO's opinion that the project will or will not have effect upon cultural resources in or eligible for inclusion in the National Register of Historic Places. Based on preliminary review of the area and the proposed project, it is anticipated that a letter of No Effect be issued.

5.5.3 Anticipated Procurement Methods

The Town, Village and City anticipate using a combination of funding sources including but not limited to NYSEFC funding. Therefore, the municipalities must comply with certain requirements including Mandatory Terms & Conditions, Minority and Women-Owned, Disadvantaged Business Enterprise/Equal Employment Opportunity, Service-Disabled Veteran-Owned Business, Davis-Bacon Prevailing Wage Requirements, American Iron and Steel Guidance and any other requirements set forth at the time of financing execution. Potential grant programs are listed below. We recommend the municipalities consider the competitive potential of the project in regard to the funding programs and each municipalities administrative and financial needs to optimize their funding strategy.

We anticipate that the proposed project is eligible for the following loan and grant programs.

5.5.3.1 NYSEFC Water Infrastructure Improvement Act (WIIA)

The NYSEFC WIIA grant program is for infrastructure projects that protect public health and/or improve water quality or address emerging contaminants. Project application requires environmental review, smart growth, resolution, bond, MWBE/EEO. Evaluation criteria include reduction in public health risk, financial need of community, readiness to advance to construction, demonstrated community support.

- Application Period: Application due July 2025.
- Maximum Award: 25% of Total Net Eligible Project Costs up to $25 million.

5.5.3.2 NYSEFC Intermunicipal Grant (IMG)

Grant funds for cooperating municipalities with an eligible project that serves multiple municipalities and be a shared project such as consolidation of facilities.

- Maximum award is $30,000,000 or 40% of net eligible project costs.
- Anticipated application due July 2025.

5.5.3.3 NYSDEC Water Quality Improvement Projects (WQIP)

The NYSDEC WQIP project is state funding that provides matching reimbursement grants for projects that directly address documented water quality issues or protect a drinking water source. Highest priority is given to projects which 1) significantly address "precluded" or "impaired" waterbodies listed on the Waterbody Inventory/Priority Waterbodies List; and 2) are consistent with regional watershed programs. Application evaluation criteria include economic and technical viability, comprehensiveness of approach, urgency of need, project readiness, applicant's experience, and capacity to undertake the project, compliance with State Smart Growth criteria, and alignment with Regional Economic Development Council recommendations. Attachments required for submission include a budget worksheet, engineering report, project map, floodplain map, sexual harassment prevention certification form, and Executive Order 16 form.

- Application period: Application due as part of NYS CFA, anticipated due date in July 2025.
- Maximum award: 25% of eligible project costs.

5.5.4 Smart Growth

Refer to Appendix G for Smart Growth Form.

5.5.5 Engineering Report Certification

Refer to Appendix H for signed Engineering Report Certification.

APPENDIX A

Location Maps

Figure A-1

City of Hornell WPCP Location



LaBella
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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
City of Hornell Water Pollution Control Plant Location

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Feb 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure A-1

1/31/2025 11:01:11 AM
B:\GLOBAL\Projects\Hornell, City of\2250913 - Intermunicipal Sewer Evaluation\06_Drawings\Civil\Titleblocks\LBA-8.5x11-ANSI A-Landscape.dwg

Figure A-2

City of Hornell PS Locations









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C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: City of Hornell PS Locations

ISSUED FOR: DRAFT

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure A-2

1/31/2025 11:01:11 AM
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Figure A-3

Town of Hornellsville PS Locations







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585-454-6110
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: Town of Hornellsville Pump Station Locations

ISSUED FOR: DRAFT

DRAWN BY: KA | DATE: Feb 2025 | PROJECT NO.: 2250913

PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure A-3

1/31/2025 11:01:11 AM
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Figure A-4

Village of North Hornell PS Locations



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Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: Village of North Hornell Pump Station Locations

ISSUED FOR: DRAFT

DRAWN BY: KA | DATE: Feb 2025 | PROJECT NO.: 2250913

PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure A-4

1/31/2025 11:01:11 AM
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APPENDIX B

Environmental Resources

Figure B-1

Geological Report

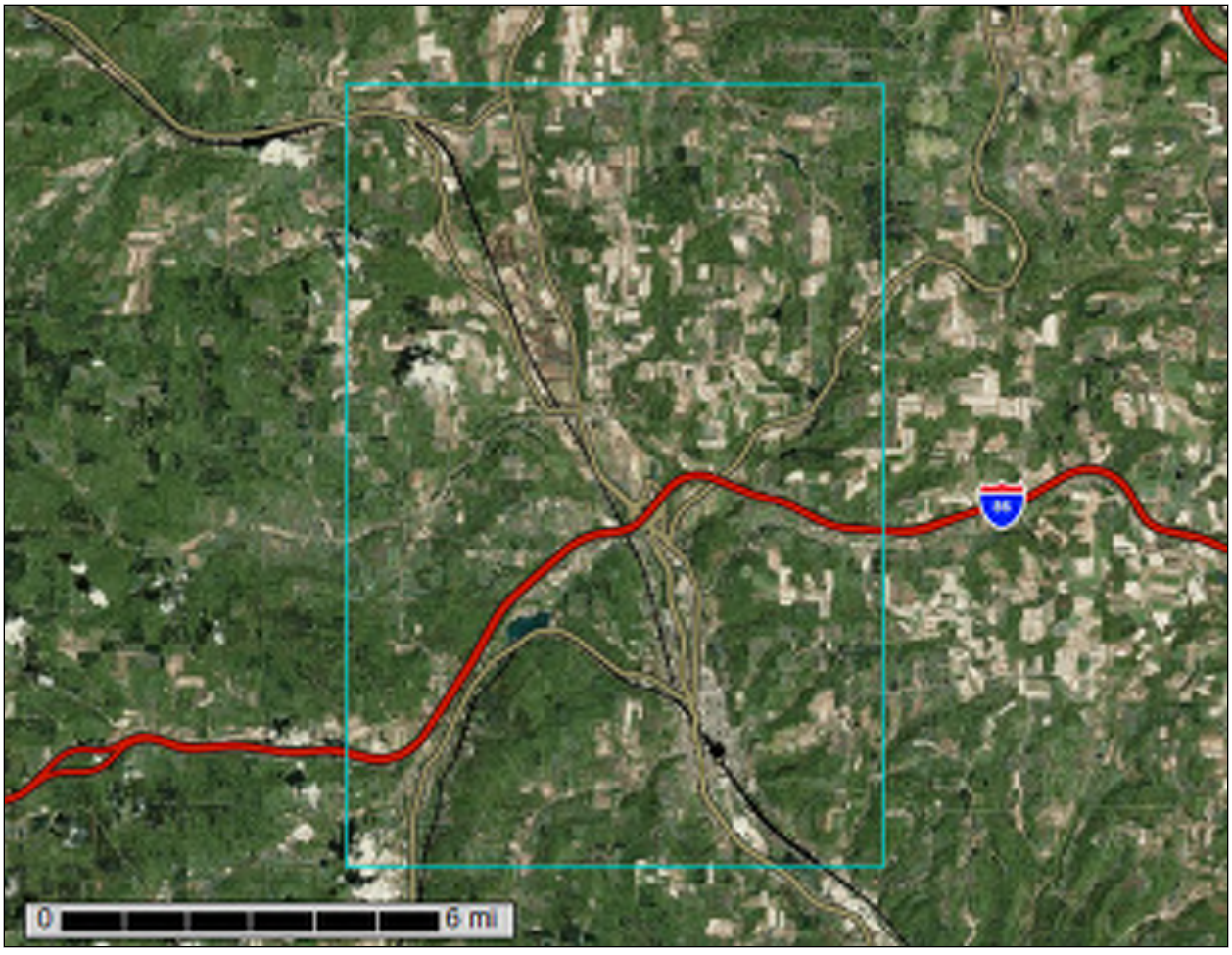
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Allegany County Area, New York, and Steuben County, New York



February 2, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:116,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1500 3000 6000 9000

Feet
0 5000 10000 20000 30000

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

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

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

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

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

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

Soil Survey Area: Allegany County Area, New York
Survey Area Data: Version 30, Aug 30, 2024

Soil Survey Area: Steuben County, New York
Survey Area Data: Version 21, Aug 25, 2024

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Aug 3, 2021—Nov 7, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1A	Udifluvents and Fluvaquents, frequently flooded, 0 to 3 percent slopes	95.4	0.1%
3A	Tioga loam, occasionally flooded, 0 to 3 percent slopes	134.8	0.2%
5A	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	50.4	0.1%
8A	Middlebury silt loam, 0 to 3 percent slopes	130.3	0.2%
9A	Pawling silt loam, 0 to 3 percent slopes	110.4	0.2%
11C	Ischua channery silt loam, 8 to 15 percent slopes	21.7	0.0%
11D	Ischua channery silt loam, 15 to 25 percent slopes	58.3	0.1%
11E	Ischua channery silt loam, 25 to 35 percent slopes	74.0	0.1%
14A	Hornellsville silt loam, 0 to 3 percent slopes	8.2	0.0%
14B	Hornellsville silt loam, 3 to 8 percent slopes	25.7	0.0%
14C	Hornellsville silt loam, 8 to 15 percent slopes	13.9	0.0%
14D	Hornellsville silt loam, 15 to 25 percent slopes	57.1	0.1%
14E	Hornellsville silt loam, 25 to 35 percent slopes	5.3	0.0%
15B	Willdin channery silt loam, 3 to 8 percent slopes	40.5	0.1%
15C	Willdin channery silt loam, 8 to 15 percent slopes	28.9	0.0%
16A	Almond silt loam, 0 to 3 percent slopes	270.8	0.4%
16B	Almond silt loam, 3 to 8 percent slopes	208.0	0.3%
16C	Almond silt loam, 8 to 15 percent slopes	91.7	0.1%
17B	Salamanca silt loam, 3 to 8 percent slopes	6.3	0.0%
17D	Salamanca silt loam, 15 to 25 percent slopes	13.6	0.0%
18F	Rock outcrop-Arnot complex, 25 to 70 percent slopes	38.6	0.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19A	Olean silt loam, 0 to 3 percent slopes	242.0	0.4%
19B	Olean silt loam, 3 to 8 percent slopes	10.0	0.0%
22A	Allard silt loam, 0 to 3 percent slopes	131.0	0.2%
22B	Allard silt loam, 3 to 8 percent slopes	42.2	0.1%
22C	Allard silt loam, 8 to 15 percent slopes	10.6	0.0%
25A	Chenango gravelly silt loam, 0 to 3 percent slopes	161.6	0.2%
26A	Chenango channery silt loam, fan, 0 to 3 percent slopes	28.1	0.0%
26B	Chenango channery silt loam, fan, 3 to 8 percent slopes	85.2	0.1%
27A	Castile gravelly silt loam, 0 to 3 percent slopes	5.2	0.0%
27B	Castile gravelly silt loam, 3 to 8 percent slopes	8.2	0.0%
29B	Arkport sandy loam, 3 to 8 percent slopes	12.5	0.0%
29C	Arkport sandy loam, 8 to 15 percent slopes	6.8	0.0%
35B	Rhinebeck silt loam, 3 to 8 percent slopes	22.3	0.0%
36A	Canadice silty clay loam, 0 to 3 percent slopes	13.6	0.0%
51D	Chadakoin channery silt loam, 15 to 25 percent slopes	7.5	0.0%
51F	Chadakoin channery silt loam, 35 to 50 percent slopes	13.2	0.0%
52A	Valois gravelly silt loam, 0 to 3 percent slopes	21.2	0.0%
52B	Valois gravelly silt loam, 3 to 8 percent slopes	122.4	0.2%
52C	Valois gravelly silt loam, 8 to 15 percent slopes	45.7	0.1%
52D	Valois gravelly silt loam, 15 to 25 percent slopes	12.4	0.0%
52E	Valois gravelly silt loam, 25 to 35 percent slopes	32.1	0.0%
52F	Valois gravelly silt loam, 35 to 50 percent slopes	7.8	0.0%
58A	Rushford channery silt loam, 0 to 3 percent slopes	10.3	0.0%
58B	Rushford channery silt loam, 3 to 8 percent slopes	280.7	0.4%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
58C	Rushford channery silt loam, 8 to 15 percent slopes	469.8	0.7%
58D	Rushford channery silt loam, 15 to 25 percent slopes	573.9	0.8%
58E	Rushford channery silt loam, 25 to 35 percent slopes	153.3	0.2%
60A	Napoli silt loam, 0 to 3 percent slopes	31.1	0.0%
60B	Napoli silt loam, 3 to 8 percent slopes	38.9	0.1%
60C	Napoli silt loam, 8 to 15 percent slopes	82.4	0.1%
60D	Napoli silt loam, 15 to 25 percent slopes	7.8	0.0%
61B	Schuyler silt loam, 3 to 8 percent slopes	10.3	0.0%
61C	Schuyler silt loam, 8 to 15 percent slopes	37.5	0.1%
61D	Schuyler silt loam, 15 to 25 percent slopes	99.1	0.1%
62B	Mardin channery silt loam, 3 to 8 percent slopes	101.8	0.2%
62C	Mardin channery silt loam, 8 to 15 percent slopes	471.1	0.7%
62D	Mardin channery silt loam, 15 to 25 percent slopes	115.0	0.2%
62E	Mardin channery silt loam, 25 to 35 percent slopes	14.5	0.0%
64C	Mardin channery silt loam, 8 to 15 percent slopes, very stony	9.2	0.0%
66B	Volusia channery silt loam, 3 to 8 percent slopes, very stony	5.8	0.0%
66C	Volusia channery silt loam, 8 to 15 percent slopes, very stony	86.3	0.1%
68A	Volusia channery silt loam, 0 to 3 percent slopes	147.5	0.2%
68B	Volusia channery silt loam, 3 to 8 percent slopes	405.1	0.6%
68C	Volusia channery silt loam, 8 to 15 percent slopes	582.2	0.9%
68D	Volusia channery silt loam, 15 to 25 percent slopes	34.7	0.1%
69B	Erie channery silt loam, 3 to 8 percent slopes	109.0	0.2%
69C	Erie channery silt loam, 8 to 15 percent slopes	102.0	0.2%
71B	Mongaup channery silt loam, 3 to 8 percent slopes, very stony	31.6	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71D	Mongaup and Ischua channery silt loams, 15 to 25 percent slopes, extremely stony	44.5	0.1%
71E	Mongaup and Ischua channery silt loams, 25 to 35 percent slopes, extremely stony	71.1	0.1%
71F	Mongaup and Ischua channery silt loams, 35 to 65 percent slopes, extremely stony	100.6	0.1%
72B	Towerville silt loam, 3 to 8 percent slopes	21.9	0.0%
72C	Towerville silt loam, 8 to 15 percent slopes	2.5	0.0%
72D	Towerville silt loam, 15 to 25 percent slopes	94.7	0.1%
72E	Towerville silt loam, 25 to 35 percent slopes	32.4	0.0%
72F	Towerville silt loam, 35 to 50 percent slopes	11.8	0.0%
73A	Gretor channery silt loam, 0 to 3 percent slopes	68.3	0.1%
73B	Gretor channery silt loam, 3 to 8 percent slopes	53.1	0.1%
73C	Gretor channery silt loam, 8 to 15 percent slopes	96.9	0.1%
76A	Orpark silt loam, 0 to 3 percent slopes	56.3	0.1%
76B	Orpark silt loam, 3 to 8 percent slopes	134.2	0.2%
76C	Orpark silt loam, 8 to 15 percent slopes	34.0	0.1%
77A	Chippewa silt loam, 0 to 3 percent slopes	42.7	0.1%
77B	Chippewa silt loam, 3 to 8 percent slopes	7.2	0.0%
78C	Hornell silt loam, 8 to 15 percent slopes	64.1	0.1%
78D	Hornell silt loam, 15 to 25 percent slopes	144.4	0.2%
78E	Hornell silt loam, 25 to 35 percent slopes	60.1	0.1%
79B	Mongaup channery silt loam, 3 to 8 percent slopes	3.0	0.0%
80A	Fremont silt loam, 0 to 3 percent slopes	23.7	0.0%
80B	Fremont silt loam, 3 to 8 percent slopes	89.3	0.1%
80C	Fremont silt loam, 8 to 15 percent slopes	409.2	0.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
80D	Fremont silt loam, 15 to 25 percent slopes	13.2	0.0%
81B	Varysburg gravelly loam, 3 to 8 percent slopes	46.0	0.1%
81D	Varysburg gravelly loam, 15 to 25 percent slopes	14.8	0.0%
81E	Varysburg gravelly loam, 25 to 35 percent slopes	52.5	0.1%
92A	Catden muck, 0 to 2 percent slopes	274.3	0.4%
93A	Aquepts, Aquents, and Saprists, inundated, 0 to 3 percent slopes	9.5	0.0%
100D	Udorthents, loamy-skeletal, 0 to 25 percent slopes	75.5	0.1%
117D	Willdin channery silt loam, 15 to 25 percent slopes, very stony	44.3	0.1%
118B	Ontusia channery silt loam, 3 to 8 percent slopes, very stony	53.9	0.1%
118C	Ontusia channery silt loam, 8 to 15 percent slopes, very stony	62.6	0.1%
124B	Lewbath channery silt loam, 3 to 8 percent slopes	6.7	0.0%
124C	Lewbath channery silt loam, 8 to 15 percent slopes	6.7	0.0%
125A	Howard gravelly loam, 0 to 3 percent slopes	705.3	1.0%
125B	Howard gravelly loam, 3 to 8 percent slopes	866.9	1.3%
125C	Howard gravelly loam, 8 to 15 percent slopes	714.5	1.1%
125D	Howard gravelly loam, 15 to 25 percent slopes	537.3	0.8%
125E	Howard gravelly loam, 25 to 35 percent slopes	282.7	0.4%
125F	Howard gravelly loam, 35 to 60 percent slopes	450.2	0.7%
126A	Ontusia channery silt loam, 0 to 3 percent slopes	28.0	0.0%
126B	Ontusia channery silt loam, 3 to 8 percent slopes	73.1	0.1%
126C	Ontusia channery silt loam, 8 to 15 percent slopes	66.4	0.1%
126D	Ontusia channery silt loam, 15 to 25 percent slopes	47.5	0.1%
132A	Wiscoy-Volusia complex, 0 to 3 percent slopes	217.8	0.3%
132B	Wiscoy-Volusia complex, 3 to 8 percent slopes	436.5	0.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
132C	Wiscoy-Volusia complex, 8 to 15 percent slopes	802.8	1.2%
134C	Bath channery silt loam, 8 to 15 percent slopes	30.4	0.0%
134D	Bath channery silt loam, 15 to 25 percent slopes	41.8	0.1%
134E	Bath channery silt loam, 25 to 35 percent slopes	7.7	0.0%
135B	Hudson silt loam, 3 to 8 percent slopes	5.8	0.0%
135C	Hudson silt loam, 8 to 15 percent slopes	17.9	0.0%
171F	Lordstown and Towerville soils, 35 to 60 percent slopes, extremely stony	285.7	0.4%
179B	Lordstown channery silt loam, 3 to 8 percent slopes	16.6	0.0%
179C	Lordstown channery silt loam, 8 to 15 percent slopes	244.0	0.4%
179D	Lordstown channery silt loam, 15 to 25 percent slopes	74.0	0.1%
179E	Lordstown channery silt loam, 25 to 35 percent slopes	95.3	0.1%
179F	Lordstown channery silt loam, 35 to 60 percent slopes	240.8	0.4%
188B	Kanona silty clay loam, 3 to 8 percent slopes	88.7	0.1%
188C	Kanona silty clay loam, 8 to 15 percent slopes	209.3	0.3%
200D	Udorthents, loamy, 0 to 25 percent slopes	30.0	0.0%
300A	Tioga loam, rarely flooded, 0 to 3 percent slopes	23.6	0.0%
800A	Holderton silt loam, 0 to 3 percent slopes, occasionally flooded 140	56.3	0.1%
PG	Pits, gravel	152.8	0.2%
W	Water	17.6	0.0%
Subtotals for Soil Survey Area		**15,729.7**	**23.3%**
Totals for Area of Interest		**67,568.0**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Aa	Alden silt loam	54.8	0.1%
AlA	Alton gravelly fine sandy loam, 0 to 3 percent slopes	630.4	0.9%
AlB	Alton gravelly fine sandy loam, undulating	30.7	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
At	Atherton silt loam	14.1	0.0%
BaB	Bath channery silt loam, 3 to 12 percent slopes	396.8	0.6%
BaC	Bath channery silt loam, 12 to 20 percent slopes	263.5	0.4%
BaD	Bath channery silt loam, 20 to 30 percent slopes	148.1	0.2%
BBE	Bath soils, steep	804.8	1.2%
BrA	Braceville gravelly silt loam, 0 to 3 percent slopes	210.7	0.3%
BrB	Braceville gravelly silt loam, 3 to 8 percent slopes	52.4	0.1%
CbB	Canaseraga silt loam, 2 to 6 percent slopes	51.5	0.1%
CbC	Canaseraga silt loam, 6 to 12 percent slopes	66.3	0.1%
Cc	Carlisle muck	615.8	0.9%
CF	Cut and fill land	252.0	0.4%
Ch	Chenango channery silt loam, fan	1,919.8	2.8%
Ck	Chippewa channery silt loam, 0 to 3 percent slopes	208.6	0.3%
CoC	Collamer silt loam, rolling	32.8	0.0%
DuC	Dunkirk silt loam, rolling	78.7	0.1%
FL	Fluvaquents and Ochrepts	1,404.3	2.1%
FrB	Fremont silt loam, 2 to 8 percent slopes	3,218.2	4.8%
GP	Gravel pits	42.9	0.1%
HfB	Hornell-Fremont silt loams, 1 to 6 percent slopes	455.2	0.7%
HfC	Hornell-Fremont silt loams, 6 to 12 percent slopes	1,827.5	2.7%
HgD	Hornell and Fremont silt loams, 12 to 20 percent slopes	1,838.2	2.7%
HHE	Hornell and Fremont silt loams, 20 to 50 percent slopes	1,784.6	2.6%
HkD3	Hornell and Fremont silty clay loams, 6 to 20 percent slopes, severely eroded	24.3	0.0%
HoA	Howard gravelly loam, 0 to 3 percent slopes	364.1	0.5%
HoB	Howard gravelly loam, undulating	1,954.8	2.9%
HoC	Howard gravelly loam, rolling	706.9	1.0%
HpD	Howard-Dunkirk complex, hilly	148.6	0.2%
HrB	Howard-Madrid complex, undulating	2,026.6	3.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HrC	Howard-Madrid complex, rolling	1,771.1	2.6%
HrD	Howard-Madrid complex, 20 to 30 percent slopes	1,068.0	1.6%
HtD	Howard and Alton gravelly soils, 20 to 30 percent slopes	1,020.9	1.5%
HtE	Howard and Alton gravelly soils, 30 to 45 percent slopes	671.3	1.0%
KaA	Kanona silty clay loam, 0 to 2 percent slopes	6.7	0.0%
KaB	Kanona silty clay loam, 2 to 6 percent slopes	289.5	0.4%
KaD	Kanona silty clay loam, 6 to 20 percent slopes	865.7	1.3%
LoB	Lordstown channery silt loam, 3 to 12 percent slopes	315.7	0.5%
LoC	Lordstown channery silt loam, 12 to 20 percent slopes	795.6	1.2%
LRE	Lordstown-Arnot complex, steep, rocky	1,023.4	1.5%
LRF	Lordstown-Arnot complex, very steep, very rocky	2,220.7	3.3%
MaB	Madrid fine sandy loam, undulating	10.5	0.0%
MdB	Mardin channery silt loam, 2 to 8 percent slopes	2,533.3	3.7%
MdC	Mardin channery silt loam, 8 to 15 percent slopes	4,618.9	6.8%
MdD	Mardin channery silt loam, 15 to 25 percent slopes	2,487.5	3.7%
MdD3	Mardin channery silt loam, 8 to 25 percent slopes, severely eroded	36.2	0.1%
MnB	Mardin and Volusia channery silt loams, silty substratum, 2 to 6 percent slopes	17.3	0.0%
MnC	Mardin and Volusia channery silt loams, silty substratum, 6 to 12 percent slopes	57.4	0.1%
Mp	Middlebury silt loam	1,063.9	1.6%
NgB	Niagara silt loam, 2 to 6 percent slopes	11.2	0.0%
OC	Ochrepts and Orthents	680.8	1.0%
Pa	Palms muck	113.6	0.2%
Rh	Red Hook silt loam	177.3	0.3%
Sc	Scio silt loam	95.5	0.1%
Tg	Tioga silt loam	852.4	1.3%
TuB	Tuller channery silt loam, 0 to 6 percent slopes	11.7	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Un	Unadilla silt loam	99.8	0.1%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	1,093.4	1.6%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	3,330.9	4.9%
VoD	Volusia channery silt loam, 15 to 25 percent slopes	1,281.6	1.9%
W	Water	415.1	0.6%
Wa	Wallington silt loam	109.3	0.2%
Wn	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	1,056.9	1.6%
Subtotals for Soil Survey Area		**51,830.8**	**76.7%**
Totals for Area of Interest		**67,568.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Allegany County Area, New York

1A—Udifluvents and Fluvaquents, frequently flooded, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20ffj
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents and similar soils: 45 percent
Fluvaquents and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium with a wide range of texture

Typical profile

H1 - 0 to 3 inches: very gravelly sandy loam
H2 - 3 to 72 inches: stratified extremely gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 24 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A
Ecological site: F140XY014NY - Low Floodplain
Hydric soil rating: No

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile

H1 - 0 to 17 inches: gravelly loam
H2 - 17 to 72 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F140XY015NY - Wet Low Floodplain
Hydric soil rating: Yes

Minor Components

Holderton

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

3A—Tioga loam, occasionally flooded, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20ffr
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tioga, occasionally flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tioga, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 26 inches: loam
H3 - 26 to 59 inches: loam
H4 - 59 to 80 inches: gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Ecological site: F140XY013PA - High Floodplain
Hydric soil rating: No

Minor Components

Udifluvents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Holderton

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

5A—Wayland soils complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgv
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 68 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent
Wayland, very poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam

C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: mucky silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam
C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D

Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Minor Components

Wakeville
Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

8A—Middlebury silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 20fg2
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Middlebury and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Middlebury

Setting
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy alluvium predominantly from areas of shale and sandstone with some lime-bearing material

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 30 inches: loam
H3 - 30 to 72 inches: fine sandy loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F140XY014NY - Low Floodplain
Hydric soil rating: No

Minor Components

Holderton

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Udifluvents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

9A—Pawling silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20fg4
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Pawling and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pawling

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly alluvium

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 28 inches: silt loam
H3 - 28 to 72 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F140XY011NY - Rich Organic Wetlands
Hydric soil rating: No

Minor Components

Holderton

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Udifluvents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

11C—Ischua channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b1wm
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ischua and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ischua

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Mongaup

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hornellsville

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Salamanca

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

11D—Ischua channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b1wn
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Ischua and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ischua

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope

Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Mongaup

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hornellsville

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Salamanca

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

11E—Ischua channery silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b1wp
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Ischua and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ischua

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Mongaup

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hornellsville

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Salamanca

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

14A—Hornellsville silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b1y7
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Hornellsville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornellsville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 34 inches: silty clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

14B—Hornellsville silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b1y8
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hornellsville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornellsville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 34 inches: silty clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

14C—Hornellsville silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b1y9
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hornellsville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornellsville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 34 inches: silty clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

14D—Hornellsville silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b1yb
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornellsville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornellsville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 34 inches: silty clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Almond

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ischua

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

14E—Hornellsville silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b1yc
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornellsville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornellsville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 34 inches: silty clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Salamanca

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Ischua

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

15B—Willdin channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wblr
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Willdin and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willdin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Brownish loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bw - 8 to 16 inches: channery silt loam
E - 16 to 20 inches: channery silt loam
Bx - 20 to 57 inches: channery loam
C - 57 to 72 inches: very channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 16 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Ontusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lewbath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear

Hydric soil rating: No

Middlebrook

Percent of map unit: 5 percent
Landform: Benches, mountains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountainflank, mountaintop, crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

15C—Willdin channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wbls
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Willdin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willdin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Brownish loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bw - 8 to 16 inches: channery silt loam
E - 16 to 20 inches: channery silt loam
Bx - 20 to 57 inches: channery loam
C - 57 to 72 inches: very channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 16 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Lewbath

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ontusia

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Middlebrook

Percent of map unit: 3 percent
Landform: Benches, mountains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountainflank, mountaintop, crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

16A—Almond silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wn2b
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Almond and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Almond

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 8 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ontusia

Percent of map unit: 7 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit

Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Gretor

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

16B—Almond silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wn2f
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Almond and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Almond

Setting

Landform: Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Gretor

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ontusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Salamanca

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

16C—Almond silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wn2h
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Almond and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Almond

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Gretor

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ontusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Salamanca

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

17B—Salamanca silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wn26
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Salamanca and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salamanca

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, mountaintop, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 38 inches: channery silty clay loam
C - 38 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Yorkshire

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountainflank, mountaintop, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Almond

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave

Across-slope shape: Linear
Hydric soil rating: No

Ischua

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

17D—Salamanca silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wn28
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Salamanca and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salamanca

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: silt loam
BE - 4 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 38 inches: channery silty clay loam
C - 38 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)

Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Yorkshire

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Almond

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

18F—Rock outcrop-Arnot complex, 25 to 70 percent slopes

Map Unit Setting

National map unit symbol: 2wbnb
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 55 percent
Arnot, extremely stony, and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Arnot, Extremely Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, free face, side slope, nose slope, free face
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: channery silt loam
Bw1 - 3 to 12 inches: very channery silt loam
Bw2 - 12 to 17 inches: very channery silt loam
2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 25 to 70 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F140XY023NY - Shallow Till Uplands
Hydric soil rating: No

Minor Components

Lordstown, extremely stony

Percent of map unit: 5 percent

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

19A—Olean silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b1zq
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Olean and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Olean

Setting

Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Silty and clayey alluvium or eolian deposits over sandy and gravelly glaciofluvial or deltaic deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silt loam
H3 - 23 to 36 inches: silty clay loam
H4 - 36 to 72 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 18 to 39 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F140XY022NY - Moist Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Castile

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

19B—Olean silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b1zr
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Olean and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Olean

Setting

Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave

Across-slope shape: Convex
Parent material: Silty and clayey alluvium or eolian deposits over sandy and gravelly glaciofluvial or deltaic deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silt loam
H3 - 23 to 36 inches: silty clay loam
H4 - 36 to 72 inches: very gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 18 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B/D
Ecological site: F140XY022NY - Moist Outwash
Hydric soil rating: No

Minor Components

Castile

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

22A—Allard silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b200
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Allard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allard

Setting

Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty eolian, glaciolacustrine, or old alluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 34 inches: silt loam
H3 - 34 to 72 inches: stratified very gravelly sand to gravel

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 36 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

22B—Allard silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b201
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Allard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allard

Setting

Landform: Outwash plains, alluvial fans, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty eolian, glaciolacustrine, or old alluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 34 inches: silt loam
H3 - 34 to 72 inches: stratified very gravelly sand to gravel

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 36 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

22C—Allard silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b202
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Allard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allard

Setting

Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty eolian, glaciolacustrine, or old alluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 34 inches: silt loam
H3 - 34 to 72 inches: stratified very gravelly sand to gravel

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 36 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Varysburg

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread

Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

25A—Chenango gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b203
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 30 inches: very gravelly silt loam
H3 - 30 to 72 inches: stratified very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash

Hydric soil rating: No

Minor Components

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Red hook

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

26A—Chenango channery silt loam, fan, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b209
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango, fan, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango, Fan

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 30 inches: very gravelly silt loam

H3 - 30 to 72 inches: stratified very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

26B—Chenango channery silt loam, fan, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b20b
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango, fan, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango, Fan

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 30 inches: very gravelly silt loam
H3 - 30 to 72 inches: stratified very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave

Across-slope shape: Convex
Hydric soil rating: No

27A—Castile gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b20c
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Castile and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Castile

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 30 inches: very gravelly loam
H3 - 30 to 72 inches: very gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Ecological site: F140XY022NY - Moist Outwash
Hydric soil rating: No

Minor Components

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

27B—Castile gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b20d
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Castile and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Castile

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 30 inches: very gravelly loam
H3 - 30 to 72 inches: very gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Ecological site: F140XY022NY - Moist Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

29B—Arkport sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b20n
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Arkport and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arkport

Setting

Landform: Deltas on lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Glaciofluvial or deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 13 inches: sandy loam
H3 - 13 to 17 inches: loamy sand
H4 - 17 to 20 inches: sandy loam
H5 - 20 to 31 inches: loamy sand
H6 - 31 to 37 inches: sandy loam
H7 - 37 to 53 inches: loamy sand
H8 - 53 to 58 inches: sandy loam
H9 - 58 to 86 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Valois

Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Scio

Percent of map unit: 5 percent

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

29C—Arkport sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b20p
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Arkport and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arkport

Setting

Landform: Deltas on lake plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Glaciofluvial or deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 13 inches: sandy loam
H3 - 13 to 17 inches: loamy sand
H4 - 17 to 20 inches: sandy loam
H5 - 20 to 31 inches: loamy sand
H6 - 31 to 37 inches: sandy loam
H7 - 37 to 53 inches: loamy sand
H8 - 53 to 58 inches: sandy loam
H9 - 58 to 86 inches: loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Valois

Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Collamer

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

35B—Rhinebeck silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b212
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Rhinebeck and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rhinebeck

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 13 inches: silty clay loam
H3 - 13 to 38 inches: silty clay
H4 - 38 to 72 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Canadice

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Oramel

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

36A—Canadice silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20fgd
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canadice and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canadice

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 42 inches: silty clay
H3 - 42 to 72 inches: stratified silty clay loam to silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Rhinebeck

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Canandaigua

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

51D—Chadakoin channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b22f
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Chadakoin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chadakoin

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, sandstone, and smaller amounts of shale

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 33 inches: channery silt loam
H3 - 33 to 54 inches: channery loam

H4 - 54 to 72 inches: very channery loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

51F—Chadakoin channery silt loam, 35 to 50 percent slopes

Map Unit Setting

National map unit symbol: b22h
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Chadakoin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chadakoin

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, sandstone, and smaller amounts of shale

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 33 inches: channery silt loam
H3 - 33 to 54 inches: channery loam
H4 - 54 to 72 inches: very channery loam

Properties and qualities

Slope: 35 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 8 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Schuyler

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope

Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Udifluvents

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52A—Valois gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: bpkx
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Valois and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 4 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Castile

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Mardin

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52B—Valois gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b22j
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Valois and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 4 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Castile

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread

Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Mardin

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52C—Valois gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b22k
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Valois and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rushford

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52D—Valois gravelly silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b22l
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Valois and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rushford

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52E—Valois gravelly silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b22m
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Valois and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rushford

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Udifluvents

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

52F—Valois gravelly silt loam, 35 to 50 percent slopes

Map Unit Setting

National map unit symbol: b22n
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Valois and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, valley sides, end moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 27 inches: gravelly silt loam
H3 - 27 to 48 inches: gravelly loam
H4 - 48 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 35 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rushford

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Udifluvents

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

58A—Rushford channery silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: bpkz
Elevation: 1,140 to 2,100 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rushford and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rushford

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale, overlying silty glaciolacustrine deposits

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 21 inches: channery silt loam
H3 - 21 to 28 inches: channery loam
H4 - 28 to 36 inches: silt loam
H5 - 36 to 72 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Niagara

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wiscoy

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

58B—Rushford channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b232
Elevation: 1,140 to 2,100 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rushford and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rushford

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale, overlying silty glaciolacustrine deposits

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 21 inches: channery silt loam
H3 - 21 to 28 inches: channery loam

H4 - 28 to 36 inches: silt loam
H5 - 36 to 72 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Wiscoy

Percent of map unit: 4 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Niagara

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Valois

Percent of map unit: 3 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

58C—Rushford channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b233
Elevation: 1,140 to 2,100 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rushford and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rushford

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale, overlying silty glaciolacustrine deposits

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 21 inches: channery silt loam
H3 - 21 to 28 inches: channery loam
H4 - 28 to 36 inches: silt loam
H5 - 36 to 72 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Wiscoy

Percent of map unit: 4 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Niagara

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

58D—Rushford channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: bp2d
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Rushford and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rushford

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, riser

Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale, overlying silty glaciolacustrine deposits

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 21 inches: channery silt loam
H3 - 21 to 28 inches: channery loam
H4 - 28 to 36 inches: silt loam
H5 - 36 to 72 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Collamer

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

58E—Rushford channery silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: bp2f
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Rushford and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rushford

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale, overlying silty glaciolacustrine deposits

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 21 inches: channery silt loam
H3 - 21 to 28 inches: channery loam
H4 - 28 to 36 inches: silt loam
H5 - 36 to 72 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Valois

Percent of map unit: 3 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Schuyler

Percent of map unit: 2 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

60A—Napoli silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b238
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Napoli and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Napoli

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silty clay loam
H3 - 23 to 46 inches: channery silty clay loam
H4 - 46 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 12 to 27 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

60B—Napoli silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b239
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Napoli and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Napoli

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silty clay loam
H3 - 23 to 46 inches: channery silty clay loam
H4 - 46 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 12 to 27 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

60C—Napoli silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b23b
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Napoli and similar soils: 95 percent

Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Napoli

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silty clay loam
H3 - 23 to 46 inches: channery silty clay loam
H4 - 46 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 12 to 27 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

60D—Napoli silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b23c
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Napoli and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Napoli

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: silty clay loam
H3 - 23 to 46 inches: channery silty clay loam
H4 - 46 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 12 to 27 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Yorkshire

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Norchip

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

61B—Schuyler silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wn1z
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Schuyler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Schuyler

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 38 inches: channery silty clay loam
C - 38 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F139XY006OH - Moist Drift Highlands
Hydric soil rating: No

Minor Components

Towerville

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Crest, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Fremont

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

61C—Schuyler silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wn20
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Schuyler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Schuyler

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 38 inches: channery silty clay loam
C - 38 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland, F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Towerville

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Fremont

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

61D—Schuyler silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wn21
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Schuyler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Schuyler

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: silt loam
BE - 4 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 38 inches: channery silty clay loam
C - 38 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland, F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Towerville

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Fremont

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve

Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

62B—Mardin channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srhb
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

62C—Mardin channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2srhj
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

Lordstown

Percent of map unit: 2 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

62D—Mardin channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2srh8
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

62E—Mardin channery silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2srhm
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Mardin and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: channery silt loam
BE - 4 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 25 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Bath

Percent of map unit: 8 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, very stony

Percent of map unit: 7 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

64C—Mardin channery silt loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2srj3
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Mardin, very stony, and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: channery silt loam
BE - 4 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam

C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, very stony

Percent of map unit: 2 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

66B—Volusia channery silt loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2srfn
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Volusia, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D

Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa, very stony
Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mardin, very stony
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

66C—Volusia channery silt loam, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2srfr
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Volusia, very stony, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia, Very Stony

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile
A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam

Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa, very stony

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

68A—Volusia channery silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2srfc
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

68B—Volusia channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srfh
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa
Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mardin
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

68C—Volusia channery silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2srfj
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile
Ap - 0 to 9 inches: channery silt loam

Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

68D—Volusia channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2srfl
Elevation: 330 to 2,460 feet

Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 7 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

Chippewa

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

69B—Erie channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wn35
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Erie and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 9 inches: channery silt loam
E - 9 to 13 inches: channery silt loam
Bg - 13 to 15 inches: channery silt loam
Bx - 15 to 38 inches: channery silt loam
C - 38 to 72 inches: channery loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 7 to 14 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Langford

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

69C—Erie channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wn36
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Erie and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 9 inches: channery silt loam
E - 9 to 13 inches: channery silt loam
Bg - 13 to 15 inches: channery silt loam
Bx - 15 to 38 inches: channery silt loam
C - 38 to 72 inches: channery loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 7 to 14 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Langford

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

71B—Mongaup channery silt loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: b245
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Mongaup, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mongaup, Very Stony

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 22 inches: channery silt loam
H3 - 22 to 26 inches: extremely channery silt loam
H4 - 26 to 37 inches: extremely channery silt loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F140XY009NY - Frigid Till Uplands
Hydric soil rating: No

Minor Components

Willdin

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Ischua

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

71D—Mongaup and Ischua channery silt loams, 15 to 25 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b247
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Mongaup, extremely stony, and similar soils: 50 percent
Ischua, extremely stony, and similar soils: 45 percent
Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mongaup, Extremely Stony

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 22 inches: channery silt loam
H3 - 22 to 26 inches: extremely channery silt loam
H4 - 26 to 37 inches: extremely channery silt loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F140XY005NY - Frigid Steep Well Drained Dense Till
Hydric soil rating: No

Description of Ischua, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Willdin, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

71E—Mongaup and Ischua channery silt loams, 25 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b248
Elevation: 1,740 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Mongaup, extremely stony, and similar soils: 50 percent
Ischua, extremely stony, and similar soils: 45 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mongaup, Extremely Stony

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 22 inches: channery silt loam
H3 - 22 to 26 inches: extremely channery silt loam
H4 - 26 to 37 inches: extremely channery silt loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F140XY005NY - Frigid Steep Well Drained Dense Till
Hydric soil rating: No

Description of Ischua, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Willdin, very stony

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Franklinville

Percent of map unit: 2 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

71F—Mongaup and Ischua channery silt loams, 35 to 65 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b249
Elevation: 1,740 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Mongaup, extremely stony, and similar soils: 50 percent
Ischua, extremely stony, and similar soils: 45 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mongaup, Extremely Stony

Setting

Landform: Hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 22 inches: channery silt loam
H3 - 22 to 26 inches: extremely channery silt loam
H4 - 26 to 37 inches: extremely channery silt loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 35 to 65 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F140XY005NY - Frigid Steep Well Drained Dense Till
Hydric soil rating: No

Description of Ischua, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived from siltstone, shale, and sandstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 23 inches: channery silt loam
H3 - 23 to 28 inches: channery silty clay loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 35 to 50 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Franklinville

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

72B—Towerville silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b24b
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Towerville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Towerville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 23 inches: silt loam

H3 - 23 to 32 inches: channery silty clay loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 4 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Hornell

Percent of map unit: 3 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

72C—Towerville silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b24c
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Towerville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Towerville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 23 inches: silt loam
H3 - 23 to 32 inches: channery silty clay loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 4 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Hornell

Percent of map unit: 3 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

72D—Towerville silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b24d
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Towerville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Towerville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope

Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 23 inches: silt loam
H3 - 23 to 32 inches: channery silty clay loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 4 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Hornell

Percent of map unit: 3 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

72E—Towerville silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b24f
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Towerville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Towerville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 23 inches: silt loam
H3 - 23 to 32 inches: channery silty clay loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 4 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hornell

Percent of map unit: 3 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

72F—Towerville silt loam, 35 to 50 percent slopes

Map Unit Setting

National map unit symbol: b24g
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Towerville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Towerville

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope

Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 23 inches: silt loam
H3 - 23 to 32 inches: channery silty clay loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 35 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 4 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hornell

Percent of map unit: 3 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 3 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

73A—Gretor channery silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b24h
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Gretor and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gretor

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 21 inches: channery silt loam
H3 - 21 to 25 inches: channery silty clay loam
R - 25 to 35 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

73B—Gretor channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b24j
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Gretor and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gretor

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 21 inches: channery silt loam
H3 - 21 to 25 inches: channery silty clay loam
R - 25 to 35 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

73C—Gretor channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: bp1v
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gretor and similar soils: 94 percent

Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gretor

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 21 inches: channery silt loam
H3 - 21 to 25 inches: channery silty clay loam
R - 25 to 35 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Almond

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

76A—Orpark silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b24m
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Orpark and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orpark

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from shale, siltstone, and sandstone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 22 inches: silty clay loam
H3 - 22 to 24 inches: silt loam
H4 - 24 to 26 inches: extremely channery silty clay loam
R - 26 to 36 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

76B—Orpark silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b24n
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Orpark and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orpark

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from shale, siltstone, and sandstone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 22 inches: silty clay loam
H3 - 22 to 24 inches: silt loam
H4 - 24 to 26 inches: extremely channery silty clay loam

R - 26 to 36 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

76C—Orpark silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b24p
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Orpark and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orpark

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from shale, siltstone, and sandstone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 22 inches: silty clay loam
H3 - 22 to 24 inches: silt loam
H4 - 24 to 26 inches: extremely channery silty clay loam
R - 26 to 36 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

77A—Chippewa silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2v32k
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chippewa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chippewa

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till dominated by siltstone, sandstone, and shale fragments

Typical profile

Ap - 0 to 7 inches: silt loam
Eg - 7 to 15 inches: channery silt loam
Bxg - 15 to 45 inches: channery silt loam
C - 45 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Chippewa, very poorly drained
Percent of map unit: 10 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

77B—Chippewa silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2v32s
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Chippewa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chippewa

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till dominated by siltstone, sandstone, and shale fragments

Typical profile
Ap - 0 to 7 inches: silt loam

Eg - 7 to 15 inches: channery silt loam
Bxg - 15 to 45 inches: channery silt loam
C - 45 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Volusia

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa, very poorly drained

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

78C—Hornell silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b24t
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hornell and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silty clay
H3 - 28 to 34 inches: channery silty clay loam
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Kanona

Percent of map unit: 7 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 3 percent
Landform: Depressions

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

78D—Hornell silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b24v
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornell and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silty clay
H3 - 28 to 34 inches: channery silty clay loam
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Kanona
Percent of map unit: 5 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

78E—Hornell silt loam, 25 to 35 percent slopes

Map Unit Setting
National map unit symbol: b24w
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition
Hornell and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silty clay
H3 - 28 to 34 inches: channery silty clay loam
R - 34 to 44 inches: bedrock

Properties and qualities
Slope: 25 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Kanona

Percent of map unit: 5 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Udifluvents

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

79B—Mongaup channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b24y
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mongaup and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mongaup

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 22 inches: channery silt loam
H3 - 22 to 26 inches: extremely channery silt loam
H4 - 26 to 37 inches: extremely channery silt loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY009NY - Frigid Till Uplands
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Willdin

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Hawksnest

Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

80A—Fremont silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2vzr6
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Fremont and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F139XY006OH - Moist Drift Highlands
Hydric soil rating: No

Minor Components

Ashville

Percent of map unit: 8 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia

Percent of map unit: 7 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Orpark

Percent of map unit: 5 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope, summit, shoulder
Landform position (three-dimensional): Base slope, interfluve, crest
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

80B—Fremont silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vzrc
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Fremont and similar soils: 80 percent

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

Orpark

Percent of map unit: 5 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope, shoulder, backslope
Landform position (three-dimensional): Base slope, crest, nose slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

80C—Fremont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vzrh
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Fremont and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Orpark

Percent of map unit: 5 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, nose slope, side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

80D—Fremont silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2vzrn
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Fremont and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: silt loam
Bw1 - 5 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F139XY006OH - Moist Drift Highlands

Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Towerville

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

81B—Varysburg gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b259
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Varysburg and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Varysburg

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 21 inches: very gravelly loam
Bt - 21 to 28 inches: very gravelly loam
2Bt - 28 to 41 inches: silty clay
2C - 41 to 72 inches: stratified silty clay to silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 22 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F140XY017NY - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hudson

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

81D—Varysburg gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b25c
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Varysburg and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Varysburg

Setting

Landform: Lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 21 inches: very gravelly loam
Bt - 21 to 28 inches: very gravelly loam
2Bt - 28 to 41 inches: silty clay
2C - 41 to 72 inches: stratified silty clay to silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 22 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F140XY017NY - Well Drained Lake Plain

Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hudson

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

81E—Varysburg gravelly loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b25d
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Varysburg and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Varysburg

Setting

Landform: Lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 21 inches: very gravelly loam

Bt - 21 to 28 inches: very gravelly loam
2Bt - 28 to 41 inches: silty clay
2C - 41 to 72 inches: stratified silty clay to silt loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 22 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F140XY017NY - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hudson

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Riser, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Udifluvents

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

92A—Catden muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 25y07
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Catden and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Catden

Setting

Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Deep organic material

Typical profile

O1 - 0 to 72 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F140XY011NY - Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Natchaug

Percent of map unit: 5 percent

Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Saprists, inundated
Percent of map unit: 5 percent
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

93A—Aquepts, Aquents, and Saprists, inundated, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 20fh2
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition
Aquepts, inundated, and similar soils: 55 percent
Aquents, inundated, and similar soils: 25 percent
Saprists, inundated, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aquepts, Inundated

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile
H1 - 0 to 4 inches: mucky silt loam
H2 - 4 to 72 inches: silt loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Description of Aquents, Inundated

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 3 inches: mucky silt loam
H2 - 3 to 50 inches: silt loam
H3 - 50 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Description of Saprists, Inundated

Setting

Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material

Typical profile

O1 - 0 to 27 inches: muck
H2 - 27 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 16.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Udifluvents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

100D—Udorthents, loamy-skeletal, 0 to 25 percent slopes

Map Unit Setting

National map unit symbol: 20fh4
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy-skeletal, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy-skeletal

Setting

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy human transported material

Typical profile

H1 - 0 to 4 inches: gravelly sandy loam
H2 - 4 to 70 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.60 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Minor Components

Red hook

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chenango

Percent of map unit: 2 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

117D—Willdin channery silt loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wblw
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches

Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Willdin, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willdin, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Brownish loamy till derived from sandstone and siltstone

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 16 inches: channery silt loam
E - 16 to 20 inches: channery silt loam
Bx - 20 to 57 inches: channery loam
C - 57 to 72 inches: very channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 16 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY010NY - Frigid Moist Till Uplands
Hydric soil rating: No

Minor Components

Lewbath, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ontusia, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Mongaup, extremely stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

118B—Ontusia channery silt loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wblm
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Ontusia, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam

C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip, very stony

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Willdin, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

118C—Ontusia channery silt loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wbln
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Ontusia, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip, very stony

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Willdin, very stony

Percent of map unit: 5 percent

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

124B—Lewbath channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wblx
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lewbath and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lewbath

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Brownish loamy till derived from gray and brown sandstone, siltstone and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery silt loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 20 to 36 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY006NY - Frigid Well Drained Dense Till
Hydric soil rating: No

Minor Components

Willdin

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mongaup

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

124C—Lewbath channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wbly
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lewbath and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lewbath

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank, interfluve, side slope

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Brownish loamy till derived from gray and brown sandstone, siltstone and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery silt loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 20 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY006NY - Frigid Well Drained Dense Till
Hydric soil rating: No

Minor Components

Mongaup

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

Willdin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

125A—Howard gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b1xb
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Valley trains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 4 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Castile

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Valois

Percent of map unit: 3 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

125B—Howard gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b1xc
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 4 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Castile

Percent of map unit: 3 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Valois

Percent of map unit: 3 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

125C—Howard gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b1xd
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash

Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 5 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Valois

Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

125D—Howard gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b1xf
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam

H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 5 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Valois

Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

125E—Howard gravelly loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: b1xg
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 5 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Valois

Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

125F—Howard gravelly loam, 35 to 60 percent slopes

Map Unit Setting

National map unit symbol: b1xh
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Howard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 35 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Arkport
Percent of map unit: 5 percent
Landform: Deltas on lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Valois
Percent of map unit: 5 percent
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

126A—Ontusia channery silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2wblg
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ontusia and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Willdin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Gretor

Percent of map unit: 2 percent
Landform: Hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

126B—Ontusia channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wblj
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ontusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D

Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Willdin
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Norchip
Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

126C—Ontusia channery silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2wblk
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ontusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile
Ap - 0 to 9 inches: channery silt loam

Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Willdin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

126D—Ontusia channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wbll
Elevation: 1,390 to 3,610 feet
Mean annual precipitation: 32 to 70 inches

Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Ontusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ontusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Brownish loamy till derived from interbedded sandstone, siltstone and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 25 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY007NY - Frigid Moist Dense Till
Hydric soil rating: No

Minor Components

Willdin

Percent of map unit: 7 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

132A—Wiscoy-Volusia complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2srgq
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wiscoy and similar soils: 60 percent
Volusia and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiscoy

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from siltstone, shale, and sandstone, over silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 14 inches: channery silt loam
H3 - 14 to 34 inches: channery silt loam
H4 - 34 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

132B—Wiscoy-Volusia complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srgr
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wiscoy and similar soils: 60 percent
Volusia and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiscoy

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from siltstone, shale, and sandstone, over silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 14 inches: channery silt loam
H3 - 14 to 34 inches: channery silt loam
H4 - 34 to 72 inches: silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D

Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

132C—Wiscoy-Volusia complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2srgs
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wiscoy and similar soils: 60 percent
Volusia and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiscoy

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from siltstone, shale, and sandstone, over silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 14 inches: channery silt loam
H3 - 14 to 34 inches: channery silt loam
H4 - 34 to 72 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till

Hydric soil rating: No

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

134C—Bath channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v314
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bath and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Lordstown
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

134D—Bath channery silt loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2v316
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Bath and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

134E—Bath channery silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2v319
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Bath and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

A - 0 to 4 inches: channery silt loam
Bw1 - 4 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 25 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Cadosia, very stony
Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown
Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, crest, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

135B—Hudson silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: xgmg
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Hudson and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hudson

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 16 inches: silty clay loam
H3 - 16 to 38 inches: silty clay
H4 - 38 to 72 inches: stratified silty clay to silty clay loam to silt

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Rhinebeck

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Varysburg

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

135C—Hudson silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b1y1
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hudson and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hudson

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 16 inches: silty clay loam
H3 - 16 to 38 inches: silty clay
H4 - 38 to 72 inches: stratified silty clay to silty clay loam to silt

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Rhinebeck

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Varysburg

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

171F—Lordstown and Towerville soils, 35 to 60 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2zffj
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown, extremely stony, and similar soils: 50 percent
Towerville, extremely stony, and similar soils: 45 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown, Extremely Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, base slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: channery highly organic silt loam

Bw1 - 5 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Towerville, Extremely Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from shale, siltstone, and smaller amounts of sandstone

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 23 inches: silt loam
Bw2 - 23 to 32 inches: channery silty clay loam
2R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D

Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Arnot, extremely stony
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, free face, side slope, nose slope, free face
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop
Percent of map unit: 0 percent
Hydric soil rating: No

179B—Lordstown channery silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2wzl0
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Lordstown and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone and siltstone

Typical profile
Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Arnot

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

179C—Lordstown channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wzl1
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lordstown and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountaintop, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Arnot

Percent of map unit: 5 percent
Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

179D—Lordstown channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wzl2
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Cadosia, very stony

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Arnot

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

179E—Lordstown channery silt loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2wzl3
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown and similar soils: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: channery highly organic silt loam
Bw1 - 5 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 25 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Cadosia, very stony

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Arnot

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 0 percent
Hydric soil rating: No

179F—Lordstown channery silt loam, 35 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2wzl4
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank, crest, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: channery highly organic silt loam
Bw1 - 5 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Cadosia, very stony

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Arnot

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 0 percent
Hydric soil rating: No

188B—Kanona silty clay loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b1zc
Elevation: 1,140 to 1,800 feet

Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Kanona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanona

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 41 inches: silty clay loam
H3 - 41 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hornell

Percent of map unit: 2 percent
Landform: Till plains, ridges, benches

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

188C—Kanona silty clay loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b1zd
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Kanona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanona

Setting

Landform: Ridges, benches, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 41 inches: silty clay loam
H3 - 41 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B/D

Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Chippewa
Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hornell
Percent of map unit: 2 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

200D—Udorthents, loamy, 0 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2llx5
Elevation: 1,140 to 2,500 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, loamy, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Setting
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy human transported material

Typical profile
H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 22 inches: channery silt loam
H3 - 22 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ischua

Percent of map unit: 2 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Napoli

Percent of map unit: 2 percent
Landform: Ridges, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Norchip

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia

Percent of map unit: 2 percent
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Towerville

Percent of map unit: 2 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

300A—Tioga loam, rarely flooded, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20fhj
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tioga, rarely flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tioga, Rarely Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 16 inches: fine sandy loam
H3 - 16 to 42 inches: loamy sand
H4 - 42 to 80 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent

Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Ecological site: F140XY013PA - High Floodplain
Hydric soil rating: No

Minor Components

Tioga, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Olean

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

800A—Holderton silt loam, 0 to 3 percent slopes, occasionally flooded 140

Map Unit Setting

National map unit symbol: 2rw9q
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 68 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Holderton and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holderton

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 10 inches: silt loam
Bw1 - 10 to 18 inches: loam
Bw2 - 18 to 35 inches: fine sandy loam
C1 - 35 to 42 inches: sandy loam
C2 - 42 to 72 inches: gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F139XY008OH - Moist Floodplain
Hydric soil rating: No

Minor Components

Middlebury

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

PG—Pits, gravel

Map Unit Setting

National map unit symbol: b272
Elevation: 1,140 to 1,800 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, gravel: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Chenango

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Udorthents, loamy-skeletal

Percent of map unit: 5 percent
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: b274
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 106 to 139 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Steuben County, New York

Aa—Alden silt loam

Map Unit Setting

National map unit symbol: 9wr2
Elevation: 300 to 1,500 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Alden and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alden

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 25 inches: silty clay loam
H3 - 25 to 60 inches: channery silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions

Hydric soil rating: Yes

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

AlA—Alton gravelly fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9wr3
Elevation: 250 to 650 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Alton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alton

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from acidic rocks, with some limestone below 40 inches

Typical profile

H1 - 0 to 6 inches: gravelly fine sandy loam
H2 - 6 to 36 inches: very gravelly sandy loam
H3 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 5 percent
Hydric soil rating: No

Braceville

Percent of map unit: 5 percent
Hydric soil rating: No

AlB—Alton gravelly fine sandy loam, undulating

Map Unit Setting

National map unit symbol: 9wr4
Elevation: 250 to 650 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Alton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alton

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from acidic rocks, with some limestone below 40 inches

Typical profile

H1 - 0 to 6 inches: gravelly fine sandy loam
H2 - 6 to 36 inches: very gravelly sandy loam
H3 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Braceville

Percent of map unit: 4 percent
Hydric soil rating: No

Howard

Percent of map unit: 4 percent
Hydric soil rating: No

Tioga

Percent of map unit: 4 percent
Hydric soil rating: No

Chenango

Percent of map unit: 4 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 4 percent
Hydric soil rating: No

At—Atherton silt loam

Map Unit Setting

National map unit symbol: 9wr6
Elevation: 50 to 1,500 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Atherton and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atherton

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy glaciofluvial deposits over stratified deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 22 inches: silt loam
H3 - 22 to 38 inches: gravelly silt loam
H4 - 38 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Wallington
Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Red hook
Percent of map unit: 5 percent
Hydric soil rating: No

Wayland
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

BaB—Bath channery silt loam, 3 to 12 percent slopes

Map Unit Setting
National map unit symbol: 2v311
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Bath and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 3 to 12 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountaintop, nose slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

BaC—Bath channery silt loam, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2v315
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Bath and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, nose slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 12 to 20 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Mardin
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lordstown
Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

BaD—Bath channery silt loam, 20 to 30 percent slopes

Map Unit Setting
National map unit symbol: 2v318
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Bath and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

A - 0 to 4 inches: channery silt loam
Bw1 - 4 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 20 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

BBE—Bath soils, steep

Map Unit Setting

National map unit symbol: 2v31g
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Bath and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

A - 0 to 4 inches: channery silt loam
Bw1 - 4 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Minor Components

Cadosia, very stony
Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, very stony
Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mardin
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

BrA—Braceville gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9wrc
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Braceville and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braceville

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits of stratified sand, silt, and gravel derived mainly from noncalcareous sandstone and shale

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 24 inches: gravelly loam
H3 - 24 to 36 inches: gravelly silt loam
H4 - 36 to 60 inches: stratified sand to gravel

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 30 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F140XY020NY - Dense Outwash
Hydric soil rating: No

Minor Components

Alton

Percent of map unit: 5 percent
Hydric soil rating: No

Chenango

Percent of map unit: 5 percent
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

BrB—Braceville gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9wrd
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Braceville and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braceville

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits of stratified sand, silt, and gravel derived mainly from noncalcareous sandstone and shale

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 24 inches: gravelly loam
H3 - 24 to 36 inches: gravelly silt loam
H4 - 36 to 60 inches: stratified sand to gravel

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 30 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 14 to 24 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F140XY020NY - Dense Outwash
Hydric soil rating: No

Minor Components

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Madrid
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

Tioga
Percent of map unit: 5 percent
Hydric soil rating: No

CbB—Canaseraga silt loam, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: 9wrg
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Canaseraga and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canaseraga

Setting
Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: A silty mantle over loamy till derived from siltstone, shale, and sandstone, with varying amounts of limestone

Typical profile
H1 - 0 to 4 inches: silt loam
H2 - 4 to 28 inches: silt loam

H3 - 28 to 62 inches: channery silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Madrid

Percent of map unit: 5 percent
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Hydric soil rating: No

CbC—Canaseraga silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 9wrh
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canaseraga and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canaseraga

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: A silty mantle over loamy till derived from siltstone, shale, and sandstone, with varying amounts of limestone

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 28 inches: silt loam
H3 - 28 to 62 inches: channery silt loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Madrid

Percent of map unit: 5 percent
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

Cc—Carlisle muck

Map Unit Setting

National map unit symbol: 9wrj
Elevation: 600 to 1,200 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Carlisle and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carlisle

Setting

Landform: Swamps, marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Deep organic material

Typical profile

H1 - 0 to 70 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F140XY011NY - Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Alden
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Edwards
Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Palms
Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

CF—Cut and fill land

Map Unit Setting
National map unit symbol: 9wrk
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Cut and fill land and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cut And Fill Land

Typical profile
H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 60 inches: channery silt loam

Properties and qualities
Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Alden
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Collamer
Percent of map unit: 5 percent
Hydric soil rating: No

Lackawanna
Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Fremont
Percent of map unit: 5 percent
Hydric soil rating: No

Ch—Chenango channery silt loam, fan

Map Unit Setting
National map unit symbol: 9wrl
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Chenango and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Valley trains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 34 inches: very channery silt loam
H3 - 34 to 60 inches: very channery sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

Alton

Percent of map unit: 5 percent
Hydric soil rating: No

Braceville

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Ck—Chippewa channery silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2vcj6
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chippewa and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chippewa

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till dominated by siltstone, sandstone, and shale fragments

Typical profile

Ap - 0 to 7 inches: channery silt loam
Eg - 7 to 15 inches: channery silt loam
Bxg - 15 to 45 inches: channery silt loam
C - 45 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Chippewa, very poorly drained
Percent of map unit: 10 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Orpark
Percent of map unit: 5 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Volusia
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Alden
Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

CoC—Collamer silt loam, rolling

Map Unit Setting
National map unit symbol: 9wrn
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Collamer and similar soils: 80 percent

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Collamer

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 14 inches: silt loam
H3 - 14 to 39 inches: silty clay loam
H4 - 39 to 60 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Niagara

Percent of map unit: 5 percent
Hydric soil rating: No

Scio

Percent of map unit: 5 percent
Hydric soil rating: No

Dunkirk

Percent of map unit: 5 percent
Hydric soil rating: No

DuC—Dunkirk silt loam, rolling

Map Unit Setting

National map unit symbol: 9wrp
Elevation: 100 to 1,000 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dunkirk and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunkirk

Setting

Landform: Lake plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 14 inches: silt loam
H3 - 14 to 39 inches: silt loam
H4 - 39 to 60 inches: stratified silt to very fine sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY017NY - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Niagara
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 4 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 4 percent
Hydric soil rating: No

Collamer
Percent of map unit: 4 percent
Hydric soil rating: No

Howard
Percent of map unit: 4 percent
Hydric soil rating: No

FL—Fluvaquents and Ochrepts

Map Unit Setting
National map unit symbol: 9wrs
Elevation: 300 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Fluvaquents and similar soils: 40 percent
Ochrepts and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F140XY015NY - Wet Low Floodplain
Hydric soil rating: Yes

Description of Ochrepts

Typical profile

H1 - 0 to 11 inches: gravelly sandy loam
H2 - 11 to 72 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 18 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B
Ecological site: F140XY014NY - Low Floodplain
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

Middlebury

Percent of map unit: 5 percent

Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

FrB—Fremont silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vzrb
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Fremont and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Orpark

Percent of map unit: 5 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, crest, base slope
Down-slope shape: Convex, concave
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

GP—Gravel pits

Map Unit Setting

National map unit symbol: 9wrv
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, gravel: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Gravel

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Alton

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

Atherton

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

HfB—Hornell-Fremont silt loams, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2vzr8
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Hornell and similar soils: 40 percent
Fremont and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Summit, shoulder, footslope
Landform position (three-dimensional): Interfluve, crest, base slope
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: silty clay
H3 - 33 to 38 inches: channery silty clay
H4 - 38 to 42 inches: bedrock

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Orpark

Percent of map unit: 5 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope, shoulder, backslope
Landform position (three-dimensional): Base slope, nose slope, crest
Down-slope shape: Concave, convex
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

HfC—Hornell-Fremont silt loams, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2vzrf
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hornell and similar soils: 40 percent
Fremont and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Interfluve, nose slope, crest, base slope
Down-slope shape: Convex, concave
Across-slope shape: Linear, convex
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: silty clay
H3 - 33 to 38 inches: channery silty clay

H4 - 38 to 42 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Orpark

Percent of map unit: 10 percent
Landform: Till plains, benches, ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

HgD—Hornell and Fremont silt loams, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2vzrm
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornell and similar soils: 45 percent
Fremont and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Hills, ridges, benches
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Interfluve, nose slope, side slope, base slope
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: silty clay
H3 - 33 to 38 inches: channery silty clay
H4 - 38 to 42 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Interfluve, head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: silt loam
Bw1 - 5 to 16 inches: silt loam

Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Schuyler

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Towerville

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

HHE—Hornell and Fremont silt loams, 20 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2vzrr
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornell and similar soils: 41 percent
Fremont and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, nose slope, side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: silty clay
H3 - 33 to 38 inches: channery silty clay
H4 - 38 to 42 inches: bedrock

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland

Hydric soil rating: No

Description of Fremont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: silt loam
Bw1 - 5 to 16 inches: silt loam
Bw2 - 16 to 30 inches: channery silt loam
BC - 30 to 34 inches: channery silty clay loam
C - 34 to 72 inches: channery silt loam

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Towerville

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

HkD3—Hornell and Fremont silty clay loams, 6 to 20 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2vzrg
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Hornell, severely eroded, and similar soils: 40 percent
Fremont, severely eroded, and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell, Severely Eroded

Setting

Landform: Hills, benches, ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Interfluve, nose slope, side slope, crest, base slope
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear, convex
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 33 inches: silty clay
H3 - 33 to 38 inches: channery silty clay
H4 - 38 to 42 inches: bedrock

Properties and qualities

Slope: 6 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Fremont, Severely Eroded

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Interfluve, head slope, side slope, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 4 inches: silty clay loam
Bw1 - 4 to 8 inches: silt loam
Bw2 - 8 to 22 inches: channery silt loam
BC - 22 to 26 inches: channery silty clay loam
C - 26 to 72 inches: channery silt loam

Properties and qualities

Slope: 6 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Minor Components

Orpark

Percent of map unit: 8 percent
Landform: Till plains, benches, ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

Schuyler

Percent of map unit: 7 percent

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Volusia, eroded

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ashville

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

HoA—Howard gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9ws1
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Howard and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Valley trains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Alton

Percent of map unit: 5 percent
Hydric soil rating: No

Braceville

Percent of map unit: 5 percent
Hydric soil rating: No

Madrid

Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 5 percent
Hydric soil rating: No

HoB—Howard gravelly loam, undulating

Map Unit Setting

National map unit symbol: 9ws2
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches

Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Howard and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Valley trains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Alton

Percent of map unit: 5 percent
Hydric soil rating: No

Braceville

Percent of map unit: 5 percent
Hydric soil rating: No

Madrid

Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 5 percent
Hydric soil rating: No

HoC—Howard gravelly loam, rolling

Map Unit Setting

National map unit symbol: 9ws3
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Howard and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting

Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Braceville
Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 5 percent
Hydric soil rating: No

HpD—Howard-Dunkirk complex, hilly

Map Unit Setting
National map unit symbol: 9ws4
Elevation: 100 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Howard and similar soils: 50 percent
Dunkirk and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile
H1 - 0 to 9 inches: gravelly loam

H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 10 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Dunkirk

Setting

Landform: Lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 14 inches: silt loam
H3 - 14 to 39 inches: silt loam
H4 - 39 to 60 inches: stratified silt to very fine sand

Properties and qualities

Slope: 10 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F140XY017NY - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

Collamer
Percent of map unit: 5 percent
Hydric soil rating: No

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

HrB—Howard-Madrid complex, undulating

Map Unit Setting
National map unit symbol: 9ws5
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Howard and similar soils: 41 percent
Madrid and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile
H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Madrid

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone and limestone

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 22 inches: fine sandy loam
H3 - 22 to 50 inches: gravelly fine sandy loam
H4 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Unnamed soils
Percent of map unit: 4 percent
Hydric soil rating: No

Alton
Percent of map unit: 4 percent
Hydric soil rating: No

Bath
Percent of map unit: 4 percent
Hydric soil rating: No

Braceville
Percent of map unit: 4 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 4 percent
Hydric soil rating: No

HrC—Howard-Madrid complex, rolling

Map Unit Setting
National map unit symbol: 9ws6
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Howard and similar soils: 41 percent
Madrid and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Madrid

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone and limestone

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 22 inches: fine sandy loam
H3 - 22 to 50 inches: gravelly fine sandy loam
H4 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 5 percent
Hydric soil rating: No

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

HrD—Howard-Madrid complex, 20 to 30 percent slopes

Map Unit Setting
National map unit symbol: 9ws7
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Howard and similar soils: 41 percent
Madrid and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile
H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam

H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Madrid

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone and limestone

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 22 inches: fine sandy loam
H3 - 22 to 50 inches: gravelly fine sandy loam
H4 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown
Percent of map unit: 5 percent
Hydric soil rating: No

Mardin
Percent of map unit: 5 percent
Hydric soil rating: No

HtD—Howard and Alton gravelly soils, 20 to 30 percent slopes

Map Unit Setting
National map unit symbol: 9ws8
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Howard and similar soils: 41 percent
Alton and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile
H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Alton

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from acidic rocks, with some limestone below 40 inches

Typical profile

H1 - 0 to 6 inches: gravelly fine sandy loam
H2 - 6 to 36 inches: very gravelly sandy loam
H3 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown
Percent of map unit: 5 percent
Hydric soil rating: No

HtE—Howard and Alton gravelly soils, 30 to 45 percent slopes

Map Unit Setting
National map unit symbol: 9ws9
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Howard and similar soils: 41 percent
Alton and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Howard

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile
H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly loam
H3 - 24 to 45 inches: very gravelly loam
H4 - 45 to 72 inches: very gravelly sand

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Description of Alton

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from acidic rocks, with some limestone below 40 inches

Typical profile

H1 - 0 to 6 inches: gravelly fine sandy loam
H2 - 6 to 36 inches: very gravelly sandy loam
H3 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga
Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown
Percent of map unit: 5 percent
Hydric soil rating: No

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

KaA—Kanona silty clay loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 9wsb
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Kanona, somewhat poorly drained, and similar soils: 50 percent
Kanona, poorly drained, and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanona, Somewhat Poorly Drained

Setting
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile
H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Kanona, Poorly Drained

Setting

Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Fremont
Percent of map unit: 5 percent
Hydric soil rating: No

Hornell
Percent of map unit: 5 percent
Hydric soil rating: No

Tuller
Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

KaB—Kanona silty clay loam, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: 9wsc
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Kanona, somewhat poorly drained, and similar soils: 50 percent
Kanona, poorly drained, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanona, Somewhat Poorly Drained

Setting
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile
H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities
Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Kanona, Poorly Drained

Setting

Landform: Ridges, benches, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Hornell

Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions

Hydric soil rating: Yes

Fremont

Percent of map unit: 5 percent
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

KaD—Kanona silty clay loam, 6 to 20 percent slopes

Map Unit Setting

National map unit symbol: 9wsd
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Kanona, somewhat poorly drained, and similar soils: 50 percent
Kanona, poorly drained, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanona, Somewhat Poorly Drained

Setting

Landform: Benches, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities

Slope: 6 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Upland
Hydric soil rating: No

Description of Kanona, Poorly Drained

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived from soft shale and some siltstone

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 30 inches: channery silty clay
H3 - 30 to 72 inches: channery silty clay

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Fremont

Percent of map unit: 5 percent
Hydric soil rating: No

Hornell

Percent of map unit: 5 percent
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions

Hydric soil rating: Yes

LoB—Lordstown channery silt loam, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2wzlt
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lordstown and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, interfluve, nose slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Arnot

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

LoC—Lordstown channery silt loam, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2wzlv
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Ap - 0 to 9 inches: channery silt loam

Bw1 - 9 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Arnot

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

LRE—Lordstown-Arnot complex, steep, rocky

Map Unit Setting

National map unit symbol: 2ywlb
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches

Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown, very stony, and similar soils: 50 percent
Arnot, very stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: channery highly organic silt loam
Bw1 - 5 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 10 to 40 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Arnot, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: channery silt loam
Bw1 - 3 to 12 inches: very channery silt loam
Bw2 - 12 to 17 inches: very channery silt loam
2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 10 to 40 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F140XY023NY - Shallow Till Uplands
Hydric soil rating: No

Minor Components

Cadosia, extremely stony

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 4 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

LRF—Lordstown-Arnot complex, very steep, very rocky

Map Unit Setting

National map unit symbol: 2ywlc
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown, very stony, and similar soils: 50 percent
Arnot, very stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived from sandstone and siltstone

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: channery highly organic silt loam
Bw1 - 5 to 17 inches: channery silt loam
Bw2 - 17 to 24 inches: very channery silt loam
C - 24 to 30 inches: extremely channery silt loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Arnot, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: channery silt loam
Bw1 - 3 to 12 inches: very channery silt loam
Bw2 - 12 to 17 inches: very channery silt loam
2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 15 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F140XY023NY - Shallow Till Uplands
Hydric soil rating: No

Minor Components

Cadosia, extremely stony

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent

Hydric soil rating: No

MaB—Madrid fine sandy loam, undulating

Map Unit Setting

National map unit symbol: 9wsn
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Madrid and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madrid

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone and limestone

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 22 inches: fine sandy loam
H3 - 22 to 50 inches: gravelly fine sandy loam
H4 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F140XY027NY - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Dunkirk

Percent of map unit: 5 percent
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

MdB—Mardin channery silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srh9
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam

C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 2 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

MdC—Mardin channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2srhj
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown
Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

MdD—Mardin channery silt loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2srh8
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting
Landform: Hills, mountains

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

MdD3—Mardin channery silt loam, 8 to 25 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2srhw
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Mardin, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin, Severely Eroded

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, head slope, side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: channery silt loam
BE - 8 to 10 inches: channery silt loam
Bw1 - 10 to 14 inches: channery silt loam
Bw2 - 14 to 18 inches: channery silt loam
Bx1 - 18 to 34 inches: channery silt loam
Bx2 - 34 to 55 inches: channery silt loam
C - 55 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath, eroded

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

MnB—Mardin and Volusia channery silt loams, silty substratum, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9wsw
Elevation: 800 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 41 percent
Volusia and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid sedimentary rock

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 19 inches: channery silt loam
H3 - 19 to 60 inches: very channery silt loam
H4 - 60 to 70 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 14 to 23 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 13 to 22 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Description of Volusia

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale or slate

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 15 inches: channery silt loam
H3 - 15 to 46 inches: channery silt loam

H4 - 46 to 70 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 10 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Canaseraga

Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wallington

Percent of map unit: 5 percent
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

MnC—Mardin and Volusia channery silt loams, silty substratum, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 9wsx
Elevation: 800 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 41 percent
Volusia and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid sedimentary rock

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 19 inches: channery silt loam
H3 - 19 to 60 inches: very channery silt loam
H4 - 60 to 70 inches: silt loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 14 to 23 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 13 to 22 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Description of Volusia

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from siltstone, sandstone, and shale or slate

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 15 inches: channery silt loam
H3 - 15 to 46 inches: channery silt loam

H4 - 46 to 70 inches: silt loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 10 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Canaseraga

Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wallington

Percent of map unit: 5 percent
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

Mp—Middlebury silt loam

Map Unit Setting

National map unit symbol: 9wsy
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Middlebury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Middlebury

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy alluvium predominantly from areas of shale and sandstone with some lime-bearing material

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 22 inches: silt loam
H3 - 22 to 41 inches: silt loam
H4 - 41 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F140XY014NY - Low Floodplain
Hydric soil rating: No

Minor Components

Tioga

Percent of map unit: 5 percent
Hydric soil rating: No

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

NgB—Niagara silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9wt2
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Niagara and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niagara

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 16 inches: silt loam
H3 - 16 to 36 inches: silty clay loam
H4 - 36 to 60 inches: stratified silt to very fine sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Dunkirk
Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Collamer
Percent of map unit: 5 percent
Hydric soil rating: No

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

OC—Ochrepts and Orthents

Map Unit Setting
National map unit symbol: 9wt3
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Ochrepts and similar soils: 40 percent
Orthents and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ochrepts

Typical profile
H1 - 0 to 11 inches: channery silt loam
H2 - 11 to 72 inches: channery silt loam

Properties and qualities
Slope: 35 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: A
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Description of Orthents

Typical profile

H1 - 0 to 11 inches: channery loam
H2 - 11 to 72 inches: channery loam

Properties and qualities

Slope: 35 to 70 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: A
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

Canaseraga

Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Wellsboro

Percent of map unit: 5 percent
Hydric soil rating: No

Pa—Palms muck

Map Unit Setting

National map unit symbol: 9wt9
Elevation: 250 to 1,500 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Palms and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palms

Setting

Landform: Swamps, marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over loamy glacial drift

Typical profile

H1 - 0 to 21 inches: muck
H2 - 21 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 14.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F140XY011NY - Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Alden
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Canandaigua
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Carlisle
Percent of map unit: 4 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Warners
Percent of map unit: 4 percent
Landform: Flood plains
Hydric soil rating: Yes

Edwards
Percent of map unit: 4 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Rh—Red Hook silt loam

Map Unit Setting
National map unit symbol: 9wtb
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Red hook and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Hook

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: loam
H3 - 22 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F140XY022NY - Moist Outwash
Hydric soil rating: No

Minor Components

Wallington

Percent of map unit: 5 percent
Hydric soil rating: No

Atherton

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Braceville

Percent of map unit: 5 percent
Hydric soil rating: No

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Sc—Scio silt loam

Map Unit Setting

National map unit symbol: 9wtc
Elevation: 100 to 1,000 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Scio and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scio

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Glaciolacustrine deposits, eolian deposits, or old alluvium, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 35 inches: silt loam
H3 - 35 to 42 inches: very fine sandy loam
H4 - 42 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Collamer

Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 5 percent
Hydric soil rating: No

Wallington

Percent of map unit: 5 percent
Hydric soil rating: No

Middlebury
Percent of map unit: 5 percent
Hydric soil rating: No

Tg—Tioga silt loam

Map Unit Setting
National map unit symbol: 9wtd
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Tioga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tioga

Setting
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Typical profile
H1 - 0 to 17 inches: silt loam
H2 - 17 to 28 inches: silt loam
H3 - 28 to 60 inches: silt loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A

Ecological site: F140XY013PA - High Floodplain
Hydric soil rating: No

Minor Components

Alton
Percent of map unit: 5 percent
Hydric soil rating: No

Middlebury
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

TuB—Tuller channery silt loam, 0 to 6 percent slopes

Map Unit Setting
National map unit symbol: 9wtf
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Tuller, somewhat poorly drained, and similar soils: 50 percent
Tuller, poorly drained, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tuller, Somewhat Poorly Drained

Setting
Landform: Hills, ridges, benches
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile
H1 - 0 to 6 inches: very channery silt loam
H2 - 6 to 13 inches: very channery silt loam
H3 - 13 to 17 inches: bedrock

Properties and qualities
Slope: 0 to 6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: No

Description of Tuller, Poorly Drained

Setting

Landform: Hills, ridges, benches
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: very channery silt loam
H2 - 6 to 13 inches: very channery silt loam
H3 - 13 to 17 inches: bedrock

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Hornell

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent
Hydric soil rating: No

Arnot
Percent of map unit: 4 percent
Hydric soil rating: No

Chippewa
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Volusia
Percent of map unit: 4 percent
Hydric soil rating: No

Un—Unadilla silt loam

Map Unit Setting
National map unit symbol: 9wth
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Unadilla and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Unadilla

Setting
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Glaciolacustrine deposits, eolian deposits, or old alluvium, comprised mainly of silt and very fine sand

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 41 inches: silt loam
H3 - 41 to 64 inches: very gravelly sandy loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F140XY017NY - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Dunkirk

Percent of map unit: 4 percent
Hydric soil rating: No

Scio

Percent of map unit: 4 percent
Hydric soil rating: No

Tioga

Percent of map unit: 4 percent
Hydric soil rating: No

Wallington

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent
Hydric soil rating: No

VoB—Volusia channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srfh
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

VoC—Volusia channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2srfj
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin
Percent of map unit: 6 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa
Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

VoD—Volusia channery silt loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2srfl
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile
Ap - 0 to 9 inches: channery silt loam

Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 7 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 9wtm
Mean annual precipitation: 31 to 39 inches

Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Wa—Wallington silt loam

Map Unit Setting
National map unit symbol: 9wtn
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 110 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Wallington and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wallington

Setting
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine or eolian deposits high in silt and very fine sand

Typical profile
H1 - 0 to 3 inches: silt loam
H2 - 3 to 12 inches: silt loam
H3 - 12 to 38 inches: silt loam
H4 - 38 to 62 inches: very fine sandy loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D
Ecological site: F140XY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Middlebury
Percent of map unit: 5 percent
Hydric soil rating: No

Niagara
Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla
Percent of map unit: 5 percent
Hydric soil rating: No

Wn—Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded

Map Unit Setting
National map unit symbol: 2srgt
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Wayland and similar soils: 60 percent
Wayland, very poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam
Bg - 9 to 21 inches: silt loam
Cg1 - 21 to 28 inches: silt loam
Cg2 - 28 to 47 inches: silt loam
Cg3 - 47 to 54 inches: silt loam
Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F101XY003NY - Low Floodplain Depression
Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 9 inches: mucky silt loam
Bg - 9 to 21 inches: silt loam
Cg1 - 21 to 28 inches: silt loam
Cg2 - 28 to 47 inches: silt loam
Cg3 - 47 to 54 inches: silt loam
Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent

Frequency of ponding: Frequent
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 13.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F101XY003NY - Low Floodplain Depression
Hydric soil rating: Yes

Minor Components

Holderton

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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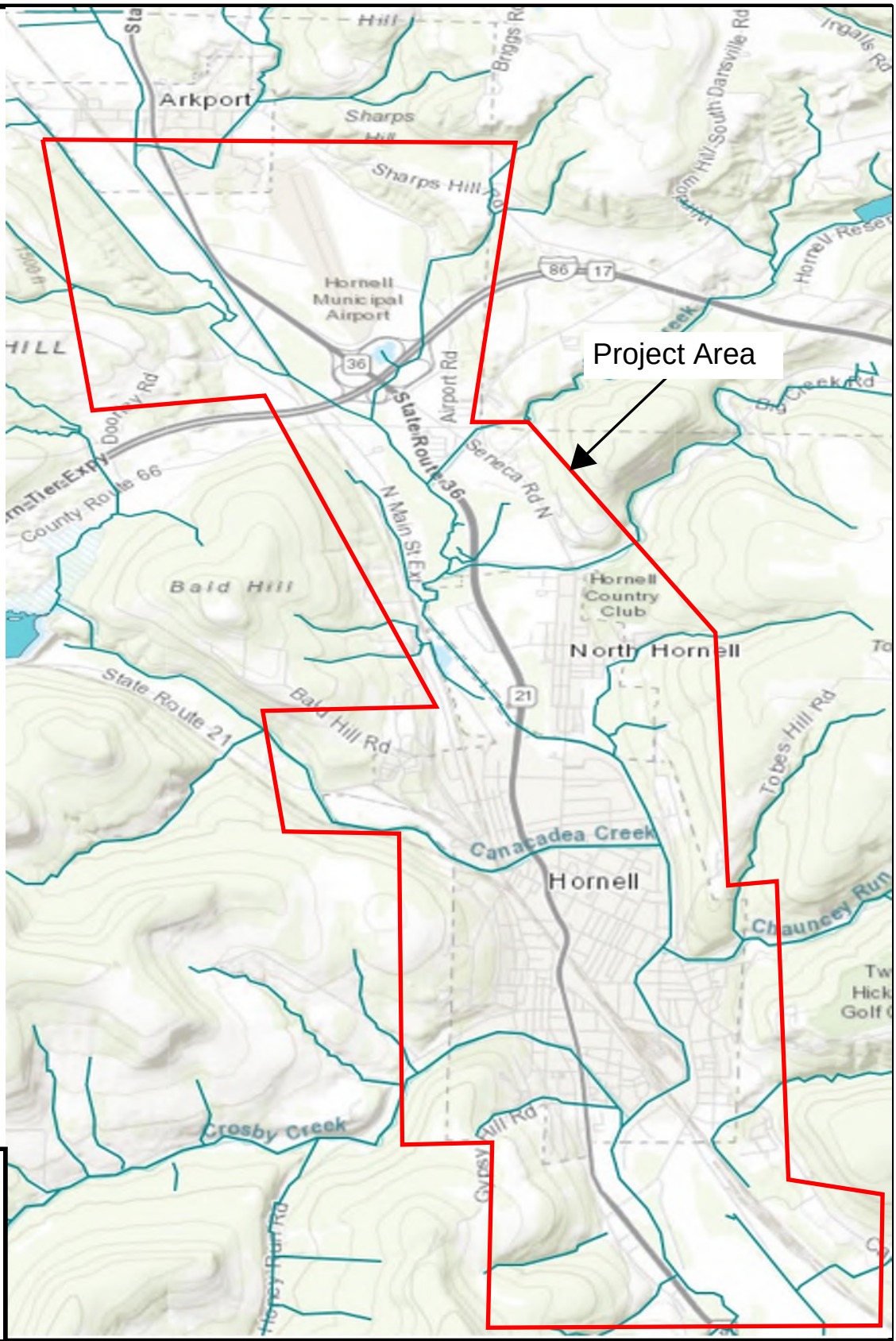
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Figure B-2

Surface Water Bodies Mapping



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GEOLOGICAL: 0021659
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PROFESSIONAL ENGINEERING: 0021272

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ISSUED FOR: DRAFT

DRAWING NAME: Surface Water Bodies

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B-2

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Figure B-2A

CANISTEO RIVER, MIDDLE, AND MINOR TRIBS (SEGMENT ID 0503-001)

CANISTEO RIVER, MIDDLE, AND MINOR TRIBS
(SEGMENT ID 0503-0001)

Waterbody Segment Assessment Factsheet

Factsheet Update: December 18, 2024
Integrated Reporting Cycle: 2022
NYSDEC CALM: 2021

IMPAIRED SEGMENT (IR CATEGORY 4c)

Introduction

This fact sheet contains the most recent water quality assessment information for this waterbody segment. The assessment is based on water quality data that meet the quality assurance requirements of NYSDEC's Division of Water (DOW). An outline of the process used to assess the quality of New York State waters is described in the NYSDEC's Consolidated Assessment and Listing Methodology (CALM). (https://extapps.dec.ny.gov/docs/water_pdf/calm.pdf)

WATERBODY INFORMATION

- **Water Index Number:** Pa 3-57- 5 (portion 4)
- **Segment Classification:** C
- **Waterbody Type:** River/Stream
- **Size:** 57.5 Miles
- **Drainage Basin:** Chemung River
- **Hydrologic Unit Code:** 0205010404
- **County:** Steuben
- **Segment Description:** Stream and selected tribs, from canisteo to hornell

Assessment of Best Use

Background

New York State waterbodies are classified to reflect their best use(s), and the assessment of a waterbody is based on the ability of waters to support those uses. This section lists whether this waterbody segment supports its best use(s).

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
 Fishing	Impaired	Confirmed	Restricted Passage	NA	IR4c
			Water Level/Flow	NA	

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
 Secondary Contact Recreation	N/A for Waterbody Class	—	—	—	—
 Primary Contact Recreation	N/A for Waterbody Class	—	—	—	—
 Source of Water Supply	N/A for Waterbody Class	—	—	—	—
 Shellfishing	N/A for Waterbody Class	—	—	—	—

Water Quality Monitoring Data and Information

Background

Water quality monitoring data used for assessments may come from a variety of sources, including but not limited to NYSDEC's surface water monitoring and regulatory programs, and monitoring network partnerships on rivers, streams, lakes, reservoirs, estuaries, and coastal waters.

For access to current and historical DOW data collected by our stream and lake monitoring programs, please use the Division of Water Monitoring Data Portal (https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1).

Data Source	Pollutant(s)
Historical Data Source	Ammonia
	Bap
	Dissolved Oxygen
	Nitrite
	None Identified
	pH
	Restricted Passage
	Water Level Flow

For more information, or to sign-up for email updates from NYSDEC, visit our website: https://dec.ny.gov/environmental-protection/water (https://dec.ny.gov/environmental-protection/water)


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Figure B-2B

CANISTEO RIVER, UPPER, AND MINOR TRIBS (SEGMENT ID 0503-0013)

CANISTEO RIVER, UPPER, AND MINOR TRIBS
(SEGMENT ID 0503-0013)

Waterbody Segment Assessment Factsheet

Factsheet Update: December 18, 2024
Integrated Reporting Cycle: 2022
NYSDEC CALM: 2021

NEEDS VERIFICATION (IR CATEGORY 3)

Introduction

This fact sheet contains the most recent water quality assessment information for this waterbody segment. The assessment is based on water quality data that meet the quality assurance requirements of NYSDEC's Division of Water (DOW). An outline of the process used to assess the quality of New York State waters is described in the NYSDEC's Consolidated Assessment and Listing Methodology (CALM). (https://extapps.dec.ny.gov/docs/water_pdf/calm.pdf)

WATERBODY INFORMATION

- **Water Index Number:** Pa 3-57- 5 (portion 5)
- **Segment Classification:** C
- **Waterbody Type:** River/Stream
- **Size:** 117.2 Miles
- **Drainage Basin:** Chemung River
- **Hydrologic Unit Code:** 0205010404
- **County:** Steuben
- **Segment Description:** Stream and selected tribs, above hornell

Assessment of Best Use

Background

New York State waterbodies are classified to reflect their best use(s), and the assessment of a waterbody is based on the ability of waters to support those uses. This section lists whether this waterbody segment supports its best use(s).

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
 Fishing	Stressed	Unconfirmed	Dissolved Oxygen	N/A	IR3
			pH		

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
Secondary Contact Recreation	Unassessed	—	No Data	N/A	IR3
Primary Contact Recreation	N/A for Waterbody Class	—	—	—	—
Source of Water Supply	N/A for Waterbody Class	—	—	—	—
Shellfishing	N/A for Waterbody Class	—	—	—	—

Water Quality Monitoring Data and Information

Background

Water quality monitoring data used for assessments may come from a variety of sources, including but not limited to NYSDEC's surface water monitoring and regulatory programs, and monitoring network partnerships on rivers, streams, lakes, reservoirs, estuaries, and coastal waters.

For access to current and historical DOW data collected by our stream and lake monitoring programs, please use the Division of Water Monitoring Data Portal (https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1).

Data Source	Pollutant(s)
Division of Water's Stream Monitoring and Assessment Programs	Dissolved Oxygen
	pH

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NEW YORK STATE | Department of Environmental Conservation

Figure B-2C

BIG CREEK AND TRIBS (SEGMENT ID 0503-0028)

BIG CREEK AND TRIBS
(SEGMENT ID 0503-0028)

Waterbody Segment Assessment Factsheet

Factsheet Update: December 18, 2024
Integrated Reporting Cycle: 2022
NYSDEC CALM: 2021

NEEDS VERIFICATION (IR CATEGORY 3)

Introduction

This fact sheet contains the most recent water quality assessment information for this waterbody segment. The assessment is based on water quality data that meet the quality assurance requirements of NYSDEC's Division of Water (DOW). An outline of the process used to assess the quality of New York State waters is described in the NYSDEC's Consolidated Assessment and Listing Methodology (CALM). (https://extapps.dec.ny.gov/docs/water_pdf/calm.pdf)

WATERBODY INFORMATION

- **Water Index Number:** Pa 3-57- 5-48
- **Segment Classification:** C
- **Waterbody Type:** River/Stream
- **Size:** 29.7 Miles
- **Drainage Basin:** Chemung River
- **Hydrologic Unit Code:** 0205010404
- **County:** Steuben
- **Segment Description:** Entire stream and tribs

Assessment of Best Use

Background

New York State waterbodies are classified to reflect their best use(s), and the assessment of a waterbody is based on the ability of waters to support those uses. This section lists whether this waterbody segment supports its best use(s).

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
 Fishing	Impaired	Unconfirmed	pH	N/A	IR3
 Secondary Contact Recreation	Unassessed	—	No Data	N/A	IR3

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
Primary Contact Recreation	N/A for Waterbody Class	—	—	—	—
Source of Water Supply	N/A for Waterbody Class	—	—	—	—
Shellfishing	N/A for Waterbody Class	—	—	—	—

Water Quality Monitoring Data and Information

Background

Water quality monitoring data used for assessments may come from a variety of sources, including but not limited to NYSDEC's surface water monitoring and regulatory programs, and monitoring network partnerships on rivers, streams, lakes, reservoirs, estuaries, and coastal waters.

For access to current and historical DOW data collected by our stream and lake monitoring programs, please use the Division of Water Monitoring Data Portal (https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1).

Data Source	Pollutant(s)
Division of Water's Stream Monitoring and Assessment Programs	pH

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Figure B-2D

CANACADEA CREEK, LOWER, AND TRIBS (SEGMENT ID 0503-0008)

CANACADEA CREEK, LOWER, AND TRIBS
(SEGMENT ID 0503-0008)

Waterbody Segment Assessment Factsheet

Factsheet Update: December 18, 2024
Integrated Reporting Cycle: 2022
NYSDEC CALM: 2021

NEEDS VERIFICATION (IR CATEGORY 3)

Introduction

This fact sheet contains the most recent water quality assessment information for this waterbody segment. The assessment is based on water quality data that meet the quality assurance requirements of NYSDEC's Division of Water (DOW). An outline of the process used to assess the quality of New York State waters is described in the NYSDEC's Consolidated Assessment and Listing Methodology (CALM). (https://extapps.dec.ny.gov/docs/water_pdf/calm.pdf)

WATERBODY INFORMATION

- **Water Index Number:** Pa 3-57- 5-47
- **Segment Classification:** C
- **Waterbody Type:** River/Stream
- **Size:** 5.2 Miles
- **Drainage Basin:** Chemung River
- **Hydrologic Unit Code:** 0205010401
- **County:** Steuben
- **Segment Description:** Stream and tribs, from mouth to almond reservoir

Assessment of Best Use

Background

New York State waterbodies are classified to reflect their best use(s), and the assessment of a waterbody is based on the ability of waters to support those uses. This section lists whether this waterbody segment supports its best use(s).

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
 Fishing	Stressed	Unconfirmed	Dissolved Oxygen	N/A	IR3
 Secondary Contact Recreation	Unassessed	—	No Data	N/A	IR3

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
Primary Contact Recreation	N/A for Waterbody Class	—	—	—	—
Source of Water Supply	N/A for Waterbody Class	—	—	—	—
Shellfishing	N/A for Waterbody Class	—	—	—	—

Water Quality Monitoring Data and Information

Background

Water quality monitoring data used for assessments may come from a variety of sources, including but not limited to NYSDEC's surface water monitoring and regulatory programs, and monitoring network partnerships on rivers, streams, lakes, reservoirs, estuaries, and coastal waters.

For access to current and historical DOW data collected by our stream and lake monitoring programs, please use the Division of Water Monitoring Data Portal (https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1).

Data Source	Pollutant(s)
Division of Water's Stream Monitoring and Assessment Programs	Dissolved Oxygen

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Figure B-2E

SEELEY CARRINGTON CR, LOWER, AND TRIBS (SEGMENT ID 0503-0029)

SEELEY/CARRINGTON CR, LOWER, AND TRIBS

(SEGMENT ID 0503-0029)

Waterbody Segment Assessment Factsheet

Factsheet Update: December 18, 2024
Integrated Reporting Cycle: 2022
NYSDEC CALM: 2021

UNASSESSED SEGMENT (IR CATEGORY 3)

There are currently no data available to conduct an assessment for this waterbody segment.

Introduction

This fact sheet contains the most recent water quality assessment information for this waterbody segment. The assessment is based on water quality data that meet the quality assurance requirements of NYSDEC's Division of Water (DOW). An outline of the process used to assess the quality of New York State waters is described in the NYSDEC's Consolidated Assessment and Listing Methodology (CALM). (https://extapps.dec.ny.gov/docs/water_pdf/calm.pdf)

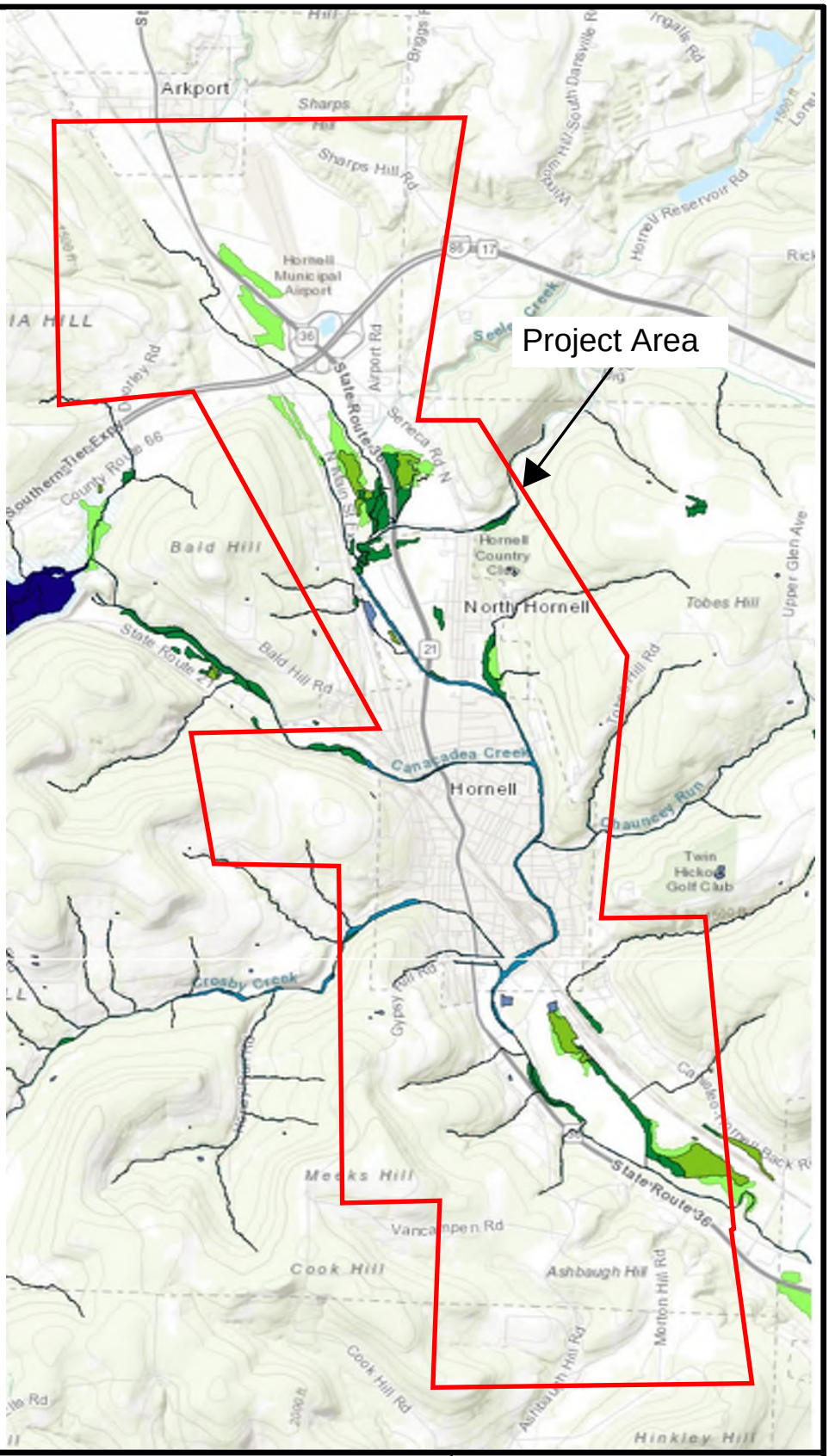
WATERBODY INFORMATION

- **Water Index Number:** Pa 3-57- 5-49
- **Segment Classification:** C
- **Waterbody Type:** River/Stream
- **Size:** 15.3 Miles
- **Drainage Basin:** Chemung River
- **Hydrologic Unit Code:** 0205010404

- **County:** Steuben
- **Segment Description:** Stream and selected tribs, mouth to hornell reservoirs

Figure B-3

Wetlands Mapping



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LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

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ISSUED FOR: DRAFT

DRAWING NAME: Wetlands Mapping
NYSDEC Environmental Resource Mapper

DRAWN BY:	DATE:	PROJECT NO.:
KA	Feb 2025	2250913

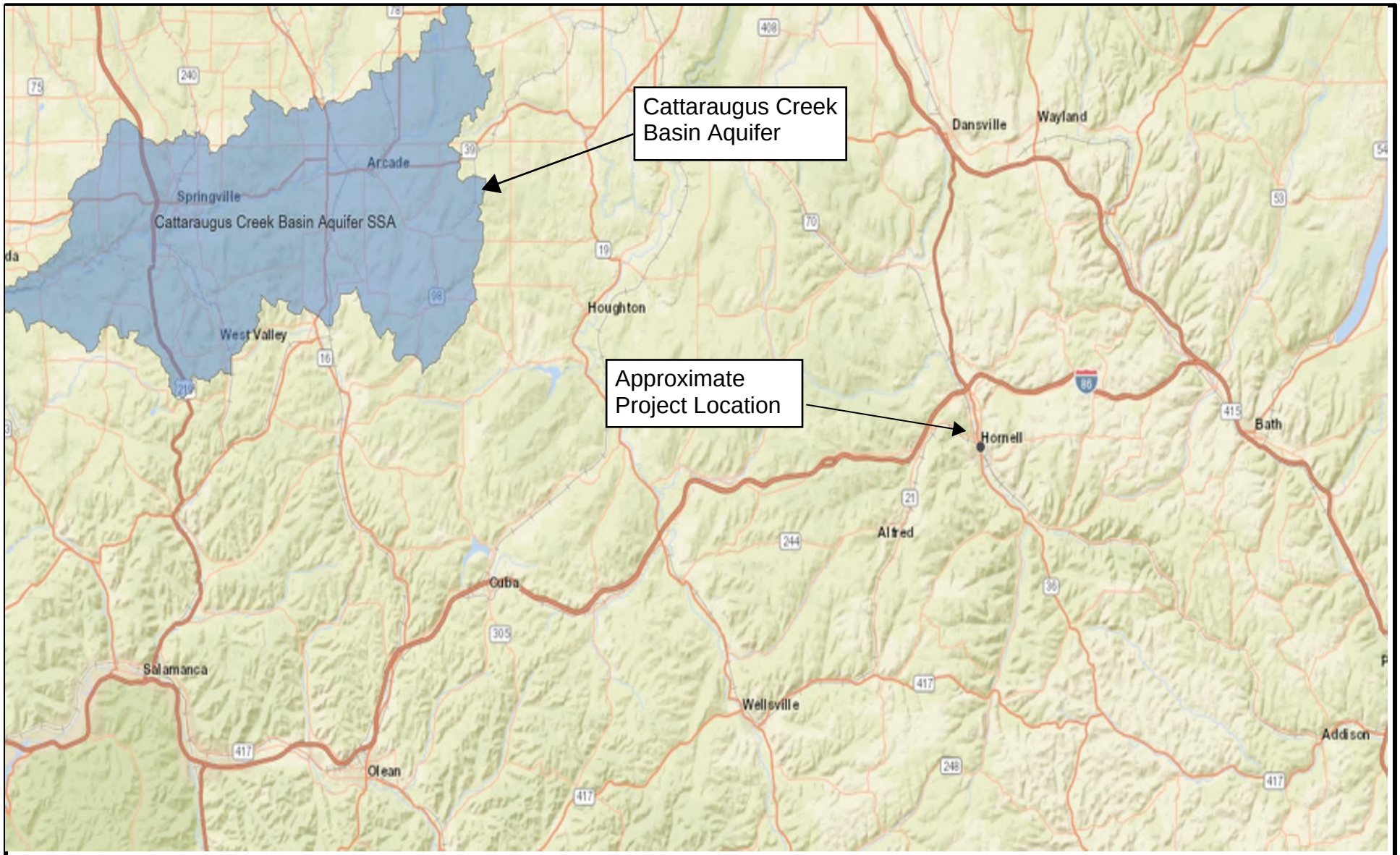
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B-3

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Figure B-4

Sole Source Aquifer



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LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Sole Source Aquifer Mapping
USEPA Sole Source Aquifers

ISSUED FOR:
DRAFT

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

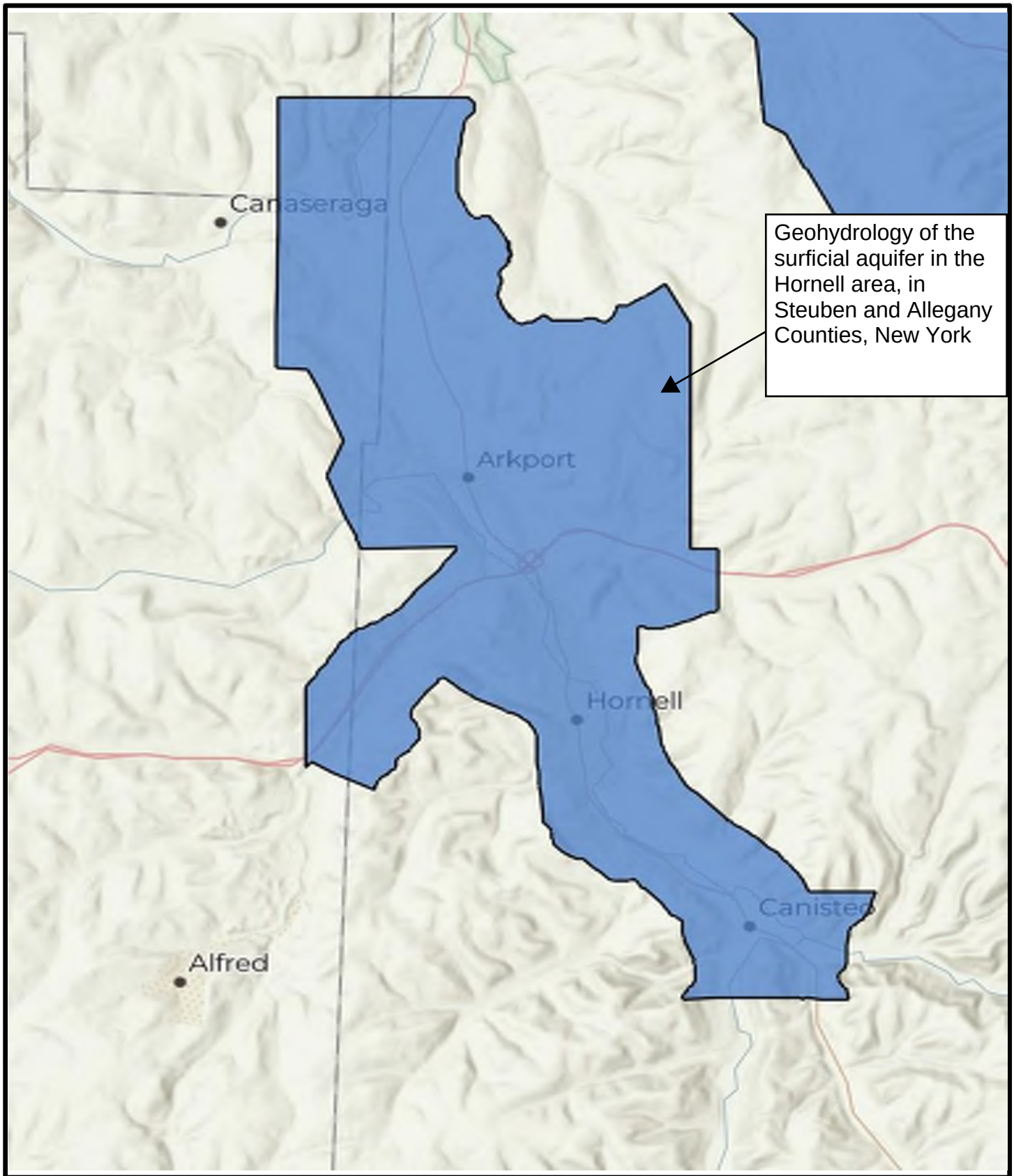
PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure B-4

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Figure B-5

Principle Aquifer



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LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

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ISSUED FOR: DRAFT			
DRAWING NAME: Principle Aquifers Mapping USGS Upstate New York Aquifers Viewer	DRAWN BY: KA	DATE: Feb 2025	PROJECT NO.: 2250913
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation	DRAWING NUMBER: Figure B-5		

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Figure B-6

Endangered or Threatened Species

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Steuben County, New York



Local office

New York Ecological Services Field Office

(607) 753-9334
(607) 753-9699
fw5es_nyfo@fws.gov

3817 Luker Road
Cortland, NY 13045-9385

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

NOT FOR CONSULTATION

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

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Clams

NAME	STATUS
Green Floater Lasmigona subviridis Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7541	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

NOT FOR CONSULTATION

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool.

NOT FOR CONSULTATION

For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

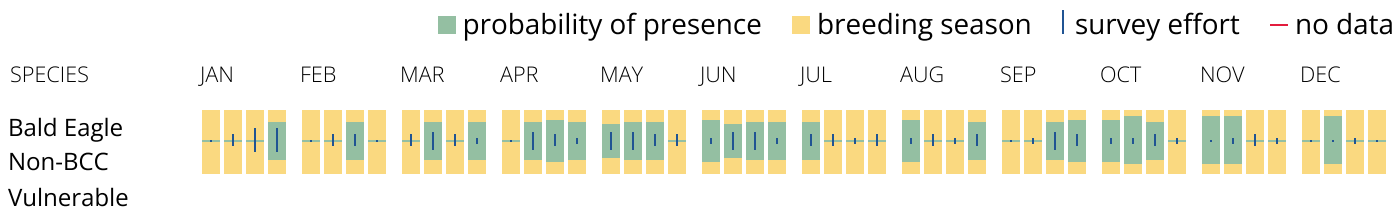
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

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What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and

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minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

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NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Black-capped Chickadee *Poecile atricapillus practicus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 10 to Jul 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Prairie Warbler Setophaga discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12

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(0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

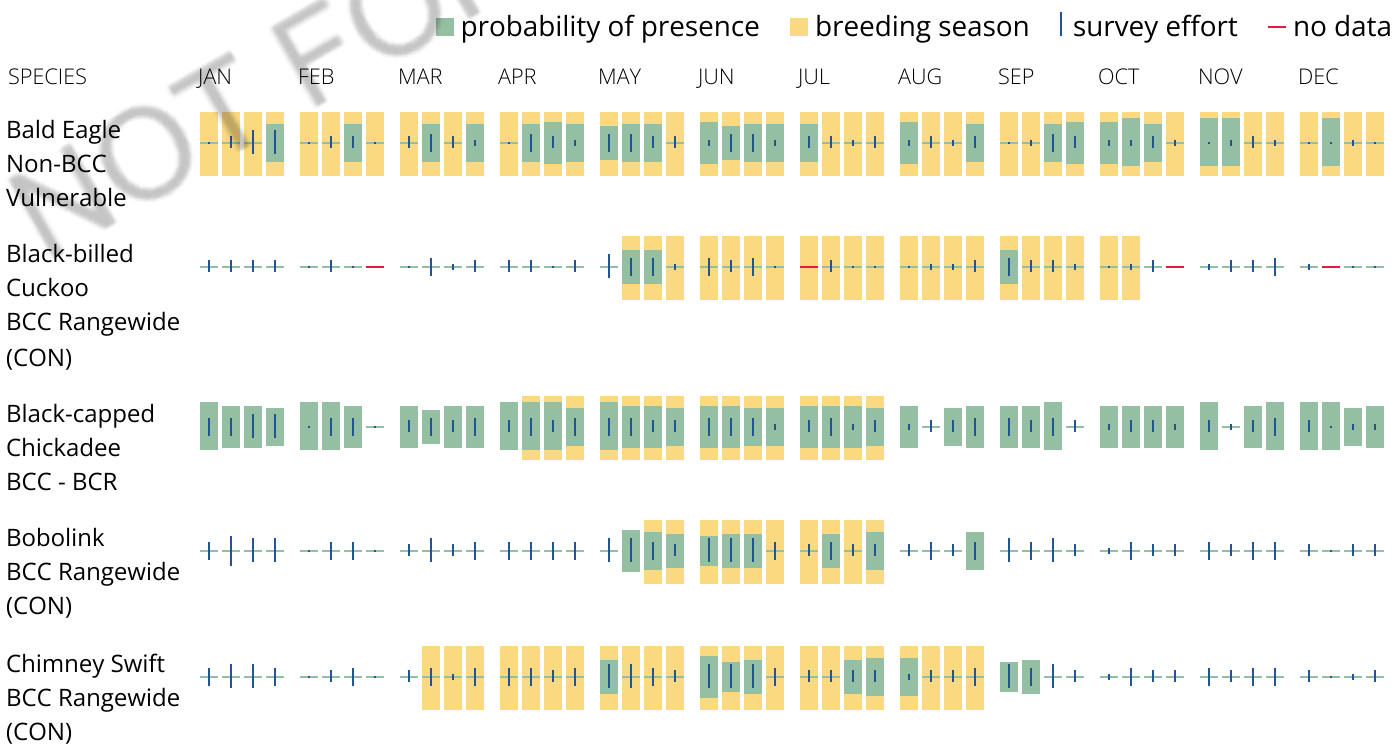
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

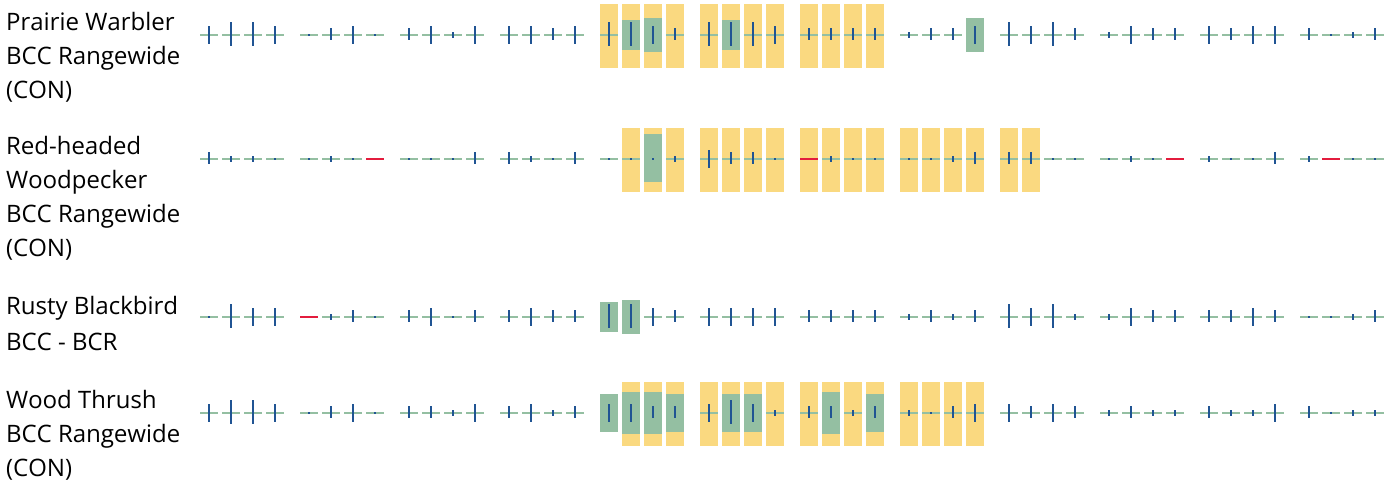
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

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Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

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For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

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Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

Wildlife refuges and fish hatcheries

Refuge and fish hatchery information is not available at this time

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1/SS1E
- PEM1E
- PEM1A
- PEM1C
- PEM1Cd
- PEM1F

FRESHWATER FORESTED/SHRUB WETLAND

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- PFO1A
- PFO1E
- PFO1/SS1E
- PSS1E
- PSS1/EM1Ad
- PSS1/FO1E
- PSS1/EM1E
- PFO4A
- PSS1Fh
- PFO1C
- PFO1/4E
- PFO4E
- PSS4E

FRESHWATER POND

- PUBHh
- PUBHx
- PUSCh
- PABKx
- PUBH
- PUBFh
- PUBKx
- PABHx

RIVERINE

- R2UBH
- R5UBH
- R4SBA
- R2UBHx
- R4SBC
- R3USA
- R3UBH
- R2USA
- R3UBHx
- R5UBFx
- R4SBAx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

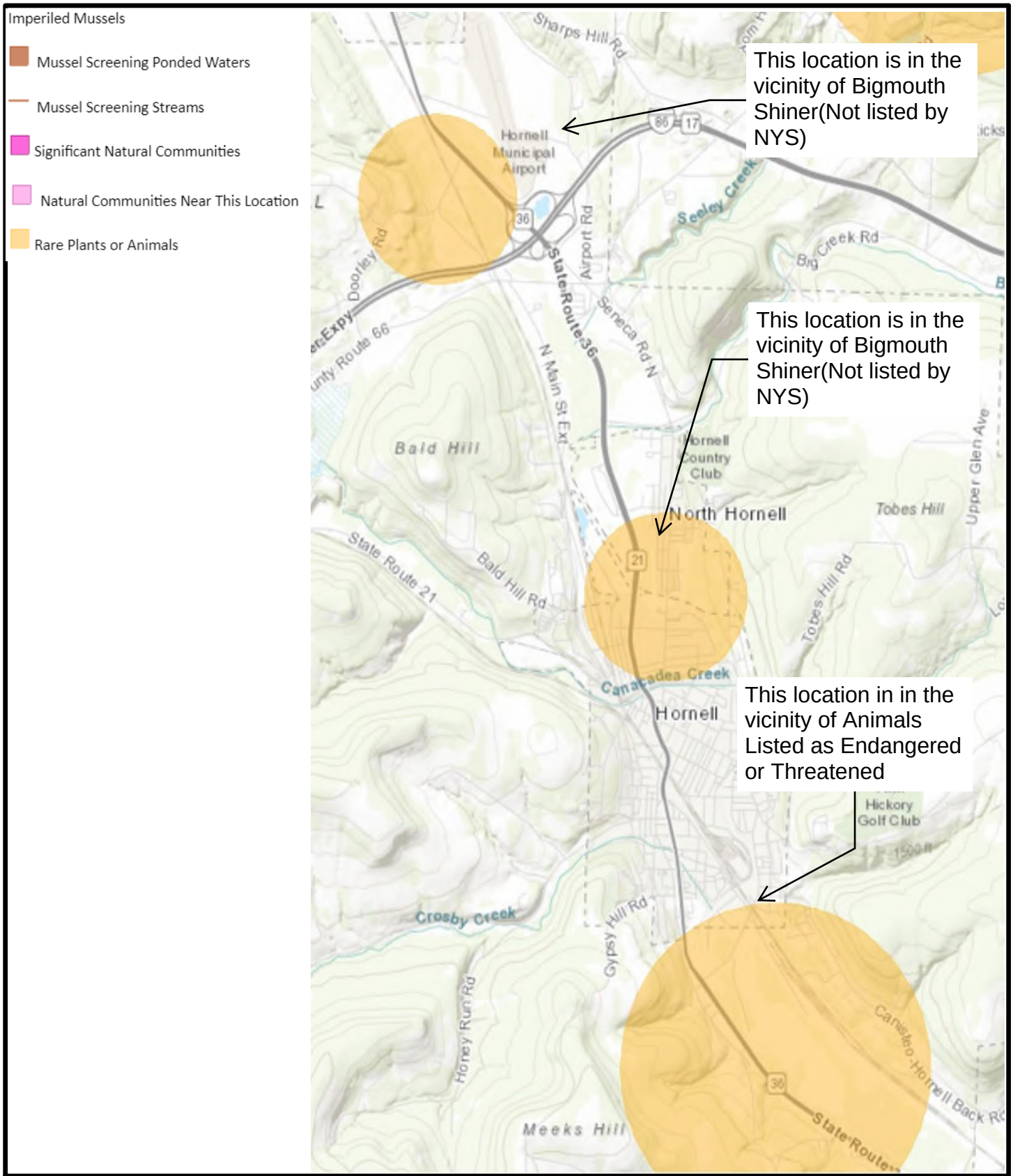
Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Figure B-7

Rare Plants and Animals



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C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

It is a violation of New York Education Law Art, 145 Sec, 7209 & Art, 147 Sec, 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered; the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

ISSUED FOR: DRAFT

DRAWING: Rare Plants and Animals Mapping
Environmental Resource Mapper

DRAWN BY: KA | DATE: Feb 2025 | PROJECT NO.: 2250913

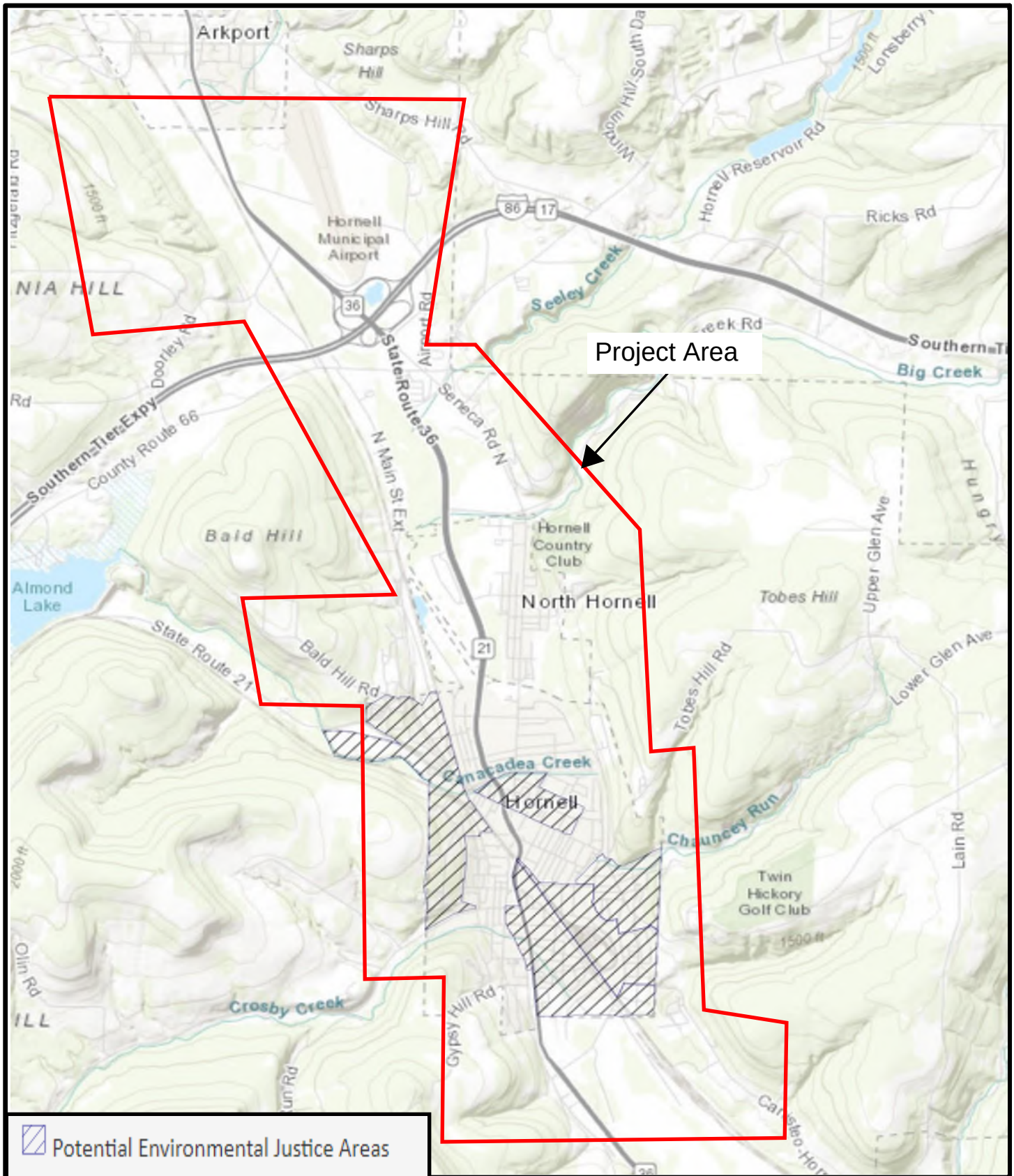
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B-7

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6/3/2010 8:47:56 AM

Figure B-8

Potential Environmental Justice Area



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C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

It is a violation of New York Education Law Art, 145 Sec. 7209 & Art, 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered; the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

ISSUED FOR: DRAFT

DRAWING NAME: Potential Environmental Justice Area
NYS DEC InfoLocator Mapping Tool

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

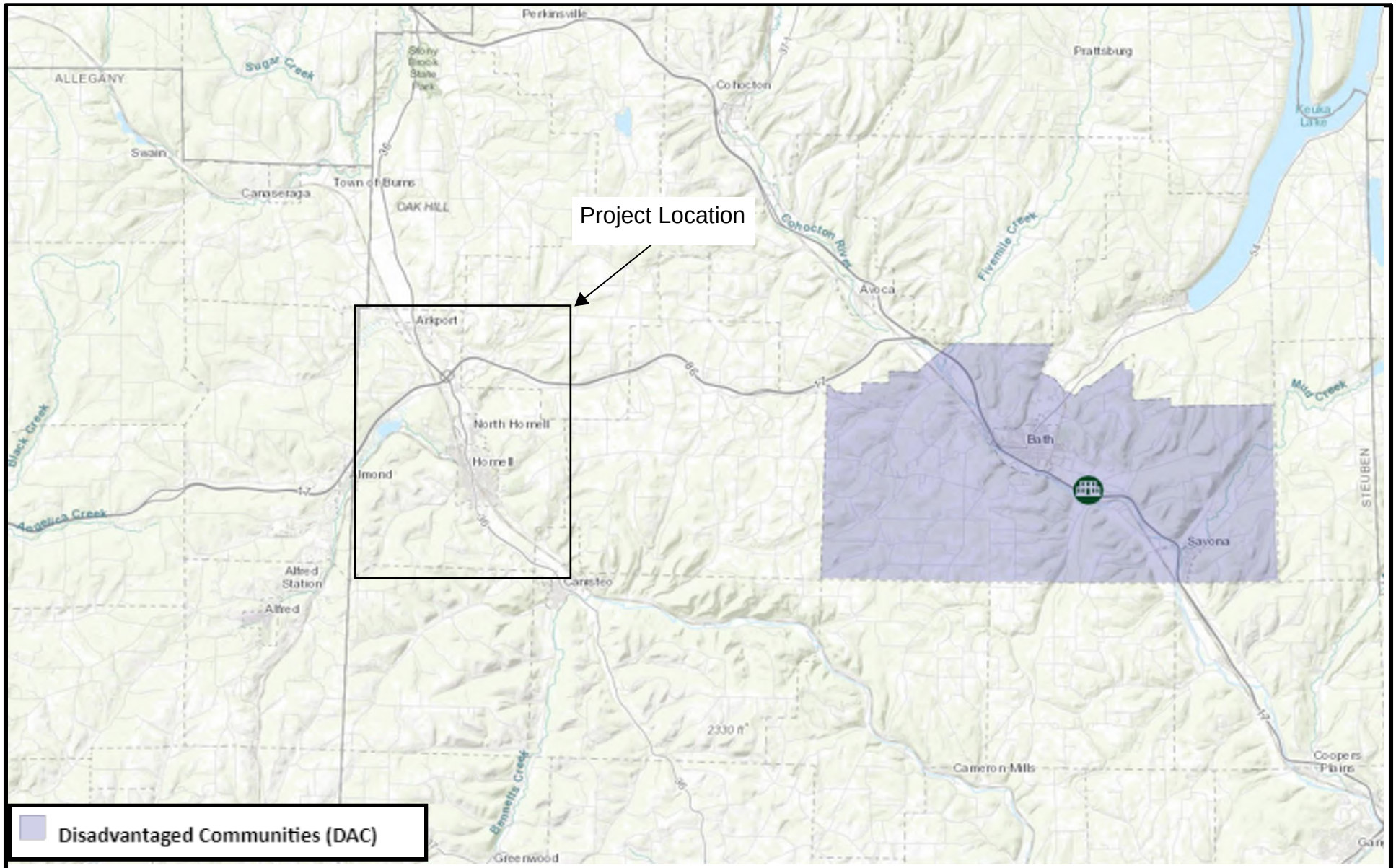
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B-8

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Figure B-9

Disadvantaged Communities



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C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Disadvantaged Communities
NYS DEC Info Locator Mapping Tool

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Feb 2025	2250913

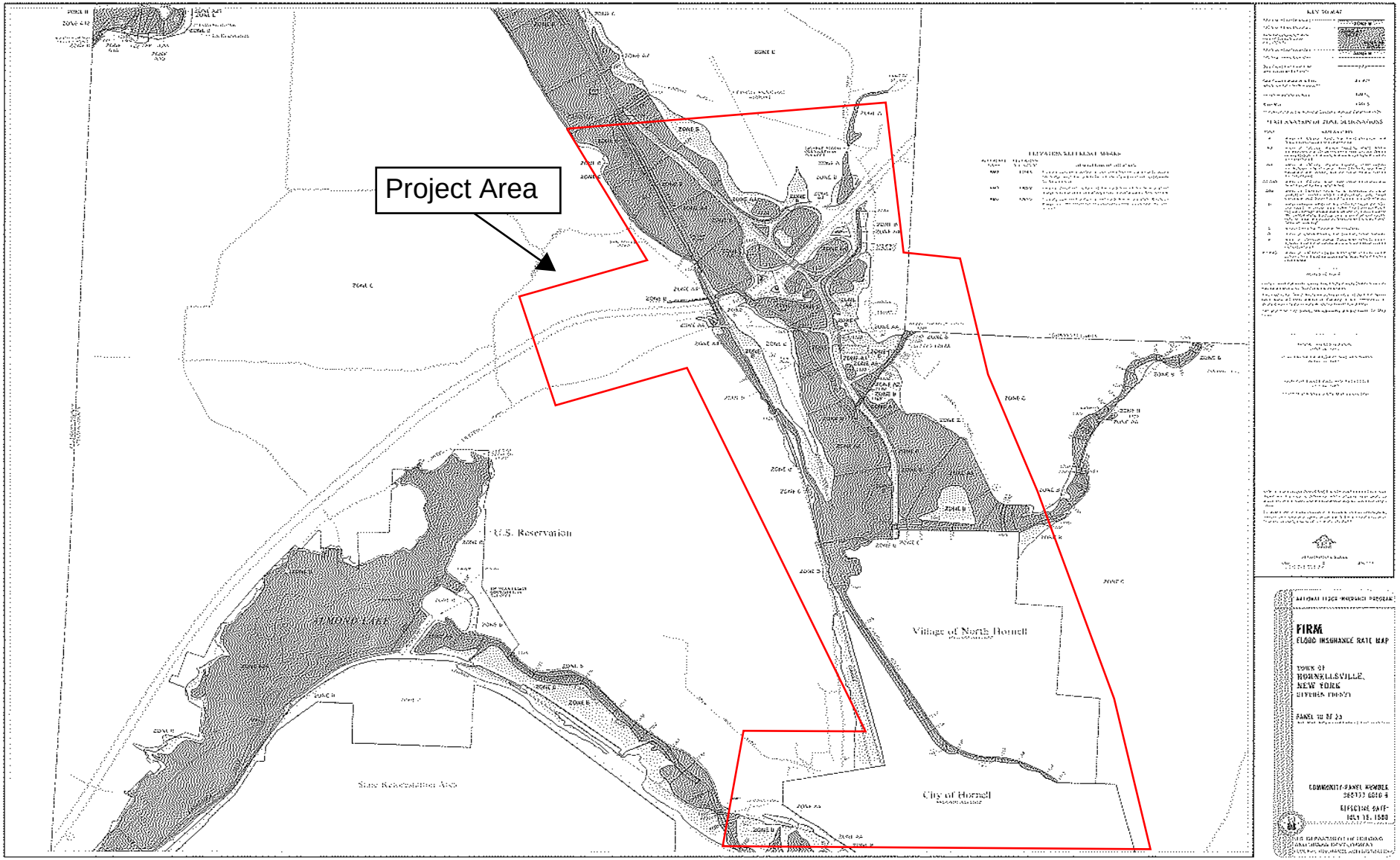
PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure B-9

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Figure B-10.1

FEMA Flood Mapping



LaBella
Powered by partnership.
300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: FEMA Flood Mapping

ISSUED FOR: DRAFT

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

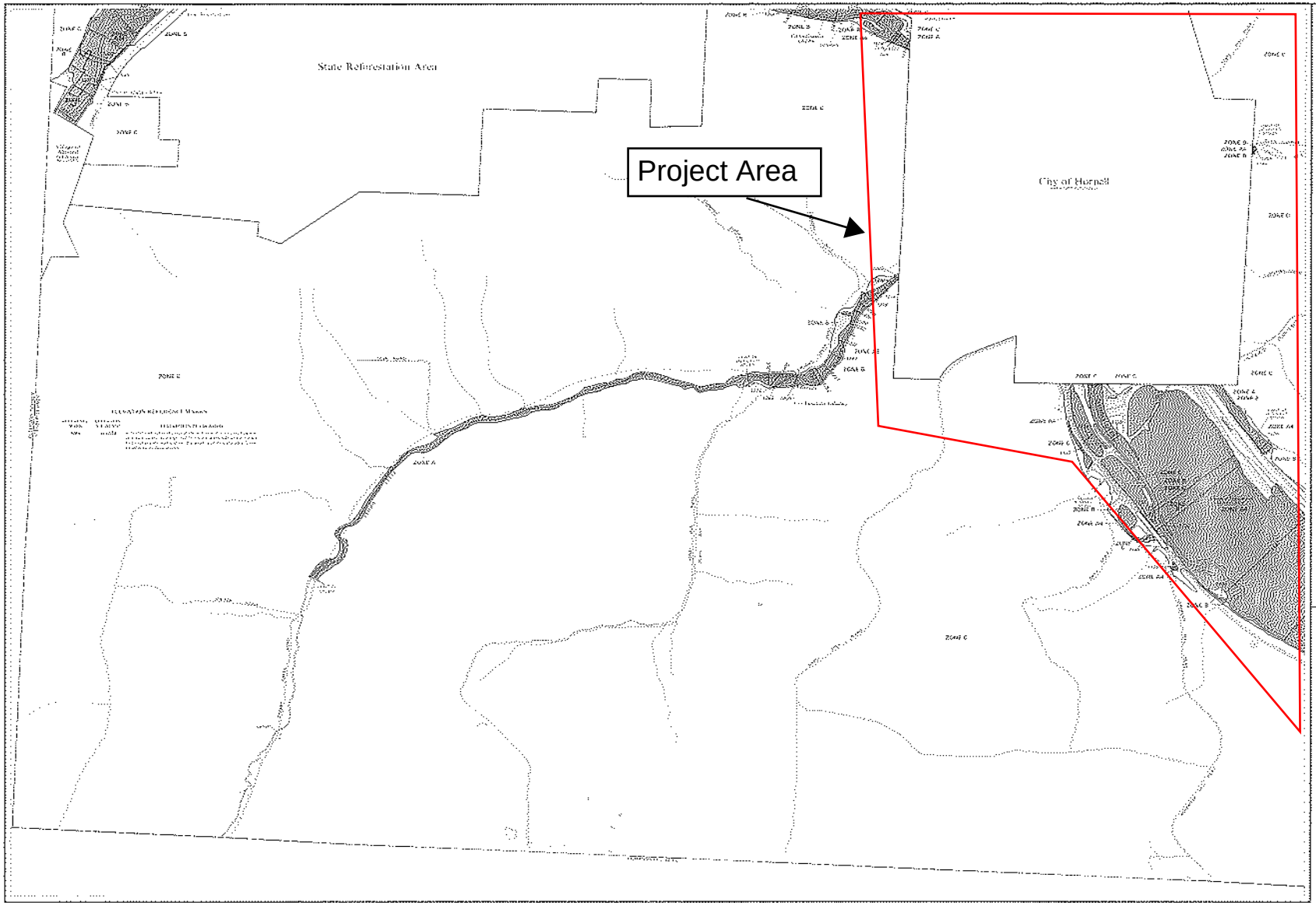
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B -10.1

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Figure B-10.2

FEMA Flood Mapping



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Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: FEMA Flood Mapping

ISSUED FOR: DRAFT

DRAWN BY: KA

DATE: Feb 2025

PROJECT NO.: 2250913

PROJECT NAME: Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER: Figure B -10.2

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APPENDIX C

Permits, IMAs

Figure C-1

WPCP Permit

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

State Pollutant Discharge Elimination System (SPDES) DISCHARGE PERMIT

SIC Code:	**4952**	NAICS Code:	**221320**	SPDES Number:	**NY0023647**
Discharge Class (CL):	**05**			DEC Number:	**8-4606-00006/00002**
Toxic Class (TX):	**T**			Effective Date (EDP):	**11/1/2021**
Major-Sub Drainage Basin:	**05 - 03**			Expiration Date (ExDP):	**10/31/2026**
Water Index Number:	**Pa 3-57-5**	Item No.:	**811 - 70**	Modification Dates (EDPM):	**11/24/2021** **05/01/2023** **EDPM**
Compact Area:	**SRBC**				

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. '1251 et.seq.)

PERMITTEE NAME AND ADDRESS					
Name:	**City of Hornell**	Attention:	**Mayor**		
Street:	**P.O. BOX 627-80 Main Street**				
City:	**Hornell**	State:	**NY**	Zip Code:	**14843**
Email:	**mayorbuckley@cityofhornell.com**	Phone:	**607-324-7421**		

is authorized to discharge from the facility described below:

FACILITY NAME, ADDRESS, AND PRIMARY OUTFALL																
Name:	**Hornell Water Pollution Control Plant**															
Address/Location:	**69 Park Drive**											County:	**Steuben**			
City:	**Hornell**						State:	**NY**				Zip Code:	**14843**			
Facility Location:		Latitude:	**42**	°	**18**	’	**39**	” N	& Longitude:	**77**	°	**39**	’	**16**	” W	
Primary Outfall No.:	**001**	Latitude:	**42**	°	**18**	’	**25**	” N	& Longitude:	**77**	°	**39**	’	**21**	” W	
Outfall Description:	**Treated Sanitary**		Receiving Water:		**Canisteo River**							Class:	**C**			

and the additional outfalls listed in this permit, in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1 and 750-2.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:
CO BWP - Permit Coordinator
CO BWC - SCIS
RWE
RPA
EPA Region II
NYSEFC

Permit Administrator:	Kimberly A. Merchant		
Address:	6274 E Avon-Lima Rd, Avon, NY 14414		
Signature:		Date:	/ /

7-Day Geo Mean	**The highest allowable geometric mean of daily discharges over a calendar week.**
7-Day Average	The average of all daily discharges for each 7-days in the monitoring period. The sample measurement is the highest of the 7-day averages calculated for the monitoring period.
12-Month Rolling Average (12 MRA)	The current monthly value of a parameter, plus the sum of the monthly values over the previous 11 months for that parameter, divided by 12.
30-Day Geometric Mean	The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of: the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
Action Level	Action level means a monitoring requirement characterized by a numerical value that, when exceeded, triggers additional permittee actions and department review to determine if numerical effluent limitations should be imposed.
Compliance Level / Minimum Level	A compliance level is an effluent limitation. A compliance level is given when the water quality evaluation specifies a Water Quality Based Effluent Limit (WQBEL) below the Minimum Level. The compliance level shall be set at the Minimum Level (ML) for the most sensitive analytical method as given in 40 CFR Part 136, or otherwise accepted by the Department.
Daily Discharge	The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.
Daily Maximum	The highest allowable Daily Discharge.
Daily Minimum	The lowest allowable Daily Discharge.
Effective Date of Permit (EDP or EDPM)	The date this permit is in effect.
Effluent Limitations	Effluent limitation means any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents that are discharged into waters of the state.
Expiration Date of Permit (ExDP)	The date this permit is no longer in effect.
Instantaneous Maximum	The maximum level that may not be exceeded at any instant in time.
Instantaneous Minimum	The minimum level that must be maintained at all instants in time.
Monthly Average	The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
Outfall	The terminus of a sewer system, or the point of emergence of any waterborne sewage, industrial waste or other wastes or the effluent therefrom, into the waters of the State.
Range	The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.
Receiving Water	The classified waters of the state to which the listed outfall discharges.
Sample Frequency / Sample Type / Units	See NYSDEC's "DMR Manual for Completing the Discharge Monitoring Report for the SPDES" for information on sample frequency, type and units.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY	RECEIVING WATER	EFFECTIVE	EXPIRING
001	Year Round	Canisteo River	11/01/2021	10/31/2026

PARAMETER	EFFLUENT LIMITATION					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Flow	Monthly Average	4.0	MGD	-	-	Continuous	Meter	X		
	Daily Max	Monitor	MGD	-	-	Continuous	Meter	X		
pH	Range	6.0 - 9.0	SU	-	-	2/day	Grab		X	
Temperature	Daily Maximum	Monitor	ºC	-	-	2/day	Grab		X	
Dissolved Oxygen (DO)	Daily Minimum	7.0	mg/L	-	-	1/week	Grab		X	
$CBOD_5$	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	1
June 1st – Oct 31st	7-Day Average	11	mg/L	370	lb/d	1/week	24-hr. Comp.		X	
$CBOD_5$	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	1
Nov 1st – May 31st	7-Day Average	30	mg/L	1000	lb/d	1/week	24-hr. Comp.		X	
Total Suspended Solids (TSS)	Monthly Average	30	mg/L	1000	lb/d	1/week	24-hr. Comp.	X	X	1
	7-Day Average	45	mg/L	1500	lb/d	1/week	24-hr. Comp.		X	
Settleable Solids	Daily Maximum	0.1	mL/L	-	-	2/day	Grab		X	
Ammonia (as N) June 1st – Oct 31st	Monthly Average	1.5	mg/L	50	lb/d	1/week	24-hr. Comp.		X	
Ammonia (as N) Nov 1st – May 31st	Monthly Average	4.2	mg/L	140	lb/d	1/week	24-hr. Comp.		X	
Total Kjeldahl Nitrogen (TKN) (as N)	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	
Nitrate (NO_3) (as N)	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	
Nitrite (NO_2) (as N)	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	
Total Nitrogen (as N)	Monthly Average	Monitor	mg/L	Monitor	lb/d	1/week	Calculated	X	X	2
	Monthly Total	-	-	Monitor	lb/mo	1/month	Calculated		X	3
	12 Month Rolling Load	-	-	117,000	lb/yr	1/month	Calculated		X	4,5
Total Phosphorus (as P)	Monthly Average	0.5	mg/L	Monitor	lb/d	1/week	24-hr. Comp.	X	X	5
	Monthly Total	-	-	Monitor	lb/mo	1/month	Calculated		X	6
	12 Month Rolling Load	-	-	6,088	lb/yr	1/month	Calculated		X	5,7
Mercury	Daily Maximum	50	ng/L	-	-	Quarterly	Grab		X	8
Mercury	12 MRA	12	ng/L	-	-	Quarterly	Calculated		X	8

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PARAMETER	EFFLUENT LIMITATION					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Biennial Pollutant Scan	Daily Maximum					1/Two Years	24-hr. Comp.		X	9

EFFLUENT DISINFECTION Required Seasonal from May 1st - October 31st		Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	FN
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 mL	-	-	1/week	Grab		X	5
Coliform, Fecal	7-Day Geometric Mean	400	No./ 100 mL	-	-	1/week	Grab		X	5
Total Residual Chlorine	Daily Maximum	0.03	mg/L	-	-	2/day	Grab		X	5,10, 11

WHOLE EFFLUENT TOXICITY (WET) TESTING		Limit	Units	Action Level	Units	Sample Frequency	Sample Type	Inf.	Eff.	FN
WET - Acute Invertebrate	See footnote	-	-	0.3	TUa		See footnote		X	8,12
WET - Acute Vertebrate	See footnote	-	-	0.3	TUa		See footnote		X	8,12
WET - Chronic Invertebrate	See footnote	-	-	3.3	TUc		See footnote		X	8,12
WET - Chronic Vertebrate	See footnote	-	-	3.3	TUc		See footnote		X	8,12

FOOTNOTES:

1. Effluent shall not exceed 15% of influent concentration values for $CBOD_5$ & TSS.
2. Total Nitrogen (as N) = [Total Kjeldahl Nitrogen (TKN), as N] + [Nitrite (NO_2), as N] + [Nitrate (NO_3), as N].
3. Total Nitrogen (as N), monthly total (lb/mo) is calculated as the monthly average load (lb/d) multiplied by the number of days in the month.
4. Total Nitrogen (as N), 12-month rolling load (lb/yr) is calculated as the current month load added to the month loads from the previous eleven months.
5. **This is a final effluent limitation.** See Schedule of Compliance for any applicable interim effluent limitations.
6. Total Phosphorus (as P), month total (lb/mo) is calculated as the monthly average load (lb/d) multiplied by the number of days in the month.
7. Total Phosphorus (as P), 12-month rolling load (lb/yr) is calculated as the current month load added to the month loads from the previous eleven months.
8. Quarterly samples shall be reported as calendar quarters (Q1 – January 1st to March 31st; Q2 – April 1st to June 30th; Q3 – July 1st to September 30th; Q4 – October 1st to December 31st).
9. Biennial Pollutant Scan: The permittee shall perform effluent sampling every two (2) years for all pollutants identified in the NY-2A Application, Tables A - D. Sampling data shall be collected and maintained by the permittee. Monitoring results shall not be submitted on the DMR. Data shall be submitted with the next submission of the NY-2A form.

Footnotes continued on next page

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10. Reporting for Total Residual Chlorine is only applicable if chlorine is used for disinfection, elsewhere in the treatment process, or the facility otherwise has reasonable potential to discharge chlorine.

11. This is a Compliance Level. The calculated WQBEL is 0.016 mg/L.

12. **Whole Effluent Toxicity (WET) Testing:**
Testing Requirements – Chronic WET testing is required, but report both the acute and chronic results. Testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be Ceriodaphnia dubia (water flea - invertebrate) and Pimephales promelas (fathead minnow - vertebrate). Receiving water collected upstream from the discharge should be used for dilution. All tests conducted should be static-renewal (two 24-hr composite samples with one renewal for Acute tests and three 24-hr composite samples with two renewals for Chronic tests). The appropriate dilution series should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test may be required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 3.0:1 for acute, and 3.3:1 for chronic. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed quarterly (calendar quarters) during calendar years ending in **2** and **7**.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: TUa = (100)/(48-hr LC50) [note that Acute data is generated by both Acute and Chronic testing] and TUc = (100)/(7-day NOEC) or (100)/(7-day IC25) when Chronic testing has been performed or TUc = (TUa) x (10) when only Acute testing has been performed and is used to predict Chronic test results, where the 48-hr LC50, 7-day NOEC and/or IC25 are all expressed in % effluent. This must be done, including the Chronic prediction from the Acute data, for both species unless otherwise directed. For Chronic results, report the most sensitive endpoint (i.e. survival, growth and/or reproduction) corresponding to the lowest 7-day NOEC or IC25 and resulting highest TUc. For Acute results, report a TUa of 0.3 if there is no statistically significant mortality in 100% effluent as compared to the control. Report a TUa of 1.0 if there is statistically significant mortality in 100% effluent as compared to the control, but insufficient mortality to generate a 48-hr LC50. Also, in the absence of a 48-hr LC50, use 1.0 TUa for the Chronic prediction from the Acute data, and report a TUc of 10.0.

The complete test report including all bench sheets, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period with your WET DMR and to the WET@dec.ny.gov email address. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48-hr LC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Identification/Reduction Evaluation (TI/RE) in accordance with Department guidance. Enforceable WET limits may also apply. The permittee shall be notified in writing by their Regional DEC office of additional requirements. The written notification shall include the reason(s) why such testing, TI/RE and/or limits are required.

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SPECIAL CONDITIONS

Landfill leachate is not currently accepted by the Hornell WPCP. To receive landfill leachate, a permit modification request must be submitted.

STORMWATER POLLUTION PREVENTION REQUIREMENTS

NO EXPOSURE CERTIFICATION
The permittee submitted a Conditional Exclusion for No Exposure Form on 10/13/2022, certifying that all industrial activities and materials are completely sheltered from exposure to rain, snow, snowmelt, and/or stormwater runoff. The permittee must maintain a condition of no exposure for the exclusion to remain applicable. If conditions change resulting in the exposure of materials and activities to stormwater, the permittee must notify the Regional Water Engineer. The permittee must recertify a condition of no exposure every five years by completing the “No Exposure Certification Form” found on the NYSDEC website.

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MERCURY MINIMIZATION PROGRAM (MMP) - Type I

1. General - The permittee must develop, implement, and maintain a mercury minimization program (MMP), containing the elements set forth below, to reduce mercury effluent levels with the goal of achieving the WQBEL of 0.7 ng/L.

2. MMP Elements - The MMP must be a written document and must include any necessary drawings or maps of the facility and/or collection system. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. At a minimum, the MMP must include the following elements as described in detail below:

   a. Monitoring - Monitoring at outfall, influent and other locations tributary to compliance points may be performed using either USEPA Method 1631 or another sufficiently sensitive method, as approved under 40 CFR Part 136[1]. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using other methods as appropriate. Monitoring must be coordinated so that the results can be effectively compared between locations.

      Minimum required monitoring is as follows:

      i. Sewage Treatment Plant Influent and/or Effluent – The permittee must collect samples at the location(s) and frequency as specified in the SPDES permit limitations table.

      ii. *Key Locations* and *Potential Mercury Sources* –The permit includes reduced monitoring requirements and does not require key location sampling. See section 2.a.iv below.

      iii. Hauled Wastes – The permittee must establish procedures for the acceptance of hauled waste to ensure the hauled waste is not a potential mercury source. Loads which may exceed 500 ng/L,[2] must receive approval from the Department prior to acceptance.

      iv. Decreased Monitoring Requirements – The permittee has an EEQ at or below 12 ng/L and the permit includes the following:

         1) Reduced requirements
            a) Conduct influent monitoring, sampling quarterly, in lieu of monitoring within the collection system, such as at *key locations*; and
            b) Conduct effluent compliance sampling quarterly.
         2) If a facility with reduced requirements reports discharges above 12 ng/L for two of four consecutive effluent samples, the Department may undertake a Department-initiated modification to remove the allowance of reduced requirements.
         3) Under the decreased permit requirements, the facility must continue to conduct a status report, as applicable in accordance with 2.c of this MMP, to determine if any waste streams have changed.

      v. Additional monitoring must be completed as required elsewhere in this permit (e.g., locations tributary to compliance points).

   b. Control Strategy - The control strategy must contain the following minimum elements:

      i. Pretreatment/Sewer Use Law - The permittee must review pretreatment program requirements and the Sewer Use Law (SUL) to ensure it is up-to-date and enforceable with applicable permit requirements and will support efforts to achieve a dissolved mercury concentration of 0.70 ng/L in the effluent.

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[1] Outfall monitoring must be conducted using the methods specified in Table 8 of *DOW 1.3.10.*
[2] A level of 0.2 mg/L (200,000 ng/L) or more is considered hazardous per 40 CFR Part 261.11. 500 ng/L is used here to alert the permittee that there is an unusual concentration of mercury and that it will need to be managed appropriately.

MERCURY MINIMIZATION PROGRAM (MMP) - Type I (Continued)

ii. Monitoring and Inventory/Inspections -
   1) Monitoring shall be performed as described in 2.a above. As mercury sources are found, the permittee must enforce its sewer use law to track down and minimize these sources.
   2) The permittee must inventory and/or inspect users of its system as necessary to support the MMP.
      a) Dental Facilities
         1. The permittee must maintain an inventory of each dental facility.
         2. The permittee must inspect each dental facility at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6 NYCRR 374.4. Alternatively, the permittee may develop and implement an outreach program,[3] which informs users of their responsibilities, and collect the "Amalgam Waste Compliance Report for Dental Dischargers"[4] form, as needed, to satisfy the inspection requirements. The permittee must conduct the outreach program at least once every five years and ensure the "Amalgam Waste Compliance Report for Dental Dischargers" are submitted by new users, as necessary. The outreach program could be supported by a subset of site inspections.
         3. A file shall be maintained containing documentation demonstrating compliance with 2.b.ii.2)a) above. This file shall be available for review by the Department representatives and copies shall be provided upon request.
      b) Other *potential mercury sources*
         1. The permittee must maintain an inventory of other *potential mercury sources.*
         2. The permittee must inspect other *potential mercury sources* once every five years. Alternatively, the permittee may develop and implement an outreach program which informs users of their responsibilities as *potential mercury sources.* The permittee must conduct the outreach program at least once every five years. The outreach program should be supported by a subset of site inspections.
         3. A file shall be maintained containing documentation demonstrating compliance with 2.b.ii.2)b) above. This file shall be available for review by the Department representatives and copies shall be provided upon request.

iii. Systems with CSO & Type II SSO Outfalls – Permittees must prioritize *potential mercury sources* upstream of CSOs and Type II SSOs for mercury reduction activities and/or controlled-release discharge.

iv. Equipment and Materials – Equipment and materials (e.g., thermometers, thermostats) used by the permittee, which may contain mercury, must be evaluated by the permittee. As equipment and materials containing mercury are updated/replaced, the permittee must use mercury-free alternatives, if possible.

v. Bulk Chemical Evaluation – For chemicals, used at a rate which exceeds 1,000 gallons/year or 10,000 pounds/year, the permittee must obtain a manufacturer's certificate of analysis, a chemical analysis performed by a certified laboratory, and/or a notarized affidavit which describes the substances' mercury concentration and the detection limit achieved. If possible, the permittee must only use bulk chemicals utilized in the wastewater treatment process which contain <10 ppb mercury.

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[3] For example, the outreach program could include education about sources of mercury and what to do if a mercury source is found.
[4] The form, "Amalgam Waste Compliance Report for Dental Dischargers," can be found here: https://www.dec.ny.gov/docs/water_pdf/dentalform.pdf

MERCURY MINIMIZATION PROGRAM (MMP) - Type I (Continued)

c. **Status Report - An annual** status report must be completed and maintained on site summarizing:
   i. All MMP monitoring results for the previous reporting period;
   ii. A list of known and *potential mercury sources*
      1) If the permittee meets the criteria for MMP Type IV, the permittee must notify the Department for a permittee-initiated modification;
   iii. All actions undertaken, pursuant to the control strategy, during the previous reporting period;
   iv. Actions planned, pursuant to the control strategy, for the upcoming reporting period; and
   v. Progress towards achieving a dissolved mercury concentration of 0.70 ng/L in the effluent (e.g., summarizing reductions in effluent concentrations as a result of the control strategy implementation and/or installation/modification of a treatment system).

   The first status report is required to be completed in accordance with the Schedule of Additional Submittals. The permittee must maintain a file with all MMP documentation. The file must be available for review by Department representatives and copies must be provided upon request in accordance with 6 NYCRR 750-2.1(i) and 750-2.5(c)(4).

3. MMP Modification - The MMP must be modified whenever:
   a. Changes at the facility, or within the collection system, increase the potential for mercury discharges;
   b. Effluent discharges exceed the current permit limitation(s); or
   c. A letter from the Department identifies inadequacies in the MMP.

   The Department may use information in the status reports, as applicable in accordance with 2.c of this MMP, to determine if the permit limitations and MMP Type is appropriate for the facility.

DEFINITIONS:

Key location – a location within the collection/wastewater system (e.g. including but not limited to a specific manhole/access point, tributary sewer/wastewater connection, or user discharge point) identified by the permittee as a potential mercury source. The permittee may adjust key locations based upon sampling and/or best professional judgement.

Potential mercury source – a source identified by the permittee that may reasonably be expected to have total mercury contained in the discharge. Some potential mercury sources include switches, fluorescent lightbulbs, cleaners, degreasers, thermometers, batteries, hauled wastes, universities, hospitals, laboratories, landfills, Brownfield sites, or raw material storage.

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DISCHARGE NOTIFICATION REQUIREMENTS

(a) The permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit, unless the Permittee has obtained a waiver in accordance with the Discharge Notification Act (DNA). Such signs shall be installed before initiation of any discharge.

(b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.

(c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.

(d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty-four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY_____

OUTFALL No. :____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: ( ) - ### - ####

OR:

NYSDEC Division of Water Regional Office Address:

NYSDEC Division of Water Regional Phone: ( ) - ### - ####

(e) Upon request, the permittee shall make available electronic or hard copies of the sampling data to the public. In accordance with the RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS page of your permit, each DMR shall be maintained (either electronically or as a hard copy) on record for a period of five years.

(f) The permittee shall periodically inspect the outfall identification sign(s) in order to ensure they are maintained, are still visible, and contain information that is current and factually correct. Signs that are damaged or incorrect shall be replaced within 3 months of inspection.

MINI INDUSTRIAL PRETREATMENT PROGRAM SCHEDULE

Significant Industrial Users discharge to the permittee's municipal sewerage system. The permittee must complete the steps in the Mini Industrial Pretreatment Schedule below by the deadline in the schedule of compliance.

Industrial Survey
The permittee shall submit Fast Report On Significant Industries forms completed through question 7A, completed Industrial Chemical Survey forms and proposed industrial monitoring H.P. Hood/Crowley Foods Inc., Alstom Car Shop, Alstom Motor Shop, Stern Industries, Inc., and Saint James Mercy Hospital and proposed Sewage Treatment Plant (STP) monitoring.

Develop Procedures
The permittee shall submit documentation of procedures for obtaining and ensuring compliance with applicable standards. Such procedures shall include requirements and schedules for discharge permits, industrial self-monitoring, compliance monitoring of industries by the permittee, ongoing STP monitoring and an enforcement program. Such procedures shall be equivalent to procedures described or referenced in the document entitled Introduction to the National Pretreatment Program, USEPA, June 2011 (https://www3.epa.gov/npdes/pubs/pretreatment_program_intro_2011.pdf).

Treatment Plant/Industry Monitoring
The permittee shall submit the results of that monitoring and a completed FROSIs for all SIUs.

Local Sewer Use Law
Following the submission of STP/industrial monitoring results, the permittee shall submit a draft local sewer use law equivalent to the DEC Model Sewer Use Law. Local limits for substance capable of causing SPDES permit violations, endangering municipal employees or limiting sludge disposal options must be included in the local law. Such limits shall be developed in accordance with document entitled Local Limits Development Guidance, US EPA, July 2004, EPA 833-R-04-002A (https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=300062Q1.txt).

Following approval by this Department, the permittee shall submit a copy of the enacted Law accompanied by proof of enactment.

Credit for Work Already Completed
Any of the above required tasks already completed by the permittee need not be repeated. If the permittee believes that a task or task(s) have been satisfactorily completed, documentation of the completed tasks should be submitted to NYSDEC for approval.

Implement Procedures
Within 9 months of enactment of its sewer use law (which shall be updated as identified in the compliance schedule), the permittee shall implement the procedures proposed under this schedule and approved by NYSDEC. At a minimum, the following activities shall be undertaken by the permittee:

1. Issue permits including limitations, monitoring requirements, and reporting requirements to its significant industrial users.
2. Enforce the local limits set forth in the POTW local sewer use law.
3. Carry out inspections and monitoring of significant industrial users to determine compliance with categorical standards and local limits.
4. Undertake enforcement actions in accordance with NYSDEC approved procedures.

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MINI INDUSTRIAL PRETREATMENT PROGRAM SCHEDULE (continued)

Reporting Requirements

In accordance with the Schedule of Submittals, the permittee shall submit yearly Fast Report On Significant Industries forms (FROSIs) for each SIU to NYSDEC. Every third year, on the same date, the permittee shall submit Industrial Chemical Survey (ICS) forms completed by all SIUs to NYSDEC. At the same time the permittee shall notify the NYSDEC of any proposed significant changes to its implementing procedures or local sewer use law.

All pretreatment reports shall be submitted to the offices listed on the monitoring, recording and reporting page of this permit.

Continuation

Unless noted otherwise, compliance actions required by the pretreatment mini schedule are one-time requirements. The permittee shall comply with the compliance actions to the satisfaction of the Department. When this permit is administratively renewed by NYSDEC letter entitled **"SPDES NOTICE/RENEWAL APPLICATION/PERMIT"**, the permittee is not required to repeat the submissions. The due dates are independent from the effective date of the permit stated in the letter of **"SPDES NOTICE/RENEWAL APPLICATION/PERMIT."**

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SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Outfall(s)	Compliance Action	Due Date
001	SCHEDULE OF COMPLIANCE STATUS REPORTS Submit interim status reports on the progress related to meeting the specified final limits.	July 31, 2022, and every 9 months thereafter
	PHOSPHORUS CONCENTRATION EFFLUENT LIMITATION The Total Phosphorus monthly average effluent concentration limit of 0.5 will become effective January 1, 2025. This requirement will be monitor only until the limit takes effect.	January 1, 2025
	The Engineering Report and Design Submittal requirement for compliance with final effluent limitations for fecal coliform and total residual chlorine were approved September 2020. BEGIN CONSTRUCTION The permittee shall begin construction of the treatment facilities in accordance with the Department approved schedule. COMPLETE CONSTRUCTION & COMMENCE OPERATION The permittee shall complete construction and commence operation of the system, and comply with the final effluent limitations for fecal coliform and total residual chlorine.	Construction Commenced May 1, 2023
	MINI INDUSTRIAL PRETREATMENT PROGRAM The permittee shall complete the steps laid out in the mini industrial pretreatment program schedule on pages 12 and 13 of this permit and submit a draft local sewer use law. Following DEC approval of the draft sewer use law, the permittee shall submit a copy of the enacted Law accompanied by proof of enactment.	April 30, 2023 April 30, 2024

The above compliance actions are one-time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the "SPDES NOTICE/RENEWAL APPLICATION/PERMIT" letter.

INTERIM EFFLUENT LIMITS FOR PARAMETERS SUBJECT TO THIS SCHEDULE OF COMPLIANCE

Outfall	Parameter(s) Affected	Interim Effluent Limit			Limits Apply	Notes	Interim Limits Expire
		Type	Limit	Units			
001	Total Nitrogen	12 Month Rolling Load	106,000	lb/yr	Year-round	1, 2	01/01/2025
001	Total Phosphorous	Monthly Average	Monitor	mg/L	Year-round	1, 2	01/01/2025
001	Total Phosphorous	12 Month Rolling Load	8,530	lb/yr	Year-round	1, 2	01/01/2025

Notes:

1. See permit limits table for sample type and frequency.
2. See permit footnotes for the calculation.

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SCHEDULE OF COMPLIANCE (continued)

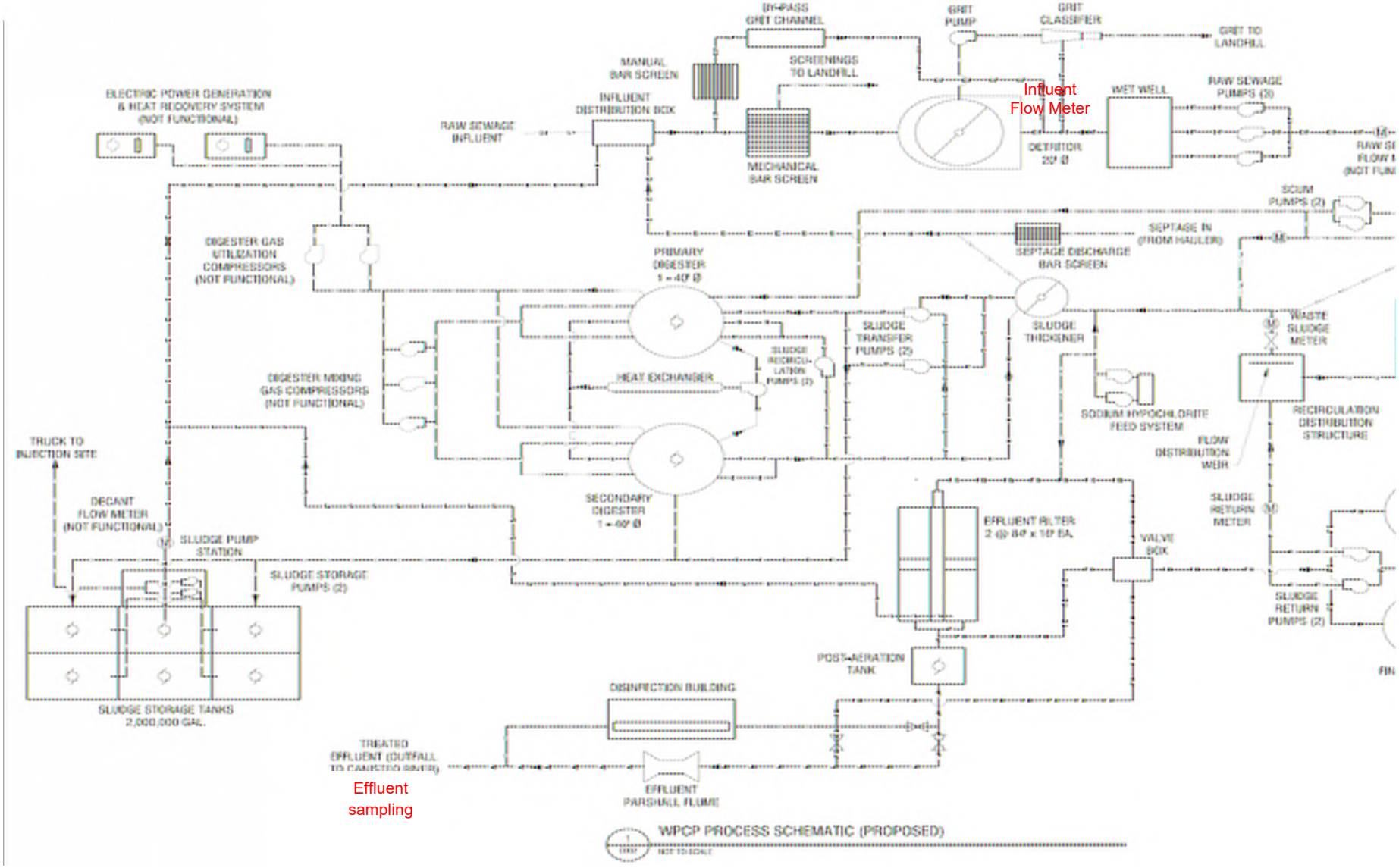
b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
   1. A short description of the non-compliance;
   2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
   3. Any details which tend to explain or mitigate an instance of non-compliance; and
   4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

c) The permittee shall submit copies of any document required by the above schedule of compliance to the NYSDEC Regional Water Engineer and to the Bureau of Water Permits.

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MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the locations(s) specified below:



GENERAL REQUIREMENTS

A. The regulations in 6 NYCRR Part 750 are hereby incorporated by reference and the conditions are enforceable requirements under this permit. The permittee shall comply with all requirements set forth in this permit and with all the applicable requirements of 6 NYCRR Part 750 incorporated into this permit by reference, including but not limited to the regulations in paragraphs B through I as follows:

B. General Conditions

1.	Duty to comply	6 NYCRR 750-2.1(e) & 2.4
2.	Duty to reapply	6 NYCRR 750-1.16(a)
3.	Need to halt or reduce activity not a defense	6 NYCRR 750-2.1(g)
4.	Duty to mitigate	6 NYCRR 750-2.7(f)
5.	Permit actions	6 NYCRR 750-1.1(c), 1.18, 1.20 & 2.1(h)
6.	Property rights	6 NYCRR 750-2.2(b)
7.	Duty to provide information	6 NYCRR 750-2.1(i)
8.	Inspection and entry	6 NYCRR 750-2.1(a) & 2.3

C. Operation and Maintenance

1.	Proper Operation & Maintenance	6 NYCRR 750-2.8
2.	Bypass	6 NYCRR 750-1.2(a)(17), 2.8(b) & 2.7
3.	Upset	6 NYCRR 750-1.2(a)(94) & 2.8(c)

D. Monitoring and Records

1.	Monitoring and records	6 NYCRR 750-2.5(a)(2), 2.5(a)(6), 2.5(c)(1), 2.5(c)(2), & 2.5(d)
2.	Signatory requirements	6 NYCRR 750-1.8 & 2.5(b)

E. Reporting Requirements

1.	Reporting requirements	6 NYCRR 750-2.5, 2.7 & 1.17
2.	Anticipated noncompliance	6 NYCRR 750-2.7(a)
3.	Transfers	6 NYCRR 750-1.17
4.	Monitoring reports	6 NYCRR 750-2.5(e)
5.	Compliance schedules	6 NYCRR 750-1.14(d)
6.	24-hour reporting	6 NYCRR 750-2.7(c) & (d)
7.	Other noncompliance	6 NYCRR 750-2.7(e)
8.	Other information	6 NYCRR 750-2.1(f)
9.	Additional conditions applicable to a POTW	6 NYCRR 750-2.9

F. Planned Changes

1. The permittee shall give notice to the Department as soon as possible of planned physical alterations or additions to the permitted facility when:

    a. The alteration or addition to the permitted facility may meet any of the criteria for determining whether facility is a new source in 40 CFR §122.29(b); or
    b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 40 CFR §122.42(a)(1); or
    c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

In addition to the Department, the permittee shall submit a copy of this notice to the United States Environmental Protection Agency at the following address: U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866.

GENERAL REQUIREMENTS (continued)

2. Notification Requirement for POTWs
   All POTWs shall provide adequate notice to the Department and the USEPA of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; or
   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   c. For the purposes of this paragraph, adequate notice shall include information on:
      i. the quality and quantity of effluent introduced into the POTW, and
      ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

   POTWs shall submit a copy of this notice to the United States Environmental Protection Agency, at the following address:
   U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866

G. Sludge Management
   The permittee shall comply with all applicable requirements of 6 NYCRR Part 360.

H. SPDES Permit Program Fee
   The permittee shall pay to the Department an annual SPDES permit program fee within 30 days of the date of the first invoice, unless otherwise directed by the Department, and shall comply with all applicable requirements of ECL 72-0602 and 6 NYCRR Parts 480, 481 and 485. Note that if there is inconsistency between the fees specified in ECL 72-0602 and 6 NYCRR Part 485, the ECL 72-0602 fees govern.

I. Water Treatment Chemicals (WTCs)
   New or increased use and discharge of a WTC requires prior Department review and authorization. At a minimum, the permittee must notify the Department in writing of its intent to change WTC use by submitting a completed *WTC Notification Form* for each proposed WTC. The Department will review that submittal and determine if a SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrative process. The majority of WTC authorizations do not require SPDES permit modification. In any event, use and discharge of a WTC shall not proceed without prior authorization from the Department. Examples of WTCs include biocides, coagulants, conditioners, corrosion inhibitors, defoamers, deposit control agents, flocculants, scale inhibitors, sequestrants, and settling aids.
   1. WTC use shall not exceed the rate explicitly authorized by this permit or otherwise authorized in writing by the Department.
   2. The permittee shall maintain a logbook of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used.
   3. The permittee shall submit a completed WTC Annual Report Form each year that they use and discharge WTCs. This form shall be submitted in electronic format and attached to either the December DMR or the annual monitoring report required below. The *WTC Notification Form and WTC Annual Report Form* are available from the Department's website at: http://www.dec.ny.gov/permits/93245.html

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RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

A. The monitoring information required by this permit shall be retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent.

B. Discharge Monitoring Reports (DMRs): Completed DMR forms shall be submitted for each 1 month reporting period in accordance with the DMR Manual available on Department's website.

DMRs must be submitted electronically using the electronic reporting tool (NetDMR) specified by NYSDEC. Instructions on the use of NetDMR can be found at https://www.dec.ny.gov/chemical/103774.html. **Hardcopy paper DMRs will only be received at the address listed below for the Bureau of Water Permits, if a waiver from the electronic submittal requirements has been granted by DEC to the facility.**

Attach the monthly "Wastewater Facility Operation Report" (form 92-15-7) and any required DMR attachments electronically to the DMR or with the hardcopy submittal.

The first monitoring period begins on the effective date of this permit, and, unless otherwise required, the reports are due no later than the 28th day of the month following the end of each monitoring period.

C. Additional information required to be submitted by this permit shall be summarized and reported to the RWE and Bureau of Water Permits at the following addresses:

Department of Environmental Conservation
Division of Water, Bureau of Water Permits
625 Broadway, Albany, New York 12233-3505 Phone: (518) 402-8111

Department of Environmental Conservation
Regional Water Engineer, Region 8
6274 E. Avon-Lima Road, Avon, New York, 14414-9519 Phone: (585) 226-5450

D. Bypass and Sewage Pollutant Right to Know Reporting: In accordance with the Sewage Pollutant Right to Know Act (ECL § 17-0826-a), Publicly Owned Treatment Works (POTWs) are required to notify DEC and Department of Health within two hours of discovery of an untreated or partially treated sewage discharge and to notify the public and adjoining municipalities within four hours of discovery. Information regarding reporting and other requirements of this program may be found on the Department's website. In addition, POTWs are required to provide a five-day incident report and supplemental information to the DEC in accordance with Part 750-2.7(d) by utilizing the Division of Water Report of Noncompliance Event form unless waived by DEC on a case-by-case basis.

E. Schedule of Additional Submittals:

The permittee shall submit as a hardcopy the following information to the Regional Water Engineer and to the Bureau of Water Permits, unless otherwise instructed:

SCHEDULE OF ADDITIONAL SUBMITTALS		
Outfall	**Required Action**	**Due Date**
001	WATER TREATMENT CHEMICAL (WTC) ANNUAL REPORT FORM The permittee shall submit a completed WTC Annual Report Form each year that Water Treatment Chemicals are used. The form shall be attached to the December DMR.	January 28tht, annually
	BIENNIAL POLLUTANT SCAN The permittee shall implement an ongoing monitoring program and perform effluent sampling every two years as specified in Footnote 10.	Retain and submit with next NY-2A Application

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SCHEDULE OF ADDITIONAL SUBMITTALS		
Outfall	**Required Action**	**Due Date**
	WHOLE EFFLUENT TOXICITY (WET) TESTING WET testing shall be performed on a Chronic testing, but report both the acute and chronic results basis, quarterly in years ending in **2** and **7**.. The toxicity test report including all information requested of this permit shall be attached to your WET DMRs and sent to the WET@dec.ny.gov email address.	Within 60 days following the end of each monitoring period
	STORMWATER NO EXPOSURE CERTIFICATION Permittee must recertify every five years a condition of no exposure to stormwater in order to continue to qualify for the no exposure exclusion. The No Exposure Certification Form can be found on the NYSDEC website.	10/01/2027, and every 5 years thereafter
	MERCURY MINIMIZATION PLAN The permittee must complete and maintain onsite an annual mercury minimization status report in accordance with the requirements of this permit.	***Maintained Onsite*** October 31, 2022 annually thereafter
	MINI PRETREATMENT PROGRAM - FROSI Submit completed Fast Report On Significant Industries forms (FROSIs) for each SIU to the Department, or notification letter that no new significant industrial users have been added.	May 28th of each year
	MINI PRETREATMENT PROGRAM – Industrial Chemical Survey (ICS) Forms Submit Industrial Chemical Survey forms completed by all SIUs to the Department. Notify the Department of any proposed significant changes to its implementing procedures or local sewer use law.	May 28, 2024 and every three years thereafter

Unless noted otherwise, the above actions are one-time requirements. The permittee shall submit the results of the above actions to the satisfaction of the Department. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the above submittal(s), unless noted otherwise. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

F. Monitoring and analysis shall be conducted using sufficiently sensitive test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

G. More frequent monitoring of the discharge(s), monitoring point(s), or waters of the State than required by the permit, where analysis is performed by a certified laboratory or where such analysis is not required to be performed by a certified laboratory, shall be included in the calculations and recording of the data on the corresponding DMRs.

H. Calculations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

I. Unless otherwise specified, all information recorded on the DMRs shall be based upon measurements and sampling carried out during the most recently completed reporting period.

J. Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be directed to the New York State Department of Health, Environmental Laboratory Accreditation Program.

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SPDES Permit Fact Sheet
City of Hornell
Hornell Water Pollution Control Plant
NY0023647



Department of Environmental Conservation

Summary of Permit Changes

A State Pollutant Discharge Elimination System (SPDES) permittee-initiated permit modification has been drafted for the Hornell Water Pollution Control Plant. The compliance date for the Total Phosphorous limitation (0.5 mg/L) has been extended from **5/1/2024** to **1/1/2025**. The interim phosphorous limitation remains **monitor only**. The Schedule of Compliance has been updated to reflect the requested change.

This factsheet summarizes the information used to determine the effluent limitations and other conditions contained in the permit. General background information about the regulatory basis for the effluent limitations and other conditions contained in this permit are in the Appendix linked throughout this factsheet.

Administrative History

11/2/2021 The last full technical review was performed and the SPDES permit became effective with a new five-year term and expiration date of 10/31/2026. The 2021 permit has formed the starting point for this permit modification.

11/24/2021 A permittee-initiated modification was issued to update the Industrial Chemical Survey (ICS) due date.

5/1/2023 A permittee-initiated modification was issued, with the following changes:
- Compliance date for Total Phosphorous extended to 5/1/2024
- Flow measurement monitoring point relocated from effluent Parshall flume to influent flow meter
- Typographical error corrected for WET Testing action levels. WET Testing acute action levels changed from 0.91 TUa to 0.3 TUa.

1/2/2024 A permittee-initiated modification request was submitted, requesting a compliance date extension for Total Phosphorous from 5/1/2024 to 1/1/2025. This date is consistent with the final effective date of 1/1/2025 for permitted Wasteload Allocations (WLAs) per the Chesapeake Bay TMDL Phase III Watershed Implementation Plan.

Appendix: Regulatory and Technical Basis of Permit Authorizations

The information presented in the Appendix is meant to supplement the factsheet for multiple types of permits and may not be applicable to this specific permit.

Regulatory References

The requirements included in SPDES permits are based on both federal and state laws, regulations, policies, and guidance.

- Clean Water Act (CWA) 33 section USC 1251 to 1387
- Environmental Conservation Law (ECL) Articles 17 and 70
- Federal Regulations
  - 40 CFR, Chapter I, subchapters D, N, and O
- State environmental regulations
  - 6 NYCRR Part 621
  - 6 NYCRR Part 750
  - 6 NYCRR Parts 700 - 704 – Best use and other requirements applicable to water classes
  - 6 NYCRR Parts 800 – 941 - Classification of individual surface waters
- NYSDEC water program policy, often referred to as Technical and Operational Guidance Series memos (TOGS)
- USEPA Office of Water Technical Support Document for Water Quality-based Toxics Control, March 1991, Appendix E

The following is a quick guide to the references used within the factsheet:

SPDES Permit Requirements	Regulatory Reference
Anti-backsliding	6 NYCRR 750-1.10(c)
Best Management Practices (BMPS) for CSOs	6 NYCRR 750-2.8(a)(2)
Environmental Benefits Permit Strategy (EBPS)	6 NYCRR 750-1.18, NYS ECL 17-0817(4), TOGS 1.2.2 (revised January 25,2012)
Exceptions for Type I SSO Outfalls (bypass)	6 NYCRR 750-2.8(b)(2), 40 CFR 122.41
Mercury Multiple Discharge Variance	Division of Water Program Policy 1.3.10 (TOGS 1.3.10)
Mixing Zone and Critical Water Information	TOGS 1.3.1 & Amendments
PCB Minimization Program	40 CFR Part 132 Appendix F Procedure 8, 6 NYCRR 750-1.13(a) and 750-1.14(f), and TOGS 1.2.1
Pollutant Minimization Program (PMP)	6 NYCRR 750-1.13(a), 750-1.14(f), TOGS 1.2.1
Schedules of Compliance	6 NYCRR 750-1.14
Sewage Pollution Right to Know (SPRTK)	NYS ECL 17-0826-a, 6 NYCRR 750-2.7
State Administrative Procedure Act (SAPA)	State Administrative Procedure Act Section 401(2), 6 NYCRR 621.11(l)
State Environmental Quality Review (SEQR)	6 NYCRR Part 617
USEPA Effluent Limitation Guidelines (ELGs)	40 CFR Parts 405-471
USEPA National CSO Policy	33 USC Section 1342(q)
Whole Effluent Toxicity (WET) Testing	TOGS 1.3.2
General Provisions of a SPDES Permit Department Request for Additional Information	NYCRR 750-2.1(i)

The provisions of the permit are based largely upon 40 CFR 122 subpart C and 6 NYCRR Part 750 and include monitoring, recording, reporting, and compliance requirements, as well as general conditions applicable to all SPDES permits.

Permit Requirements

Basis for Effluent Limitations

Sections 101, 301, 304, 308, 401, 402, and 405 of the CWA and Titles 5, 7, and 8 of Article 17 ECL, as well as their implementing federal and state regulations, and related guidance, provide the basis for the effluent limitations and other conditions in the permit.

Anti-backsliding

Anti-backsliding requirements are specified in the CWA sections 402(o) and 303(d)(4), ECL 17-0809, and regulations at 40 CFR 122.44(*l*) and 6 NYCRR 750-1.10(c) and (d). Generally, the relaxation of effluent limitations in permits is prohibited unless one of the specified exceptions applies, which will be cited on a case-by-case basis in this factsheet. Consistent with current case law[1] and USEPA interpretation[2] anti-backsliding requirements do not apply should a revision to the final effluent limitation take effect before the scheduled date of compliance for that final effluent limitation.

Antidegradation Policy

New York State implements the antidegradation portion of the CWA based upon two documents: (1) Organization and Delegation Memorandum #85-40, "Water Quality Antidegradation Policy" (September 9, 1985); and, (2) TOGS 1.3.9, "Implementation of the NYSDEC Antidegradation Policy – Great Lakes Basin (Supplement to Antidegradation Policy dated September 9, 1985) (undated)." The permit for the facility contains effluent limitations which ensure that the existing best usage of the receiving waters will be maintained. To further support the antidegradation policy, SPDES applications have been reviewed in accordance with the State Environmental Quality Review Act (SEQR) as prescribed by 6 NYCRR Part 617.

Other Conditions

Schedules of Compliance

Schedules of compliance are included in accordance with 40 CFR Part 132 Attachment F, Procedure 9, 40 CFR 122.47 and 6 NYCRR 750-1.14. Schedules of compliance are intended to, in the shortest reasonable time, achieve compliance with applicable effluent standards and limitations, water quality standards, and other applicable requirements. Where the time for compliance is more than nine months, the schedule of compliance must include interim requirements and dates for their achievement. If the time necessary to complete the interim milestones is more than nine months, and not readily divisible into stages for completion, progress reports must be required.

[1] American Iron and Steel Institute v. Environmental Protection Agency, 115 F.3d 979, 993 n.6 (D.C. Cir. 1997)
[2] U.S. EPA, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; 65 Fed. Reg. 31682, 31704 (May 18, 2000); Proposed Water Quality Guidance for the Great Lakes System, 58 Fed. Reg. 20802, 20837 & 20981 (April 16, 1993)

Figure C-2

City and Village IMA

MEMORANDUM OF UNDERSTANDING

Between

THE VILLAGE OF NORTH HORNELL

And

THE CITY OF HORNELL

LOWE'S PROJECT

1. The City of Hornell will extend the current sewer agreement with the Village of North Hornell, which is scheduled to expire in 2016; the agreement will be extended until the year 2031.

2. The City of Hornell's yard waste disposal facility will be open at no charge to Village residents. Village residents can also have free mulch and top soil, available at the yard waste facility.

3. The City of Hornell recreational facilities will be available to Village residents at no cost, (pavilions at Veterans Memorial Park at James Street). High school and college age Village residents will be eligible to apply for and be hired for summer jobs in the City.

4. The City of Hornell street sweeper will sweep Seneca Road once per week during the sweeper season.

5. Village residents will be included in our collective solid waste pickup contract with Lippincotts at the same cost of City residents.

CITY OF HORNELL

By: Shawn D. Hogan, Mayor

VILLAGE OF NORTH HORNELL

By: John J. Falci, Mayor

STATE OF NEW YORK }
COUNTY OF STEUBEN}

On the 7 day of August 2007, before me, the undersigned, a notary public in and for said state, personally appeared SHAWN D. HOGAN, personally known to me or proved to me on the basis of satisfactory evidence, to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Cindy M. Burdell
Notary Public

CINDY M. BURDELL
Notary Public, State of New York
Steuben County, No. 01BU6157741
My Commission Expires Dec. 11, 20 10

STATE OF NEW YORK }
COUNTY OF STEUBEN}

On the 7 day of August 2007, before me, the undersigned, a notary public in and for said state, personally appeared JOHN J. FALCI, personally known to me or proved to me on the basis of satisfactory evidence, to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Cindy M Burdell
Notary Public

CINDY M. BURDELL
Notary Public, State of New York
Steuben County, No. 01BU6157741
My Commission Expires Dec. 11, 20 10

A G R E E M E N T

This Agreement made this 21st day of May, 1976, by and between:

THE VILLAGE OF NORTH HORNELL, a municipal corporation, situate in the County of Steuben and State of New York, hereinafter referred to as the Village

and

THE CITY OF HORNELL, a municipal corporation, situate in the County of Steuben and State of New York, hereinafter referred to as the City

W I T N E S S E T H :

WHEREAS, the City of Hornell has entered into an agreement with the Industrial Development Agency for the treatment of wastewater originating in the Town of Hornellsville, and

WHEREAS, such wastewater originating in the Town of Hornellsville, must pass through the intercepting sewer line of the Village, in order to reach the water pollution control plant in the City, and

WHEREAS, the Village and the City are desirous of entering into an Agreement relative to the use of the intercepting sewer line, pump station and force main in connection with the transporting of the aforementioned wastewater to the Hornell Water Pollution Control Plant.

NOW THEREFORE, in consideration of the covenants hereinafter expressed, it is mutually agreed by and between the parties hereto as follows:

1. The City agrees with the Village to treat all wastewater of the Village at no cost to the Village subject to the limitations hereinafter provided.

2. The Village agrees to pay the City $.20 per one thousand gallons of wastewater treated by the City over and above 50 million gallons per year, for the first five years of this contract. Such determinations to be made annually.

1981-82

3. It is understood and agreed by and between the parties hereto that the charge provided for in paragraph "2" herein, shall be subject to renegotiation every five years from the commencement of this contract and that any and all changes for payment of consideration by the Village shall be computed by the same method of cost that is presently used by the City.

HENRY R. BURKE
ATTORNEY AT LAW
76 MAIN STREET
HORNELL, N. Y. 14843

4. The Village agrees to take all reasonable precautions to repair any ruptured or otherwise broken sewer lines in the Village which may cause surface water or underground water to be introduced into the sewer system.

5. For the purpose of determining and calculating the volume of wastewater discharged into the water pollution control plant, the Village shall continue to maintain the recording meter presently located at the pumping station.

6. Meter readings and access to meter installation herein provided for shall be made available to the City upon request therefore to the Village.

7. The record of wastewater flow through recording meters operated and maintained by the Village will be forwarded to the City at a time mutually convenient to the parties.

8. In the event of the failure of the sewage meter maintained by the Village, repairs will be made as soon as practicable. In the case of missing flow records due to faulty meter readings or otherwise, an estimate of flows will be made for the purposes required by this contract; such estimate will be based on evaluation of past flow records as applied to present conditions and as mutually agreed upon by the parties.

9. The City agrees to keep and maintain its water pollution control plant at all times in good repair and operating condition.

10. The City agrees to install, maintain and operate a recording meter of adequate size and type at the southern terminus of the sewer line presently being constructed from the industrial park site to the Village, such terminus being at the junction of the sewer line from the industrial park and others to the Village interceptor line on McKinley Avenue in the Village; such meter to be used for determining the amount of wastewater introduced into the interceptor line of the Village.

11. The meter readings and access to the meter installation last above provided for shall be made available to the Village upon request therefore to the City. The record of wastewater flow through such recording meter operated and maintained by the City will be forwarded to the Village at a time mutually agreed upon by the parties.

12. In the event of failure of the last above mentioned sewage meter maintained by the City, repairs will be made as soon as practicable. In the case of missing flow records due to faulty meter readings or otherwise, an estimate of flows will be made for the purposes required by this contract; such estimate will be based on an evaluation of past flow records as applied to present conditions.

HENRY R. BURKE
ATTORNEY AT LAW
78 MAIN STREET
HORNELL, N. Y. 14843

13. The difference between the reading on the meter maintained by the City at the southern terminus of the Industrial Development Agency sewer line and reading on the meter at the pumping station maintained by the Village, shall determine the amount of wastewater chargeable to the Village.

14. This agreement specifically supercedes a sewer service agreement entered into between the parties hereto dated February 28, 1972.

15. The City agrees to control any odors which may originate from the industrial parks wastewater or other sources which in the opinion of the Village Board constitutes a public nuisance or health hazard and to immediately correct any condition which causes such odors.

16. All wastewater introduced into the interceptor line of the Village from sources outside the Village shall comply with the terms of the sewer ordinance of the Village. The Village covenants and agrees at all times to use all reasonable methods and due diligence to prevent the discharge into the water pollution control plant of any waste that is dangerous to the public health and safety or inviolation of any of the restrictions set by the New York State Department of Environmental Conservation or the City ordinances or to not cause or allow any abnormal discharges into said system. The Village agrees to cooperate with the City in every respect in fulfilling the terms, conditions and intent of this Agreement , and, whenever requested by the City, will obtain or will authorize and assist the City to obtain samples of wastewater discharged into the water pollution control plant for the purpose of analysis of character and strength of such wastewater.

17. The City agrees to replace one of the existing pumps at the Village's pump station when the average daily flow approaches 600,000 gallons per day for any one year period. The City agrees to replace the remaining existing pump at the Village's pump station when the average daily flow approaches 800,000 gallons per day, for any one year period. Both of the replacement pumps provided for herein will be of the variable speed type and have a flow range of 630 to 900 gallons per minute and such pumps shall have a combined capacity, when the pumps are operating together of 1,250,000 gallons per day for a period of one year.

18. The City agrees to withhold additional flows into the Village intercepting sewer line when the peak flows in such line reach 1,250,000 gallons per day. When such peak flow is reached, the parties hereto agree that no additional flows be permitted to enter the intercepting sewer from sources outside the Village of North Hornell.

19. The parties hereto agree that in the event repairs or modifications are needed to the intercepting sewer line, pump station or force main of the Village in excess of $1,000.00 then such repairs or modifications will be shared by the City and the Village in proportion to the flows from the Village and from sources outside the Village.

HENRY R. BURKE
ATTORNEY AT LAW
78 MAIN STREET
HORNELL, N. Y. 14843

20. This agreement shall remain in effect for a period of forty (40) years from the date hereto.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be duly executed and attested to by their proper officers pursuant to proper action of their governing bodies on the day and year first above written.

ATTEST:

Salvatore E Salato
City Clerk

CITY OF HORNELL
Steuben County, New York

By Andrew R Mazzella
Andrew R. Mazzella, Mayor

ATTEST:

Marilyn Deers
Village Clerk

VILLAGE OF NORTH HORNELL
Steuben County, New York

By George J House
George J. House, Mayor

HENRY R. BURKE
ATTORNEY AT LAW
78 MAIN STREET
HORNELL, N. Y. 14843

Figure C-3

City and Town IMA

INTERMUNICIPAL WATER AND SEWER AGREEMENT ADDENDUM

WHEREAS, the City of Hornell, a municipal corporation with offices located at 82 Main Street, Hornell, New York, and the Town of Hornellsville, a municipal corporation with principal offices at 4 Park Street, Arkport, New York, previously entered into a intermunicipal water and sewer agreement dated the 26th day of July, 2001, and

WHEREAS, both the City of Hornell and the Town of Hornellsville wish to amend said water and sewer agreement.

NOW, THEREFORE, it is hereby agreed that Paragraph 13 of the existing agreement entered into on the 26th day of July, 2001 is hereby amended to read as follows:

The Town of Hornellsville agrees to prohibit the making of any new water or sewer connections to the piping within or without the Town without the written consent of the City of Hornell. The Town agrees to assume the responsibility to monitor and control all authorized and unauthorized use of water and services within the Town of Hornellsville. The Town of Hornellsville is prohibited from selling water or sewer services outside of the Town without the express written permission of the City. All applications for water and/or sewer hook-ups shall be reviewed by the City prior to approving said connection to the system. The City further agrees that the City shall not unreasonably withhold such improvement.

It is the intention of both parties that this addendum shall supplement, amend and be added to the agreement entered into between the City of Hornell and the Town of Hornellsville on the 26th day of July, 2001.

CITY OF HORNELL

By: Shawn D. Hogan, Mayor

TOWN OF HORNELLSVILLE

By: Kenneth E. Isaman
Town Supervisor

STATE OF NEW YORK)
COUNTY OF STEUBEN) ss:

On the _____ day of October, 2005, before me, the undersigned, a notary public in and for said state, personally appeared SHAWN D. HOGAN, personally known to me or proved to me on the basis of satisfactory evidence, to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

DAVID D. OAKES
Notary Public, State of New York
Steuben County No. 4781944
My Commission Expires 12-31-05

STATE OF NEW YORK)
COUNTY OF STEUBEN) ss:

On the _____ day of October, 2005, before me, the undersigned, a notary public in and for said state, personally appeared KENNETH E. ISAMAN, personally known to me or proved to me on the basis of satisfactory evidence, to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

Notary Public
Steuben County
My Commission Expires 12-31-05

INTERMUNICIPAL WATER AND SEWER AGREEMENT

This Agreement is made is made and entered into this 26th day of **July** in the year **Two Thousand One.**

BY AND BETWEEN: **THE CITY OF HORNELL, NEW YORK,** a Municipal Corporation, having its principal offices at City Hall, 108 Broadway, Hornell, New York 14843 (hereinafter referred to as the "City"),

AND

TOWN OF HORNELLSVILLE, NEW YORK, a Municipal Corporation having its principal offices at 4 Park Street, Arkport, New York 14807, (hereinafter referred to as the "Town"),

WITNESSETH:

WHEREAS, the City, through its Department of Public Works (DPW), owns and operates a potable water supply system and a sanitary sewage system; and

WHEREAS, the Town is in the process of forming Water and Sewer Districts within the Town of Hornellsville, and

WHEREAS, the City desires to provide water and sewer services to the Town in the Water and Sewer Districts to be created under the terms and conditions of this agreement and the Town is desirous of using the water and sewer services of the City under the same terms and conditions;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties agree as follows:

1. The City agrees to provide water and sanitary sewer services to users

within the Town upon the same terms and conditions as provided to properties within the City except as specifically modified by this Agreement. For the purposes of this Agreement, sewer or sewer services refer to sanitary sewer services.

2. Water and sewer services will be provided at the cost of no more than one hundred fifty percent (150%) of the rate charged for comparable water and sewer service within the City. The Town hereby adopts the water and sewer rates and any changes thereto established by the City under this paragraph and authorizes the City to bill charges due from users in the district in accordance with the terms of this Agreement either in the name of the City or in the name of the Town.

3. The Town agrees to reimburse the City for any reported individual water or sewer bills unpaid by any user within the Town for a period in excess of sixty (60) days after the due date of such bill as follows: By November 1 of each year, the City may report the unpaid bills to the Town on a list containing a description of the property served sufficient to identify it, the tax map number, the names of the persons or corporations liable to pay for the same, and the amounts chargeable. The Town shall include the past due amounts on the tax bills to the property owners and shall pay the City the past due amounts within thirty (30) days of receipt thereof by the Town. Nothing in this paragraph shall be read to restrict the rights of the City to collect past due amounts through normal collection procedures, including service disconnect.

4. The Town agrees to regulate its water and sewage systems by regulations substantially the same as the existing regulations applicable within the City and, additionally, agrees to comply with all applicable laws, regulations, and ordinances pertaining to water and sewage systems. The DPW agrees to provide the Town with copies of changes to the City regulations.

5. The Town agrees that it is solely responsible for the legal creation and the ownership of all water and sewer districts with in the boundaries of the Town, and it shall be solely responsible for obtaining all approvals, resolutions, and permits required by federal, state, regional, or local bodies having jurisdiction over the districts and over the supply of water and collection of sewage to and from the districts which the City would not otherwise be responsible to obtain. The Town shall, at the City's request, provide the City with copies of the documentation of all pertinent approvals, resolutions, and permits which have not already been provided to it.

6. The Town shall not be deemed in breach of this Agreement if users of services of the City shall fail and/or refuse to form a legal district. It is mutually agreed that users of services of the City not located within a legally formed water and/or sewer district shall not be subject to or protected by the terms imposed by this Agreement.

7. The normal operation, maintenance and repair of the sewage collection system and the water system located within the Town shall be the responsibility of the Town, whether undertaken by Town personnel or contracted out by the Town pursuant to separate agreement. Such operation, maintenance and repair of the water or sewer systems shall be performed at the same standard applied to water and sewer systems within the City and any and all work performed on the Town water and sewer utilities shall be subject to the rules and regulations of the City governing water and sewer use. The cost of any improvements or extensions of the water and sewer systems of the Town, including replacement of damaged or deteriorated lines shall be borne by the Town, whether performed by the Town, City or a third party pursuant to a separate Operation and Maintenance Contract.

8. The Town and City shall specify a Water and Sewer District Supervisor or

Supervisors and alternates who will be available to make responsible decisions for the Town and the City on an emergency basis. Names and telephone numbers are to be on file in the Town Water Department and the City DPW central office. The parties hereto shall promptly advise each other of the fact of an emergency. The Town Water and Sewer District Supervisor shall arrange to have all necessary emergency repairs performed for emergencies within the Town and the City shall arrange to have all necessary repairs performed for emergencies within the City.

9. The Town shall maintain ownership of those parts of the water and sewer systems within the Town previously installed or newly installed by the Town. During the term of this agreement and any extensions or renewals thereof the Town shall maintain a subleasehold interest (at no additional cost) in those parts of the water and sewer systems within the Town previously installed by the City and/or the Hornell Industrial Development Agency. The Town shall maintain control of the water distribution system excluding water quality within the newly formed districts in the Town and shall assume the risk of loss thereof or damage thereto unless assumed by a third party under contract with the Town pursuant to an Overhead and Maintenance Agreement. The City shall own and control all systems located within the City and shall assume the risk of loss thereof or damage thereto.

10. Water and Sewer services will be provided by the City at the closest point of connection within the limits of the City. If, according to accepted industry standards, the system is incapable of handling the additional capacity at the closest point of connection, the Town shall be responsible for the installation of pipelines and appurtenances to a point on the City/Town boundary line nearest the point of connection within the City that is capable of handling the additional capacity. The City DPW represents that it is currently unaware of any areas in which the water and/or sewer systems are incapable of handling marginal additional capacity.

11. Sewer and Water Districts of the Town established prior to this Agreement, if any, shall waive capital costs (by this or any other name) which were or may have been made to the City pursuant to a prior agreement of service and renounce any right or claim of ownership in the City's sewage collection and treatment system and water supply system. The City hereby waives the right to collect a separate capital contribution (by this or any other name) for water or sewer districts formed in the future and to be serviced pursuant to this Agreement and waives the right to collect the costs of treatment plant upgrades other than through normal rates or assessments. The Town will be responsible to establish a Capital Account and collect a Capital fee from system users with the districts.

12. The Town shall require individual customer water meters within the Town to be installed in accordance with the standards established by the City for its own water and sewer systems. The Town, on its own or through an operation and maintenance contract, agrees to have individual customer meters within the Town read on a routine basis and to have quarterly billing statements for water and/or sewer usage supplied to each customer within the Town. Where it is technically infeasible to measure sewage flow by water meter, sewage flow will be measured by sewage flow meters, or in the event a Town customer is not connected to City water, then the well water consumption shall be metered and shall serve as the basis for sewer use billing.

13. The Town agrees to prohibit the making of any new water or sewer connections to the piping within or without the Town without the written consent of the city. The Town agrees to assume the responsibility to monitor and control all authorized and unauthorized use of water and sewer services within the Town. The Town is prohibited from selling water or sewer services outside of the town without the express written permission of the City. All applications

for water and/or sewer hookup shall be reviewed by the City prior to approving connection to the systems.

14. The Town agrees that the City shall not be liable for any interruption in the receipt of water or sewage services, occasioned by the natural forces of nature, strike or other labor dispute, mechanical breakdown, or other events beyond the direct control of the City, and, accordingly, the Town hereby agrees to indemnify and hold the City harmless therefrom.

15. The Town agrees to indemnify, defend, and save the city harmless from any and all liability resulting to the Town or third parties from damages caused by broken water or sewer lines, flooding, roily water or other reasonable failure to supply water.

16. In the event that any sewer user within the Town discharges any waste prohibited by the sewer use ordinance of the city into the sewage system of the Town and such discharge results in damage to the sewage system of the City, including the City's sewage treatment plant, the Town hereby agrees to pay to the City any and all damages which the City may sustain.

17. In consideration of all the mutual conditions and covenants in this agreement undertaken by the City and as additional consideration therefore, and in conformance with a Settlement Stipulation between the parties dated August 24, 1999, the Town agrees to pay to the City annually an amount equal to twenty-five percent (25%) of the total dollar value of real property tax liability attributable to each new Industrial and commercial property established after the date of this contract.

18. This Agreement supersedes all previous sewer and water agreements entered into between the Town and the City, if any, whether current or expired, and whether oral or written.

19. The city acknowledges and represents that it has the legal right and authority over

all water and or sewer lines located within the Town of Hornellsville which were installed by the city and or the Hornell Industrial Development Agency and the City hereby leases to the Town at no additional costs all such infrastructure to the Town at no additional cost, including but not limited to, water lines, sewer lines, pumps, pump stations, etc.

20. The Cities obligations under this contract shall extend only to those properties within the water and sewer districts established by the Town.

21. The term of this Agreement shall be from the effective date hereof until the expiration of twenty-five (25) years thereafter. The City and the Town shall enter into good faith negotiations for the renewal of this Agreement commencing not later than the beginning of the 23rd year of the term. In the event that the city and the Town are unable to successfully negotiate the terms of a new Agreement by the 24th year anniversary of the effective date of this Agreement, then either party may, by written notice given at least nine months prior to the end of the term, terminate the Agreement effective at the end of the 25 year term. In such event, no rights or obligations recited in this Agreement shall survive the expiration. If neither party gives written notice of termination, then the terms and conditions of this Agreement shall be deemed to be renewed for a period of one year, and from year to year thereafter, until such times as the City and the Town enter into a new Agreement or a party gives nine months notice of termination to be effective at the end of the then current one-year term.

22. In the event the supply of water for the City and its inhabitants is insufficient at any time in the future then the City may cut back, suspend or terminate the supply of water to the Town under this contract until such time as the water supply is sufficient for the City and its inhabitants.

23. The Town agrees to adopt the City Sewer and Water use ordinance by Town local law or ordinance.

24. This Agreement shall be duly adopted by the Municipal Boards of the Town and the City and its Department of Public Works and each party shall take all steps necessary to make this a legally binding agreement.

25. This Agreement is not assignable by either party hereto without the written consent of the other party.

26. All notices required or permitted to be given by this Agreement shall be deemed to be duly given if delivered in writing personally or sent by certified mail, return receipt requested, to the other party at the address given in this Agreement, or at such different address as may be furnished by either party to the other in writing. The date of mailing shall be deemed the date of giving such notice.

27. No waiver by either party of any breach of any of the covenants or conditions herein contained to be performed by the other party shall be construed as a waiver of any succeeding breach of the same or of any other covenant or condition.

28. The parties hereto expressly agree that it is not the intention of either party to violate public policy or statutory or common law and that if any sentence, paragraph, clause, or combination of the same of this Agreement is in violation of any law, such sentence, paragraph, clause or combination of the same shall be inoperative and the remainder of this Agreement shall be binding upon the parties hereto.

29. This Agreement shall be binding upon and inure to the benefit of the successors and/or assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement by their duly authorized representatives on the day and year first above written.

CITY OF HORNELL

By _____
Shawn D. Hogan, Mayor

TOWN OF HORNELLSVILLE

By _____
Charles Flanders
Town Supervisor

OPERATION AND MAINTENANCE AGREEMENT

Made and entered into this 26th day of **July** in the year **Two Thousand One**

BY AND BETWEEN: **CITY OF HORNELL,** a Municipal Corporation, having its principal offices at City Hall, 108 Broadway, Hornell, New York 14843, (hereinafter referred to as the "City") ,

AND

TOWN OF HORNELLSVILLE, NEW YORK, a Municipal Corporation having its principal offices at 4 Park Street, Arkport, New York 14807, (hereinafter referred to as the "Town"),

WITNESSETH:

WHEREAS, the City and the Town have entered into an intermunicipal water and sewer agreement dated the **26th** day of **July, 2001** under which the City has agreed to provide water and sewer services to the Town according to its terms; and

WHEREAS, the Town is desirous of providing for the operation, maintenance and/or repair of the water and sewer systems located within the Town; and

WHEREAS, the City is desirous of providing services for the operation, maintenance and repair of the water and sewer systems located within the Town,

NOW, THEREFORE, in consideration of the mutual covenants herein contained the parties agree as follows:

1. The City agrees to operate and maintain the water and sewer systems

located within the Town including billing and collection for water and sewer use within the Town. The payment by the Town to the City of the annual fee under this agreement shall include the Cities responsibility to repair and replace pumps or pump stations and shall include the cost of any materials necessary in order to make repairs to pumps or pump stations. This agreement shall not obligate the City under this agreement to pay the cost and repair and or replacement of any water or sewer line break within the town limits.

2. The annual payment by the Town to the City under this agreement was specifically based and estimated on the following routine overhead maintenance costs:

Sewerline Patrol

Labor	
Sewer crew consisting of two men at 8 hours each week per year	
Jim Spike @ $11.97/hour times 8 hours/week times 52 weeks	$4979.52
Pete Robbins @ $11.75/hour times 8 hours/week times 52 weeks	$4888.00
Add 30% to wage for fringe benefits	$2960.25
Equipment	
Pickup & misc. Tools 312 hrs/yr. @ $15.00	$4680.00
Sewer flushing and cleaning equipment 104 hrs/yr. @ $75.00	$7800.00

Pumping Station Service

Service crew consisting of two men at 8 hours each week per year	
Ron Panter @ $16.48/hour times 8 hours/week times 52 weeks	$7972.00
Duane Butler @ $12.40/hour times 8 hours/week times 52 weeks	$5408.00
Add 30% to wage for fringe benefits	$4014.00
Pickup & misc. Tools 416 hrs/yr. @ $15.00	$6240.00

Known Capital Improvements

As mentioned above, it is planned to replace two pumping stations within the next ten years. The estimated expenditure for that work is approximately $90,000.00, or $9,000.00 per annum. Approximately 50% of this cost will be recovered from Crowley Foods. The cost to be spread in the town is therefore..... $4500.00

ESTIMATED COSTS	$53441.77
Less agreed upon discounted cost	$ 5441.77
TOTAL	$48000.00

3. Any expansion of the water and or sewer system within the Town shall meet with the approval of the city. In the event expansion of the system is agreed to by the Town and the City then the overhead and maintenance fee as provided for in this contract shall be renegotiated and agreed to by both parties.

4. This agreement does not apply to any water and or sewer infrastructure, persons or businesses located in any incorporated village within the Town.

5. In consideration of the City operating, maintaining and repairing the water and sewer systems located within the Town, the Town agrees to pay to the City an annual fee of Forty-eight thousand dollars ($48,000.00). The City agrees that there will be no increase in the Overhead and Maintenance annual fee for a minimum of two (2) years. It is agreed by and between the parties that the annual fee established under this agreement or as modified due to expansion of the system shall be increased at the same percentage rate as any increase in the City sewer rates.

6. This agreement shall be for a definite term of twenty (20) years.

7. Unless specified otherwise in this agreement the City agrees to provide (as part of

its duty to operate, maintain and repair the water and sewer systems located within the Town) any replacements parts and/or materials necessary to operate, maintain or repair the water and sewer systems.

8. The responsibilities of the City under this agreement shall not extend to the operation, maintenance or repair of the laterals running from the main connection to the sewer and water customers.

9. The City agrees to perform its obligations under this contract in a good and workmanlike manner and all work under this agreement shall be in accordance with all federal, state or local laws, rules and regulations.

10. The City shall provide liability insurance in the amount of _____ _____ Dollars ($_____) insuring the City and the Town from all general liability claims.

11. The status of the City and its workers under this agreement shall be that of independent contractor and not that of an employee. It is expressly agreed that the City is an independant contractor and shall perform its duties under this contract without interference or control by the Town. The City has no authority to otherwise act for or in behalf of the Town or to bind the Town to any contract or in any other manner without the express approval, in writing, of the Town.

12. The Town shall not be deemed in breach of this agreement if Town users of services of the City shall fail and/or refuse to form a legal district for any reason. It is mutually agreed that Town water and sewer users not located within a legally formed water or sewer districts shall not be subject to or protected by the terms imposed by this agreement.

13. This agreement is not assignable by either party hereto without the written consent of the other party.

14. All notices required or permitted to be given by this agreement shall be deemed to be duly given if delivered in writing personally or sent by certified mail, return receipt requested, to the other party at the address given in this agreement. The date of mailing shall be deemed the date of giving such notice.

15. No waiver by either party of any breach of any of the covenants or conditions herein contained to be performed by the other party shall be construed as a waiver of any succeeding breach of the same or of any other covenant or condition.

16. The parties agree that if any sentence, paragraph, clause or combination of the same of this agreement is held to be in violation of any law, then such sentence, paragraph, clause or combination of the same shall be inoperative and the remainder of this agreement shall remain binding upon the parties hereto.

17. This agreement shall be binding upon and shall inure to the benefit of the

successors and/or assigns of the parties hereto.

18. The parties hereto agree that they have the approval of their respective Boards prior to the signing of this Agreement.

19. This agreement shall be null and void in the event the Town does not form the contemplated water and sewer districts and any overhead and maintenance fee paid under this agreement shall be refunded on a prorated basis.

IN WITNESS WHEREOF, the parties hereto have executed this agreement by their duly authorized representatives on the day and year first above written.

CITY OF HORNELL

By _____
Shawn D. Hogan, Mayor

TOWN OF HORNELLSVILLE

By _____
Charles Flanders, Supervisor

Figure C-4

HP Hood Permit

INDUSTRIAL SEWER USE PERMIT

Permit No.	**SIU-001**	Effective Date: January 1, 2025 Expiration Date: January 1, 2027
Company Name:		HP Hood
Facility Name:		Arkport Manufacturing Facility
Mailing Address:		25 Hurlbut St Arkport, NY 14807
Facility Address:		25 Hurlbut St Arkport, NY 14807
Facility Representatives:		Diana Vesosky, Senior EHS Manager
Phone:		(607) 295-8754
24 Hour Emergency Contact:		Harley May, Maintenance Manager
Phone:		(607) 295-8791

The above-named facility is authorized to discharge industrial wastewater into the City of Hornell Sanitary Sewer System, or Tributary thereto, in compliance with Chapter 252 of the City's Local Law, any applicable provisions of Federal or State law or regulation, and in accordance with the discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This Sewer Use Permit is granted in accordance with the application filed on _____ in the office of the City of Hornell and in conformity with the plans, specifications, and other data submitted to the City in support of the above application.

Permit issued by:

Ashley Brown, Assistant Superintendent of Public Works Date

PART I – STANDARD CONDITIONS

The applicant agrees to:

1. Renew every two years upon payment of the Annual Permit Fee of $100.00. The City of Hornell (City) and applicant agree that the terms and conditions of this Permit may be reviewed after a demonstrated change of circumstances or conditions is presented by either party.

2. Odor abatement shall be per [Chapter 252, Sewer Use Law, of the Municipal Law] Section 902 General Prohibitions.

3. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

4. Furnish to the City of Hornell and the City's authorized representative Engineer, upon request, any additional information relating to the installation and use of the sewer or drain. This information includes but is not limited to: plant records relating to wastewater discharge, sanitary piping drawings, details regarding excessive, accidental, or slug discharges information regarding proposed manufacturing and/or pretreatment changes.

5. Operate and maintain any wastewater pretreatment facilities, as may be required by the City of Hornell, as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times and at no expense to the City of Hornell.

6. Cooperate with the City of Hornell or its representatives in their inspection, sampling and study of the User's wastewaters and any facilities provided for pretreatment. Access to facility is required under Article 10 of the City SUL.

7. Determine all measurements, tests and analyses of the characteristics of wastes and wastewaters in accordance with the procedures outlined under 40 CFR, Part 136 and as amended. If a required procedure is not outlined in 40 CFR, Part 136, then the measurement, test or analysis shall be done in accordance with "Methods of Chemical Analysis of Water and Waste" as published by the USEPA and/or "Standard Methods for the Examination of Water and Wastewater," latest approved edition.

   All compliance test analyses shall be performed by a laboratory certified for such analytical procedures by the New York State Department of Health. Chain of Custody reports shall be submitted for all such samples.

8. Not increase the use of potable or process water or in any way attempt to dilute a discharge as a partial or complete substitute for adequate treatment in order to achieve compliance with the limits contained in the local limits in the Sewer Use Law.

9. Retain and preserve for a period of no less than five (5) years, all documents, records, books, memoranda, reports, correspondence and summaries thereof, which relate to monitoring of sampling and chemical analyses made by or on behalf of the User in connection with its discharge.

10. Record the following information for each measurement or sample taken pursuant to the requirements of this permit. The laboratory chain of custody sheets should contain the following information:

    a. The exact place, date, and time of sampling;
    b. The dates the analyses were performed;
    c. The name of the person(s) or laboratory who performed the analyses;
    d. The analytical techniques or methods used; and
    e. The results of all required analyses.

11. The City making available for public inspection at the City Offices, all reports required by this permit, except for information determined to be confidential under Section 1014 of the Sewer Use Law.

12. Properly dispose of sludges and spent chemicals generated as part of their pretreatment processes, in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

13. The following conditions for modification or revision of this Permit, in accordance with Section 1004B of the Sewer Use Law:

    a. Promulgation of an applicable National Categorical Pretreatment Standard,
    b. Revision of or a grant of a variance from such categorical standards pursuant to 40 CFR 403.13,
    c. Changes in general discharge prohibitions and local limits as per Section 903 of this law,
    d. Changes in processes used by the permittee, or changes in discharge volume or character,
    e. Changes in design or capability of any part of the POTW,
    f. Discovery that the permitted discharge causes or contributes to pass through or interference, and

g. Changes in the nature and character of the sewage in the POTW as a result of other permitted discharges.

14. Reapply for reissuance of this Permit, within ninety (90) days of notification by the City. The City shall notify the User of the need to reapply for the permit one hundred and eighty (180) days prior to the expiration of the User's permit. If the User is not notified by the City and the City's authorized representative Engineer thirty (30) days prior to the expiration of the Permit, the Permit shall automatically be extended for six (6) months.

15. This Permit shall not be transferable.

16. Civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule, are applicable as set forth in Article 11 of the City SUL and may be set forth by applicable State and Federal laws and regulations. Such laws and regulations shall include the provisions of 18 U.S.C. section 1001 relating to fraud and false statements; the provisions of sections 309(c)(4) of the Act, as amended governing false statements, representation, or certification; and the provisions of Section 309(c)(6) regarding responsible corporate officers. Any person violating any of the provisions of the above laws shall become liable to the City for any expense, loss, or damage occasioned by the City by reason of such violation and maybe, upon conviction, subject to fines of not less than $1,000.00/per day/per violation or imprisonment up to six (6) months or both.

17. The permittee may petition the terms of this permit within thirty (30) days of the notice. This petition shall be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provision objected to, the reason for the objection and the alternative condition, if any, it seeks to be placed in the permit.

18. If the permittee chooses or is to mandated to alter pretreatment procedures and/or infrastructure used to provide pretreatment of wastewater entering the City of Hornell Sewer System, permittee shall provide plans for in the form of construction documents to the City and the City's authorized representative Engineer.

19. All construction documents and other information shall be submitted to the City's authorized representative Engineer:

LaBella Associates D.P.C
300 State St, Suite 201
Rochester, NY 14614
Attn: Civil Engineering, Municipal Team

A copy of each shall also be submitted to:

City of Hornell City Hall
82 Main St.
Hornell, NY 14843
Attn: Superintendent of Public Works

PART II – REPORTING REQUIREMENTS

The Industrial User shall:

1. Notify the City of Hornell POTW, immediately, of any accidental or slug discharge to the public sewers. The concentration that constitutes a slug discharge is based on Part III of this agreement. Formal, written notification that discusses the circumstances and remedies shall be submitted to the City of Hornell, within five (5) working days of the occurrence.

2. Have all reports required by this permit signed by a principal executive officer of the User, or other duly authorized employee and the City's authorized representative Engineer.

3. Notify the City at least thirty (30) days prior to the introduction of any new wastewater or pollutants or any substantial change in volume or characteristics of the wastewater being discharged to the public sewers from the User's industrial processes.

4. Notify the City of Hornell of any upset or breakdown of its pretreatment process or equipment that places the User in a temporary state of non-compliance with the wastewater discharge limitations. Such notification shall take place within twenty-four (24) hours of first awareness of the commencement of such an occurrence. A detailed report shall be submitted to the City and the City's authorized representative Engineer within five (5) working days of the occurrence.

5. If the results of the permittee's wastewater analysis indicates that a violation of this permit has occurred, the permittee must:
    a. Inform the City of Hornell of the violation within 24 hours; and
    Repeat the sampling and pollutant analysis and submit, in writing, the results of this second analysis within 30 days of the first violation.

6. A report shall be submitted providing the results of wastewater sampling and analysis for the pollutants specified in Part III of the Permit monthly and according to the Attachment 4 template. The report shall be submitted no later than the 28th day of the month following the end of each reporting period. Included with the report shall be a Monthly Average and Maximum Daily flow from the facility. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

7. Report on conditions of its sampling/monitoring manhole which adversely affect representative sampling results to the City and the City's authorized representative Engineer.

8. Submit to the City and its authorized representative Engineer periodic reports of continued compliance. The report is due October 1 each year and summarizes the previous years testing results. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

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82 Main St.
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PART III – WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the effective period of this permit, the permittee is authorized to discharge process wastewater to the City of Hornell sewer system. During the duration of this permit, the discharge shall not exceed the effluent limitations outlined below.

A. Local Limits

The Industrial User shall comply with the effluent limitations and monitoring requirements as specified in this permit, at the point of discharge to the publicly owned sewer system.

EFFLUENT LIMITATIONS

Parameter	Maximum Daily	Maximum Monthly Average
Flow	330,000 Gallons	330,000 GPD
pH	6.0 – 9.0 Standard Units	NA

The concentration in sewage of any of the following toxic substances shall not exceed the 24-hour average concentration limits specified below when discharged into the public sewer.

Sewer Users covered by Federal Categorical Pretreatment Standards shall comply with applicable Federal Standards. Substances not regulated by the Categorical Pretreatment Standard shall not exceed the concentration limits specified below. For substances regulated by Categorical Pretreatment Standards determination of concentration shall be at the discharge into the sewer with the dilution attributed to non-process flow excluded as determined by the Combined Waste Stream Formula (40 CFR 403.6 of the "Act").

City of Hornell may revise the following limits or insert additional items after a hearing when in the opinion of the Mayor, the Department of Health, or the Department of Environmental Conservation, the need for a rule change is indicated or as provided for in Section 1004B.

The Pollutant loadings (based on uniform concentration limits for all significant industrial users) and the required sampling frequency and type are as follows:

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
Aluminum	19.27	Monthly	24-Hr. Composite
Ammonia	35.78	Weekly	24-Hr. Composite
Arsenic	0.55	Monthly	24-Hr. Composite
Beryllium	2.75	Monthly	24-Hr. Composite

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
BOD5	330.26	Weekly	24-Hr. Composite
Cadmium	0.28	Monthly	24-Hr. Composite
Chromium	1.38	Monthly	24-Hr. Composite
Hexavalent Chromium	1.38	Monthly	24-Hr. Composite
Cobalt	0.55	Monthly	24-Hr. Composite
Copper	9.36	Monthly	24-Hr. Composite
Fluorides	11.01	Monthly	24-Hr. Composite
Iron	27.52	Monthly	24-Hr. Composite
Lead	1.93	Monthly	24-Hr. Composite
Mercury	0.55	Monthly	24-Hr. Composite
Molybdenum	0.55	Monthly	24-Hr. Composite
Nickel	1.10	Monthly	24-Hr. Composite
Total Kjeldahl Nitrogen (TKN)	41.28	Monthly	24-Hr. Composite
Oil & Grease	137.61	Monthly	Grab
Phenols	1.38	Monthly	Grab
Total Phosphorous	11.0	Weekly	24-Hr. Composite
Selenium	0.55	Monthly	24-Hr. Composite
Silver	1.38	Monthly	24-Hr. Composite
Sulfide	16.51	Monthly	24-Hr. Composite
Total Dissolved Solids	13761.00	Monthly	24-Hr. Composite
Thallium	1.38	Monthly	24-Hr. Composite
Total Cyanide	3.30	Monthly	Grab
Total Suspended Solids	825.66	Monthly	24-Hr. Composite
Vanadium	2.75	Monthly	24-Hr. Composite
Zinc	1.38	Monthly	24-Hr. Composite

All discharges shall comply with all other applicable laws, regulations, standards, and requirements contained in the City of Hornell Sewer Use Law and any applicable State and Federal pretreatment laws, regulations, standards, and requirements including any such laws, regulations, standards, or requirements that may become effective during the term of this permit.

* Composite samples shall be collected and representative of a typical workday.

** These are final effluent limitations. See schedule of compliance for any applicable interim effluent limitations.

B. Sample Location and Methodology

All handling and preservation of collected samples and laboratory analyses of samples shall be performed in accordance with 40 CFR Part 136 and amendments thereto unless

specified otherwise in the monitoring conditions of this permit. The analysis shall be conducted by a certified laboratory at the cost of the permittee. Furthermore, the City SUL Article 10 Section 1007 provides additional information.

The permittee shall sample from the sampling location specified within Attachment 3 of this permit.

PART IV – SPECIAL CONDITIONS

A. The following processes and activity discharges, and conditional items are hereby incorporated into this permit:

- The City shall utilize billing as included within Attachment 1, of this permit.
- The User shall adhere to its compliance schedule as included within Attachment 2, of this permit.
- The User shall adhere to its sampling location specified within Attachment 3 of this permit.
- The User shall utilize to the Self-Monitoring Report template as included within Attachment 4 of this permit.

The City of Hornell reserves the right to revoke any of the above permitted processes and/or activities within the Special Conditions section if the process or activity is found to cause upset/passthrough at the plant, conditional items are not met, or if the original chemistry formulation or concentration, industrial process, or activity has been altered since the original amendment application and incorporation into the permit.

PART V – DEFINITIONS

A. The following definitions apply:

a. Maximum Daily — The maximum allowable discharge during a calendar day. Where daily maximum limitations are expressed in units of mass, the total mass discharged over the course of the day shall be used to determine compliance.

b. Maximum Monthly Average – The maximum allowable monthly average discharge shall be the total discharge flow during a given calendar month divided by the number of days within that calendar month.

c. Grab Sample — An individual sample collected in less than 15 minutes, without regard for flow or time.

d. Composite Sample — A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may

be composited either as a time composite sample composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or has a flow proportional composite sample collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots.

e. Slug — A substantial deviation from normal rates of discharge or constituent concentration (see normal sewage) sufficient to cause interference. In any event, a discharge which, in concentration of any constituent or in quantity of flow, that exceeds, for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flow during normal user operations, shall constitute a slug.

PART V – ATTACHMENTS

Attachment 1 – How to Estimate Your Monthly Industrial User Charge
Attachment 2 – Sampling Location
Attachment 3 – Self-Monitoring Report
Attachment 4 – Compliance Schedule

How to Estimate Your Monthly Industrial User Charge

To estimate your monthly industrial waste user charges, you will need the following items:

- City Debt Service Costs = D = *Use $675,000 for estimates (varies annually),*
- Operation and Maintenance Costs, O = O1 + O2 +O3 +O4
    - WPCP O&M Budget, O1 = *Use $765,000 for estimates (varies annually),*
    - Other Misc Costs
- Monthly Average Influent WPCP Flow, WPCP Flow = *Use 2,300,000 GPD for estimates (varies monthly)*
- Maximum Daily Flow from SIU *(if estimated, use maximum daily flow limit from permit)*, SIU Flow
- Monthly Average Flow from SIU *(if estimated, use most recent water bill reading)*

Line 1:	Total the amount of City Debt Service, D	$ _____
Line 2:	Total the amount of O&M, O	$ _____
Line 3:	Add line 1 and line 2	$ _____
Line 4:	Total the monthly flow from the SIU	_____ gallons
Line 5:	Total the monthly flow into the WPCP	_____ gallons
Line 6:	Divide line 5 by line 4 to determine the SIU percentage of flow contribution into the WPCP, %F	_____ %
Line 7:	Multiply line 3 by line 6 and divide by 12 to determine the total monthly base rate for the SIU, BR	$ _____
Line 8:	Determine the SIU surcharge factor on the next page and enter its amount	_____
Line 9:	Determine the Surcharge Fee for the SIU by multiplying line 7 by line 8, SF	$ _____
Line 10:	Determine the cost for flow over the Daily Maximum by subtracting the Daily Maximum from the Maximum Daily Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 11:	Determine the cost for flow over the Maximum Monthly Average by subtracting the Maximum Monthly Average from the Monthly Average Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 12:	Determine the Flow Exceedance Fee by adding line 10 and line 11, FEF	$ _____
Line 13:	Determine the total monthly service charge by adding line 7, line 9, and line 12,	$ _____

Please note that the formulation above is an estimation of the User's monthly user charge. The City will issue billing on a quarterly basis.

Ammonia Sample | Maximum Daily Flow Reading | Maximum Daily Flow Limit | Maximum Daily Flow Limit

(_____ mg/L x 8.34 x _____ MGD - 13 mg/L x 8.34 x _____ MGD) / (13 mg/L x 8.34 x _____ MGD) = _____ x 0.2008 = _____

BOD5 Sample | Maximum Daily Flow Reading | Maximum Daily Flow Limit | Maximum Daily Flow Limit

(_____ mg/L x 8.34 x _____ MGD - 120 mg/L x 8.34 x _____ MGD) / (120 mg/L x 8.34 x _____ MGD) = _____ x 0.2098 = _____

TKN Sample | Maximum Daily Flow Reading | Maximum Daily Flow Limit | Maximum Daily Flow Limit

(_____ mg/L x 8.34 x _____ MGD - 15 mg/L x 8.34 x _____ MGD) / (15 mg/L x 8.34 x _____ MGD) = _____ x 0.1870 = _____

TP Sample | Maximum Daily Flow Reading | Maximum Daily Flow Limit | Maximum Daily Flow Limit

(_____ mg/L x 8.34 x _____ MGD - 0.8 mg/L x 8.34 x _____ MGD) / (4 mg/L x 8.34 x _____ MGD) = _____ x 0.1885 = _____

TSS Sample | Maximum Daily Flow Reading | Maximum Daily Flow Limit | Maximum Daily Flow Limit

(_____ mg/L x 8.34 x _____ MGD - 300 mg/L x 8.34 x _____ MGD) / (300 mg/L x 8.34 x _____ MGD) = _____ x 0.2139 = _____

Total Surcharge Factor = _____

SELF MONITORING REPORT

(1) IDENTIFICATION

Company Name: _____

Mailing Address: _____
(street name & number) (city) (state) (zip code)

(2) FLOW DATA – GALLONS PER DAY (gpd)

The following flows are:		Estimated Water	Measured Water	Measured Sewage
Monthly Average				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____
Maximum Daily				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____

* Total Plant Flow = Overall facility water usage or sewage discharge

** For non-categorized Significant Industrial Users (SIU's) regulated flow = total process flow
Multiple sample points should be reported separately.

(3) CONCENTRATIONS OF REGULATED POLLUTANTS

The laboratory analytical reports for all sampling conducted between the period of _____ and _____ are attached to this report including the chain of custody forms.

This information has been reviewed and we have determined that we are in / not in compliance with permitted discharge limits.

(4) CERTIFICATION

The preceding sampling and analyses are representative of normal cycles and expected pollutant discharges to the POTW. All sampling, measurements and analyses were conducted in accordance with guidelines set forth by the Environmental Protection Agency 40 CFR Part 136 and/or approved substitute.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

In addition, based on my inquiry of the persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the sewer system has occurred since filing of the last periodic report on continued compliance. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting authority.

SELF MONITORING REPORT

Your Report must be signed as follows:

1. For a corporation: By a responsible Corporate Officer. A Corporate Officer means:

   (a) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy – or decision – making functions for the corporation; or
   (b) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second – quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

3. By a duly authorized representative of the individual designated in items (1) or (2) above if:

   (a) The authorization is made in writing by the individual described in items (1) or (2);
   (b) The authorization specified either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originated such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   (c) The written authorization is submitted to this Department.

Authorized Representative's Signature: _____ Date: _____

Print Name: _____

Title: _____

Interim Effluent Limitations

The permittee shall comply with the following schedule:

Effective Date	Description	Parameter	Maximum Daily Loading (lb/day)	Sampling Frequency	Sample Type	Note
January 1, 2025	*ISUP effective date, interim limit effective*	*Total Phosphorous*	*22.0*	*Weekly*	*24-hour composite*	
January 1, 2027	*Final ISUP limit effective date*	*Total Phosphorous*	*11.0*	*Weekly*	*24-hour composite*	

Compliance Actions

The permittee shall comply with the following schedule:

Description	Deadline	Note
Submit description and drawing of proposed sampling point	*January 1, 2025*	
Identify additional pretreatment measures/equipment	*January 31, 2025*	
Pilot test potential applicable measures/equipment	*March 30, 2025*	
Complete preliminary design plans	*July 31, 2025*	
Order equipment	*August 30, 2025*	
Complete construction	*April 30, 2026*	
Dubugging period commencement	*May 1, 2026*	
Full operation	*June 30, 2026*	

Figure C-5

UR St. James Sewer Use Permit

INDUSTRIAL SEWER USE PERMIT

Permit No.	**SIU-002**	Effective Date: January 1, 2025 Expiration Date: January 1, 2027
Company Name: Facility Name:		UR St. James Hospital
Mailing Address:		7329 Seneca Rd N Hornell, NY 14843
Facility Address:		7329 Seneca Rd N Hornell, NY 14843
Facility Representatives: Phone:		Caleb Drake, Facilities Operations & Compliance (607) 368-4258
24 Hour Emergency Contact: Phone:		Caleb Drake, Facilities Operations & Compliance (607) 368-4258

The above-named facility is authorized to discharge industrial wastewater into the City of Hornell Sanitary Sewer System, or Tributary thereto, in compliance with Chapter 252 of the City's Local Law, any applicable provisions of Federal or State law or regulation, and in accordance with the discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This Sewer Use Permit is granted in accordance with the application filed on _____ in the office of the City of Hornell and in conformity with the plans, specifications, and other data submitted to the City in support of the above application.

Permit issued by:

Ashley Brown, Assistant Superintendent of Public Works Date

PART I – STANDARD CONDITIONS

The applicant agrees to:

1. Renew every two years upon payment of the Annual Permit Fee of $100.00. The City of Hornell (City) and applicant agree that the terms and conditions of this Permit may be reviewed after a demonstrated change of circumstances or conditions is presented by either party.

2. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

3. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

4. Furnish to the City of Hornell and the City's authorized representative Engineer, upon request, any additional information relating to the installation and use of the sewer or drain. This information includes but is not limited to: plant records relating to wastewater discharge, sanitary piping drawings, details regarding excessive, accidental, or slug discharges information regarding proposed manufacturing and/or pretreatment changes.

5. Operate and maintain any wastewater pretreatment facilities, as may be required by the City of Hornell, as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times and at no expense to the City of Hornell.

6. Cooperate with the City of Hornell or its representatives in their inspection, sampling and study of the User's wastewaters and any facilities provided for pretreatment. Access to facility is required under Article 10 of the City SUL.

7. Determine all measurements, tests and analyses of the characteristics of wastes and wastewaters in accordance with the procedures outlined under 40 CFR, Part 136 and as amended. If a required procedure is not outlined in 40 CFR, Part 136, then the measurement, test or analysis shall be done in accordance with "Methods of Chemical Analysis of Water and Waste" as published by the USEPA and/or "Standard Methods for the Examination of Water and Wastewater," latest approved edition.

All compliance test analyses shall be performed by a laboratory certified for such analytical procedures by the New York State Department of Health. Chain of Custody reports shall be submitted for all such samples.

8. Not increase the use of potable or process water or in any way attempt to dilute a discharge as a partial or complete substitute for adequate treatment in order to achieve compliance with the limits contained in the local limits in the Sewer Use Law.

9. Retain and preserve for a period of no less than five (5) years, all documents, records, books, memoranda, reports, correspondence and summaries thereof, which relate to monitoring of sampling and chemical analyses made by or on behalf of the User in connection with its discharge.

10. Record the following information for each measurement or sample taken pursuant to the requirements of this permit. The laboratory chain of custody sheets should contain the following information:

    a. The exact place, date, and time of sampling;
    b. The dates the analyses were performed;
    c. The name of the person(s) or laboratory who performed the analyses;
    d. The analytical techniques or methods used; and
    e. The results of all required analyses.

11. The City making available for public inspection at the City Offices, all reports required by this permit, except for information determined to be confidential under Section 1014 of the Sewer Use Law.

12. Properly dispose of sludges and spent chemicals generated as part of their pretreatment processes, in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

13. The following conditions for modification or revision of this Permit, in accordance with Section 1004B of the Sewer Use Law:

    a. Promulgation of an applicable National Categorical Pretreatment Standard,
    b. Revision of or a grant of a variance from such categorical standards pursuant to 40 CFR 403.13,
    c. Changes in general discharge prohibitions and local limits as per Section 903 of this law,
    d. Changes in processes used by the permittee, or changes in discharge volume or character,
    e. Changes in design or capability of any part of the POTW,

f. Discovery that the permitted discharge causes or contributes to pass through or interference, and
g. Changes in the nature and character of the sewage in the POTW as a result of other permitted discharges.

14. Reapply for reissuance of this Permit, within ninety (90) days of notification by the City. The City shall notify the User of the need to reapply for the permit one hundred and eighty (180) days prior to the expiration of the User's permit. If the User is not notified by the City and the City's authorized representative Engineer thirty (30) days prior to the expiration of the Permit, the Permit shall automatically be extended for six (6) months.

15. This Permit shall not be transferable.

16. Civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule, are applicable as set forth in Article 11 of the City SUL and may be set forth by applicable State and Federal laws and regulations. Such laws and regulations shall include the provisions of 18 U.S.C. section 1001 relating to fraud and false statements; the provisions of sections 309(c)(4) of the Act, as amended governing false statements, representation, or certification; and the provisions of Section 309(c)(6) regarding responsible corporate officers. Any person violating any of the provisions of the above laws shall become liable to the City for any expense, loss, or damage occasioned by the City by reason of such violation and maybe, upon conviction, subject to fines of not less than $1,000.00/per day/per violation or imprisonment up to six (6) months or both.

17. The permittee may petition the terms of this permit within thirty (30) days of the notice. This petition shall be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provision objected to, the reason for the objection and the alternative condition, if any, it seeks to be placed in the permit.

18. If the permittee chooses or is to mandated to alter pretreatment procedures and/or infrastructure used to provide pretreatment of wastewater entering the City of Hornell Sewer System, permittee shall provide plans for in the form of construction documents to the City and the City's authorized representative Engineer.

19. All construction documents and other information shall be submitted to the City's authorized representative Engineer:

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A copy of each shall also be submitted to:

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82 Main St.
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PART II – REPORTING REQUIREMENTS

The Industrial User shall:

1. Notify the City of Hornell POTW, immediately, of any accidental or slug discharge to the public sewers. The concentration that constitutes a slug discharge is based on Part III of this agreement. Formal, written notification that discusses the circumstances and remedies shall be submitted to the City of Hornell, within five (5) working days of the occurrence.

2. Have all reports required by this permit signed by a principal executive officer of the User, or other duly authorized employee and the City's authorized representative Engineer.

3. Notify the City at least thirty (30) days prior to the introduction of any new wastewater or pollutants or any substantial change in volume or characteristics of the wastewater being discharged to the public sewers from the User's industrial processes.

4. Notify the City of Hornell of any upset or breakdown of its pretreatment process or equipment that places the User in a temporary state of non-compliance with the wastewater discharge limitations. Such notification shall take place within twenty-four (24) hours of first awareness of the commencement of such an occurrence. A detailed report shall be submitted to the City and the City's authorized representative Engineer within five (5) working days of the occurrence.

5. If the results of the permittee's wastewater analysis indicates that a violation of this permit has occurred, the permittee must:
    a. Inform the City of Hornell of the violation within 24 hours; and
    Repeat the sampling and pollutant analysis and submit, in writing, the results of this second analysis within 30 days of the first violation.

6. A report shall be submitted providing the results of wastewater sampling and analysis for the pollutants specified in Part III of the Permit monthly and according to the Attachment 4 template. The report shall be submitted no later than the 28th day of the month following the end of each reporting period. Included with the report shall be a Monthly Average and Maximum Daily flow from the facility. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

7. Report on conditions of its sampling/monitoring manhole which adversely affect representative sampling results to the City and the City's authorized representative Engineer.

8. Submit to the City and its authorized representative Engineer periodic reports of continued compliance. The report is due October 1 each year and summarizes the previous years testing results. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

9. All reports and other information shall be submitted to the City's authorized representative Engineer:

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PART III – WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the effective period of this permit, the permittee is authorized to discharge process wastewater to the City of Hornell sewer system. During the duration of this permit, the discharge shall not exceed the effluent limitations outlined below.

A. Local Limits

The Industrial User shall comply with the effluent limitations and monitoring requirements as specified in this permit, at the point of discharge to the publicly owned sewer system.

EFFLUENT LIMITATIONS

Parameter	Maximum Daily	Maximum Monthly Average
Flow	75,000 Gallons	75,000 GPD
pH	6 – 9.0 Standard Units	NA

The concentration in sewage of any of the following toxic substances shall not exceed the 24-hour average concentration limits specified below when discharged into the public sewer.

Sewer Users covered by Federal Categorical Pretreatment Standards shall comply with applicable Federal Standards. Substances not regulated by the Categorical Pretreatment Standard shall not exceed the concentration limits specified below. For substances regulated by Categorical Pretreatment Standards determination of concentration shall be at the discharge into the sewer with the dilution attributed to non-process flow excluded as determined by the Combined Waste Stream Formula (40 CFR 403.6 of the "Act").

City of Hornell may revise the following limits or insert additional items after a hearing when in the opinion of the Mayor, the Department of Health, or the Department of Environmental Conservation, the need for a rule change is indicated or as provided for in Section 1004B.

The Pollutant loadings (based on uniform concentration limits for all significant industrial users) and the required sampling frequency and type are as follows:

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
Aluminum	4.38	Monthly	24-Hr. Composite
Ammonia	8.13	Monthly	24-Hr. Composite
Arsenic	0.13	Monthly	24-Hr. Composite
Beryllium	0.63	Monthly	24-Hr. Composite

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
BOD5	75.06	Monthly	24-Hr. Composite
Cadmium	0.06	Monthly	24-Hr. Composite
Chromium	0.31	Monthly	24-Hr. Composite
Hexavalent Chromium	0.31	Monthly	24-Hr. Composite
Cobalt	0.13	Monthly	24-Hr. Composite
Copper	2.13	Monthly	24-Hr. Composite
Fluorides	2.50	Monthly	24-Hr. Composite
Iron	6.26	Monthly	24-Hr. Composite
Lead	0.44	Monthly	24-Hr. Composite
Mercury	0.13	Monthly	24-Hr. Composite
Molybdenum	0.13	Monthly	24-Hr. Composite
Nickel	0.25	Monthly	24-Hr. Composite
Total Kjeldahl Nitrogen (TKN)	9.38	Monthly	24-Hr. Composite
Oil & Grease	31.28	Monthly	Grab
Phenols	0.31	Monthly	Grab
Phosphorous	2.5	Monthly	24-Hr. Composite
Selenium	0.13	Monthly	24-Hr. Composite
Silver	0.31	Monthly	24-Hr. Composite
Sulfide	3.75	Monthly	24-Hr. Composite
Total Dissolved Solids	3127.50	Monthly	24-Hr. Composite
Thallium	0.31	Monthly	24-Hr. Composite
Total Cyanide	0.75	Monthly	Grab
Total Suspended Solids	187.65	Monthly	24-Hr. Composite
Vanadium	0.63	Monthly	24-Hr. Composite
Zinc	0.31	Monthly	24-Hr. Composite

All discharges shall comply with all other applicable laws, regulations, standards, and requirements contained in the City of Hornell Sewer Use Law and any applicable State and Federal pretreatment laws, regulations, standards, and requirements including any such laws, regulations, standards, or requirements that may become effective during the term of this permit.

* Composite samples shall be collected and representative of a typical workday.

** These are final effluent limitations. See schedule of compliance for any applicable interim effluent limitations.

B. Sample Location and Methodology

All handling and preservation of collected samples and laboratory analyses of samples shall be performed in accordance with 40 CFR Part 136 and amendments thereto unless

specified otherwise in the monitoring conditions of this permit. The analysis shall be conducted by a certified laboratory at the cost of the permittee. Furthermore, the City SUL Article 10 Section 1007 provides additional information.

The permittee shall sample from the sampling location specified within Attachment 3 of this permit.

PART IV – SPECIAL CONDITIONS

A. The following processes and activity discharges, and conditional items are hereby incorporated into this permit:

- The City shall utilize billing as included within Attachment 1, of this permit.
- The User shall adhere to its compliance schedule as included within Attachment 2, of this permit.
- The User shall adhere to its sampling location specified within Attachment 3 of this permit.
- The User shall utilize to the Self-Monitoring Report template as included within Attachment 4 of this permit.

The City of Hornell reserves the right to revoke any of the above permitted processes and/or activities within the Special Conditions section if the process or activity is found to cause upset/passthrough at the plant, conditional items are not met, or if the original chemistry formulation or concentration, industrial process, or activity has been altered since the original amendment application and incorporation into the permit.

PART V – DEFINITIONS

A. The following definitions apply:

a. Maximum Daily — The maximum allowable discharge during a calendar day. Where daily maximum limitations are expressed in units of mass, the total mass discharged over the course of the day shall be used to determine compliance.

b. Maximum Monthly Average – The maximum allowable monthly average discharge shall be the total discharge flow during a given calendar month divided by the number of days within that calendar month.

c. Grab Sample — An individual sample collected in less than 15 minutes, without regard for flow or time.

d. Composite Sample — A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may

be composited either as a time composite sample composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or has a flow proportional composite sample collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots.

e. Slug — A substantial deviation from normal rates of discharge or constituent concentration (see normal sewage) sufficient to cause interference. In any event, a discharge which, in concentration of any constituent or in quantity of flow, that exceeds, for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flow during normal user operations, shall constitute a slug.

PART V – ATTACHMENTS

Attachment 1 – How to Estimate Your Monthly Industrial User Charge
Attachment 2 – Sampling Location
Attachment 3 – Self-Monitoring Report
Attachment 4 – Compliance Schedule

How to Estimate Your Monthly Industrial User Charge

To estimate your monthly industrial waste user charges, you will need the following items:

- City Debt Service Costs = D = *Use $675,000 for estimates (varies annually),*
- Operation and Maintenance Costs, O = O1 + O2 +O3 +O4
    - WPCP O&M Budget, O1 = *Use $765,000 for estimates (varies annually),*
    - Other Misc Costs
- Monthly Average Influent WPCP Flow, WPCP Flow = *Use 2,300,000 GPD for estimates (varies monthly)*
- Maximum Daily Flow from SIU *(if estimated, use maximum daily flow limit from permit)*, SIU Flow
- Monthly Average Flow from SIU *(if estimated, use most recent water bill reading)*

Line 1:	Total the amount of City Debt Service, D	$ _____
Line 2:	Total the amount of O&M, O	$ _____
Line 3:	Add line 1 and line 2	$ _____
Line 4:	Total the monthly flow from the SIU	_____ gallons
Line 5:	Total the monthly flow into the WPCP	_____ gallons
Line 6:	Divide line 5 by line 4 to determine the SIU percentage of flow contribution into the WPCP, %F	_____ %
Line 7:	Multiply line 3 by line 6 and divide by 12 to determine the total monthly base rate for the SIU, BR	$ _____
Line 8:	Determine the SIU surcharge factor on the next page and enter its amount	_____
Line 9:	Determine the Surcharge Fee for the SIU by multiplying line 7 by line 8, SF	$ _____
Line 10:	Determine the cost for flow over the Daily Maximum by subtracting the Daily Maximum from the Maximum Daily Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 11:	Determine the cost for flow over the Maximum Monthly Average by subtracting the Maximum Monthly Average from the Monthly Average Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 12:	Determine the Flow Exceedance Fee by adding line 10 and line 11, FEF	$ _____
Line 13:	Determine the total monthly service charge by adding line 7, line 9, and line 12,	$ _____

Please note that the formulation above is an estimation of the User's monthly user charge. The City will issue billing on a quarterly basis.

	Ammonia Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	13	mg/L	x	8.34	x		MGD	)	/	(	13	mg/L	x	8.34	x		MGD	)	=		x	0.2008	=	
	BOD5 Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	120	mg/L	x	8.34	x		MGD	)	/	(	120	mg/L	x	8.34	x		MGD	)	=		x	0.2098	=	
	TKN Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	15	mg/L	x	8.34	x		MGD	)	/	(	15	mg/L	x	8.34	x		MGD	)	=		x	0.1870	=	
	TP Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	4	mg/L	x	8.34	x		MGD	)	/	(	4	mg/L	x	8.34	x		MGD	)	=		x	0.1885	=	
	TSS Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	300	mg/L	x	8.34	x		MGD	)	/	(	300	mg/L	x	8.34	x		MGD	)	=		x	0.2139	=	

Total Surcharge Factor =

Attachment 2 – Sampling Location

To be added after submission by the User

SELF MONITORING REPORT

(1) IDENTIFICATION

Company Name: _____

Mailing Address: _____
(street name & number) (city) (state) (zip code)

(2) FLOW DATA – GALLONS PER DAY (gpd)

The following flows are:		Estimated Water	Measured Water	Measured Sewage
Monthly Average				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____
Maximum Daily				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____

* Total Plant Flow = Overall facility water usage or sewage discharge

** For non-categorized Significant Industrial Users (SIU's) regulated flow = total process flow
Multiple sample points should be reported separately.

(3) CONCENTRATIONS OF REGULATED POLLUTANTS

The laboratory analytical reports for all sampling conducted between the period of _____ and _____ are attached to this report including the chain of custody forms.

This information has been reviewed and we have determined that we are in / not in compliance with permitted discharge limits.

(4) CERTIFICATION

The preceding sampling and analyses are representative of normal cycles and expected pollutant discharges to the POTW. All sampling, measurements and analyses were conducted in accordance with guidelines set forth by the Environmental Protection Agency 40 CFR Part 136 and/or approved substitute.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

In addition, based on my inquiry of the persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the sewer system has occurred since filing of the last periodic report on continued compliance. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting authority.

SELF MONITORING REPORT

Your Report must be signed as follows:

1. For a corporation: By a responsible Corporate Officer. A Corporate Officer means:

   (a) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy – or decision – making functions for the corporation; or
   (b) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second – quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

3. By a duly authorized representative of the individual designated in items (1) or (2) above if:

   (a) The authorization is made in writing by the individual described in items (1) or (2);
   (b) The authorization specified either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originated such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   (c) The written authorization is submitted to this Department.

Authorized Representative's Signature: _____ Date: _____

Print Name: _____

Title: _____

Schedule of Compliance

Interim Effluent Limitations

The permittee shall comply with the following interim limits.

Interim Limit Effective Date	Interim Limit Expiration Date	Parameter(s) Affected	Interim Local Limit			Note
			Type	Limit	Units	
January 1, 2025	*December 31, 2026*	*Total Phosphorous*	*Maximum Daily Loading*	*5.0*	*lb/day*	*See Local Limits section of Permit for sample frequency and type.*

Compliance Actions

The permittee shall comply with the following schedule and submit documentation to the City to demonstrate compliance.

Description	Deadline	Note
Submit description and drawing of proposed sampling point	*January 1, 2025*	

Figure C-6

Stern and Stern Sewer Use Permit

INDUSTRIAL SEWER USE PERMIT

Permit No.	**SIU-003**	Effective Date: January 1, 2025 Expiration Date: January 1, 2027
Company Name: Facility Name:		Stern and Stern Industries
Mailing Address:		188 Thacher St Hornell, NY 14843
Facility Address:		188 Thacher St Hornell, NY 14843
Facility Representatives: Phone:		Brian Morrell, Chief Operating Officer (919) 819-4779
24 Hour Emergency Contact: Phone:		Bob Turner, Maintenance Coordinator (607) 324-4495

The above-named facility is authorized to discharge industrial wastewater into the City of Hornell Sanitary Sewer System, or Tributary thereto, in compliance with Chapter 252 of the City's Local Law, any applicable provisions of Federal or State law or regulation, and in accordance with the discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This Sewer Use Permit is granted in accordance with the application filed on _____ in the office of the City of Hornell and in conformity with the plans, specifications, and other data submitted to the City in support of the above application.

Permit issued by:

Ashley Brown, Assistant Superintendent of Public Works Date

PART I – STANDARD CONDITIONS

The applicant agrees to:

1. Renew every two years upon payment of the Annual Permit Fee of $100.00. The City of Hornell (City) and applicant agree that the terms and conditions of this Permit may be reviewed after a demonstrated change of circumstances or conditions is presented by either party.

2. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

3. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

4. Furnish to the City of Hornell and the City's authorized representative Engineer, upon request, any additional information relating to the installation and use of the sewer or drain. This information includes but is not limited to: plant records relating to wastewater discharge, sanitary piping drawings, details regarding excessive, accidental, or slug discharges information regarding proposed manufacturing and/or pretreatment changes.

5. Operate and maintain any wastewater pretreatment facilities, as may be required by the City of Hornell, as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times and at no expense to the City of Hornell.

6. Cooperate with the City of Hornell or its representatives in their inspection, sampling and study of the User's wastewaters and any facilities provided for pretreatment. Access to facility is required under Article 10 of the City SUL.

7. Determine all measurements, tests and analyses of the characteristics of wastes and wastewaters in accordance with the procedures outlined under 40 CFR, Part 136 and as amended. If a required procedure is not outlined in 40 CFR, Part 136, then the measurement, test or analysis shall be done in accordance with "Methods of Chemical Analysis of Water and Waste" as published by the USEPA and/or "Standard Methods for the Examination of Water and Wastewater," latest approved edition.

All compliance test analyses shall be performed by a laboratory certified for such analytical procedures by the New York State Department of Health. Chain of Custody reports shall be submitted for all such samples.

8. Not increase the use of potable or process water or in any way attempt to dilute a discharge as a partial or complete substitute for adequate treatment in order to achieve compliance with the limits contained in the local limits in the Sewer Use Law.

9. Retain and preserve for a period of no less than five (5) years, all documents, records, books, memoranda, reports, correspondence and summaries thereof, which relate to monitoring of sampling and chemical analyses made by or on behalf of the User in connection with its discharge.

10. Record the following information for each measurement or sample taken pursuant to the requirements of this permit. The laboratory chain of custody sheets should contain the following information:

    a. The exact place, date, and time of sampling;
    b. The dates the analyses were performed;
    c. The name of the person(s) or laboratory who performed the analyses;
    d. The analytical techniques or methods used; and
    e. The results of all required analyses.

11. The City making available for public inspection at the City Offices, all reports required by this permit, except for information determined to be confidential under Section 1014 of the Sewer Use Law.

12. Properly dispose of sludges and spent chemicals generated as part of their pretreatment processes, in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

13. The following conditions for modification or revision of this Permit, in accordance with Section 1004B of the Sewer Use Law:

    a. Promulgation of an applicable National Categorical Pretreatment Standard,
    b. Revision of or a grant of a variance from such categorical standards pursuant to 40 CFR 403.13,
    c. Changes in general discharge prohibitions and local limits as per Section 903 of this law,
    d. Changes in processes used by the permittee, or changes in discharge volume or character,
    e. Changes in design or capability of any part of the POTW,

f. Discovery that the permitted discharge causes or contributes to pass through or interference, and
g. Changes in the nature and character of the sewage in the POTW as a result of other permitted discharges.

14. Reapply for reissuance of this Permit, within ninety (90) days of notification by the City. The City shall notify the User of the need to reapply for the permit one hundred and eighty (180) days prior to the expiration of the User's permit. If the User is not notified by the City and the City's authorized representative Engineer thirty (30) days prior to the expiration of the Permit, the Permit shall automatically be extended for six (6) months.

15. This Permit shall not be transferable.

16. Civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule, are applicable as set forth in Article 11 of the City SUL and may be set forth by applicable State and Federal laws and regulations. Such laws and regulations shall include the provisions of 18 U.S.C. section 1001 relating to fraud and false statements; the provisions of sections 309(c)(4) of the Act, as amended governing false statements, representation, or certification; and the provisions of Section 309(c)(6) regarding responsible corporate officers. Any person violating any of the provisions of the above laws shall become liable to the City for any expense, loss, or damage occasioned by the City by reason of such violation and maybe, upon conviction, subject to fines of not less than $1,000.00/per day/per violation or imprisonment up to six (6) months or both.

17. The permittee may petition the terms of this permit within thirty (30) days of the notice. This petition shall be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provision objected to, the reason for the objection and the alternative condition, if any, it seeks to be placed in the permit.

18. If the permittee chooses or is to mandated to alter pretreatment procedures and/or infrastructure used to provide pretreatment of wastewater entering the City of Hornell Sewer System, permittee shall provide plans for in the form of construction documents to the City and the City's authorized representative Engineer.

19. All construction documents and other information shall be submitted to the City's authorized representative Engineer:

LaBella Associates D.P.C
300 State St, Suite 201

Rochester, NY 14614
Attn: Civil Engineering, Municipal Team

A copy of each shall also be submitted to:

City of Hornell City Hall
82 Main St.
Hornell, NY 14843
Attn: Superintendent of Public Works

PART II – REPORTING REQUIREMENTS

The Industrial User shall:

1. Notify the City of Hornell POTW, immediately, of any accidental or slug discharge to the public sewers. The concentration that constitutes a slug discharge is based on Part III of this agreement. Formal, written notification that discusses the circumstances and remedies shall be submitted to the City of Hornell, within five (5) working days of the occurrence.

2. Have all reports required by this permit signed by a principal executive officer of the User, or other duly authorized employee and the City's authorized representative Engineer.

3. Notify the City at least thirty (30) days prior to the introduction of any new wastewater or pollutants or any substantial change in volume or characteristics of the wastewater being discharged to the public sewers from the User's industrial processes.

4. Notify the City of Hornell of any upset or breakdown of its pretreatment process or equipment that places the User in a temporary state of non-compliance with the wastewater discharge limitations. Such notification shall take place within twenty-four (24) hours of first awareness of the commencement of such an occurrence. A detailed report shall be submitted to the City and the City's authorized representative Engineer within five (5) working days of the occurrence.

5. If the results of the permittee's wastewater analysis indicates that a violation of this permit has occurred, the permittee must:
    a. Inform the City of Hornell of the violation within 24 hours; and
    Repeat the sampling and pollutant analysis and submit, in writing, the results of this second analysis within 30 days of the first violation.

6. A report shall be submitted providing the results of wastewater sampling and analysis for the pollutants specified in Part III of the Permit monthly and according to the Attachment 4 template. The report shall be submitted no later than the 28th day of the month following the end of each reporting period. Included with the report shall be a Monthly Average and Maximum Daily flow from the facility. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

7. Report on conditions of its sampling/monitoring manhole which adversely affect representative sampling results to the City and the City's authorized representative Engineer.

8. Submit to the City and its authorized representative Engineer periodic reports of continued compliance. The report is due October 1 each year and summarizes the previous years testing results. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

9. All reports and other information shall be submitted to the City's authorized representative Engineer:

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Rochester, NY 14614
Attn: Civil Engineering, Municipal Team

A copy of each shall also be submitted to:

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82 Main St.
Hornell, NY 14843
Attn: Superintendent of Public Works

PART III – WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the effective period of this permit, the permittee is authorized to discharge process wastewater to the City of Hornell sewer system. During the duration of this permit, the discharge shall not exceed the effluent limitations outlined below.

A. Local Limits

The Industrial User shall comply with the effluent limitations and monitoring requirements as specified in this permit, at the point of discharge to the publicly owned sewer system.

EFFLUENT LIMITATIONS

Parameter	Maximum Daily	Maximum Monthly Average
Flow	53,000 Gallons	53,000 GPD
pH	6.0 – 9.0 SU	NA

The concentration in sewage of any of the following toxic substances shall not exceed the 24-hour average concentration limits specified below when discharged into the public sewer.

Sewer Users covered by Federal Categorical Pretreatment Standards shall comply with applicable Federal Standards. Substances not regulated by the Categorical Pretreatment Standard shall not exceed the concentration limits specified below. For substances regulated by Categorical Pretreatment Standards determination of concentration shall be at the discharge into the sewer with the dilution attributed to non-process flow excluded as determined by the Combined Waste Stream Formula (40 CFR 403.6 of the "Act").

City of Hornell may revise the following limits or insert additional items after a hearing when in the opinion of the Mayor, the Department of Health, or the Department of Environmental Conservation, the need for a rule change is indicated or as provided for in Section 1004B.

The Pollutant loadings (based on uniform concentration limits for all significant industrial users) and the required sampling frequency and type are as follows:

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
Aluminum	3.09	Monthly	24-Hr. Composite
Ammonia	5.75	Monthly	24-Hr. Composite
Arsenic	0.09	Monthly	24-Hr. Composite
Beryllium	0.44	Monthly	24-Hr. Composite

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
BOD5	53.04	Monthly	24-Hr. Composite
Cadmium	0.04	Monthly	24-Hr. Composite
Chromium	0.22	Monthly	24-Hr. Composite
Hexavalent Chromium	0.22	Monthly	24-Hr. Composite
Cobalt	0.09	Monthly	24-Hr. Composite
Copper	1.50	Monthly	24-Hr. Composite
Fluorides	1.77	Monthly	24-Hr. Composite
Iron	4.42	Monthly	24-Hr. Composite
Lead	0.31	Monthly	24-Hr. Composite
Mercury	0.09	Monthly	24-Hr. Composite
Molybdenum	0.09	Monthly	24-Hr. Composite
Nickel	0.18	Monthly	24-Hr. Composite
Total Kjeldahl Nitrogen (TKN)	6.63	Monthly	24-Hr. Composite
Oil & Grease	22.10	Monthly	Grab
Phenols	0.22	Monthly	Grab
Phosphorous	1.8	Monthly	24-Hr. Composite
Selenium	0.09	Monthly	24-Hr. Composite
Silver	0.22	Monthly	24-Hr. Composite
Sulfide	2.65	Monthly	24-Hr. Composite
Total Dissolved Solids	2210.10	Monthly	24-Hr. Composite
Thallium	0.22	Monthly	24-Hr. Composite
Total Cyanide	0.53	Monthly	Grab
Total Suspended Solids	132.61	Monthly	24-Hr. Composite
Vanadium	0.44	Monthly	24-Hr. Composite
Zinc	0.22	Monthly	24-Hr. Composite

All discharges shall comply with all other applicable laws, regulations, standards, and requirements contained in the City of Hornell Sewer Use Law and any applicable State and Federal pretreatment laws, regulations, standards, and requirements including any such laws, regulations, standards, or requirements that may become effective during the term of this permit.

* Composite samples shall be collected and representative of a typical workday.

** These are final effluent limitations. See schedule of compliance for any applicable interim effluent limitations.

B. Sample Location and Methodology

All handling and preservation of collected samples and laboratory analyses of samples shall be performed in accordance with 40 CFR Part 136 and amendments thereto unless

specified otherwise in the monitoring conditions of this permit. The analysis shall be conducted by a certified laboratory at the cost of the permittee. Furthermore, the City SUL Article 10 Section 1007 provides additional information.

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PART V – DEFINITIONS

A. The following definitions apply:

a. Maximum Daily — The maximum allowable discharge during a calendar day. Where daily maximum limitations are expressed in units of mass, the total mass discharged over the course of the day shall be used to determine compliance.

b. Maximum Monthly Average – The maximum allowable monthly average discharge shall be the total discharge flow during a given calendar month divided by the number of days within that calendar month.

c. Grab Sample — An individual sample collected in less than 15 minutes, without regard for flow or time.

d. Composite Sample — A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may

be composited either as a time composite sample composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or has a flow proportional composite sample collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots.

e. Slug — A substantial deviation from normal rates of discharge or constituent concentration (see normal sewage) sufficient to cause interference. In any event, a discharge which, in concentration of any constituent or in quantity of flow, that exceeds, for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flow during normal user operations, shall constitute a slug.

PART V – ATTACHMENTS

Attachment 1 – How to Estimate Your Monthly Industrial User Charge
Attachment 2 – Sampling Location
Attachment 3 – Self-Monitoring Report
Attachment 4 – Compliance Report

How to Estimate Your Monthly Industrial User Charge

To estimate your monthly industrial waste user charges, you will need the following items:

- City Debt Service Costs = D = *Use $675,000 for estimates (varies annually),*
- Operation and Maintenance Costs, O = O1 + O2 +O3 +O4
    - WPCP O&M Budget, O1 = *Use $765,000 for estimates (varies annually),*
    - Other Misc Costs
- Monthly Average Influent WPCP Flow, WPCP Flow = *Use 2,300,000 GPD for estimates (varies monthly)*
- Maximum Daily Flow from SIU *(if estimated, use maximum daily flow limit from permit)*, SIU Flow
- Monthly Average Flow from SIU *(if estimated, use most recent water bill reading)*

Line 1:	Total the amount of City Debt Service, D	$ _____
Line 2:	Total the amount of O&M, O	$ _____
Line 3:	Add line 1 and line 2	$ _____
Line 4:	Total the monthly flow from the SIU	_____ gallons
Line 5:	Total the monthly flow into the WPCP	_____ gallons
Line 6:	Divide line 5 by line 4 to determine the SIU percentage of flow contribution into the WPCP, %F	_____ %
Line 7:	Multiply line 3 by line 6 and divide by 12 to determine the total monthly base rate for the SIU, BR	$ _____
Line 8:	Determine the SIU surcharge factor on the next page and enter its amount	_____
Line 9:	Determine the Surcharge Fee for the SIU by multiplying line 7 by line 8, SF	$ _____
Line 10:	Determine the cost for flow over the Daily Maximum by subtracting the Daily Maximum from the Maximum Daily Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 11:	Determine the cost for flow over the Maximum Monthly Average by subtracting the Maximum Monthly Average from the Monthly Average Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 12:	Determine the Flow Exceedance Fee by adding line 10 and line 11, FEF	$ _____
Line 13:	Determine the total monthly service charge by adding line 7, line 9, and line 12,	$ _____

Please note that the formulation above is an estimation of the User's monthly user charge. The City will issue billing on a quarterly basis.

	Ammonia Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	13	mg/L	x	8.34	x		MGD	)	/	(	13	mg/L	x	8.34	x		MGD	)	=		x	0.2008	=	
	BOD5 Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	120	mg/L	x	8.34	x		MGD	)	/	(	120	mg/L	x	8.34	x		MGD	)	=		x	0.2098	=	
	TKN Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	15	mg/L	x	8.34	x		MGD	)	/	(	15	mg/L	x	8.34	x		MGD	)	=		x	0.1870	=	
	TP Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	4	mg/L	x	8.34	x		MGD	)	/	(	4	mg/L	x	8.34	x		MGD	)	=		x	0.1885	=	
	TSS Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	300	mg/L	x	8.34	x		MGD	)	/	(	300	mg/L	x	8.34	x		MGD	)	=		x	0.2139	=	

Total Surcharge Factor =

Attachment 2 – Sampling Location

To be added after submission by the User

SELF MONITORING REPORT

(1) IDENTIFICATION

Company Name: _____

Mailing Address: _____
(street name & number) (city) (state) (zip code)

(2) FLOW DATA – GALLONS PER DAY (gpd)

The following flows are:		Estimated Water	Measured Water	Measured Sewage
Monthly Average				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____
Maximum Daily				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____

* Total Plant Flow = Overall facility water usage or sewage discharge

** For non-categorized Significant Industrial Users (SIU's) regulated flow = total process flow
Multiple sample points should be reported separately.

(3) CONCENTRATIONS OF REGULATED POLLUTANTS

The laboratory analytical reports for all sampling conducted between the period of _____ and _____ are attached to this report including the chain of custody forms.

This information has been reviewed and we have determined that we are in / not in compliance with permitted discharge limits.

(4) CERTIFICATION

The preceding sampling and analyses are representative of normal cycles and expected pollutant discharges to the POTW. All sampling, measurements and analyses were conducted in accordance with guidelines set forth by the Environmental Protection Agency 40 CFR Part 136 and/or approved substitute.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

In addition, based on my inquiry of the persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the sewer system has occurred since filing of the last periodic report on continued compliance. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting authority.

SELF MONITORING REPORT

Your Report must be signed as follows:

1. For a corporation: By a responsible Corporate Officer. A Corporate Officer means:

   (a) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy – or decision – making functions for the corporation; or
   (b) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second – quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

3. By a duly authorized representative of the individual designated in items (1) or (2) above if:

   (a) The authorization is made in writing by the individual described in items (1) or (2);
   (b) The authorization specified either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originated such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   (c) The written authorization is submitted to this Department.

Authorized Representative's Signature: _____ Date: _____

Print Name: _____

Title: _____

Schedule of Compliance

Interim Effluent Limitations

The permittee shall comply with the following interim limits.

Interim Limit Effective Date	Interim Limit Expiration Date	Parameter(s) Affected	Interim Local Limit			Note
			Type	Limit	Units	
January 1, 2025	*December 31, 2026*	*Total Phosphorous*	*Maximum Daily Loading*	*3.5*	*lb/day*	*See Local Limits section of Permit for sample frequency and type.*

Compliance Actions

The permittee shall comply with the following schedule and submit documentation to the City to demonstrate compliance.

Description	Deadline	Note
Submit description and drawing of proposed sampling point	*January 1, 2025*	

Figure C-7

Alstom Sewer Use Permit

INDUSTRIAL SEWER USE PERMIT

Permit No.	**SIU-004**	Effective Date: January 1, 2025 Expiration Date: January 1, 2027
Company Name:		Alstom Transportation
Facility Name:		Plant 1 (Car Shop)
Mailing Address:		1 Transit Dr Hornell, NY 14843
Facility Address:		1 Transit Dr Hornell, NY 14843
Facility Representatives:		Bill Pulling, EHS Engineer
Phone:		(607) 794-1465
24 Hour Emergency Contact:		Mike Vanscoter, EHS Manager
Phone:		(607) 968-3082

The above-named facility is authorized to discharge industrial wastewater into the City of Hornell Sanitary Sewer System, or Tributary thereto, in compliance with Chapter 252 of the City's Local Law, any applicable provisions of Federal or State law or regulation, and in accordance with the discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This Sewer Use Permit is granted in accordance with the application filed on _____ in the office of the City of Hornell and in conformity with the plans, specifications, and other data submitted to the City in support of the above application.

Permit issued by:

Ashley Brown, Assistant Superintendent of Public Works Date

PART I – STANDARD CONDITIONS

The applicant agrees to:

1. Renew every two years upon payment of the Annual Permit Fee of $100.00. The City of Hornell (City) and applicant agree that the terms and conditions of this Permit may be reviewed after a demonstrated change of circumstances or conditions is presented by either party.

2. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

3. Accept and abide by all provisions of [Chapter 252, Sewer Use Law, of the Municipal Law] of the City of Hornell and by all pertinent rules or regulations now in force or which shall be adopted in the future. Hereafter, [Chapter 252] will be referred to as the Sewer Use Law (SUL).

4. Furnish to the City of Hornell and the City's authorized representative Engineer, upon request, any additional information relating to the installation and use of the sewer or drain. This information includes but is not limited to: plant records relating to wastewater discharge, sanitary piping drawings, details regarding excessive, accidental, or slug discharges information regarding proposed manufacturing and/or pretreatment changes.

5. Operate and maintain any wastewater pretreatment facilities, as may be required by the City of Hornell, as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times and at no expense to the City of Hornell.

6. Cooperate with the City of Hornell or its representatives in their inspection, sampling and study of the User's wastewaters and any facilities provided for pretreatment. Access to facility is required under Article 10 of the City SUL.

7. Determine all measurements, tests and analyses of the characteristics of wastes and wastewaters in accordance with the procedures outlined under 40 CFR, Part 136 and as amended. If a required procedure is not outlined in 40 CFR, Part 136, then the measurement, test or analysis shall be done in accordance with "Methods of Chemical Analysis of Water and Waste" as published by the USEPA and/or "Standard Methods for the Examination of Water and Wastewater," latest approved edition.

All compliance test analyses shall be performed by a laboratory certified for such analytical procedures by the New York State Department of Health. Chain of Custody reports shall be submitted for all such samples.

8. Not increase the use of potable or process water or in any way attempt to dilute a discharge as a partial or complete substitute for adequate treatment in order to achieve compliance with the limits contained in the local limits in the Sewer Use Law.

9. Retain and preserve for a period of no less than five (5) years, all documents, records, books, memoranda, reports, correspondence and summaries thereof, which relate to monitoring of sampling and chemical analyses made by or on behalf of the User in connection with its discharge.

10. Record the following information for each measurement or sample taken pursuant to the requirements of this permit. The laboratory chain of custody sheets should contain the following information:

    a. The exact place, date, and time of sampling;
    b. The dates the analyses were performed;
    c. The name of the person(s) or laboratory who performed the analyses;
    d. The analytical techniques or methods used; and
    e. The results of all required analyses.

11. The City making available for public inspection at the City Offices, all reports required by this permit, except for information determined to be confidential under Section 1014 of the Sewer Use Law.

12. Properly dispose of sludges and spent chemicals generated as part of their pretreatment processes, in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

13. The following conditions for modification or revision of this Permit, in accordance with Section 1004B of the Sewer Use Law:

    a. Promulgation of an applicable National Categorical Pretreatment Standard,
    b. Revision of or a grant of a variance from such categorical standards pursuant to 40 CFR 403.13,
    c. Changes in general discharge prohibitions and local limits as per Section 903 of this law,
    d. Changes in processes used by the permittee, or changes in discharge volume or character,
    e. Changes in design or capability of any part of the POTW,

f. Discovery that the permitted discharge causes or contributes to pass through or interference, and
g. Changes in the nature and character of the sewage in the POTW as a result of other permitted discharges.

14. Reapply for reissuance of this Permit, within ninety (90) days of notification by the City. The City shall notify the User of the need to reapply for the permit one hundred and eighty (180) days prior to the expiration of the User's permit. If the User is not notified by the City and the City's authorized representative Engineer thirty (30) days prior to the expiration of the Permit, the Permit shall automatically be extended for six (6) months.

15. This Permit shall not be transferable.

16. Civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule, are applicable as set forth in Article 11 of the City SUL and may be set forth by applicable State and Federal laws and regulations. Such laws and regulations shall include the provisions of 18 U.S.C. section 1001 relating to fraud and false statements; the provisions of sections 309(c)(4) of the Act, as amended governing false statements, representation, or certification; and the provisions of Section 309(c)(6) regarding responsible corporate officers. Any person violating any of the provisions of the above laws shall become liable to the City for any expense, loss, or damage occasioned by the City by reason of such violation and maybe, upon conviction, subject to fines of not less than $1,000.00/per day/per violation or imprisonment up to six (6) months or both.

17. The permittee may petition the terms of this permit within thirty (30) days of the notice. This petition shall be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provision objected to, the reason for the objection and the alternative condition, if any, it seeks to be placed in the permit.

18. If the permittee chooses or is to mandated to alter pretreatment procedures and/or infrastructure used to provide pretreatment of wastewater entering the City of Hornell Sewer System, permittee shall provide plans for in the form of construction documents to the City and the City's authorized representative Engineer.

19. All construction documents and other information shall be submitted to the City's authorized representative Engineer:

LaBella Associates D.P.C
300 State St, Suite 201

Rochester, NY 14614
Attn: Civil Engineering, Municipal Team

A copy of each shall also be submitted to:

City of Hornell City Hall
82 Main St.
Hornell, NY 14843
Attn: Superintendent of Public Works

PART II – REPORTING REQUIREMENTS

The Industrial User shall:

1. Notify the City of Hornell POTW, immediately, of any accidental or slug discharge to the public sewers. The concentration that constitutes a slug discharge is based on Part III of this agreement. Formal, written notification that discusses the circumstances and remedies shall be submitted to the City of Hornell, within five (5) working days of the occurrence.

2. Have all reports required by this permit signed by a principal executive officer of the User, or other duly authorized employee and the City's authorized representative Engineer.

3. Notify the City at least thirty (30) days prior to the introduction of any new wastewater or pollutants or any substantial change in volume or characteristics of the wastewater being discharged to the public sewers from the User's industrial processes.

4. Notify the City of Hornell of any upset or breakdown of its pretreatment process or equipment that places the User in a temporary state of non-compliance with the wastewater discharge limitations. Such notification shall take place within twenty-four (24) hours of first awareness of the commencement of such an occurrence. A detailed report shall be submitted to the City and the City's authorized representative Engineer within five (5) working days of the occurrence.

5. If the results of the permittee's wastewater analysis indicates that a violation of this permit has occurred, the permittee must:
    a. Inform the City of Hornell of the violation within 24 hours; and
    Repeat the sampling and pollutant analysis and submit, in writing, the results of this second analysis within 30 days of the first violation.

6. A report shall be submitted providing the results of wastewater sampling and analysis for the pollutants specified in Part III of the Permit monthly and according to the Attachment 4 template. The report shall be submitted no later than the 28th day of the month following the end of each reporting period. Included with the report shall be a Monthly Average and Maximum Daily flow from the facility. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

7. Report on conditions of its sampling/monitoring manhole which adversely affect representative sampling results to the City and the City's authorized representative Engineer.

8. Submit to the City and its authorized representative Engineer periodic reports of continued compliance. The report is due October 1 each year and summarizes the previous years testing results. If the User is unable to comply with these dates, then the User must submit a written request for a time extension to the City of Hornell no later than seven (7) days prior to the above dates. The request shall include the reasons for the delay and give an estimated date of submission.

9. All reports and other information shall be submitted to the City's authorized representative Engineer:

LaBella Associates D.P.C
300 State St, Suite 201
Rochester, NY 14614
Attn: Civil Engineering, Municipal Team

A copy of each shall also be submitted to:

City of Hornell City Hall
82 Main St.
Hornell, NY 14843
Attn: Superintendent of Public Works

PART III – WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the effective period of this permit, the permittee is authorized to discharge process wastewater to the City of Hornell sewer system. During the duration of this permit, the discharge shall not exceed the effluent limitations outlined below.

A. Local Limits

The Industrial User shall comply with the effluent limitations and monitoring requirements as specified in this permit, at the point of discharge to the publicly owned sewer system.

EFFLUENT LIMITATIONS

Parameter	Maximum Daily	Maximum Monthly Average
Flow	20,000 Gallons	15,000 GPD
pH	6 – 9.0 Standard Units	NA

The concentration in sewage of any of the following toxic substances shall not exceed the 24-hour average concentration limits specified below when discharged into the public sewer.

Sewer Users covered by Federal Categorical Pretreatment Standards shall comply with applicable Federal Standards. Substances not regulated by the Categorical Pretreatment Standard shall not exceed the concentration limits specified below. For substances regulated by Categorical Pretreatment Standards determination of concentration shall be at the discharge into the sewer with the dilution attributed to non-process flow excluded as determined by the Combined Waste Stream Formula (40 CFR 403.6 of the "Act").

City of Hornell may revise the following limits or insert additional items after a hearing when in the opinion of the Mayor, the Department of Health, or the Department of Environmental Conservation, the need for a rule change is indicated or as provided for in Section 1004B.

The Pollutant loadings (based on uniform concentration limits for all significant industrial users) and the required sampling frequency and type are as follows:

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
Aluminum	0.88	Monthly	24-Hr. Composite
Ammonia	1.63	Monthly	24-Hr. Composite
Arsenic	0.03	Monthly	24-Hr. Composite
Beryllium	0.13	Monthly	24-Hr. Composite

POLLUTANT LOADINGS**

Pollutant	*Maximum Daily Loading (lb/day)*	*Sampling Frequency*	*Sample Type**
BOD5	15.01	Monthly	24-Hr. Composite
Cadmium	0.01	Monthly	24-Hr. Composite
Chromium	0.06	Monthly	24-Hr. Composite
Hexavalent Chromium	0.06	Monthly	24-Hr. Composite
Cobalt	0.03	Monthly	24-Hr. Composite
Copper	0.43	Monthly	24-Hr. Composite
Fluorides	0.50	Monthly	24-Hr. Composite
Iron	1.25	Monthly	24-Hr. Composite
Lead	0.09	Monthly	24-Hr. Composite
Mercury	0.03	Monthly	24-Hr. Composite
Molybdenum	0.03	Monthly	24-Hr. Composite
Nickel	0.05	Monthly	24-Hr. Composite
Total Kjeldahl Nitrogen (TKN)	1.88	Monthly	24-Hr. Composite
Oil & Grease	6.26	Monthly	Grab
Phenols	0.06	Monthly	Grab
Phosphorous	0.70	Monthly	24-Hr. Composite
Selenium	0.03	Monthly	24-Hr. Composite
Silver	0.06	Monthly	24-Hr. Composite
Sulfide	0.75	Monthly	24-Hr. Composite
Total Dissolved Solids	625.50	Monthly	24-Hr. Composite
Thallium	0.06	Monthly	24-Hr. Composite
Total Cyanide	0.15	Monthly	Grab
Total Suspended Solids	37.53	Monthly	24-Hr. Composite
Vanadium	0.13	Monthly	24-Hr. Composite
Zinc	0.06	Monthly	24-Hr. Composite

All discharges shall comply with all other applicable laws, regulations, standards, and requirements contained in the City of Hornell Sewer Use Law and any applicable State and Federal pretreatment laws, regulations, standards, and requirements including any such laws, regulations, standards, or requirements that may become effective during the term of this permit.

* Composite samples shall be collected and representative of a typical workday.

** These are final effluent limitations. See schedule of compliance for any applicable interim effluent limitations.

B. Sample Location and Methodology

All handling and preservation of collected samples and laboratory analyses of samples shall be performed in accordance with 40 CFR Part 136 and amendments thereto unless

specified otherwise in the monitoring conditions of this permit. The analysis shall be conducted by a certified laboratory at the cost of the permittee. Furthermore, the City SUL Article 10 Section 1007 provides additional information.

The permittee shall sample from the sampling location specified within Attachment 3 of this permit.

PART IV – SPECIAL CONDITIONS

A. The following processes and activity discharges, and conditional items are hereby incorporated into this permit:

- The City shall utilize billing as included within Attachment 1, of this permit.
- The User shall adhere to its compliance schedule as included within Attachment 2, of this permit.
- The User shall adhere to its sampling location specified within Attachment 3 of this permit.
- The User shall utilize to the Self-Monitoring Report template as included within Attachment 4 of this permit.

The City of Hornell reserves the right to revoke any of the above permitted processes and/or activities within the Special Conditions section if the process or activity is found to cause upset/passthrough at the plant, conditional items are not met, or if the original chemistry formulation or concentration, industrial process, or activity has been altered since the original amendment application and incorporation into the permit.

PART V – DEFINITIONS

A. The following definitions apply:

a. Maximum Daily — The maximum allowable discharge during a calendar day. Where daily maximum limitations are expressed in units of mass, the total mass discharged over the course of the day shall be used to determine compliance.

b. Maximum Monthly Average – The maximum allowable monthly average discharge shall be the total discharge flow during a given calendar month divided by the number of days within that calendar month.

c. Grab Sample — An individual sample collected in less than 15 minutes, without regard for flow or time.

d. Composite Sample — A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may

be composited either as a time composite sample composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or has a flow proportional composite sample collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots.

e. Slug — A substantial deviation from normal rates of discharge or constituent concentration (see normal sewage) sufficient to cause interference. In any event, a discharge which, in concentration of any constituent or in quantity of flow, that exceeds, for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flow during normal user operations, shall constitute a slug.

PART V – ATTACHMENTS

Attachment 1 – How to Estimate Your Monthly Industrial User Charge
Attachment 2 – Sampling Location
Attachment 3 – Self-Monitoring Report
Attachment 4 – Compliance Report

How to Estimate Your Monthly Industrial User Charge

To estimate your monthly industrial waste user charges, you will need the following items:

- City Debt Service Costs = D = *Use $675,000 for estimates (varies annually),*
- Operation and Maintenance Costs, O = O1 + O2 +O3 +O4
    - WPCP O&M Budget, O1 = *Use $765,000 for estimates (varies annually),*
    - Other Misc Costs
- Monthly Average Influent WPCP Flow, WPCP Flow = *Use 2,300,000 GPD for estimates (varies monthly)*
- Maximum Daily Flow from SIU *(if estimated, use maximum daily flow limit from permit)*, SIU Flow
- Monthly Average Flow from SIU *(if estimated, use most recent water bill reading)*

Line 1:	Total the amount of City Debt Service, D	$ _____
Line 2:	Total the amount of O&M, O	$ _____
Line 3:	Add line 1 and line 2	$ _____
Line 4:	Total the monthly flow from the SIU	_____ gallons
Line 5:	Total the monthly flow into the WPCP	_____ gallons
Line 6:	Divide line 5 by line 4 to determine the SIU percentage of flow contribution into the WPCP, %F	_____ %
Line 7:	Multiply line 3 by line 6 and divide by 12 to determine the total monthly base rate for the SIU, BR	$ _____
Line 8:	Determine the SIU surcharge factor on the next page and enter its amount	_____
Line 9:	Determine the Surcharge Fee for the SIU by multiplying line 7 by line 8, SF	$ _____
Line 10:	Determine the cost for flow over the Daily Maximum by subtracting the Daily Maximum from the Maximum Daily Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 11:	Determine the cost for flow over the Maximum Monthly Average by subtracting the Maximum Monthly Average from the Monthly Average Flow from the SIU, dividing by 1000 and multiplying by $2.50	$ _____
Line 12:	Determine the Flow Exceedance Fee by adding line 10 and line 11, FEF	$ _____
Line 13:	Determine the total monthly service charge by adding line 7, line 9, and line 12,	$ _____

Please note that the formulation above is an estimation of the User's monthly user charge. The City will issue billing on a quarterly basis.

	Ammonia Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	13	mg/L	x	8.34	x		MGD	)	/	(	13	mg/L	x	8.34	x		MGD	)	=		x	0.2008	=	
	BOD5 Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	120	mg/L	x	8.34	x		MGD	)	/	(	120	mg/L	x	8.34	x		MGD	)	=		x	0.2098	=	
	TKN Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	15	mg/L	x	8.34	x		MGD	)	/	(	15	mg/L	x	8.34	x		MGD	)	=		x	0.1870	=	
	TP Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	4	mg/L	x	8.34	x		MGD	)	/	(	4	mg/L	x	8.34	x		MGD	)	=		x	0.1885	=	
	TSS Sample					Maximum Daily Flow Reading						Maximum Daily Flow Limit						Maximum Daily Flow Limit													
(		mg/L	x	8.34	x		MGD	-	300	mg/L	x	8.34	x		MGD	)	/	(	300	mg/L	x	8.34	x		MGD	)	=		x	0.2139	=	

Total Surcharge Factor =

Attachment 2 – Sampling Location

To be added after submission by the User

SELF MONITORING REPORT

(1) IDENTIFICATION

Company Name: _____

Mailing Address: _____
(street name & number) (city) (state) (zip code)

(2) FLOW DATA – GALLONS PER DAY (gpd)

The following flows are:		Estimated Water	Measured Water	Measured Sewage
Monthly Average				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____
Maximum Daily				
*Total Plant Flow:	_____ GPD	____	____	____
**Regulated (Process Flow):	_____ GPD	____	____	____

* Total Plant Flow = Overall facility water usage or sewage discharge

** For non-categorized Significant Industrial Users (SIU's) regulated flow = total process flow
Multiple sample points should be reported separately.

(3) CONCENTRATIONS OF REGULATED POLLUTANTS

The laboratory analytical reports for all sampling conducted between the period of _____ and _____ are attached to this report including the chain of custody forms.

This information has been reviewed and we have determined that we are in / not in compliance with permitted discharge limits.

(4) CERTIFICATION

The preceding sampling and analyses are representative of normal cycles and expected pollutant discharges to the POTW. All sampling, measurements and analyses were conducted in accordance with guidelines set forth by the Environmental Protection Agency 40 CFR Part 136 and/or approved substitute.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

In addition, based on my inquiry of the persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the sewer system has occurred since filing of the last periodic report on continued compliance. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting authority.

SELF MONITORING REPORT

Your Report must be signed as follows:

1. For a corporation: By a responsible Corporate Officer. A Corporate Officer means:

   (a) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy – or decision – making functions for the corporation; or
   (b) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second – quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

3. By a duly authorized representative of the individual designated in items (1) or (2) above if:

   (a) The authorization is made in writing by the individual described in items (1) or (2);
   (b) The authorization specified either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originated such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   (c) The written authorization is submitted to this Department.

Authorized Representative's Signature: _____ Date: _____

Print Name: _____

Title: _____

Schedule of Compliance

Interim Effluent Limitations

The permittee shall comply with the following interim limits.

Interim Limit Effective Date	Interim Limit Expiration Date	Parameter(s) Affected	Interim Local Limit			Note
			Type	Limit	Units	
January 1, 2025	*December 31, 2026*	*Total Phosphorous*	*Maximum Daily Loading*	*1.3*	*lb/day*	*See Local Limits section of Permit for sample frequency and type.*

Compliance Actions

The permittee shall comply with the following schedule and submit documentation to the City to demonstrate compliance.

Description	Deadline	Note
Submit description and drawing of proposed sampling point	*January 1, 2025*	

Figure C-8

City of Hornell Chapter 252 Sewer Use Law

Proposed City of Hornell Sewer Use Law
Chapter 252

Based on NYSDEC Model Sewer Use Law
(Incorporating Federal Pretreatment Language)
1994 Revision, Adapted April 2023 for the City of Hornell

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Article 1

Short Title and Purpose

Section 101 - Short Title
Section 102 - General Purpose
Section 103 - Specific Purposes
Section 104 - Replacement of Previous Sewer Use Law

Section 101 - Short Title For brevity and ease of communication, this Law may be cited as the City of Hornell Sewer Use Law.

Section 102 - General Purpose The general purpose of this Law is the following:
To provide for efficient, economic, environmentally safe, and legal operation of the City of Hornell POTW.

Section 103 - Specific Purposes The specific purposes of this Law are the following:

(1) To prevent the introduction of substances into the POTW that will:

1. interfere with the POTW in any way,
2. pass through the POTW to the state's waters and cause contravention of standards for those waters or cause violation of the POTW's SPDES permit,
3. increase the cost or otherwise hamper the disposal of POTW sludge and/or residuals,
4. endanger municipal employees,
5. cause air pollution, or groundwater pollution, directly or indirectly,
6. cause, directly or indirectly, any public nuisance condition.

(2) To prevent new sources of infiltration and inflow and, as much as possible, eliminate existing sources of infiltration and inflow.
(3) To assure that new sewers and connections are properly constructed.
(4) To provide for equitable distribution to all users of the POTW of all costs, associated with sewage transmission, treatment, and residuals disposal, and to provide for the collection of such costs.

Section 104 - Replacement of Previous Sewer Use Law The provisions in the existing City of Hornell Code entitled "Chapter 252 Sewers and Sewage Disposal" are hereby repealed and said provisions are replaced by the herein set forth Articles 1 through 14 inclusive.

Article 2

Definitions

Section 201 - Defined Terms
Section 202 - Abbreviations
Section 203 - Undefined Terms

Section 201 - Defined Terms Unless otherwise stated in the section where the term is used in this Law, the meaning of terms used in this Law shall be as stated below. When not inconsistent with the context, the present tense shall include the future, and words used in the plural shall include the singular and vice versa. Furthermore, a masculine pronoun shall include the

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feminine. Shall is mandatory; may is permissive.

Abnormal Sewage - Sewage whose concentration of one or more characteristics of normal sewage exceeds the maximum concentrations of the characteristics of normal sewage. See normal sewage.

Act or "THE ACT" - The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq., as may be amended.

Administrator - The Regional Administrator of the U. S. Environmental Protection Agency (USEPA), Region 2.

Ammonia - The result obtained, using an approved laboratory procedure, to determine the quantity of ammonia in a sample, expressed as milligrams of nitrogen per liter.

Applicant - That person who makes application for any permit. The applicant may be an owner, new or old, or their agent.

Approval Authority - The USEPA, or the New York State Department of Environmental Conservation (NYSDEC), in the event the NYSDEC is delegated approval authority responsibility by the USEPA.

Approved Laboratory Procedure - The procedures defined as 'Standard Methods' in this article, or other procedures approved by the Superintendent, for flow measurement or determination of the concentration of pollutants or their surrogates in waters, wastewaters, and/or sludges.

ASTM, denoting American Society for Testing and Materials - The latest edition of any ASTM specification, when stipulated in this Law.

Authorized Representative of the Industrial User
An authorized representative of the industrial user may be:

(a) A principal executive officer of at least the level of vice-president, if the industrial user is a corporation;
(b) A general partner or proprietor, if the industrial user is a partnership or proprietorship, respectively;
(c) A duly authorized representative of the individual designated above, if such representative is responsible for the overall operation of the facilities from which the indirect discharge originates.

Board of Public Works — A duly appointed body of officials as defined in the City Charter.

BOD, denoting Biochemical Oxygen Demand - The result obtained when using an approved laboratory procedure to determine the quantity of oxygen utilized in the aerobic biochemical oxidation of organic matter or in a sample, expressed in milligrams per liter.

Builder - Any person who undertakes to construct a building or any part of a building, either under contract or for resale.

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Building Drain - That part of the lowest horizontal piping of a building drainage system which receives the discharge from soil, waste, and other drainage pipes inside the building walls, and conveys it to the building lateral, which begins five (5) feet outside the inner face of the building wall.

Building Sewer — The extension from the building drain to the public or other place of disposal.

Categorical Standards — National Categorical Pretreatment Standards or pretreatment standards.

Chlorine Demand - The result obtained when using an approved laboratory procedure to determine the difference between the amount of chlorine added to a sample and the amount of chlorine remaining in the sample at the end of a specified contact time at room temperature, expressed in milligrams per liter.

City - The City of Hornell incorporated on March 2nd, 1888.

City Chamberlain — The duly elected fiscal officer of the City.

City Council — The duly elected legislative body of the City.

Combined Sewer — A sewer receiving both surface runoff and sewage.

COD, denoting Chemical Oxygen Demand - The result obtained when using an approved laboratory procedure to measure the oxygen requirement of that portion of matter, in a sample, that is susceptible to oxidation, by a specific chemical oxidant, expressed in milligrams per liter.

Color - The optical density at the visual wave length of maximum absorption, relative to distilled water. One hundred percent (100%) transmittance is equivalent to zero (0.0) optical density.

Composite Sample - The sample resulting from the combination of individual samples of wastewater taken at selected intervals, for a specified time period. The individual samples may have equal volumes or the individual volumes may be proportioned to the flow at the time of sampling.

Connection - Attachment of one user to a sewer. (See Extension)

Connection Charge (Tap Fee) - The one time application fee to offset City of Hornell expenses to process an application for a connection of a building/street lateral to the public sewer. The fee also covers plan review, permit issuance, street repair cost, and inspection costs. The fee may be scaled to the amount of work involved, or to the size of the public sewer involved.

Control Authority - The term shall refer to "Approval Authority", or to the superintendent when the City has an approved pretreatment program under the provisions of 40 CFR 403.11.

Control Manhole - A manhole accessible to the Control Authority in or upstream of the street lateral, such that samples collected from t he manhole represent the discharge to the POTW.

Conventional Pollutant - A pollutant that the POTW treatment plant was designed to treat,

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defined in accordance with the Act.

Cooling Water - The water discharged from any system of condensation, air conditioning, refrigeration, or other sources. It shall contain no polluting substances which would produce COD or suspended solids in excess of five (5) milligrams per liter, or toxic substances, as limited elsewhere in this Law.

County - The county in which the City of Hornell is located, Steuben County.

Developer - Any person who subdivides land for the purpose of constructing, or causing to be constructed, buildings for which wastewater disposal facilities are required.

Direct Discharge - The discharge of treated or untreated wastewater directly to the Waters of the State of New York. (For reference, see Indirect Discharge.)

Domestic Wastes - see Sewage, Domestic.

Dry Sewers - The sanitary sewer installed in anticipation of future connection to a POTW but which is not used, in the meantime, for transport of storm or sanitary sewage.

End of Pipe - For the purpose of determining compliance with limitations prescribed by Article 9, end of pipe shall mean the control manhole, provided the samples collected from the control manhole are representative of the discharge to the POTW.

End of Pipe Concentration - The concentration of a substance in a sample of wastewater at end of pipe.

End of Process Concentration - see National Categorical Pretreatment Standard.

Easement - An acquired legal right for the specific use of land owned by others.

EPA, USEPA, or U.S. Environmental Protection Agency - The agency of the federal government charged with the administration and enforcement of federal environmental laws, rules, and regulations. Also may be used as a designation for the Administrator or other duly authorized official of this Agency.

Extension - Attachment of a sewer line, with more than one user, to an existing sewer line.

Facility - All buildings, other structures, grounds and contiguous property at any locations related to or connected with a user at the user's location.

Floatable Oil - Oil, grease, or fat in a physical state such that it will separate by gravity from wastewater by treatment in a wastewater treatment facility.

Flow Rate - The quantity of liquid or waste that flows in a certain period of time.

Garbage — Solid wastes from the domestic and commercial preparation, cooking and dispensing of food and from the handling, storage and sale of produce.

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Grab Sample - A single sample of wastewater representing the physical, chemical, and biological characteristics of the wastewater at one point and time.

Health Officer — The Health Officer or their duly authorized representative as determined by the City of Hornell.

ICS Form - The form used by the NYSDEC to survey industries to perform and update the Industrial Chemical Survey.

Indirect Discharge - The introduction of wastewater into a POTW for treatment and ultimate discharge of the treated effluent to the State's Waters. (For reference, see Direct Discharge).

Industrial - Meaning or pertaining to industry, manufacturing, commerce, trade, business, or institution, and is distinguished from domestic or residential.

Industrial Chemical Survey (ICS) - The survey of industries in New York State, initiated by the NYSDEC, to determine chemical usage and storage by those industries.

Industrial User - See User, Industrial.

Industrial Wastes - The liquid or liquid-carried solid, liquid and/or gaseous wastes from industrial manufacturing processes, trade, service, utility, or business, as distinct from sanitary sewage.

Infiltration - Water, other than wastewater, that enters a sewer system (excluding building drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow. Infiltration is inadvertent, that is, not purposely designed or built into the sewer or drain.

Inflow - Water, other than wastewater, that enters a sewer system (including building drains) from sources such as, but not limited to, roof leaders, cellar drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, foundation drains, swimming pools, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration. Inflow is purposely designed and/or built into the sewer or drain.

Interference - A discharge which, alone or in conjunction with discharges by other sources,

(a) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) therefore is a cause of a violation of any requirement of the (C,V,T) POTW's SPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal by the POTW in accordance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations):

- Section 405 of the Clean Water Act,
- the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the

Resource Conservation and Recovery Act - RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D or the SWDA),

- Clean Air Act,
- Toxic Substance Control Act, and
- Marine Protection Research and Sanctuaries Act.

Lateral, Building - The sewer extension from the building drain to the Street Lateral or other place of wastewater disposal.

Lateral, Street - The sewer extension from the public sewer to the property line.

Mayor — The duly elected official of the City.

National Categorical Pretreatment Standard, or Categorical Standard - Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with Section 307 (B) and (C) of the Act (22 U.S.C. 1347), which applies to a specific category of industrial users. These standards apply at the end of the categorical process ("end of process").

National Pollutant Discharge Elimination System (NPDES) Permit - A permit issued pursuant to Section 402 of the Act (33 U.S.C. 1342).

National Prohibitive Discharge Standard, or Prohibitive Discharge Standard - Any regulation developed under the authority of Section 307 (B) of the Act, and 40 CFR, Section 403.5.

Natural Outlet — Any outlet into a watercourse, pond, ditch, lake or other body of surface or ground water.

New Owner - That individual or entity who purchased property within the Service Area of the City of Hornell after the effective date of this law.

New Source - Any source, the construction of which is commenced after the publication of the proposed regulation prescribing a Section 307 (C) (33 U.S.C 1317) Categorical Pretreatment Standard which will be applicable to such source, if such standard is thereafter promulgated.

New User - A discharger to the POTW who commences discharge after the effective date of this Law.

Normal Sewage - see Sewage, Normal.

Nuisance - The use or lack of use of the POTW in such a manner so as to endanger life or health, give offense to the senses, or obstruct or otherwise interfere with the reasonable use or maintenance of the POTW.

NYSDEC — The New York State Department of Environmental Conservation or duly authorized

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representatives of said Department.

Oil and Grease - The result obtained when using an approved laboratory procedure to determine the quantity of fats, wax, grease, and oil, in a sample, expressed in milligrams per liter.

Old Owner - That individual or entity who owned a property, within the Service Area of the POTW, purchased prior to the effective date of this Law, who or inherited the property at any time and intends to sell the property, or has sold the property to a new owner, also the agent of the old owner.

Other Wastes - Garbage (shredded or unshredded), refuse, wood, egg shells, coffee grounds, sawdust, shavings, bark, sand, lime, ashes, and all other discarded matter not normally present in sewage or industrial wastes. Also, the discarded matter not normally present in sewage or industrial waste.

Owner — The titleholder of real property.

Pass Through - The discharge which exits the City POTW into waters of the State in quantities, which, alone or in conjunction with Discharges from other sources, is a cause of a violation of any requirement of the POTW's SPDES permit (including an increase in the magnitude or duration of a violation).

Permit - A temporary revocable written document allowing use of the POTW for specified wastes over a limited period of time, containing sampling locations and reporting frequencies, and requiring other actions as authorized by this Law.

Person - Any individual, public or private corporation, political subdivision, Federal, State, or local agency or entity, association, trust, estate or any other legal entity whatsoever.

pH - The logarithm (base 10) of the reciprocal of the weight of hydrogenions, in gram moles per liter of solution. A pH value of 7.0, the pH scale midpoint, represents neutrality. Values above 7.0 represent alkaline conditions. Values below 7.0 represent acid conditions.

Phosphorus, total - See total phosphorus.

Plumbing Inspector — The duly appointed official of the City.

Pollutant - Any material placed into or onto the State's waters, lands and/or airs, which interferes with the beneficial use of that water, land and/or air by any living thing at any time.

Pollution - The man-made or man-induced alteration of the chemical, physical, biological, and/or radiological integrity of the State's waters, lands and/or airs resulting from the introduction of a pollutant into these media.

Pretreatment (Treatment) - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration can be achieved by physical, chemical, or biological process, process

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changes, or by other means, except as prohibited by 40 CFR, Section 403.6 (D).

Pretreatment Requirements - Any substantive or procedural requirement related to pretreatment, other than a National Pretreatment Standard imposed on an industrial user.

Pretreatment Standard or National Pretreatment Standard -Any Categorical Standard or Prohibitive Discharge Standard.

Priority Pollutants - The most recently revised or updated list, developed by the EPA, in accordance with the Act.

Prohibitive Discharge Standard - see National Prohibitive Discharge Standard.

Properly Shredded Garbage - The wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, and with no particle having a dimension greater than one-half (1/2) inch in any dimension.

POTW Treatment Plant - That portion of the POTW designed to provide treatment to wastewater, and to treat sludge and residuals derived from such treatment.

Publicly Owned Treatment Works (POTW) - A treatment works, as defined by Section 212 of the Act, (33 U.S.C 1292), which is owned, in this instance, by the City of Hornell. This definition includes any sewers and appurtenances that transport wastewater to the POTW treatment plant, but does not include pipes, sewers, or other conveyances not connected directly or indirectly to a facility providing treatment.

Public Sewer — A sewer in which all owners of abutting properties have equal rights and which is controlled by public authority.

Receiving Waters - A natural water course or body of water (usually Waters of the State) into which treated or untreated sewage is discharged.

Records - Shall include, but not be limited to, any printed, typewritten, handwritten or otherwise recorded matter of whatever character (including paper or electronic media), including but not limited to, letters, files, memoranda, directives, notes and notebooks, correspondence, descriptions, telephone call slips, photographs, permits, applications, reports, compilations, films, graphs and inspection reports. For the purposes of this law, records shall mean records of and relating to waste generation, reuse and disposal, and shall include records of usage of raw materials.

Roof Drain - A drain installed to receive water collecting on the surface of a roof for disposal.

Sanitary Sewer — A sewer which carries sewage and to which storm-, surface and ground waters are not intentionally admitted.

Septage - All liquids and solids in and removed from septic tanks, holding tanks, cesspools, or approved type of chemical toilets, including but not limited to those serving private residences, commercial establishments, institutions, and industries. Also sludge from small sewage

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treatment plants. Septage shall not have been contaminated with substances of concern or priority pollutants.

Septic Tank - A private domestic sewage treatment system consisting of an underground tank (with suitable baffling), constructed in accordance with any and/or all local and State requirements.

Service Area of the POTW - The legally defined bounds of real property from which wastewater may be discharged into the POTW. The bounds shall be established, altered, changed, modified, reduced, enlarged, combined, or consolidated by action of the City of Hornell (Council).

Sewage - A combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, and such ground, surface, and storm water as may be inadvertently present. The admixture of sewage, as defined above, with industrial wastes and other wastes shall also be considered "sewage", within the meaning of this definition.

Sewage, Domestic (Domestic Wastes) - Liquid wastes from the non-commercial preparation, cooking, and handling of food, liquid wastes containing human excrement and similar matter from the sanitary conveniences in dwellings, commercial buildings, industrial buildings, and institutions, or liquid wastes from clothes washing and/or floor/wall washing. Therefore, domestic sewage includes both black water and grey water. (See Sewage, Sanitary.)

Sewage, Normal - Sewage, industrial wastes, or other wastes, which show, by analysis, the following characteristics:

- B.O.D. (Five Day) - 2090 lbs. per million gallons (250 milligrams per liter), or less.
- Suspended Solids - 2500 lbs. per million gallons (300 milligrams per liter), or less.
- Phosphorus - 125 lbs. per million gallons (15 milligrams per liter), or less
- Ammonia - 250 lbs. per million gallons (30 milligrams per liter), or less.
- Total Kjeldahl Nitrogen - 417 lbs. per million (50 milligrams per liter), or less.
- Chlorine Demand - 209 lbs. per million gallons (25 milligrams per liter), or less.
- Chemical Oxygen Demand - 2920 lbs. per million gallons (350 milligrams per liter), or less.
- Oil and Grease - 830 lbs. per million gallons (100 milligrams per liter), or less

In spite of satisfying one or more of these characteristics, if the sewage also contains substances of concern, it may not be considered normal sewage.

Sewage, Sanitary - Liquid wastes from the sanitary conveniences of dwellings (including apartment houses and hotels), office buildings, factories, or institutions, and free from storm water, surface water, industrial, and other wastes. (See Domestic Wastes.)

Sewage Treatment Plant (Water Pollution Control Plant) - see POTW Treatment Plant.

Sewage, Unusual Strength or Character - Sewage which has characteristics greater than those of Normal Sewage and /or which contains Substances of Concern.

Sewer - A pipe or conduit for carrying or transporting sewage.

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Sewer, Combined - A sewer designed to receive and transport both surface runoff and sewage.

Sewer, Public - A sewer in which all abutting property owners have equal rights, and the use of which is controlled by the City of Hornell.

Sewer, Sanitary - A sewer which carries sewage, and to which storm, surface, and groundwaters are not intentionally admitted.

Sewer, Storm (Storm Drain) - A sewer which carries storm and surface waters and drainage, but excludes sewage and industrial wastewaters, other than cooling waters and other unpolluted waters.

Sewerage System (also POTW) - All facilities for collecting, regulating, pumping, and transporting wastewater to and away from the POTW treatment plant.

Sewerage Surcharge - The demand payment for the use of a public sewer and/or sewage treatment plant for the handling of any sewage, industrial wastes, or other wastes accepted for admission thereto in which the characteristics thereof exceed the maximum values of such characteristics in normal sewage. (See Volume Charge.)

Significant Industrial User - see User, Significant Industrial.

Significant Non-Compliance (SNC) - A User is in significant non-compliance if its violation(s) meet(s) one or more of the following criteria:

- Chronic violations of wastewater discharge limits, defined here as those, in sixty-six (66) percent or more of all of the measurements taken during a six-month period, which exceed (by any magnitude) the daily maximum limit or average limit for the same pollutant parameter;

- Technical Review Criteria (TRC) violations, defined here as those, in which thirty-three (33) percent or more of all of the measurements for each pollutant parameter taken during a six- month period, which equal or exceed the product of the daily maximum limits multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil and grease; TRC = 1.2 for all other pollutants);

- Any other violation of a pretreatment effluent limit (daily maximum or long-term average) that the Superintendent determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public);

- Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the Superintendent's exercise of its emergency authority under Article 11 of this Law;

- Failure to meet, within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance;

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- Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;

- Failure to report accurately any non-compliance;

- Any other violation which the Superintendent determines will adversely affect the implementation or operation of the local pretreatment program.

Sludge — Heavy, slimy deposit or sediment, as the waste, resulting from a wastewater treatment process.

Slug - A substantial deviation from normal rates of discharge or constituent concentration (see normal sewage) sufficient to cause interference. In any event, a discharge which, in concentration of any constituent or in quantity of flow, that exceeds, for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flow during normal user operations, shall constitute a slug.

SPDES — The state pollutant discharge elimination system.

Standard Industrial Classification (SIC) - A classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972, and subsequent revisions.

Standard Methods - Procedures contained in the latest edition of "Standard Methods for the Examination of Water and Wastewater", published by the American Public Health Association, procedures established by the Administrator, pursuant to Section 304 (G) of the Act and contained in 40 CFR, Part 136, and amendments thereto. (If 40 CFR, Part 136 does not include a sampling or analytical technique for the pollutant in question, then procedures set forth in EPA publication, "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants", April 1977, and amendments thereto, shall be used.), any other procedure approved by the Administrator, or any other procedure approved by the Superintendent, whichever is the most conservative.

State - State of New York.

State's Waters - See Waters of the State.

Storm Drain (sometimes termed "storm sewer") — A sewer which carries storm- and surface waters and drainage but excludes sewage and industrial wastes, other than unpolluted cooling water.

Storm Water - Any flow occurring during or following any form of natural precipitation; also the flow resulting therefrom.

Substances of Concern - Those compounds which the New York State Department of Environmental Conservation has determined may be harmful to man or the environment.

Sump Pump - A mechanism used for removing water from a sump or wet well.

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Superintendent - That individual nominated by the City of Hornell (Mayor) and confirmed by the City of Hornell (Council) as the Superintendent of Water and Wastewater. Such an individual shall be qualified to oversee water treatment and distribution and POTW operations. This definition shall also include their authorized deputy, agent, or representative.

Suspended Solids - The result obtained, using an approved laboratory procedure, to determine the dry weight of solids, in a sample, that either float on the surface of, or are in suspension, or are settleable, and can be removed from the sample by filtration, expressed in milligrams per liter.

Total Kjeldahl Nitrogen (TKN) - The result obtained, using an approved laboratory procedure, to determine the quantity of ammonia in a sample and released during the acid digestion of organic nitrogen compounds, expressed as milligrams of nitrogen per liter.

Total Phosphorus - The result obtained, using an approved laboratory procedure, to determine the total quantity of orthophosphate, in a sample of wastewater, following the hydrolysis of phosphorus compounds, expressed as milligrams of phosphorus per liter of sample.

Toxic Substances - Any substance, whether gaseous, liquid, or solid, that when discharged to a public sewer in sufficient quantities may be hazardous to POTW operation and maintenance personnel, tend to interfere with any biological sewage treatment process, or to constitute a hazard to recreation in the receiving waters, due to the effluent from a sewage treatment plant or overflow point. Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the EPA under provisions of CWA 307 (A), or other Acts.

USEPA — The United States Environmental Protection Agency or duly authorized representatives of said Agency

User - Any person who contributes, causes, or permits the contribution of wastewater into the POTW.

User, Existing - A discharger to the POTW who is discharging on or before the effective date of this Law.

User, Industrial - A discharger to the POTW who discharges non-domestic wastewaters.

User, New - A discharger to the POTW who initiates discharge after the effective date of this Law.

User, Significant Industrial (SIU) - An industrial user of the City of Hornell POTW who is:

- Subject to National Categorical Pretreatment Standards promulgated by the EPA,
- Having substantial impact, either singly or in combination with other industries, on the operation of the treatment works,
- Using, on an annual basis, more than 10,000 lbs or 1,000 gallons of raw material containing priority pollutants and/or substances of concern and discharging a measurable quantity of these pollutants to the sewer system,
- Discharging more than five percent (5%) of the flow or load of conventional pollutants

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received by the POTW treatment plant.

*Note: A user discharging a measurable quantity of a pollutant may be classified as non-significant if, at the influent to the POTW treatment plant, the pollutant is not detectable.

Volume Charge (User Charge) - The demand sewer use charge which is based, in part or wholly, on the volume of normal sewage discharged into the POTW (there may be surcharges, as provided for in Article 12). The volume charge shall be based on a specific cost per 100 cubic feet or per 1,000 gallons. The specific charge shall be subject to approval by the City of Hornell. The moneys so obtained shall be used for current operation and maintenance, for retirement of bonded indebtedness, and for funding of capital projects, of the POTW. The basis of volume charge calculations shall be made available to the public, on demand, as provided in Article 13. The volume charge shall be recalculated annually, as well as the surcharge rates.

Wastewater - The liquid and water-carried industrial or domestic wastewaters from dwellings, commercial establishments, industrial facilities, and institutions, together with any groundwater, surface water, and storm water that may be present, whether treated or untreated, which is contributed into or permitted to enter the POTW.

Wastewater Discharge Permit - A permit as set forth in Article 10 of this Law.

Wastewater, Unusual Strength or Character - see Sewage, Unusual Strength or Character.

Waters of the State (State's Waters) - All streams, lakes, ponds, marshes, water courses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the State or any portion thereof.

Wastewater Contribution Permit — An industrial wastewater contribution permit issued for industries' contribution to the City of Hornell's sewage collection system.

Watercourse — A channel in which a flow of water occurs, either continuously or intermittently.

Water Pollution Control Plant (WPCP) — Any arrangement of devices and structures used for treating sewage.

"Shall" is mandatory; "may" is permissive.

Section 202 – Abbreviations The following abbreviations shall have the designated meanings: ANSI - American National Standards Institute.

ASTM - American Society for Testing and Materials
AWWA - American Water Works Association
BOD - Biochemical Oxygen Demand
CFR - Code of Federal Regulations
CPLR - Code of Public Law and Rules
COD - Chemical Oxygen Demand
EPA - Environmental Protection Agency
L - Liter

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Mg - Milligram
Mg/l - Milligrams per liter
NCPI - National Clay Pipe Institute
NPDES - National Pollutant Discharge Elimination System
NYSDEC - New York State Department of Environmental Conservation
NYSDOH - New York State Department of Health
NYSDOT - New York State Department of Transportation
P - Total Phosphorus
PSI - Pounds per Square Inch
POTW - Publicly Owned Treatment Works
PPM - Parts per Million, weight basis
SIC - Standard Industrial Classification
SPDES - State Pollutant Discharge Elimination System
SWDA - Solid Waste Disposal Act, 42 U.S.C. 690 L, et seq.
U.S.C. - United State Code of Laws
USEPA - United State Environmental Protection Agency
TSS - Total Suspended Solids

Section 203 - Undefined Terms Terms not defined in this article, or terms found to be ambiguous or improperly defined in this article, shall be defined by the Act, or Regulations, pursuant thereto.

Article 3

Use of Public Sewers Required

Section 301 - Waste Disposal Unlawful
Section 302 - Connecting Private Sewage System to Storm Sewer Unlawful
Section 303 - Discharge of Sewage into Well Prohibited
Section 304 - Wastewater Discharge Unlawful
Section 305 - Building Permit Allowed Only When Approved Wastewater Disposal Available
Section 306 - Private Wastewater Disposal Unlawful
Section 307 - Connection to Public Sewer Required
Section 308 - Limitation on Use of Public Sewers
Section 309 - Wastewater from Outside the POTW Service Area - Inter-municipal Agreements
Section 310 - Moratorium
Section 311 - Basis of Sewer Use Requirement

Section 301 - Waste Disposal Unlawful It shall be unlawful for any person to place, deposit, or permit to be deposited, in any unsanitary manner, on public or private property, within the City of Hornell or in any area under the jurisdiction of the said municipality, any human or animal excrement, garbage, or objectionable waste. Also, no person shall discharge domestic sewage onto the surface of the ground or discharge it in a way that permits it to come to the surface of the ground.

Section 302 - Connecting Private Sewage system to Storm Sewer Unlawful
No person shall connect a private sewage system so that sewage flows into a storm sewer or into a drain intended exclusively for storm water.

Section 303 - Discharge of Sewage into Well Prohibited

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No person shall discharge sewage into a well.

Section 304 - Wastewater Discharge Unlawful It shall be unlawful to discharge to any natural outlet, within the City of Hornell, or in any area under the jurisdiction of the said municipality, any wastewater or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of this Law.

Section 305 - Building Permit Allowed Only When Approved Wastewater Disposal Available No property owner, builder, or developer shall be issued a building permit for a new dwelling or structure requiring sanitary facilities unless a suitable and approved method of wastewater disposal, conforming to this Law, is available. All housing construction or building development which takes place after this Law is enacted shall provide for an approved system of sanitary sewers.

Section 306 - Private Wastewater Disposal Unlawful Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, cesspool, septic tank, or other facility intended or used for disposal of wastewater.

Section 307 - Connection to Public Sewer Required The owner(s) of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City of Hornell, and abutting on any street, alley, or right-of-way in which there is now located or may, in the future, be located a public sewer, is hereby required, at the owner's expense to install suitable sanitary facilities therein, and to connect such facilities directly with the proper public sewer, in accordance with the provisions of this law, within ninety (90) days after official notice to do so, provided that said public sewer is within one hundred twenty five (125) feet (38.1 meters) of the property line.

Section 308 - Limitation on Use of Public Sewers The use of the City of Hornell public sewers shall be strictly limited and restricted, except as provided in Section 307, to receive and accept the discharge of sewage and other wastes, including industrial wastes generated on or discharged from real property within the bounds of the Service Area of the POTW.

Section 309 - Wastewater from Outside the POTW Service Area - Inter-municipal Agreements The City of Hornell, on the recommendation of the Superintendent and Board of Public Works, shall have the authority to enter into agreements to accept sewage and other wastes, including industrial wastes, generated by or discharged from persons outside the service area of the POTW.

If the person is a municipality, that municipality shall have enacted a Sewer Use Law as restrictive on the discharge of sewage and other wastes as the restrictions contained in this Law. If the person is not a municipality the acceptance shall be made only with the expressed written consent of the Superintendent (the issuance of a permit) setting forth the terms and conditions of such a acceptance.

Section 310 - Moratorium At the recommendation of the Superintendent, who determines that:

- one or more segments of the POTW is exceeding its hydraulic capacity at any time
- any specific purpose of this Law is being violated

The City of Hornell shall have the authority to limit or deny new connections to the POTW until

the conditions leading to the moratorium are corrected. Such correction may be by:

- construction of new facilities
- enlarging existing facilities
- correction of inflow and infiltration
- cleaning and repairing of existing facilities

Section 311 - Basis of Sewer Use Requirement All requirements, directives, and orders calling for mandatory use of the sewers, within the Service Area of the POTW, for the proper discharge of sewage and other wastes, including industrial wastes, shall be established and given by the City of Hornell, NYSDEC, USEPA, and/or other such State or Federal agencies, which have enforcement powers.

Article 4

Private Wastewater Disposal

Section 401 - Public Sewer Unavailable - Private Wastewater Disposal Required
Section 402 - Connection of Two Buildings to the Same Septic Tank Prohibited
Section 403 - Construction Permit Application
Section 404 - Construction Permit
Section 405 - Preventing Nuisances - Rehabilitation Required
Section 406 - Sanitary Operation Required
Section 407 - Septage Removal
Section 408 - Direct Connection to New Public Sewers Required
Section 409 - Additional Requirements

Section 401 - Public Sewer Unavailable - Private Wastewater Disposal Required Where a public sewer is not available, under the provisions of Section 304, the building lateral shall be connected to a private wastewater disposal system complying with the provisions of the Rules and Regulations of the NYSDOH, to be enforced by the Superintendent, and/or the NYSDOH Hornell District Office.

Section 402 - Connection of Two Buildings to the Same Septic Tank Prohibited No two separate permanent buildings, where the intended use for either is for a distinct and separate business or a dwelling place for a private family or families, shall be connected to the same individual septic tank and tile absorption field.

Section 403 - Construction Permit Application A completed application form, containing results of percolation tests, computations, and a plot plan, including the design and cross-section of the wastewater disposal system, in relation to lot lines, adjacent and on-site well or water supply, and buildings, shall be submitted to the City of Hornell. A permit and inspection fee as provided in Chapter 142, shall be paid to the City at the time the application is filed, shall accompany the application. The wastewater disposal system shall be designed by a professional engineer, licensed surveyor, or architect, and shall be in accordance with the NYSDOH - "Standards for Waste Treatment Works", or NYSDEC "Standards for Commercial and Institutional Facilities", as appropriate.

Section 404 - Construction Permit A written construction permit shall be obtained from the City Clerk before construction commencement. The Superintendent, or their designated

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representative, shall be permitted to inspect the construction work at any stage, without prior notice.

Section 405 - Preventing Nuisances - Rehabilitation Required When the liquid or liquid-borne effluent from a private wastewater disposal system enters any watercourse, ditch, storm sewer, or water supply system, located in the City of Hornell, in such a manner, volume, and concentration so as to create a hazardous, offensive, or objectionable condition, in the opinion of the Superintendent, the City of Hornell Code Enforcement, or the NYSDOH, the owner of the premises upon which such wastewater disposal system is located, upon receiving written notice from the Superintendent, to do so, shall, within ninety (90) days, after receipt of such notice, repair, rebuild, or relocate such wastewater disposal system for the purpose of eliminating such hazardous, offensive, or objectionable conditions. The repair, rebuilding, or relocation of the system shall be accomplished in accordance with the rules and regulations of the NYSDOH, at the owner's expense and shall be subject to the approval of the Superintendent, and the NYSDOH, in accordance with Section 501.

Section 406 - Sanitary Operation Required The owner shall operate and maintain the private wastewater disposal system in a satisfactory manner at all times, at the owner's expense.

Section 407 - Septage Removal Where a private wastewater disposal system utilizes a cesspool or a septic tank, septage shall be removed from the cesspool or septic tank, by a licensed hauler of trucked and hauled wastes, at three year intervals or more frequently.

Section 408 - Direct Connection to New Public Sewers Required At such time that a public sewer becomes available to a property, a direct connection shall be made to the public sewer, in compliance with this Law, and any cesspool, septic tank, and similar wastewater disposal facilities shall be cleaned of septage, by a licensed septage hauler, and finally either filled with clean sand, bank-run gravel, or dirt, or removed and properly disposed. When the connection is made to the public sewer, the connection to the private wastewater disposal facility shall be broken and both ends of the break shall be plugged, as appropriate. Alternatively, the septic tank effluent may be piped or pumped to the sewer; the owner shall provide an easement to the septic tank for septage removal.

Section 409 - Additional Requirements No statement in this Article shall be construed to prevent, or interfere with, any additional requirements that may be deemed necessary by the City of Hornell, to protect public health and public welfare.

Article 5

New Sewers or Sewer Extensions

Section 501 - Proper Design
Section 502A - New Sewers Subject to Approval, Fees, Inspection, Testing, and Reporting
Section 502B - Plans, Specification, and Pipe Test Results Required
Section 503A - Sewer Pipe
Section 503B - Safety and Load Factors
Section 503C - Sewer Pipe installation
Section 503D - Cleanout Installation
Section 504 - Manholes and Manhole Installation

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Section 505A - Infiltration/Exfiltration Testing

Section 505B - Test Section

Section 505C - Test Period

Section 505D - Pipe Lamping

Section 505E - Deflection Testing
Section 505F - Air Testing Alternative
Section 505G - Vacuum Testing Alternative
Section 506A - Force Mains
Section 506B - Force Main Testing
Section 507 - Final Acceptance and Warranty/Surety
Section 508 - Liability Insurance Coverage During Construction Period

Section 501 - Proper Design New sanitary sewers and all extensions to sanitary sewers owned and operated by the City of Hornell shall be designed, by a professional licensed to practice sewer design in the State, in accordance with the Recommended Standards for Sewage Works, as adopted by the Great Lakes - Upper Mississippi River Board of State Sanitary Engineers ("Ten State Standards"), and in strict conformance with all requirements of the NYSDEC. Plans and specifications shall be submitted to, and written approval shall be obtained from the Superintendent, the NYSDEC, the NYSDOH and/or the NYSDOH Hornell District Office before initiating any construction. The design shall anticipate and allow for flows from all possible future extensions or developments within the immediate drainage area.

If, however, there is inadequate capacity in any sewer which would convey the wastewater or if there is insufficient capacity in the POTW treatment plant to treat the wastewater properly, the application shall be denied. Sewer line and POTW treatment plant current use shall be defined as the present use and the unutilized use which has been committed, by resolution, to other users by the City of Hornell.

Section 502 A - New Sewers Subject to Approval, Fees, Inspection, Testing, and Reporting When a property owner, builder, or developer proposes to construct sanitary sewers or extensions to sanitary sewers in an area proposed for subdivision, the plans, specifications, and method of installation shall be subject to the approval of the Superintendent, and the NYSDOH, in accordance with Section 501. Said property owner, builder, or developer shall pay for the entire installation, including a proportionate share of the treatment plant, intercepting or trunk sewers, pumping stations, force mains, and all other City of Hornell expenses incidental thereto. Each street lateral shall be installed and inspected pursuant to Article 6, and inspection fees shall be paid by the applicant prior to initiating construction. Design and installation of sewers shall be as specified in Section 503, and in conformance with Paragraphs 3 through 6 of ASTM Specification C-12. The installation of the sewer shall be subject to periodic inspection by the Superintendent, without prior notice. The Superintendent shall determine whether the work is proceeding in accordance with the approved plans and specifications, and whether the completed work will conform with the approved plans and specifications. The sewer, as constructed, must pass the infiltration test (or the exfiltration test, with prior approval), required in Section 505, before any building lateral is connected thereto.

The Superintendent shall be notified 30 days in advance of the start of any construction actions so that such inspection frequencies and procedures as may be necessary or required, may be established. No new sanitary sewers will be accepted by the City of Hornell until such

construction inspections have been made so as to assure the City of Hornell of compliance with this Law and any amendments or additions thereto. The Superintendent has the authority to require such excavation as necessary to inspect any installed facilities if the facilities were covered or otherwise backfilled before they were inspected so as to permit inspection of the construction. The Superintendent shall report all findings of inspections and tests to the Board of Public Works.

Sewer extensions, including individual building sewers from the public sewer to the property line, may be constructed by the City under public contract if, in the opinion of the Board of Public Works, the number of properties to be served by such extension warrants its cost. Under this arrangement, the property owner shall pay for and install the building sewer from the property line to their residence or place of business in accordance with the requirements outlined herein.

Property owners may propose sewer extensions within the incorporated City by drafting extensions within the incorporated City by drafting a written petition, signed by a majority of the benefiting property owners, and filing it with the Board of Public Works. The cost of such extensions may be assessed to the benefited property owners in any manner determined by the Board of Public Works.

Section 502 B - Plans, Specification, and Pipe Test Results Required Plans, specifications, and methods of installation shall conform to the requirements of this Article. Components and materials of wastewater facilities not covered in this Law, such as pumping stations, lift stations, or force mains shall be designed in accordance with Section 501, and shall be clearly shown and detailed on the plans and specifications submitted for approval. Force main details are covered in Section 506. When requested, the applicant shall submit to the Superintendent and to the NYSDOH, all design calculations and other pertinent data to supplement review of the plans and specifications. Results of manufacturer's tests on each lot of pipe delivered to the job site shall also be furnished, upon request.

Section 503 A - Sewer Pipe 1) Sewer pipe material shall be:

- Reinforced Concrete Pipe (Note that non-reinforced concrete pipe shall not be used.)
    - Portland cement shall conform to ASTM C-150 Type II.
    - The pipe and specials shall conform to ASTM Specification C-76.
    - The reinforcing wire cage shall conform to ASTM Specification A 15, A 82,or A 185, as appropriate.
    - Entrained air shall be 5.0% to 9.0% by ASTM C-890.
    - Water absorption and three-edge bearing tests shall conform to ASTM Specification C- 497.
    - Gaskets shall conform to Sections 3.3 and 3.4 of AWWA Specification C-302.
- Cast Iron Pipe - Extra Heavy
    - Pipe, fittings, and specials shall conform to the requirements of ASTM Specification A- 74 or ANSI A-21.11.
    - Gaskets shall conform to ASTM Specification C-564.
- Polyvinyl Chloride (PVC) Pipe - Heavy Wall

- Pipe shall be made from Class 12454-B materials or better in accordance with ANSI/ASTM Specification D-1784.

- Pipe and accessories shall conform to the requirements of the following, with a minimum pipe stiffness of 46.

- PSI at a maximum deflection of five percent (5%).

- `ANSI/ASTM D 1785 (4" - 15")

- ASTM D 2665 (18" - 27")

- Ductile Iron Pipe

  - Pipe, fittings, and specials shall be manufactured in accordance with ASTM Specification A-746.
  - Pipe shall have a minimum thickness of Class 50.
  - Fittings shall conform to ANSI Specification A-21.11 and have a minimum pressure class rating of 150 PSI.
  - All pipe and fittings shall be cement mortar lined in accordance with ANSI Specification A-21.4 at twice the specified thickness, and have an internal and external bituminous seal coating.
  - Closure pieces shall be jointed by means of a mechanical coupling of the cast sleeve type.

- Vitrified Clay Pipe - Extra strength (Note that standard strength vitrified clay pipe shall not be used.)

  - Pipe shall conform to the current requirements of NCPI Specification ER 3300-67 and meet the requirements of ASTM Specification C 700.

- Acrylonitrile-Butadiene-Styrene (ABS) Pipe

  - Pipe and fittings shall conform to the requirements of ASTM Specification D2661.

- Other pipe materials
  - Other pipe materials require prior written approval of the Superintendent before being installed.
    - the minimum internal pipe diameter shall be eight (8) inches for gravity sewers and three (3) inches for low pressure sewers.
    - Joints for the selected pipe shall be designed and manufactured such that "O" ring gaskets of the "Snap-On" type are used.
    - Gaskets shall be continuous, solid, natural or synthetic rubber, and shall provide a positive compression seal in the assembled joint, such that the requirements of section 505 are met.
    - Joint preparation and assembly shall be in accordance with the manufacturer's recommendations.
    - Wye branch fittings, as approved by the Superintendent, shall be installed, for connection of street laterals, in accordance with Section 606.

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Section 503 B - Safety and Load Factors
Selection of pipe class shall be predicated on the following criteria:
Safety factor - 1.5
Load factor - 1.7
Weight of soil - 120 lbs/cu. Ft
Wheel loading - 16,000 lbs.
Utilizing the foregoing information, design shall be made as outlined in Chapter IX of the Water Pollution Control Federation Manual of Practice No. 9, latest edition, "Design and Construction of Sanitary and Storm Sewers", and the pipe shall have sufficient structural strength to support all loads to be placed on the pipe, with a safety factor as specified above.

PVC pipe shall not be encased in concrete due to their different coefficients of linear thermal expansion.

Section 503 C - Sewer Pipe Installation
(1) Local utilities shall be contacted to verify construction plans and to make arrangements to disconnect all utility services, where required to undertake the construction work. The utility services shall later be reconnected. The work shall be scheduled so that there is minimum inconvenience to local residents. Residents shall be provided proper and timely notice regarding disconnection of utilities.

(2) The construction right-of-way shall be cleared only to the extent needed for construction. Clearing consists of removal of trees which interfere with construction, removal of underbrush, logs, and stumps, and other organic matter, removal of refuse, garbage, and trash, removal of ice and snow, and removal of telephone and power poles, and posts. Any tree which will not hinder construction shall not be removed, and shall be protected from damage by any construction equipment. Debris shall not be burned, but hauled for disposal in an approved manner.
(3) The public shall be protected from personal and property damage as a result of the construction work.

(4) Traffic shall be maintained at all times in accordance with applicable highway permits. Where no highway permits are required, at least 1/2 of a street shall be kept open for traffic flow.

5) Erosion control shall be performed throughout the project to minimize the erosion of soils onto lands or into waters adjacent to or affected by the work. Erosion control can be effected by limiting the amount of clearing and grubbing prior to trenching, proper scheduling of the pipe installation work, minimizing time of open trench, prompt grading and seeding, and filtration of drainage.

(6) The trench shall be excavated only wide enough for proper installation of the sewer pipe, manhole, and appurtenances. Allowances may be made for sheeting, de-watering, and other similar actions to complete the work. Roads, sidewalks, and curbs shall be cut, by sawing or by other methods as approved by the Superintendent, before trench excavation is initiated.

(7) Under ordinary conditions, excavation shall be by open cut from the ground surface. However, tunneling or boring under structures other than buildings may be permitted. Such structures include crosswalks, curbs, gutters, pavements, trees, driveways, and railroad tracks.

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(8) Open trenches shall be protected at all hours of the day with barricades, as required.

(9) Trenches shall not be open for more than 30 feet in advance of pipe installation nor left unfilled for more than 30 feet in the rear of the installed pipe, when the work is in progress, without permission of the Superintendent. When work is not in progress, including overnight, weekends, and holidays, the trench shall be backfilled to ground surface.

(10) The trench shall be excavated approximately six (6) inches deeper than the final pipe grade. When unsuitable soils are encountered, these shall be excavated to a maximum depth of 2-1/2 feet below the final pipe invert grade and replaced with select materials.

(11) Ledge rock, boulders, and large stones shall be removed from the trench sides and bottom. The trench shall be over-excavated at least 12 inches for five (5) feet, at the transition from rock bottom to earth bottom, centered on the transition.

(12) Maintenance of grade, elevation, and alignment shall be done by some suitable method or combination of methods.

(13) No structure shall be undercut unless specifically approved by the Superintendent.

(14) Proper devices shall be provided, and maintained operational at all times, to remove all water from the trench as it enters. At no time shall the sewer line be used for removal of water from the trench.

(15) To protect workers and to prevent caving, shoring and sheeting shall be used, as needed. Caving shall not be used to backfill the trench. Sheeting shall not be removed but cut off no lower than one foot above the pipe crown nor no higher than one foot below final grade, and left in the trench, during backfill operations.

(16) The pipe barrel shall be supported, along its entire length, on a minimum of six (6) inches of crusher run max. 1/2 inch stone free of organic material. This foundation shall be firmly tamped in the excavation.

(17) Bell holes shall be hand excavated, as appropriate.

(18) Pipe shall be laid from low elevation to high elevation. The pipe bell shall be up-gradient; the pipe spigot shall be down-gradient.

(19) Joint preparation and assembly shall be in accordance with the manufacturer's written instructions.

(20) The grade and alignment shall be checked and made correct. The pipe shall be in straight alignment. Any negotiation of curves shall be at manholes, except when site conditions require alternative pipe laying procedures. These alternative procedures, including bending the pipe barrel, deflecting the joint, and using special fittings, shall require prior written approval of the plans and also written confirmation approval of need by the Superintendent after examination of the site conditions.

(21) When a smaller sewer joins a larger one the invert of the larger sewer shall be lowered sufficiently to maintain the same hydraulic gradient. An approximate method which may be used

for securing this result is to place the 0.8 depth of both sewers at the same elevation.

(22) Crushed stone shall be placed over the laid pipe to a depth of at least six (6) inches. The embedment of thermoplastic pipe shall be in accordance with ASTM D2321 using class 1A or 1B backfill materials. Care shall be exercised so that stone is packed under the pipe haunches. Care shall be exercised so that the pipe is not moved during placement of the crushed stone.

(23) The migration of fines from surrounding backfill or native soils shall be restricted by gradation of embedment materials or by use of suitable filter fabric.

(24) The remaining portion of the trench above the pipe embedment shall be backfilled in foot lifts which shall be firmly compacted. Compaction near/under roadways, driveways, sidewalks, and other structures shall be to 95 % of the maximum moisture-density relationship, as determined by ASTM Specification D 698, Method D. Ice, snow, or frozen material shall not be used for backfill.

Section 503 D - Cleanout Installation

(1) Cleanouts for low pressure sewers shall be placed at intervals of approximately 400 to 500 feet, at major changes of direction, where one collection main joins another main and at the upstream end of each main branch.

(2) The design of the cleanouts shall be as approved by the Superintendent.

Section 504 - Manholes and Manhole Installation

(1) Design of all manholes shall be submitted to the Superintendent and shall receive approval prior to placement.

(2) Manholes shall be placed where there is a change in slope or alignment, and at intervals not exceeding 400 linear feet except as authorized by the Superintendent.

(3) Manhole bases shall be constructed or placed on a minimum of six (6) inches of crusher run max. 1/2 inch stone free of organic materials.

(4) Manhole bases shall be constructed of 4,000 psi (28 day) concrete 8 inches thick, or shall be precast bases properly bedded in the excavation. Field constructed bases shall be monolithic, properly reinforced, and extend at least 6 inches beyond the outside walls of lower manhole sections. Precast manhole bases shall extend at least 6 inches beyond the outside walls of lower manhole sections.

(5) Manholes shall be constructed using precast minimum 4 foot diameter concrete manhole barrel sections, and an eccentric top section, conforming to ASTM Specification C-478, with the following exceptions on wall thickness:

Manhole Diameter (Feet)	Wall Thickness (Inches)
4	5
5	6
6	7

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6 1/2	7 1/2
7	8
8	9

All sections shall be cast solid, without lifting holes.

Flat top slabs shall be a minimum of 8 inches thick and shall be capable of supporting a H-20 loading.

(6) All joints between sections shall be sealed with an "O" ring rubber gasket, meeting the same specifications as pipe joint gaskets, or butyl joint sealant completely filling the joint.

(7) All joints shall be sealed against infiltration. All metal parts shall be thickly coated with bitumastic or elastomeric compound to prevent corrosion.

(8) No steps or ladder rungs shall be installed in the inside or outside manhole walls at any time.

(9) No holes shall be cut into the manhole sections closer than 6 inches from joint surfaces.

10) Manholes which extend above grade shall not have an eccentric top section. The top plate shall be large enough to accommodate the cover lifting device and the cover.

(11) The elevation of the top section shall be such that the cover frame top elevation is 0.5 foot above the 100-year flood elevation (in a field), 0.5 foot above a lawn elevation, or at finished road or sidewalk grade.

(12) When located in a travelled area (road or sidewalk), the manhole frame and cover shall be heavy duty cast iron. When located in a lawn or in a field, the manhole frame and cover may be light duty cast iron. The cover shall be 36 inches, minimum, in diameter. The minimum combined weight of the heavy duty frame and 36 inch cover shall be 735 +/- 5% lbs. The minimum combined weight of the light duty frame and 36 inch cover shall be 420 +/- 5% lbs. The mating surfaces shall be machined, and painted with tar pitch varnish. The cover shall not rock in the frame. Infiltration between the cover and frame shall be prevented by proper design and painting. Covers shall have "Sanitary Sewer" cast into them. Covers shall have lifting holes suitable for any lifting/jacking device. The lifting holes shall be designed so that infiltration is prevented.

(13) A drop of at least 0.1 foot shall be provided between incoming and outgoing sewers on all junction manholes and on manholes with bends greater than 45 degrees.

(14) Inverts and shelves/benches shall be placed after testing the manholes and sewers.

(15) Benches shall be level and slope to the flow channel at about 1 inch per foot.

(16) The minimum depth of the flow channel shall be the nominal diameter of the smaller pipe. The channel shall have a steel trowel finish. The flow channel shall have a smooth curvature from inlet to outlet.

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(17) Manhole frames, installed at grade, shall be set in a full bed of mortar with no less than two nor more than four courses of brick underneath to allow for later elevation adjustment. In lieu of brick, grade rings may be used for elevation adjustment. Grade rings shall not exceed 6 inches in depth. The total number of grade rings shall not exceed 12 inches in height, however, in no event shall more than 3 grade rings be used.

(18) Manholes which extend above grade, shall have the frames cast into the manhole top plate. The top plate shall be securely anchored to the manhole barrel, by a minimum of six 1/2 inch corrosion resistant anchor bolts, to prevent overturning when the cover is removed. The anchor bolts shall be electrically isolated from the manhole frame and cover.

(19) Internal drop pipes and fittings shall be PVC plastic sewer pipe in compliance with ASTM D2241. Corrosion resistant anchors shall be used to attach the drop pipe to the inside surface of the manhole barrel.

Section 505 A - Infiltration/Exfiltration Testing
All sanitary sewers or extensions to sanitary sewers, including manholes, shall satisfy requirements of a final infiltration test before they will be approved and wastewater flow permitted by the City of Hornell. The infiltration rate shall not exceed 25 gallons per 24 hours per mile per nominal diameter in inches. An exfiltration test may be substituted for the infiltration test; the same rate shall not be exceeded. The exfiltration test shall be performed by the applicant, under the supervision of the Superintendent, who shall have the responsibility for making proper and accurate measurements required. The exfiltration test consists of filling the pipe with water to provide a head of at least 5 feet above the top of the pipe or 5 feet above groundwater, whichever is higher, at the highest point under test, and then measuring the loss of water, from the pipe section under test, by the amount of water which must be added to maintain the original level. However, under no circumstances shall the head at the downstream manhole exceed ten (10) feet or fill to within six (6) inches of the top of the downstream manhole. Should this condition prevail, the testing methods in Sections 504 F and/or 504 G shall be utilized. In this test, the test section must remain filled with water for at least 24 hours prior to taking any measurements. Exfiltration shall be measured by the drop of water level in a standpipe with a closed bottom end, or in one of the sewer manholes serving the test section. When a standpipe and plug arrangement is used in the upper manhole in the test section, there shall be some positive method for releasing entrapped air prior to taking any measurements.

Section 505 B - Test Section
The test section shall be as ordered or as approved, but in no event longer than 1,000 feet. In the case of sewers laid on steep grades, the test length may be limited by the maximum allowable internal pressure on the pipe and joints at the lower end of the test section. For purposes of determining the leakage rate of the test section, manholes shall be considered as sections of 48-inch diameter pipe, 5 feet long. The maximum allowable leakage rate for such a section is 1.1 gallons per 24 hours. If leakage exceeds the allowable rate, then necessary repairs or replacements shall be made, and the section retested.

Section 505 C - Test Period
The test period, during which the test measurements are taken, shall not be less than two (2) hours.

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Section 505 D - Pipe Lamping
Prior to testing, the section shall be lamped. Any length of pipe out of straight alignment shall be realigned.

Section 505 E - Deflection Testing
Also prior to testing, all plastic pipe, in the test section, shall be tested for deflection. Deflection testing shall involve the pulling of a rigid ball or mandrel, whose diameter is 95 percent of the pipe inside diameter, through the pipe. Any length of pipe with a deflection greater than 5 percent shall be replaced. The test section shall be flushed just prior to deflection testing. The test shall not be performed with a mechanical pulling device.

Section 505 F - Low Pressure Air Testing Alternative
In lieu of hydrostatic testing (exfiltration or infiltration), low pressure air testing may be employed. Low pressure air tests shall conform to ASTM Specification C 828. All sections to be tested shall be cleaned and flushed, and shall have been backfilled, prior to testing. Air shall be added until the internal pressure of the test section is raised to approximately 4.0 PSIG. The air pressure test shall be based on the time, measured in seconds, for the air pressure to drop from 3.5 PSIG to 2.5 PSIG.

Acceptance is based on limits tabulated in the "Specification Time Required for a 1.0 PSIG Pressure Drop" in the Uni-Bell PVC Pipe Association "Recommended Practice For Low-Pressure Air Testing of Installed Sewer Pipe".

Before pressure is applied to the line all connections shall be firmly plugged. Before the test period starts, the air shall be given sufficient time to cool to ambient temperature in the test section.

If the test section is below groundwater, the test pressure shall be increased by an amount sufficient to compensate for groundwater hydrostatic pressure, however, the test pressure shall not exceed 10 PSI, or a lower pressure as required by the Superintendent.

The pressure test gauge shall have been recently calibrated, and a copy of the calibration results shall be made available to the Superintendent prior to testing.

Section 505 G - Vacuum Testing Alternative
In lieu of hydrostatic testing (exfiltration or infiltration), vacuum testing may be employed for testing of sewer lines and manholes. Sewer lines and manholes shall be tested separately. All sewer lines to be tested shall be cleaned and flushed, and shall have been backfilled, prior to testing. The vacuum test shall be based on the time, measured in seconds, for the vacuum to decrease from 10 inches of mercury to 9 inches of mercury for manholes, and from 7 inches of mercury to 6 inches of mercury for sewers.

Acceptance of manholes is based on the following:

Manhole Depth	Manhole Diameter	Time to Drop 1 inch Hg (10"to9")
10 ft or less	4 ft	120 seconds
10 ft to 15 ft	4 ft	150 seconds

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15 ft to 25 ft	4 ft	180 seconds

For 5 ft diameter manholes, add 30 seconds to the times above. For 6 ft diameter manholes, add 60 seconds to the times above.

If the test on the manhole fails (the time is less than that tabulated above), necessary repairs shall be made and the vacuum test repeated, until the manhole passes the test.

Acceptance of sewers (7" Hg to 6" Hg) is based on the time tabulated in the "Specification Time Required for a 0.5 PSIG Pressure Drop" in the Uni-Bell PVC Pipe Association "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe".

The vacuum test gauge shall have been recently calibrated, and a copy of the calibration results shall be made available to the Superintendent prior to testing.

Section 506A - Force Mains

Force mains serving sewage lifting devices, such as grinder pumps and pump stations, shall be designed in accordance with Section 501. Additional design requirements are:

(1) Force main pipe material shall be:

(a)Ductile Iron Pipe

Pipe shall conform to ANSI A21.51. The minimum wall thickness shall be Class 52 (ANSI A21.50). The pipe shall be clearly marked with either "D" or "DUCTILE". Fittings shall conform to ANSI A21.10.

Pipe and fittings shall be furnished with push-on joints conforming to ANSI A21.11.

Pipe and fittings shall be cement mortar lined and have an internal and external bituminous seal coating.

(b) Polyvinyl Chloride (PVC) Plastic Pipe

Pipe shall conform to ASTM D2241. Materials used in the manufacture of PVC pipe shall meet ASTM c1784. The minimum wall thickness shall be SDR-21. Fittings shall conform to ASTM D2241. Joints and gaskets shall conform to ASTM D2241, D1869, and F477.

(c) Other pipe materials

Other pipe materials require prior written approval of the Superintendent before being installed.

(2) Trenching, bedding, and backfilling shall be in accordance with Section 503 C.

(3) Joint preparation and assembly shall be in accordance with the manufacturer's written instructions.

(4) Anchorages, concrete blocking, and/or mechanical restraint shall be provided when there

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is a change of direction of 7-1/2 degrees or greater.

(5) Drain valves shall be placed at low points.

(6) Automatic air relief valves shall be placed at high points and at 400 ft intervals, on level force main runs.

(7) Air relief and drain valves shall be suitably protected from freezing.

(8) When the daily average design detention time, in the force main, exceeds 20 minutes, the manhole and sewer line receiving the force main discharge or the sewage shall be treated so that corrosion of the manhole and the exiting line are prevented. The corrosion is caused by sulfuric acid biochemically produced from hydrogen sulfide anaerobically produced in the force main.

(9) The force main shall terminate, in the receiving manhole, at a PVC plastic sewer pipe "T". The vertical arms of the "T" shall be twice the diameter of the force main. The upper arm shall be at least 4 feet long; the lower arm shall terminate in a PVC plastic sewer pipe 90 degree elbow in a flow channel directed to the manhole exit pipe. The "T" and its arms shall be securely fastened to the inside surface of the manhole wall using corrosion resistant anchors.

Section 506B - Force Main Testing

All force mains shall be subjected to hydrostatic pressure of 150 percent of the normal operating pressure. The duration of the test, at pressure, shall be at least 2 hours. Before conducting the test, the pipe shall be filled with water and all air shall be expelled. During the test, water shall be added, as needed, to maintain the test pressure. The amount of water added shall be recorded so as to calculate leakage. Leakage shall not exceed 25 gallons per day per mile per inch nominal pipe diameter. During the test, the owner and the Superintendent shall walk the route of the force main and examine the exposed pipe and the ground covering any backfilled pipe to discover leaks.

Leakage in excess of that specified above shall be corrected with new material at the owner's expense and the test repeated. Any observed leaks shall be repaired at the owner's expense. Each test section length shall be as approved by the Superintendent, but in no event longer than one thousand (1,000) feet.

Section 507 - Final Acceptance and Warranty/Surety

All sanitary sewers and extensions to sanitary sewers constructed at the applicant's expense, after final approval and acceptance by the Superintendent, and concurrence by the City of Hornell, shall become the property of the Owner, and shall thereafter be operated and maintained by the Owner. No sanitary sewer shall be accepted by the City of Hornell until four (4) copies of as-built drawings have been so filed with the Superintendent and the Superintendent has approved the submitted drawings. Said sewers, after their acceptance by the City of Hornell, shall be guaranteed against defects in materials or workmanship for one (1) year, by the applicant. The guarantee shall be in such form and contain such provision as deemed necessary by the City of Hornell, secured by a surety bond or such other security as the City of Hornell may approve.

Section 508 - Liability Insurance Coverage During Construction Period

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(1) All contractors engaged in connecting house laterals with sanitary sewers, who perform any work within the Right of Way of any highway, shall file a bond in the amount not less than Five Thousand Dollars ($5,000.00) with the City of Hornell Clerk to indemnify the City of Hornell against loss, cost, damage or expense sustained or recovered on account of any negligence, omission or act of the applicant for such a permit, or any of his, or their agents arising or resulting directly or indirectly by reason of such permit or consent, or of any act, construction or excavation done, made or permitted under authority of such permit or consent. All bonds shall contain a clause that permits given by the City of Hornell may be revoked at any time for just cause.

2) Before commencing work, the above contractor shall file insurance certificates with the City of Hornell Clerk for the following:

(a) Workman's Compensation and Employer's Liability Insurance as required by the laws of the State covering the contractor;

(b) Personal Injury Liability having limits of not less than $500,000 each occurrence and $500,000 aggregate (completed operations/products, personal injury);

(c) Property Damage Liability having limits of not less than $500,000 for all damages arising during the life of the contract; and shall include, but not be limited to, the following designated hazards:

i - Premises and Operations; ii - Independent Contractors;
iii - Completed operations and products; iv - Property Damage; and
v - Explosions, collapse and underground;

(d) Comprehensive automobile liability (including non-owned and hired automobiles) having limits of not less than:

i - Bodily injury - each person, $300,000 each occurrence, $500,000
ii - Property damage - each occurrence, $500,000

(e) Business Excess Liability Insurance in the amount of $2,000,000.

(f) All insurance policies must provide for five (5) business days notice to the City of Hornell before cancellation and must cover all liabilities of the City of Hornell and be in a form approved by the City of Hornell Council and be in a satisfactory form approved by the City of Hornell Council.

(g) The minimum insurance limits stated above shall be subject to periodic review by the City of Hornell City of Hornell and adjustments made, by resolution, as appropriate.

(3) Where it is necessary to enter upon or excavate any highway or cut any pavement, sidewalk or curbing, permission must be obtained from the Superintendent of Highways if a City of Hornell Highway is involved, from the County Department of Public Works if a County Highway is involved, and/or the New York State Department of Transportation if a State Highway is involved.

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(4) The minimum insurance limits above shall be as established by the City of Hornell and shall be subject to periodic review and adjustment, as appropriate, by the City of Hornell.

Article 6

Building Laterals, Street Laterals Connections, and Fees

Section 601A - Permit Required for Sewer Connections
Section 601B - Inflow/Infiltration Prohibited
Section 602 - Sewer Lateral Permits
Section 603A - New Building Laterals
Section 603B - Laterals Serving Several Buildings
Section 603C - Laterals Serving Complexes
Section 603D - Dry Sewers
Section 604 - Using Existing Building Laterals
Section 605 - Lateral Pipe Materials
Section 606A - Street Lateral to Public Sewer Connection
Section 606B - Future Connection Locations; As-Built Drawings
Section 606C - Special Manhole Requirements
Section 607 - Laterals At and Near Buildings
Section 608 - Sewage Lifting
Section 609 - Lateral Pipe Installation
Section 610A - Watertight Joints
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Section 611A - Building Lateral/Street Lateral Connection
Section 611B - Cleanout Repair/Replacement
Section 611C - Street Lateral Replacement; Ownership
Section 612 - Testing
Section 613A - Connection Inspection
Section 613B - Trench Inspections
Section 614 - Public Safety Provisions Required; Restoration of Disturbed Areas
Section 615 - Interior Clean-Out
Section 616 - Costs Borne by Owner

Section 601 A - Permit Required for Sewer Connections
No unauthorized person shall uncover, make any connection with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Superintendent.

Section 601 B - Inflow/Infiltration Prohibited
No person shall discharge or cause to be discharged any storm cooling water or unpolluted industrial waters to any sanitary sewer. Swimming pool drains shall not be connected to any sanitary sewer.

Section 602 - Sewer Lateral Permits
There shall be two classes of sewer lateral permits:

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(1) For residential, commercial, and institutional service,

(2) For service to establishments producing industrial wastes.

In either case, a permit application shall be submitted to the Superintendent. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent, in the judgement of the Superintendent. A fee, for residential, commercial, institutional and industrial users, as established by the City of Hornell, shall accompany the application.

Connections to existing manholes shall be made as directed by the Superintendent.

Section 603 A - New Building Laterals
A separate and independent building lateral shall be provided for every building requiring sanitary facilities. When, however, there is a building behind a front building, the second building may use the front building's building lateral, if there is no other way to provide sanitary service to the back building.

New street laterals and/or building laterals shall not go under building basements. In like fashion, a building shall not be constructed over an existing lateral; the lateral shall be relocated after the Superintendent has approved plans showing the relocation. If relocation is not physically possible then the lateral shall be:

(1) exposed and totally encapsulated in not less than three inches of concrete, or

(2) exposed and walled and the building rooms above positively ventilated outdoors.

All existing manholes in or under the basement shall be sealed air-tight in a manner acceptable to the Superintendent. No new manholes shall be constructed on the portion of the lateral under the building.

Section 603 B -Laterals Serving Several Buildings
When building laterals are to serve multiple dwelling structures, the building lateral shall be sized in accordance with the metered water use and with sound professional engineering judgement.

Section 603 C - Laterals Serving Complexes
Where a lateral sewer is to serve a complex of industrial, commercial, institutional, or dwelling structures, special design of the building lateral system shall be required. Such lateral sewer shall be connected to the public sewer through a manhole. The Superintendent shall determine if and where this connection to the public sewer is required. If required, a new manhole shall be installed in the public sewer pursuant to Section 503 D and 1007 and the lateral connection made and tested as directed by the Superintendent. Plans and specifications shall be prepared and submitted for approval pursuant to this Law.

Section 603 D - Dry Sewers
Dry Sewers shall be designed and installed in accordance to this Law.

Section 604 - Using Existing Building Laterals
Existing building laterals may be used in connection with new buildings only when they are

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found, on examination by the Superintendent, to meet all requirements of this local Law.

Section 605 - Lateral Pipe Materials

Building and street lateral pipe materials shall be one of the following:

1) Tar-coated, service grade, cast iron soil pipe conforming to ASTM Specification A-74, "Cast Iron Pipe and Fittings". All dimensions, weight and markings of the pipe shall conform to the requirements of ANSI, Designation A112.5.1, except spigot ends shall be "plain end", if gasket joints are used.

(2) Polyvinyl chloride (PVC) pipe and fittings conforming to ASTM Specification D-3034-73, "SDR-35 Polyvinyl Chloride (PVC) Sewer Pipe and Fittings". All pipe shall be suitable for gravity sewer service. Provisions shall be made for contraction and expansion at each joint with a rubber ring. The bell shall consist of an integral wall section stiffened with two PVC retainer rings which securely lock the solid cross-section ring into position. Minimum "Pipe Stiffness" (F/Y) at five percent (5%) deflection shall be 46 PSI when tested in accordance with ASTM Specification D-2412.

Any part of the building or street lateral that is located within five (5) feet of a water main or water service shall be constructed of cast iron soil pipe. Cast iron soil pipe may be required by the Superintendent where the building or street lateral is likely to be damaged by tree roots. If installed on fill or unstable ground, the building or street lateral shall be of cast iron soil pipe, although other pipe material may be permitted if such pipe is uniformly supported on a poured concrete cradle approved by the Superintendent. The distance between consecutive joints, as measured along the centerline of the installed pipe, shall not be less than ten (10) feet, except under abnormal circumstances, in which case this dimension may be diminished, if approved by the Superintendent. The size and slope of building and street laterals shall be subject to approval by the Superintendent, but in no event shall the internal pipe diameter be less than 4 inches, nor shall the pipe slope be less than 1/4 inch per foot.

The street lateral shall include a full port curb stop with flow-through diameter equal to that of the lateral. A curb box shall be installed.

Section 606 A - Street Lateral to Public Sewer Connection

At the point of connection of a street lateral to a main sewer, a standard wye fitting and sufficient one- eighth (45 degree) bend fittings shall be used. The wye fittings shall be installed so that flow in the "arm" shall transition smoothly into the flow in the public sewer. No lateral connection shall be made to the public sewer which permits the flow into the public sewer from the lateral to enter at right angles.

The inside diameter of the fittings shall be same diameter as the street lateral inside diameter.

Section 606 B - Future Connection Locations; As-Built Drawings

The street lateral, including the wye and eighth bend fittings, shall be connected to the main sewer at the time of constructing the main sewer, for each proposed lot for either immediate or future development. Laterals installed for future development shall be fitted a standard plug approved for use by the Superintendent. All sewer connections shall be via a properly installed saddle on the main sewer pipe. No portion of the lateral pipe shall protrude into the main sewer pipe. The location of all lateral connections shall be field marked with a corrosion and rot resistant board. The marker board shall extend from the depth of the lateral to a minimum of two (2) feet above grade. The location of all lateral connections shall be indicated on a drawing with

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a minimum of three (3) tie lines indicated. Four (4) copies of this drawing, showing the as-built location of these connections, shall be furnished to the Superintendent. A refundable deposit shall be placed with City of Hornell to assure receipt of these as-builts. The deposit shall be placed when application is made; the amount of the deposit shall be $100 per sheet of plans showing locations of lateral connections. No sanitary sewer shall be accepted by City of Hornell until four (4) copies of this record drawing have been so filed with the Superintendent and the Superintendent has approved the submitted drawings.

Section 606 C - Special Manhole Requirements
When any street lateral is to serve a school, hospital, or similar institution, or public housing, or is to serve a complex of industrial or commercial buildings, or which, in the opinion of the Superintendent, will receive wastewater or industrial wastes of such volume or character that frequent maintenance of said building or street lateral is anticipated, then such street lateral shall be connected to the public sewer through a manhole. The Superintendent shall determine if and where this type of connection to the public sewer is required. Connections to existing manholes shall be made as directed by the Superintendent. If required, a new manhole shall be installed in the public sewer pursuant to Sections 504 and 1007, and the lateral connection made thereto as directed by the Superintendent.

Section 607 - Laterals at and Near Buildings
Building laterals laid parallel to a bearing wall shall not be installed closer than three (3) feet to such wall. The building lateral shall enter the basement through the basement wall no less than twelve (12) inches above the basement floor. In no event shall any building lateral be placed below the basement floor, except with the expressed written approval of the Superintendent.

The building lateral shall be laid at uniform grade and in straight alignment insofar as possible. Changes in direction shall be made only with properly curved pipe and fittings. Changes of direction of 90 degrees or greater shall be made with a cleanout which extends to grade, terminating in a terminal box set in concrete. In building laterals, said cleanouts shall be provided such that the maximum distance between cleanouts is 75 feet. The ends of all building or street laterals, which are not connected to the interior plumbing of the building, for any reason, shall be sealed against infiltration by a suitable stopper, plug, or by other approved means.

Section 608 - Sewage Lifting
In all buildings in which any building drain is too low to permit gravity flow to the public sewer, wastewater carried by such drain shall be lifted by mechanical means and discharged to the building lateral, on approval of the Superintendent.

Section 609 - Lateral Pipe Installation
All excavations required for the installation of a building or street lateral shall be open trench work unless otherwise approved by the Superintendent. Pipe laying and backfilling, regardless of pipe material used, shall be performed in general accordance with paragraphs 3 through 6 of ASTM Specification C-12, except that trench width, measured at the top of the installed pipe, shall not exceed the outside pipe diameter plus 14 inches and, except that no backfill shall be placed until the work has been inspected. The depth of cover over the pipe shall be sufficient to afford protection from frost, but not in any case shall such depth be less than four (4) feet. Where it is physically impossible to provide cover of four (4) feet, the depth may be reduced to a minimum of two (2) feet and the pipe shall be insulated, as approved by the Superintendent.

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Section 610 A - Watertight Joints
All joints and connections shall be made watertight.

Section 610 B - Cast Iron Pipe Poured Joints
Poured joints for cast iron pipe shall be firmly packed with oakum or hemp, and the annulus filled with an approved compound not less than 1 inch deep. The said compound shall be run in with a single pouring, and caulked tight, if appropriate for the compound used. No paint, varnish, or other coatings shall be permitted on the jointing material until after the joint has been tested and approved. The transition joint between cast iron pipe and other pipe materials shall be made with special adapters and jointing materials approved by the Superintendent. If such joints are hot-poured, the material shall not soften sufficiently to destroy the effectiveness of the joint when subjected to a temperature of 160 degrees F, nor be soluble in any of the wastes carried by the lateral.

Section 610 C - Cast Iron Push Joints
Pre-molded gaskets may be used for hub and plain end cast iron pipe joints and joints with fittings, if approved by the Superintendent. The gasket shall be a neoprene compression-type unit which provides a positive seal in the assembled joint. The gasket shall be pre-molded, one-piece unit, designed for joining the cast iron hub and plain end soil pipe and fittings. The assembled joint shall be sealed by compression of the gasket between the exterior surface of the spigot and the interior surface of the hub. The joint shall be assembled following the manufacturer's recommendations using acceptable lubricant and special pipe-coupling tools designed for that purpose. The plain spigot end shall be forced into the hub end of the pipe for the full depth of the hub itself. Lubricant shall be a bland, flax-base, non-toxic material, and shall not chemically attack the gasket material.

Section 610 D - PVC Push Joints
Joints for PVC sewer pipe shall follow the manufacturer's recommendations, using properly designed couplings and rubber gaskets pursuant to the published information relating thereto, and conforming to the applicable ASTM specification identified in Section 605.

Section 611 A - Building Lateral/Street Lateral Connection

(1) The connection of the building lateral to an existing street lateral shall be made at the property line. Except as provided under Section 502, if a street lateral has not previously been provided, the street lateral will be constructed from the existing public sewer to the property line, by a licensed plumber, at the owner's expense. The street lateral shall be installed with a properly sealed and covered clean-out to grade located at the property line. The clean-out shall terminate in a metal box imbedded in concrete.

(2) The cost of constructing the street lateral from the existing public sewer to the property line shall be at the property owner's expense; all subsequent costs and expense incidental to the installation and connection of the building lateral shall also be borne by the owner.

(3) The property owner shall indemnify the City of Hornell from any loss or damage that may directly or indirectly be occasioned by the installation of the building lateral.

4) It shall be the responsibility of the property owner to maintain, repair, or replace the building lateral, as needed.

(5) The method of connection of the building lateral to the street lateral will be dependent upon

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the type of sewer pipe material, and, in all cases, shall be approved by the Superintendent.

(6) In case of a violation of any City rules and regulations by a plumber, their journeyman plumbers, or other persons in the plumber's employ, the plumber's license may be suspended or revoked by the City.

Section 611 B - Cleanout Repair/Replacement
If, in the judgement of the Superintendent, it is determined that a building lateral, without a property line clean-out, needs repair or replacement, the City of Hornell may install a clean-out at the property line, at the property owner's expense, such that the street lateral can be maintained independently of the building lateral.

Section 611 C - Street Lateral Replacement; Ownership
Any existing street lateral which, upon examination by the Superintendent, is determined to be in need of replacement will be replaced with a new street lateral with a property line clean-out. The replacement street lateral shall be constructed by a licensed plumber. The cost of constructing the replacement street lateral and clean-out shall be at the property owner's expense.

Section 612 - Testing
The street lateral, building lateral, or the combined lateral shall be tested for infiltration/exfiltration by:

(a) any full pipe method described in Section 505, or

(b) by a suitable joint method, with the prior written approval of the Superintendent.

Section 613 A - Connection Inspection
The applicant for the building lateral permit shall notify the Superintendent when the building lateral is ready for inspection and connection is to be made to the street lateral. The connection shall be made under the supervision of the Superintendent.

The applicant for the street lateral permit shall notify the Superintendent when the street lateral is ready for inspection and connection is to be made to the main sewer. The connection shall be made under the supervision of the Superintendent.

Section 613 B - Trench Inspections
When trenches are excavated for the laying of building lateral pipes or for laying of street lateral pipes, such trenches shall be inspected by the Superintendent. Before the trenches are backfilled, the person performing such work shall notify the Superintendent when the laying of the building lateral is completed, and no backfilling of trenches shall begin until approval is obtained from the Superintendent.

Section 614 - Public Safety Provisions Required; Restoration of Disturbed Areas
All excavations for constructing building laterals shall be adequately protected with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed, in the course of the work, shall be restored in a manner satisfactory to the Superintendent. When installation requires disturbance of paved public roads and shoulders, restoration shall involve backfilling to road grade. Shortly thereafter the City of Hornell

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Department of Public Works (DPW) shall complete road and shoulder restoration to the City of Hornell Standards. The cost for such final road and shoulder restoration by the DPW shall be included with the fees paid with the application for the permit required in Section 602.

Section 615 - Interior Clean-Out
An interior clean-out fitting shall be provided for each building lateral at a readily accessible location, preferably just inside the basement wall. The fitting shall contain a 45-degree branch with removable plug or test tee, and so positioned that sewer cleaning equipment can be inserted therein to clean the building lateral. The cleanout diameter shall be no less than the building lateral diameter.

Section 616 - Costs Borne by Owner
All costs associated with the provisions of this Article shall be borne by the property owner unless specifically stated or agreed to be a cost borne by the City of Hornell. The property owner shall indemnify the City of Hornell from any loss or damage that may be directly or indirectly occasioned by the installation of the building and street laterals, and connections and appurtenances.

Article 7

Inflow

Section 701 - New Inflow Sources Prohibited
Section 702 - Existing Inflow Sources Disconnected
Section 703 - Existing Inflow Sources Disconnected When Property Sold
Section 704 - No Re-connection of Inflow Source Allowed
Section 705 - Charges for Inflow

Section 701 - New Inflow Sources Prohibited No connections shall be made to a sanitary or to a combined sewer which connections are intended to discharge inflow. Such prohibited connections include, but are not limited to, footing drains, roof leaders, roof drains, cellar drains, sump pumps, catch basins, uncontaminated cooling water discharges, or other sources of inflow.

Section 702 - Existing Inflow Sources Disconnected
For properties where separate storm sewers are available within 100 feet of the property line or where, in the judgement of the Superintendent, sufficient natural drainage is available, connections which contribute inflow to the sanitary sewers must be disconnected in a fashion approved by the Superintendent, prior to the sale of the property.

Section 703 - Existing Inflow Sources Disconnected When Property Sold
Upon notice from the Tax Assessor, the Superintendent shall inspect any newly sold property for the purpose of determining if storm sewers or natural drainage is available, and, if so, if all connections which contribute inflow have been disconnected.

Section 704 - No Re-connection of Inflow Source Allowed It shall be a willful violation of this Law for any person to reconnect any inflow source which has been disconnected pursuant to this Article.

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Section 705 - Charges for Inflow
The Superintendent is enabled to take whatever action is necessary to determine the amount of inflow including the requirement for installation of a control manhole. The property from which the inflow originated shall be billed for inflow according to Article 12, however, the City of Hornell may cause a surcharge at a rate not to exceed five (5) times that for normal sewage volume charge.

ARTICLE 8

Trucked or Hauled Waste

Section 801 - Licenses and Application Section
Section 802 - Concurrent Requirements Section
Section 803 - Dumping Location and Timing Section
Section 804 - Notification of Dumping

Section 801 - Licenses and Application
The discharge of trucked or hauled wastes into the City of Hornell sewer system and public sewers tributary thereto will be permitted only with the written approval (license) of the Superintendent. Applicants for such license shall apply on a form provided by the Superintendent. These forms may require information such as vehicle specifications, vehicle license number, vehicle color, NYSDEC permits issued under 6 NYCRR Part 364, approximate annual septage volume expected, service area, and any other information that the Superintendent may require, to determine whether the trucked or hauled wastes could adversely impact the POTW. The application shall be accompanied by a fee prescribed by the Superintendent, not to exceed $100.

The licensee of trucked or hauled wastes will also be charged a fee for each dumping, in accordance with Article 12. The dumping fee shall be paid prior to dumping.

Section 802 - Concurrent Requirements
The applicant for a license to truck or haul wastes shall be the owner of the vehicle or vehicles to be used for such discharge. Any false or misleading statement, in any license application, shall be grounds for invalidating the license. All licenses, issued by the Superintendent, for this purpose, shall be for one (1) year. The licensee shall also be duly permitted by the NYSDEC under 6 NYCRR Part 364 ("364 permit"). If, for any reason, the 364 permit is revoked, the 364 permit lapses or becomes invalid, then the license issued under this Article shall become invalid immediately. All acts performed in connection with the license shall be subject to the inspection and regulations, as established by the Superintendent, the terms and conditions of the license and all local and general laws, ordinances, and regulations which are now or may come into effect, and such license may be suspended or revoked, at any time, by the Superintendent for willful, continued, or persistent violation thereof.

Section 803 - Dumping Location and Timing
The Superintendent may require discharging at only certain locations within the POTW, and only at certain times, and on only certain days of the week, or seasons of the year as shall be stated on said license or as may be relocated by the Superintendent, after appropriate notice. The time and conditions for permissible discharge shall be as set forth on the license, or as may be revised by the superintendent, after appropriate notice.

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Section 804 - Notification of Dumping
Each discharge of trucked or hauled wastes shall be made only with the approval of the Superintendent. The Superintendent may require inspection, sampling, and analysis of each load prior to the discharge of a load. Any extra costs associated with such inspection, sampling, and analysis shall be paid by the licensee.

Article 9

Discharge Restrictions

Section 901 - Pretreatment Standards
Section 902 - General Prohibitions
Section 903 - Concentration Based Limitations
Section 904 - Mass Discharge Based Limitations
Section 905 - Modification of Limitations
Section 906 - Access to User's Records
Section 907 – Dilution
Section 908 - Grease, Oil, and Sand Interceptors
Section 909 - Solid Waste Grinders
Section 910 - Rejection of Wastewater

Section 901 - Pretreatment Standards
All users of the City of Hornell POTW will comply with all standards and requirements of the Act and standards and requirements promulgated pursuant to the Act, including but not limited to 40 CFR Parts 406 - 471.

Section 902 - General Prohibitions
No user shall contribute or cause to be contributed, in any manner or fashion, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the POTW. These general prohibitions apply to all such users of a POTW whether or not the user is subject to National Categorical Pretreatment Standards, or any other National, State, or Local Pretreatment Standards or Requirements.

Without limiting the generality of the foregoing, a user may not contribute the following substances to the POTW:

(1) Any solids, liquids, or gases which, by reason of their nature or quantity, are or may be sufficient, either alone or by interaction with other substances, to cause a fire or an explosion or be injurious, in any way, to the POTW, or to the operation of the POTW. At no time shall both of two successive readings on a flame type explosion hazard meter, at the point of discharge into the system (or at any other point in the system) be more than 25 % nor any single reading be more than 40 % of the lower explosive limit (LEL) of the meter. Unless explicitly allowable by a written permit, prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, carbides, hydrides, and sulfides, and any other substance which the City of Hornell, the State, or the EPA has determined to be a fire hazard, or hazard to the POTW.

(2) Solid or viscous substances which may cause obstruction to the flow in a sewer or otherwise interfere with the operation of the wastewater treatment facilities. Unless explicitly allowable by a written permit, such substances include, but are not limited to, garbage that has

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not been properly shredded, grease, garbage with particles greater than one-half (1/2) inch in any dimension, animal guts or tissues, paunch manure, bones, hair, hides or fleshings, entrails, whole blood, feathers, ashes, cinders, sand, spent lime, lime residues, lime slurry, chemical residues, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, beer, distillery slops, waste paper, paper cups and dishes, milk containers, whey, bulk solids, wood, plastics, cardboard, gas, tar asphalt residues, paint residues, cannery waste, residues from refining or processing fuel or lubricating oil, mud, or glass or stone grinding or polishing wastes.

(3) Any wastewater having a pH less than 6.0 or greater than 9.5, unless the POTW was specifically designed to manage such wastewater, or wastewater having any other corrosive property capable of causing damage or hazard to structures, equipment, and/or POTW personnel. Free acids or alkalies must be neutralized at all times within the above pH range.

(4) Any wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants (including heat), to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of the POTW, or to exceed the limitation set forth in a Categorical Pretreatment Standard.

(5) A toxic pollutant shall include, but not be limited to, any pollutant identified pursuant to Section 307(A) of the Act.

(6) Any noxious or malodorous solids, liquids, or gases which either singly or by interaction with other wastes are sufficient to create a public nuisance or hazard to life, injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, interfere with the use, reuse, reclamation or disposal of sludge or create any hazard in the receiving waters of the sewage treatment plan or prevent entry into sewers for maintenance and repair, including but not limited to cyanides in excess of 1.2 milligrams per liter as CN in the wastes as discharged to the public sewer.

(7) Oils and grease - Any commercial, institutional, or industrial wastes containing fats, waxes, grease, or oils which, whether emulsified or not, may become solid or viscous at temperatures between 32° F and 150° F; any petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in excess of 50 mg/l or in amounts that will cause interference or pass through.

(8) Any wastewater which will cause interference or pass through.

(9) Any wastewater with objectionable color which is not removed in the treatment process, such as, but not limited to, dye wastes, and vegetable tanning solutions.

(10) Any solid, liquid, vapor, or gas having a temperature higher than 65 degrees C (150 degrees F); however, such materials shall not cause the POTW treatment plant influent temperature to be greater than 40 degrees C (104 degrees F). The Superintendent reserves the right, in certain instances, to prohibit or limit the discharge of wastes whose maximum temperatures are lower than 65 degrees C.

(11) Unusual flow rate or concentration of wastes, constituting slugs, except if authorized by the City of Hornell by Industrial Wastewater Permit.

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(12) Any wastewater containing any radioactive wastes except as approved by the Superintendent, and in compliance with applicable State and Federal regulations.

(13) Any wastewater which causes a hazard to human life or which creates a public nuisance, either by itself or in combination, in any way, with other wastes.

(14) Any wastewater with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR Part 261.21.

(15) Any pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems and other items determined to be harmful to the system as determined by the City of Hornell.

(16) Any waters of waste containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the sewage treatment plant.

(17) Any stormwater, roof drains, spring water, cistern or tank overflow, footing drain, discharge from any vehicle washrack or water motor or the contents of a privy vault, septic tank, or cesspool or the discharge or any air-conditioning machine or refrigeration unit.

(18) Any waters or wastes containing strong acid iron pickling wastes or concentrated plating solutions, whether neutralized or not.

(19) Any waters or wastes containing phenols or other taste- or odor-producing substances in such concentrations exceeding limits which may be established by the Superintendent, as necessary, after treatment of the composite sewage to meet the requirements of the state, federal or other public agencies of jurisdiction for such discharge to the receiving waters.

(20) Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed or are amenable to treatment only to such a degree that the sewage treatment plant effluent and/or sewage treatment plant sludge cannot meet the requirements of other agencies having jurisdiction over said sewage treatment plant and receiving waters.

Section 903 - Concentration Based Limitations

No users shall discharge, directly or indirectly, into the POTW, wastewater above the characteristics of Normal Sewage on either a daily or an instantaneous basis, except by permit or as provided for in Section 904. Concentration limits are applicable to wastewater effluents at the point just prior to discharge into the POTW ("end of pipe" concentrations).

Permits issued in accordance with this section may establish limitations that differ from and supersede the characteristics of Normal Sewage.

Section 904 - Mass Discharge Based Limitations

The Superintendent shall determine the total allowable influent load of each substance from significant industrial users. In determining the total load of each substance that significant industrial users shall be allowed to discharge, the superintendent shall consider:

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(1) The quantities of each substance that are uncontrollable because they occur naturally in wastewater,
(2) The quantities of each substance that are anthropogenic but are nonetheless uncontrollable,
(3) Historical discharge trends,
(4) Past pollution control efforts of each significant industrial user as compared to other significant industrial dischargers of the same substance,
(5) Potential for growth in the POTW service area,
(6) Potential for more restrictive regulatory requirements to be placed on the POTW discharge or sludge disposal or sludge reuse method, and
(7) Treatability of the substance. The superintendent shall apply a minimum 10 % safety factor to be protective of the POTW.

To assure that the total loads so calculated, for each substance, are not violated, the Superintendent shall issue permits to significant industrial users limiting discharge loads and/or concentrations.

Permits issued in accordance with this section may establish limitations that differ from and supersede the characteristics of Normal Sewage.

Section 905 - Modification of Limitations
Limitations on wastewater strength or mass discharge contained in this Law and industrial wastewater discharge permits may be supplemented with more stringent limitations when, in the opinion of the Superintendent:

(1) The limitations in this Law are not sufficient to protect the POTW,
(2) The limitations in this Law are not sufficient to enable the POTW treatment plant to comply with applicable water quality standards or the effluent limitations specified in the POTW's SPDES permit,
(3) The POTW sludge will be rendered unacceptable for disposal or reuse as the City of Hornell desires, as a result of discharge of wastewaters at the above prescribed concentration limitations,
(4) Municipal employees or the public will be endangered, or
(5) Air pollution and/or groundwater pollution will be caused.

The limitations on wastewater strength or mass discharge shall be recalculated not less frequently than once every five (5) years. The results of these calculations shall be reported to the City of Hornell. Any issued industrial wastewater discharge permits, which have limitations, based directly on any limitations, which were changed, shall be revised and amended, as appropriate.

Section 906 - Access to User's Records
The Superintendent shall have the authority to copy any record related to wastewater discharges to the POTW.

Section 907 - Dilution
Except where expressly authorized to do so by an applicable Pretreatment Standard, no user shall ever increase the use of process water or, in any other way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with a Pretreatment Standard.

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Dilution flow shall be considered to be inflow.

Section 908 - Grease, Oil, and Sand Interceptors
Grease, oil, and sand interceptors shall be provided, when, in the opinion of the Superintendent, they are necessary for the proper handling of wastewater containing excessive amounts of grease, flammable substances, sand, or other harmful substances; except that such interceptors shall not be required for private living quarters or living units. All interceptors shall be of type and capacity approved by the Superintendent and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the owner, at their expense.

Section 909 - Solid Waste Grinders
Solid waste grinders at or serving commercial establishments, institutions or industries shall not discharge into the City of Hornell POTW if there is a combined sewer overflow (CSO) on the sewer lines conveying the waste to the POTW treatment plant.

Section 910 - Rejection of Wastewater
The City of Hornell may reject a User's wastewater, on recommendation of the Superintendent, when it is has been determined that the wastewater contains substances or possesses characteristics which have a deleterious effect on the POTW and its processes, or on the receiving water, or which constitute a public nuisance or hazard. See Section 1016.

If any waters or wastes are discharged or are proposed to be discharged to the public sewers, which waters contain the substances or possess the characteristics enumerated in herein, and which, in the judgment of the Superintendent, may have a deleterious effect upon the sewage works, processes, equipment or receiving waters or which otherwise create a hazard to life or constitute a public nuisance, the Superintendent may:

(1) Reject the wastes;
(2) Require pretreatment to an acceptable condition for discharge to the public sewers
(3) Require control over the quantities and rates of discharge; and/or
(4) Require payment to cover the added cost of handling and treating the waste not covered by existing taxes or sewer charges.

Article 10

Discharge Permits and Pretreatment Requirements

Section 1001 - Wastewater Discharge Reports
Section 1002 - Notification to Industrial Users
Section 1003 A - Wastewater Discharges
Section 1003 B - Wastewater Discharge Permits Required for Significant Industrial Users
Section 1003 C - Other Industrial Users
Section 1003 D - Discharge Permits to Storm Sewers Not Authorized
Section 1004 A - Application for Wastewater Discharge Permits
Section 1004 B - Permit Modifications
Section 1004 C - Permit Conditions
Section 1004 D - Permit Duration
Section 1004 E - Permit Reissuance Section

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Section 1004 F - Permit Transfer
Section 1004 G - Permit Revocation
Section 1004 H - Public Notification
Section 1005 - Reporting Requirements for Permittee
Section 1006 - Flow Equalization
Section 1007 - Monitoring Stations (Control Manholes)
Section 1008 - Proper Design and Maintenance of Facilities and Monitoring Stations
Section 1009 - Vandalism, Tampering with Measuring Devices
Section 1010 - Sampling and Analysis
Section 1011 - Accidental Discharges; SPCC Plan
Section 1012 - Posting Notices
Section 1013 - Sample Splitting
Section 1014 - Public Access to Information Maintained by the Superintendent
Section 1015 A - Access to Property and Records
Section 1015 B - Access to Easements
Section 1015 C - Liability of Property Owner
Section 1016 - Special Agreements

Section 1001 - Wastewater Discharge Reports
As a means of determining compliance with this Law, with applicable SPDES permit conditions, and with applicable State and Federal law, each industrial user shall be required to notify the Superintendent of any new or existing discharges to the POTW by submitting a completed Industrial Chemical Survey (ICS) form and a completed Industrial Wastewater Survey (IWS) form to the Superintendent. The Superintendent may require any user discharging wastewater into the POTW to file wastewater discharge reports and to supplement such reports as the Superintendent deems necessary. All information shall be furnished by the user in complete cooperation with the Superintendent.

Section 1002 - Notification to Industrial Users
The Superintendent shall, from time to time, notify each industrial user of applicable Pretreatment Standards, and of other applicable requirements under Section 204(B) and Section 405 of the Clean Water Act, and Subtitles C and D of RCRA.

Section 1003 A - Wastewater Discharges
No Significant Industrial User shall discharge wastewater to the POTW without having a valid Wastewater Discharge Permit, issued by the Superintendent. Significant Industrial Users shall comply fully with the terms and conditions of their permits in addition to the provisions of this Law. Violation of a permit term or condition is deemed a violation of this Law.

Section 1003 B - Wastewater Discharge Permits Required for Significant Industrial Users
All Significant Industrial Users proposing to connect to or to discharge to the POTW shall obtain a Wastewater Discharge Permit before connecting to or discharging to the POTW. Existing significant industrial users shall make application for a Wastewater Discharge Permit within 30 days after the effective date of this Law, and shall obtain such a permit within 90 days after making application.

Section 1003 C - Other Industrial Users
The Superintendent may issue Wastewater Discharge Permits to other industrial users of the POTW.

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Section 1003 D - Discharge Permits to Storm Sewers Not Authorized
The City of Hornell does not have the authority to issue permits for the discharge of any wastewater to a storm sewer. This authority rests with the NYSDEC.

Section 1004 A - Application for Wastewater Discharge Permits
Industrial users required to obtain a Wastewater Discharge Permit shall complete and file with the Superintendent an application in the form prescribed by the City of Hornell, the application shall be accompanied by a fee, as set forth in Section 1203. In support of any application, the industrial user shall submit, in units and terms appropriate for evaluation, the following information:

(1) Name, address, and location (if different from the address).
(2) SIC code of both the industry and any categorical processes.
(3) Wastewater constituents and characteristics including but not limited to those mentioned in Article 10 of this Law and which are limited in the appropriate Categorical Standard, as determined by a reliable analytical laboratory approved by the NYSDOH. Sampling and analysis shall be performed in accordance with Standard Methods.
(4) Time and duration of the discharge.
(5) Average daily peak wastewater flow rates, including daily, monthly, and seasonal variations, if any.
(6) Site plans, floor plans, mechanical and plumbing plans, and details to show all sewers, sewer connections, and appurtenances.
(7) Description of activities, facilities, and plant processes on the premises, including all materials which are or could be discharged to the POTW.
(8) Each product produced by type, amount, process or processes, and rate of production.
(9) Type and amount of raw materials processed (average and maximum per day).
(10) Number and type of employees, and hours of operation, and proposed or actual hours of operation of the pretreatment system.
(11) The nature and concentration of any pollutants in the discharge which are limited by any County, State, or Federal Standards, and a statement whether or not the standards are being met on a consistent basis and if not whether additional Operation and Maintenance (O&M) and/or additional pretreatment is required for the user to meet all applicable Standards.
(12) If additional pretreatment and/or O&M will be required to meet the Standards, then the industrial user shall provide the shortest schedule to accomplish such additional treatment and/or O&M. The completion date in this schedule shall not be longer than the compliance date established for the applicable Pretreatment Standard. The following conditions shall apply to this schedule:
    (a) The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable Pretreatment Standards (such events include hiring an engineer, completing preliminary plans, completing final plans, executing contracts for major components, commencing construction, completing construction, beginning operation, and beginning routine operation).
    (b) No increment referred to in (a) above shall exceed 9 months, nor shall the total compliance period exceed 18 months.
    (c) No later than 14 calendar days following each date in the schedule and the final date for compliance, the user shall submit a progress report to the Superintendent

including, as a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the user to return to the established schedule. In no event shall more than 9 months elapse between such progress reports to the Superintendent.

(d) Any other information as may deemed by the Superintendent to be necessary to evaluate the permit application.

The Superintendent will evaluate the data furnished by the industrial user and may require additional information. After evaluation and acceptance of the data furnished, the City of Hornell may issue a Wastewater Discharge Permit subject to terms and conditions provided herein.

Section 1004 B - Permit Modifications

Wastewater Discharge Permits may be modified by the Superintendent, upon 30 days notice to the permittee, for just cause. Just cause shall include, but not be limited to:

(1) Promulgation of an applicable National Categorical Pretreatment Standard,
(2) Revision of or a grant of a variance from such categorical standards pursuant to 40 CFR 403.13,
(3) Changes in general discharge prohibitions and local limits as per Section 903 of this law,
(4) Changes in processes used by the permittee, or changes in discharge volume or character,
(5) Changes in design or capability of any part of the POTW,
(6) Discovery that the permitted discharge causes or contributes to pass through or interference, and
(7) Changes in the nature and character of the sewage in the POTW as a result of other permitted discharges.

Upon the promulgation of the Federal Categorical Pretreatment Standards for a particular industrial subcategory, the federal standard, if more stringent than the limitations imposed under this chapter for sources in that subcategory, shall immediately supersede the limitations imposed under this chapter. The Superintendent shall notify all affected users of the applicable reporting requirements under 40 CFR 403.12. The user shall submit to the Superintendent within 180 days after the promulgation of an applicable Federal Categorical Pretreatment Standard information required by 1004A.

Any changes or new conditions in the permit shall include a reasonable time schedule for compliance as set forth in Section 1004 A (12)(a).

Where a user subject to a National Categorical Pretreatment Standard has not previously submitted an application for a Wastewater Discharge Permit, the user shall apply for a Wastewater Discharge Permit within 180 days after the promulgation of the applicable National Categorical Pretreatment Standard.

Section 1004 C - Permit Conditions

Wastewater Discharge Permits shall be expressly subject to all the provisions of this Law, and all other applicable regulations, user charges and fees established by the City of Hornell. Permits may contain the following:

(1) Limits on the average and maximum rate and time of discharge, or requirements for flow regulation and equalization.

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(2) Limits on the average and maximum wastewater constituents and characteristics, including concentration or mass discharge limits.
(3) The unit charge or schedule of user charges and fees for the management of the wastewater discharged to the POTW.
(4) Requirements for installation and maintenance (in safe condition) of inspection and sampling facilities.
(5) Specifications for monitoring programs which may include sampling locations, frequency of sampling, number, types, and standards for tests, and reporting schedules.
(6) Compliance schedules
(7) Requirements for submission of technical reports or discharge reports.
(8) Requirements for maintaining and retaining plant records relating to wastewater discharge, as specified by the City of Hornell, and affording the Superintendent access thereto.
(9) Requirements for notification of the City of Hornell of any new introduction of wastewater constituents or of any substantial change in the volume or character of the wastewater constituents being introduced into the POTW.
(10) Requirements for the notification of the City of Hornell of any change in the manufacturing and/or pretreatment process used by the permittee.
(11) Requirements for notification of excessive, accidental, or slug discharges.
(12) Other conditions as deemed appropriate by the City of Hornell to ensure compliance with this Law, and State and Federal laws, rules, and regulations.

Section 1004 D - Permit Duration
Permits shall be issued for a specified time period, not to exceed five (5) years. A permit may be issued for a period less than five (5) years.

Section 1004 E - Permit Reissuance
The user shall apply for permit reissuance a minimum of 180 days prior to the expiration of the user's existing permit. The terms and conditions of the permit may be subject to modification, by the Superintendent, during the term of the permit, as limitations or requirements, as identified in Section 1004 B, or other just cause exists. The User shall be informed of any proposed changes in their permit at least 30 days prior to the effective date of the change. Any changes or new conditions in the reissued permit shall include a reasonable time schedule for compliance as established in Section 1004 A (12)(a).

Section 1004 F - Permit Transfer
Wastewater Discharge Permits are issued to a specific User for a specific operation, or discharge at a specific location. A Wastewater Discharge Permit shall not be reassigned, transferred, or sold to a new owner, new User, different premises, or a new or changed operation.

Section 1004 G - Permit Revocation
Wastewater Discharge Permits may be revoked for the following reasons: falsifying self-monitoring reports, tampering with monitoring equipment, refusing to allow the Superintendent timely access to the industrial premises, failure to meet effluent limitations, failure to pay fines, failure to pay user charges, and failure to meet compliance schedules.

Section 1004 H - Public Notification
The City of Hornell may publish in the City of Hornell official daily newspaper(s), informal notice of intent to issue a Wastewater Discharge Permit, at least 14 days prior to issuance.

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Section 1005 - Reporting Requirements for Permittee

The reports or documents required to be submitted or maintained under this section shall be subject to:

(a) The provisions of 18 USC Section 1001 relating to fraud and false statements;
(b) The provisions of Sections 309(c)(4) of the Act, as amended, governing false statements, representation or certification; and
(c) The provisions of Section (c)(6) of the Act, as amended, regarding corporate officers.

(1) Baseline Monitoring Report

Within 180 days after promulgation of an applicable Federal Categorical Pretreatment Standard, a User subject to that standard shall submit, to the Superintendent, the information required by paragraphs (8) and (9) of Section 1004 A.

(2) 90-Day Compliance Report

Within 90 days following the date for final compliance with applicable Pretreatment Standards, or, in the case of a New Source, following commencement of the introduction of wastewater into the POTW, any User subject to Pretreatment Standards and Requirements shall submit, to the Superintendent, a report indicating the nature and concentration of all pollutants in the discharge, from the regulated process, which are limited by Pretreatment Standards and Requirements, and the average and maximum daily flow for these process units in the User's facility which are limited by such Pretreatment Standards and Requirements. The report shall state whether the applicable Pretreatment Standards and Requirements are being met on a consistent basis, and, if not, what additional O&M and/or pretreatment is necessary to bring the User into compliance with the applicable Pretreatment Standards or Requirements. This statement shall be signed by an authorized representative of the Industrial User, and certified to by a qualified professional.

(3) Periodic Compliance Reports

(a) Any User subject to a Pretreatment Standard, after the compliance date of such Pretreatment Standard, or, in the case of a New Source, after commencement of the discharge into the POTW, shall submit to the Superintendent, during the months of June and December, unless required more frequently in the Pretreatment Standard or by the Superintendent, a report indicating the nature and concentration of pollutants in the effluent which are limited by such Pretreatment Standards. In addition, this report shall include a record of all daily flows which, during the reporting period, exceeded the average daily flow reported in Section 1004 A. At the discretion of the Superintendent, and in consideration of such factors as local high or low flow rates, holidays, budget cycles, etc., the Superintendent may agree to alter the months during which the above reports are to be submitted, however, no fewer than two reports shall be submitted per year.

(b) The Superintendent may impose mass limitations on Users, which are using dilution to meet applicable Pretreatment Standards or Requirements, or, in other

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cases where the imposition of mass limitations are appropriate. In such cases, the report required by Section 1005 (3) (a) shall indicate the mass of pollutants regulated by Pretreatment Standards in the effluent of the User. These reports shall contain the results of discharge sampling and analysis, including the flow, and the nature and concentration, or production and mass, where requested by the Superintendent, of pollutants contained therein, which are limited by the applicable Pretreatment Standard. All analyses shall be performed in accordance with Standard Methods, by a laboratory certified by NYSDOH to perform the analyses.

(4) Violation Report

If sampling, performed by the user, indicates a violation of this Law and/or the User's discharge permit, the User shall notify the Superintendent within 24 hours of becoming aware of the violation. The User shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Superintendent within 30 days after becoming aware of the violation. The User is not required to re-sample if the POTW performs monitoring of the User's discharge at least once a month for the parameter which was violated, or if the POTW performs sampling, for the parameter which was violated, between the User's initial sampling and when the User receives the results of this sampling.

(5) Other reports

The Superintendent may impose reporting requirements equivalent to the requirements imposed by Section 1005(3) for users not subject to pretreatment standards.

Section 1006 - Flow Equalization

No person shall cause the discharge of slugs to the POTW. Each person discharging, into the POTW, greater than 100,000 gallons per day or greater than five percent (5%) of the average daily flow in the POTW, whichever is lesser, shall install and maintain, on their property and at their expense, a suitable storage and flow control facility to insure equalization of flow over a twenty-four (24) hour period. The facility shall have a capacity for at least fifty percent (50%) of the daily discharge volume and shall be equipped with alarms and a rate of discharge controller, the regulation of which shall be directed by the Superintendent. A wastewater discharge permit may be issued solely for flow equalization.

Section 1007 - Monitoring Stations (Control Manholes)

(a) All Significant Industrial Users, and other Industrial Users whose industrial waste discharge has caused or may cause Interference or Pass-Through shall install and maintain a suitable monitoring station, on their premises at their expense, to facilitate the observation, sampling, and measurement of their industrial wastewater discharge.

(b) If there is more than one street lateral serving an Industrial User, the Superintendent may require the installation of a control manhole on each lateral.

(c) The Superintendent may require that such monitoring station(s) include equipment for the continuous measurement and recording of wastewater flow rate and for the sampling of the wastewater. Such station(s) shall be accessibly and safely located, and the Industrial

User shall allow immediate access, without prior notice, to the station by the Superintendent, or their designated representative.

Section 1008 - Proper Design and Maintenance of Facilities and Monitoring Stations
Preliminary treatment, and flow equalization facilities, or monitoring stations, if provided for any wastewater, shall be constructed and maintained continuously clean, safe, and continuously operational by the owner at their expense. Where an Industrial User has such treatment, equalization, or monitoring facilities at the time this Law is enacted, the Superintendent may approve or disapprove the adequacy of such facilities. Where the Superintendent disapproves of such facilities and construction of new or upgraded facilities for treatment, equalization, or monitoring are required, plans and specifications for such facilities shall be prepared by a licensed professional engineer and submitted to the Superintendent. Construction of new or upgraded facilities shall not commence until written approval of the Superintendent has been obtained.

Section 1009 - Vandalism, Tampering with Measuring Devices
No unauthorized person shall negligently break, damage, destroy, uncover, deface, tamper with, prevent access, or render inaccurate, or cause or permit the negligent breaking, damaging, destroying, uncovering, defacing, tampering with, preventing access, or rendering inaccurate to:

i - any structure, appurtenance, or equipment which is a part of the City of Hornell POTW, or

ii - any measuring, sampling, and/or testing device or mechanism installed pursuant to any requirement under this Law except as approved by the Superintendent.

Section 1010 - Sampling and Analysis
Sampling shall be performed so that a representative portion of the wastewater is obtained for analysis.

All measurements, tests, and analyses of the characteristics of waters and wastes required in any section of this Law shall be carried out in accordance with Standard Methods, by a laboratory certified by NYSDOH to perform the analyses. Such samples shall be taken at the approved monitoring stations described in Section 1007, if such a station exists. If an approved monitoring station is not required, then samples shall be taken from another location on the industrial sewer lateral before discharge to the public sewer. Unless specifically requested otherwise, or unless specifically not allowed in Federal regulation, samples shall be gathered as flow proportioned (where feasible) composite samples made up of individual samples taken not less than once per hour for the period of time equal to the duration of industrial wastewater discharge during daily operations (including any cleanup shift).

Section 1011 - Accidental Discharges; SPCC Plan
Each user shall provide for protection from accidental or slug discharges of prohibited materials or discharges of materials in volume or concentration exceeding limitations of this Law or of an Industrial Wastewater Discharge Permit. Users shall immediately notify the Superintendent of the discharge of wastes in violation of this Law or any Permit. Such discharges may result from:

(1) Breakdown of pretreatment equipment

(2) Accidents caused by mechanical failure, or negligence

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(3) Other causes.

Where possible, such immediate notification shall allow the Superintendent to initiate appropriate countermeasure action at the POTW. The user shall prepare a detailed written statement following any accidental or slug discharge, which describes the causes of the discharge and the measures being taken to prevent future occurrences, within five (5) days of the occurrence, and the Superintendent shall receive a copy of such report no later than the fifth calendar day following the occurrence. Analytical results and their interpretation may be appended to the report at a date not exceeding 45 calendar days after the occurrence.

When required by the Superintendent, detailed plans and procedures to prevent accidental or slug discharges shall be submitted to the Superintendent, for approval. These plans and procedures shall be called a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The plan shall address, at a minimum, the following:

(a) Description of discharge practices, including non-routine batch discharges;

(b) Description of stored chemicals;

(c) Procedures for immediately notifying the POTW of any accidental or slug discharge. Such notification must also be given for any discharge which would violate any provision of the permit and any National Prohibitive Discharge Standard;

(d)Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

Section 1012 - Posting Notices
In order that the Industrial User's employees be informed of the City of Hornell requirements, a notice shall be permanently posted on appropriate bulletin board(s) within the user's facility advising employees of the City of Hornell requirements and whom to call in case of an accidental discharge in violation of this Law.

Section 1013 - Sample Splitting
When so requested in advance by an industrial user, and when taking a sample of industrial wastewater, the City of Hornell representative(s) shall gather sufficient volume of sample so that the sample can be split into two nearly equal volumes, each of size adequate for the anticipated analytical protocols including any Quality Control (QC) procedures. One of the portions shall be given to the representative of the industrial user whose wastewater was sampled, and the other portion shall be retained by the City of Hornell for its own analysis.

Section 1014 - Public Access to Information Maintained by the Superintendent
When requested, the Superintendent shall make available, to the public, for inspection and/or copying, information and data on industrial users obtained from reports, questionnaires, permit applications, permit and monitoring programs, and inspections, unless the Industrial User

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specifically requests, and is able to demonstrate to the satisfaction of the Superintendent, that such information, if made public, would divulge processes or methods of production entitled to protection as trade secrets of the user. Wastewater constituents and characteristics, and reports of accidental discharges shall not be recognized as confidential.

Confidential information shall not be made available for inspection and/or copying by the public but shall be disclosed, upon written request, to governmental agencies, for uses related to this Law, or the SPDES Permit, providing that the governmental agency making the request agrees to hold the information confidential, in accordance with State or Federal Laws, Rules and Regulations. The Superintendent shall provide written notice to the industrial user of any disclosure of confidential information to another governmental agency.

Section 1015 A - Access to Property and Records
The Superintendent and other authorized representatives of the City of Hornell, representatives of EPA, NYSDEC, NYSDOH, and/or NYSDOH Hornell District Office, bearing proper credentials and identification, shall be permitted to enter upon all non-residential properties at all times for the purpose of inspection, observation, sampling, flow measurement, and testing to ascertain a user's compliance with applicable provisions of Federal and State law governing use of the City of Hornell POTW, and with the provisions of this Law. Inspections of residential properties shall be performed in proper observance of the resident's civil rights. Such representative(s) shall have the right to set up, on the User's property or property rented/leased by the User, such devices as are necessary to conduct sampling or flow measurement. Guard dogs shall be under proper control of the User while the representatives are on the User's property or property rented/leased by the User. Such representative(s) shall, additionally have access to and may copy any records the User is required to maintain under this Law. Where a User has security measures in force which would require proper identification and clearance before entry into the premises, the user shall make necessary arrangements so that upon presentation of suitable identification, inspecting personnel will be permitted to enter, without delay, for the purpose of performing their specific responsibilities.

Section 1015 B - Access to Easements
The Superintendent, bearing proper credentials and identification, shall be permitted to enter all private premises through which the City of Hornell holds an easement for the purpose of inspection, observation, measurement, sampling, repair, and maintenance of any portion of the City of Hornell public sewer system lying within the easement. All entry and subsequent work on the easement shall be done in accordance with the terms of the easement pertaining to the private premises involved.

Section 1015 C - Liability of Property Owner
During the performance, on private premises, of inspections, sampling, or other similar operations referred to in Sections 1014 A and 1014 B, the inspectors shall observe all applicable safety rules established by the owner or occupant of the premises. The owner and/or occupant shall be held harmless for personal injury or death of the inspector and the loss of or damage to the inspector's supplies and/or equipment; and the inspector shall indemnify the owner and/or occupant against loss or damage to property of the owner or occupant by the inspector and against liability claims asserted against the owner or occupant for personal injury or death of the inspector or for loss of or damage to the inspector's supplies or equipment arising from inspection and sampling operations, except as such may be caused by negligence or failure of the owner or occupant to maintain safe conditions.

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Section 1016 - Special Agreements
Nothing in this Article shall be construed as preventing any special agreement or arrangement between the City of Hornell and any User of the POTW whereby wastewater of unusual strength or character is accepted into the POTW and specially treated, subject to any payments or user charges, as may be applicable. In entering into such a special agreement, the City of Hornell shall consider whether the wastewater will:

(1) pass-through or cause interference

(2) endanger the public municipal employees

(3) cause violation of the SPDES Permit

(4) interfere with any Purpose stated in Section 102

(5) prevent the equitable compensation to the City of Hornell for wastewater conveyance and treatment, and sludge management and disposal

No discharge which violates the Federal Pretreatment Standards will be allowed under the terms of such special agreements.

No agreement shall be entered into without the user having been issued and presently having a permit to discharge wastes into the POTW for treatment and disposal. Additionally, the user shall be in compliance with all conditions in the permit and shall not be in arrears in any charges due to the City before the agreement is entered into. The Board of Public Works may condition the agreement.

Article 11

Enforcement and Penalties

Note: This Article is under review by NYSDEC and may be revised following review. The municipal attorney or officer responsible for drafting the City of Hornell Sewer Use Law should carefully review the provisions in this Article of the Model and make any suitable adjustments to maintain consistency with local and state law.

Section 1101 - Enforcement Response Plan

Administrative Remedies

Section 1102 - Notification of Violation
Section 1103 - Consent Orders
Section 1104 - Administrative or Compliance Orders
Section 1105 - Administrative Fines
Section 1106 - Cease and Desist Orders
Section 1107 - Termination of Permit
Section 1108 - Water Supply Severance
Section 1109 - Show Cause Hearing
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Section 1111 - Notice
Section 1112 - Right to Choose Multiple Remedies

Judicial Remedies

Section 1113 - Civil Actions for Penalties
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Miscellaneous

Section 1118 - Delinquent Payments
Section 1119 - Performance Bonds
Section 1120 - Liability Insurance
Section 1121 - Informant Rewards
Section 1122 - Public Notification
Section 1123 - Contractor Listings

Section 1101 - Enforcement Response Plan
The Superintendent shall prepare an Enforcement Response Plan. The Enforcement Response Plan, in a step-by-step fashion, shall outline the procedures to be followed to identify, document, and respond to violations by Users of the POTW. All violations by Users of the POTW shall be met with some type of enforcement response. The response shall be comprehensive and effective.

The Enforcement Response Plan shall:

(1) describe how the Superintendent will investigate instances of non-compliance

(2) describe the types of escalated enforcement actions that the Superintendent will take in response to all anticipated types of User violations and the time periods within which to initiate and follow-up these actions

(3) adequately reflect the City of Hornell's responsibility to enforce all applicable standards and requirements.

The Enforcement Response Plan shall contain:

(1) criteria for scheduling periodic inspection and/or sampling visits to POTW Users

(2) forms and guidelines for documenting compliance data in a manner which will enable the information to be used as evidence

(3) systems to track due dates, compliance schedule milestones, and pending enforcement actions

(4) criteria, responsible personnel, and procedures to select and initiate an enforcement action.

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The range of appropriate enforcement actions shall be based on the nature and severity of the violation and other relevant factors, such as:

- magnitude of the violation
- duration of the violation
- effect of the violation on the receiving water
- effect of the violation on the POTW
- effect of the violation on the health and safety of the POTW employees
- compliance history of the User
- good faith of the User
- and shall promote consistent and timely use of enforcement remedies.

The City of Hornell shall approve the Enforcement Response Plan. The Enforcement Response Plan shall be reviewed at least every five years.

Administrative Remedies

Section 1102 - Notification of Violation

Whenever the Superintendent finds that any User has violated or is violating this Law, or any Wastewater Discharge Permit, order, prohibition, limitation, or requirement permitted by this Law, the Superintendent may serve upon such person a written notice stating the nature of the violation. Within ten (10) calendar days of the date the Superintendent mails the notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof shall be submitted to the Superintendent, by the User. The correction and prevention plan shall include specific actions.

Submission of this plan in no way relieves the User of liability for any violations caused by the User before or after receipt of the Notice of Violation.

Section 1103 - Consent Orders
The Superintendent is hereby empowered to enter into Consent Orders, assurances of voluntary compliance, or other similar documents establishing an agreement with the User responsible for the noncompliance. Such orders shall include specific action to be taken by the User to correct the noncompliance within a time period also specified by the order. Consent Orders shall have the same force and effect as an administrative order.

Section 1104 - Administrative or Compliance Orders
When the Superintendent finds that a User has violated or continues to violate this Law or a permit or administrative order issued thereunder, he may issue an administrative order to the User responsible for the discharge directing that, following a specified time period, sewer service shall be discontinued, severed and abated unless the violation is corrected and that there is no reoccurrence of the violation. Administrative orders may also contain such other requirements as might be reasonably necessary and appropriate to address the noncompliance, including the installation of pretreatment technology, additional self-monitoring, and management practices.

The User may, within fifteen (15) calendar days of receipt of such order, petition the Superintendent to modify or suspend the order. Such petition shall be in written form and shall be

transmitted to the Superintendent by registered mail. The Superintendent shall then:

(1) Reject any frivolous petitions,

(2) Modify or suspend the order, or

(3) Order the petitioner to show cause in accordance with Section 1109 and may as part of the show cause notice request the User to supply additional information.

Section 1105 - Administrative Fines

Notwithstanding any other section of this Law, any User who is found to have violated any provision of this Law, or a wastewater discharge permit or administrative order issued hereunder, shall be fined in an amount not less than one thousand dollars ($1,000.00) per violation. Each day on which noncompliance shall occur or continue shall be deemed a separate and distinct violation.

The User may, within fifteen (15) calendar days of notification of the Superintendent's notice of such fine, petition the Board of Public Works to modify or suspend the order. Such petition shall be in written form and shall be transmitted to the Superintendent by registered mail. The Board of Public Works shall then:

(1) Reject any frivolous petitions,

(2) Modify or suspend the fine, or

(3) Order the petitioner to show cause in accordance with Section 1109 and may as part of the show cause notice request the User to supply additional information.

Section 1106 - Cease and Desist Orders

When the Superintendent finds that a User has violated or continues to violate this Law or any permit or administrative order issued hereunder, the Superintendent may issue an administrative order to cease and desist all such violations and direct those persons in noncompliance to:

(1) Comply forthwith

(2) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations or terminating the discharge.

The User may, within fifteen (15) calendar days of the date the Superintendent mails notification of such order, petition the Superintendent to modify or suspend the order. Such petition shall be in written form and shall be transmitted to the Superintendent by registered mail. The Superintendent shall then:

(1) Reject any frivolous petitions,

(2) Modify or suspend the order,

(3) Order the petitioner to show cause in accordance with Section 1109 and may as part of the show cause notice request the User to supply additional information.

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Section 1107 - Termination of Permit
Any User who violates the following conditions of this Law or a wastewater discharge permit or administrative order, or any applicable or State and Federal law, is subject to permit termination: (1) Violation of permit conditions or conditions of an administrative order, (2) Failure to accurately report the wastewater constituents and characteristics of its discharge, (3) Failure to report significant changes in operations or wastewater constituents and characteristics, (4) Refusal of reasonable access to the User's premises for the purpose of inspection, monitoring, or sampling, or (5) Failure to pay administrative fines, fees or user charges. Non-compliant industrial Users will be notified, by registered mail, of the proposed termination of their wastewater permit. The User may, within fifteen (15) calendar days of the date the Superintendent mails such notification, petition the Superintendent to allow continued use of the POTW by the user. Such petition shall be in written form and shall be transmitted to the Superintendent by registered mail.

The Superintendent shall then:
(1) Reject any frivolous petitions,
(2) Order the petitioner to show cause in accordance with Section 1109 and may as part of the show cause notice request the User to supply additional information.

Section 1108 - Water Supply Severance
Whenever a User has violated or continues to violate the provisions of this Law or an order or permit issued hereunder, water service to the User may be severed and service will only recommence, at the User's expense, after it has satisfactorily demonstrated its ability to comply. The User may, within fifteen (15) calendar days of severance, petition the Superintendent to reconnect water supply service. Such petition shall be in written form and shall be transmitted to the Superintendent by registered mail.

The Superintendent shall then:
(1) Reject any frivolous petitions,
(2) Reconnect the water supply, or
(3) Order the petitioner to show cause in accordance with Section 1109 and may as part of the show cause notice request the User to supply additional information.

Section 1109 - Show Cause Hearing
The Superintendent may order any User appealing administrative remedies for violations of this Law to show cause, before the City of Hornell, why an enforcement action, initiated by the Superintendent, should not be taken. A notice shall be served on the User specifying the time and place of a hearing to be held by the City of Hornell regarding the violation, the reasons why the action is to be taken, the proposed enforcement action, and directing the User to show cause before the City of Hornell why the proposed enforcement action should not be taken. The notice of the hearing shall be served at least ten (10) calendar days before the hearing in accordance with Section 1111 of this Article.

Service shall be made on any principal or executive officer of a User's establishment or to any partner in a User's establishment. The notice of the hearing shall be served at least ten (10) calendar days before the hearing, in accordance with Section 1111. The City of Hornell may itself conduct the hearing, or may designate any of its members or any officer or employee of the City of Hornell to conduct the hearing:

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(1) Issue, in the name of the City of Hornell, notices of hearings requesting the attendance and testimony of witnesses, and the production of evidence relevant to any matter involved in such hearings,
(2) Take the evidence,
(3) Take sworn testimony,
(4) Transmit a report of the evidence and hearing, including transcripts and other evidence, together with recommendations to the City of Hornell for action thereon.

After the City of Hornell has reviewed the evidence and testimony, it may order the user to comply with the Superintendent's order or fine, modify the Superintendent's order or fine, or vacate the Superintendent's order or fine.

Section 1110 - Failure of User to Petition the Superintendent
In the event the Superintendent issues any administrative order, terminates the User's permit, or makes any fine as set forth in this article, and the User fails, within the designated period of time set forth, to petition the Superintendent, as provided in appropriate sections of this article, the User shall be deemed in default and its rights to contest the administrative order or fine shall be deemed waived.

Section 1111 - Notice
The notices, orders, petitions, or other notification which the User or Superintendent shall desire or be required to give pursuant to any sections of this Law shall be in writing and shall be served personally or sent by certified mail or registered mail, return receipt requested, postage prepaid, and the notice, order, petition, or other communication shall be deemed given upon its mailing as provided herein.

Any notice, administrative order, or communication mailed to the User pursuant to the sections of this Law shall be mailed to the User where the User's effluent is discharged into transmission lines to the City of Hornell's POTW. Any notice, petition, or other communication mailed to the Superintendent shall be addressed to the “Superintendent of Public Works” and mailed to 82 Main St. Hornell, NY 14843.

Section 1112 - Right to Choose Multiple Remedies The Superintendent shall have the right, within the Superintendent's sole discretion, to utilize any one or more appropriate administrative remedies set forth in this Article. The Superintendent may utilize more than one administrative remedy established pursuant to this Article, and the Superintendent may hold one show cause hearing combining more than one enforcement action.

Judicial Remedies

Section 1113 - Civil Actions For Penalties Any person who violates any of the provisions of or who fails to perform any duty imposed by this Law, or any administrative order or determination of the Superintendent promulgated under this Law, or the terms of any permit issued hereunder, shall be liable to the City of Hornell for a civil penalty not to exceed one thousand dollars ($1000) for each such violation, to be assessed after a hearing (unless the User waives the right to a hearing) held in conformance with the procedures set forth in this Article. Each violation shall be separate and distinct violation, and in the case of continuing violation, each day's continuance thereof shall be deemed a separate and distinct violation. Such penalty may be recovered in an action brought by the City of Hornell attorney, or their designated attorney, at the request of the Superintendent in the name of the City of Hornell, in any court of competent

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jurisdiction giving preference to courts local to the City of Hornell. In addition to the above-described penalty, the Superintendent may recover all damages incurred by the City of Hornell from any persons or Users who violate any provisions of this Law, or who fail to perform any duties imposed by this Law or any administrative order or determination of the Superintendent promulgated under this Law, or the terms of any permit issued hereunder. In addition to the above-described damages, the Superintendent may recover all reasonable attorney's fees incurred by the City of Hornell in enforcing the provisions of this Article, including reasonable attorney's fees incurred in any action to recover penalties and damages, and the Superintendent may also recover court costs, and other expenses associated with the enforcement activities, including sampling and monitoring expenses.

In determining the amount of civil penalty, the court shall take into account all relative circumstances, including, but not limited to the extent of harm caused by the violation, the magnitude and duration, any economic benefit gained through the User's violation, corrective actions by the User, the compliance history of the User, and any other relative factors as justice may require.

Such civil penalty may be released or compromised by the Superintendent before the matter has been referred to the City of Hornell attorney, and where such matter has been referred to the City of Hornell attorney, any such penalty may be released or compromised and any action commenced to recover the same may be settled and discontinued by the City of Hornell attorney, with the consent of the Superintendent.

Section 1114 - Court Orders
In addition to the power to assess penalties as set forth in this Article, the Superintendent shall have the power, following the hearing held in conformance with the procedures set forth in this Article, to seek an order:

(1) Suspending, revoking, or modifying the violator's Wastewater Discharge Permit, or
(2) Enjoining the violator from continuing the violation.

Any such court order shall be sought in an action brought by the City of Hornell attorney, at the request of the Superintendent, in the name of the City of Hornell, in any court of competent jurisdiction giving precedence to courts local to the City of Hornell.

The City of Hornell attorney, at the request of the Superintendent shall petition the Court to impose, assess, and recover such sums imposed according to this Article. In determining amount of liability, the Court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration, any economic benefit gained through the User's violation, corrective actions by the User, the compliance history of the User, and any other factor as justice requires.

Section 1115 - Criminal Penalties
Any person who willfully violates any provision of this Law or any final determination or administrative order of the Superintendent made in accordance with this Article shall be guilty of a Class A Misdemeanor, and upon conviction thereof, shall be punished by a fine of not less than Five Hundred Dollars ($500) nor more than One Thousand Dollars ($1,000), or imprisonment not to exceed one (1) year or both. Each offense shall be a separate and distinct offense, and, in the case of a continuing offense, each day's continuance thereof shall be

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deemed a separate and distinct offense.

Any User who knowingly makes any false statements, representations, or certifications in any application, record, report, plan or other document filed or required to be maintained pursuant to this Law, or wastewater permit, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Law shall be guilty of a Class A Misdemeanor and, upon conviction, shall be punished by a fine of not more than One Thousand Dollars ($1,000.00) per violation per day or imprisonment for not more than one (1) year or both.

No prosecution, under this Section, shall be instituted until after final disposition of a show cause hearing, if any, was instituted.

Section 1116 - Additional Injunctive Relief
Whenever a User has violated or continues to violate the provisions of this Law or permit or order issued hereunder, the Superintendent, through counsel may petition the Court, in the name of the City of Hornell, for the issuance of a preliminary or permanent injunction or both (as may be appropriate) which restrains the violation of, or compels the compliance with any order or determination thereunder by the Superintendent.

Section 1117 - Summary Abatement
Notwithstanding any inconsistent provisions of this Law, whenever the Superintendent finds, after investigation, that any User is causing, engaging in, or maintaining a condition or activity which, in the judgement of the Superintendent, presents an imminent danger to the public health, safety, or welfare, or to the environment, or is likely to result in severe damage to the POTW or the environment, and it therefore appears to be prejudicial to the public interest to allow the condition or activity to go unabated until notice and an opportunity for a hearing can be provided, the Superintendent may, without prior hearing, order such User by notice, in writing wherever practicable or in such other form as practices are intended to be proscribed, to discontinue, abate, or alleviate such condition or activity, and thereupon such person shall immediately discontinue, abate,or alleviate such condition or activity; or where the giving of notice is impracticable, or in the event of a User's failure to comply voluntarily with an emergency order, the Superintendent may take all appropriate action to abate the violating condition. As promptly as possible thereafter, not to exceed fifteen (15) calendar days, the Superintendent shall provide the User an opportunity to be heard, in accordance with the provisions of this Article.

If the User is not within the geographic boundaries of the City of Hornell the right of summary abatement to discontinue, abate, or alleviate conditions or activities shall be those prescribed in the inter-municipal agreement.

The Superintendent, acting upon the belief that an emergency exists, shall be indemnified against any personal liability that may arise in the performance of their duties to protect the public health, safety, or welfare, or to preserve the POTW or the environment.

Miscellaneous

Section 1118 - Delinquent Payments
If there shall be any payments which are due to the City of Hornell, or any Department thereof, pursuant to any Article or Section of this Law, which shall remain due and unpaid, in whole or in

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part, for a period of twenty (20) calendar days from the date of billing by the City of Hornell, the same shall constitute a default, and there shall be added to the entire amount of the original bill, a penalty equal to twenty percent (20%) of the original bill, and interest shall accrue on the unpaid balance, at the rate of two percent (2%) per month, retroactive to the date of the original billing.

In the event that there are any sewer taxes, assessments, or other service charges which shall have been delinquent for a period of at least sixty (60) calendar days as of December 15 of any year, the Superintendent shall report the names of the defaulting persons to the City of Hornell Supervisor, the City of Hornell Clerk, the City of Hornell Chief Assessor, and the City of Hornell Treasurer on or before December 15 of the same year. The City of Hornell Chief Assessor is hereby directed to add the entire amount of the sewer tax, assessment, or other service charge which shall be in default, plus penalty and interest, as provided for in this Law, to the real property taxes due and owing to City of Hornell in the next succeeding year, and the City of Hornell Chief Assessor is directed to collect the same in the same manner as real property taxes due and owing to the City of Hornell are collected.

Where charges are delinquent and the violator is not a resident of the City of Hornell, or is located outside the geographical boundaries of the City of Hornell, then the City of Hornell attorney is authorized to seek recovery of charges, including punitive damages, in a court of competent jurisdiction or make arrangements with the appropriate county where the User is located to add the amount of the sewer assessment or other charges which shall be in default, plus penalty and interest, as provided for in the Law, to the real property taxes due to the County in the next ensuing year.

Section 1119 - Performance Bonds
The Superintendent may decline to reissue a permit to any User which has failed to comply with the provisions of this Law or any order or previous permit issued hereunder unless such User first files with it a satisfactory bond, payable to the POTW, in a sum not to exceed a value determined by the Superintendent to be necessary to achieve consistent compliance.

Section 1120 - Liability Insurance
The Superintendent may decline to reissue a permit to any User which has failed to comply with the provisions of this Law or any order or previous permit issued hereunder, unless the User first submits proof that it has obtained financial assurances sufficient to restore or repair POTW damage caused by its discharge.

Section 1121 - Informant Rewards
The Superintendent is authorized to pay up to $500 for information leading to the discovery of noncompliance by a User. In the event that the information provided results in an administrative fine or civil penalty levied against the User, the Superintendent is authorized to disperse up to ten (10) percent of the collected fine or penalty to the informant. However, a single reward payment may not exceed $10,000, including the discovery reward.

Section 1122 - Public Notification
The Superintendent may provide public notification of Users which were in significant non-compliance of local or Federal pretreatment standards or requirements since the last such notice. The frequency of such notices shall be at least once per year.

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Section 1123 - Contractor Listings
(1) Users which have not achieved consistent compliance with applicable pretreatment standards and requirements are not eligible to receive a contractual award for the sale of goods or services to the City of Hornell.

(2) Existing contracts for the sale of goods or services to the City of Hornell held by a User found to be in significant violation with pretreatment standards may be terminated at the discretion of the City of Hornell.

Article 12

Charges

Section 1201 - Normal Sewage Service Charges
Section 1202 - Surcharge for Abnormal Sewage
Section 1203 - Total Sewer Service Charge
Section 1204 - Segmenting the POTW
Section 1205 - Measurement of Flow
Section 1206 - Billing Period
Section 1207 - Pretreatment Program Costs
Section 1208 - Charges for Trucked and Hauled Wastes
Section 1209 - Capital Recovery
Section 1210 - Collection of Charges
Section 1211 - Fiscal Year for System
Section 1212 - Impact Fees
Section 1213 - Use of Revenues
Section 1214 - Records and Accounts

Section 1201 - Normal Sewage Service Charges
All Users discharging or depositing wastes into the public sewers may pay a sewer service charge proportional to the liquid volume of waste so deposited, which charge shall be collected as a sewer rent.

Section 1202 - Surcharge for Abnormal Sewage
All Users discharging or depositing wastes with concentrations in excess of the pollutant concentrations in normal sewage shall pay a surcharge.

Section 1203 - Total Sewer Service Charge
The total sewer service charge, (which shall be called the "User Charge"), shall be as provided within the User's permit and shall be the specific to each User holding a permit. All Users without a permit, shall pay a total sewer service charge equal to the sum of the charges established in Section 1201 and Section 1202.

Section 1204 - Segmenting the POTW
The service area of the POTW may be segmented to assist in a fair distribution of user charges, especially if there is a pump station serving a segment.

Section 1205 - Measurement of Flow
The volume of flow to be used in computing sewer service charges and abnormal sewage

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surcharges shall be based upon metered water consumption as shown on the records of meter readings maintained by the City of Hornell Water Department. In the event that a person discharging wastes into the POTW produces evidence, to the Superintendent, demonstrating that a substantial portion of the total amount of metered water does not reach the POTW, then the Superintendent shall either establish a percentage of the total metered water to be used as a basis for such computations, or direct the installation of appropriate flow measuring (and totalizing) devices to measure and record the actual amount of flow into the POTW. In the event that a person discharging wastes into the POTW procures all or part of their water supply from un-metered sources, the Superintendent shall either direct the installation of water meters on the other sources of water supply or direct the installation of appropriate flow measuring devices to measure and record the actual amount of flow into the POTW. Any water meters and/or flow measuring devices installed pursuant to this Section shall be of a type and design acceptable to the Superintendent and shall be installed, maintained, and periodically tested as required by the Superintendent, at the owner's expense. All such meters and/or flow measuring devices shall be subject to periodic inspection, testing, and reading by the Superintendent. Any person discharging wastes into the POTW may install a flow measuring device at their option, of the type, design, installation, and maintenance standards of the Superintendent, at the owner's expense.

Section 1206 - Billing Period
The Billing Period shall be quarterly for industrial users unless otherwise defined on the Industrial Wastewater Discharge Permit held by the User and billing may be bi-annually for non-industrial Users.

Section 1207 - Pretreatment Program Costs
The additional charges and fees associated with the operation of the pretreatment program shall be assessed the User, and include:

(1) reimbursement of costs of setting up and operating the pretreatment program
(2) issuing permits
(3) monitoring, inspections, and surveillance procedures
(4) costs of equipment and supplies
(5) reviewing accidental discharge procedures
(6) construction inspections
(7) filing appeals
(8) application for consistent removal status as outlined in 40 CFR 403
(9) other reasonable expenses to carry out the program to satisfy the requirements of this Law, the NYSDEC, and the Federal government

Section 1208 - Charges for Trucked and Hauled Wastes
The charge for treatment and disposal of trucked or hauled waste which has been introduced into the POTW shall be as established by the City of Hornell. The manner of determining the volume dumped shall be at the discretion of the Superintendent.

Section 1209 - Capital Recovery
The City of Hornell may institute an equitable procedure for recovering the costs of any capital improvements of those parts of the POTW which collect, pump, treat, and dispose of industrial wastewaters from those persons discharging such wastewaters into the POTW.

Section 1210 - Collection of Charges

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Provisions of Article 11 of this Law relating to the collection of penalties shall apply to the collection of Sewer Service Charges and Abnormal Sewage Service Surcharges, unless where otherwise provided by application of the Sewer Rent Law by City of Hornell.

Section 1211 - Fiscal Year for System
The POTW shall be operated on the basis of a fiscal year as determined by the City of Hornell

Section 1212 - Impact Fees
The City of Hornell shall have the authority to impose impact fees on new development, which development may:

(1) - cause enlargement of the service area of the POTW
(2) - cause increased hydraulic and/or treatment demands on the POTW

Section 1213 - Use of Revenues
Revenues derived from user charges and associated penalties, and impact fees, shall be credited to a special fund. Monies in this fund shall be used exclusively for the following functions:

(a) For the payment of the operation and maintenance, including repair and replacement costs of the City of Hornell POTW,
(b) For the discovery and correction of inflow and infiltration,
(c) For the payment of interest on and the amortization of or payment of indebtedness which has been or shall be incurred for the construction or extension of the City of Hornell POTW,
d) For the extension, enlargement, replacement of, and/or additions to the City of Hornell POTW, including any necessary appurtenances.

Section 1214 - Records and Accounts
The City of Hornell shall maintain and keep proper books of records and accounts for the POTW, separate from all other records and accounts, in which shall be made full and correct entries of all transactions relating to the POTW. The City of Hornell will cause an annual audit of such books of record and account for the preceding fiscal year to be made by a recognized independent certified public accountant, and will supply such audit report to authorized officials, and the public, on request.

In conjunction with the audit, there shall be an annual review of the sewer charge system to determine if it is adequate to meet expenditures for all programs for the coming year.

Classification of old and new industrial users should also be reviewed annually.

The City of Hornell shall maintain and carry insurance on all physical properties of the POTW, of the kinds and in the amounts normally carried by public utility companies and municipalities engaged in the operation of sewage disposal systems. All moneys received for losses under any such insurance policies shall be applied solely to the replacement and restoration of the property damaged or destroyed.

Article 13

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Public Disclosure of POTW Operations

Section 1301- POTW Operations Open to the Public
Section 1302- Procedural Requirements Available
Section 1303- Validity Through Public Inspection

Section 1301- POTW Operations Open to the Public
It shall be the policy of the City of Hornell to conduct all business with full disclosure to the public.

Section 1302- Procedural Requirements Available
The nature and requirements of all formal procedures for applying for a permit and for requesting a permit under this Law and for requesting a hearing shall be formulated by the City of Hornell and be made available to any resident of the City of Hornell upon request.

Section 1303- Validity Through Public Inspection
The City of Hornell shall formulate procedures to make available to the public for inspection such orders, statements of policy, and interpretations used by the City of Hornell in administration of this Law. No rule, regulation, or civil order shall be valid until it has been available for public inspection.

Article 14
Conflicts, Severability, Effective Date and Applicability

Section 1401- Conflicts
Section 1402- Severability
Section 1403- Effective Date
Section 1404- Applicability

Section 1401- Conflicts
The provisions of any City of Hornell law in conflict with any provision of this Law are hereby repealed.

Section 1402- Severability
Each provision of this Law is severable from the others, so that if any provision is held to be illegal or invalid for any reason whatsoever, such illegal or invalid provision shall be severed from this Law which shall nonetheless remain in full force and effect.

Section 1403- Effective Date
This law shall take effect 30 days after its filing in the office of the Secretary of State.

Section 1404- Applicability
Articles 1, 2, 4, 8, 11, 12, 13 and 14 shall apply in all incorporated areas of the City of Hornell. Articles 3, 5, 6, 7, 9 and 10 shall apply only in incorporated areas of the City of Hornell which are also within the service area of the POTW.

Appendix

Parameters of Concern

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Class A - Halogenated Hydrocarbons
Class B - Halogenated Organics (Other than Hydrocarbons)
Class C - Pesticides (Includes Herbicides, Algaecides, Biocides, Slimicides and Mildewcides)
Class D - Aromatic Hydrocarbons
Class E - Tars
Class F - Substituted Aromatics (Other than Hydrocarbons and Non-Halogenated)
Class G - Miscellaneous
Class M - Metals and their Compounds

Class A - Halogenated Hydrocarbons
A01. Methyl Chloride
A02. Methylene Chloride
A03. Chloroform
A04. Carbon Tetrachloride
A05. Freon/Genatron
A06. Other Halomethanes
A07. 1,1,1-Trichloroethane
A08. Other Haloethanes

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A09. Vinyl Fluoride
A10. Vinyl Chloride
A11. Dichloroethylene
A12. Trichloroethylene
A13. Tetrachloroethylene A
14. Chlorinated Propane
A15. Chlorinated Propene
A16. Hexachlorobutadiene
A17. Hexachlorocyclopentadiene
A18. Chlorinated Benzene
A19. Chlorinated Toluene
A20. Fluorinated Toluene
A21. Polychlorinated Biphenyl (PCB)
A22. Chlorinated Naphthalene
A23. Dechlorane ($C_{10}Cl_{12}$)
A24. Hexachlorocyclohexane (BHC)

A99. Halogenated Hydrocarbons Not Specified Above

Class B - Halogenated Organics (Other than Hydrocarbons)
B01. Phosgene
B02. Methyl Chloromethyl Ether
B03. Bis-Chloromethyl Ether
B04. Other Chloroalkyl Ethers
B05. Benzoyl Chloride
B06. Chlorothymol
B07. Chlorinated Phenol
B08. Chlorinated Cresols or Xylenols
B09. Chlorendic Acid
B10. Chloroaryl Ethers
B11. Dichlorophene or Hexachlorophene
B12. Chlorinated Aniline (Including Methylene Bis)(2-Chloroaniline)
B13. Dichlorobenzidine
B14. Chlorinated Diphenyl Oxide
B15. Chlorinated Toluidine
B16. Kepone ($C_{10}Cl_{10}0$)
B17. Dichlorovinyl Sulfonyl Pyridine
B18. Chloropicrin
B19. Trichloromethyl Thio-Phthalimide
B20. Trichloro-Propylsulfonyl Pyridine
B21. Tetrachloro-Methysulfonyl Pyridine
B22. Tetrachloro-Isopthalonitrile

B99. Halogenated Organics Not Specified Above

Class C - Pesticides (Includes Herbicides, Algaecides, Biocides, Slimicides and Mildewcides)
C01. Aldrin/Dieldrin
C02. Chlordane and Metabolites
C03. DDT and Metabolites

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C04. Endosulfan/Thiodan and Metabolites
C05. Endrin and Metabolites
C06. Heptachlor and Metabolites
C07. Malathion
C08. Methoxychlor
C09. Parathion
C10. Toxaphene
C11. Sevin
C12. Kelthane
C13. Diazinon
C14. Dithane
C15. Carbaryl
C16. Silvex
C17. Dithiocarbamates
C18. Maneb
C19. Dioxathion
C20. Tandex/Karbutilate
C21. Carbofurans
C22. Pentac
C23. Folpet
C24. Dichlone
C25. Rotenone
C26. Lindane/Isotox
C27. Simazine
C28. Methoprene

C99. Pesticides Not Specified Above

Class D - Aromatic Hydrocarbons
D01. Benzene
D02. Toluene
D03. Xylene
D04. Biphenyl
D05. Naphthalene
D06. Ethylbenzene
D07. Styrene
D08. Acenaphthene
D09. Fluoranthene

D99. Aromatic Hydrocarbons Not Specified Above

Class E - Tars
E01. Coal Tar
E02. Petroleum Tar

E99. Tars Not Specified Above

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Class F - Substituted Aromatics (Other than Hydrocarbons and Non-Haglogenated)
F01. Phenol, Cresol or Xylenol
F02. Catechol, Resorcinol, or Hydroquinone
F03. Nitrophenols
F04. Nitrobenzenes
F05. Nitrotoluenes
F06. Aniline
F07. Toluidines
F08. Nitroanilines
F09. Nitroanisole
F10. Toluene Diisocyanate
F11. Dimethylaminoazobenzene
F12. Benzoic Acid (and Benzoate Salts)
F13. Phthalic, Isophthalic or Terephthalic Acid
F14. Phthalic Anhydride
F15. Phthalate Esters
F16. Phenoxyacetic Acid
F17. Phenylphenols
F18. Nitrobiphenyls
F19. Aminobiphenyls (Including Benzidine)
F20. Diphenylhydrazine
F21. Naphthylamines
F22. Carbazole
F23. Acetylaminofluorene
F24. Dyes and Organic Pigments
F25. Pyridine

F99. Substituted Aromatics Not Specified Above

Class G - Miscellaneous
G01. Asbestos
G02. Acrolein
G03. Acrylonitrile
G04. Isophorone
G05. Nitrosamines
G06. Ethyleneimine
G07. Propiolactone
G08. Nitrosodimethylamine
G09. Dimethylhydrazine
G10. Maleic Anhydride
G11. Methyl Isocyanate
G12. Epoxides
G13. Nitrofurans
G14. Cyanide

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Class M - Metals and Their Compounds
M01. Antimony
M02. Arsenic
M03. Beryllium
M04. Cadmium
M05. Chromium
M06. Copper
M07. Lead
M08. Mercury
M09. Nickel
M10. Selenium
M11. Silver
M12. Thallium
M13. Zinc

M99. Metals Not Specified Above

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APPENDIX D

Pump Station Photographs

Figure D-1

Joe Jones PS







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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Joe Jones Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-1

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Figure D-2

Industrial Park PS







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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Industrial Park Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-2

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Figure D-3

Bowling Alley PS







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Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Bowling Alley Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-3

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Figure D-4

Seneca North PS







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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Seneca North Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

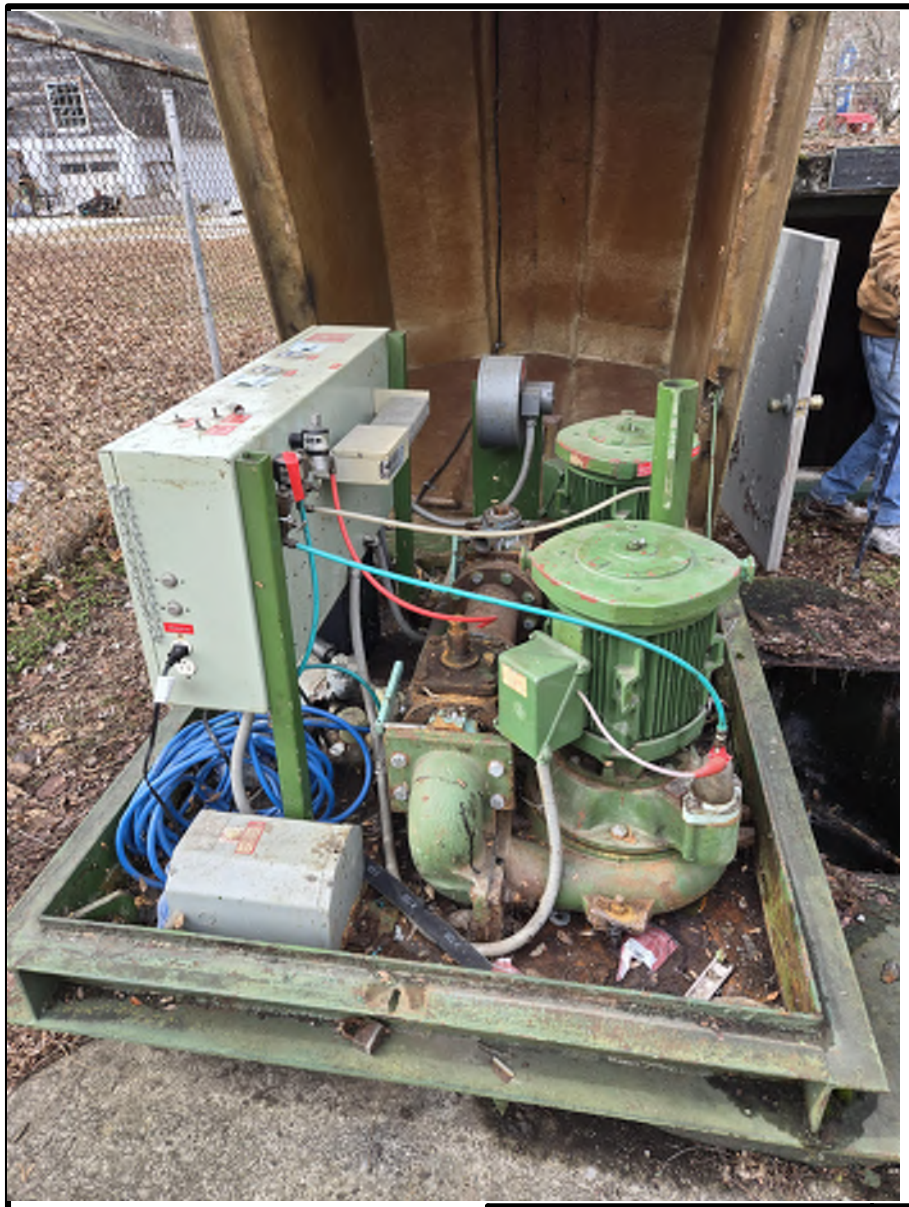
PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-4

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Figure D-5

Madison Ave PS







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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Madison Ave Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-5

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Figure D-6

Mays Ave PS







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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME: Mays Ave Pump Station	ISSUED FOR: DRAFT		
	DRAWN BY: KA	DATE: Mar 2025	PROJECT NO.: 2250913
PROJECT NAME: Hornell Intermunicipal Sewer Evaluation	DRAWING NUMBER: Figure D-6		

1/31/2025 11:01:11 AM
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Figure D-7

Walmart PS





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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Walmart Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-7

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Figure D-8

Ice Haus Rd PS





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300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

DRAWING NAME:
Ice Haus Rd Pump Station

ISSUED FOR:
DRAFT

DRAWN BY:	DATE:	PROJECT NO.:
KA	Mar 2025	2250913

PROJECT NAME:
Hornell Intermunicipal Sewer Evaluation

DRAWING NUMBER:
Figure D-8

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APPENDIX E

Pump Station Design and Piping Recommendation

Figure E-1

Basis of Design Flows Calculations

Steuben County Average # / household			2.35					
10 State Standards - Sanitary Flow			100		gallons/capita/day			
					Year	2025	2030	2055
Description	Parcel #	Property Class	Flow Estimate (GPD)	Notes	Timestep	0	5	30
Hood						330,000	400,000	600,000
					Subtotal (existing flow)	330,000	400,000	600,000
Potential Development Area 1								2115
	6	Agriculture	0					
	46.1	Agriculture	0					
	7	Single family residential	235					
	17	Single family residential	235					
	23	Single family residential	235					
	18	Single family residential	235					
	19	Single family residential	235					
	20	Single family residential	235					
	21	Single family residential	235					
	22	Single family residential	235					
	23	One story small structure	235	Zoned residential (R-1B)				
	36	Agriculture	0					
	70	Agriculture	0	Small portion zoned industrial (B-1)				
					Subtotal (future flow)	330,000	400,000	602,115

Steuben County Average # / household	2.35	
10 State Standards - Sanitary Flow	100	gallons/capita/day
Intermediate Size Standards		

					Year	2025	2030	2055
Description	Parcel #	Property Class	Flow Estimate (GPD)	Notes	Timestep	0	5	30
Joe Jones PS	NA					330,000	400,000	600,000
				Subtotal (existing flow)		335,215	405,215	605,215
				Intermediate size standards- Table B-3				
Airport	38.111	Air Transport	45	Office building				21,894
Harley Center	38.25	Medium Retail	244	Hornell Water Consumption Data				
	38.12	Animal Welfare	311	Hornell Water Consumption Data				
	38.24	Kennel/Vet	178	Hornell Water Consumption Data				
	38.22	Highway Garage	800	Intermediated sized standards				
	38.23	Other Storage	28	Hornell Water Consumption Data				
				Intermediate sized standards- Table B-				
	38.26	Manufacture	600	3 Factory/ Distribution Warehouse				
	39	Single Family Resident	235	Ten State Standards				
	40	Mfg Housing Pk	1100	Intermeduate sized standards				
	41	Single Family Resident	235	Ten State Standards				
	43	Single Family Resident	235	Ten State Standards				
				Intermediate sized standards- Table B-				
	44.31	Other Storage	400	3				
				Intermediate sized standards- Table B-				
	44.32	Church	225	3				
	44.12	Electric- Gas Facility	579	Hornell Water Consumption Data				
	14.2	Air Transport	0	Zoned as AG				
Potential Development Area 2								
	26	314 Rural- Vacant	0	Zoned as B-1				
	28	314 Rural- Vacant	0	Zoned as B-1				
	27	314 Rural- Vacant	0	Zoned as B-1				
	56	314 Rural- Vacant	0	Zoning Code B-1 Local				
	38.3	314 Rural- Vacant	0	Zoning Code B-1 Local				
	27.111	Future Apartment Buildings	18480	Intermediate sized standards				
	11.3	314 Rural- Vacant	0	Zoned as AG				
	11.111	105- Vacant Farmland	0	Zones as AG				
	27.112	Single Family Resident	235	Ten State Standards; Zoned as AG				
	27.2	Commercial Office Building	29	Hornell water consumption data; zoned as AG				
	11.116	Commercial- Other Storage	800	Zones as AG				
	11.7	Commercial- Other Storage	0	Zones as AG				
	44.11	Commercial- 480 multi use Building	0	Zoned as Industrial I-2				
	44.22	314 Rural- Vacant	0	Zoned as Industrial I-2				
	45.1	Single Family Resident	235	Ten State Standards, Zoned as Industrial I-2				
		Future Development Upstream	2115					
				Subtotal (future flow)		335,215	405,215	627,109

Steuben County Average # / household			2.35					
10 State Standards - Sanitary Flow			100		gallons/capita/day			
Intermediate Size Standards								
					Year	2025	2030	2055
Description	Parcel #	Property Class	Flow Estimate (GPD)	Notes	Timestep	0	5	30
Industrial Park PS						335,215	405,215	605,215
					Subtotal (existing flow)	354,425	424,425	624,425
	25	Vacant Community	0	Shows up just as a highway				36,963
	23.21	Commercial- Motel	5390	Intermediate Sized Standards				
	23.23	Commercial-Auto Dealer	147	Hornell Water Consumption Data				
	23.22	Commercial- Mobile Home Park	7711	Hornell Water Consumption Data				
	1	Commercial- Auto Dealer	522	Hornell Water Consumption Data				
	8	Commercial Dealer Production	188	Hornell Water Consumption Data				
	7	Commercial-Auto Dealer	58	Hornell water consumptiom data				
	21	Commercial- Auto Dealer	1600	Intermediate Sized Standards				
	45	Commercial- Auto Dealer	1600	Intermediate Sized Standards				
	46	Single Family Residential	235	Ten State Standards				
	47	Single Family Residential	235	Ten State Standards				
	48	Commericial- Auto Body	800	Intermediate Sized Standards				
	49	Single Family Residential	235	Ten State Standards				
	51	Commercial- Rental	84	Hornell Water Consumption Data				
	26	Commercial- Vacant	0					
	27	Commericial- Bowling Alley	264	Hornell Water Consumption Data				
	52	Commercial- Office Building	141	Hornell Water Consumption Data				
	30							
Potential Development Area 3								
	24	Commercial- Vacant	0	Zoned as B-1				
	45.2	314 Rural- Vacant	0	Zoned as AG				
	14	Single Family Resident	235	Zoned as B-2				
	15	Single Family Resident	235	Zoned as B-2				
	49.2	270- Mfg Housing	241	Zoned as AG				
	16	270- Mfg Housing	63	Zoned as B-2				
	17	Single Family Resident	235	Zoned as B-2				
	49.11	270- Mfg Housing	235	Zoned as B-2; Treat as Single family?				
	49.12	270- Mfg Housing	235	Zoned as B-2; Treat as Single family?				
	30	Single Family Resident	235	Zoned as B2				
	31	Single Family Resident	235	Zoned as B2				
	32	Commercial- Auto Body	0	Zoned as B2				
	33	Single Family Resident	235	Zoned as B2				
	34	Single Family Resident	235	Zoned as B2				
	35	311- Res Vacant Land	0	Zoned as B2				
	36	Single Family Resident	235	Zoned as B2				
	37	Single Family Resident	235	Zoned as B2				
	46	270-Mfg Housing	235	Zoned as B2; Treat as single family?				
	47	Single Family Resident	235	Zoned as B2				
	18	Single Family Resident	235	Zoned as B2 and AG				
	19	Single Family Resident	235	Zoned as B2 and AG				
	48	Single Family Resident	235	Zoned as B2 and AG				
	20.2	270-Mfg Housing	0	Zoned as B2 and AG, Treat as single family?				
	20.11	485- Small building; Commercial	30	Listed as zero on water consumption data; Ten State standards				
	3.1	314- Rural- Vacant	0	Zoned as B2				
	3.2	Single Family Resident	235	Ten State Standards				
	4	Single Family Resident	235	Ten State Standards				
	28.1	Two family resident	470	Ten State Standards				
	28.2	Single Family Resident	235	Ten State Standards				
	29	Single Family Resident	235	Ten State Standards				
	20.12	314- Rural- Vacant	0	Zoned as B2 and AG				
	52	314- Rural- Vacant	0	Zoned as AG				
	50	314- Rural- Vacant	0	Zoned as AG				
	21	312- Vacant with improvements	0	Zoned as AG				
	22	Single Family Resident	235	Ten State Standards				
	31	Single Family Resident	235	Ten State Standards				
	32	Single Family Resident	235	Ten State Standards				
	33	314- Rural- Vacant	0	Zoned as B2				
	36	416 Mfg Housing park- Commerical	2750	Intermediate sized standards				
	43	Single Family Resident	235	Ten State Standards				
	44	Single Family Resident	235	Ten State Standards				
	5.1	Single Family Resident	235	Ten State Standards				
	5.2	Single Family Resident	235	Ten State Standards				
	6	Single Family Resident	235	Ten State Standards				
	7	Single Family Resident	235	Ten State Standards				
	8	Single Family Resident	235	Ten State Standards				
	9	Single Family Resident	235	Ten State Standards				
	10	Single Family Resident	235	Ten State Standards				
	11	Single Family Resident	235	Ten State Standards				
	12	Single Family Resident	235	Ten State Standards				
	13.1	Single Family Resident	235	Ten State Standards				
	13.2	Single Family Resident	235	Ten State Standards				
	14	447- Truck Terminal- Commerical	0					
	15	Single Family Resident	235	Ten State Standards				
	16	Single Family Resident	235	Ten State Standards				
	17	Single Family Resident	235	Ten State Standards				
	18	Single Family Resident	235	Ten State Standards				
	20	Single Family Resident	235	Ten State Standards				
	37	Single Family Resident	235	Ten State Standards				
	38	Single Family Resident	235	Ten State Standards				
	39	Single Family Resident	235	Ten State Standards				
	42.1	Single Family Resident	235	Ten State Standards				
	42.2	Single Family Resident	235	Ten State Standards				
	40	Single Family Resident	235	Ten State Standards				
	41	Single Family Resident	235	Ten State Standards				
	9	Single Family Resident	235	Ten State Standards				
		Future Development Upstream	21,894					
					Subtotal (future flow)	354,425	424,425	661,388

Steuben County Average # / household		2.35	
10 State Standards - Sanitary Flow		100	gallons/capita/day
Intermediate Size Standards			

					Year	2025	2030	2055
Description	Parcel #		Property Class	Flow Estimate (GPD)	Notes	Timestep	0	5	30
Seneca Street PS Data							419,114	599,114	799,114
						Subtotal (existing flow)	419,114	599,114	799,114
									46203
Potential Development Area 4									
		58	330- Vacant Commercial	0					
		1	Single Family Resident	235	Ten State Standards				
		2	484- 1 use small building	30	Zoned as B2				
		3.12	Single Family Resident	235	Ten State Standards				
		11	Single Family Resident	235	Ten State Standards				
		12.2	Single Family Resident	235	Ten State Standards				
		19.121	449- Other Storage commercial	0	Zoned as B2				
		19.122	484- One use small building	30	Zoned as B2				
		19.21	311- Com Vac W/impro	0					
			411- Apartment- Commercial-						
		19.22	Seneca Manor Apartment	7040	Intermediate Size Standards				
		27	432- Gas station	400	Ten State Standards				
		44	311- Res vacant land	0	Zoned as B2				
		28.2	431- Auto Dealer- commercial		Zoned as B2				
		28.1	440- Other Storage	800	Intermediate Size Standards				
			Future Development Upstream	36,963					
						Subtotal (future flow)	419,114	599,114	845,317

	Daily Flow (gpd)	Avg. Flow (gpm)	Instantaneous Flow (gpm)
Current (2025)	330,000	229	344
Short Term Growth (2030-2035)	400,000	278	556
Long Term Growth (2055)	600,000	417	833

	Existing avg (GPD)	2025 Design Avg (GPD)	2030 Design Avg (GPD)	2055 Design Avg for Wet Well (GPD)	PF	2025 PHF (gpd)	2030 PHF (gpd)	2055 PHF (gpd)	2025 Desig	2025 Design PHF (GPM)
HP Hood	220,000	330,000	400000	600,000	2	660,000	800,000	1,200,000	660,000	458
Town avg	157,694	157,694	157,694	194,657	4	630,774	630,774	778,626	630,774	438
Village avg	41,421	41,421	41,421	50,661	4	165,683	165,683	202,643	165,683	115
Seneca St avg	419,114	529,114	599,114	845,317		1,456,457	1,596,457	2,181,269	1,456,457	1011

	Existing avg (gpm)	2025 Design Avg (gpm)	2030 Design Avg (gpm)	2055 Design Avg for Wet Well (gpm)	2025 PHF (gpm)	2030 PHF (gpm)	2055 PHF (gpm)
HP Hood	153	229	278	417	458	556	833
Town avg	110	110	110	135	438	438	541
Village avg	29	29	29	35	115	115	141
Seneca St avg	291	367	416	587	1,011	1,109	1,515

Design ADF must be based on HP Hood averaging a discharge flow of their permitted limit every day (330,000 gpd).
Short-term growth (2030 - 2050): Need this number based on PF appropriate for each type of discharger.

Figure E-2

Existing and Potential Development Areas

Town of Hornellsville

12/10/2001

SW521

WD521

Both

Potential Development Area 1 Joe Jones PS

Potential Development Area 2 Industrial Park PS

Potential Development Area 3 Bowling Alley PS

Potential Development Area 4 Seneca Street PS

Seneca St PS & flow meter

not served

Village of Arkport

Village of North Hornell

City of Hornell

0 3000 6000 Feet

1 inch = 1,000 feet

Steuben County Planning Dept
Thomas E. Sears
GIS Coordinator

Figure E-3

North Hornell Sewer Main Condition Eval & Recommendations – MRB Group 04-07-2022

April 7, 2022

Mayor Joseph Ingalls
Village of North Hornell
4 West Maplewood Ave
North Hornell, New York 14843

RE: Sanitary Sewer main Condition Evaluation & Rehabilitation Recommendations
MRB Project No. 1424.21001

Dear Mayor:

MRB Group has completed review and analysis of sewer main video inspections, which were completed by Kenyon Pipeline Inspection in February and March 2022. Overall, Kenyon videoed 17,302 linear feet (LF) of 8-inch diameter sewer main, 6,349 LF of 12-inch diameter sewer main, and 45 LF of 15-inch diameter sewer main, which comprise of most of the Village sewer system. Approximately 994 LF of the sewer system was not inspected due to camera access issues. The following is a summary of areas not inspected:

- Cleveland Avenue from manhole (MH) 18 to MH 17: A 399 linear foot, 12" dia. ACP pipe. 204 feet was not inspected due to a hole in the pipe at 195 feet.
- Fourth Street from MH 99 to MH 77: Approximately 350 linear foot of 8" dia. PVC pipe. Approximately 325 feet was not inspected due to a large offset pipe joint, 25 feet from MH 99.
- Third Street from MH 97 to MH 76: Approximately 350 linear foot of 8" dia. PVC pipe was not inspected due to a 45-degree elbow located outside of MH 76.
- Elmwood from MH 77 to MH 76: A 244 linear foot, 8" dia. ACP pipe. Approximately 115 feet was not inspected due to a large offset pipe joint approximately 128 feet from MH 76.

During the process of inspection, the configuration of certain areas of the sewer system varied somewhat from Village record drawings. These variations also include the configuration of newer sewers added at Marick Park and Forth Street, which do not have good record drawings. Additionally, a number of manholes were found, which are not depicted on the 1970 record drawings. Enclosed within this report are five pages of the 1970 record drawings, which depict actual sewer configurations in these areas.

MRB | group

Predominantly, the Village sewer system comprises of Asbestos Cement Pipe (ACP), which was used prevalently in the 1960s and early 1970s. The pipe was manufactured with asbestos fibers to provide reinforcement (tensile strength) for the cement pipe, similar to the use of fiberglass fibers currently used in cast-in-place concrete. Due to health concerns associated with the manufacturing and construction processes, production of ACP pipe ceased in the United States in the early 1970s.

ACP sewer mains have a typical service life of approximately 50 years, but service life is dependent on the degree of corrosive conditions within the pipeline. Anaerobic conditions in sewer systems can lead to the production of hydrogen sulfide, which reacts with Portland cement in ACP pipe, and leads to deterioration and structural failure of the pipeline.

The Village sewer system also contains very small sections of Polyvinyl Chloride Pipe (PVC), which are located in newer areas of the Village.

Conditions Observed

Based on our review of the inspection video, we found varying conditions in the Village sewer system. Generally, in portions of the Village sewer system containing 8" diameter ACP sewers, we determined that pipelines were either satisfactory or contained a moderate number of issues. Issues that were observed were primarily related to isolated leaking joints, isolated holes/active infiltration in the pipe, areas of root infiltration, and isolated circumferential fractures. In many cases, active infiltration of ground water was observed in the video footage.

Within areas of 8" PVC sewers, conditions were generally satisfactory with the exception of two areas; one with a rolled gasket at a pipe joint and another area with a large offset joint.

In all areas containing 12" diameter ACP pipe, conditions are poor, with the predominate problem of pipe interior spalling and delamination. In the video footage, this can be observed as layers of the pipe interior that are separating from the pipeline interior surface, and has an appearance similar to wet paper mache. Unfortunately, these pipelines have undergone deterioration due to exposure of corrosive conditions.

We have enclosed within this report a table that list each manhole to manhole segment, the street location, the length inspected, and the various issues that were observed. Based on our observations, we ranked the condition as either

MRB | group

poor or satisfactory. A condition of poor indicates that the pipeline requires attention, and a condition of satisfactory indicates that no rehabilitation is required at this time. In addition, for pipelines that were ranked poor, we provided a ranking of one (one being the worst) through three based on our observations. We have also enclosed representative photos of the various issues observed within this report.

In addition to pipeline issues, Kenyon also noted other observations, which were not part of their inspection scope. We included these notes on the table, under other remarks. Most of these notes relate to observations of clear water running from lateral connections, which could be a sign of basement/foundation sump pump connections, and miscellaneous observations of active groundwater infiltration at manholes.

Rehabilitation Recommendations and Estimated Costs

Based on the issues observed, we developed recommendations for the rehabilitation of these sewer mains. Primarily, the most common rehabilitation technique is to line the existing sewer main with a Cured-in-Place (CIPP) pipe liner. CIPP lining involves inserting a flexible, resin impregnated, liner inside the existing pipe, inflating the liner, and exposing it to heat (either hot water or steam) over a prescribed curing period. This results in a "new pipe" contained within the existing sewer main. After the curing period, existing laterals are cut and reopened through the use of a remotely operated apparatus.

For budgetary purposes, we are utilizing a unit price of $45 per LF for 8" diameter pipe and $60 per LF for 8" diameter pipe for CIPP lining. It should also be noted that we selected CIPP lining for certain isolated issues at 8" diameter sewer mains that may have just a single defect (for example, MH 27 to MH 6 containing one hole and active infiltration), as opposed to the completion of an open cut spot repair for this isolated issue. This is due to economics; the cost associated with lining the entire MH to MH pipe run will be less than the projected cost of an open cut spot repair.

In select areas of the 8" diameter ACP sewer mains, we have outlined the testing and sealing of pipe joints to address pipelines that may not have structural issues, but contain issues such as leaking pipe joints. The testing and sealing of pipe joints is performed by a remotely operated apparatus, which inflates a diaphragm on each side of the pipe joint and pressure tests the joint. If the joint fails the pressure test, a special two-part epoxy grout is injected in the pipe joint, which combines and hardens to create a new seal at the pipe joint.

MRB group

In two areas we are recommending open cut spot repairs of the sewer mains due to offset joints. Offset joints result from a joint failure and settlement of one end of the pipe at the failure. This essentially creates an obstruction in the pipeline, and can only be repaired by open cut methods.

For the rehabilitation of all the issues observed, we have developed an overall estimated project cost of $725,000.00. Of the overall estimated cost, approximately 52% is represented by sewer mains with a condition rank of "one" (worst). Another 40% of the project cost are sewer mains with a condition rank of "two", and 8% of the project cost are sewer mains with a condition rank of "three".

Due to budgetary constraints, we anticipate that the Village may need to utilize a phased approach for the completion sewer main rehabilitations. This phased approach could include the rehabilitation of all the 12" diameter sewers under a first phase. Also, this may be necessary if other municipalities will share in the cost of rehabilitation of this 12" trunk sewer which serves the Village, Town, and City. Based on a phased approach which first addresses the 12" diameter sewer, and then the 8" diameter sewer, the following is a summary of estimated project costs:

Phase 1: Rehabilitation of the 12" diameter sewer mains:

Estimated Construction Cost:	$393,138.00
Construction Contingency:	$58,970.70
Total Estimate Construction Cost:	$452,108.70
Estimated Legal, Administration, Engineering, and Construction Administration Cost:	$68,000.00
Total Estimate Project Cost (rounded):	$520,500.00

Phase 2: Rehabilitation of the 8" diameter sewer mains:

Estimated Construction Cost:	$154,103.00
Construction Contingency:	$23,115.45
Total Estimate Construction Cost:	$177,218.45
Estimated Legal, Administration, Engineering, and Construction Administration Cost:	$27,000.00
Total Estimate Project Cost (rounded):	$204,500.00

MRB group

As next steps, we recommend review of this letter report by the Village Board and Department of Public Works. Also, perhaps after review and comment by the Village, this report should be forwarded to the Town and City for review. Once the Village has reviewed, we would like to meet to discuss the outcome of this evaluation and our recommendations. Please contact me at your convenience if you have any questions or comments regarding this report.

Respectfully submitted,

David Willard, P.E.
Project Manager

CC: Richard Scavo, Superintendent of Public Works

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NOTE
UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN

N

BENCHMARK — 19
SPIKE IN POLE
ELEV. 1161.65

MH 12A

MH 13A

86.3 feet

163.4 feet

41.8 feet

NEW MEDICAL CENTER

APPROX. SEPTIC TANK LOCATION

M.H. 11

M.H. 12

M.H. 13

SIDEWALKS TO MEDICAL CENTER

BETHESDA DRIVE

M.H. 9

M.H. 10

CLEVELAND AVENUE

W. MAPLEWOOD AVE.

TELEPHONE CABLE BURIED DEPTH 3'±

CONTRACTOR TO VERIFY 2" WATER LINE LOCATION PRIOR TO CONSTRUCTION OF M.H. 9 & M.H. 10 & THIS SECTION OF 12" SEWER.

SHEET 6
MATCH LINE SHEET 5

PLAN 1"= 40'

M.H. 9
TYPE A

M.H. 10
TYPE A

M.H. 11
TYPE A

M.H. 12
TYPE A

M.H. 13
TYPE A

CONTRACTOR TO PROTECT WATER MAIN LOCATED 5' NORTH OF SEWER LINE AND ANY OTHER EXISTING UNDERGROUND UTILITIES ENCOUNTERED.

PROFILE 1"=5'

3	AS BUILT	WLA	1/25/71
2	APPROVED FOR CONSTRUCTION	JSC	3-26-70
1	FOR VILLAGE & FEDERAL APPROVAL WA/PC 12-68	WLA	2/5/69

A.G. Wedell 31573
S.G. Snyder 31810
W.O. Lynch 37958
Not valid without original signature

VILLAGE OF NORTH HORNELL, N.Y.
SANITARY SEWER CONSTRUCTION

12" SEWER - CLEVELAND AVE. & HOSPITAL ALLEYWAY

STEARNS & WHEELER
CIVIL AND SANITARY ENGINEERS
CAZENOVIA, N. Y.

531 | 6 | 29

NOTE:
UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND SURFACE EVIDENCE. THE LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.

WELLS STREET

M.H.14

M.H. 14A

M.H.15

M.H.16

M.H. 17

CLEVELAND AVENUE

MATCH LINE SHEET 6

MATCH LINE SHEET 8

BENCHMARK – 21
SPIKE IN POLE – 24
ELEV. 1168.94

CONTRACTOR TO VERIFY LOCATION OF 12" WATER LINE ALONG CLEVELAND AVENUE BETWEEN MH 16 & MH 17 PRIOR TO CONSTRUCTION IN THAT AREA. CAUTION SHOULD BE EXERCISED IN LOCATING THIS MAIN AS IT IS BELIEVED TO BE ABANDONED CEMENT LINE.

PLAN 1"= 40'

M.H.14 TYPE A

M.H. 14A TYPE A

M.H.15 TYPE A

M.H.16 TYPE A

M.H.17 TYPE A

PROFILE 1"=5'

4	AS BUILT		
3	REVISED PER WATER DEPT.	JSG	4/6/70
2	APPROVED CASE CONSTRUCTION	JSG	3/26/70
1	FOR D.V.D.H.D. & FEDERAL APPROVAL	AGW	2/27/70

VILLAGE OF NORTH HORNELL, N.Y.
SANITARY SEWER CONSTRUCTION
12" SEWER - HOSPITAL ALLEYWAY, WELLS ST. & CLEVELAND AVE.

STEARNS & WHEELER
CIVIL AND SANITARY ENGINEERS
CANANDAIGUA N. Y.

531 | 1 | 7 | 29

NOTE-
UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS. ARE THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. OTHERS MAY BE PRESENT. THE EXISTENCE OF WATER IS PRESENTLY NOT KNOWN

BENCHMARK - 26
SPIKE IN POLE - 3
ELEV. 1173.51

RURAL AVENUE

Mc KINLEY AVENUE

M.H. 22

M.H. 23

MH 23B

MH 98

230 feet

83.7 feet

PRECAST MANHOLE SECTIONS

ELEVATION LATERAL SEWER

ELEVATION EFFLUENT SEWER

ELEVATION INFLUENT SEWER

CONCRETE MANHOLE BASE

TYPICAL
BENCHWALL & MANHOLE
CHANNEL CONSTRUCTION

4" SEWER WYE SERVICE TO VACANT LOT

MATCH LINE SHEET 8

SHEET 9

PLAN 1"=40'

M.H. 22
TYPE A

M.H. 23
TYPE B

PROFILE 1"=5'

VILLAGE OF NORTH HORNELL, N.Y.
SANITARY SEWER CONSTRUCTION
12" SEWER - RURAL AVE.
10" SEWER McKINLEY AVE.

STEARNS & WHEELER
CIVIL AND SANITARY ENGINEERS
CAZENOVIA N. Y.

5.51 | 1 | 9 | 29

NOTE.
UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.

BENCHMARK - 1
SPIKE IN POLE - 34
ELEV. 1136.15

BENCHMARK - 2
SPIKE IN POLE - 40
ELEV. 1136.38

SENECA ROAD

CAMERON ST.

MARY ST.

EAST ALLEYWAY

M.H. 1

MH 46A

MH. 46

M.H. 47

M.H. 48

MH 48A

M.H. 49

141.7 feet

74.8 feet

147.2 feet

136.2 feet

No MH just ends with a lateral or cleanout

No MH just ends with a plug

144.0 feet

192.1 feet

134.4 feet

MH 93

MH 90A

MH 90

MH 92

MH 95

MH 96

117.3 feet

154.4 Feet

153.0 feet

161 feet

232.2 feet

PLAN 1"= 40'

MH 1
TYPE A

MH 46
TYPE A

PROFILE 1"=5'

LICENSED PROFESSIONAL ENGINEER
CERTIFICATE OF THE STATE OF NEW YORK

A. G. Wheeler - 3,375
S. G. Bristol - 51,810
W. Gayhart - 57,926
Not valid without
signature impression

3	AS BUILT	W/E D.	12/30/70
2	REV. VALVES AND D	JSG	5-26-70
1	MANHOLE AND CONSTRUCTION		
	FOR WATER & SEWER APPROVAL	RCW	2/5/69
	WATER 12-68	D.C.L.D.	

VILLAGE OF NORTH HORNELL, N.Y.
SANITARY SEWER CONSTRUCTION
8" SEWER - CAMERON ST.
& EAST ALLEYWAY

STEARNS & WHEELER
CIVIL AND SANITARY ENGINEERS
CAZENOVIA, N. Y.

SCALE 1" = 40' | SHEET NO. 1 | DRAWING NO. 16

MH 97

MH 100

MH 99

Could not inspect due to a 45 degree elbow outside of MH 76

415.4 feet

350 +/- feet (could only inspect 25.7 feet due to an offset joint)

SENECA ROAD

FIRST ST.

ELMWOOD AVENUE

SECOND ST.

THIRD ST.

FOURTH ST.

BENCHMARK – 14
SPIKE IN POLE
ELEV. 1174.87

BENCHMARK – 16
SPIKE IN POLE
ELEV. 1195.59

BENCHMARK – 6
SPIKE IN POLE – 54
ELEV. 1169.33

M.H. 55

M.H. 74

M.H. 75

M.H. 76

M.H. 77

PLAN 1"= 40'

M.H. 55
TYPE A

M.H. 74
TYPE A

M.H. 75
TYPE A

M.H. 76
TYPE A

M.H. 77
TYPE A

PROFILE 1"=5'

VILLAGE OF NORTH HORNELL, N.Y.

SANITARY SEWER CONSTRUCTION

8" SEWER
ELMWOOD AVENUE

STEARNS & WHEELER
CIVIL AND SANITARY ENGINEERS
CAZENOVIA, N. Y.

531

Video Viewer ID No.	Plan Sheet No.	Manhole ID		Location	Record Map Length (feet)	Diameter (inch)	Pipe Material	Actual Length Inspected	Condition (Satisfactory, Good)	Issues	Rank	Recommendation	Other Remarks	Spot Repair Unit Cost per Each	Unit Cost per Ft	Estimated Cost
		Up-stream	Down-stream													
1	G-13	26	27	Cleveland	168	8	ACP	169.8	Satisfactory	NA		Inspect again at a future date				
2	G-13	28	27	Cleveland	337	8	ACP	338.5	Poor	Light roots at one lateral 100'. large Infiltration at jt 215'. Heavy Infiltration at jt 327'	1	Test and Grout Pipe Jts			$ 10.00	$ 3,385.00
3	G-13	27	6	Park	190	8	ACP	189.6	Poor	small hole and infiltration 26'	2	Line pipe with CIPP			$ 45.00	$ 8,532.00
4	G-14	pipe end	90A	Marick Park	117	8	PVC	117.3	Satisfactory			NA	Starts at MH 90A and ends at a lateral or clean out			
5	G-14	90A	90	Marick Park	154	8	PVC	154.4	Satisfactory	Light Infiltration at pipe connection at manhole	3	Grout Pipe Opening at MH.				$ 500.00
6	G-14	pipe end	93	Marick Park	134.1	8	PVC	134.1	Satisfactory	NA		NA	No MH at end - just a plug. lat at 85' has clear running water			
7	G-14	95	93	Marick Park	161	8	PVC	161.0	Satisfactory	NA		NA	lat at 155' has clear water running			
8	G-14	93	92	Marick Park	192.1	8	PVC	192.1	Satisfactory	rolled gasket 103'	3	Test and Grout Pipe Jts			$ 10.00	$ 1,921.00
9	G-14	92	90	Marick Park	153	8	PVC	153.0	Satisfactory	NA		Inspect again at a future date				
10	G-14	92	48A	Marick Park	144	8	PVC	144.0	Satisfactory	NA		Inspect again at a future date				
11	G-15	51	50	Backlot	157	8	ACP	157.6	Satisfactory	NA		Inspect again at a future date				
12	G-14	50	49	4th Alley	192	8	ACP	189.3	Poor	Hole at top pipe 10'.	1	Line pipe with CIPP			$ 45.00	$ 8,518.50
13	G-14	49	48A	4th Alley	136.2	8	ACP	136.2	Satisfactory	NA		Inspect again at a future date				
14	G-14	48A	48	4th Alley	147.2	8	ACP	147.2	Satisfactory	NA		Inspect again at a future date				
15	G-17	62	61	Seneca	240	8	ACP	240.5	Satisfactory	NA		Inspect again at a future date				
16	G-17	61	60	Seneca	377	8	ACP	376.9	Satisfactory	NA		Inspect again at a future date				
17	G-17	60	59	Seneca	305	8	ACP	305.4	Satisfactory	NA		Inspect again at a future date	lat at 93' has clear water running			
18	G-17	59	58	Seneca	171	8	ACP	174.0	Satisfactory	NA		Inspect again at a future date	mh-59 leaking bad			
19	G-16	58	57	Seneca	270	8	ACP	272.0	Satisfactory	NA		Inspect again at a future date				
20	G-16	56	55	Seneca	380	8	ACP	381.0	Satisfactory	NA		Inspect again at a future date				
21	G-19	80	57	Linwood	349	8	ACP	350.3	Poor	Heavy Infiltration at jt 215'.	1	Test and Grout Pipe Jts			$ 10.00	$ 3,503.00
22	G-19	81	58	Jones	361	8	ACP	362.0	Satisfactory	NA		NA	lat at 125', 301' has clear water running			
23	G-22	77	76	Elmwood	244	8	ACP	128.5	Poor	Large offset joint ar 128'	1	Complete Spot Repair	MH 77 is paved over	$ 10,000		$ 10,000.00
24	G-22	76	75	Elmwood	258	8	ACP	259.2	Satisfactory	NA		Inspect again at a future date				
25	G-22	75	74	Elmwood	284	8	ACP	284.0	Satisfactory	Minor infiltration at a lateral connection 138'		Inspect again at a future date	lat at 78', 138' has clear water running			
NA	G-22	97	76	Third	350 +/-	8	PVC	NA	Not Inpsected	45 degree bend outside of MH 76 pervented inspection						
26	G-10	37	36	Seneca	327	8	ACP	324.3	Satisfactory	NA		Inspect again at a future date				
27	G-9	36	35	Seneca	399	8	ACP	397.6	Satisfactory	NA		Inspect again at a future date				
28	G-9	35	34	Seneca	359	8	ACP	355.9	Poor	Roots and heavy mineral deposits at 98'	2	Test and Grout Pipe Jts			$ 10.00	$ 3,559.00
29	G-9	34	33	Seneca	375	8	ACP	372.3	Satisfactory	NA		Inspect again at a future date				
30	G-9	33	32	Backlot	160	8	ACP	160.0	Satisfactory	Minor roots at lateral connection 72'		Inspect again at a future date				
31	G-8	32	31	1st Alley	256	8	ACP	243.8	Poor	Heavy Infiltration at jt 241'.	1	Test and Grout Pipe Jts			$ 10.00	$ 2,438.00

Video Viewer ID No.	Plan Sheet No.	Manhole ID		Location	Record Map Length (feet)	Diameter (inch)	Pipe Material	Actual Length Inspected	Condition (Satisfactory, Good)	Issues	Rank	Recommendation	Other Remarks	Spot Repair Unit Cost per Each	Unit Cost per Ft	Estimated Cost
		Up-stream	Down-stream													
32	G-8	31	30	1st Alley	204	8	ACP	202.2	Satisfactory	NA		Inspect again at a future date				
33	G-8	30	29	1st Alley	368	8	ACP	360.5	Satisfactory	Minor Offset joint at 205'. Sag in pipeline at 354'		Inspect again at a future date	lat at 119', 142' has clear running water			
34	G-8	29	8	1st Alley	326	8	ACP	321.1	Poor	pipe sag at 70'. Hole at 124' with heavy infiltration. Hole with infiltration at 233'	1	Line pipe with CIPP	lat at 287 has clear running water		$ 45.00	$ 14,449.50
35	G-21	73	72	Fourth	110	8	ACP	107.9	Satisfactory	NA		Inspect again at a future date				
36	G-21	72	71	Maplewood	254	8	ACP	252.9	Poor	hole in pipe at 186'. Open joint at 186.5'. Hole in pipe at 191'.	1	Line pipe with CIPP			$ 45.00	$ 11,380.50
37	G-21	71	70	Maplewood	251	8	ACP	250.5	Satisfactory	NA		Inspect again at a future date	lat at 73', 124' has clear running water			
38	G-21	70	69	Maplewood	252	8	ACP	249.8	Poor	Infiltration at jt 58'. Infiltration at 99'.	2	Test and Grout Pipe Jts			$ 10.00	$ 2,498.00
39	G-21	69	54	Maplewood	267	8	ACP	274.1	Satisfactory	NA		Inspect again at a future date	lat at 57', 226' has clear water running			
40	G-20	66	65	Wightman	249	8	ACP	247.6	Satisfactory	NA		Inspect again at a future date				
41	G-20	65	64	Wightman	251	8	ACP	250.5	Satisfactory	NA		Inspect again at a future date	lat at 203' clear water running			
42	G-20	64	53	Wightman	276	8	ACP	274.1	Poor	Jt 271' with heavy infiltration.	1	Test and Grout Pipe Jts	lat at 61', 145', 213' clear water running		$ 10.00	$ 2,741.00
43	G-11	45	44	Rural	205	8	ACP	202.6	Poor	Hole at 19'. Hole at 21'.	3	Line pipe with CIPP			$ 45.00	$ 9,117.00
44	G-11	44	22	Rural	340	8	ACP	340.6	Poor	infirltration at 254'. Infiltration at 338'	1	Line pipe with CIPP			$ 45.00	$ 15,327.00
45	G-23	79	78	First	225	8	ACP	226.2	Satisfactory	NA		Inspect again at a future date				
46	G-23	78	74	First	250	8	ACP	249.1	Satisfactory	NA		Inspect again at a future date				
47	G-25	38	24	Bowen	347	8	ACP	347.7	Satisfactory	NA		Inspect again at a future date				
48	G-25	24	21	Cleveland	118	8	ACP	118.9	Satisfactory	small pipe defect at 55'		Inspect again at a future date				
49	G-25	84	83	Country Club	374	8	ACP	373.0	Poor	circum fracture at 0.38'	3	Line pipe with CIPP			$ 45.00	$ 16,785.00
50	G-25	83	82A	Country Club	142	8	ACP	145.1	Poor	infiltration at joint 9'	2	Test and Grout Pipe Jts			$ 10.00	$ 1,451.00
51	G-25	82A	82	Country Club	88	8	ACP	86.0	Poor	roots , slight offset pipe and infioration at 3'	1	Line pipe with CIPP			$ 45.00	$ 3,870.00
52	G-25	63	82	Seneca	105	8	ACP	105.0	Satisfactory	NA		Inspect again at a future date				$ -
53	G-25	82	38	Seneca	109	8	ACP	121.3	Satisfactory	Slight offset joint at 81'		Inspect again at a future date				$ -
54	G-24	67	66	Third	275	8	ACP	275.3	Satisfactory	Lateral opening capped by nontraditional methods		Inspect again at a future date				$ -
55	G-24	68	65	Second	250	8	ACP	251.8	Poor	infiltration at joint 249'	2	Test and Grout Pipe Jts			$ 10.00	$ 2,518.00
56	G-22	74	55	Elmwood	239	8	ACP	239.4	Satisfactory	NA		NA				
57	G-11	43	22	Mc Kinley	248	8	ACP	249.0	Poor	circum fracture at 1'	2	Test and Grout Pipe Jts			$ 10.00	$ 2,490.00
58	G-12	42	41	Avondale	288	8	ACP	289.1	poor	hole at 124'	3	Line pipe with CIPP			$ 45.00	$ 13,009.50
59	G-12	41	19	Avondale	237	8	ACP	237.0	Satisfactory	NA		Inspect again at a future date				$ -
60	G-12	40	16	Cleveland	108	8	ACP	108.0	Satisfactory	Open goint with Gasket showing. No infiltration		Inspect again at a future date				$ -
61	G-13	39	9	Cleveland	174	8	ACP	174.5	Satisfactory	NA		Inspect again at a future date				$ -
62	G-16	55	54	Seneca	280	8	ACP	280.9	Poor	infiltration at 124'	2	Test and Grout Pipe Jts	mh-55 leaking		$ 10.00	$ 2,809.00

Video Viewer ID No.	Plan Sheet No.	Manhole ID		Location	Record Map Length (feet)	Diameter (inch)	Pipe Material	Actual Length Inspected	Condition (Satisfactory, Good)	Issues	Rank	Recommendation	Other Remarks	Spot Repair Unit Cost per Each	Unit Cost per Ft	Estimated Cost
		Up-stream	Down-stream													
63	G-15	54	53	Seneca	378	8	ACP	380.9	Satisfactory	NA		Inspect again at a future date				
64	G-15	53	52	Seneca	231	8	ACP	232.4	Satisfactory	NA		Inspect again at a future date				
65	G-15	52	51	Seneca	247	8	ACP	246.4	Satisfactory	NA		Inspect again at a future date				
66	G-22	100	99	Fourth Ext	415.4	8	PVC	415.4	Satisfactory	NA		Inspect again at a future date				
67	G-14	96	95	Marick Park	232.2	8	PVC	232.2	Satisfactory	video calls the ACP pipe but it is PVC pipe		NA				
71	G-14	48	47	4th Alley	280	8	ACP	280.6	Satisfactory	NA		Inspect again at a future date				
72	G-14	47	46	4th Alley	303	8	ACP	227.5	Satisfactory	NA		Inspect again at a future date				
73	G-22	99	77	Fourth Ext	350 +/-	8	PVC	25.7	Poor	Large offset joint at 25'	2	Spot Repair		$ 10,000		$ 10,000.00
94	G-2	25	4	Pittsburg	128	8	ACP	130.6	Satisfactory	Video footage blurry		Inspect again at a future date				
95	G-14	46	46A	Cameron	74.8	8	ACP	74.8	Satisfactory	NA		Inspect again at a future date				
96	G-14	46A	1	Cameron	141.7	8	ACP	141.7	Satisfactory	NA		Inspect again at a future date	Infiltration at MH 46A bench			
97	G-16	57	56	Seneca	330	8	ACP	330.1	Poor	Infiltration and light roots at 96'	3	Test and Grout Pipe Jts			$ 10.00	$ 3,301.00
68	G-6	22	21	Rural	344	12	ACP	326.5	Poor	Light Spalling/Delamination of pipe interior	2	Line pipe with CIPP			$ 60.00	$ 19,590.00
69	G-6	21	20	Cleveland	222	12	ACP	222.2	Poor	Spalling/Delamination/Hole in pipe 26'. Spalling/Hole in pipe 97'. Spalling of pipe interior.	1	Line pipe with CIPP	MH 21 leaks		$ 60.00	$ 13,332.00
70	G-6	20	19	Cleveland	213	12	ACP	213.3	Poor	Spalling/Delamination of pipe. Roots at 120'	2	Line pipe with CIPP			$ 60.00	$ 12,798.00
74	G-6	19	18	Cleveland	394	12	ACP	393.7	Poor	Spalling/Delamination of pipe interior	1	Line pipe with CIPP			$ 60.00	$ 23,622.00
75	G-5	18	17	Cleveland	399	12	ACP	195.2	Poor	Spalling/Delamination of pipe interior. Hole in pipe at 195.25'	1	Line pipe with CIPP			$ 60.00	$ 23,940.00
76	G-5	17	16	Cleveland	255	12	ACP	255.8	Poor	Light Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 15,348.00
77	G-5	16	15	Wells	196	12	ACP	195.4	Poor	Spalling/Delamination of pipe interior. Pipe bottom seems unstable (shaky camera), possible issues with pipe bottom.	1	Line pipe with CIPP			$ 60.00	$ 11,724.00
78	G-5	15	14a	2nd Alley	148	12	ACP	148.6	Poor	Light Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 8,916.00
79	G-5	14a	14	2nd Alley	254	12	ACP	253.1	Poor	Spalling/Delamination of pipe interior. Spalled/Hole at 173'. Pipe bottom seems unstable (shaky camera), possible issues with pipe bottom.	1	Line pipe with CIPP			$ 60.00	$ 15,186.00
80	G-4	14	13A	2nd Alley	274.0	12	ACP	274.0	Poor	Light Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 16,440.00
81	G-4	13A	13	3rd Alley	41.8	12	ACP	41.8	Poor	Light Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 2,508.00

Video Viewer ID No.	Plan Sheet No.	Manhole ID		Location	Record Map Length (feet)	Diameter (inch)	Pipe Material	Actual Length Inspected	Condition (Satisfactory, Good)	Issues	Rank	Recommendation	Other Remarks	Spot Repair Unit Cost per Each	Unit Cost per Ft	Estimated Cost
		Up-stream	Down-stream													
82	G-4	13	12A	2nd Alley	163.4	12	ACP	163.4	Poor	Light Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 9,804.00
83	G-4	12A	12	3rd Alley	86.3	12	ACP	86.3	Poor	Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 5,178.00
84	G-4	12	11	2nd Alley	251	12	ACP	248.9	Poor	Open joint at 25'. Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 14,934.00
85	G-4	11	10	Euclid	187	12	ACP	187.7	Poor	Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 11,262.00
86	G-4	10	9	Cleveland	165	12	ACP	166.3	Poor	Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 9,978.00
87	G-3	9	8	Maplewood	191	12	ACP	191.0	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 11,460.00
88	G-3	8	7	1st Alley	394	12	ACP	394.8	Poor	Spalling/Delamination of pipe interior. Hole at 125' Hole at 357'.	1	Line pipe with CIPP			$ 60.00	$ 23,688.00
89	G-3	7	6	1st Alley	279	12	ACP	277.6	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP	MH 7 is paved over. MH 7 leaks		$ 60.00	$ 16,656.00
90	G-3	6	5	1st Alley	393	12	ACP	394.4	Poor	Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 23,664.00
91	G-2	5	4	1st Alley	283	12	ACP	281.6	Poor	Spalling/Delamination of pipe interior.	1	Line pipe with CIPP			$ 60.00	$ 16,896.00
92	G-2	4	3	Chambers	313	12	ACP	313.9	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 18,834.00
93	G-1	3	2	Chambers	331	12	ACP	332.0	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 19,920.00
98	G-7	98	23B	Mc Kinley Ext.	83.7	12	ACP	83.7	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 5,022.00
99	G-7	23B	23	Mc Kinley Ext.	230	12	ACP	230.0	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 13,800.00
100	G-7	23	22	Mc Kinley Ext.	218.9	12	ACP	218.9	Poor	Spalling/Delamination of pipe interior. Roots at 134'	1	Line pipe with CIPP			$ 60.00	$ 13,134.00
101	G-1	2	2A	Richland	155	12	ACP	153.3	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 9,198.00
102	G-1	2A	1	Richland	103	12	ACP	105.1	Poor	Spalling/Delamination of pipe interior.	2	Line pipe with CIPP			$ 60.00	$ 6,306.00
103	G-1	1	PS	Seneca	48	15	CIP	45.1	Satisfactory	NA		Inspect again at a future date				$ -

Line Sewermain with Cured-in-place Liner

Test and Seal Pipe Joints

Spot Repair

Total Estimated Construction Cost	**$ 547,241.00**
15% Construction Contingency	$ 82,086.15
Total Estimated Construction Cost	**$ 629,327.15**
Estimated Legal, Administration, Engineering, and Construction Administration Cost	$ 95,000.00
Total Estimated Project Cost	**$ 724,327.15**
Total Estimated Project Cost (Rounded)	**$ 725,000.00**

MH 28 to MH 27 (Video #2): Heavy Infiltration at Pipe Joint



MH 50 to MH 49 (Video #12): Hole in Pipe



MH 80 to MH 57 (Video #21): Heavy Infiltration at Pipe Joint



MH 77 to MH 76 (Video #23): Large Offset Joint



MH 35 to MH 34 (Video #28): Roots and heavy mineral deposits



MH 32 to MH 31 (Video #31): Heavy Infiltration at Pipe Joint



MH 29 to MH 8 (Video #34): Hole in top of pipe with heavy Infiltration



MH 29 to MH 8 (Video #34): Hole in top of pipe with heavy Infiltration



MH 64 to MH 53 (Video #42): Infiltration at Pipe Joint



MH 45 to MH 44 (Video #43): Hole in side of pipe starting to form



MH 99 to MH 77 (Video #73): Large offset Joint



MH 57 to MH 56 (Video #97): Roots and infiltration at pipe joint



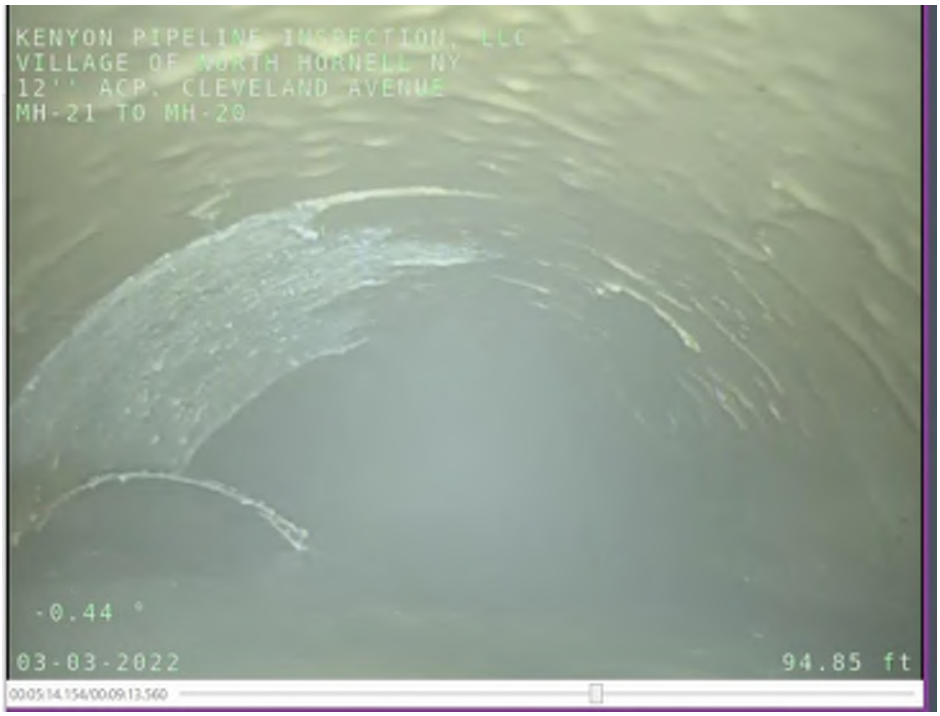
MH 21 to MH 20 (Video #69): Cement is spalling off interior of pipe.



MH 21 to MH 20 (Video #69): Cement is spalling off interior of pipe.



MH 21 to MH 20 (Video #69): Cement is spalling off interior of pipe.



MH 21 to MH 20 (Video #69): Cement is spalling off interior of pipe.



MH 20 to 19 (Video #70): Cement is spalling off interior of pipe.



MH 20 to 19 (Video #70): Cement is spalling off interior of pipe.



MH 20 to 19 (Video #70): Cement is spalling off interior of pipe.



MH 20 to 19 (Video #70): Cement is spalling off interior of pipe.



MH 19 to MH 18 (Video #74): Cement is spalling off interior of pipe.



MH 19 to MH 18 (Video #74): Cement is spalling off interior of pipe.



MH 19 to MH 18 (Video #74): Cement is spalling off interior of pipe.



MH 18 to MH 17 (Video #75): Cement is spalling off interior of pipe.



MH 17 to MH 16 (Video #76): Cement is spalling off interior of pipe.



MH 16 to MH 15 (Video #77): Cement is spalling off interior of pipe.



MH 15 to MH 14A (Video #78): Cement is spalling off interior of pipe.



MH 15 to MH 14A (Video #78): Cement is spalling off interior of pipe.



MH 14A to MH 14 (Video #79): Cement is spalling off interior of pipe.



MH 14A to MH 14 (Video #79): Cement is spalling off interior of pipe.



MH 14 to MH 13A (Video #80): Cement is spalling off interior of pipe.



MH 13 to MH 12A (Video #82): Cement is spalling off interior of pipe.



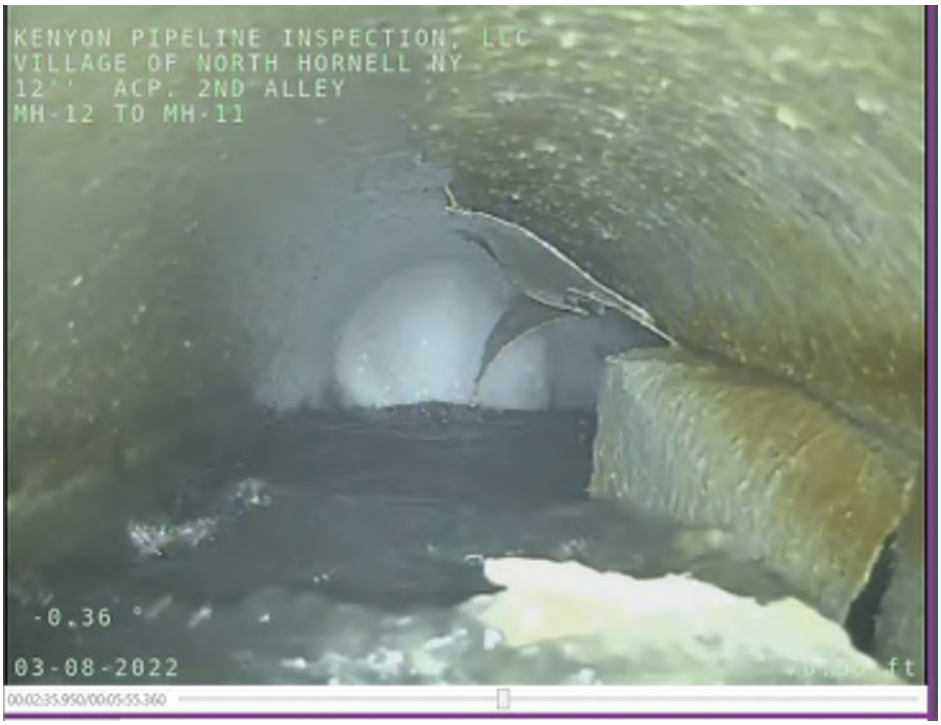
MH 12A to MH 12 (Video #83): Cement is spalling off interior of pipe.



MH 12 to MH 11 (Video #84): Cement is spalling off interior of pipe.



MH 12 to MH 11 (Video #84): Cement is spalling off interior of pipe.



MH 12 to MH 11 (Video #84): Cement is spalling off interior of pipe.



MH 12 to MH 11 (Video #84): Cement is spalling off interior of pipe.



MH 12 to MH 11 (Video #84): Cement is spalling off interior of pipe.



MH 11 to MH 10 (Video #85): Cement is spalling off interior of pipe.



MH 11 to MH 10 (Video #85): Cement is spalling off interior of pipe.



MH 10 to MH 9 (Video #86): Cement is spalling off interior of pipe.



MH 9 to MH 8 (Video #87): Cement is spalling off interior of pipe.



MH 8 to MH 7 (Video #88): Cement is spalling off interior of pipe.



MH 8 to MH 7 (Video #88): Cement is spalling off interior of pipe.



MH 8 to MH 7 (Video #88): Cement is spalling off interior of pipe.



MH 7 to MH 6 (Video #89): Cement is spalling off interior of pipe.



MH 6 to MH 5 (Video #90): Cement is spalling off interior of pipe.



MH 6 to MH 5 (Video #90): Cement is spalling off interior of pipe.



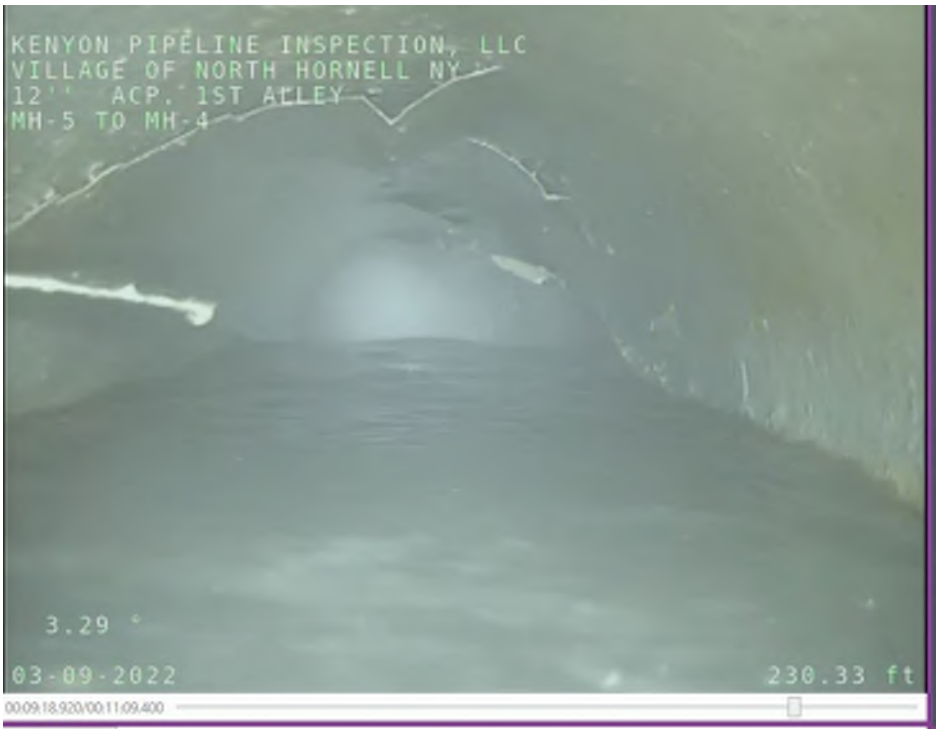
MH 6 to MH 5 (Video #90): Cement is spalling off interior of pipe.



MH 5 to MH 4 (Video #91): Cement is spalling off interior of pipe.



MH 5 to MH 4 (Video #91): Cement is spalling off interior of pipe.



MH 4 to MH 3 (Video #92): Cement is spalling off interior of pipe.



MH 23 to MH 23A (Video #100): Cement is spalling off interior of pipe.

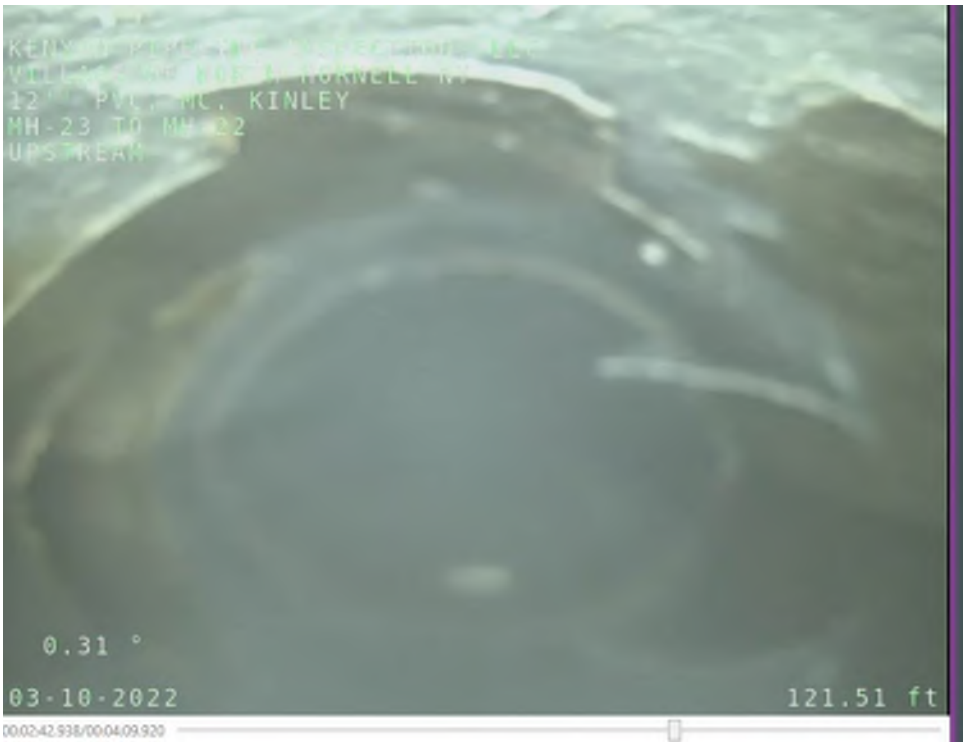


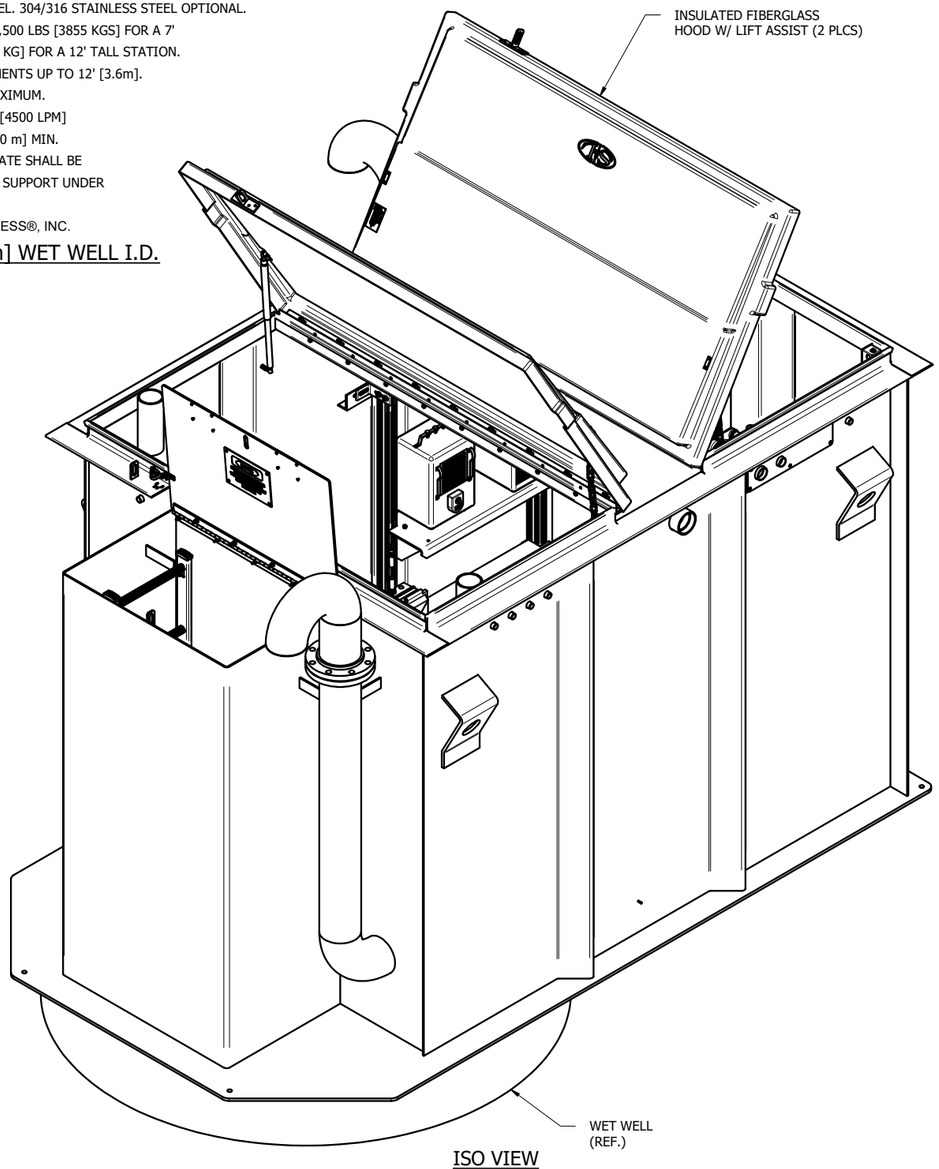
Figure E-4

Smith and Loveless Rectangular Recessed WW

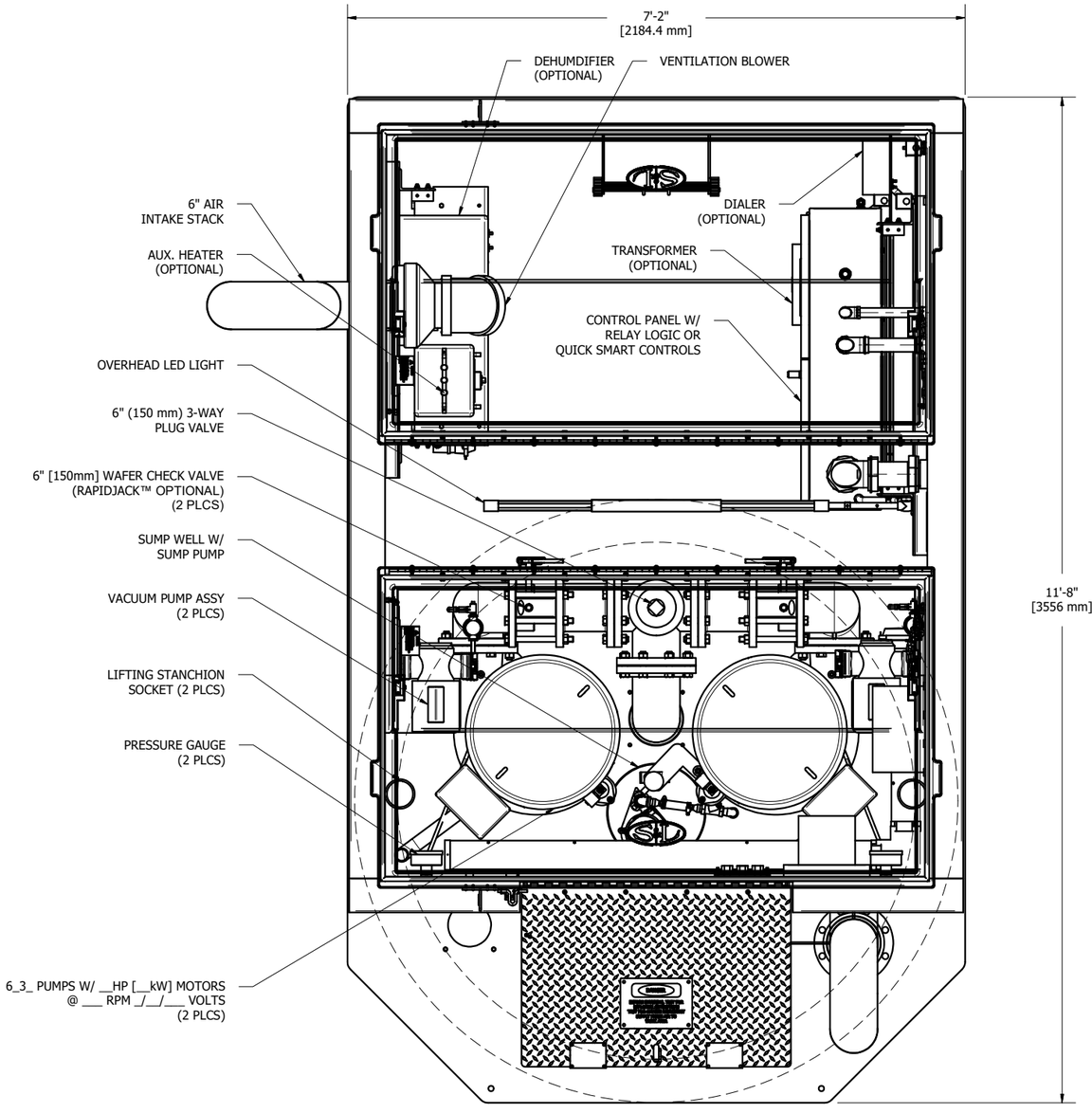
NOTES:

1. SEE DRAWING 87B650 FOR STATION INSTALLATION DRAWING.
2. SEE DRAWING 87B721 FOR TYPICAL WET WELL SETTINGS FOR FLOAT SWITCH SETTINGS, SEE DRAWING 87B1005 FOR TYPICAL WET WELL SETTINGS FOR TRANSDUCER SETTINGS.
3. U.S. CUSTOMARY CONDUIT COUPLING SIZES SHOWN. METRIC SIZES OPTIONAL.
4. MATERIALS OF CONSTRUCTION
   a. BASE: EPOXY COATED A36 CARBON STEEL, DUROLAST STAINLESS STEEL OPTIONAL.
   b. PIPING: EPOXY COATED CAST/DUCTILE IRON WITH A53 STEEL DISCHARGE.
   c. HOOD: FIBERGLASS INSULATED HOOD.
5. CONTROL PANEL CONSTRUCTION.
   a. MATERIAL: POWDER-COATED STEEL. 304/316 STAINLESS STEEL OPTIONAL.
6. MAXIMUM WEIGHT RANGES FROM 8,500 LBS [3855 KGS] FOR A 7' TALL STATION TO 11,000 LBS [5,000 KG] FOR A 12' TALL STATION.
7. AVAILABLE IN 1'-0" [305mm] INCREMENTS UP TO 12' [3.6m].
8. PUMP MOTORS - 50 HP [37.3 kW] MAXIMUM.
9. MAXMIMUM CAPACITY - 1200 G.P.M. [4500 LPM]
10. INTERIOR HEAD CLEARANCE 6'-7" [2.0 m] MIN.
11. SUBGRADE UNDER STATION BASE PLATE SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT UNDER ENTIRE BASE PLATE.
12. COPYRIGHT © 2025 SMITH & LOVELESS®, INC.

5'-0" [1.5 m] & 6'-0" [1.8 m] WET WELL I.D.



ISO VIEW
(LIDS AND MANWAY SHOWN OPEN)



PLAN VIEW
(LIDS SHOWN TRANSPARENT)

87B571/G

SHEET 1 OF 2

G	N2025-1	1/6/2025	CAS	DRAWN BY: ARW	DATE: 7/21/2004	ALLOWABLE TOLERANCES
F	N2013-41	11/1/2013	APZ			
E	N2011-14	1/2/2012	E.G. RGD	CHECKED BY: FT	DATE: 10/18/2004	FRACTIONS -
D	N2010-54	8/2/2010	GBB RGD	APPROVED BY: CGM	DATE: 10/18/2004	DECIMALS -
C	N2009-64	11/1/2009	GAN HJM ADB RGD	SCALE:	CODE:	ANGLES -
LET	ECN NO	DATE	BY APPV'D			

FOR

RECTANGULAR RWWMPS 6" [150 mm]
PIPING 6_3_ PUMPS

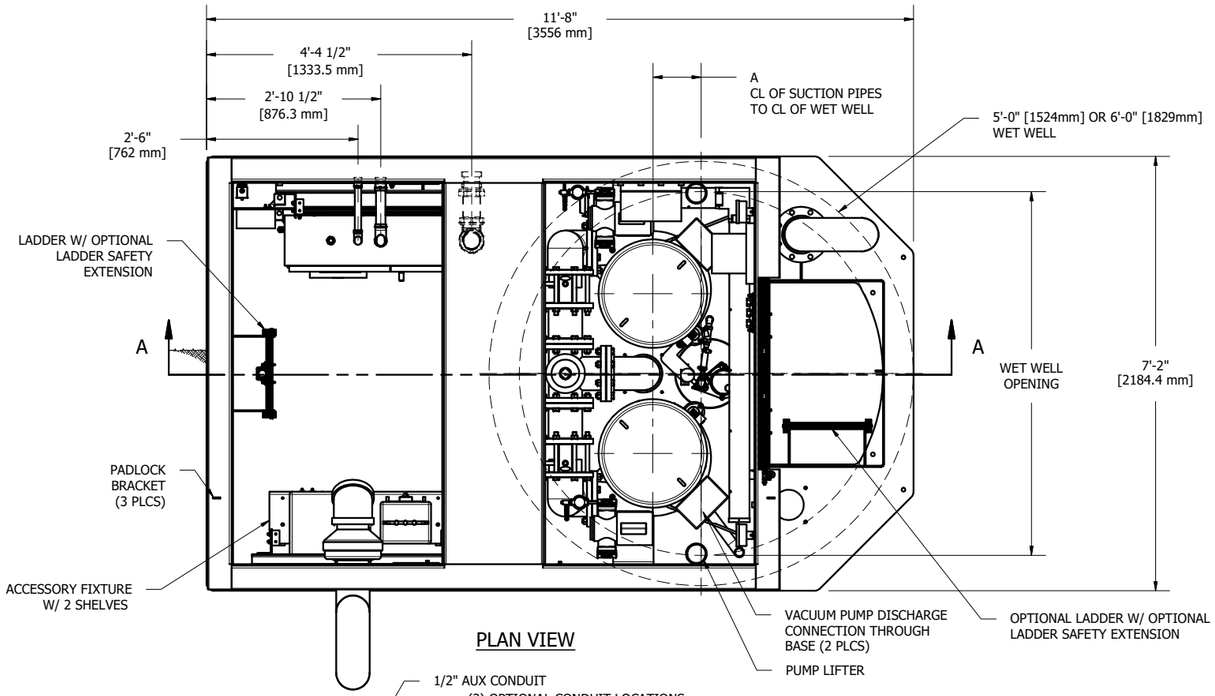
SIZE		U/M EA	WT.
FILE NAME 87B571.dwg			PLOT SCALE 1:1
ORIGINAL ISSUE N2004-31	© Smith & Loveless, Inc. 2004, 06, 09, 10, 12, 13, 25	SERIAL NO	DWG NO 87B571 REV G

THIRD ANGLE PROJECTION

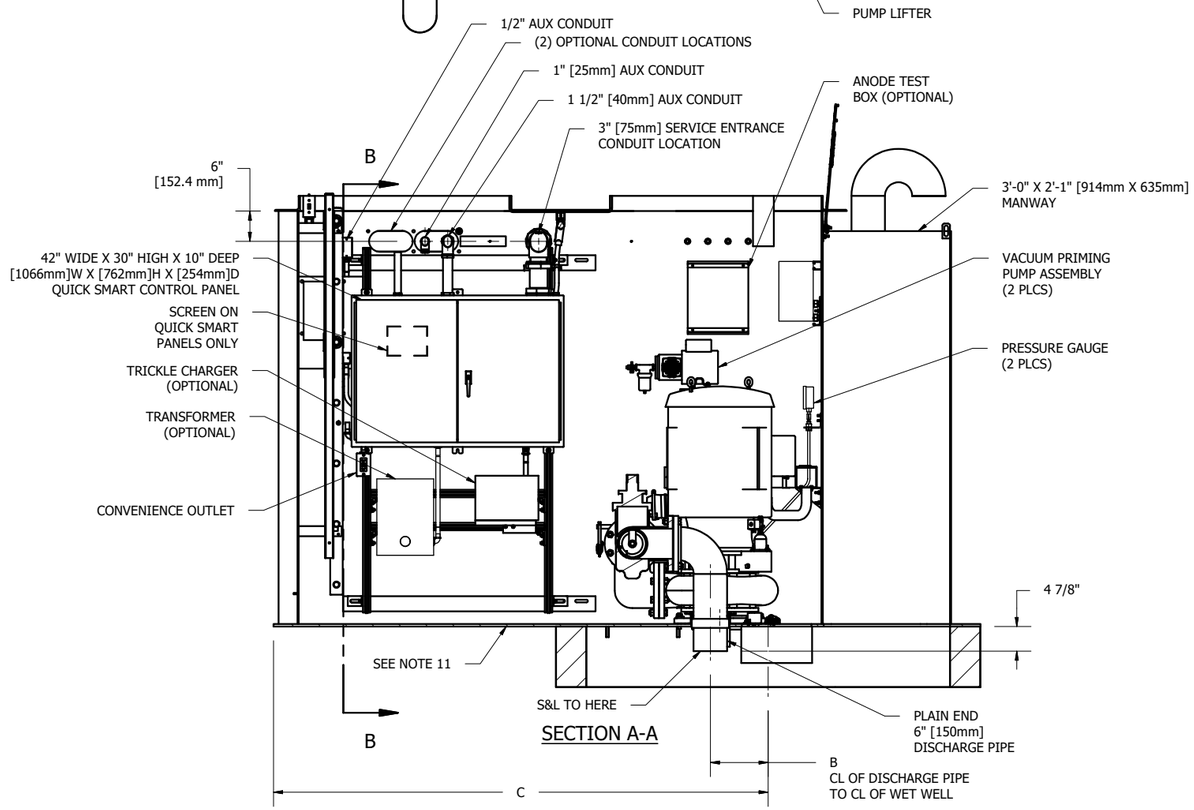
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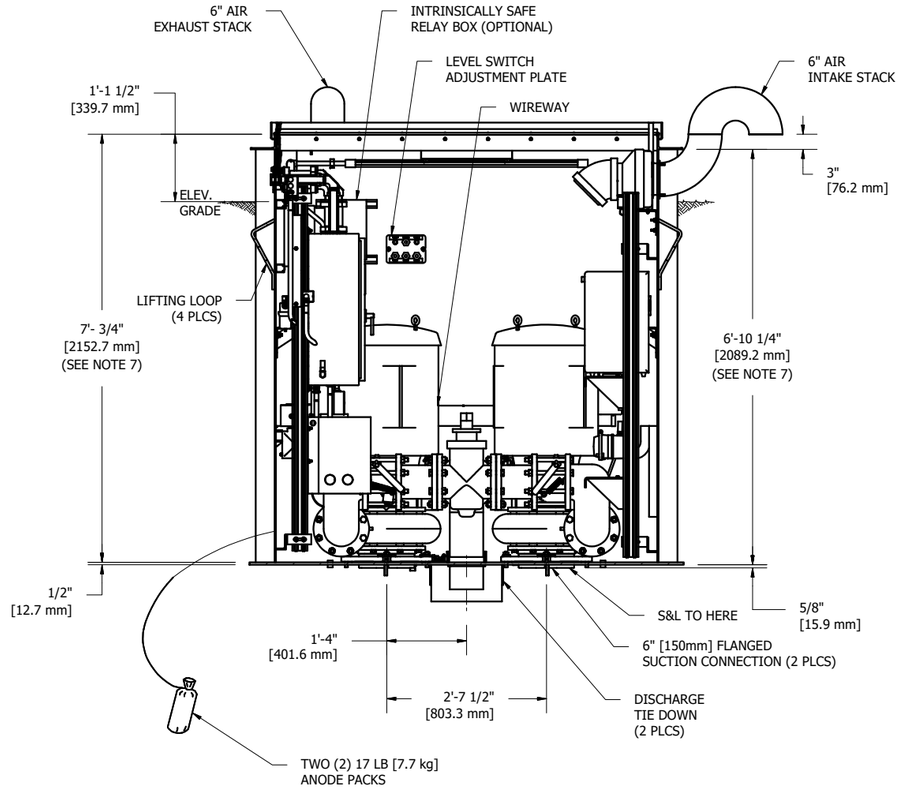
WET WELL OPENING	A	B	C
5'-0" [1.5 m]	1' - 3 1/2" [393.7 mm]	1' - 5 7/16" [446.1 mm]	8'-7 15/16 [2640 mm]
6'-0" [1.8 m]	9 1/2" [242.1 mm]	11 7/16" [290.6 mm]	8'-1 15/16" [2487.7 mm]



PLAN VIEW



SECTION A-A



SECTION B-B

87B571/G

SHEET 2 OF 2

LET	ECN NO	DATE	BY APPV'D
G	N2025-1	1/6/2025	CAS
F	N2013-41	11/1/2013	APZ E.G. RGD
E	N2011-14	1/2/2012	GBB RGD
D	N2010-54	8/2/2010	GAN HJM
C	N2009-64	11/1/2009	ADB RGD

DRAWN BY: ARW — DATE: 7/21/2004 — ALLOWABLE TOLERANCES
CHECKED BY: FT — DATE: 10/18/2004 — FRACTIONS -
APPROVED BY: CGM — DATE: 10/18/2004 — DECIMALS -
SCALE: — CODE: — ANGLES -

FOR

RECTANGULAR RWWMPS 6" [150 mm] PIPING 6_3_ PUMPS

SIZE — U/M EA — WT.
FILE NAME 87B571.dwg — PLOT SCALE 1:1
SERIAL NO — DWG NO 87B571 — REV G

ORIGINAL ISSUE N2004-31

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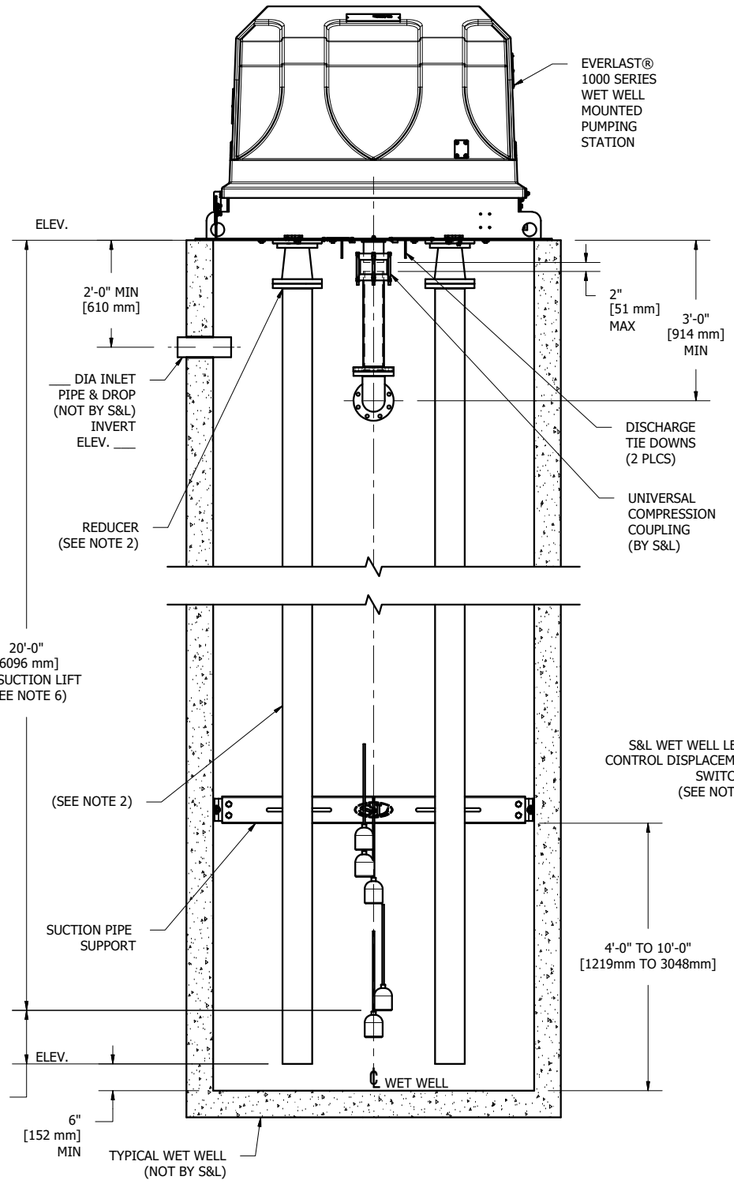
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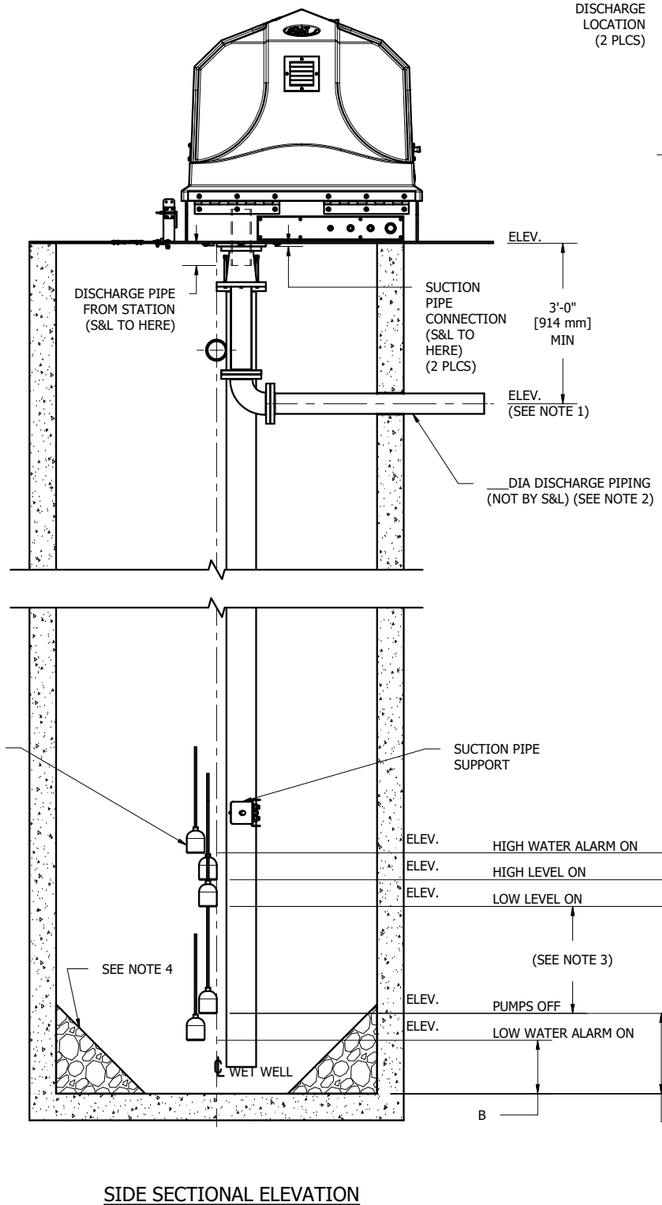
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Figure E-5

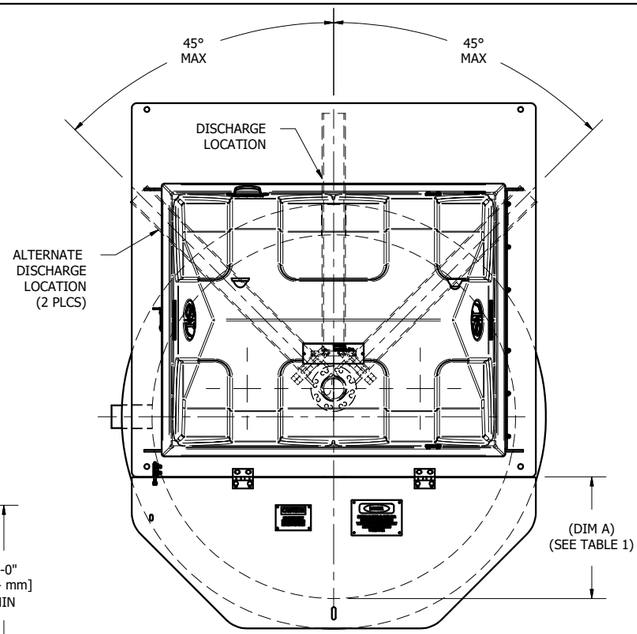
Smith and Loveless Above Grade WW



FRONT SECTIONAL ELEVATION



SIDE SECTIONAL ELEVATION



PLAN VIEW

TABLE 1	
WET WELL DIAMETER	DIM A
4' [1.2 m] (SEE NOTE 7)	1'-2 1/2" [368 mm]
5' [1.5 m]	2'-0" [610 mm]
6' [1.8 m]	2'-0" [610 mm]

NOTES:

1. IF THE INVERT ELEVATION AT THE DISCHARGE END OF THE FORCE MAIN IS BELOW THE INVERT ELEVATION OF THE FORCE MAIN AT THE POINT OF LEAVING THE WET WELL, OR IF THE DISCHARGE FORCE MAIN IS LESS THAN 200 FEET [61 m] IN LENGTH, A PRIMING LOCK LOOP MAY BE REQUIRED TO BE INSTALLED TO PROVIDE A "TRAP" IN THE FORCE MAIN. SEE DRAWING 87B761 FOR PRIMING LOCK LOOP AND ADDITIONAL STATION INSTALLATION DETAILS.
2. DISCHARGE AND SUCTION PIPES TYPICALLY ARE 4-INCH [100mm], 6-INCH [150mm] OR 8-INCH [200mm] DEPENDING ON THE PROJECT REQUIREMENTS. FLANGED INCREASER FITTINGS CAN BE PROVIDED TO ACCOMMODATE LARGER DIAMETER DISCHARGE AND SUCTION PIPES TO THE STATION FOR INCREASED FLOW REQUIREMENTS.
3. THE WET WELL VOLUME AS DEFINED BETWEEN THE LOW LEVEL "ON" AND THE PUMPS "OFF" SETTINGS SHOULD BE EQUAL TO, OR GREATER THAN, THE PUMPING RATE PER MINUTE OF THE STATION SO THE STATION WILL OPERATE FOR AT LEAST ONE MINUTE PER CYCLE. SEE TABLE 2 FOR TYPICAL LEVEL SETTINGS.
4. PROVIDE 45° SLOPE IN WET WELL AS REQUIRED. ENSURE THE GROUT DOES NOT CONFLICT WITH, RESTRICT OR BLOCK THE OPENINGS OF, THE SUCTION PIPES.
5. SUCTION PIPE MATERIAL RECOMMENDED TO BE SCHEDULE 80 PVC OR CPVC. A SUCTION PIPE SUPPORT KIT IS PROVIDED BY S&L, TO BE INSTALLED BY OTHERS AS SHOWN. THE SIZE AND MOUNTING WILL VARY BASED ON PROJECT REQUIREMENTS.
6. 20 FT MAXIMUM SUCTION LIFT IS AVAILABLE UP TO A MAXIMUM OF 85°F [29°C] AND 1000 FT OF ALTITUDE. THE ALLOWABLE SUCTION LIFT WILL BE DERATED FOR TEMPERATURES ABOVE 85°F [29°C] AND 1000 FT OF ALTITUDE.
7. MINIMUM OF 1/2-IN OF GROUT OR MASTIC SPACER ON THE TOP OF THE WET WELL LIP FOR IS REQUIRED FOR STATIONS WITH A 4' WET WELL OPENING TO AVOID CLASHES BETWEEN THE PUMP STATION HARDWARE AND THE WET WELL STRUCTURE.
8. THE TOTAL NUMBER OF CONTROL DISPLACEMENT SWITCHES (FLOATS) WILL VARY BASED ON REQUIREMENTS.
9. THE WET WELL (INCLUDING INLET, INVERT, CAP AND/OR GROUT), SUCTION PIPES, DISCHARGE FORCE MAIN AND DISCHARGE FORCE MAIN RESTRAINT ARE NOT PROVIDED BY S&L.
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TABLE 2 (TYPICAL WET WELL LEVEL SETINGS)		
ITEM	DIMENSION	LEVEL
LOW WATER ALARM	B	1'-0" [305 mm]
PUMPS OFF	C	1'-6" [457 mm]
LOW LEVEL	D	3'-6" [1067 mm]
HIGH LEVEL	E	4'-0" [1219 mm]
HIGH WATER ALARM	F	4'-6" [1372 mm]

87B721/C

SHEET 1 OF 2

LET	ECN NO	DATE	BY APPV'D
C	N2021-166	9/21/2021	BTG RMV
B	N2021-122	8/4/2021	NO RMV
A	N2021-52	1/13/2021	CAS RMV

DRAWN BY: F.J.G.M. DATE: 3/27/2008 ALLOWABLE TOLERANCES
CHECKED BY: A.C.M. DATE: 3/31/2008 FRACTIONS -
APPROVED BY: C.G.M. DATE: 3/31/2008 DECIMALS -
SCALE: CODE: ANGLES -

FOR

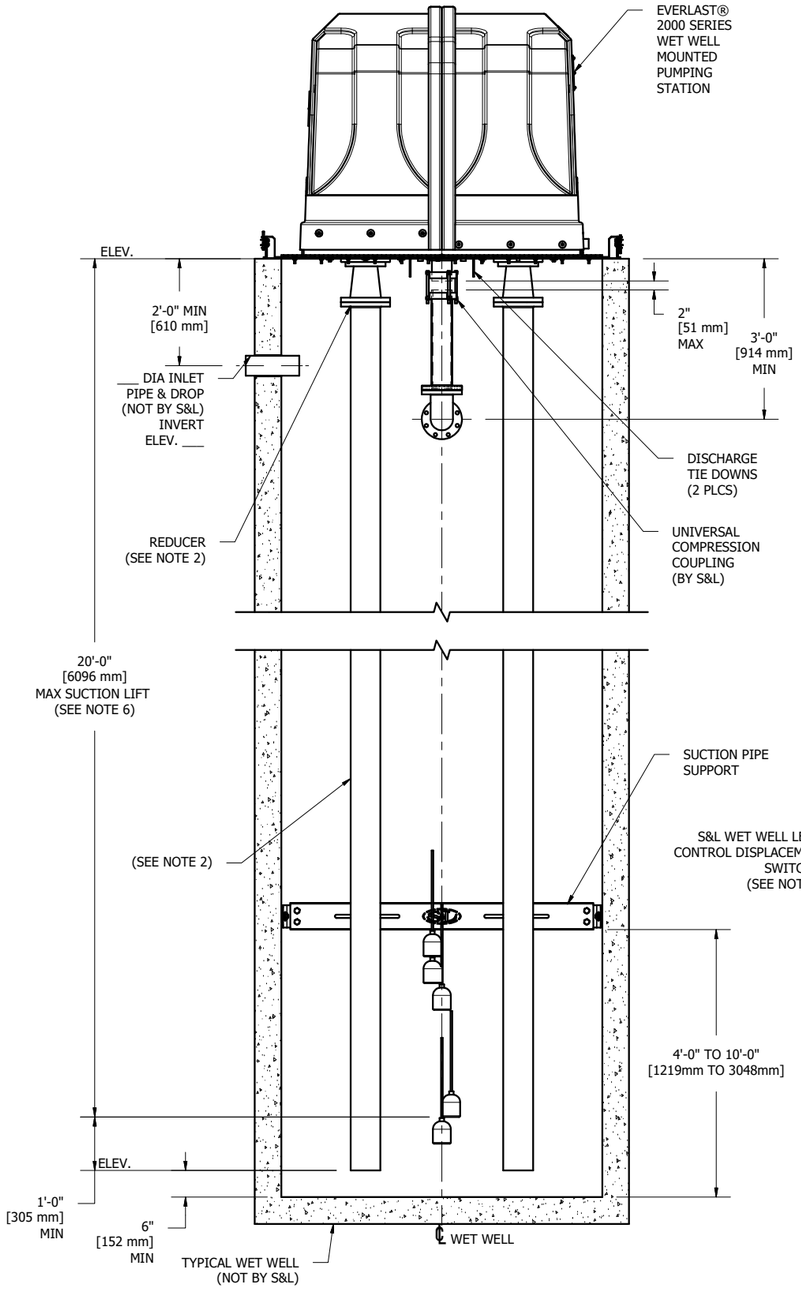
EVERLAST® PUMP STATIONS TYPICAL WET WELL LAYOUT AND CONTROL LEVEL SETTINGS

SIZE U/M EA WT.
FILE NAME 87B721.dwg PLOT SCALE 1:1
ORIGINAL ISSUE N2008-23
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SERIAL NO DWG NO 87B721 REV C

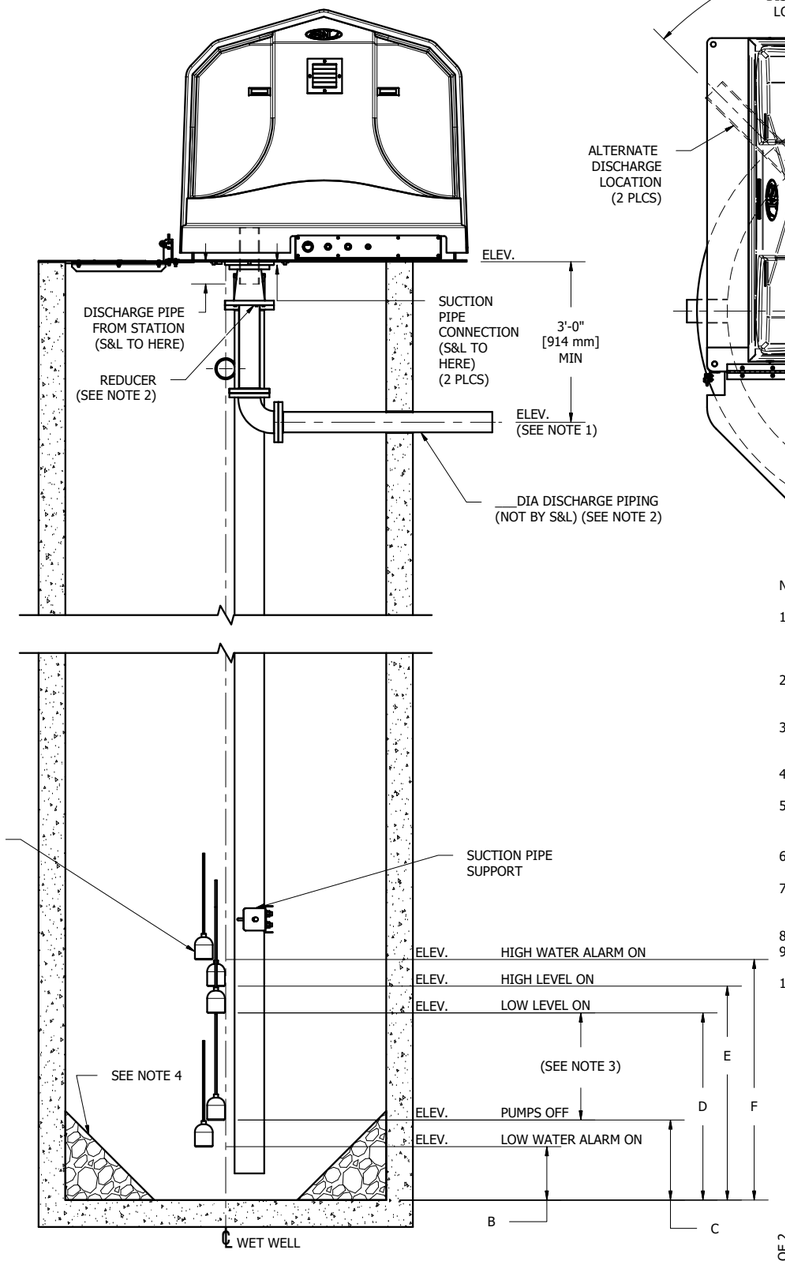
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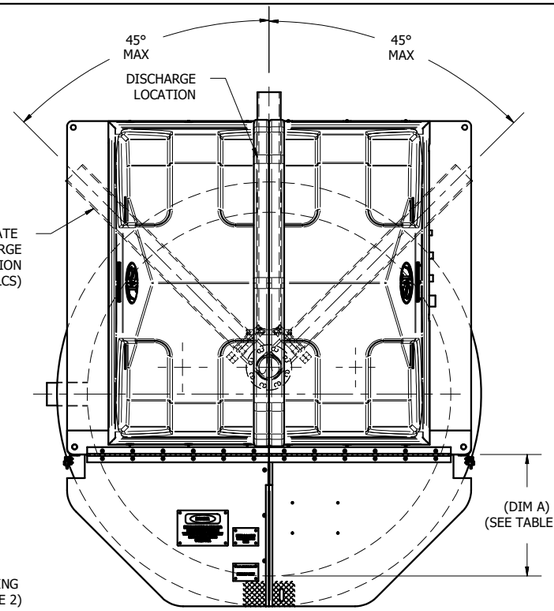
Smith & Loveless, Inc.



FRONT SECTIONAL ELEVATION



SIDE SECTIONAL ELEVATION



PLAN VIEW

TABLE 1	
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87B721/C

SHEET 2 OF 2

LET	ECN NO	DATE	BY APPV'D
C	N2021-166	9/21/2021	BTG RMV
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DRAWN BY: F.J.G.M. DATE: 3/27/2008
CHECKED BY: A.C.M. DATE: 3/31/2008
APPROVED BY: C.G.M. DATE: 3/31/2008
SCALE: CODE:
ALLOWABLE TOLERANCES: FRACTIONS -; DECIMALS -; ANGLES -

FOR

EVERLAST® PUMP STATIONS TYPICAL WET WELL LAYOUT AND CONTROL LEVEL SETTINGS

SIZE U/M EA WT.
FILE NAME 87B721.dwg PLOT SCALE 1:1
ORIGINAL ISSUE N2008-23
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SERIAL NO
DWG NO 87B721 REV C

THIRD ANGLE PROJECTION

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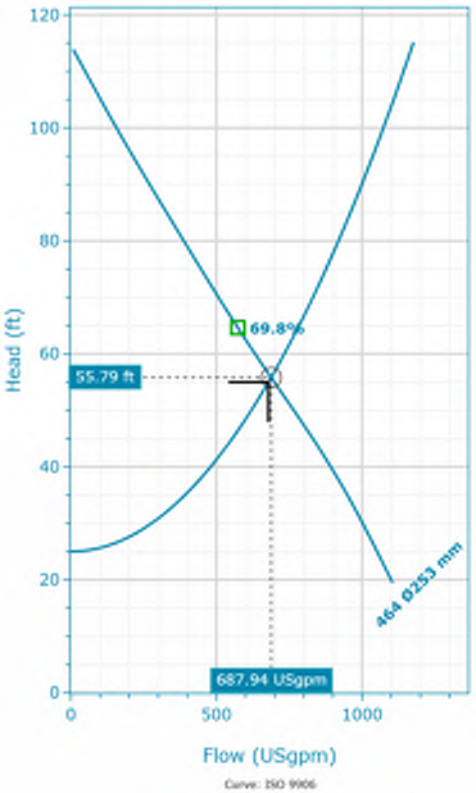
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Figure E-6

NP Flygt 3153 HT 464 – 15HP – Seneca Street (002)

NP 3153 HT 3~ 464 | Configuration Summary





Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Installation

Installation Type
P - Semi-Permanent, Wet

Motor

Rated Voltage
460 V

Coupling
D

Motor Efficiency Class
Standard

Rated Power
15 Hp

Materials

Impeller Material
Hard-Iron

Volute Material
Grey Cast Iron

Performance

Explosion Proof
true

Approval
FM

Max. Pumped Media Temp.
104 °F

Impeller Diameter
253 mm

NP 3153 HT 3~ 464 | Product Details

N 3153

The Flygt N-series are equipped with the Flygt invented N-technology with its innovative self-cleaning impeller. Solid objects entering the pump will pass through the impeller between the impeller vanes. If an object gets caught on the leading edge of one of the vanes, it will slide along the backswept shape towards the perimeter of the inlet where it will be guided by a relief groove through the pump housing. This ensures a high sustained total efficiency over time. Due to the mechanical self-cleaning design, a sludge concentration of solids up to 8% can easily be pumped. The pump can easily be installed in either permanently or temporary submerged, or horizontally or vertically dry installations.

Flexible and Modular Design

The modular hydraulic design enables customization of the hydraulics to meet the requirements of many applications.

- Replaceable wear ring in two materials, gray iron or Hard Iron, for different operation conditions
- Hardened gray iron impeller for typical wastewater applications
- Hard-Iron impeller for heavy duty wastewater applications containing abrasive and corrosive content
- Chopper ring intended for tough wastewater applications where cutting is required due to long fibres and solid concentrations up to 10-12%
- Stainless steel impeller for special applications that require duplex stainless steel

Robust and Reliable

- Short shaft overhang reduces shaft deflection and increases seal and bearing life
- Class H Motor designed for submersible use. Heat is concentrated to the stator core for improved cooling properties.
- The Plug-in seal with Active Seal system eliminates the risk associated with incorrect installation and careless handling. All in one unit. Available in Tungsten carbide (WCCR) or Silicone carbide (SiC) depending on pumped media.
- Motor cable SUBCAB® specially developed for submersible use
- Offers flexible cooling systems, e.g. closed-loop cooling system, media cooled or external cooling that allows full motor potential in dry installations.
- Premium brand bearings, greased for life, ensures a minimum of 50 000 hours of duty
- Leakage sensor and motor temperature sensor as standard

The N 3153 is available with the following options:

- ATEx, FM, CSA-approvals
- Premium efficiency motors
- Hard Iron hydraulic design
- Stainless Steel hydraulic design
- Vibration-sensor, extended motor temperature sensors, additional leakage-sensor, current-sensor and pump memory
- Compatible with SmartRun® Wastewater pump controller
- Compatible with MAS 801 monitoring system

Product Features

- State-of-the-art wastewater pump with N-technology
- Sustained high efficiency pumping with energy savings up to 25%
- Flexible and modular design
- Robust and reliable

Construction Materials

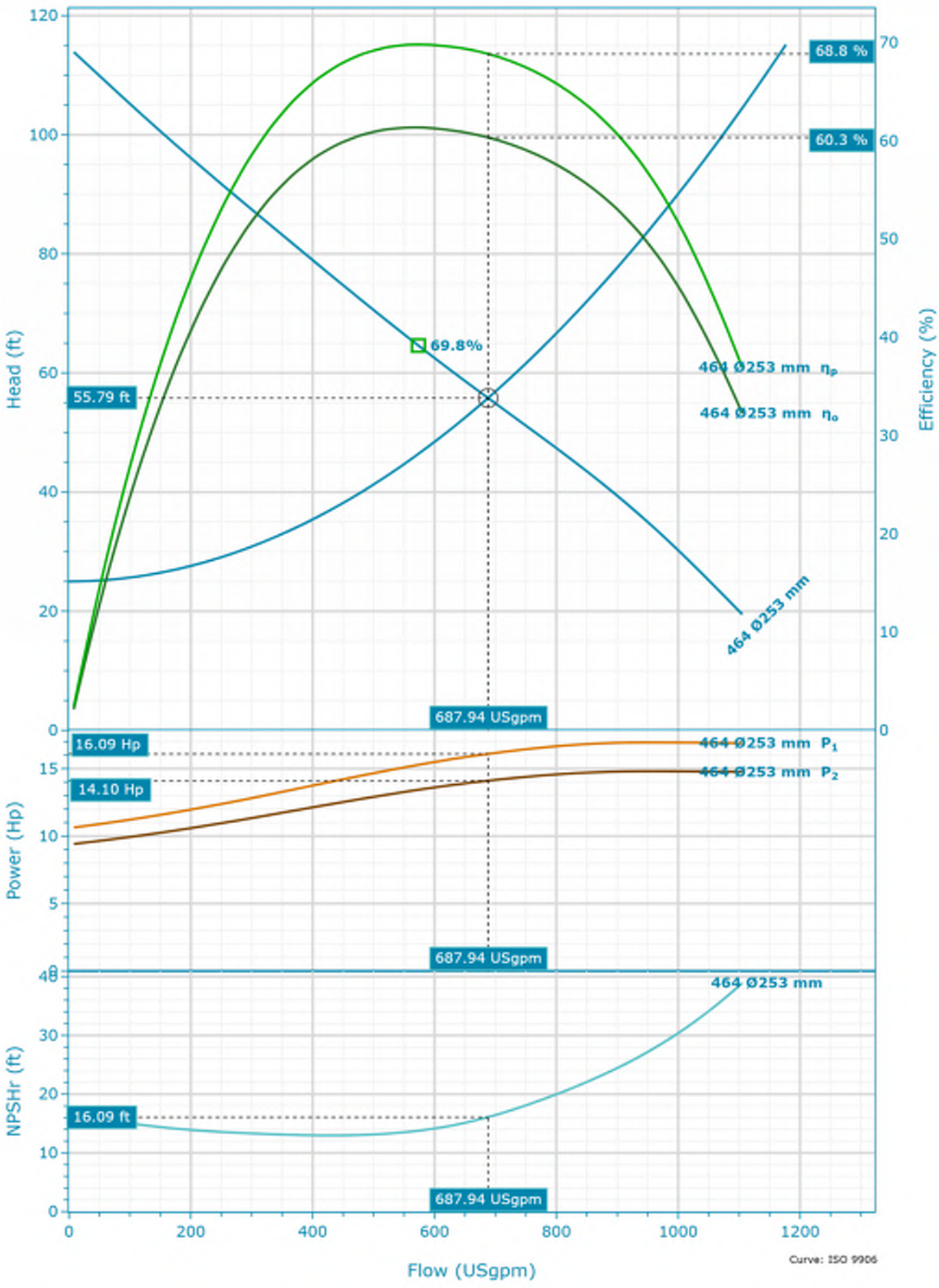
Impeller Material	Volute Material	Stator Cover Material
Hard-Iron	Grey Cast Iron	-

Motor

Rated Power	Number Of Phases	Start Current Ratio	Motor Issue
15 Hp	3	5.83	11
Motor Denomination	Rated Motor Speed	Insulation Class	Locked Rotor Code
21-15-4AA	1,765 RPM	H	G
Motor Efficiency Class	Rated Voltage	Approval	Max starts per hour
Standard	460 V	FM	30
Version Code	Rated Current	Total moment of inertia	Power Factor 100%
095	19 A	2.034 ft²lbf	0.84
Frequency	Start Current	Type of duty	Power Factor 75%
60 Hz	112 A	S1	0.78
Max P2 (1x)	Starting Current, Direct Starting	Stator Variant	Power Factor 50%
14.8 Hp	112 A	1	0.67
Number Of Poles	Starting Current, Star Delta	Motor Module	Efficiency 100%
4	37.33 A	145	87.3 %

Project:	Created By:	Created On:	Last Update:
NP 3153 HT 3~ 464	Ian Belczyk	4/1/25	-

NP 3153 HT 3~ 464 | Hydraulic Data & Performance Curve



Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Project:	Created By:	Created On:	Last Update:
NP 3153 HT 3~ 464	Ian Belczyk	4/1/25	-

Selection

Series N 3000	System Type Single Pump
Name NP 3153 HT 3~ 464	Operating Pumps 1
Frequency 60 Hz	Standby Pumps No Standby Pump
Total Flow 679.00 USgpm	Curve Code 464
Total Head 55.00 ft	Impeller Diameter 253 mm
Pump Flow 679.00 USgpm	Inlet Diameter 150 mm
Pump Head 55.00 ft	Outlet Diameter 4 in
	Number Of Vanes 2

Fluid

Fluid Type Water	Density 62.428 lb/ft³
Fluid Temperature 39.2 °F	Dynamic Viscosity 1.567212 cP
Specific Gravity 1	Fluid Vapor Pressure 0.118 psi

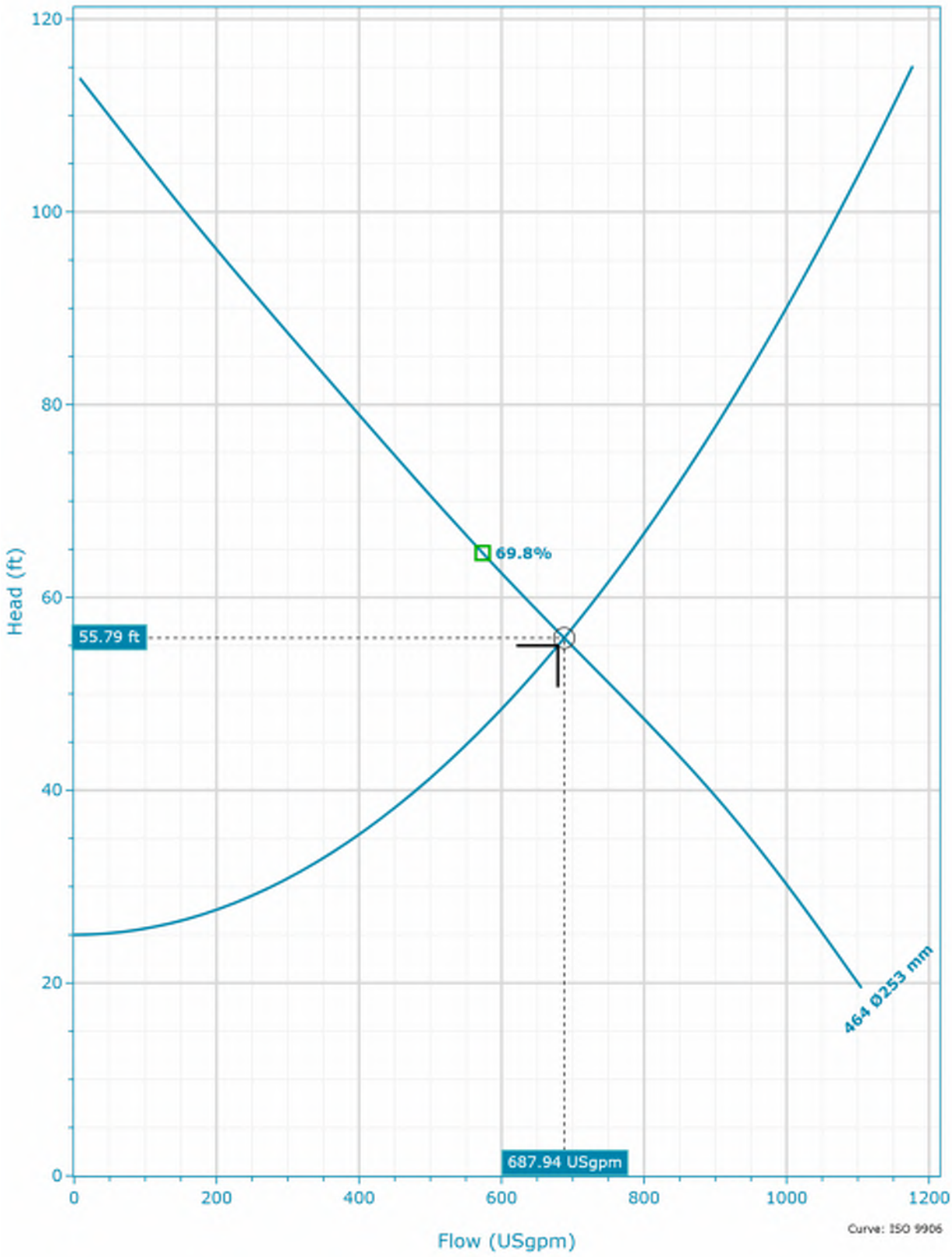
Design Point

Flow 687.94 USgpm	Shaft power (P2) 14.1 Hp
Head 55.79 ft	NPSHR 16.09 ft
Overall Efficiency (ηo) 60.34 %	Static Head 25.00 ft
Pump Efficiency (ηp) 68.85 %	Flow To BEP Ratio 119.9 %
Input Power (P1) 16.09 Hp	

Design Curve

Rated Speed 60 Hz	BEP Flow 573.57 USgpm
Max Flow 1,105.2 USgpm	BEP Head 64.61 ft
H@QMin 113.88 ft	Max P2 14.8 Hp
H@QMax 19.48 ft	Specific Energy 0.000291 kWh/USgal
BEP 69.8 %	

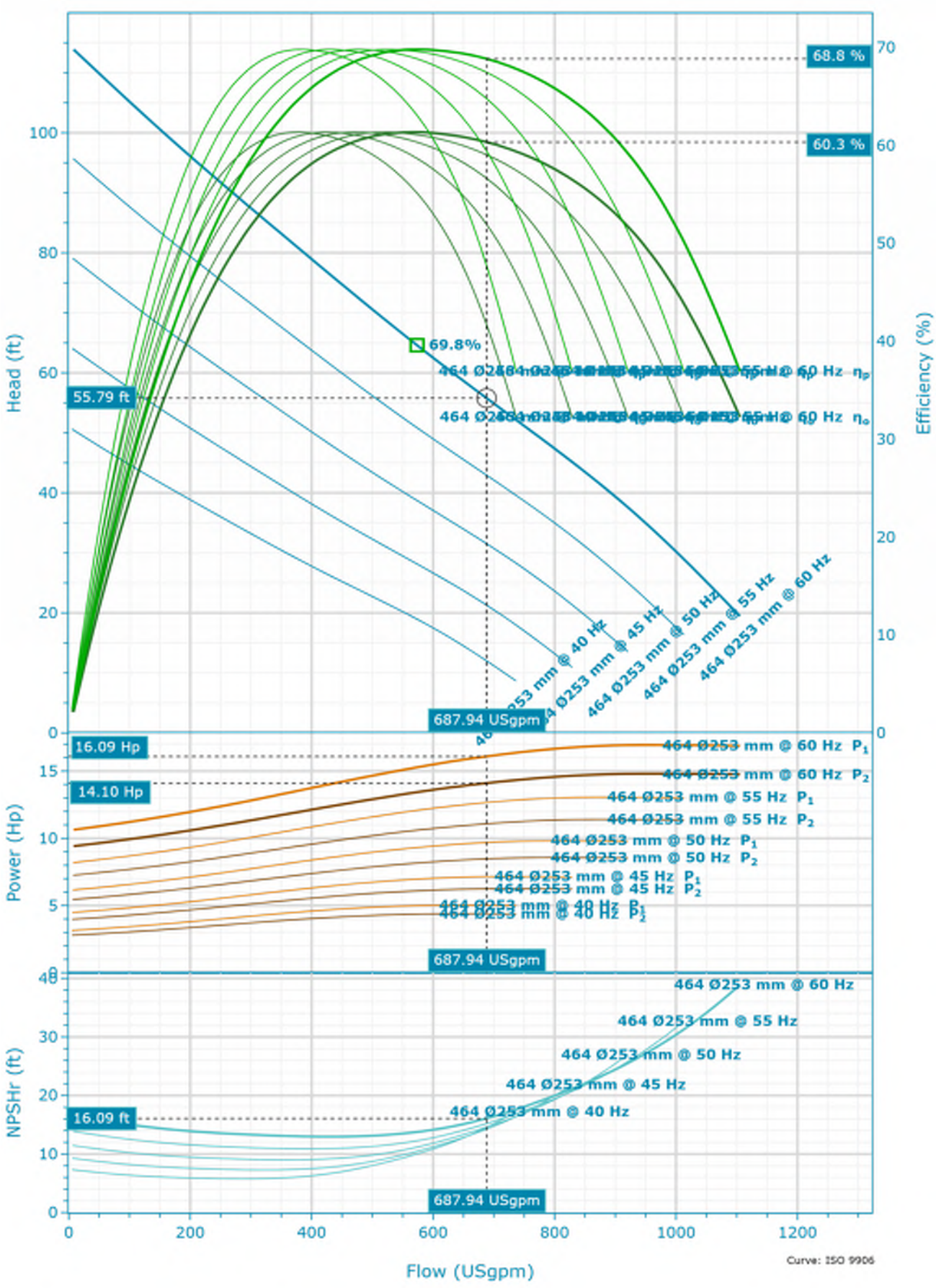
NP 3153 HT 3~ 464 | Duty Analysis



Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Name	Q (1x) [USgpm]	H (1x) [ft]	P2 (1x) [Hp]	Q [USgpm]	H [ft]	P2 [Hp]	ηp [%]	SE [kWh/USgal]	NPSHr [ft]
DP @ 1x	687.94	55.79	14.1	687.94	55.79	14.1	68.85	0	16.09

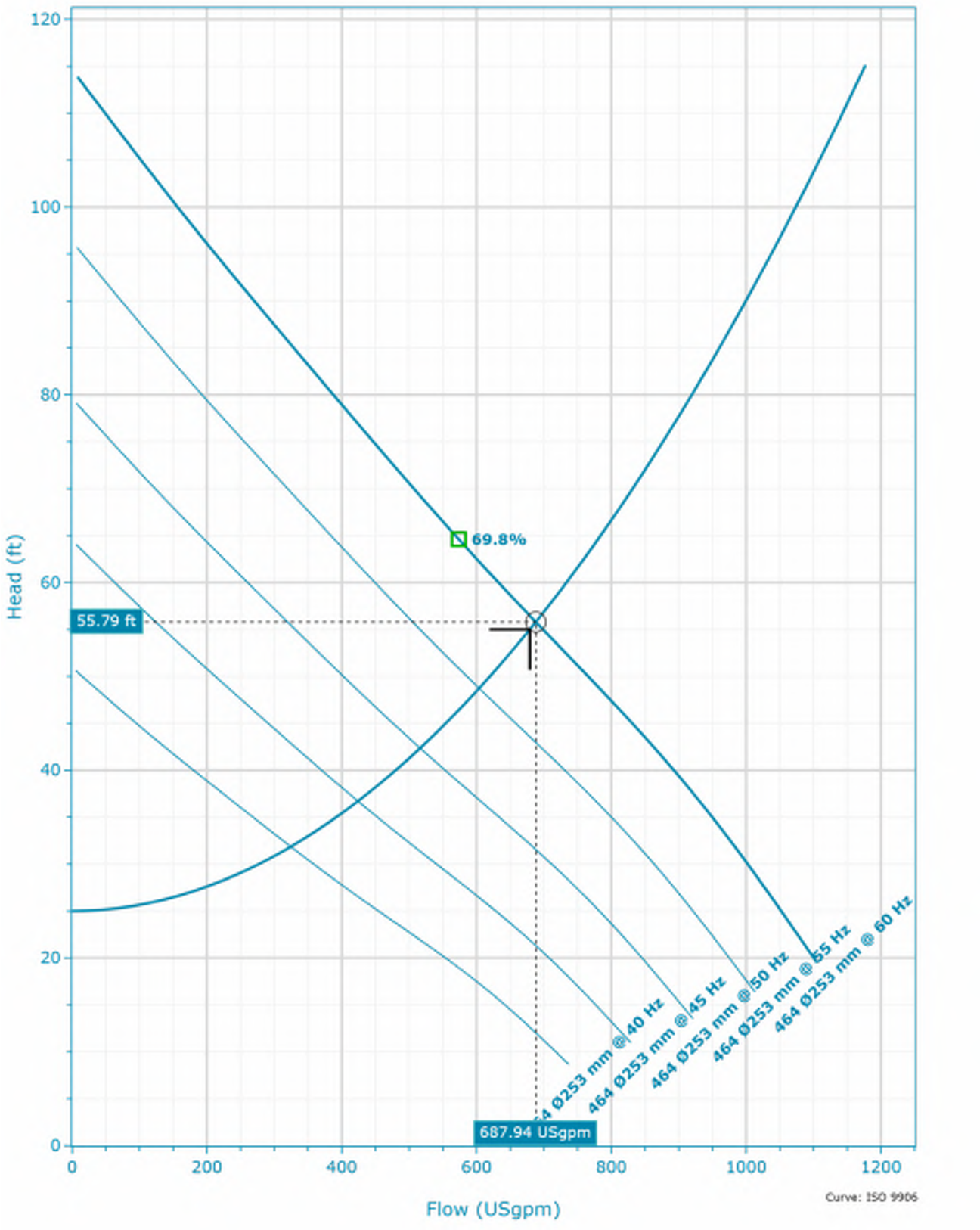
NP 3153 HT 3~ 464 | Variable Speed Curve



Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Project:	Created By:	Created On:	Last Update:
NP 3153 HT 3~ 464	Ian Belczyk	4/1/25	-

NP 3153 HT 3~ 464 | Variable Speed Analysis



Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Name	Speed	Q (1x) [USgpm]	H (1x) [ft]	P2 (1x) [Hp]	Q [USgpm]	H [ft]	P2 [Hp]	ηp [%]	SE [kWh/USgal]	NPSHr [ft]
DP @ 1x	40 Hz	324.54	31.85	3.79	324.54	31.85	3.79	68.92	0	5.81
DP @ 1x	45 Hz	424.12	36.7	5.64	424.12	36.7	5.64	69.79	0	7.69

Project:	Created By:	Created On:	Last Update:
NP 3153 HT 3~ 464	Ian Belczyk	4/1/25	-

NP 3153 HT 3~ 464 | Dimensional Data & Drawing

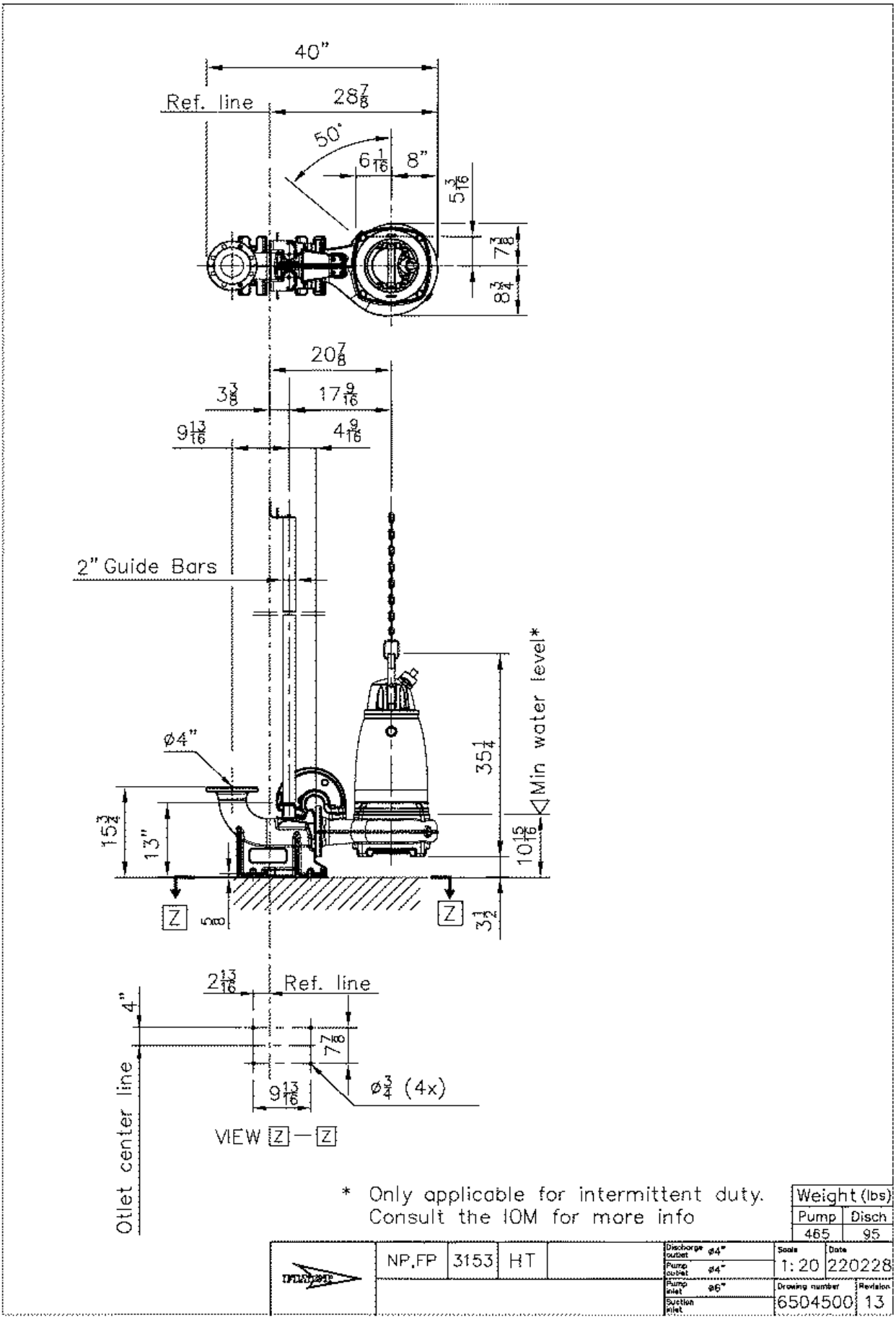


Figure E-7

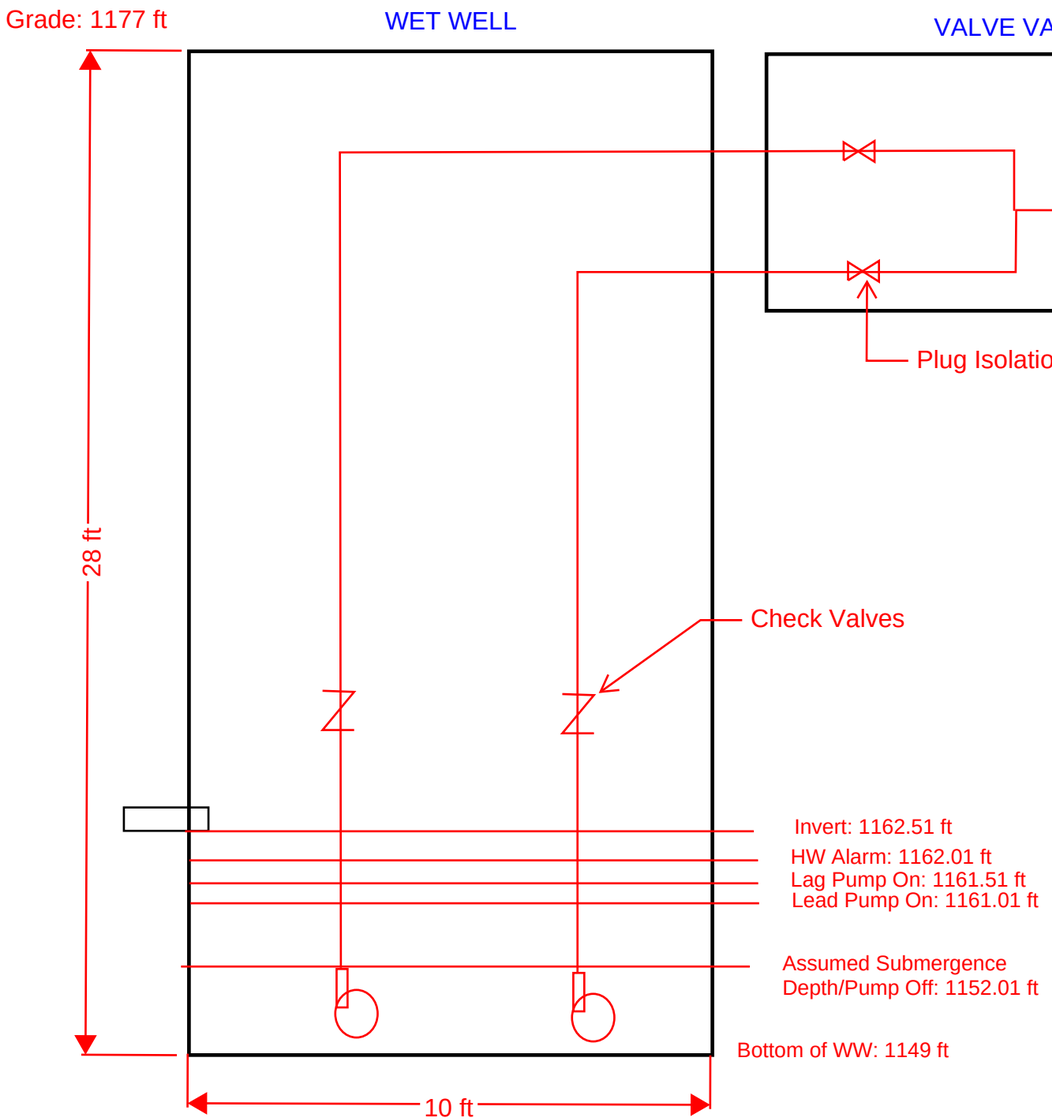
Joe Jones WW Concept Plan

Standard design for all pump stations: Design wet well for 2 pumps (1 duty, 1 redundant) - 1 pump should handle current and future ADFs, and PHF through 2050. No VFDs, pumps will just drop the Wet Wells faster in earlier years.

Smith and Loveless Vertical Turbine Pumps Limited to:

10 Start/Stops per hour

18 feet suction head (static) - must pump to surface based on view of pumps online - too deep in this instance and at industrial park due to cycling times (wet well would need to be wider). Therefor, Layout assumes submersible pumps.



Pumps - Assumed 575 GPM Each

Storage Calcs:

Pump Off to Lead Pump On - Pi x 5 ft x 5 ft x 9 ft = 706.85 CF = 5287 gallons

Lead Pump On to Lag Pump On - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Lag Pump On to HW Alarm - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

HW Alarm to Invert - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Fill Time PHF 2030-2050 = 5287 gallons/556 gpm = 9.5 minutes.

Cycle times/hr will be: 60 min/9.5 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 3.16 cycles/hr

Fill Time ADF 2025 = 5287 gallons/229 gpm = 23.08 minutes.

Cycle times/hr will be: 60 min/23.08 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 1.29 cycles/hr

Fill Time PHF 2055 = 5287 gallons/836 gpm = 6.32 minutes.

Cycle times/hr will be: 60 min/6.32 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 4.74 cycles/hr

Fill Time ADF 2055 = 5287 gallons/418 gpm = 12.64 minutes.

Cycle times/hr will be: 60 min/12.64 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 2.37 cycles/hr

Pumps will likely hit end of useful life around 2050, at which time they should be upsized to 850 GPM if flows truly warrant it. This will require adjustments to downstream pump stations as well.

Figure E-8

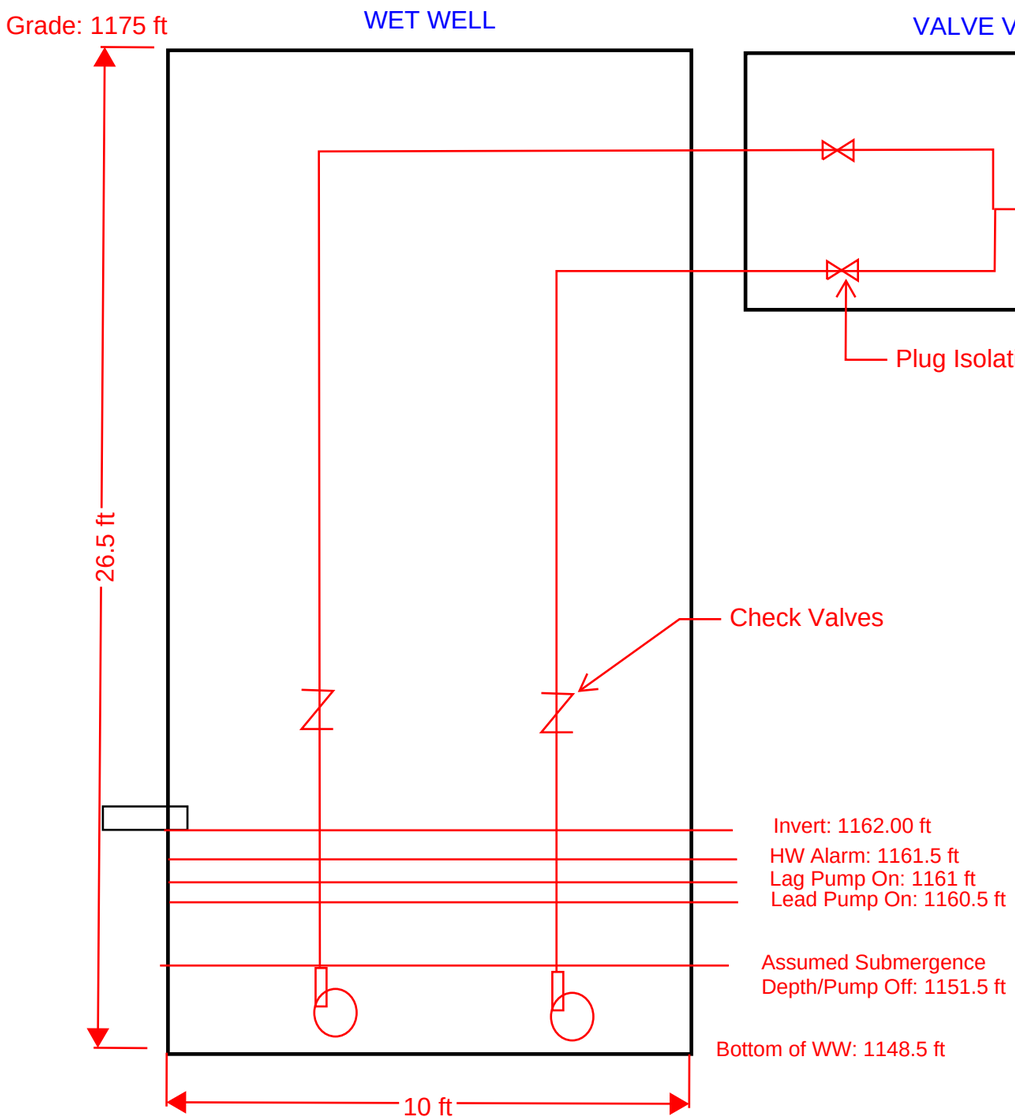
Industrial Park WW Concept Plan

Standard design for all pump stations: Design wet well for 2 pumps (1 duty, 1 redundant) - 1 pump should handle current and future ADFs, and PHF through 2050. No VFDs, pumps will just drop the Wet Wells faster in earlier years.

Smith and Loveless Vertical Turbine Pumps Limited to:

10 Start/Stops per hour

18 feet suction head (static) - must pump to surface based on view of pumps online. Seems that there would be too much head to overcome, would recommend submersible style pump



Pumps - Assumed 590 GPM Each

Storage Calcs:

Pump Off to Lead Pump On - Pi x 5 ft x 5 ft x 9 ft = 706.85 CF = 5287 gallons

Lead Pump On to Lag Pump On - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Lag Pump On to HW Alarm - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

HW Alarm to Invert - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Fill Time PHF 2030-2050 = 5287 gallons/563 gpm = 9.39 minutes.

Cycle times/hr will be: 60 min/9.39 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 3.19 cycles/hr

Fill Time ADF 2025 = 5287 gallons/233 gpm = 22.7 minutes.

Cycle times/hr will be: 60 min/22.7 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 1.32 cycles/hr

Fill Time PHF 2055 = 5287 gallons/871 gpm = 6.07 minutes.

Cycle times/hr will be: 60 min/6.07 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 4.94

Fill Time ADF 2055 = 5287 gallons/435 gpm = 12.15 minutes.

Cycle times/hr will be: 60 min/12.15 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 2.46 cycles/hr

Pumps will likely hit end of useful life around 2050, at which time they should be upsized to 900 GPM if flows truly warrant it. This will require adjustments to downstream pump stations as well.

Figure E-9

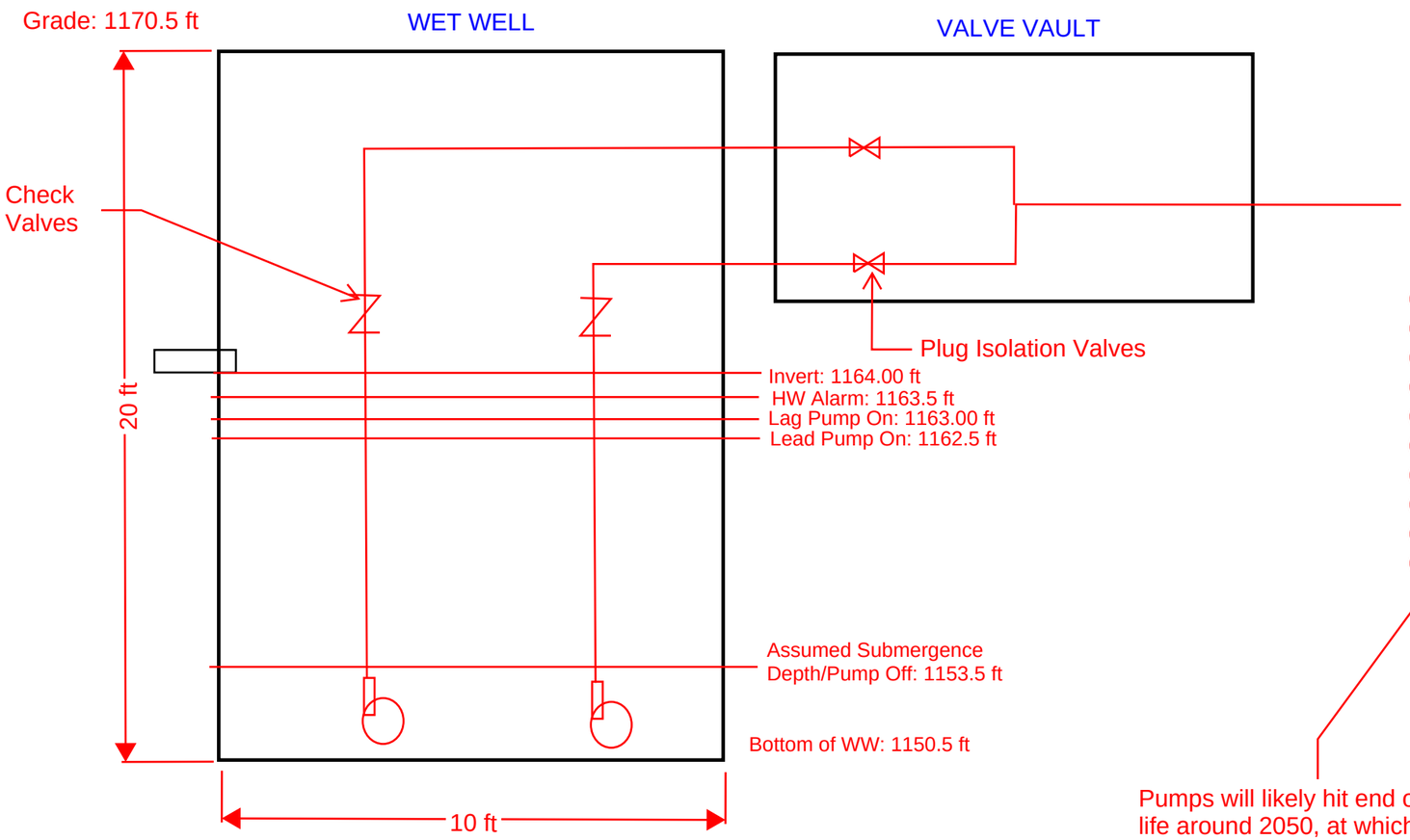
Bowling Alley WW Concept Plan

Standard design for all pump stations: Design wet well for 2 pumps (1 duty, 1 redundant) - 1 pump should handle current and future ADFs, and PHF through 2050. No VFDs, pumps will just drop the Wet Wells faster in earlier years.

Smith and Loveless Vertical Turbine Pumps Limited to:

10 Start/Stops per hour

18 feet suction head (static) - must pump to surface based on view of pumps online - we are probably on the cusp of being able to us Smith and Loveless VTPs (17 ft from pump off to grade) at this station, but it is close. Would recommend submersible pumps (shown)



Pumps - Assumed 610 GPM Each

Storage Calcs:

Pump Off to Lead Pump On - Pi x 5 ft x 5 ft x 9 ft = 706.85 CF = 5287 gallons

Lead Pump On to Lag Pump On - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Lag Pump On to HW Alarm - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

HW Alarm to Invert - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Fill Time PHF 2030-2050 = 5287 gallons/589 gpm = 8.97 minutes.

Cycle times/hr will be: 60 min/8.97 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 3.34 cycles/hr

Fill Time ADF 2025 = 5287 gallons/246 gpm = 21.49 minutes.

Cycle times/hr will be: 60 min/21.49 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 1.40 cycles/hr

Fill Time PHF 2055 = 5287 gallons/919 gpm = 5.75 minutes.

Cycle times/hr will be: 60 min/5.75 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 5.21 cycles/hr

Fill Time ADF 2055 = 5287 gallons/459 gpm = 11.52 minutes.

Cycle times/hr will be: 60 min/11.52 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 2.60 cycles/hr

Pumps will likely hit end of useful life around 2050, at which time they should be upsized to 950 GPM if flows truly warrant it. This will require adjustments to downstream pump stations as well.

Figure E-10

Seneca Street WW Concept Plan

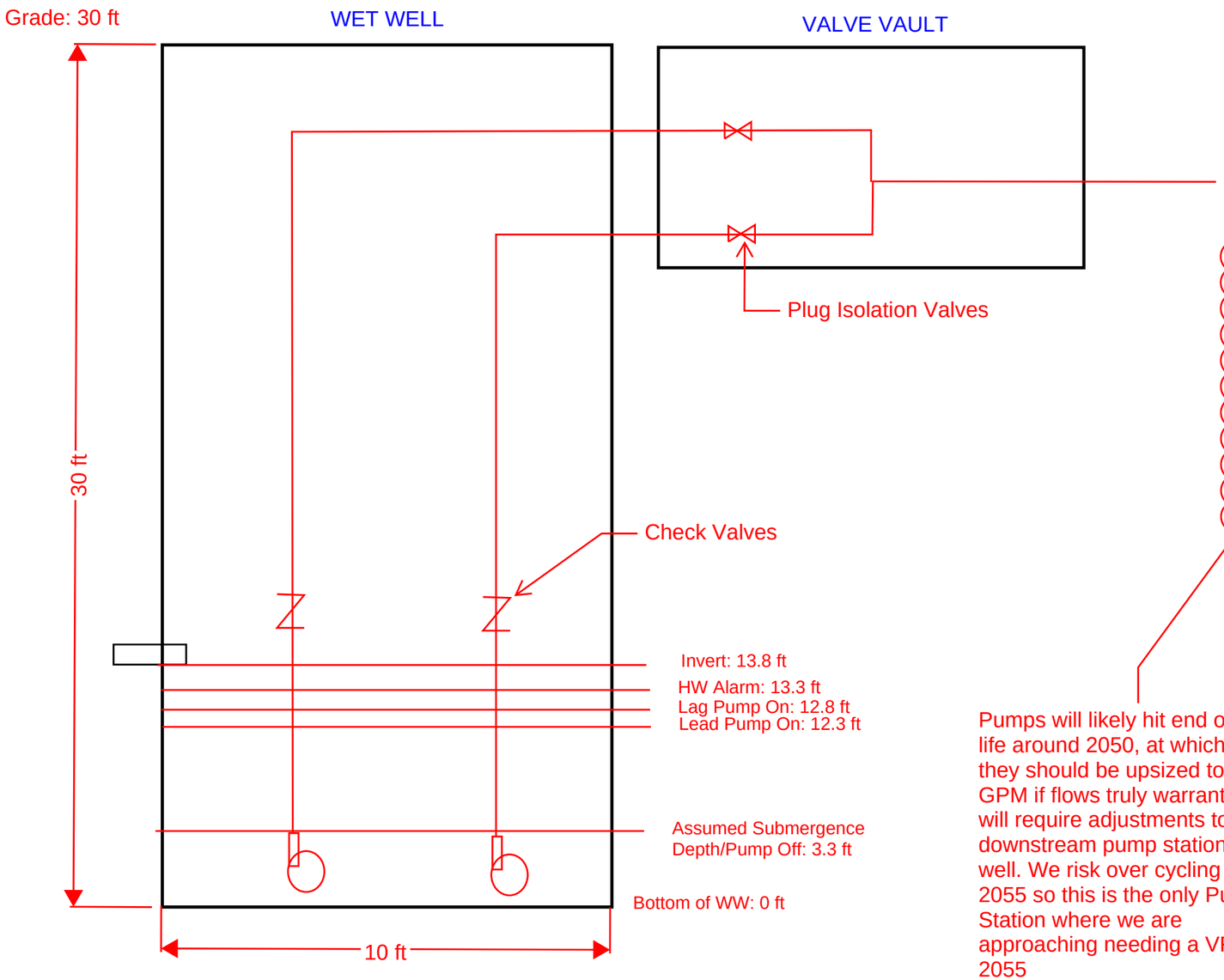
Standard design for all pump stations: Design wet well for 2 pumps (1 duty, 1 redundant) - 1 pump should handle current and future ADFs, and PHF through 2050. No VFDs, pumps will just drop the Wet Wells faster in earlier years.

Smith and Loveless Vertical Turbine Pumps Limited to:

10 Start/Stops per hour

18 feet suction head (static) - must pump to surface based on view of pumps online - too deep in this instance refer to information on Joe Jones/Industrial Park for similar reasoning. Base design off of submersible pumps.

2025 ADF = 367 gpm * 30 mins = 11,010 gal
2030 ADF = 416 gpm * 30 mins = 12,480 gal
2055 ADF = 587 gpm over 30 minutes = 17,610 gal



Pumps - two pumps each capable of 1,120 gpm

Storage Calcs:

Pump Off to Lead Pump On - Pi x 5 ft x 5 ft x 9 ft = 706.85 CF = 5287 gallons

Lead Pump On to Lag Pump On - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Lag Pump On to HW Alarm - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

HW Alarm to Invert - Pi x 5 ft x 5 ft x 0.5 ft = 39.26 CF = 293.73 gallons

Fill Time PHF 2030-2050 = 5287 gallons/1109 gpm = 4.8 minutes.

Cycle times/hr will be: 60 min/4.8 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 6.25 cycles/hr

Fill Time ADF 2025 = 5287 gallons/367 gpm = 14.4 minutes.

Cycle times/hr will be: 60 min/14.4 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 2.1 cycles/hr

Fill Time PHF 2055 = 5287 gallons/1515 gpm = 3.49 minutes.

Cycle times/hr will be: 60 min/3.49 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 8.6 cycles/hr

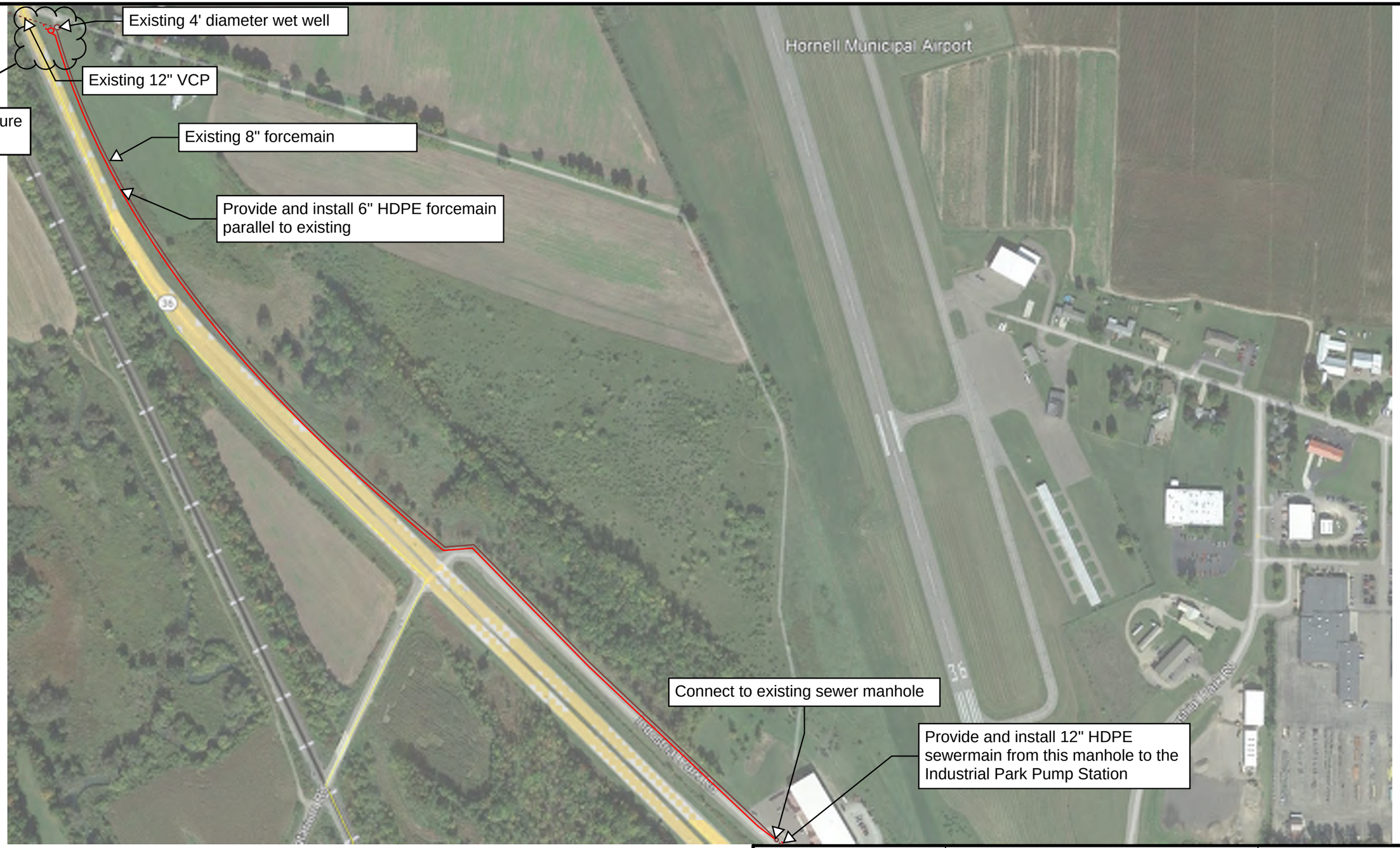
Fill Time ADF 2055 = 5287 gallons/587 gpm = 9.0 minutes.

Cycle times/hr will be: 60 min/9.0 min/cycle (excl. pump time)/2 (assumed usage between 2 pumps rotating) = 3.33 cycles/hr

Pumps will likely hit end of useful life around 2050, at which time they should be upsized to 1550 GPM if flows truly warrant it. This will require adjustments to downstream pump stations as well. We risk over cycling in 2055 so this is the only Pump Station where we are approaching needing a VFD in 2055

Figure E-11

Alternative 1.1 Joe Jones PS Concept



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DRAWN BY:

DATE: June. 2025

PROJECT NO.: 2250913

PROJECT NAME: City of Hornell Intermunicipal Sewer Evaluation

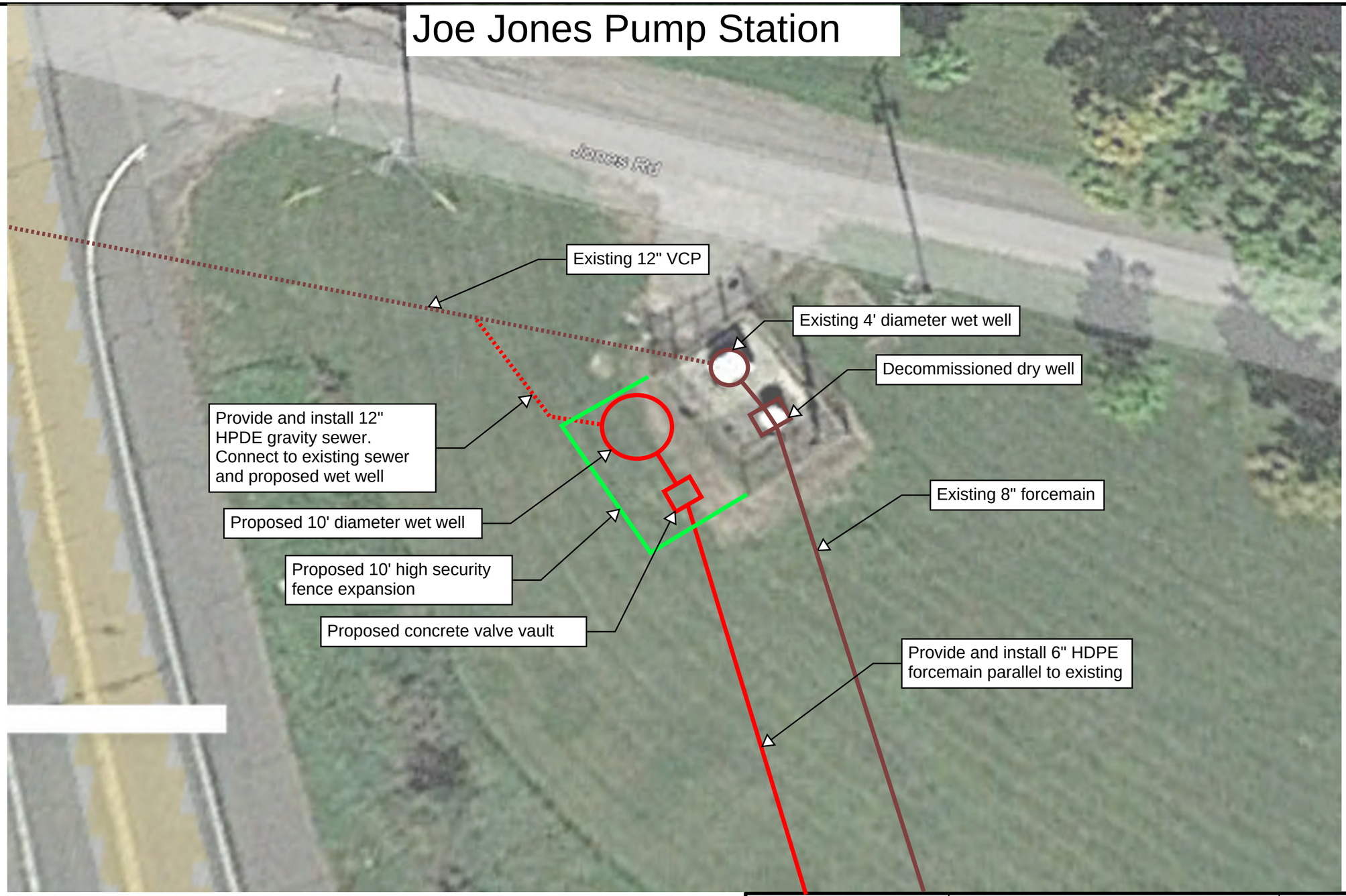
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Figure E-12

Alternative 1.2 Joe Jones PS Concept - Enlarged

Joe Jones Pump Station



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DATE: June 2025

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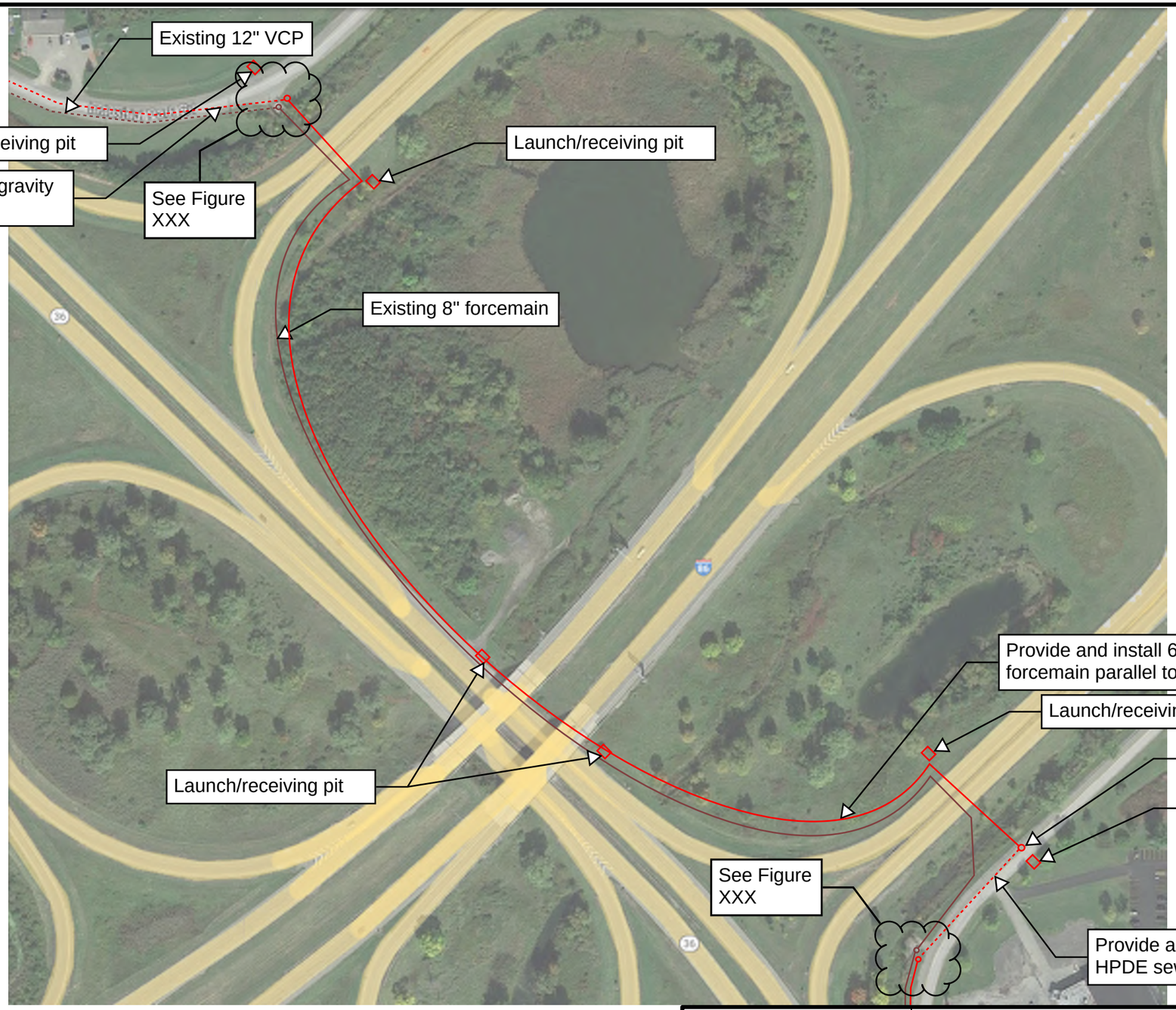
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Figure E-13

Alternative 1.3 – Industrial Park PS Concept



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PROJECT NAME: City of Hornell Intermunicipal Sewer Evaluation

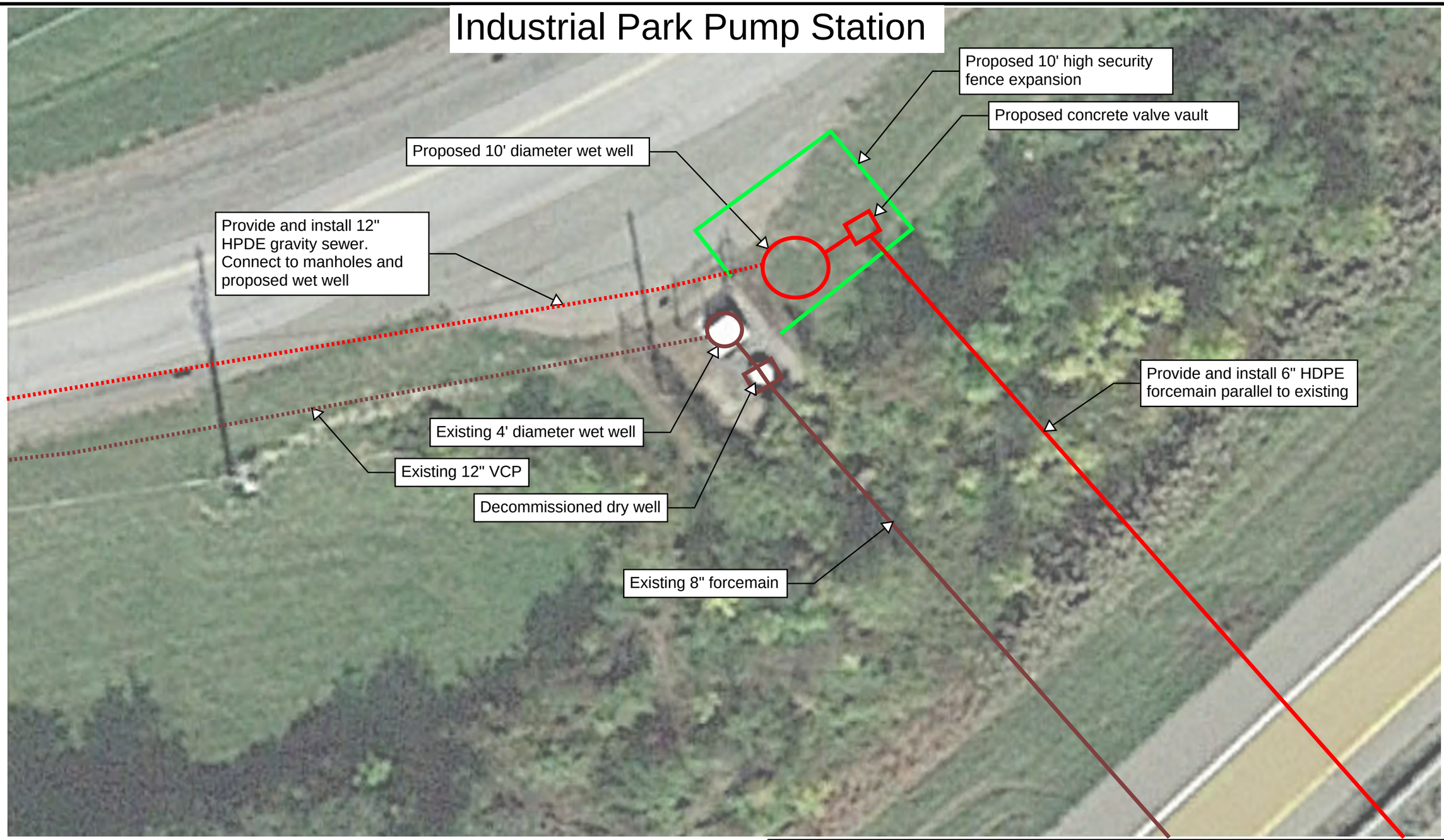
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Figure E-14

Alternative 1.4 – Industrial Park PS Concept - Enlarged

Industrial Park Pump Station



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PROJECT NAME: City of Hornell Intermunicipal Sewer Evaluation	DRAWING NUMBER: Figure XXXX		

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Figure E-15

Alternative 1.5 – Bowling Alley PS Concept

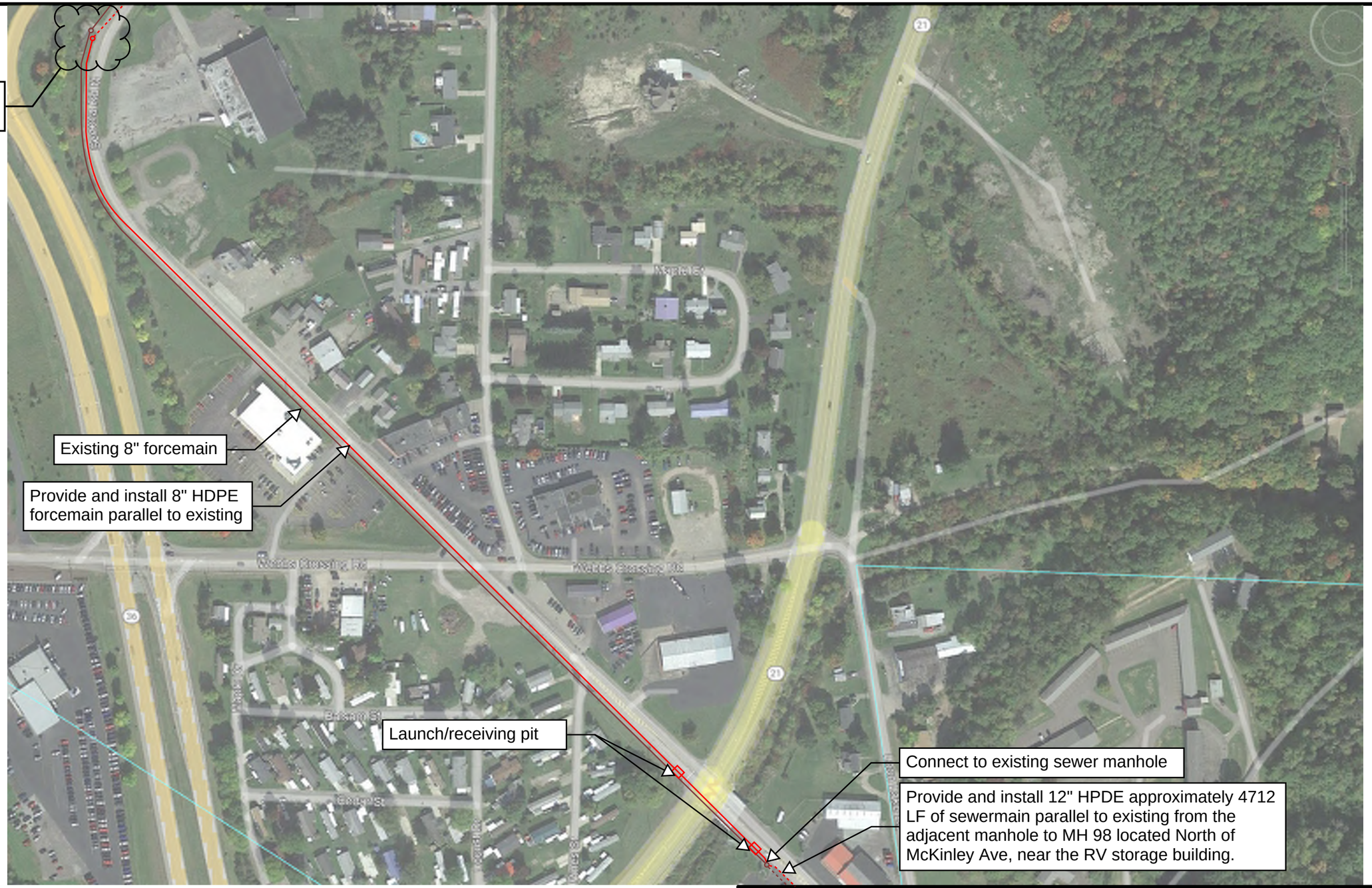
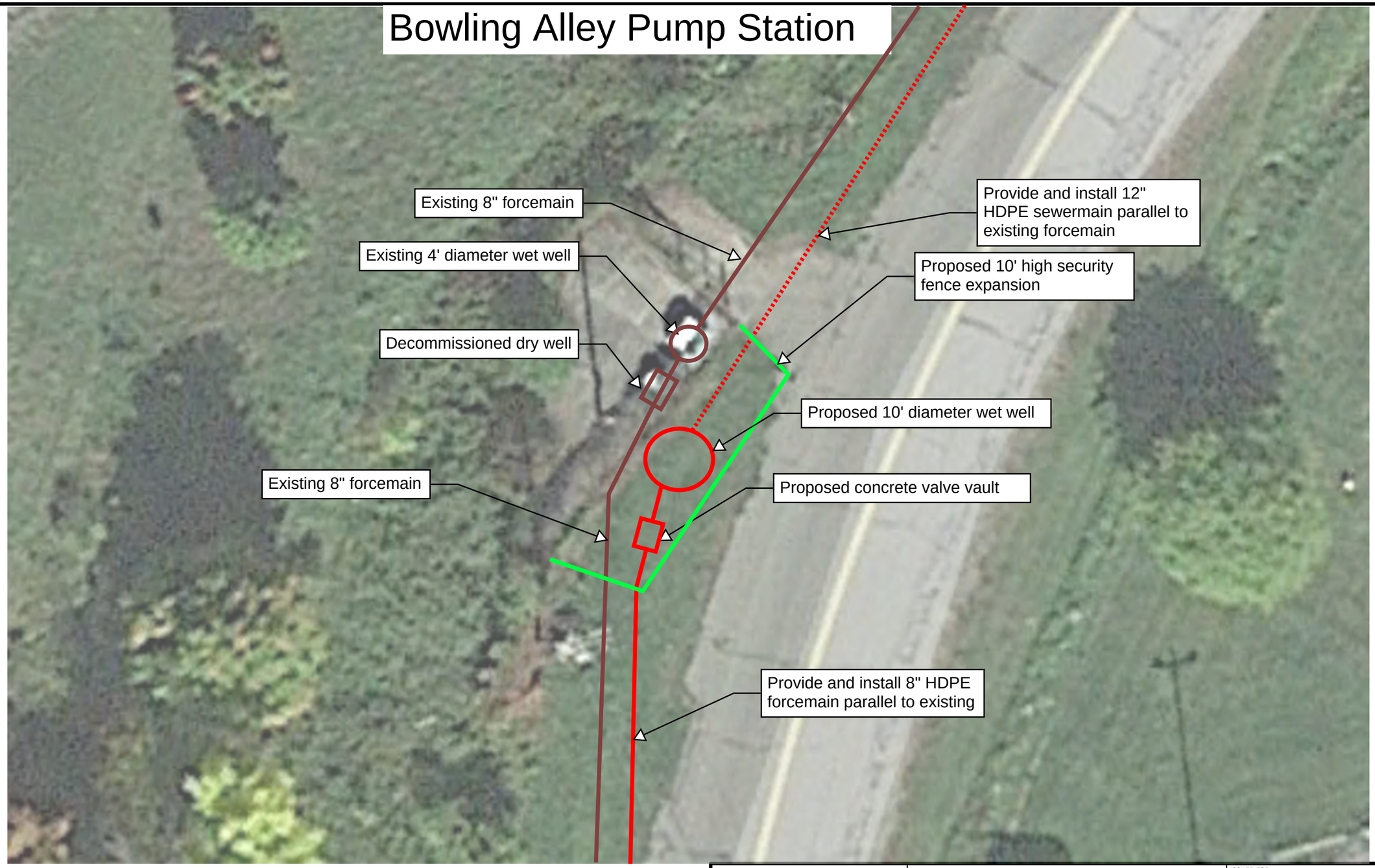

See Figure XXX
Existing 8" forcemain
Provide and install 8" HDPE forcemain parallel to existing
Launch/receiving pit
Connect to existing sewer manhole
Provide and install 12" HPDE approximately 4712 LF of sewermain parallel to existing from the adjacent manhole to MH 98 located North of McKinley Ave, near the RV storage building.
Maple Ave
Maple Ave
Maple Ave

Figure E-16

Alternative 1.6 – Bowling Alley PS Concept - Enlarged

Bowling Alley Pump Station



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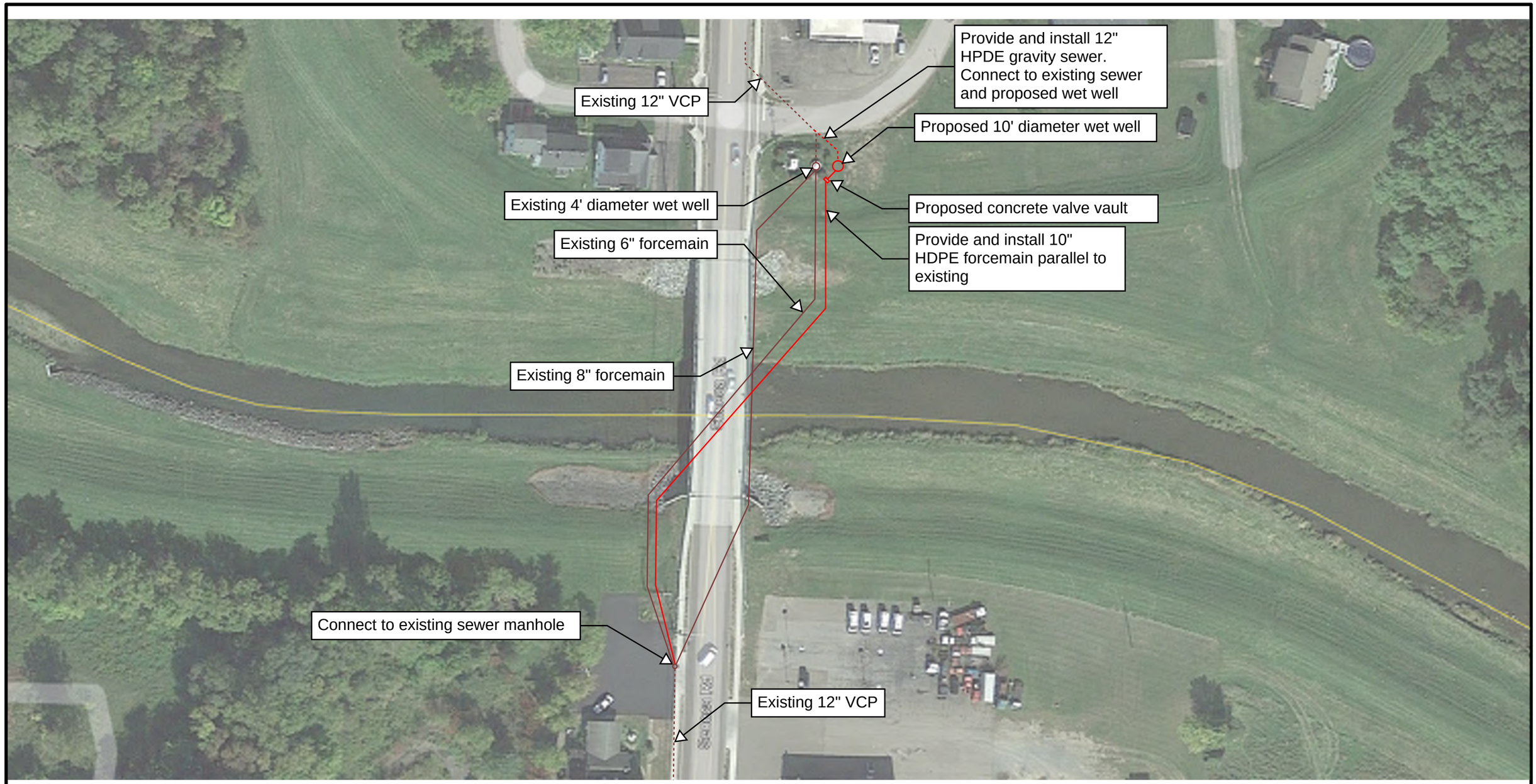
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PROJECT NAME: City of Hornell Intermunicipal Sewer Evaluation	DRAWING NUMBER: Figure XXXX		

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Figure E-17

Alternative 1.7 – Seneca St PS Concept



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APPENDIX F

Alternatives Cost Estimate

Figure F-1

Alt 2.1 Cap Cost

Hornell Intermunicipal Sewer Evaluation
Alternative 2.1 Opinion of Probable Cost
Date: May 2025

Item Description	*Unit Price*	*Quantity*	*Units*	*Cost (Bare Material + Bare Labor+ Bare Equipment)*
Pump stations (applies to 3 pump stations)				
Pumps				
Demo for existing pumps	100	12	Hr.	$ 1,204
JJPS - Abandon in place wet well and associated utilities	53	264	CF	$ 14,032
IPPS - Abandon in place wet well and associated utilities	53	594	CF	$ 31,571
BAPS - Abandon in place wet well and associated utilities	53	594	CF	$ 31,571
S&L Rectangular Recessed Pump Station with Duplex 6D3B*1 Pumps	399000	2	LS	$ 798,000
S&L Above Grade EV 1000 Station with Duplex 6D3B*1 Pumps	259000	1	LS	$ 259,000
Wet Well and Valve Pit Install				
JJPS Wet Well Installation	68	2200	CF	$ 150,427
IPPS Wet Well Installation	68	2082	CF	$ 142,359
BAPS Wet Well Installation	68	1571	CF	$ 107,419
Valve Pit Installations (Identical Valve Pits for each Pump Station)	47200	3	Ea.	$ 141,600
Excavation, shoring, refill, compaction, dewatering, repaving				
JJPS Excavation, Rock Excavation (Max $150/CY)	150	597	CY	$ 89,600
JJPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	1	2688	SF Wall	$ 3,844
JJPS Backfill, Dozer backfilling, bulk, up to 300' haul	2	597	LCY	$ 1,171
Air tamped, add	18	597	BCY	$ 10,842
JJPS Repaving, Heavy Duty Asphalt	9	64	SY	$ 575
IPPS Excavation, Rock Excavation (Max $150/CY)	150	565	CY	$ 84,800
IPPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	1	2544	SF Wall	$ 3,638
IPPS Backfill, Dozer backfilling, bulk, up to 300' haul	2	565	LCY	$ 1,108
Air tamped, add	18	565	BCY	$ 10,261
IPPS Repaving, Heavy Duty Asphalt	9	64	SY	$ 575
BAPS Excavation, Rock Excavation (Max $150/CY)	150	427	CY	$ 64,000
BAPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	1	1920	SF Wall	$ 2,746
BAPS Backfill, Dozer backfilling, bulk, up to 300' haul	2	427	LCY	$ 836
Air tamped, add	18	427	BCY	$ 7,744
BAPS Repaving, Heavy Duty Asphalt	9	64	SY	$ 575
Valve Vault Excavtion, Rock Excavation (Max $150/CY)	150	257	CY	$ 38,500
Valve Vault Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	1	1323	SF Wall	$ 1,892
Valve Vault Backfill, Dozer backfilling, bulk, up to 300' haul	2	257	LCY	$ 503
Air tamped, add	18	257	BCY	$ 4,659
Valve Vault Repaving, Heavy Duty Asphalt	9	147	SY	$ 1,319
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F. of suction hose & 100 L.F. discharge hose 4" diaphragm pump used for 8 hours	254	36	day	$ 9,126
Electrical				
Electrical Panel is included in Koester Quote				
Electrical Feed	43	375	LF	$ 15,953
Intrusion Deterence				
Security Fence	73	320	LF	$ 23,446
Upgrading Collection System				
Utility Directional Drilling				
Mobilization or demobilization	5550	3	Ea.	$ 16,650
Directional Drill 1A (9" Diameter)	60	853	LF	$ 50,860

Directional Drill 1B (9" Diameter)	60	304	LF	$	18,126
Directional Drill 1C (12" Diameter)	80	213	LF	$	16,934
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	9	1157	LF	$	9,846
Piping, HDPE Corrugated Type S with watertight gaskets, 8" diameter	11	213	LF	$	2,298
Utility Boring and Jacking					
Prepare jacking pits, incl. mobilization & demobilization, maximum	21700	3	Ea.	$	65,100
Bore and Jack 1A	377	387	LF	$	145,996
Bore and Jack 1B	377	303	LF	$	114,307
Bore and Jack 1C	377	301	LF	$	113,552
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	9	991	LF	$	8,433
Television Inspection of Sewers					
Power rodder with header & cutters	7	4712	LF	$	32,277
Mobilization charge, maximum	9000	1	Total	$	9,000
Cleaning 4"-12" diameter	7	4712	LF	$	32,277
Inspection, television camera with video (up to 500 linear feet)	1045	1	Total	$	1,045
Proposed Sewer Manhole (next to BAPS)					
Sewer Manhole (4' ID)	6220	1	Ea.	$	6,220
Connection to existing sewer manhole					
Connection to existing sewer manhole	5130	5	LS	$	25,650
Sewage Collection, HDPE Pipe - 12" Gravity					
Piping, HDPE Corrugated Type S with watertight gaskets, 12" diameter	14	6081	LF	$	84,587
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	5	7883	B.C.Y.	$	37,759
Rent shoring per week per S.F. wall protected, loose material, 4'W	1	60810	SF Wall	$	86,958
Dozer backfilling, trench, up to 300' haul, no compaction	3	7883	L.C.Y.	$	20,653
Air tamped, add	18	7883	B.C.Y.	$	143,072
Repaving, Heavy Duty Asphalt	9	4730	SY	$	42,520
Excavate sump pits by hand, heavy soil	123	50	CY	$	6,150
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F.					
of suction hose & 100 L.F. discharge hose					
4" diaphragm pump used for 8 hours	254	36	day	$	9,126
Service Connections	5000	10	S.C.	$	50,000
Flowable Fill (for abandon in place piping, wet wells)	53	5907	LF	$	313,957
Sewage Collection, HDPE Pipe - 6" FM					
Not including excavation or backfill					
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	9	4378	LF	$	37,257
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	5	5675	B.C.Y.	$	27,184
Rent shoring per week per S.F. wall protected, loose material, 4'W	1	43780	SF Wall	$	62,605
Dozer backfilling, trench, up to 300' haul, no compaction	3	5675	L.C.Y.	$	14,869
Air tamped, add	18	5675	B.C.Y.	$	103,005
Repaving, Heavy Duty Asphalt	9	3405	SY	$	30,612
Excavate sump pits by hand, heavy soil	123	50	CY	$	6,150
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F.					
of suction hose & 100 L.F. discharge hose					
4" diaphragm pump used for 8 hours	254	36	day	$	9,126
Sewage Collection, HDPE Pipe - 8" FM					
Piping, HDPE Corrugated Type S with watertight gaskets, 8" diameter	11	2287	LF	$	24,677
Common earth with no sheeting or dewatering included					
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	5	2965	B.C.Y.	$	14,201
Rent shoring per week per S.F. wall protected, loose material, 4'W	1	22870	SF Wall	$	32,704
Dozer backfilling, trench, up to 300' haul, no compaction	3	2965	L.C.Y.	$	7,767
Air tamped, add	18	2965	B.C.Y.	$	53,808
Repaving, Heavy Duty Asphalt	9	1779	SY	$	15,991
Excavate sump pits by hand, heavy soil	123	50	CY	$	6,150
4" diaphragm pump used for 8 hours	254	36	day	$	9,126
Flowable Fill (for abandon in place piping, wet wells)	53	9026	LF	$	479,732
SUBTOTAL CONSTRUCTION COSTS				**$**	**4,454,000**
Mobilization (for respective items)				$	445,400
SUBTOTAL CONSTRUCTION COSTS (WITH MOBILIZATION)				$	4,900,000

Contractor Overhead and Profit	$	735,000
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR OH&P)	$	5,635,000
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR ESCALATION)	$	6,910,000

ASSOCIATED COSTS		
Construction Contingency	$	2,073,000
Preliminary Engineering	$	691,000
Environmental Review	$	138,200
Final Engineering & Add-Ons	$	345,500
Construction Administration	$	138,200
Construction Observation	$	345,500
Special Inspections and Testing	$	69,100
SUBTOTAL ASSOCIATED COSTS	$	3,800,500
TOTAL CAPITAL COST (PRESENT VALUE)	$	10,710,500

Figure F-2

Alt 2.2 Cap Cost

Hornell Intermunicipal Sewer Evaluation
Alternative 2.2 Opinion of Probable Cost
Date: May 2025

Item Description	*Unit Price*	*Quantity*	*Units*	*Cost (Bare Material + Bare Labor+ Bare Equipment)*
Pump stations (applies to 3 pump stations)				
Pumps				
Demo for existing pumps	$ 100	12	Hr.	$ 1,204
JJPS - Abandon in place wet well and associated utilities	$ 53	264	CF	$ 14,032
IPPS - Abandon in place wet well and associated utilities	$ 53	594	CF	$ 31,571
BAPS - Abandon in place wet well and associated utilities	$ 53	594	CF	$ 31,571
Vaughan Chopper Pump Stations	$ 150,850	3	LS	$ 452,550
Wet Well and Valve Pit Install				
JJPS Wet Well Installation	$ 68	2200	CF	$ 150,427
IPPS Wet Well Installation	$ 68	2082	CF	$ 142,359
BAPS Wet Well Installation	$ 68	1571	CF	$ 107,419
Valve Pit Installations (Identical Valve Pits for each Pump Station)	$ 47,200	3	Ea.	$ 141,600
Pump Station Piping and Valves				
JJPS and Valve Vault - Suction and discharge piping, Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$ 9	100	LF	$ 851
JJPS - Suction and discharge valving, Backwater drainage control PVC swing check backwater valve, 6" size	$ 637	2	Ea.	$ 1,274
JJPS Valve Vault - 6" Butterfly Valve, Manual; 2 in Nut, Two Position	$ 1,080	2	Ea.	$ 2,160
IPPS and Valve Vault - Suction and discharge piping, Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$ 9	100	LF	$ 851
IPPS - Suction and discharge valving, Backwater drainage control PVC swing check backwater valve, 6" size	$ 637	2	Ea.	$ 1,274
IPPS Valve Vault - 6" Butterfly Valve, Manual; 2 in Nut, Two Position	$ 1,080	2	Ea.	$ 2,160
BAPS - Suction and discharge piping, Piping, HDPE Corrugated Type S with watertight gaskets, 8" diameter	$ 11	100	LF	$ 1,079
Suction and discharge valving, Backwater sewer line valve offset type, bronze swing check assy and bronze cover 8" size	$ 6,013	2	Ea.	$ 12,026
BAPS Valve Vault - 8" Butterfly Valve, Manual; 2 in Nut, Two Position	$ 1,553	2	Ea.	$ 3,106
Excavation, shoring, refill, compaction, dewatering, repaving				
JJPS Excavation, Rock Excavation (Max $150/CY)	$ 150	597.3333	CY	$ 89,600
JJPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	2688	SF Wall	$ 3,844
JJPS Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	597.3333	LCY	$ 1,171
Air tamped, add	$ 18	597.3333	BCY	$ 10,842
JJPS Repaving, Heavy Duty Asphalt	$ 9	64	SY	$ 575
IPPS Excavation, Rock Excavation (Max $150/CY)	$ 150	565.3333	CY	$ 84,800
IPPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	2544	SF Wall	$ 3,638
IPPS Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	565.3333	LCY	$ 1,108
Air tamped, add	$ 18	565.3333	BCY	$ 10,261
IPPS Repaving, Heavy Duty Asphalt	$ 9	64	SY	$ 575
BAPS Excavation, Rock Excavation (Max $150/CY)	$ 150	426.6667	CY	$ 64,000
BAPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	1920	SF Wall	$ 2,746
BAPS Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	426.6667	LCY	$ 836
Air tamped, add	$ 18	426.6667	BCY	$ 7,744
BAPS Repaving, Heavy Duty Asphalt	$ 9	64	SY	$ 575
Valve Vault Excavtion, Rock Excavation (Max $150/CY)	$ 150	256.6667	CY	$ 38,500
Valve Vault Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	1323	SF Wall	$ 1,892

Valve Vault Backfill, Dozer backfilling, bulk, up to 300' haul	$	2	256.6667	LCY	$	503
Air tamped, add	$	18	256.6667	BCY	$	4,659
Valve Vault Repaving, Heavy Duty Asphalt	$	9	146.6667	SY	$	1,319
4" diaphragm pump used for 8 hours	$	254	36	day	$	9,126
Electrical						
Electrical Panel is included in Koester Quote						
Electrical Feed	$	43	375	LF	$	15,953
Intrusion Deterence						
Security Fence	$	73	320	LF	$	23,446
Upgrading Collection System						
Utility Directional Drilling						
Mobilization or demobilization	$	5,550	3	Ea.	$	16,650
Directional Drill 1A (9" Diameter)	$	60	853	LF	$	50,860
Directional Drill 1B (9" Diameter)	$	60	304	LF	$	18,126
Directional Drill 1C (12" Diameter)	$	80	213	LF	$	16,934
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$	9	1157	LF	$	9,846
Piping, HDPE Corrugated Type S with watertight gaskets, 8" diameter	$	11	213	LF	$	2,298
Utility Boring and Jacking						
Prepare jacking pits, incl. mobilization & demobilization, maximum	$	21,700	3	Ea.	$	65,100
Bore and Jack 1A	$	377	387	LF	$	145,996
Bore and Jack 1B	$	377	303	LF	$	114,307
Bore and Jack 1C	$	377	301	LF	$	113,552
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$	9	991	LF	$	8,433
Television Inspection of Sewers						
Power rodder with header & cutters	$	7	4712	LF	$	32,277
Mobilization charge, maximum	$	9,000	1	Total	$	9,000
Cleaning 4"-12" diameter	$	7	4712	LF	$	32,277
Inspection, television camera with video (up to 500 linear feet)	$	1,045	1	Total	$	1,045
Proposed Sewer Manhole (next to BAPS)						
Sewer Manhole (4' ID)	$	6,220	1	Ea.	$	6,220
Connection to existing sewer manhole						
Connection to existing sewer manhole	$	5,130	5	LS	$	25,650
Sewage Collection, HDPE Pipe - 12" Gravity						
Piping, HDPE Corrugated Type S with watertight gaskets, 12" diameter	$	14	6397	LF	$	88,982
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$	5	8292.407	B.C.Y.	$	39,721
Rent shoring per week per S.F. wall protected, loose material, 4'W	$	1	63970.00	SF Wall	$	91,477
Dozer backfilling, trench, up to 300' haul, no compaction	$	3	8292.407	L.C.Y.	$	21,726
Air tamped, add	$	18	8292.407	B.C.Y.	$	150,507
Repaving, Heavy Duty Asphalt	$	9	4975.444	SY	$	44,729
Excavate sump pits by hand, heavy soil	$	123	50	CY	$	6,150
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F. of suction hose & 100 L.F. discharge hose						
4" diaphragm pump used for 8 hours	$	254	36	day	$	9,126
Service Connections	$	5,000	10	S.C.	$	50,000
Flowable Fill (for abandon in place piping, wet wells)	$	53	5907	LF	$	313,957
Sewage Collection, HDPE Pipe - 6" FM						
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$	9	4378	LF	$	37,257
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$	5	5675.185	B.C.Y.	$	27,184
Rent shoring per week per S.F. wall protected, loose material, 4'W	$	1	43780.00	SF Wall	$	62,605
Dozer backfilling, trench, up to 300' haul, no compaction	$	3	5675.185	L.C.Y.	$	14,869
Air tamped, add	$	18	5675.185	B.C.Y.	$	103,005
Repaving, Heavy Duty Asphalt	$	9	3405.111	SY	$	30,612
Excavate sump pits by hand, heavy soil	$	123	50	CY	$	6,150
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F. of suction hose & 100 L.F. discharge hose						
4" diaphragm pump used for 8 hours	$	254	36	day	$	9,126
Sewage Collection, HDPE Pipe - 8" FM						

Not including excavation or backfill						
Piping, HDPE Corrugated Type S with watertight gaskets, 8" diameter	$	11	2287	LF	$	24,677
Common earth with no sheeting or dewatering included						
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$	5	2964.63	B.C.Y.	$	14,201
Rent shoring per week per S.F. wall protected, loose material, 4'W	$	1	22870.00	SF Wall	$	32,704
Dozer backfilling, trench, up to 300' haul, no compaction	$	3	2964.63	L.C.Y.	$	7,767
Air tamped, add	$	18	2964.63	B.C.Y.	$	53,808
Repaving, Heavy Duty Asphalt	$	9	1778.778	SY	$	15,991
Excavate sump pits by hand, heavy soil	$	123	50	CY	$	6,150
Pumping 8 hrs., attended 2 hrs/day, incl 20 L.F.						
of suction hose & 100 L.F. discharge hose						
4" diaphragm pump used for 8 hours	$	254	36	day	$	9,126
Flowable Fill (for abandon in place piping, wet wells)	$	53	9026	LF	$	479,732
SUBTOTAL CONSTRUCTION COSTS					**$**	**3,896,000**
Mobilization (for respective items)					$	325,723
SUBTOTAL CONSTRUCTION COSTS (WITH MOBILIZATION)					$	4,222,000
Contractor Overhead and Profit					$	633,300
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR OH&P)					$	4,855,300
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR ESCALATION)					$	5,954,000
ASSOCIATED COSTS						
Construction Contingency					$	1,786,200
Preliminary Engineering					$	595,400
Environmental Review					$	119,080
Final Engineering & Add-Ons					$	297,700
Construction Administration					$	119,080
Construction Observation					$	297,700
Special Inspections and Testing					$	59,540
SUBTOTAL ASSOCIATED COSTS					**$**	**3,274,700**
TOTAL CAPITAL COST (PRESENT VALUE)					**$**	**9,228,700**

Figure F-3

Alt 2 LCC

Town of Hornellsville Infrastructure Life-Cycle Cost Comparison

Alternative	2.1	2.2
Type of Pumps	Suction Lift	Submersible
Wet Well	To be enlarged	To be enlarged
Piping	To be replaced	To be replaced
Capital Cost	$ 10,710,500	$ 9,228,700
Operating and Maintenance Costs	$ 1,757,000	$ 986,000
Short-Lived Asset Costs	$ 1,620,000	$ 1,015,000
Total Cost (2025 P.V. of costs over 30 years)	$ 14,088,000	$ 11,230,000

Notes:
(1) Operating, maintenance and short lived asset costs assume design ADF.
(2) Operating, maintenance and short lived asset costs are the present value (2025) of costs over 30 years.

CAPITAL COST

Alternative	2.1	2.2
Pump Stations	$ 2,054,894	$ 1,475,225
Collection System Piping & Appurtenances	$ 2,398,317	$ 2,419,911
Mobilization	$ 445,400	$ 325,723
OH&P	$ 735,000	$ 633,300
Subtotal Construction Costs (with Contractor Escalation)	**$ 6,910,000**	**$ 5,954,000**
Associated Costs		
Contingency	$ 2,073,000	$ 1,786,200
Preliminary Engineering	$ 691,000	$ 595,400
Environmental Review	$ 138,200	$ 119,080
Final Engineering & Add-Ons	$ 345,500	$ 297,700
Construction Administration	$ 138,200	$ 119,080
Construction Observation	$ 345,500	$ 297,700
Special Inspections and Testing	$ 69,100	$ 59,540
Subtotal Associated Costs	**$ 3,800,500**	**$ 3,274,700**
Total Capital Cost	**$ 10,710,500**	**$ 9,228,700**

OPERATING COSTS

Cost/KWh $ 0.2100

Equipment	Quantity	Power hp	Energy kW	Capacity running	Operating time h/d	Energy rate kWh/yr	Annual cost	Present Value of cost over 30 years
Alternative 2.1								
Joe Jones Duplex 6D3B*1 Pumps	2	50	74.6	50%	6	81,654	$17,147	$514,421
Industrial Park Duplex 6D3B*1 Pumps	2	40	59.7	50%	6	65,323	$13,718	$411,537
Bowling Alley Duplex 6D3B*1 Pumps	2	40	59.7	50%	6	65,323	$13,718	$411,537
Controls/SCADA	3	-	0.8	100%	24	6,570	$1,380	$41,391
							Subtotal	$1,378,886
Alternative 2.2								
Joe Jones (2) Vaughan Model S4L-460V-089	2	20	29.8	50%	6	32,662	$6,859	$205,768
Industrial Park (2) Vaughan Model S4L-460V-089	2	15	22.4	50%	6	24,496	$5,144	$154,326
Bowling Alley (2) Vaughan Model S4L-460V-089	2	20	29.8	50%	6	32,662	$6,859	$205,768
Controls/SCADA Duplex 304SS Control Panel	3	N/A	0.8	100%	24	6,570	$1,380	$41,391
							Subtotal	$607,254

MAINTENANCE COSTS

Period 30 years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 2.1					
Sewage Pumps (Inspection)	6	1	$ 1,000	$ 6,000	$ 180,000
Sewer Main Flushing and Cleaning	1	5	$ 10,000	$ 10,000	$ 60,000
Emergency Generator Servicing	3	1	$ 1,250	$ 3,750	$ 112,500
SCADA Controls (Subscription)	3	1	$ 290	$ 870	$ 26,100
				Subtotal	$ 378,600
Alternative 2.2					
Seweage Pumps (Inspection)	6	1	$ 1,000	$ 6,000	$ 180,000
Sewer Main Flushing and Cleaning	1	5	$ 10,000	$ 10,000	$ 60,000
Emergency Generator Servicing	3	1	$ 1,250	$ 3,750	$ 112,500
SCADA Controls (Subscription)	3	1	$ 290	$ 870	$ 26,100
				Subtotal	$ 378,600

SHORT-LIVED ASSET COSTS

Period 30 years years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 2.1					

Replace in Kind Pumps	1	30	$ 1,057,000	$ 35,233	$	1,057,000
Repair and recoat Wet Well	3	20	$ 50,000	$ 7,500	$	225,000
Replace emergency generator	3	20	$ 75,000	$ 11,250	$	337,500
				Subtotal	$	1,619,500

Alternative 2.2

Replace in Kind Pumps	1	30	$ 452,550	$ 15,085	$	452,550
Repair and recoat Wet Well	3	20	$ 50,000	$ 7,500	$	225,000
Replace emergency generator	3	20	$ 75,000	$ 11,250	$	337,500
				Subtotal	$	1,015,050

Figure F-4

Alt 3.1 Cap Cost

Hornell Intermunicipal Sewer Evaluation
Alternative 3.1 Opinion of Probable Cost
Date: May 2025

Item Description	*Unit Price*	*Quantity*	*Units*	*Cost (Bare Material + Bare Labor+ Bare Equipment)*
Pump stations (applies to 3 pump stations)				
Pumps				
Demo for existing pumps	$ 100	12	Hr.	$ 1,204
SSPS - Abandon in place wet well and associated utilities	$ 53	264	CF	$ 14,032
S&L Rectangular Recessed Pump Station with Duplex 6D3B*1 Pumps	$ 399,000	1	LS	$ 399,000
Wet Well and Valve Pit Install				
SSPS Wet Well Installation	$ 68	2356.194	CF	$ 161,107
Valve Vault Installation	$ 47,200	1	Ea.	$ 47,200
Excavation, shoring, refill, compaction, dewatering, repaving				
SSPS Excavation, Rock Excavation (Max $150/CY)	$ 150	640	CY	$ 96,000
SSPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	2880	SF Wall	$ 4,118
SSPS Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	640	LCY	$ 1,254
Air tamped, add	$ 18	640	BCY	$ 11,616
SSPS Repaving, Heavy Duty Asphalt	$ 9	576	SY	$ 5,178
Valve Vault Excavtion, Rock Excavation (Max $150/CY)	$ 150	9.333333	CY	$ 1,400
Valve Vault Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	441	SF Wall	$ 631
Valve Vault Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	9.333333	LCY	$ 18
Air tamped, add	$ 18	9.333333	BCY	$ 169
Valve Vault Repaving, Heavy Duty Asphalt	$ 9	440	SY	$ 3,956
4" diaphragm pump used for 8 hours	$ 254	36	day	$ 9,126
Electrical				
Electrical Feed	$ 43	125	LF	$ 5,318
Intrusion Deterence				
Security Fence	$ 73	130	LF	$ 9,525
Connection to existing sewer manhole				
Connection to existing sewer manhole	$ 5,130	1	LS	$ 5,130
Sewage Collection, HDPE Pipe - 12" Gravity				
Piping, HDPE Corrugated Type S with watertight gaskets, 12" diameter	$ 14	40	LF	$ 556
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$ 5	51.85185	B.C.Y.	$ 248
Rent shoring per week per S.F. wall protected, loose material, 4'W	$ 1	400.00	SF Wall	$ 572
Dozer backfilling, trench, up to 300' haul, no compaction	$ 3	51.85185	L.C.Y.	$ 136
Air tamped, add	$ 18	51.85185	B.C.Y.	$ 941
Repaving, Heavy Duty Asphalt	$ 9	31.11111	SY	$ 280
Excavate sump pits by hand, heavy soil	$ 123	10	CY	$ 1,230
4" diaphragm pump used for 8 hours	$ 254	4	day	$ 1,014
Service Connections	$ 5,000	0	S.C.	$ -
Flowable Fill (for abandon in place piping, wet wells)	$ 53	40	LF	$ 2,126
Sewage Collection, HDPE Pipe - 10" FM				
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$ 9	500	LF	$ 4,255
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$ 5	648.1481	B.C.Y.	$ 3,105
Rent shoring per week per S.F. wall protected, loose material, 4'W	$ 1	5000.00	SF Wall	$ 7,150
Dozer backfilling, trench, up to 300' haul, no compaction	$ 3	648.1481	L.C.Y.	$ 1,698
Air tamped, add	$ 18	648.1481	B.C.Y.	$ 11,764
Repaving, Heavy Duty Asphalt	$ 9	388.8889	SY	$ 3,496
Excavate sump pits by hand, heavy soil	$ 123	25	CY	$ 3,075
4" diaphragm pump used for 8 hours	$ 254	18	day	$ 4,563
Flowable Fill - 8" (for abandon in place piping, wet wells)	$ 53	500	LF	$ 26,575
MRB Report Recommended Improvements (escalated to present)				

Rehabilitation of the 12" diameter sewer mains	$ 436,383	1 LS	$	436,383
Rehabilitation of the 8"" diameter sewer mains	$ 171,054	1 LS	$	171,054
SUBTOTAL CONSTRUCTION COSTS			**$**	**1,457,000**
Mobilization (for respective items)			$	145,500
SUBTOTAL CONSTRUCTION COSTS (WITH MOBILIZATION)			$	1,602,500
Contractor Overhead and Profit			$	240,375
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR OH&P)			$	1,842,875
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR ESCALATION)			$	2,260,000
ASSOCIATED COSTS				
Construction Contingency			$	678,000
Preliminary Engineering			$	226,000
Environmental Review			$	45,200
Final Engineering & Add-Ons			$	113,000
Construction Administration			$	45,200
Construction Observation			$	113,000
Special Inspections and Testing			$	22,600
SUBTOTAL ASSOCIATED COSTS			**$**	**1,243,000**
TOTAL CAPITAL COST (PRESENT VALUE)			**$**	**3,503,000**

Figure F-5

Alt 3.2 Cap Cost

Hornell Intermunicipal Sewer Evaluation
Alternative 3.2 Opinion of Probable Cost
Date: May 2025

Item Description	*Unit Price*	*Quantity*	*Units*	*Cost (Bare Material + Bare Labor+ Bare Equipment)*
Pump stations (applies to 3 pump stations)				
Pumps				
Demo for existing pumps	$ 100	12	Hr.	$ 1,204
SSPS - Abandon in place wet well and associated utilities	$ 53	264	CF	$ 14,032
Vaughn Chopper Pump Stations	$ 150,850	1	LS	$ 150,850
Wet Well and Valve Pit Install				
SSPS Wet Well Installation	$ 68	2360	CF	$ 161,367
Valve Vault Installation	$ 47,200	1	Ea.	$ 47,200
Pump Station Piping and Valves				
SSPS - Suction and discharge piping, Piping, HDPE Corrugated Type S with watertight gaskets, 10" diameter	$ 12	100	LF	$ 1,224
Suction and discharge valving, Backwater sewer line valve offset type, bronze swing check assy and bronze cover 10" size	$ 12,026	2	Ea.	$ 24,052
IPPS Valve Vault - 10" Butterfly Valve, Manual; 2 in Nut, Two Position	$ 2,126	2	Ea.	$ 4,252
Excavation, shoring, refill, compaction, dewatering, repaving				
SSPS Excavation, Rock Excavation (Max $150/CY)	$ 150	640	CY	$ 96,000
SSPS Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	2880	SF Wall	$ 4,118
SSPS Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	640	LCY	$ 1,254
Air tamped, add	$ 18	640	BCY	$ 11,616
SSPS Repaving, Heavy Duty Asphalt	$ 9	576	SY	$ 5,178
Valve Vault Excavtion, Rock Excavation (Max $150/CY)	$ 150	9.333333	CY	$ 1,400
Valve Vault Shoring, rent shroing per week per S.F. wall protected, loose material, 4'W	$ 1	441	SF Wall	$ 631
Valve Vault Backfill, Dozer backfilling, bulk, up to 300' haul	$ 2	9.333333	LCY	$ 18
Air tamped, add	$ 18	9.333333	BCY	$ 169
Valve Vault Repaving, Heavy Duty Asphalt	$ 9	440	SY	$ 3,956
4" diaphragm pump used for 8 hours	$ 254	36	day	$ 9,126
Electrical				
Electrical Feed	$ 43	125	LF	$ 5,318
Intrusion Deterence				
Security Fence	$ 73	130	LF	$ 9,525
Connection to existing sewer manhole				
Connection to existing sewer manhole	$ 5,130	2	LS	$ 10,260
Sewage Collection, HDPE Pipe - 12" Gravity				
Piping, HDPE Corrugated Type S with watertight gaskets, 12" diameter	$ 14	40	LF	$ 556
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$ 5	51.85185	B.C.Y.	$ 248
Rent shoring per week per S.F. wall protected, loose material, 4'W	$ 1	400.00	SF Wall	$ 572
Dozer backfilling, trench, up to 300' haul, no compaction	$ 3	51.85185	L.C.Y.	$ 136
Air tamped, add	$ 18	51.85185	B.C.Y.	$ 941
Repaving, Heavy Duty Asphalt	$ 9	31.11111	SY	$ 280
Excavate sump pits by hand, heavy soil	$ 123	10	CY	$ 1,230
4" diaphragm pump used for 8 hours	$ 254	4	day	$ 1,014
Service Connections	$ 5,000	0	S.C.	$ -
Flowable Fill (for abandon in place piping, wet wells)	$ 53	40	LF	$ 2,126
Sewage Collection, HDPE Pipe - 10" FM				
Piping, HDPE Corrugated Type S with watertight gaskets, 6" diameter	$ 9	500	LF	$ 4,255
Common earth with no sheeting or dewatering included				
4' to 6' deep, 1-1 1/2 C.Y. excavator w/ trench box	$ 5	648.1481	B.C.Y.	$ 3,105

Rent shoring per week per S.F. wall protected, loose material, 4'W	$	1	5000.00	SF Wall	$	7,150
Dozer backfilling, trench, up to 300' haul, no compaction	$	3	648.1481	L.C.Y.	$	1,698
Air tamped, add	$	18	648.1481	B.C.Y.	$	11,764
Repaving, Heavy Duty Asphalt	$	9	388.8889	SY	$	3,496
Excavate sump pits by hand, heavy soil	$	123	25	CY	$	3,075
4" diaphragm pump used for 8 hours	$	254	18	day	$	4,563
Flowable Fill - 8" (for abandon in place piping, wet wells)	$	53	500	LF	$	26,575
MRB Report Recommended Improvements (escalated to present)						
Rehabilitation of the 12" diameter sewer mains	$	436,383	1	LS	$	436,383
Rehabilitation of the 8"" diameter sewer mains	$	171,054	1	LS	$	171,054
SUBTOTAL CONSTRUCTION COSTS					**$**	**1,243,000**
Mobilization (for respective items)					$	124,177
SUBTOTAL CONSTRUCTION COSTS (WITH MOBILIZATION)					$	1,368,000
Contractor Overhead and Profit					$	205,200
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR OH&P)					$	1,573,200
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR ESCALATION)					$	1,930,000
ASSOCIATED COSTS						
Construction Contingency					$	579,000
Preliminary Engineering					$	193,000
Environmental Review					$	38,600
Final Engineering & Add-Ons					$	96,500
Construction Administration					$	38,600
Construction Observation					$	96,500
Special Inspections and Testing					$	19,300
SUBTOTAL ASSOCIATED COSTS					**$**	**1,061,500**
TOTAL CAPITAL COST (PRESENT VALUE)					**$**	**2,991,500**

Figure F-6

Alt 3 LCC

Village of North Hornell Infrastructure Life-Cycle Cost Comparison

Alternative	3.1	3.2
Type of Pumps	Suction Lift	Submersible
Wet Well	To be enlarged	To be enlarged
Piping	To be replaced	To be replaced
Capital Cost	$ 3,503,000	$ 2,991,500
Operating and Maintenance Costs	$ 664,000	$ 334,000
Short-Lived Asset Costs	$ 587,000	$ 338,350
Total Cost (2025 P.V. of costs over 30 years)	$ 4,754,000	$ 3,664,000

Notes:
(1) Operating, maintenance and short lived asset costs assume design ADF.
(2) Operating, maintenance and short lived asset costs are the present value (2025) of costs over 30 years.

CAPITAL COST

Alternative	3.1	3.2
Pump Stations	$ 775,982	$ 562,750
Collection System Piping & Appurtenances	$ 680,222	$ 680,222
Mobilization	$ 145,500.00	$ 124,176.82
OH&P	$ 240,375.00	$ 205,200.00
Subtotal Construction Costs (with Contractor Escalation)	**$ 2,260,000.00**	**$ 1,930,000.00**
Associated Costs		
Contingency	$ 678,000.00	$ 579,000.00
Preliminary Engineering	$ 226,000.00	$ 193,000.00
Environmental Review	$ 45,200.00	$ 38,600.00
Final Engineering & Add-Ons	$ 113,000.00	$ 96,500.00
Construction Administration	$ 45,200.00	$ 38,600.00
Construction Observation	$ 113,000.00	$ 96,500.00
Special Inspections and Testing	$ 22,600.00	$ 19,300.00
Subtotal Associated Costs	**$ 1,243,000.00**	**$ 1,061,500.00**
Total Capital Cost	**$ 3,503,000.00**	**$ 2,991,500.00**

OPERATING COSTS

Cost/KWh $ 0.2100

Equipment	Quantity	Power hp	Energy kW	Capacity running	Operating time h/d	Energy rate kWh/yr	Annual cost	Present Value of cost over 30 years
Alternative 3.1								
Seneca Street Duplex 6D3B*1 Pumps	2	50	74.6	50%	6.4	87,098	$18,291	$548,716
Controls/SCADA	1	-	0.3	100%	24	2,190	$460	$13,797
							Subtotal	$562,513
Alternative 3.2								
Seneca Street (2) Vaughan Model S4L-460V-089	2	20	29.8	50%	6.4	34,839	$7,316	$219,486
Controls/SCADA	1	N/A	0.3	100%	24	2,190	$460	$13,797
							Subtotal	$233,283

MAINTENANCE COSTS

Period 30 years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 3.1					
Seweage Pumps (Inspection)	2	1	$ 1,000.00	$ 2,000.00	$ 60,000
Sewer Main Flushing and Cleaning	1	5	$ 5,000.00	$ 5,000.00	$ 30,000
Emergency Generator Servicing	1	1	$ 1,250	$ 1,250	$ 2,500
SCADA Controls (Subscription)	1	1	$ 290.00	$ 290.00	$ 8,700
				Subtotal	$ 101,200
Alternative 3.2					
Seweage Pumps (Inspection)	2	1	$ 1,000.00	$ 2,000.00	$ 60,000
Sewer Main Flushing and Cleaning	1	5	$ 5,000.00	$ 5,000.00	$ 30,000
Emergency Generator Servicing	1	1	$ 1,250	$ 1,250	$ 2,500
SCADA Controls (Subscription)	1	1	$ 290.00	$ 290.00	$ 8,700
				Subtotal	$ 101,200

SHORT-LIVED ASSET COSTS

Period 30 years years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 3.1					
Replace in Kind Pumps	1	30	$ 399,000	$ 13,300	$ 399,000
Repair and recoat Wet Well	1	20	$ 50,000	$ 50,000	$ 75,000
Replace emergency generator	1	20	$ 75,000	$ 3,750	$ 112,500
				Subtotal	$ 586,500

Alternative 3.2						
Replace in Kind Pumps	1	30	$ 150,850	$ 150,850	$	150,850
Repair and recoat Wet Well	1	20	$ 50,000	$ 50,000	$	75,000
Replace emergency generator	1	20	$ 75,000	$ 3,750	$	112,500
				Subtotal	$	338,350

Figure F-7

Alt 4.1 Cap Cost

Hornell Intermunicipal Sewer Evaluation
Alternative 4.1 Opinion of Probable Cost
Date: May 2025

Item Description	*Unit Price*	*Quantity*	*Units*	*Cost (Bare Material + Bare Labor+ Bare Equipment)*
Pump stations (applies to 3 pump stations)				
Pumps				
Demo for existing pumps	$ 100	12	Hr.	$ 1,204
Above Grade Duplex 6D3B*1 Pumps	$ 259,000	4	LS	$ 1,036,000
Madison Ave Wet Well Structural Improvements				
Remove rust and paint	$ 5,000	1	LS	$ 5,000
Precast roof cap Replacement	$ 10,000	1	LS	$ 10,000
Mays Ave Wet Well Structural Improvements				
Remove rust and paint (wet well, outside of the steel ring re-paint, and all steel around cap and equipment skid)	$ 5,000	2	LS	$ 10,000
Walmart Wet Well Structural Improvements				
Remove rust and paint	$ 5,000	1	LS	$ 5,000
SUBTOTAL CONSTRUCTION COSTS				**$ 1,068,000**
Mobilization (for respective items)				$ 106,600
SUBTOTAL CONSTRUCTION COSTS (WITH MOBILIZATION)				$ 1,175,000
Contractor Overhead and Profit				$ 176,250
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR OH&P)				$ 1,351,250
SUBTOTAL CONSTRUCTION COSTS (WITH CONTRACTOR ESCALATION)				$ 1,657,000
ASSOCIATED COSTS				
Construction Contingency				$ 497,100
Preliminary Engineering				$ 165,700
Environmental Review				$ 33,140
Final Engineering & Add-Ons				$ 82,850
Construction Administration				$ 33,140
Construction Observation				$ 82,850
Special Inspections and Testing				$ 16,570
SUBTOTAL ASSOCIATED COSTS				**$ 911,350**
TOTAL CAPITAL COST (PRESENT VALUE)				**$ 2,568,350**

Figure F-8

Alt 4 LCC

City of Hornell Infrastructure Life-Cycle Cost Comparison

Alternative	4.1	
Type of Pumps	Suction Lift	
Wet Well	To be enlarged	
Piping	To be replaced	
Capital Cost	$ 2,568,350	
Operating and Maintenance Costs	$ 965,000	
Short-Lived Asset Costs	$ 1,561,000	
Total Cost (2025 P.V. of costs over 30 years)	$ 5,094,000	

Notes:
(1) Operating, maintenance and short lived asset costs assume design ADF.
(2) Operating, maintenance and short lived asset costs are the present value (2025) of costs over 30 years.

CAPITAL COST

Alternative	4.1	
Pump Stations	$ 1,067,203.72	
Collection System Piping & Appurtenances	$ -	
Mobilization	$ 106,600.00	
OH&P	$ 176,250.00	
Subtotal Construction Costs (with Contractor Escalation)	**$ 1,657,000.00**	
Associated Costs		
Contingency	$ 497,100.00	
Preliminary Engineering	$ 165,700.00	
Environmental Review	$ 33,140.00	
Final Engineering & Add-Ons	$ 82,850.00	
Construction Administration	$ 33,140.00	
Construction Observation	$ 82,850.00	
Special Inspections and Testing	$ 16,570.00	
Subtotal Associated Costs	**$ 911,350.00**	
Total Capital Cost	**$ 2,568,350.00**	

OPERATING COSTS

Cost/KWh $ 0.2100

Equipment	Quantity	Power hp	Energy kW	Capacity running	Operating time h/d	Energy rate kWh/yr	Annual cost	Present Value of cost over 30 years
Alternative 4.1								
Mays Ave Pumps	2	14	20.9	50%	6.4	24,387	$5,121	$153,640
Madison Ave Pumps	2	14	20.9	50%	6.4	24,387	$5,121	$153,640
Walmart Pumps	2	14	20.9	50%	6.4	24,387	$5,121	$153,640
Ice Haus Rd Pumps	2	14	20.9	50%	6.4	24,387	$5,121	$153,640
Controls/SCADA	4	-	1.0	100%	24	8,760	$1,840	$55,188
							Subtotal	$669,750

MAINTENANCE COSTS

Period 30 years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 4.1					
Sewage Pumps (Inspection)	8	1	$ 1,000.00	$ 8,000.00	$ 240,000
Emergency Generator Servicing	4	1	$ 1,250	$ 5,000	$ 20,000
SCADA Controls (Subscription)	4	1	$ 290.00	$ 1,160.00	$ 34,800
				Subtotal	$ 294,800

SHORT-LIVED ASSET COSTS

Period 30 years years

	Quantity	Replacement Frequency (years)	Present Value (2025) Unit Cost	Present Value (2025) Annual Cost	Present Value of cost over 30 years
Alternative 4.1					
Replace in Kind Pumps	1	30	$ 1,036,000	$ 1,036,000	$ 1,036,000
Repair and recoat Wet Well	1	20	$ 50,000	$ 50,000	$ 75,000
Replace emergency generator	4	20	$ 75,000	$ 15,000	$ 450,000
				Subtotal	$ 1,561,000

Figure F-9

Recommended Alternatives Op Costs

OPERATING COSTS							
EXISTING REMAINING EQUIPMENT ENERGY COSTS							
Cost/KWh	$0.210						
Equipment	Quantity	Power	Energy	Capacity running	Operating time	Energy rate	Annual cost
		hp	kW		h/d	kWh/yr	
SUBTOTAL							**$0.00**
PROPOSED NEW AND REPLACED EQUIPMENT ENERGY COSTS							
Equipment	Quantity	Power	Energy	Capacity running	Operating time	Energy rate	Annual cost
		hp	kW		h/d	kWh/yr	
Joe Jones PS Pumps	2	50	74.6	50%	6	81,654	$17,147.37
Industrial Park PS Pumps	2	40	59.7	50%	6	65,323	$13,717.90
Bowling Alley PS Pumps	2	40	59.7	50%	6	65,323	$13,717.90
Town PS's SCADA / Controls	3	-	0.8	100%	24	6,570	$1,379.70
Seneca St PS Pumps	2	50	74.6	50%	6.4	87,098	$18,290.53
Village PS's SCADA / Controls	1	-	0.3	100%	24	2,190	$459.90
Mays Ave PS Pumps	2	14	20.9	50%	6.4	24,387	$5,121.35
Madison Ave PS Pumps	2	14	20.9	50%	6.4	24,387	$5,121.35
Walmart PS Pumps	2	14	20.9	50%	6.4	24,387	$5,121.35
Ice Haus Rd PS Pumps	2	14	20.9	50%	6.4	24,387	$5,121.35
City PS's SCADA / Controls	4	-	1.0	100%	24	8,760	$1,839.60
SUBTOTAL							**$87,038.29**
TOTAL COSTS (PRESENT VALUE)							
Note: Each municipality's budgeting for sewer-related operating costs differs and cost-sharing is to-be-determined based on ongoing							
collaboration between the three municipalities advancing the present evaluation and next steps. Therefore,							
Operating Costs presented herein are limited to those recommended and exclude detailed consideration,							
at this time, of each municipality's ongoing budget.							
Proposed equipment energy costs	$87,038.29						
TOTAL	**$87,038.29**						

Figure F-10

Recommended Alternatives Maint & SLA Costs

Maintenance and Short-Lived Asset Costs					Projection Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Annual Inflation	3%				100%	103%	106%	109%	112%	115%	118%	121%	124%	127%	130%	133%	136%	139%	142%	145%	148%	151%	154%	157%	160%	163%	166%	169%	172%	175%	178%	181%	184%	187%	190%
Equipment	Maintenance Item	Quantity	Replacement Frequency (years)	Present Unit Cost	Total Present Cost	Year and Replacement Cost																														
						2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
Anticipated Maintenance Costs (online 2027)																																				
Sewage Pumps	Inspection	16	1	$ 1,000	$ 16,000				$ 17,440	$ 17,920	$ 18,400	$ 18,880	$ 19,360	$ 19,840	$ 20,320	$ 20,800	$ 21,280	$ 21,760	$ 22,240	$ 22,720	$ 23,200	$ 23,680	$ 24,160	$ 24,640	$ 25,120	$ 25,600	$ 26,080	$ 26,560	$ 27,040	$ 27,520	$ 28,000	$ 28,480	$ 28,960	$ 29,440	$ 29,920	$ 30,400
Flushing and Cleaning of Sewer Main	Flushing and Cleaning	1	5	$ 15,000	$ 15,000								$ 18,150				$ 20,400						$ 22,650				$ 24,900						$ 27,150			
Emergency Backup Generators	Calibration / Servicing	8	1	$ 1,250	$ 10,000				$ 10,900	$ 11,200	$ 11,500	$ 11,800	$ 12,100	$ 12,400	$ 12,700	$ 13,000	$ 13,300	$ 13,600	$ 13,900	$ 14,200	$ 14,500	$ 14,800	$ 15,100	$ 15,400	$ 15,700	$ 16,000	$ 16,300	$ 16,600	$ 16,900	$ 17,200	$ 17,500	$ 17,800	$ 18,100	$ 18,400	$ 18,700	$ 19,000
SCADA Controls	Service Contract Subscription	8	1	$ 290	$ 2,320				$ 2,529	$ 2,598	$ 2,668	$ 2,738	$ 2,807	$ 2,877	$ 2,946	$ 3,016	$ 3,086	$ 3,155	$ 3,225	$ 3,294	$ 3,364	$ 3,434	$ 3,503	$ 3,573	$ 3,642	$ 3,712	$ 3,782	$ 3,851	$ 3,921	$ 3,990	$ 4,060	$ 4,130	$ 4,199	$ 4,269	$ 4,338	$ 4,408
TOTAL MAINTENANCE COST						**$ -**	**$ -**	**$ -**	**$ 30,869**	**$ 31,718**	**$ 32,568**	**$ 33,418**	**$ 52,417**	**$ 35,117**	**$ 35,966**	**$ 36,816**	**$ 37,666**	**$ 58,915**	**$ 39,365**	**$ 40,214**	**$ 41,064**	**$ 41,914**	**$ 65,413**	**$ 43,613**	**$ 44,462**	**$ 45,312**	**$ 46,162**	**$ 71,911**	**$ 47,861**	**$ 48,710**	**$ 49,560**	**$ 50,410**	**$ 78,409**	**$ 52,109**	**$ 52,958**	**$ 53,808**
Anticipated Short-Lived Asset Costs (online 2027)																																				
Replace Pumps (at 3 Town PSs)	Replacement	1	30	$ 1,057,000	$ 1,057,000																											$ 1,913,170			
Replace Pumps (at 1 Village PS)	Replacement	1	30	$ 399,000	$ 399,000																												$ 734,160		
Replace Pumps (at 4 City PSs)	Replacement	1	30	$ 1,036,000	$ 1,036,000																													$ 1,937,320	
Wet Wells	Repair / Re-coat	8	20	$ 50,000	$ 400,000																					$ 640,000									
Emergency Generator	Replacement	8	20	$ 75,000	$ 600,000																							$ 996,000							
TOTAL SHORT LIVED ASSET COST						**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 640,000**	**$ -**	**$ 996,000**	**$ -**	**$ -**	**$ -**	**$ 1,913,170**	**$ 734,160**	**$ 1,937,320**	**$ -**

Figure F-11

Existing Debt Service

Loan	EFC Emergency Sewer & WPCP Phase #3	**Loan**	EFC Phase 4 & 5 - WPCP	**Loan**	Short-Term: WPCP Improvements
Remaining Principal (2024)	1,735,000.00	**Remaining Principal (2024)**	120,000.00	**Remaining Principal (2024)**	2,076,689
Remaining Years	21	**Remaining Years**	5	**Remaining Years**	
Interest Rate	2.54%	**Interest Rate**	3.00%	**Interest Rate**	
Payments per year	1	**Payments per year**	1	**Payments per year**	1

Note: Loan has not yet converted to long-term debt; Payments shown below represent those to cover short-term until conversion.

Year	Year	Payment	Interest	Principle	Balance		Payment	Interest	Principle	Balance		Payment	Interest	Principle	Balance		Total
2024	0				1,735,000.00					120,000.00							-
2025	1	$107,623.94	$44,069.00	$63,554.94	$1,671,445.06		$26,202.55	$3,600.00	$22,602.55	$97,397.45		$60,000.00					$193,826.49
2026	2	$107,623.94	$42,454.70	$65,169.24	$1,606,275.83		$26,202.55	$2,921.92	$23,280.63	$74,116.83		$60,000.00					$193,826.49
2027	3	$107,623.94	$40,799.41	$66,824.53	$1,539,451.29		$26,202.55	$2,223.50	$23,979.04	$50,137.78		$60,000.00					$193,826.49
2028	4	$107,623.94	$39,102.06	$68,521.88	$1,470,929.41		$26,202.55	$1,504.13	$24,698.42	$25,439.37							$133,826.49
2029	5	$107,623.94	$37,361.61	$70,262.33	$1,400,667.08		$26,202.55	$763.18	$25,439.37	$0.00							$133,826.49
2030	6	$107,623.94	$35,576.94	$72,047.00	$1,328,620.09												$107,623.94
2031	7	$107,623.94	$33,746.95	$73,876.99	$1,254,743.10												$107,623.94
2032	8	$107,623.94	$31,870.47	$75,753.46	$1,178,989.63												$107,623.94
2033	9	$107,623.94	$29,946.34	$77,677.60	$1,101,312.03												$107,623.94
2034	10	$107,623.94	$27,973.33	$79,650.61	$1,021,661.42												$107,623.94
2035	11	$107,623.94	$25,950.20	$81,673.74	$939,987.68												$107,623.94
2036	12	$107,623.94	$23,875.69	$83,748.25	$856,239.42												$107,623.94
2037	13	$107,623.94	$21,748.48	$85,875.46	$770,363.97												$107,623.94
2038	14	$107,623.94	$19,567.24	$88,056.69	$682,307.27												$107,623.94
2039	15	$107,623.94	$17,330.60	$90,293.33	$592,013.94												$107,623.94
2040	16	$107,623.94	$15,037.15	$92,586.79	$499,427.15												$107,623.94
2041	17	$107,623.94	$12,685.45	$94,938.49	$404,488.66												$107,623.94
2042	18	$107,623.94	$10,274.01	$97,349.93	$307,138.73												$107,623.94
2043	19	$107,623.94	$7,801.32	$99,822.62	$207,316.12												$107,623.94
2044	20	$107,623.94	$5,265.83	$102,358.11	$104,958.01												$107,623.94
2045	21	$107,623.94	$2,665.93	$104,958.01	$0.00												$107,623.94
2046	22																$0.00
2047	23																$0.00
2048	24																$0.00
2049	25																$0.00
2050	26																$0.00
2051	27																$0.00
2046	28																$0.00
2047	29																$0.00
2048	30																$0.00

Figure F-12

Recommended Alternatives Annual Costs

Annual Costs	Projection Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Annual Inflation	3%	100%	103%	106%	109%	113%	116%	119%	123%	127%	130%	134%	138%	143%	147%	151%	156%	160%	165%	170%	175%	181%	186%	192%	197%	203%	209%	216%	222%	229%	236%	243%
	Present Value (2025) Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Year and Cost (1) 2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
Debt Service Costs																																
Existing Annual Debt Service	$193,826	$193,826	$193,826	$193,826	$133,826	$133,826	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$107,624	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Rate	4.00%																															
Loan Period (years)	30																															
Capital Project Costs (Project Start)	$ 16,790,000																															
Proposed Project Annual Debt Service	$ 970,967	$ -	$ -	$ -	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000	$ 971,000
TOTAL DEBT SERVICE		**$193,826**	**$193,826**	**$193,826**	**$1,104,826**	**$1,104,826**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$1,078,624**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**	**$971,000**
Proposed Operating Costs	$ 87,038	$ 87,000	$ 90,000	$ 92,000	$ 95,000	$ 98,000	$ 101,000	$ 104,000	$ 107,000	$ 110,000	$ 114,000	$ 117,000	$ 120,000	$ 124,000	$ 128,000	$ 132,000	$ 136,000	$ 140,000	$ 144,000	$ 148,000	$ 153,000	$ 157,000	$ 162,000	$ 167,000	$ 172,000	$ 177,000	$ 182,000	$ 188,000	$ 193,000	$ 199,000	$ 205,000	$ 211,000
Subtotal Proposed Operating Costs		***$ 87,000***	***$ 90,000***	***$ 92,000***	***$ 95,000***	***$ 98,000***	***$ 101,000***	***$ 104,000***	***$ 107,000***	***$ 110,000***	***$ 114,000***	***$ 117,000***	***$ 120,000***	***$ 124,000***	***$ 128,000***	***$ 132,000***	***$ 136,000***	***$ 140,000***	***$ 144,000***	***$ 148,000***	***$ 153,000***	***$ 157,000***	***$ 162,000***	***$ 167,000***	***$ 172,000***	***$ 177,000***	***$ 182,000***	***$ 188,000***	***$ 193,000***	***$ 199,000***	***$ 205,000***	***$ 211,000***
Subtotal Proposed Maintenance Costs		***$ - $***	***$ - $***	***$ - $***	***30,869 $***	***31,718 $***	***32,568 $***	***33,418 $***	***52,417 $***	***35,117 $***	***35,966 $***	***36,816 $***	***37,666 $***	***58,915 $***	***39,365 $***	***40,214 $***	***41,064 $***	***41,914 $***	***65,413 $***	***43,613 $***	***44,462 $***	***45,312 $***	***46,162 $***	***71,911 $***	***47,861 $***	***48,710 $***	***49,560 $***	***50,410 $***	***78,409 $***	***52,109 $***	***52,958 $***	***53,808***
TOTAL OPERATING AND MAINTENANCE COSTS		**$ 87,000**	**$ 90,000**	**$ 92,000**	**$ 125,869**	**$ 129,718**	**$ 133,568**	**$ 137,418**	**$ 159,417**	**$ 145,117**	**$ 149,966**	**$ 153,816**	**$ 157,666**	**$ 182,915**	**$ 167,365**	**$ 172,214**	**$ 177,064**	**$ 181,914**	**$ 209,413**	**$ 191,613**	**$ 197,462**	**$ 202,312**	**$ 208,162**	**$ 238,911**	**$ 219,861**	**$ 225,710**	**$ 231,560**	**$ 238,410**	**$ 271,409**	**$ 251,109**	**$ 257,958**	**$ 264,808**
Short Lived Asset Costs		***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***640,000 $***	***$ - $***	***996,000 $***	***$ - $***	***$ - $***	***$ - $***	***$ - $***	***1,913,170 $***	***734,160 $***	***1,937,320 $***	-
Subtotal Short Lived Asset Costs		**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**640,000 $**	**$ - $**	**996,000 $**	**$ - $**	**$ - $**	**$ - $**	**$ - $**	**1,913,170 $**	**734,160 $**	**1,937,320 $**	-
Short Lived Asset Reserve Fund																																
Simple Annual Average - Short Lived Asset Costs	$ 207,000																															
Annual Reserve Deposit		$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 225,000	$ 225,000	$ 225,000	$ 225,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Cumulative Reserve Deposits		$ 150,000	$ 300,000	$ 450,000	$ 600,000	$ 750,000	$ 925,000	$ 1,100,000	$ 1,275,000	$ 1,450,000	$ 1,625,000	$ 1,825,000	$ 2,025,000	$ 2,225,000	$ 2,425,000	$ 2,625,000	$ 2,850,000	$ 3,075,000	$ 3,300,000	$ 3,525,000	$ 3,775,000	$ 4,025,000	$ 3,635,000	$ 3,885,000	$ 3,139,000	$ 3,389,000	$ 3,639,000	$ 3,889,000	$ 4,139,000	$ 2,475,830	$ 1,991,670	$ 304,350
Subtract Annual Short Lived Asset Costs		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (640,000)	$ -	$ (996,000)	$ -	$ -	$ -	$ -	$ (1,913,170)	$ (734,160)	$ (1,937,320)	$ -
Net Maintenance Reserve		$ 150,000	$ 300,000	$ 450,000	$ 600,000	$ 750,000	$ 925,000	$ 1,100,000	$ 1,275,000	$ 1,450,000	$ 1,625,000	$ 1,825,000	$ 2,025,000	$ 2,225,000	$ 2,425,000	$ 2,625,000	$ 2,850,000	$ 3,075,000	$ 3,300,000	$ 3,525,000	$ 3,775,000	$ 3,385,000	$ 3,635,000	$ 2,889,000	$ 3,139,000	$ 3,389,000	$ 3,639,000	$ 3,889,000	$ 2,225,830	$ 1,741,670	$ 54,350	$ 304,350
TOTAL SHORT LIVED ASSET RESERVE FUND		**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 175,000**	**$ 175,000**	**$ 175,000**	**$ 175,000**	**$ 175,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 225,000**	**$ 225,000**	**$ 225,000**	**$ 225,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**
GRAND TOTAL ANNUAL COST		**$430,826**	**$433,826**	**$435,826**	**$1,380,695**	**$1,384,545**	**$1,387,192**	**$1,391,042**	**$1,413,041**	**$1,398,741**	**$1,403,590**	**$1,432,440**	**$1,436,290**	**$1,461,539**	**$1,445,989**	**$1,450,838**	**$1,480,688**	**$1,485,538**	**$1,513,037**	**$1,495,237**	**$1,526,086**	**$1,530,936**	**$1,429,162**	**$1,459,911**	**$1,440,861**	**$1,446,710**	**$1,452,560**	**$1,459,410**	**$1,492,409**	**$1,472,109**	**$1,478,958**	**$1,485,808**
EDUs	8219																															
Cost per EDU		$52	$53	$53	$168	$168	$169	$169	$172	$170	$171	$174	$175	$178	$176	$177	$180	$181	$184	$182	$186	$186	$174	$178	$175	$176	$177	$178	$182	$179	$180	$181

APPENDIX G

Smart Growth

NEW YORK STATE OF OPPORTUNITY. | Department of Health | Environmental Facilities Corporation

Smart Growth Assessment Form

This form should be completed by an authorized representative of the applicant, preferably the project engineer or other design professional.[1]

Section 1 – General Applicant and Project Information

Applicant: City of Hornell Project No.: 2250913

Project Name: Hornell Intermunicipal Sewer Evaluation

Is project construction complete? ☐ Yes, date: ☑ No

Please provide a brief project summary in plain language including the location of the area the project serves:

The City of Hornell (City), Village of North Hornell (Village), Town of Hornellsville (Town) own and the City operates a sanitary collection system within the City, Village, and Town that serves residents and is treated at the City of Hornell Water Pollution Control Plant (WPCP). The collection system includes gravity sewermains, and sanitary pumpstations which are deteriorating due to their significant age. The City, Village, and Town intend to remedy age-related hydraulic and structural deficiencies through replacement of pumping systems, relining & spot repairs, and full depth replacement of sewermains. Overall ground disturbance throughout the City, Village, and Town is estimated to be approximately 5-acres.

Section 2 – Screening Questions

A. Prior Approvals

1. Has the project been previously approved for Environmental Facilities Corporation (EFC) financial assistance? ☐ Yes ☑ No
2. If yes to A(1), what is the project number(s) for the prior approval(s)? Project No.:
3. If yes to A(1), is the scope of the previously-approved project substantially the same as the current project? ☐ Yes ☐ No

If your responses to A(1) and A(3) are both yes, please proceed to Section 5, Signature.

B. New or Expanded Infrastructure

1. Does the project involve the construction or reconstruction of new or expanded infrastructure? ☑ Yes ☐ No

Examples of new or expanded infrastructure include, but are not limited to:

(i) The addition of new wastewater collection/new water mains or a new wastewater treatment system/water treatment plant where none existed previously;

(ii) An increase of the State Pollutant Discharge Elimination System (SPDES) permitted flow capacity for an existing wastewater treatment system; and OR

[1] If project construction is complete and the project was not previously financed through EFC, an authorized municipal representative may complete and sign this assessment.

(iii) An increase of the permitted water withdrawal or the permitted flow capacity for the water treatment system such that a Department of Environmental Conservation (DEC) water withdrawal permit will need to be obtained or modified, or result in the Department of Health (DOH) approving an increase in the capacity of the water treatment plant.

If your response to B(1) is no, please proceed to Section 5, Signature.

Section 3 –Smart Growth Criteria

Your project must be consistent will all relevant Smart Growth criteria. For each question below please provide a response and explanation.

1. Does the project use, maintain, or improve existing infrastructure?
   ☑ Yes ☐ No

   Explain your response: The proposed project intends to reline and spot repair existing sewermains, where feasible, rather than to construct new sewer infrastructure.

2. Is the project located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center, as such terms are defined herein (please select one response)?

   ☐ Yes, my project is located in a municipal center, which is an area of concentrated and mixed land uses that serves as a center for various activities, including but not limited to: central business districts, main streets, downtown areas, brownfield opportunity areas (see *www.dos.ny.gov* for more information), downtown areas of local waterfront revitalization program areas (see *www.dos.ny.gov* for more information), areas of transit-oriented development, environmental justice areas (see *www.dec.ny.gov/public/899.html* for more information), and hardship areas (projects that primarily serve census tracts or block numbering areas with a poverty rate of at least twenty percent according to the latest census data).

   ☐ Yes, my project is located in an area adjacent to a municipal center which has clearly defined borders, is designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibits strong land use, transportation, infrastructure, and economic connections to an existing municipal center.

   ☐ Yes, my project is located in an area designated as a future municipal center in a municipal or comprehensive plan and is appropriately zoned in a municipal zoning ordinance

   ☑ No, my project is not located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center.

   Explain your response and reference any applicable plans:

3. Is the project located in a developed area or an area designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan, and/or brownfield opportunity area plan?

☐Yes ☑No

Explain your response and reference any applicable plans:

4. Does the project protect, preserve, and enhance the State's resources, including surface and groundwater, agricultural land, forests, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources?

☑Yes ☐No

Explain your response:

The proposed project correlates directly to the protection of State environment resources. The proposed project intends to repair and replace aged infrastructure, which if were to fail, would be catastrophic to environmental health in the project region.

5. Does the project foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups?

☑Yes ☐No

Explain your response:

The proposed project serves several disadvantaged communities, which will be benefited by its successful completion.

6. Does the project provide mobility through transportation choices including improved public transportation and reduced automobile dependency?

☐Yes ☐No ☑N/A

Explain your response:

7. Does the project involve coordination between State and local government, intermunicipal planning, or regional planning?

☑Yes ☐No

Explain your response and reference any applicable plans:

The proposed project is intended to be a collaborative effort between three (3) local governances, the City of Hornell, Village of North Hornell, and Town of Hornellsville. These local governances will be required to coordinate with the New York State Department of Environmental Conservation and others to ensure that the proposed project has undergone regulatory approvals before construction.

8. Does the project involve community-based planning and collaboration?

   ☑Yes ☐No

   Explain your response and reference any applicable plans:

   The proposed project is intended to be a collaborative effort between the City, Village, and Town, which each are benefited by the successful completion of the proposed infrastructure improvements.

9. Does the project support predictability in building and land use codes?

   ☐Yes ☐No ☑N/A

   Explain your response:

10. Does the project promote sustainability by adopting measures such as green infrastructure techniques, decentralized infrastructure techniques, or energy efficiency measures?

    ☑Yes ☐No

    Explain your response and reference any applicable plans:

    The proposed project seeks to replace aged infrastructure which has surpassed its useful life and in doing so, introduce modern equivalents which are to be optimized for their ability to efficiently guarantee performance. As an example, each proposed pump station will include Variable Frequency Drives (VFDs) which reduce energy usage compared with the existing continuous speed drives.

11. Does the project mitigate future physical climate risk due to sea-level rise, storm surges, and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data, if applicable?

    ☑Yes ☐No

    Explain your response and reference any applicable plans:

    The proposed project intends to reline and replace sections of damaged sewermains which currently incur inflow and infiltration due to rain and groundwater inflow to the sewer system. Extreme flooding which may cause surcharges or other issues may be mitigated by relining and spot repair as proposed.

Section 4 – Miscellaneous

1. Is the project expressly required by a court or administrative consent order? ☐ Yes ☑ No

   If yes, and you have not previously provided the applicable order to EFC/DOH, please submit it with this form.

Section 5 – Signature

By signing below, you agree that you are authorized to act on behalf of the applicant and that the information contained in this Smart Growth Assessment is true, correct and complete to the best of your knowledge and belief.

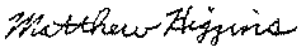
Applicant: City of Hornell	Phone Number: (585) 591-0898
Name and Title of Signatory: Matthew Higgins, PE	
Signature: Matthew Higgins	Date: May 30, 2025

APPENDIX H

Engineering Certification

ENGINEERING REPORT CERTIFICATION

During the preparation of this Engineering Report, I have studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is being sought from the New York State Drinking Water State Revolving Fund. In my professional opinion, I have recommended for selection, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of constructing the project or activity, the cost of operating and maintaining the project or activity over the life of the project or activity, and the cost of replacing the project and activity.

Title of Engineering Report:	**Hornell Intermunicipal Sewer Preliminary Engineering Report** **City of Hornell, Steuben County, New York** **Village of North Hornell, Steuben County, New York** **Town of Hornellsville, Steuben County, New York**
Date of Report:	**May 2025**
Professional Engineer:	**Matthew Higgins, PE**
Signature:	
Date:	**May 30, 2025**