

APPENDIX Q

SEWAGE COLLECTION AND TREATMENT REPORT

Engineer's Report
Sewage Collection & Treatment

Blue Point Overlay District

191-200 Blue Point Road
Town of Lloyd
Ulster County, New York 12528

July 5, 2013



Prepared for:

Hudson Valley Wine Village, Inc.
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EXECUTIVE SUMMARY

The Blue Point Overlay District [also known as the Hudson Valley Wine Village (HVWV)] project site is located in the Town of Lloyd in Ulster County, New York. Ulster County is situated directly south of Greene County. The property on which the HVWV development is proposed consists of 429± acres of primarily undeveloped land, a portion of which is located on a bluff overlooking the Hudson River. The abandoned buildings for the former use as a winery are located at the northeast corner of the site. These parcels are currently under the ownership of Hudson Valley Wine Village, Inc. The parcels are adjacent to NYS Route 9W at the intersection of Blue Point Road. The HVWV is an integrated development project proposed to be built over a 20-year period. The project would include three primary components: residential units, the Tuscan Village Conference Center, and a light industrial/manufacturing park.

The Town of Lloyd has an operating wastewater treatment facility (WWTF) located on River Road, approximately 2.5 miles north of the proposed development. The Lloyd Highlands Sewage treatment Plat (STP) (NY 0024295) is currently permitted for 1.25 million gallons per day (MGD) and may exceed this limit in wet weather. Recently, average dry weather flows to the facility have been 0.8± MGD. Ongoing upgrades to the facility will allow for an increase of permitted flow to 1.75 MGD. Conveying sewage generated by the proposed HVWV project to the existing publicly owned treatment works (POTW) would present a significant expense and logistical challenges. The preferred alternative for this project is to construct a new collection and treatment system for wastewater at the site.

The new wastewater collection and treatment system will be a central system serving the entire project. Ownership of the system could be either private or public. A private wastewater system would be owned by a sewer works transportation corporation. The public ownership alternative would require the creation of a sewer district or sewer improvement pursuant to the provisions of New York State Town Law.

The sewage collection and treatment system will be designed and constructed in accordance with state and county regulations. The estimated daily volume of sewage is 250,000± gallons per day, and a SPDES permit for 325,000 gallons will be requested. Discharge of treated sewage at the development will be to an on-site intermittent stream. The default effluent limits for this situation are referred to as the Intermittent Stream Effluent Limits (ISELs). These are the most stringent effluent limits normally required by NYS Department of Environmental Conservation (NYSDEC). For the proposed HVWV WWTF location, it is concluded that the ISEL limits are appropriate. The proposed treatment facility will be designed to address the ISEL effluent limits.

Additional concerns to be addressed in the design of the treatment facility are noise, odors, separation distances from the remainder of the development, and efficient power use.

1.0 INTRODUCTION

The Blue Point Overlay District, also known as the Hudson Valley Wine Village (HVWV), project site is located in the Town of Lloyd in Ulster County, New York. Ulster County is situated south of Greene County. The Town of Lloyd lies along the eastern border of Ulster County, bounded by the Town of Esopus to the North, New Paltz to the west, Plattekill and Marlborough to the south, and the Hudson River to the east. Across the Hudson River, the City of Poughkeepsie is a dense urban environment that provides commercial, cultural, and educational amenities at a regional level.

The property on which the HVWV development is proposed consists of 429± acres of primarily undeveloped land, a portion of which is located on a bluff overlooking the Hudson River. The abandoned buildings for the former use as a winery are located at the northeast corner of the site. These parcels are currently under the ownership of Hudson Valley Wine Village, Inc. The parcels are adjacent to NYS Route 9W at the intersection of Blue Point Road. NYS Route 9W is the area's primary north-south travel corridor and NYS Route 44 is the primary east-west travel corridor. North of the project site, the Mid-Hudson Bridge is the primary means of crossing the Hudson River for the region. Please refer to Figure 2.1.1 in the main GDEIS report for the proposed development layout.

The HVWV is an integrated development project proposed to be built over a 20-year period. The project would include three primary components: residential units, the Tuscan Village Conference Center, and a light industrial/manufacturing park. The figure enclosed in Appendix A of this report shows the conceptual layout of the proposed development.

1.1 Water & Wastewater Utility Requirements

This report is to outline the methodology for collection and treatment of sewage to be generated for the proposed development. Basic issues and proposed treatment processes will be assessed. The impact of the proposed sewerage systems will be discussed and any mitigation will be described.

This section of this report briefly describes the water and wastewater requirements for the proposed project.

1.1.1 Potable Water

The existing facilities located at the project site are supplied with water from on-site wells. The proposed development is estimated to have water demands that exceed the capabilities of the on-site supply. It is proposed to connect the development to the Town of Lloyd water supply by extending water piping south on NYS Route 9W to the project site. Water supply for the proposed development is described in a separate report.

1.2.1 Wastewater

The existing buildings at the HVWV site use subsurface disposal fields for treatment of sewage. These disposal systems will be abandoned for the proposed development.

The Town of Lloyd has an operating wastewater treatment facility (WWTF) located on River Road, approximately 2.5 miles north of the proposed development. The Lloyd Highlands STP (NY 0024295) is currently permitted for 1.25 million gallons per day (MGD) and may exceed this limit in wet weather. Recently, average dry weather flows to the facility have been approximately 0.8 MGD. Ongoing upgrades to the facility will allow for an increase of permitted flow to 1.75 MGD.

Conveying sewage generated by the proposed activity to the existing publicly owned treatment works (POTW) would present a significant expense and logistical challenges. The direct distance between the two locations is approximately 2.5 miles. Installation of a force main between these locations would need to follow state and local roadway right-of-ways to connect to the existing collection system, and would have a longer route. The added flow from the proposed activity would also bring average flow to the existing POTW close to the current capacity of the facility.

The preferred alternative for this project is therefore to construct a new collection and treatment system for wastewater at the site. The cost of the on-site facility is estimated to be similar to the cost of conveying sewage to the existing facility plus connection fees. This report will address the onsite collection and treatment alternative.

1.2 Legal Requirements

The distance from HVWV to the existing wastewater treatment facility of the Highland Sewer District and the limitation of existing capacity make it impracticable to convey wastewater from the HVWV project to the existing wastewater treatment facility, so a new on-site central wastewater treatment facility will be created for the project. Under New York Law, a privately owned central wastewater treatment facility must be owned and operated as Sewage-Works Corporation under the Transportation Corporation Law. As an alternative to a transportation corporation, a publicly owned central wastewater facility may be owned and operated under New York Town Law as a sewer district or an improvement district.

The legal entity created will own the wastewater treatment facility, the tax parcel the facility is located on and all other sewage-related infrastructure. The legal entity is authorized by New York Law to locate infrastructure within the public rights of way. Easements in favor of the legal entity will be required for access to all components of the sewage collection system located on the private property.

Whether the wastewater treatment and collection system is owned privately or publicly, its impacts on the environment remain the same. The procedures for establishing a privately owned sewer works corporation are different from establishing a publicly owned sewer district or sewer improvement, but the approving agencies are the same. Whether ownership of the sewer system is private or public, approval of the Town Board of the Town of Lloyd and the Ulster County Department of Health are required. In addition, the NYS DEC must issue a SPDES permit to allow for the discharge of treated effluent from the sewer treatment plant.

In order to establish a sewer works corporation, a sewer district or a sewer improvement, a report showing a map of the sewer system and specifications for its construction and operation, including projected costs, must be drafted as the initial step. This is called the Map, Plan & Report. The Map, Plan & Report must be submitted to the Town Board and the Health Department for review and approval.

In the case of a sewer works corporation, the developer would submit a proposed rate schedule for review and approval by the Town Board together with certain guarantees of performance. In the case of a sewer district or improvement, the Town Board reviews the petition of the applicant to establish the boundaries of the district or the improvement in order to determine if all of the properties within the boundaries of the proposed district or improvement would be benefited and that it is in the best interest of the Town to create the district.

Prior to NYSDEC approval of the SPDES permit for the proposed treatment facility, the legal entity which will own the facility will need to be established. The initial submission of permit and design documents for the proposed WWTF may list the developer as the permittee. Prior to start-up of the sewer system, ownership would be transferred to the sewage works corporation, sewer district or sewer improvement.

The service area of legal entity that owns the sewer system for the HVWV project will cover all real property owned by the developer. The developer intends to provide sufficient space at the WWTF site for future expansion of the facility so that the Town could expand the service area or sewer district in the future.

2.0 PROJECT DESCRIPTION

The project sponsor proposes the development of residential housing of various types, the Tuscan Village Conference Center consisting of a hotel, restaurant, conference center and office/commercial retail space, and a light industrial/manufacturing park area.

More specifically, the project will include the following:

Residential

Residential properties will be comprised of apartments, townhouses, and single-family homes in a range of unit sizes dispersed throughout the project site as follows:

- 584 apartments in a mix of one (1) and two (2) bedroom units (912 bedrooms);
- 282 townhouses in a mix of two (2) and three (3) bedroom units (612 bedrooms);
- 50 single-family dwellings consisting of three-bedroom homes (150 bedrooms).

Tuscan Village Conference Center

- 103-room suite hotel overlooking the Hudson River;
- 34,048 SF conference center;
- 8,222 SF restaurant;
- 204,871 SF of commercial office and retail space

Light Industrial/Manufacturing

- (8) buildings totaling 435,262 SF of light industrial, manufacturing, and/or institutional space.

3.0 PROJECT PHASING

Development of the property is expected to proceed in several phases of construction over a 20-year period in the following order:

- Site preparation and infrastructure improvements (site clearing, grading, roadway, paving, drainage, electric utilities, water distribution, sanitary sewer, wastewater treatment plant);
- Industrial Park area;
- Tuscan Village Conference Center area; and,
- Residential housing.

The residential housing development phase is anticipated to occur concurrently with the other phases of development over the 20-year construction period, based on market demand.

4.0 WASTEWATER DEMANDS

4.1 Estimate of Volume

The proposed development includes a mix of residential, commercial and light industrial development. At this time, it is not anticipated that significant process water is required for the

proposed industrial development. If an industrial process in the proposed development requires water and generates industrial wastewater, the owner of that use may be required to have a separate industrial SPDES permit to provide pre-treatment prior to discharge to the proposed WWTF.

Estimated water use for the proposed development is presented in the table located in Appendix A. Generally, the estimate of water use is developed using a NYSDEC guidance manual (Ref. 1). Estimated wastewater generated for the proposed development is approximately 250,000 gallons per day (GPD). Based on this volume, the SPDES permit for the proposed development will request a minimum flow limit of 325,000 gpd (0.33 MGD).

The treatment units can be configured to allow for future expansion of the WWTF at a later date to service areas beyond the HVWV site after completion of the project. Such future expansion is not the subject of this action.

4.2 Sewage Collection

The site of the proposed development generally has higher elevations at the northwest and southeast corners of the site and the site elevation trends downward both easterly and toward the center of the property. The proposed location of the on-site WWTF is near the center of the site. However, all sewage generated at the site cannot be conveyed by gravity to the WWTF.

Generally, the sewage collection system is anticipated to be a network of gravity collection pipes constructed in accordance with local code and Ten-States (Ref. 2) standards. Where gravity collection systems will not be capable of conveying sewage to the WWTF, pump stations will be required. The pump stations will also be designed in accordance with Ten-states and NYSDEC documents.

Each pump station will be, at a minimum, furnished with duplex pumps and an emergency power supply. It is anticipated that several smaller pump stations may be needed to either convey sewage to the main interceptor pipe leading to the WWTF, or to gravity piping leading to a central pump station designed to lift sewage from the lower areas of the site directly to the vicinity of the inlet to the WWTF.

As design of the proposed development advances, design of the sewage collection and conveyance systems will also be advanced.

4.3 Sewage Treatment

This section of the report discusses general issues and requirements for the on-site treatment of sewage. A more detailed discussion of treatment is presented in the following section of the report.

4.3.1 Receiving Stream and Discharge Point

After the estimate of the volume of sewage to be treated is established, the receiving stream is the next factor in determination of the treatment requirements at a particular location. Simply stated, the ratio of the volume of treated effluent to the volume of the receiving stream is a significant factor in determination of the effluent limits of a WWTF. In addition, the presence of endangered or threatened species may be a factor in treatment requirements. At the HVWV site, no endangered species affected by treated effluent discharges have been identified.

The HVWV site is bisected by an intermittent stream that flows from west to east across the center of the site. The proposed WWTF location is adjacent to this stream, and the discharge from the WWTF will be to this stream. In the area of the WWTF, the stream is within an area of minimal slope. As the stream approaches the eastern edge of the property, it flows down the steep face of the bluff at the edge of the Hudson River in a ravine that has been excised into the face of the bluff. The ravine is steep and the stream has minimal detention time in this reach. At the bottom of the bluff the stream crosses under the CSX rail line through a small bridge and enters the Hudson River.

The streams within the HVWV site are not included in the NYCRR sections that list and classify streams. Also, no NYSDEC-classified ponded water body is located within the HVWV property. Normally, for unlisted streams, the policy of NYSDEC is the unlisted stream takes the classification of the receiving stream. In this case, the receiving stream is the Hudson River. This reach of the Hudson River is classified as an 'A' stream, and the intermittent stream on the HVWV property is assumed to also be classified as an 'A' stream for purposes of determining wastewater discharge requirements.

4.3.2 Effluent Limits

NYSDEC publishes Technical and Operational Guidance Series (TOGS) documents for the determination of effluent limits. The analysis required to determine the proposed effluent limits varies by the scenario for which limits are to be calculated. In all situations, detailed calculations are allowed. However, in situations where the proposed discharge is to an intermittent stream, as at the HVWV site, the default effluent limits are described in a TOGS specific to this scenario (Ref. 3). In this situation, the default effluent limits are referred to as the Intermittent Stream Effluent Limits (ISELs). These are the most stringent effluent limits normally required by NYSDEC. For the proposed HVWV WWTF location, it is concluded that the ISEL limits are appropriate. The proposed effluent limits are listed in Table 1 below. Correspondence with NYSDEC with respect to effluent limits is enclosed in Appendix B.

Table 1: Proposed Effluent Limits

Constituent	Limit	Unit	Description
Flow	0.33	MGD	30-day arithmetic mean
CBOD, 5-day	5.0	mg/L	30-day arithmetic mean
Solids, Suspended	10.0	mg/L	30-day arithmetic mean
Solids, Settleable	0.1	ml/L	Daily Maximum
pH	6.5-8.5	SU	Range
Ammonia, as N	1.1	mg/L	May to October, 30-day arithmetic mean
	2.2	mg/L	November to April, 30-day arithmetic mean
Dissolved Oxygen	7.0	mg/L	Minimum, Year-round
Disinfection	0.1	mg/L	Year-round, TRC for chlorine

Notes:

- MGD – Million Gallons per Day
- CBOD – Carbonaceous Biochemical Oxygen Demand
- mg/L – Milligrams per Liter
- SU – Standard Units
- ml/L – Milliliters per Liter
- N – Nitrogen
- TRC – Total Residual Chlorine

5.0 WASTEWATER TREATMENT

This section of the report will briefly describe the approval process and conceptual design of the wastewater treatment facility.

5.1 General Permit Approval Information

Advancement of the project will require submission of a draft SPDES permit for the proposed treatment facility to NYSDEC. Design plans and an Engineer's Report are required to be submitted to NYSDEC for review and approval of the proposed facility design. Design documents will also be provided to the Ulster County Department of Health (UCDH) and the Town Engineer for their comments. NYSDEC will approve and administer the SPDES permit for the facility. Sampling and reporting requirements are prescribed in the SPDES permit, which will be in force for five years from the approval date.

5.2 Basic Treatment Process Description

The following sections briefly describe the basic treatment components. A simple schematic of the treatment process is provided in Appendix C.

Treatment facilities are designed in accordance with Ten-States, NYSDEC, and NEIWPCC (Ref. 4) publications. The size of tanks, the number of tanks, redundancy, instrumentation and controls and many other details are all to be addressed as design of the project advances. However, the traditional activated sludge process commonly used for WWTFs will address the main requirements of the anticipated effluent limits. There are many variants of this process that may address treatment parameters or facility size and layout. All variants must provide the required level of treatment. The process variant that best addresses the various concerns for this site will be identified as the preferred alternative as the design process progresses. The intent of the treatment processes is to have the proposed WWTF normally operate in compliance with the proposed effluent limits.

5.2.1 Pre-Treatment

Pre-treatment serves to intercept large solids prior to entering the main treatment processes. Solids, such as rags, can clog and jamb pumps and other equipment if allowed to enter the main part of the WWTF. Screening equipment is used to intercept solids in the pre-treatment process. Material captured in screening will be automatically dewatered and conveyed to a dumpster for off-site disposal at a landfill.

5.2.2 Activated Sludge/Nitrification

The units in the treatment process are designed to furnish reduction of the various constituents listed in the effluent limits of the SPDES permit. In this case, constituents addressed in the treatment processes are CBOD, suspended solids, and ammonia. Activated sludge processes are capable of providing this treatment. There are several variants of the activated sludge process which may be utilized. Ease of operation, minimizing operational costs, and reliable operation with limited maintenance requirements are some factors considered in selecting a treatment process. Reduction in the process footprint is also a desirable factor. Each of the main treatment processes must include redundant units, to ensure continuous operations.

5.2.3 Secondary Settling

After treatment in the activated sludge tanks, sewage is directed to secondary clarifiers for separation of sludge. Sludge is collected off the bottom of the clarifiers and routed back to the head of the activated sludge process. Supernatant overflows the top of the clarifiers and moves to the next treatment process.

5.2.4 Tertiary Filtration

Supernatant from the clarifier process will be routed to tertiary filters. The filters will be used to reduce the suspended solids concentration to the effluent limit. Material captured by the filters will be diverted to the sludge digesters. Chemical additives may be used to aid in the capture of solids by the filters.

5.2.5 Disinfection

Prior to discharge the effluent must be disinfected. There are two (2) likely disinfection process alternatives. One is ultraviolet light (UV) units. UV units manufactured for wastewater disinfection would be used, and dual trains would be provided to ensure continuous operation. The second disinfection option is chlorination. If chlorination is used, tanks providing adequate contact time must be provided, and prior to discharge a chemical to neutralize the chlorine must be added. The effluent limits include a limit on the residual chlorine concentration discharge to the receiving stream.

5.2.6 Post-Aeration

The final treatment step is to re-aerate the effluent. Re-aeration ensures that the discharge from the WWTF does not adversely impact the dissolved oxygen concentration of the receiving stream. Alternatives available for the re-aeration of treated effluent include a passive process – step aeration, or holding treated effluent in a tank and using aeration equipment similar to the aeration system to be used in the main treatment process.

5.2.7 Sludge Digestion

Activated sludge processes use mixed liquor, which includes a large variety of bacteria that provide beneficial treatment of the wastewater. However, to maintain the health of the process, a fraction of the mixed liquor must be wasted each day, to ensure that the performance of the mixed liquor does not diminish over time. The wasted mixed liquor is sent to sludge digesters, which are used to reduce the quantity of sludge required for disposal. For a facility of this size, further processing of the sludge is not economical, so it is intended to pump and haul wet sludge on a regular basis. The sludge will be pumped from the sludge digester tanks and transferred by truck to a larger facility with additional sludge processing equipment. At build-out of the proposed development, it is possible that one truck load per week for sludge removal will be needed.

5.3 Additional Issues

These issues are among the other factors to be addressed in the detailed design of the facility. This non-exhaustive list addresses some of the additional concerns.

5.3.1 Odor Control

NYSDEC requires that wastewater treatment facilities with open tanks be located at least 400 feet from habited structures. This criterion is met at this site. Some portions of the treatment process will occur within buildings. The activated sludge and sludge digester tanks will not be within a building, but covers will be provided for these tanks to aid in reduction of noise and odors. Odor control equipment will capture and treat air ventilated from areas housing treatment processes.

5.3.2 Noise Control

The primary source of noise at a WWTF is the mechanical equipment used to provide air to aerated tanks. In an activated sludge process air is required for the activated sludge tanks, the sludge digester tanks, and the re-aeration tanks. Modern aeration equipment is much quieter than older units. However, the aeration equipment still generates significant noise and runs continuously. All aeration equipment will be housed inside buildings. Most other noise at a WWTF is transient. Pumps will either be submerged or located within buildings. The facility will have an emergency generator. This will be housed in its own sound-proof enclosure. The generator will be exercised once a week. However, it will be programmed to perform this step during normal business hours.

5.3.3 Scalability/Start-Up

All wastewater generated at the site must be treated before discharge. This presents some challenge at the very beginning of construction. Activated sludge treatment processes require enough biological material to sustain the treatment process. At the start of the construction process there will not be adequate wastewater to sustain the activated sludge process. A temporary self-contained treatment unit will be placed at the site of the WWTF, and will be sized to treat the sewage generated at the start of the project, until the minimum volume of sewage capable of sustaining the activated sludge process is regularly generated and the design treatment train can be utilized. This unit will be specified with the anticipated effluent limits in mind.

5.3.4 SCADA

Modern treatment facilities are equipped with supervisory, control, and data acquisition (SCADA) hardware and software. Instrumentation and equipment at the treatment facility are all connected to a centralized monitoring and control system. The control system facilitates operation and monitoring of the facility. Remote monitoring and control of the facility is also an option with this equipment, as well as notifications for equipment failures. The facility will be equipped with SCADA equipment appropriate for the selected treatment process.

The pump station(s) will also be connected to the central control system, and any failures at the pump stations can also be transmitted through the alarm system.

5.3.5 Sludge Disposal

Sludge digesters are to be included in the WWTF. Digesters are designed in accordance with the technical references. Larger treatment facilities have additional equipment for thickening and dewatering of sludge. However, for a facility of this size, it is less economical to have sludge processing equipment. The usual approach for smaller facilities is to have sludge digesters that also serve as settling tanks. After an appropriate detention time for digestion, the sludge is allowed to settle in the tank and the sludge is withdrawn from the bottom of the tank and the supernatant is returned to the activated sludge tanks.

The facility will contract with a sludge hauler to pump and haul the sludge. Sludge will be hauled to a facility equipped to receive and process sludge, such as the facility in Beacon.

6.0 IMPACTS & MITIGATION

The environmental impacts and mitigation of impacts for the proposed sewerage system is discussed in this section of the report.

6.1 Impacts/Mitigation for Collection and Conveyance

Environmental impacts from the collection system are minimal. Generally, collection system components are installed in areas disturbed by roadways and other buried utilities. Small sewage lift stations are totally enclosed and can be hidden by shrubbery and similar small vegetation. Larger pump stations, if required, can be located away from residential development and also can be screened by fencing and landscaping. Generators are enclosed in sound-proof enclosures to minimize noise impacts.

6.2 Impacts/Mitigation for Wastewater Treatment

The WWTF is proposed at a location that achieves the minimum separation distance from residences required by NYSDEC. By distancing the WWTF from residences, the impact of noise and odors at the facility are mitigated. In addition, treatment tanks may be equipped with removable covers, to further reduce noise and odors. Where possible, processes will be enclosed in buildings. Where necessary, the building ventilation will be equipped with odor control units. Tanks in the treatment sequence of a wastewater treatment facility normally drop in elevation through the chain of the process, and the location and elevation of the tanks can be adjusted to minimize the excavation required to install them.

Wastewater treatment facilities require significant power to operate, and the power supplied is a source of greenhouse gas emissions. Power demands can be minimized by specifying

premium efficiency electrical motors, efficient design of other systems throughout the treatment process, and adhering to the same design standards for buildings at the WWTF as for other utility buildings within the development.

7.0 REFERENCES

1. *Design Standards for Intermediate-Sized Wastewater Treatment Systems*, 2012 Draft, NYSEDC – Division of Water, Bureau of Water Permits
2. *Recommended Standards for Wastewater Facilities*, 2004 Edition - Policies for the Design, Review, and Approval of Plans and Specifications for Wastewater Collection and Treatment Facilities. A Report of the Wastewater Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers
3. TOGS 1.3.1.B Total Maximum Daily Loads and Water-Quality Based Effluent Limits, Amendment – Low and Intermittent Flow Streams, NYSEDC – Division of Water, Bureau of Water Permits
4. *TR-16 Guides for the Design of Wastewater Treatment Works*, 2011 Edition, New England Interstate Water Pollution Control Commission

Appendix A: Estimate – Water Use

**Hudson Valley Wine Village
aka Blue Point Conservation Development District**
Table
Estimate of Project Wastewater and Water Demands

USE/DESCRIPTION	SIZE (SF)	NUMBER OF UNITS	UNIT	UNIT FLOW ⁽¹⁾ (gpd)	WASTEWATER (gpd)	WATER AVERAGE (gpd)	PEAK DEMAND ⁽⁶⁾ (gpd)
WASTEWATER/WATER FRACTION = 0.8							
Date: August 10, 2012							
Residential							
Unit Type 1:							
Apartment (1 BR)		96	DU	110	10,560	13,200	26,400
Apartment (2 BR)		168	DU	220	36,960	46,200	92,400
Apartment (3 BR)		0	DU	330	0	0	0
Unit Type 2:							
Apartment (1 BR)		160	DU	110	17,600	22,000	44,000
Apartment (2 BR)		160	DU	220	35,200	44,000	88,000
Apartment (3 BR)		0	DU	330	0	0	0
Unit Type 3:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		148	DU	220	32,560	40,700	81,400
Townhouse (3 BR)		0	DU	330	0	0	0
Unit Type 4:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		86	DU	220	18,920	23,650	47,300
Townhouse (3 BR)		0	DU	330	0	0	0
Unit Type 5:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		0	DU	220	0	0	0
Townhouse (3 BR)		48	DU	330	15,840	19,800	39,600
Unit Type 6:							
Single Family Dwelling (1 BR)		0	DU	110	0	0	0
Single Family Dwelling (2 BR)		0	DU	220	0	0	0
Single Family Dwelling (3 BR)		50	DU	330	16,500	20,625	41,250
TOTAL		916			184,140	230,175	460,350
				Average per Unit:	201	251	503
General Commercial/Retail/Office							
Light Industrial-North (2)	210,375	383	550 SFPC	15	5,738	7,172	14,344
Light Industrial-South (2)	224,887	409	550 SFPC	15	6,133	7,667	15,333
New Office Use (2)	53,144	97	550 SFPC	15	1,449	1,812	3,623
Existing Office Use (2)	51,727	94	550 SFPC	15	1,411	1,763	3,527
Total	540,133	982			14,731	18,414	36,827
Civic/Community							
Conference Center (3)	34,048	2,270		16	36,318	45,397	90,795
Hotel (4)	89,906	103		110	11,330	14,163	28,325
Total	123,954				47,648	59,560	119,120
Food Service Operations							
Restaurant (5)	8,222	140		35	4,900	6,125	12,250
Total Project Flow (gpd)							
					251,419	314,273	628,547

- (1) Unit Flow Rates based on NYSDEC Design Standards for Wastewater Treatment Works *(2012 DRAFT)
(2) Each SF is divided by 550 Net Sq. Ft. Per Employee to get Building Population or "Number of Units"
(3) Table 1004.1.1 Building Code of NYS (2010) estimate 15 Sq. Ft. Per Occupant for an Assembly without fixed seats
(4) Flow Rate based on Per Sleeping Unit (103 Sleeping Units) *Reference Note (1)
(5) Flow Rate based on Per Seat in an Ordinary Restaurant (103-140 seats) *Reference Note (1)
(6) Two Times the Average Daily Flow (Per NYSDOH Requirements)

Appendix B: NYSDEC Effluent Limits Correspondence



Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Hudson Valley Office

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Capital District Office (518) 273-0055
North Country Office (518) 812-0513

September 27, 2012

Mr. John Sansalone, P.E.
NYSDEC – Region 3
21 South Putt Corners Road
New Paltz, New York 12561-1620

*Re: Blue Point Conservation Development District (aka Hudson Valley Wine Village)
Proposed Effluent Limits
Job # 31024.01*

Dear Mr. Sansalone:

The subject project is a proposed mixed-use development consisting of approximately 900 residential units, 450,000SF of office and light industry development, and a conference center and hotel. The residential units are to be a mix of rental units and townhouse and single-family style residences. The proposed development is to be located on a site in the south-east of the Town of Lloyd, in Ulster County. We are requesting NSYDEC to confirm our determination of preliminary effluent limits, for use in the conceptual design of the new on-site wastewater treatment facility proposed to be constructed as part of this project.

The proposed development will include an on-site wastewater treatment facility (WWTF). It is estimated that the project, as currently proposed, will generate approximately 250,000 gpd of sewage. A spreadsheet of computations for the estimate of water use is attached. This estimate was completed in consultation with the Ulster County Department of Health (UCDH). It is possible that some time in the future the Town of Lloyd may request additional capacity at this site for Town use. However, at this time, it is anticipated that the new SPDES permit will request a capacity of 300,000 gpd for the facility.

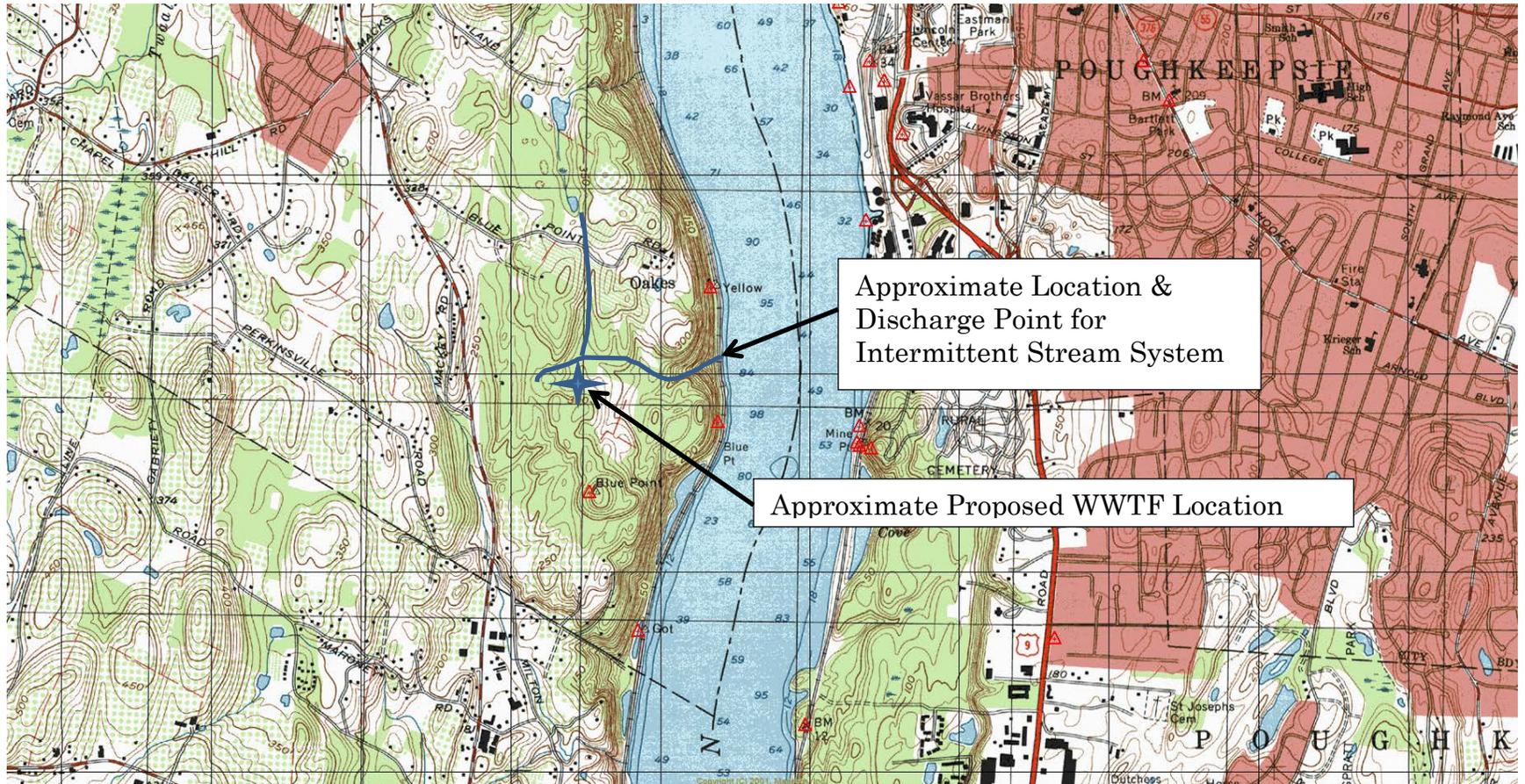
The proposed location of the on-site WWTF is near the center of the site. A map of the site is enclosed. The site is bisected east-west by an intermittent stream that flow directly to the Hudson River. This intermittent stream is not listed in NYSDEC regulations. As such, Chazen anticipates that the stream will receive the same water quality classification as the receiving stream. The ultimate receiving stream is the Hudson River, which is classified as an 'A' stream at this reach. The treated effluent discharge point is adjacent to the proposed WWTF, and it is discharging to the closest reach of the intermittent stream. The stream flows generally east to the top of a cliff by the river. The stream then enters a ravine down the cliff face. This ravine is very steep and has been excised deeply into the face of the cliff. At the bottom of the ravine, the stream crosses under the CSX rail line by what is effectively a small bridge. The bridge is approximately 8 feet wide by 5 feet high. The shore of the Hudson River is directly east of the bridge.

Given the very small intermittent receiving stream, relative to the wastewater volume, it has been concluded that Intermittent Stream Effluent Limits (ISEL) are appropriate for this site. Accordingly, the proposed effluent limits for this WWTP are tabulated in the table below.

Proposed Effluent Limits		
Flow	0.30	MGD
CBOD, 5-day (30 day avg.)	5 mg/L	12.5 lb/day
Solids, Suspended (30 day avg.)	10 mg/L	25 lb/day
pH	6.5 – 8.5 SU	range
Solids, Settleable	0.1 mL/L	
Ammonia, as N	1.1 mg/L	May-Oct
	2.2 mg/L	Oct-May
Dissolved Oxygen	7.0 mg/L	
Disinfection	Year-Round	0.1 mg/L TRC

The proposed limits listed above will be the basis of preliminary design for the WWTF, as it will be addressed in the GDEIS documents for the proposed development. We are requesting confirmation that the proposed limits are acceptable to NYSDEC prior to advancement of the facility design.

Blue Point Conservation Development District Proposed WWTF Location Map September 26, 2012



Quadrangle: Poughkeepsie
Stream: Unidentified

Please contact me directly at (845) 486-1539 if any additional information is required for the determination of effluent limits for this development.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael E. Fanning". The signature is stylized with a large, sweeping flourish at the end.

Michael E. Fanning
Senior Engineer

MEF

Enclosure: Water Use Estimate Table

cc: Jim Connors, P.E., Senior Director
Bill Keaton, P.E., Senior Director
Veronica Wolak, Asst. Public Health Engineer

Hudson Valley Wine Village
aka Blue Point Conservation Development District
Table
Estimate of Project Wastewater and Water Demands

USE/DESCRIPTION	SIZE (SF)	NUMBER OF UNITS	UNIT	UNIT FLOW ⁽¹⁾ (gpd)	WASTEWATER (gpd)	WATER AVERAGE (gpd)	PEAK DEMAND ⁽⁶⁾ (gpd)
WASTEWATER/WATER FRACTION = 0.8							
Date: August 10, 2012							
Residential							
Unit Type 1:							
Apartment (1 BR)		96	DU	110	10,560	13,200	26,400
Apartment (2 BR)		168	DU	220	36,960	46,200	92,400
Apartment (3 BR)		0	DU	330	0	0	0
Unit Type 2:							
Apartment (1 BR)		160	DU	110	17,600	22,000	44,000
Apartment (2 BR)		160	DU	220	35,200	44,000	88,000
Apartment (3 BR)		0	DU	330	0	0	0
Unit Type 3:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		148	DU	220	32,560	40,700	81,400
Townhouse (3 BR)		0	DU	330	0	0	0
Unit Type 4:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		86	DU	220	18,920	23,650	47,300
Townhouse (3 BR)		0	DU	330	0	0	0
Unit Type 5:							
Townhouse (1 BR)		0	DU	110	0	0	0
Townhouse (2 BR)		0	DU	220	0	0	0
Townhouse (3 BR)		48	DU	330	15,840	19,800	39,600
Unit Type 6:							
Single Family Dwelling (1 BR)		0	DU	110	0	0	0
Single Family Dwelling (2 BR)		0	DU	220	0	0	0
Single Family Dwelling (3 BR)		50	DU	330	16,500	20,625	41,250
TOTAL		916			184,140	230,175	460,350
				Average per Unit:	201	251	503
General Commercial/Retail/Office							
Light Industrial-North (2)	197,400	359	550 SFPC	15	5,384	6,730	13,459
Light Industrial-South (2)	207,812	378	550 SFPC	15	5,668	7,085	14,169
New Office Use (2)	17,716	32	550 SFPC	15	483	604	1,208
Existing Office Use (2)	27,475	50	550 SFPC	15	749	937	1,873
Total	450,403	819			12,284	15,355	30,709
Civic/Community							
Conference Center (3)	18,466	2,638		16	42,208	52,760	105,520
Hotel (4)	21,038	103		110	11,330	14,163	28,325
Total	39,504				53,538	66,923	133,845
Food Service Operations							
Restaurant (5)	6,062	140		35	4,900	6,125	12,250
Total Project Flow (gpd)					254,862	318,577	637,154

(1) Unit Flow Rates based on NYSDEC Design Standards for Wastewater Treatment Works *(2012 DRAFT)

(2) Each SF is divided by 550 Net Sq. Ft. Per Employee to get Building Population or "Number of Units"

(3) Table 1004.1.1 Building Code of NYS (2010) estimate 7 Sq. Ft. Per Occupant for an Assembly without fixed seats

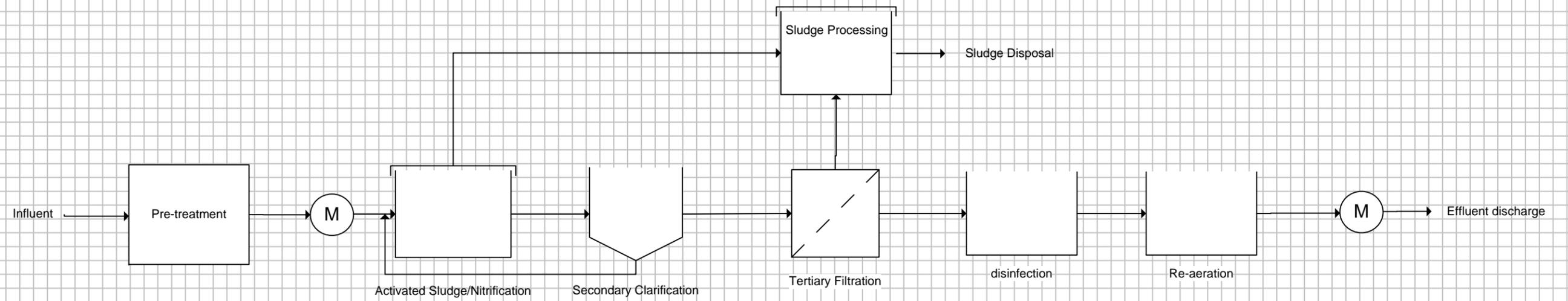
(4) Flow Rate based on Per Sleeping Unit (103 Sleeping Units) *Reference Note (1)

(5) Flow Rate based on Per Seat in an Ordinary Restaurant (103-140 seats) *Reference Note (1)

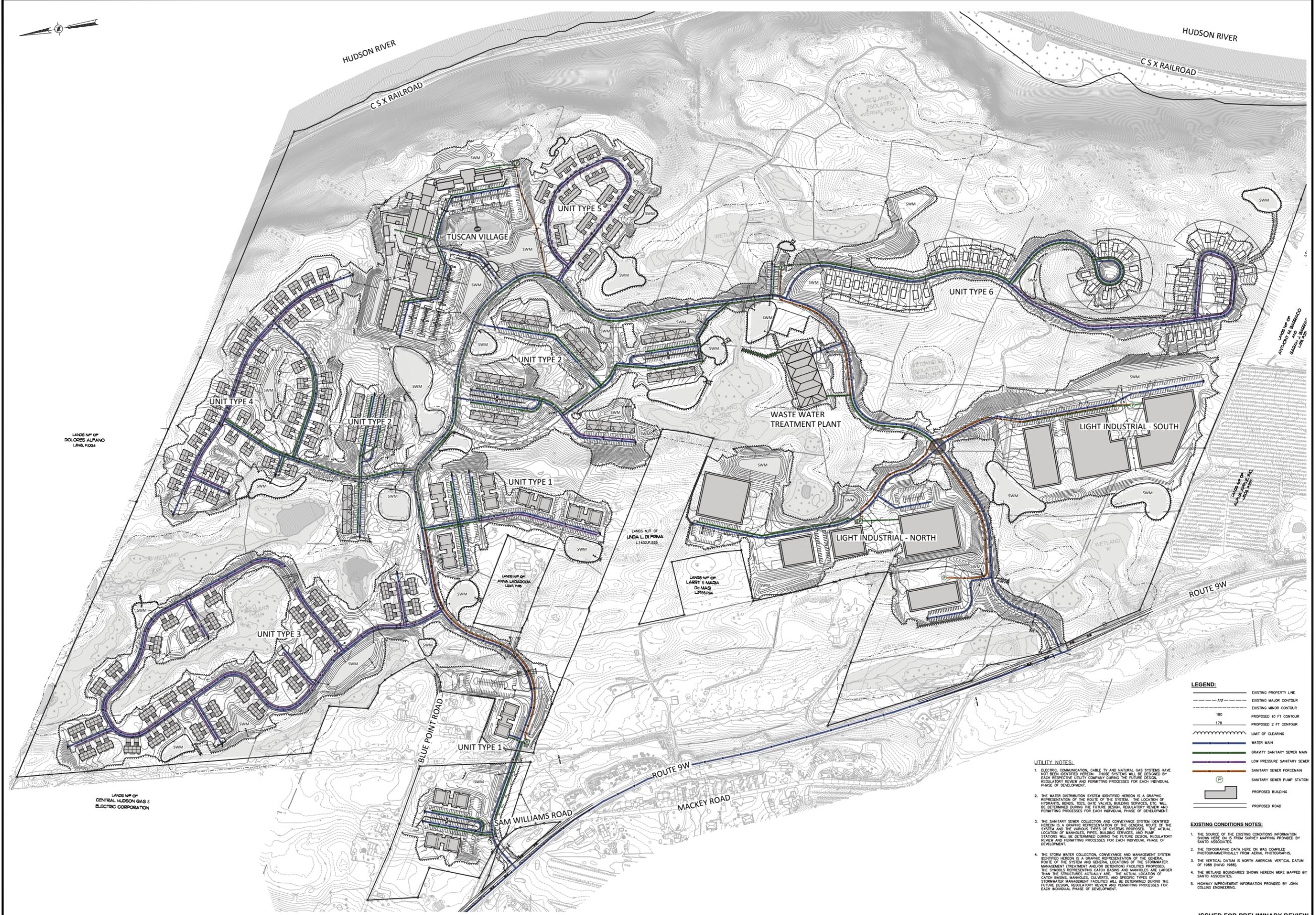
(6) Two Times the Average Daily Flow (Per NYSDOH Requirements)

Appendix C: WWTF Simple Process Flow Diagram

Blue Point Conservation Development District
Simple Wastewater Treatment Process Flow Diagram
October 23, 2012



Appendix D: Wastewater Collection/Conveyance System



LANDS N/P OF DOLORES ALFANO L14617-004

LANDS N/P OF CENTRAL HUDSON GAS & ELECTRIC CORPORATION

LANDS N/P OF LINDA L. DI POMA L14327-025

LANDS N/P OF LARRY & MARISA DI MASI L290504

LEGEND:

- EXISTING PROPERTY LINE
- 110' EXISTING MAJOR CONTOUR
- 180' EXISTING MINOR CONTOUR
- 178' PROPOSED 10 FT CONTOUR
- 178' PROPOSED 2 FT CONTOUR
- LIMIT OF CLEARING
- WATER MAIN
- GRAVITY SANITARY SEWER MAIN
- LOW PRESSURE SANITARY SEWER
- SANITARY SEWER FORCE MAIN
- SANITARY SEWER PUMP STATION
- PROPOSED BUILDING
- PROPOSED ROAD

UTILITY NOTES:

1. ELECTRIC, COMMUNICATION, CABLE TV AND NATURAL GAS SYSTEMS HAVE NOT BEEN IDENTIFIED HEREON. THOSE SYSTEMS WILL BE LOCATED BY EACH RESPECTIVE UTILITY COMPANY DURING THE FUTURE DESIGN, REGULATORY REVIEW AND PERMITTING PROCESSES FOR EACH INDIVIDUAL PHASE OF DEVELOPMENT.
2. THE WATER DISTRIBUTION SYSTEM IDENTIFIED HEREON IS A GRAPHIC REPRESENTATION OF THE ROUTE OF THE SYSTEM. THE LOCATION OF HYDRANTS, MENS, REEL, GATE VALVES, BUILDING SERVICES, ETC. WILL BE DETERMINED DURING THE FUTURE DESIGN, REGULATORY REVIEW AND PERMITTING PROCESSES FOR EACH INDIVIDUAL PHASE OF DEVELOPMENT.
3. THE SANITARY SEWER COLLECTION AND CONVEYANCE SYSTEM IDENTIFIED HEREON IS A GRAPHIC REPRESENTATION OF THE GENERAL ROUTE OF THE SYSTEM AND THE VARIOUS TYPES OF SYSTEMS PROPOSED. THE ACTUAL LOCATION OF MANHOLES, PIPES, BUILDING SERVICES AND PUMP STATIONS WILL BE DETERMINED DURING THE FUTURE DESIGN, REGULATORY REVIEW AND PERMITTING PROCESSES FOR EACH INDIVIDUAL PHASE OF DEVELOPMENT.
4. THE STORM WATER COLLECTION, CONVEYANCE AND MANAGEMENT SYSTEM IDENTIFIED HEREON IS A GRAPHIC REPRESENTATION OF THE GENERAL ROUTE OF THE SYSTEM AND GENERAL LOCATIONS OF THE STORMWATER MANAGEMENT (TREATMENT AND/OR DETENTION) FACILITIES PROPOSED. THE SYMBOLS REPRESENTING CATCH BASINS AND MANHOLES ARE LARGER THAN THE SYMBOLS ACTUALLY ARE. THE ACTUAL LOCATION OF CATCH BASIN, MANHOLES, CULVERTS, AND SPECIFIC TYPES OF STORMWATER MANAGEMENT FACILITIES WILL BE DETERMINED DURING THE FUTURE DESIGN, REGULATORY REVIEW AND PERMITTING PROCESSES FOR EACH INDIVIDUAL PHASE OF DEVELOPMENT.

EXISTING CONDITIONS NOTES:

1. THE SOURCE OF THE EXISTING CONDITIONS INFORMATION SHOWN HERE ON IS FROM SURVEY MAPPING PROVIDED BY SANTO ASSOCIATES.
2. THE PHOTOGRAPHIC DATA HERE ON WAS COMPILED PHOTOGRAMMETRICALLY FROM AERIAL PHOTOGRAPHS.
3. THE VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).
4. THE WETLAND BOUNDARIES SHOWN HEREON WERE MAPPED BY SANTO ASSOCIATES.
5. HIGHWAY IMPROVEMENT INFORMATION PROVIDED BY JOHN COLLING ENGINEERING.

ISSUED FOR PRELIMINARY REVIEW

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 Environmental Scientists
 Landscape Architects

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REV.	DATE	DESCRIPTION

HUDSON VALLEY WINE VILLAGE
 NYS ROUTE 9W
CONCEPTUAL GRADING PLAN
 TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

Drawn: CJB
 Checked: JAC
 Date: 11/21/12
 Scale: 1"=100'
 Project No.: 31024.00
FIGURE 3.1.3