APPENDIX K

Water Supply Report

WATER SUPPLY REPORT FOR THE CHESTER DEVELOPMENT PROJECT

Chester Development
Town of Chester Section 2, Block 1, Lot 39
Village of Chester Section 107, Block 3, Lot 4
Section 108, Block 1, Lot 1
Section 120, Block 1, Lot 1
Orange County
New York

Prepared For:

BT Holdings LLC- Chester Development
Town and Village of Chester
Orange County, New York

Prepared By:

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15 September 2009
9123501

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

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1.0 INTRODUCTION

This report presents a summary of the existing water supply system, proposed water usage and proposed infrastructure required for the proposed BT Holdings Chester Development project, a multi-family residential project in the Village of Chester, Orange County, N.Y. The Chester Development project site is several parcels totaling ±68.4 acres east of state Route17M, approximately one-half mile north of the intersection of Route 17M and state Route 94 (see Figure 1). Chester Mall is immediately south of the project site, Route 17M and a farm are to the west, residential properties and the Nexans industrial facility are to the north and Oakland Avenue and residential properties are to the east. Although the majority of the site, a 60.6-acre parcel, is presently located within the Town of Chester, the project proposes to annex this lot into the Village of Chester, which owns and operates a public water-supply system.

2.0 PUBLIC WATER-SUPPLY SYSTEM

Existing Water Supply and Capacity

A public water system is operated by the Village of Chester Water Department. Water is supplied by gravity from Walton Lake and several wells in the Black Meadow well-field. The water taken from the lake is limited to a maximum of 800,000 gallons per day (gpd); however, there are restrictions on water taking as the water level in the lake decreases. The village's system is permitted for a total maximum daily water-taking from wells and the lake of 1.1 million gallons per day (mgd). According to Mr. Tom Becker, Superintendent of the Water Department, the current demand on the system is approximately 0.45 mgd. According to the reported current demand on the system, there is approximately 0.65 mgd (650,000 gpd) in available excess capacity in the village's system.

Existing Water System

The village owns, operates and maintains an extensive water main distribution network throughout the village, including a 4-inch main in Route 17M and an 8-inch main in Oakland Terrace. According to Mr. Becker, the public water system presently includes three storage tanks: the Nancy Lane Tank (a 40-foot tall one-million gallon tank based at elevation 596±), the Whispering Hills Tank (a 64-foot tall 660,000 gallon tank based at elevation 550±), and the Princeton Street Tank (a 70-foot tall 399,000 gallon tank based at elevation 550±). The Princeton Street tank is on the Nexans parcel immediately north of the project site (see Figure 2). The gross storage capacity of the three storage tanks is approximately 2 million gallons.

Hydrant-testing records provided by the village water department indicate that the hydrants at Chester Mall, which are fed from a 10-inch main in Route 17M, have a static pressure of 78 pounds per square inch (psi), and a residual pressure of 66 psi flowing at 1,100 gallons per minute (gpm). No hydrant testing data was available for the main in Oakland Terrace; however, the hydrants on the 8-inch main in Hambletonian Avenue, which is connected to the 8-inch main in Oakland Terrance, were reportedly tested and found to have a static pressure of 80 psi and a residual pressure of 55 psi flowing at 950 gpm.

Pending or Approved Projects

According to available records, the following projects are pending or approved and may seek water service from the Village. For the purposes of this analysis, the estimated water usage is assumed to be the same as the wastewater generation rates from NYSDEC:

Project Name	Project Description	Estimated Water Usage
The Castle Entertainment Complex (Town of Chester)	10,000sf expansion	10,000sf x 0.10gpd/sf = *1,000gpd*
Frozen Ropes Sports Center (Town of Chester)	20,200 sf building	20,200sf x 0.10gpd/sf = *2,020gpd*
Lowe's Home Improvement Store (Village of Chester)	150,000 sf building	*2,500gpd**
C&S Wholesale Foods (Village of Chester)	356,022 sf warehouse expansion	*54,000 gpd***
Meadow Hill Development (Village of Chester)	142 residential units	*20,000gpd***
Korean Church	Unknown	*350gpd****
Joe Dipolis	Unknown	*350gpd****
Joe Mooze	Unknown	*350gpd****
	Total:	***80,570 gpd***

* Although the Lowe's is currently open and operating, it was still under construction when the current demand of the system was provided by Tom Becker, Village Water Superintendent

** As reported by Tom Becker, Village Water Superintendent

*** According to Tom Becker, Village Water Superintendent, these landowners are eligible to receive up to 30,000 gallons of water per quarter

3.0 PROJECT WATER DEMAND AND INFRASTRUCTURE

Project Domestic Water Demand

The domestic water demand of the project is estimated to be approximately 10% higher than the estimated wastewater generation rate of the project. The 10% margin allows for incidental and ancillary uses of water associated with the project that do not end up in the wastewater stream, such as outdoor water use, routine testing, flushing and maintenance, and leakage. The estimated wastewater generation of the project is based on New York State Department of Environmental Conservation (NYSDEC) standards. The following table outlines the average daily domestic water demand for the project.

Type of Facility	Number of Units	NYSDEC Estimated Wastewater Generation Rate	Estimated Water Demand Rate	Water Demand (gpd)
1-bedroom dwelling unit	75	150 gpd per unit	165 gpd per unit	12,375
2-bedroom dwelling unit	101	300 gpd per unit	330 gpd per unit	33,330
3-bedroom dwelling unit	282	400 gpd per unit	440 gpd per unit	124,080
Clubhouse (sf)	6,000	0.1 gpd per sf	0.11 gpd per sf	660
Pool (swimmers)	150	10 gpd per swimmer	11 gpd per swimmer	1,650
			Subtotal:	*172,095*
			20% savings for use of water conservation devices	-34,419
			Total:	***137,676 gpd***

In addition to the ±137,680 gpd average daily domestic water demand, approximately 123,500 gpd could be required for irrigation demand during the summer. The 123,500 gpd irrigation demand is conservatively based on one inch of water needed per week for approximately 31.75 acres of lawn and landscaped areas. Existing areas to remain undisturbed are not included in this estimate. The 123,500 gpd estimate is a conservative estimate because the extent of undisturbed area will remain the same or increase with future layout revisions, which means the extent of lawn or landscaped areas requiring irrigation will decrease. In addition, the selection of low maintenance, drought-tolerant plantings and landscaping materials can reduce the currently estimated 31.75 acres of future lawn and landscaped areas that require irrigation.

Water System Capacity and Other Projects

The combination of the domestic demand and irrigation demand for the project plus the domestic demand for the other pending or approved projects is approximately 341,750 gpd, which is significantly below the reported 650,000 gpd available excess capacity of the system. There is also ample storage capacity in the existing municipal tanks (2 million gallons) to store

the average daily demand of the system once the BT Holdings project and pending/approved projects (341,750 gpd total) are added to the existing water supply usage (450,000 gpd).

In terms of fire protection flows, the addition of the proposed project's domestic demand (137,676 gpd) translates to approximately 95 gallons per minute (gpm). Given that the reported flow tests in the vicinity of the project site and in the higher areas of the village north and east of the site were all approximately 1,000 gpm, the resulting hydrant flows after the BT Holdings project could be roughly estimated to be approximately 900 gpm at the same locations, which is still a high flowrate for fire protection purposes. In summary, the project is not expected to have a significant effect on the capacity or efficiency of the existing village water distribution system.

Proposed Water System Infrastructure

The proposed project will require improvements to the village water system to provide adequate water supply to the site. The existing 4-inch main in Route 17M along the site frontage will be replaced with a new 10-inch main extended from the existing 10-inch main in Route 17M just south of the site that serves the Chester Mall. The replacement of the 4-inch main with the 10-inch main will require the village water department and Orange County Health Department review and approvals and would occur in the Route 17M right-of-way.

In addition to the new water main in Route 17M, a new public water main trunk line with hydrants every 400 feet will be constructed through the project site connecting the new 10-inch main Route 17M to the existing 8-inch main in Oakland Terrace. This new trunk line will allow for and provide redundant water supplies to the site for fire protection, domestic and irrigation purposes, in addition to providing a cross-connection of two branches of the village system. This trunk line will likely be a public main and will therefore require an easement dedicated to the village across the project site. As a public main, its design and installation will have to be reviewed and approved by the village water department and the Orange County Health Department.

In addition to the trunk line, a new water distribution network consisting of pipes, valves, hydrants, tees, elbows and other components will be provided on the site for fire protection, domestic, and irrigation needs of the new buildings and project components. With the exception of the aforementioned trunk main, the water- distribution system will be a privately owned, operated, and maintained system that will be designed and submitted for review to the village and county during the design phase of the project. The system will be designed in accordance with village, county, state, and National Fire Protection Association (NFPA) standards.

A private water-storage tank is not anticipated to be required for the project; however, a booster station will very likely be required to maintain adequate pressure in the system at the higher elevations of the site during fire-flow events. The booster station is typically housed within and below a small building structure, approximately 15 feet by 20 feet or smaller and 15 feet high or less, which is designed to look like a small garage on the site. More recent flow test data and hydraulic modeling of a conceptual water distribution network would be required to complete the booster station assessment. If such a booster station is required, it would be privately owned, operated and maintained by the homeowners' association or their designated agent.

The cost of the design, permitting and installation of all of the above on-site water supply system components, including the Route 17M water-main improvements, will be borne by the developer of the project.

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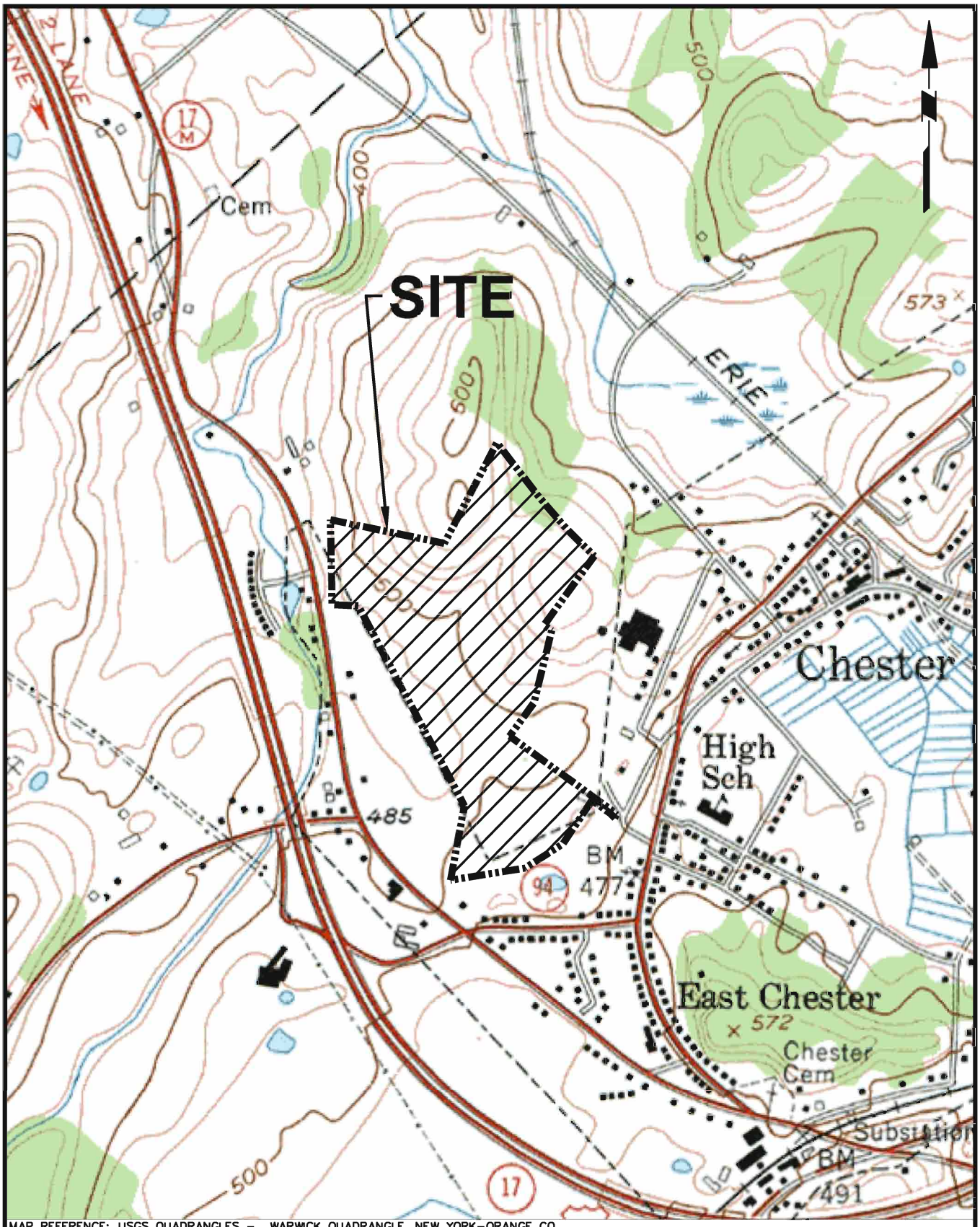
FIGURES



MAP REFERENCE: USGS QUADRANGLES – WARWICK QUADRANGLE, NEW YORK–ORANGE CO.

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Project

SITE LOCATION MAP
CHESTER DEVELOPMENT

VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12–2–08	1"=1000'	FIGURE–1

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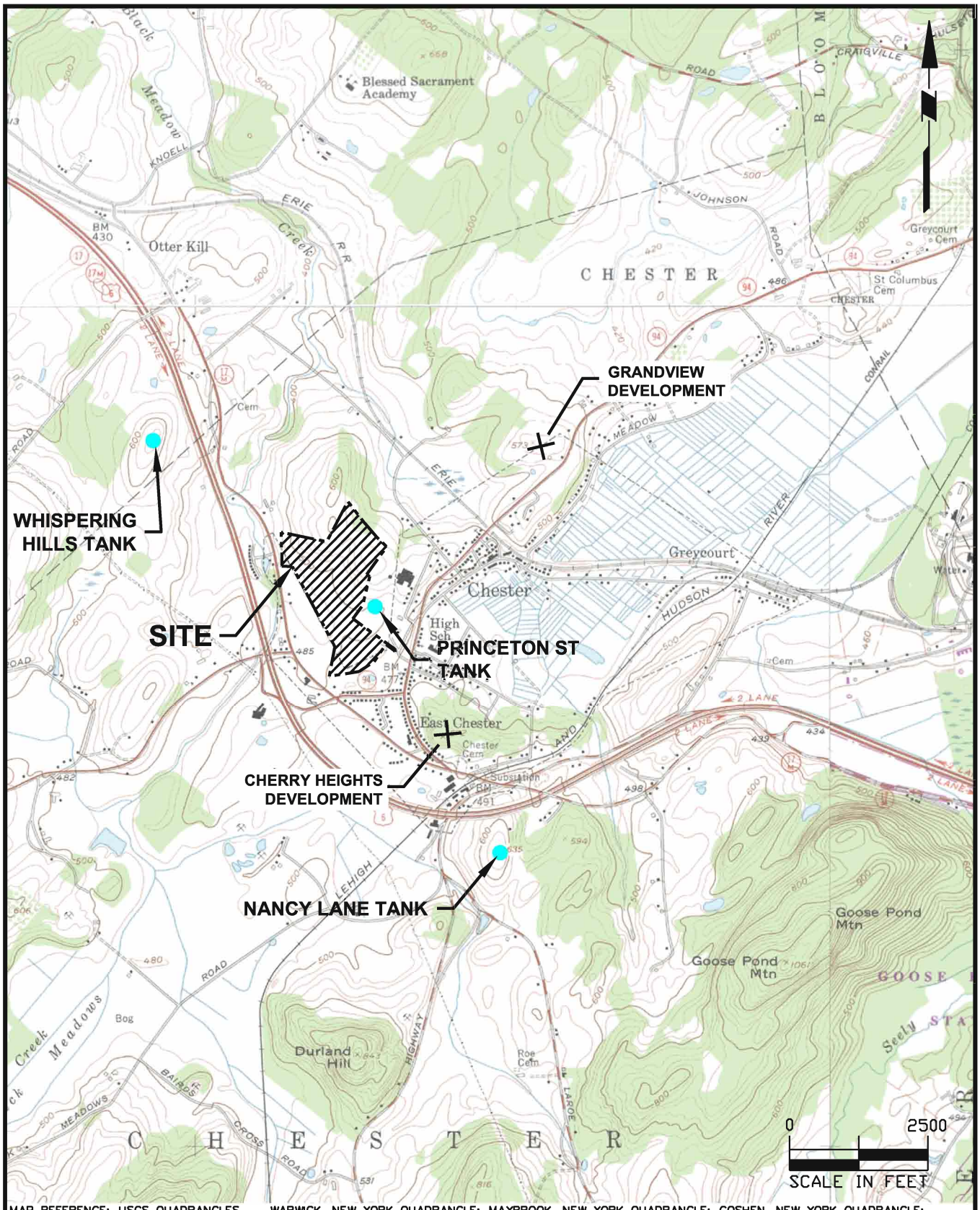

MAP REFERENCE: USGS QUADRANGLES – WARWICK, NEW YORK QUADRANGLE; MAYBROOK, NEW YORK QUADRANGLE; GOSHEN, NEW YORK QUADRANGLE; MONROE, NEW YORK QUADRANGLE–ORANGE CO.

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Project

PUBLIC WATER TANK LOCATION MAP CHESTER DEVELOPMENT

ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	9/08/09	1"=2500'	2

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