

Water Supply Report



Village of South Blooming Grove, NY

Prepared for:

**OCCR Enterprises, LLC
c/o The Cordish Company
601 East Pratt Street, 6th floor
Baltimore, MD 21202**

**McLaren Project No. 140346
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Prepared by:
**McLaren Engineering Group
100 Snake Hill Road
West Nyack, NY 10994
(845) 353-6400**

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1.0 INTRODUCTION

McLaren Engineering Group (MEG), has been retained by the OCCR Enterprises, LLC to conduct an independent analysis regarding a proposed water supply and availability for the proposed casino/hotel development in the Village of South Blooming Grove, Orange County, New York. The proposed project will be a joint venture between two established gaming operators, the Cordish Companies and Penn National Gaming, Inc.

2.0 MCLAREN ENGINEERING GROUP QUALIFICATIONS

Founded in 1977, McLaren Engineering Group has a 37-year history of providing multidiscipline consulting engineering services to clients worldwide. Headquartered in West Nyack, NY and with offices in New York, NY; Orlando, FL; Baltimore, MD; Middletown, CT; and San Francisco, CA.

We have an excellent history of inspection, engineering and design experience working for both public and private entities. McLaren is currently providing or has recently provided structural engineering services for clients such as the Port Authority of New York and New Jersey, New York City Department of Transportation, New York City Economic Development Corporation, New York City Department of Corrections, New York State Department of Transportation, the Baltimore Center for the Performing Arts, Olympia & York, Carnival Cruise Corporation, U.S. Gypsum, Roseland Contractors, LLC., R&D Development, Turner Construction, Consolidated Edison Company, PSE&G, and the U.S. Navy.

The Site/Civil Division provides complete design and construction management services for all types public and private of civil and site development projects. Including drainage, grading, infrastructure, geotechnical services, utilities design, erosion control, stormwater management and zoning and entitlement permitting and assistance for large-scale public and private infrastructure, mixed-use developments, parks, and waterfront facilities. We have specific in-depth expertise in large site development projects and public transportation and infrastructure facilities.

Our recent experience with similar large-scale entertainment and gaming facilities include: Philly Live! that contains which approximately 57,000 sf of entertainment/ retail space where McLaren provided site/civil engineering and geotechnical engineering services including the subsurface investigation and report and development of ground modification specification; and Maryland Live! gaming facility that includes the 2 million square foot structure and parking for 4,300 cars on the six-level structure.

Other large-scale site development and infrastructure experience includes: the Club at Briarcliff Manor Senior Housing will be a 385 unit continuing care retirement community with on a 59 acre campus; the General Electric Training Center in Ossining, NY, which includes a new residential building, maintenance building, classroom addition, and renovations on the 52 acre campus; the Port Imperial development which consists of 6,500 residential units and approximately 2 million square feet of commercial space, including office, retail and a full service hotel; the Central Nyack Drainage Improvement Project for the Town of Clarkstown which is a \$11 million dollar infrastructure project including street and streetscape improvements, drainage improvements and a 30-acre regional dam and detention basin; and the Village of Briarcliff Water Infrastructure projects which includes a water pump station to replace an existing elevated tank, water and sewer infrastructure and a comfort station at a Village Park.

3.0 EXISTING CONDITION

3.1 Site Location

The project site is located in the Village of South Blooming Grove, NY. The site is approximately 125 acres and is located west of NYS Route 208 in the southern portion of the Village. The site known as Tax Map Section 223, Block 1, Lots 1 and 2.

3.2 Village Water District

Portions of the Village of South Blooming Grove is located in the Village's Consolidated Water District 1. The Water District serves approximately 3,000 people including predominantly the Worley Heights and Merriewold Subdivisions. The total amount of water produced in 2013 was 70.6 million gallons. The daily average of water treated and pumped into the distribution system is 193,000 gallons per day. The highest single day was 252,000 gallons. The amount of water delivered to customers was 140,800 gallons per day.

The water is derived from six drilled wells. The Worley Heights Wellfield includes is Well #7, a 600' deep bedrock well located in the Rolling Hills Condominium ballfield and Well 9 that was drilled in the summer of 2004 and is a 325 foot bedrock well being used in an emergency basis until all approvals are granted. The Orange and Rockland Well is 350 foot deep bedrock well. The Merriewold Wellfield includes Well #3, a 525' deep bedrock well, Well #4, a 425' deep bedrock well and Well 5 a 530' deep bedrock well. The well field is located along NYS Route 208 near the intersection of Mangin Road. Wells 7 and 9 are the primary wells. The water is disinfected utilizing chlorine prior to distribution.

The Orange and Rockland Well was obtained after the Village negotiated the right to access the property outside the District to develop a well as an additional water source. The water taking permit for this well has been approved by the New York State Department of Environmental Conservation. Construction of a new 8" water transmission main and well house was completed in 2013. The well is now in service and affords the Consolidated Water District an additional source of water.

4.0 PROPOSED PROJECT

4.1 Water District

The OCCR will petition the Village Board to extent the Consolidated Water District 1 to include the project site. The extension of the water district will be in accordance with the procedures prescribed in Article I Sewer & Water Services of

the Village Code. In accordance with the Village requirements, the Applicant will be required to provide additional wells and infrastructure to meet the water demands for the area to be extended to the Water District.

4.2 Projected Project Demand

The estimated water demand for the new facilities were determined through engineering analysis and reflected in the table below. The sewer and water demand is based on the component of the building program. The calculated values are considered to be conservative, since the interaction of users between the various venues and uses within the casino and hotel will provide redundancy and may results in actual lower flow rates.

PROGRAM AREAS LIVE! New York Hotel & Casino	Unit	Quantity	Water/Sewer Demand	
			Rate	Total (Gallons Per Day)
Casino Floor	SF	217,700	15 gpd per employee/shift + 0.3 gpd/sf	87,080
Casino Support (FOH)	SF	27,660	.1 gpd/sf	2,766
Casino Support (BOH)	SF	47,250	.1 gpd/sf	4,725
Administration/Support	SF	28,710	.1 gpd/sf	2,871
Hotel Guestrooms	Rooms	321	110 gpd/module	35,310
Meeting Rooms (4), Prefunction	SF	8,150	.1 gpd/sf	815
Center Bar / Lounge	Seats	109	35 gpd/seat	5,250
Lobby Bar	Seats	90	35 gpd/seat	4,375
Upscale Steakhouse	Seats	174	35 gpd/seat	5,250
Overlook Lounge	Seats	105	35 gpd/seat	3,675
Asian	Seats	133	35 gpd/seat	4,655
Deli	Seats	80	35 gpd/seat	2,800

Italian	Seats	221	35 gpd/seat	7,735
Food Court / Buffet	Seats	375	50 gpd/seat	13,125
American Diner / Café (24 HR)	Seats	254	50 gpd/seat	8,890
Noodles	Seats	30	35 gpd/seat	1,050
Employee Dining	Seats	325	35 gpd/seat	11,375
Spa (at hotel 11th and 12th floors)	SF	34,094	0.1 gpd/SF	3,409
Central Plant (condensate recovery - percentage of cooling tower makeup)	Ton	5,272	4 gph/ton	31,632
Entertainment Venue	Seats	3,000	5 gpd/seat	15,000
Daycare	Child	20	20 gpd/child	400
TOTAL				252,188
Total Water Demand - with 20% reduction for low flow fixtures + 5% for irrigation/misc.		211,838 GPD		Use 215,000 GPD

Based on the above water demand, the project will require an average daily water demand of approximately 150 gallons per minute, which will be used for determining the well yield requirements. The peak instantaneous demand use for sizing of water distribution facilities will be approximately 600 gallons per minute.

Fire flow demand has been estimated by the fire protection engineers as approximately 1,500 gallons per minute. At 2-hour fire flow is required with respect to water storage capacity.

4.3 Well Design

4.3.1 Approval/Design Criteria

The proposed well and associated facilities will be subject to the approval of the Village of Blooming Grove Water District, the Orange County Health Department and NYS DEC. The official guidance for design of drinking water facilities in New York State is the document titled Recommended Standards for Water Works, also known as "Ten-State Standards". This publication contains policies for the review and approval of plans and specifications for public water supplies. It is a report of the Water Supply Committee of the Great Lakes--Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. Member states and province: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, New York, Ohio, Ontario, Pennsylvania, Wisconsin. The location of the well will be subject to the Orange County Department of Health Public Water Supply Wellhead Protection Guidelines.

The Ten-State Standards applicable to the well design, include the following:

- A minimum of two sources of groundwater shall be provided. The total developed groundwater source capacity shall equal or exceed the design maximum day demand with the largest producing well out of service
- Dedicated Standby power shall be required so that water may be treated and/or pumped to the distribution system during power outages to meet the average day demand.
- All water supply facilities and water treatment plant access roads shall be protected to at least the 100 year flood elevation
- Where the depth of unconsolidated formations is more than 50 feet, the permanent casing shall be firmly seated in uncreviced or unbroken rock.
- Pumping Facilities shall be elevated to a minimum of three feet above the 100-year flood elevation, be readily accessible at all times unless permitted to be out of service for the period of inaccessibility, graded around the station so as to lead surface drainage away from the station and protected to prevent vandalism and entrance by animals or unauthorized persons. The pump station should be located within a secure area such as a locked building or fenced area.

- At least two pumping units shall be provided. With any pump out of service, the remaining pump or pumps shall be capable of providing the maximum pumping demand of the system.

The water storage facility will meet the following standards:

- The materials and designs used for finished water storage structures shall provide stability and durability as well as protect the quality of the stored water. Steel structures shall follow the current AWWA standards concerning steel tanks, standpipes, reservoirs, and elevated tanks wherever they are applicable.
- Storage facilities should have sufficient capacity to meet domestic demands, and where fire protection is provided, fire flow demands. The minimum storage capacity (or equivalent capacity) shall be equal to the average daily consumption. This requirement may be reduced when the source and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system.

4.4 Well Development

The project site is located in an existing aquifer region as identified by the Orange County Water Authority Ground Water Resource Report. The existing Village wells north and south of the site have production rates ranging from 130 to 188 gallons per minute. Based on the projected yield of 100 to 125 gallons per minute, 3 wells will be required to meet the requirement of the developed groundwater source capacity being equal or exceeding the design maximum day demand (147 gallons per minute) with the largest producing well out of service.

4.5 Infrastructure Improvements

The proposed wells will be provided with pump building facilities. A 400,000 gallon storage tank will be provided with a capacity for the peak daily demand plus a 2 hour fire flow. Onsite water mains will distribute proposed buildings and onsite fire hydrants. A connection will be made to the Village 8-inch water main in Route 208. A pressure control valve may be required to stabilize flow rates between the on-site and municipal system. After construction, testing and placing into operation, the wells, storage tank and the connection to the Village water main will be dedicated to the Village for operation and maintenance. Onsite distribution water mains to the structures and fire hydrants will be privately maintained. Backflow prevention will be provided per the NYS Health Department requirements.

5.0 LOCAL AND REGIONAL IMPACTS

The proposed project will provide all water system infrastructure improvements required to provide domestic water and fire demand for the facility. With the construction of these facilities, no local or regional impacts are anticipated with respect to water facilities. Connection to the Village water system will provide back-up water for the existing water district and provide benefit to the Village Water district.

6.0 CONCLUSION

The project will require the extension of the existing Village Water District to include the project site. The construction of the wells and the water infrastructure will provide connection to the existing offsite water infrastructure and the onsite water distribution system.

Respectfully submitted by,

The Office of
McLaren Engineering Group
M.G. McLAREN, P.C.



Steven L. Grogg, P.E.
Vice President– Site/Civil Division