Engineers / Surveyors
Planners
Environmental Scientists
Landscape Architects

Engineer's Map, Plan and Report

Peaceable Hill Water District Improvements

Town of Southeast
Putnam County, New York

First Draft: June 25, 2014
Second Revised Draft: August 26, 2014
Final Draft: November 13, 2014

Prepared for:

Town of Southeast
1360 Route 22
Brewster, NY 10509

Prepared by:

Chazen Engineering, Land Surveying & Landscape Architecture Co., D.P.C.
21 Fox Street
Poughkeepsie, New York 12601
(845) 454-3980

Troy Office
(518) 273-0055

North Country Office
(518) 812-0513

Chazen Project No. 81026.02

Unauthorized alteration or addition to this document is a violation of Section 7209 Subdivision 2 of the New York State Education Law.

©2014 The Chazen Companies

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 EXISTING CONDITIONS 1

2.1 Town of Southeast Geography and Demographics 1

2.2 Town of Southeast Water Districts 2

3.0 WATER SOURCE 2

3.1 General Site Description 3

3.2 Threatened Species Investigation 3

3.3 Well PW-1 and PW-2 Yield and Quality 3

4.0 WATER SYSTEM DESIGN 4

4.1 Pump House and Water Treatment 4

4.2 Water Storage Tank 4

4.3 Water Distribution 5

5.0 OPINION OF PROBABLE COSTS 5

6.0 BENEFIT UNIT ASSIGNMENT 7

6.1 Existing Water District 7

6.2 Future Water Service Connections 7

7.0 ANNUAL USER COST ANALYSIS 7

7.1 Construction Bonding Cost and Existing Water District Debt Retirement 7

7.2 Operation and Maintenance/Cost of Water 8

7.3 Annual User Cost Summary 8

7.4 Existing Water District Annual User Costs 9

8.0 REQUIRED APPROVALS AND OTHER ACTIONS 9

9.0 CONCLUSION 10

APPENDICES

Appendix A: Site Location Map
Appendix B: Existing Water District Map
Appendix C: Preliminary Endangered and Threatened Species Investigation Letter Report
Appendix D: Aquifer Pumping Test Report
Appendix E: Proposed Water Main Map
Appendix F: Proposed Infrastructure Plan
Appendix G: Peaceable Hill Parcel Property Type

1.0 INTRODUCTION

The purpose of this Map, Plan, and Report is to present data and information to the Town of Southeast (Town) relative to a new water supply via the installation of two new wells for the Peaceable Hill Water District (PHWD). The PHWD currently receives its water from the Village of Brewster. The water furnished by the Village is prohibitively high in cost. By direction of the Town, the water district will be provided water via the recently installed wells, and then be distributed through the existing water system network. The water connection to the Village water source will still be maintained. The Village water source will be a secondary source only. It is the intention of the Town to eliminate the need for daily water supply from the Village. This Map, Plan, and Report includes:

- Description of the existing Town water district;
- Estimate of the existing and projected water demands for the Peaceable Hill Water District;
- Description of the existing water system infrastructure and proposed modifications necessary for change in primary water source;
- Opinion of probable construction cost;
- Suggested benefit unit assignment, and;
- Evaluation of the resulting debt retirement and operation and maintenance cost.

Criteria outlined in the *Great Lakes Upper Mississippi River Board of State Public Health and Environmental Managers* (10 States Standards), *Recommended Standards for Water Works*, 2012 edition and ISO "Guide for Determination of Needed Fire Flow", 2008 edition have been considered in the development of this report. Also included is data obtained from the documents identified below:

- *Town of Southeast Water District Expansions and Source Replacement Feasibility Report*, dated April 2011, prepared by The Chazen Companies.
- *Aquifer Pumping Test Report, Peaceable Hill Well Field Site,* dated April 2014, prepared by The Chazen Companies.
- *Preliminary Endangered and Threatened Species Investigation Letter Report Proposed Well Site,* dated October 25, 2011, prepared by The Chazen Companies.

Copies of these documents can be made available and/or are included as attachments and shall be considered supplemental documents relative to this Map, Plan and Report.

2.0 EXISTING CONDITIONS

2.1 Town of Southeast Geography and Demographics

The Town of Southeast is located in the south east corner of Putnam County, New York. Refer to the Site Location Map in Appendix A.

According to the 2010 U.S. Census, the Town of Southeast population is 18,404 and has a median household income of $69,272.

The Village of Brewster, New York is a separate municipality that is encompassed by the Town of Southeast. The Village of Brewster owns and operates a water treatment and distribution system to the point of connection with the Town. The Village of Brewster and the Town of Southeast have a municipal agreement where the Town purchases water from the Village.

2.2 Town of Southeast Water Districts

The Town of Southeast operates three (3) water districts located in the vicinity of the Village of Brewster. These water districts are: Brewster Heights, Hillcrest, and Peaceable Hill. There are also some Town residents (not within the PHWD) but in the vicinity of the Village who purchase their water directly from the Village.

Currently, Brewster Heights water source is the adjacent NYC reservoir (East Branch). The Hillcrest Water District water supply is a series of in district community wells. The PHWD receives water entirely from the Village of Brewster.

Peaceable Hill Water District

The PHWD is bound by the Village of Brewster, Hillcrest Water District (HWD), and the right-of-way for Interstate Rte 84.

The primary goal for the PHWD is to modify the current agreement by which the Town of Southeast must purchase water from the Village of Brewster. The rate charged by the Village for water has become prohibitively expensive and supply on an emergency basis only is preferred.

The PHWD serves a reported 144 accounts, has a reported average demand of 24,000(±) gallons per day (gpd) and a reported peak demand of 29,000(±) gpd. The average daily use of a customer is 166 gpd. The average user in PHWD spends approximately $2,300 per year for water. Appendix B shows the existing water district map and distribution piping.

The PHWD utilizes approximately 9,700 linear feet of distribution piping. An 8 inch PVC distribution main is located along Peaceable Hill Road. This main connects to the Village water supply at the south end of Peaceable Hill Road. The remainder of the distribution piping is 6 inch PVC. The distribution system within the PHWD also includes hydrants for system maintenance and fire protection and in line gate valves for system isolation.

3.0 WATER SOURCE

To remove the PHWD reliance on the Village water supply, the Town investigated alternative water sources within the PHWD. Tax parcel 56.20-2-12 was identified as a candidate site for a potential water supply. Once the water supply source was determined and evaluated as a suitable drinking water source, the water treatment method was determined and the Town purchased the parcel. Lastly, changes and additions to the distribution system were evaluated to accommodate the new drinking water source.

3.1 General Site Description

The Chazen Companies (Chazen) conducted site visits to the approximately 10 acre project site (Site). Most of the Site is characterized by a relatively gentle slope with a northern aspect. Elevations range from 510 feet above sea level (asl) along the southern boundary to 480 feet asl near the northern end of the Site. According to the Soil Survey of Putnam County, NY, there are three soil types mapped within the Site; Ridgebury loam, Paxton fine sandy loam and Woodbridge loam.

Chazen identified two distinct upland plant communities (Northern Hardwood Forest and Spruce Plantation) and one wetland plant community (Red Maple Swamp) during our visits to the Site. The Northern Hardwood Forest is a relatively young hardwood forest community on most of the Site's upland terrain. This community is overwhelmingly dominated by sugar maple (Acer saccharum) in both the canopy and sub-canopy layers. The Spruce Plantation is a conspicuous stand of softwoods occurring along the hillside in the northeast corner of the Site. This stand consists of a monoculture of even-aged Norway spruce (Picea abies). A Red Maple Swamp community is located along the southern and western portions of the Site. This wetland formed within the gently sloping drainageway of two unnamed intermittent streams. For further details about the Site please see the *Preliminary Endangered and Threatened Species Investigation Letter Report Propose Well Site,* in Appendix C.

3.2 Threatened Species Investigation

The Site was investigated for the potential presence of federally and state-listed endangered and threatened species that may occur in the vicinity of the Site. The findings of Chazen's field investigation are presented below. Of the endangered and threatened species identified through the literature review to be in this region, the Site was determined to not be a suitable habitat for the Indiana bats, bog turtle, New England cotton tails and bald eagles. For further details about Endangered and Threatened Species please see the *Preliminary Endangered and Threatened Species Investigation Letter Report Propose Well Site,* in Appendix C.

3.3 Well PW-1 and PW-2 Yield and Quality

Chazen was contracted to manage installation and testing of two candidate water supply wells at the Site (Tax ID 56.20-2-12). The wells were installed between January and November of 2012. The two test wells are situated within boundaries of an existing water district area, within parcel 56.20-2-12. The parcel was purchased by the Town, therefore the project will include real estate acquisition costs for this parcel.

Two 72-hour aquifer pumping tests were conducted between February 24 and March 6, 2014, on candidate production wells PW-1 and PW-2. The PW-1 test was conducted at a final discharge rate of 95 gallons per minute (gpm) (136,800 gpd) and the PW-2 test was conducted at a final discharge rate of 84 gpm (120,960 gpd). Drawdown projections suggest water levels in these wells will remain above the primary water-bearing fractures and most reasonable pump installation depths in each well during a 6 month period without groundwater recharge.

During the final hours of each flow test, groundwater samples were collected for analysis of quality criteria specified by New York State Department of Health (NYSDOH) personnel. Groundwater quality parameters were found to meet NYSDOH Subpart 5 maximum contaminant limits (MCLs). The complete *Aquifer Pumping Test Report* can be found in Appendix D.

4.0 WATER SYSTEM DESIGN

4.1 Pump House and Water Treatment

A new building will be located on parcel 56.20-2-12 (the Site) and constructed to house the treatment system and distribution pumps. The building would house disinfection, metering, one (1) duplex pressure booster pump, (1) fire pump, (1) vacuum assistant pump, pressurized tank for low flow conditions, controls, and all ancillary equipment. A new emergency generator would also be provided at the Site. The pump house would require 3 phase power. The treatment building will be approximately 375 sq.ft. The treatment building should be constructed of solid materials such as concrete block, wood, or other materials that have good longevity. The treatment facility will be in view of the adjacent residential homes. Effort should be made to provide appropriate aesthetics. A pre-fabricated pump house may be evaluated as a suitable alternative and cost saving measure. Appendix F shows the proposed pump house location and facility layout.

4.2 Water Storage Tank

The PHWD would require a water storage tank to supply the PHWD with suitable flow and pressure.

In accordance with 10 States Standards, storage facilities should have sufficient capacity to meet domestic and fire flow demands and:

a. Fire flow requirements established by the appropriate state Insurance Services Office (ISO) should be satisfied where fire protection is provided and;

b. The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption.

The design criteria for the water storage tank capacity will be the average daily consumption plus the ISO minimum storage requirements for fire flow. Storage capacity should be discussed with the Putnam County Department of Health (PCDOH) and New York State Department of Health (NYSDOH) before proceeding with a full design.

According to the ISO Guidelines, for 1-family and 2-family dwellings not exceeding 2 stories in height, the maximum needed fire flow is 1,000-gpm for dwellings 11 feet to 30 feet apart and shall be maintained for a minimum of 2 hours. The minimum storage required for fire flow is 120,000-gallons.

The average water consumption for the Town of Southeast districts is 146 gallons/dwelling. As identified above, the current daily demand for PHWD is approximately 24,000-gpd (167 gallons/dwelling.) However, it is expected that usage would increase once a more cost effective water source is available. For design purposes the per dwelling water usage from the neighboring water district was used (269gpd/dwelling) as a conservative approach. Therefore the future demand for PHWD is approximately 38,750-gpd. The total required storage to satisfy the average daily demand plus the minimum storage for fire flow is approximately 160,000-gallons.

To meet the storage needs, Chazen proposes four (4) underground storage tanks with a capacity of 40,000-gallons and would be located on parcel 56.20-2-12. The water storage tanks location is shown in Appendix F.

4.3 Water Distribution

The proposed infrastructure includes approximately 850-linear feet of 8-inch diameter water main, and associated appurtenances. The 8-inch diameter PVC water main would begin from the proposed pump house near PW-1 and PW-2 and continue west under the footprint of Paper Road which has been abandoned. To avoid impacting the wetlands, a send and receiving pit would be established on either side of the delineated wetlands, and approximately 100 linear feet of 8-inch water main would be directionally drilled underneath the wetlands. See Appendix F for the send and receiving pit locations. At Peaceable Hill Road the proposed water main would connect into the existing water main. Approximately 550 linear feet of 2-inch water service would be installed on Peaceable Hill Road, south of the connection to the Village water supply to service three homes. Appendix E depicts the proposed water main layout.

Where the water main is installed within a roadway, the main shall be installed parallel to the roads, between the road surface and road right-of-way. Water mains will typically be installed in trenches. Trenchless methods will be selectively utilized to avoid environmentally sensitive areas. All disturbed surfaces will be restored to original condition after construction.

5.0 OPINION OF PROBABLE COSTS

The following opinion of probable costs is developed anticipating construction by competitive bid and utilizing posted wage rates for construction in accordance with the NYS Municipal Law.

The cost opinions are based upon our understanding of the project and have been developed using 2014 construction budgeting values. Subsequent changes in the project scope or time frame may change project costs. Since there is no control over the costs of labor and materials or competitive bidding and market conditions, the opinion of probable construction costs is made on the basis of past experience and available data. These opinions represent our best judgment as a consultant familiar with the public works industry. However, there is no guarantee that proposals, bids or construction costs will not vary from the opinion of probable costs.

Table 5.0: Peaceable Hill Total Project Cost

Description	Units	$/Unit	Quantity	Cost
Source				
Parcel Procurement	LS	$242,423.07	1	$242,423
Well Pumps	EA	$5,000.00	2	$10,000
Site Work	LS	$73,000.00	1	$73,000
Treatment				
Erosion and Sediment Control	LS	$7,500.00	1	$7,500
Pump house	LS	$100,000.00	1	$100,000
Generator	LS	$150,000.00	1	$150,000
3 Phase Power Supply	LS	$60,000.00	1	$60,000
Vacuum Assist Pump	LS	$10,000.00	1	$10,000
Fire Pump & Controls	EA	$60,000.00	1	$60,000
Duplex Booster Pump System & Controls	EA	$30,000.00	1	$30,000
Chemical Feed Pump Skid	EA	$15,000.00	1	$15,000
Equipment Installation	LS	$46,000.00	1	$46,000
Storage				
Underground Storage Tanks	EA	$125,000.00	4	$500,000
Storage Tank Installation	LS	$25,000.00	1	$25,000
Distribution				
8" PVC Water Main	LF	$175.00	750	$131,250
Directional Drill 8 inch Water Main	LF	$400.00	100	$40,000
2" Service Line	LF	$50.00	550	$27,500
			Subtotal	**$1,500,000**
			Construction Contingency (10%)	$150,000.0
			Construction Subtotal	**$1,650,000**
			Legal, Technical & Administrative Allowance (35%)	$578,000.00
			Total Project Budget	**$2,228,000**

The PHWD at the time of this report has two outstanding bonds, the remaining balance on the first bond is $29,114 and will expire in 2015. The remaining balance on the second bond is $117,183 and will expire in 2032. The outstanding debt balance at the time of this report, for the PHWD is approximately $146,300. The total amount to be bonded for the project by the Town is $2,228,000.

6.0 BENEFIT UNIT ASSIGNMENT

6.1 Existing Water District

Table 6.1 outlines the property types within PHWD. Appendix G summarizes each parcel and property type.

Table 6.1: PHWD Property Type Summary

Property Type	Number of Parcels	Number of Benefit Units
Residential	138	138
Single Family	*124*	*124*
Two Family	*9*	*9*
Multipurpose/Multi-structure	*5*	*5*
Commercial	2	2
Vacant	8	4
Total	148	144

The existing water district is composed of 144 benefit units. Each residential and commercial parcel is considered an account and is assigned 1 benefit unit and each vacant parcel is assigned 0.5 benefit units.

It is proposed that the debt service shall be satisfied by a benefit unit assignment following the current assignments.

6.2 Future Water Service Connections

At this time, the Town does not anticipate future development for additional connections to the water system within the PHWD or individual outside district users.

7.0 ANNUAL USER COST ANALYSIS

7.1 Construction Bonding Cost and Existing Water District Debt Retirement

The construction and installation of the pump house, water storage tank and distribution piping will require the issuance of bond anticipation notes to finance the project cost of $2,228,000.

The Town plans to bond the proposed project for 20-years at an estimated 3.5% interest rate. Assuming that $2,228,000 will be financed, the resulting annual debt payment (principal and interest) is approximately $155,058. The Town anticipates making the annual principal and interest payment via the annual fee charged to the 144 benefit units within the PHWD. This fee of $269.20 per Benefit Unit per quarter is in addition to the current debt the PHWD is currently paying.

7.2 Operation and Maintenance/Cost of Water

The PHWD currently pays $84.37 for operation and maintenance services quarterly per Benefit Unit. Though there will be a new pump house, treatment system, water storage tanks and distribution piping, the operation and maintenance cost is anticipated to remain the same to properly service the new and improved infrastructure.

The Town can expect an estimated annual income for operations and maintenance of approximately $48,528. If additional users connect to the water system, the Town may choose to reevaluate and adjust its operation and maintenance rate.

The PHWD accounts will be granted a water usage allowance of 15,000 gallons per quarter and will be charged $0.01 per gallon for water usage thereafter.

7.3 Annual User Cost Summary

The annual user cost for PHWD is determined by the existing debt retirement within the water district, the Town's operation and maintenance cost and the capital investment of the new proposed water supply and infrastructure. Assuming each Benefit Unit uses 269-gpd or 98,185-gallons per year, Table 7.3 estimates the annual user costs.

Table 7.3: Estimated Annual User Cost – Per Benefit Unit

	PHWD
2015 Existing Debt per Benefit Unit[(1)]	***$163***
Cost of New Water Supply and Infrastructure	$1,077
Town O&M Rate	$337
Estimated Annual Usage Payment per Benefit Unit[(2)]	***98,185 gallons***
Total Annual Cost per Benefit Unit	***$1,577***
Total Equivalent Cost per 1,000-gal	*$16.06*

(1) Existing bonds currently expires in 2015 and 2032. Above table assumed 2015 bond will expire before this project is completed.

(2) Assume future water usage of 269 gpd/Benefit Unit

7.4 Existing Water District Annual User Costs

For comparison, Table 7.4 is a summary of existing annual user costs for the typical single family home within existing water districts:

Table 7.4: 2013 Existing Annual User Cost – Per Benefit Unit

	PHWD
Existing Debt per Benefit Unit (Based on Town's 2014 Budget)	***$560***
Village of Brewster Cost of Water ($0.023 per 1-gal) [(1)]	$1,399
Town O&M Rate	$337
Estimated Annual Usage Payment per Benefit Unit	***60,833***
Total Annual Cost per Benefit Unit	***$2,296***
Total Equivalent Cost per 1,000-gal	*$37.74*

(1) Assume current water usage of 167 gpd/Benefit Unit

Based on a comparison of existing annual costs versus the estimated annual cost following the construction of the new water supply, customers in PHWD would see a reduction in annual costs on the order of approximately $764. On a per 1,000 gallon basis the future cost of water will be 43% of the current cost.

8.0 REQUIRED APPROVALS AND OTHER ACTIONS

The anticipated approvals for the construction of the PHWD water system are as follows:

- Complete SEQR Review and Determination.
- Bonding for required Project Costs.
- Advance Design and Construction Documents.
- Advance project entitlement with involved agencies.
- Bid and Award Construction.
- Complete Construction and Commissioning of facility.
- Modify existing agreements with the Village of Brewster, develop Memorandum of Understanding for emergency connections.
- Seek Agency Approval to serve.

9.0 CONCLUSION

Chazen has completed an investigation and analysis for the construction of a new water supply for PHWD for the Town.

The PHWD includes 148 parcels, primarily residential with 2 commercial and 8 vacant parcels.

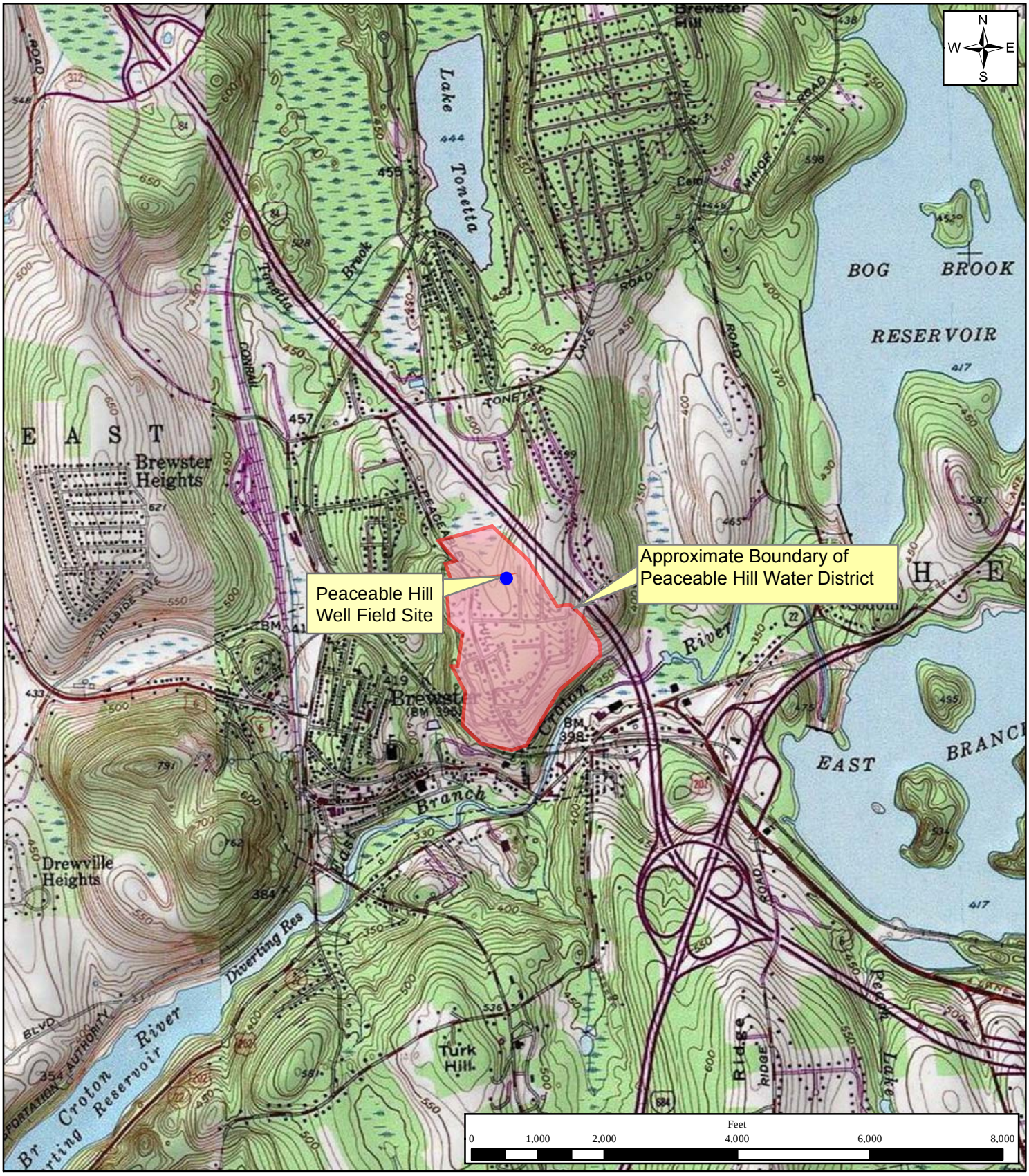
The PHWD is currently supplied with water purchased from the Village of Brewster. High rates associated with the Village water supply has prompted the Town to investigate alternate and additional water supplies.

An adequate water supply was identified from two wells PW-1 and PW-2 on parcel 56.20-2-12. The PW-1 test was conducted at a final discharge rate of 95 GPM (136,800 gpd) and the PW-2 test was conducted at a final discharge rate of 84 GPM (120,960 gpd). The estimated future demand of PHWD is 269 gpd.

The opinion of probable cost for the entire project cost is approximately $2,228,000 including approximately 850-linear feet of 8 inch water main piping, 550-linear feet of 2 inch water service, underground water storage tanks, chlorination system, valves and other required appurtenances.

The PHWD currently has 144 accounts, and each account currently pay approximately $37.74/ 1,000 gallons or $2,296 annually. Through the development of a new water supply and supporting infrastructure the anticipated rate would be $16.06/ 1,000 gallons or $1,577 annually. This is a cost saving of approximately $719 per account annually.

Appendix A:
Site Location Map



THE Chazen COMPANIES

ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road, Queensbury, NY 12804
Phone: (518) 812-0513

Peaceable Hill Well Field Site

Figure 1 - Site Location Map

Spruce Road
Town of Southeast, Putnam County, New York

Source: USGS Topographic Maps of the Lake Carmel, New York and Brewster, New York-Connecticut Quadrangles, Dated 1960 (Photorevised 1981) and 1958 (Photorevised 1984), 7.5-minute Series.

Drawn:	EJO
Date:	April 2014
Scale:	1:24,000
Project:	81026.01
Figure:	1

Appendix B:
Existing Water District Map

Pump house storage tank

Interconnection chamber

Pump house storage tank

Connection to Village of Brewster water supply

Well 1

Well 2

Well 3

Paper Road (To be Removed by Town of Southeast)

Sunset Ridge Ln

Crosby Ave

Friendship Ln

Curiosity Ln

Harmony Rd

Forest Ln

Hillcrest Ave

Griffin Rd

Tonetta Lake Rd

Prospect Hill Rd

N Main St

Gregor St

Eagle Ridge Rd

Scott Pl

Neal Ct

Blueberry Dr

Village Dr

Connecting Road

Riverside Dr

Sodom Rd

Argonne Rd

Stone Ridge Rd

South Rd

Birch Rd

Spruce Rd

Pine Rd

Manor Way

Birch Ave

Eastchester Hill Rd

Hughes Ln

Panorama Dr

Cedar Ln

Grady Ln

Casino St

Wells St

Center St

Prospect St

Eastview Ave

Garden St

Michael Neuner Dr

Oak St

Carmel Ave

Ward St

Phillips Ln

Putnam Ter

N

Legend

- Well
- Valve
- Air Relief Valve (ARV)
- Water Valve Blow Off
- Hydrant

EXISTING PIPE INFRASTRUCTURE

- 1.5, Galvanized
- 2, Galvanized
- 2, Copper
- 2, Plastic
- 3, Plastic
- 6, PVC
- 8, PVC
- 8, PVC (Inactive)
- Tax Parcels selection
- EXISTING_PIPE_INFRASTRUCTURE
- Tax Parcels
- Hillcrest Water District Boundary
- Peaceable Hill Water District Boundary

THE Chazen COMPANIES®

Engineers/Surveyors
Planners
Environmental Scientists
Landscape Architects

CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTS CO., P.C.

Dutchess County Office:
21 Fox Street
Poughkeepsie, NY. 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street
Troy, NY. 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road
Queensbury, NY. 12804
Phone: (518) 812-0513

This map is a product of The Chazen Companies. It should be used for reference purposes only. Reasonable efforts have been made to ensure the accuracy of this map. The Chazen Companies expressly disclaims any responsibilities or liabilities from the use of this map for any purpose other than its intended use.

PEACEABLE HILL WATER DISTRICT

EXISTING WATER DISTRIBUTION SYSTEM

TOWN OF SOUTHEAST, PUTNAM COUNTY, NEW YORK

Drawn:	RGL
Date:	06/02/2014
Scale:	1 inch=245 feet
Project:	81026.01
Figure:	1

Path: X:\8\81000-81099\81026.01 - Peaceable Hill Supply Identification\GIS\maps\81026_01_WaterSystem_052314_rgl_EXISTING.mxd

Appendix C:
Preliminary Endangered and Threatened Species Investigation Letter Report

THE Chazen COMPANIES®
Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Hudson Valley Office
21 Fox St., Poughkeepsie, NY 12601
P: (845) 454-3980 F: (845) 454-4026
www.chazencompanies.com

Capital District Office (518) 273-0055
North Country Office (518) 812-0513
Connecticut Office (860) 440-2690

October 25, 2011

Mr. Levon Bedrosian
Special Districts Administrator
Town of Southeast
One Main Street
Brewster, NY 10509

Re: Preliminary Endangered and Threatened Species Investigation Letter Report
Proposed Well Site
Town of Southeast, Putnam County, New York
Job # 81026.01

Dear Mr. Bedrosian:

On August 18, 21, and 29, 2011, Mr. John Sullivan of The Chazen Companies (Chazen) conducted site visits to the approximately 10 acre project site (hereafter referred to as the "Site") located east of Peaceable Hill Road, north of South Road, and west of Spruce Road (and Interstate 84) in the Town of Southeast, Putnam County, NY. The purpose of these site visits was to evaluate the potential suitability of on-site and adjacent off-site habitats for federally and/or state-listed species. Attachment A, Figures, Figure 1, "Site Location Map," depicts the Site on the Brewster Quadrangle 7.5' Topographic Map. Mr. Sullivan is a qualified Level I, II and III bog turtle surveyor and an experienced wetland scientist.

Prior to the site visit, Chazen examined available mapping, as provided in Attachment A. This included United States Geologic Survey (USGS) topographic maps; 2009 aerial orthophotos; the Natural Resource Conservation Service (NRCS) Soil Survey of Putnam County, NY ;and National Wetlands Inventory (NWI) and New York State Department of Environmental Conservation (NYSDEC) wetlands and watercourse mapping. An ecological communities map was prepared after the site visit to identify the location of various community types on the site.

To determine the location of endangered and threatened species that are known to occur in the vicinity of the Site, Chazen reviewed the Comprehensive List of Endangered and Threatened Species provided on the United States Fish and Wildlife Service's (USFWS) website, the NYSDEC Environmental Resource Mapper Program, and submitted an inquiry to the New York Natural Heritage Program (NYNHP) requesting information regarding known occurrences of endangered and threatened species at, and in the vicinity of, the Site. Chazen also reviewed background literature regarding significant critical habitat areas and wildlife and plant species located in the vicinity of the Site. Below, we provide a summary of the ecological resources identified at the Site with an assessment of the likelihood of the Site to support endangered or threatened species. Please note that a full inventory of ecological resources present at

the Site was not completed as part of this assessment, and the summary of resources presented below should not be considered an inclusive list of all wildlife and plant species present at the Site.

Endangered and Threatened Species Literature Review

To determine if any federally-listed species potentially occur at the Site, Chazen reviewed the "Federally Listed Endangered and Threatened Species and Candidate Species in New York (by County)" as provided on the USFWS's website.[1] This list identifies federally-listed species according to the counties in which they have been documented. According to this list, the federally-endangered shortnose sturgeon (*Acipenser brevirostrum*) and Indiana bat (*Myotis sodalis*), and the federally-threatened bog turtle (*Clemmys [Glyptemys] muhlenbergii*) may occur in Putnam County, New York. Additionally, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and New England Cottontail (*Sylvilagus transitionalis*) are candidate species for listing under the Federal Endangered Species Act (ESA). The range for Atlantic and shortnose sturgeons is restricted to the Hudson River[2]; therefore, further evaluation of these two species was determined to be unwarranted for this Site. The bald eagle (*Haliaeetus leucocephalus*) is also listed by the USFWS as a species that may occur in Putnam County. The bald eagle was formerly listed as a federally-threatened species; however, it was delisted from the ESA on August 8, 2007. Bald eagles still receive protection under the Bald and Golden Eagle Protection Act (BGEPA), and they also receive protection by the NYSDEC as a state-listed threatened species. No "critical habitat" for any of the abovementioned species has been designated by the USFWS within the Site.

The NYSDEC Environmental Resource Mapping Program was also reviewed to obtain information regarding the known occurrences of both federally-listed and state-listed endangered and threatened species. This program identifies the generalized locations of New York State listed endangered/threatened/rare plants, animals, and significant ecosystems. The NYSDEC mapping program did not identify the Site or its immediate surroundings as containing any rare plant or animals or any significant natural communities. Chazen also sent a letter to the NYNHP requesting information on the known occurrences of endangered/threatened/rare (ETR) species and significant natural communities located on, or within close proximity of, the Site. The NYNHP responded in a letter dated August 17, 2011 that there were no records of rare or state listed animals or plants, significant natural communities or other significant habits on or in the immediate vicinity of the site.

A copy of the August 17, 2009 NYNHP response letter and the USFWS County List is provided in Attachment B.

Table 1, "Suitable Habitat Requirements for Potential Endangered and Threatened Species," identifies the habitat requirements for the different species identified from the initial consultation with the USFWS and NYSDEC and identifies whether suitable habitat is likely present on-site based on a preliminary review of available mapping (orthophotos, topographic map, etc.) for the Site and surrounding area. The site visits were conducted to verify the accuracy of the information obtained during the regulatory correspondences and literature review, and to assess the likelihood of the Site to support endangered or threatened species.

---

[1] http://www.fws.gov/northeast/nyfo/es/ColistCurrent.pdf Last revised Jun3 1, 2011. Printed August 30, 2011.

[2] New York Natural Heritage Program. 2009. Online Conservation Guide for *Acipenser brevirostrum*. Available from: http://www.acris.nynhp.org/guide.php?id=7168. Accessed: August 11, 2009.

Table 1: Suitable Habitat Requirements for Potential Endangered and Threatened Species

Common Name	Regulatory Status	Preferred Habitat	Suitable Habitat within Site?
Indiana Bat	Federally and State-listed Endangered	Suitable Indiana bat roosting habitat is characterized by wooded areas with trees that have sun exposure for at least half of the day, are ≥ 5 in. diameter at breast height (dbh), and exhibit specific physical traits (e.g. exfoliating bark, crevices, dead limbs, snags). Hibernation sites for Indiana bats include caves and mines with stable temperatures and relatively high humidity (usually above 74%) for overwintering. Suitable foraging habitat includes riparian/floodplain forests, upland forests, as well as open fields and pastures with scattered trees.	Potentially
Bog turtle	Federally-listed Threatened; State-listed Endangered	Bog turtles are usually found in association with fens, which are wetlands dominated by herbaceous vegetation and that receive calcareous groundwater discharge through seepage and small streams (rivulets). Other habitats where bog turtles are found include wet meadows, cow pastures, shrub swamps and forested wetlands with emergent wetland openings. As with fens, these wetlands usually have small rivulets fed by groundwater, deep muck soils and emergent vegetation with exposure to the sun.	Unlikely
New England Cottontail	Candidate Species for Federal Listing; State-listed Special Concern	Typical habitat consists of early successional vegetative communities with dense shrub cover. Such communities are often associated with abandoned or idle agricultural fields, hedgerows, power-line corridors, and young forest clear-cuts. Habitats with close proximity to water tend to be preferred.	Unlikely
Bald Eagle	State-listed Threatened	Suitable bald eagle habitat is characterized by mature or old-growth forested areas with some habitat edge adjacent to large bodies of water with suitable foraging opportunities.	Unlikely

Source:
New York Natural Heritage Program. 2009. Online Conservation Guides. [Online]. Available from: http://www.acris.nynhp.org/. Accessed June 26, 2009.
Gibbs, J. P., A. R. Breisch, P. K. Ducey, G. Johnson, J. L. Behler, and R. C. Bothner. 2007. The amphibians and reptiles of New York State. Oxford University Press, NY.

General Site Description

Following the literature review, a field inspection was conducted at the Site to confirm on-site conditions. The following describes those results.

Topography

Most of the Site is characterized by a relatively gentle slope with a northern aspect. Elevations range from 510 feet above sea level (asl) along the southern boundary to 480 feet asl near the northern end of the Site. There is, however, a more prominent slope or hillside along the eastern edge of the Site. The on-site portion of this hillside has a maximum elevation around 520 feet asl with a western aspect.

Soils

According to the Soil Survey of Putnam County, NY[3], there are three soil types mapped within the Site. These soils are briefly described below and their approximate locations are depicted in Figure 2, "Soils Map," in Attachment A.

- RdB – Ridgebury loam 3 to 8% slopes. The Ridgebury series consists of very deep, somewhat poorly and poorly drained soils formed in glacial till. They occur along low areas and drainageways in uplands, and have a nearly level to gently sloping topography. Ridgebury soils are characterized by a dense restrictive layer (i.e., fragipan) within 28 inches of the surface. This restrictive layer results in a perched, fluctuating water table for 7 to 9 months of the year. Ridgebury soils are classified as Hydric soils by the NRCS.

- PnD – Paxton fine sandy loam 15 to 25% slopes. The Paxton series is moderately steep, very deep, and well drained. These soils formed in dense glacial till along the side slopes of broad ridges and small hills. Surface runoff is generally rapid due to the moderately steep slopes. The water table is typically perched at a depth of 1.5 to 2.5 feet during the early spring. Paxton soils, however, are classified as non-hydric by the NRCS. The erosion hazard of these soils is considered to be severe.

- WdB – Woodbridge loam 3 to 8% slopes. The Woodbridge series is gently sloping, very deep, and moderately well drained. These soils formed in compact glacial till along the lower parts of hillsides and ridges. Surface runoff can range from slow to rapid depending on the topographic setting. The water table tends to be perched at a depth of 1.5 to 2.5 feet during the winter and spring. Although Woodbridge soils are classified as non-hydric by the NRCS, small inclusions of Sun soils and Ridgebury soils (both hydric) may occur within this mapping unit.

The following soil type was mapped by NRCS just to the northwest of the Site. It is described here because of its potential relevance to the endangered and threatened species habitat assessment.

- Ce – Carlisle muck. The Carlisle series is nearly level, very deep, and very poorly drained. These soils formed in basins or other depressional areas between hills or on outwash plains, flood plains, and ground moraines. Carlisle soils are characterized by more than 51 inches of highly decomposed organic matter or muck. Varying amounts of undecomposed plant remains are visible in the soil profile, some of which are woody (ca. 15-30 percent). The water table typically ranges from 6 inches above to 12 inches below the surface from September through June. Carlisle muck is classified as a Hydric soil by the NRCS.

[3] United States Department of Agriculture. 2008. Soil Survey Geographic (SSURGO) database for Putnam County, New York. United States Department of Agriculture, Fort Worth, TX.

On-Site Ecological Communities

We identified two distinct upland plant communities and one wetland plant community during our visits to the Site. These communities are briefly described below and their approximate locations are depicted in Figure 3, "Ecological Communities," in Attachment A. The Site photographs referenced below are provided in Attachment C.

Upland Communities:

- NHF – Northern Hardwood Forest. Most of the Site's upland terrain supports a relatively young hardwood forest community (see Photos 1 – 2). This community is overwhelmingly dominated by sugar maple (*Acer saccharum*) in both the canopy and sub-canopy layers. Trees in the canopy layer are generally 50 to 75 feet in height with a typical diameter at breast height (dbh) of 8 to 12 inches. A few trees near Spruce Road are considerably larger with a dbh of over 20 inches. Other species in the canopy layer include red maple (*Acer rubrum*), shagbark hickory (*Carya ovata*), white ash (*Fraxinus americana*), and a few big-tooth aspen (*Populus grandidentata*). Several individuals of Norway maple (*Acer platanoides*), an invasive species, occur along the eastern edge near Spruce Road. The sub-canopy layer is comprised almost exclusively of pole sized (2-6 inch dbh) sugar maple. The shrub layer is very patchy or localized with the greatest cover occurring along the lower elevations near the wetland boundary (see Photo 3). Dominant shrubs include spice bush (*Lindera benzoin*) and the invasive Japanese barberry (*Berberis thunbergii*). The ground layer is characterized by a relatively sparse cover of Virginia-creeper (*Parthenocissus quinquefolia*), Christmas fern (*Polystichum acrostichoides*), hay-scented fern (*Dennstaedtia punctilobula*), common wood fern (*Dryopteris intermedia*), Canada mayflower (*Maianthemum canadense*), Oriental bittersweet (*Celastrus orbiculatus*), garlic mustard (*Alliaria petiolata*), and sugar maple seedlings.

- SP – Spruce Plantation. A conspicuous stand of softwoods occurs along the hillside in the northeast corner of the Site (see Photo 4). This stand consists of a monoculture of even-aged Norway spruce (*Picea abies*). Most of the spruce trees are over 75 feet in height and have a dbh of 12-14 inches. The sub-canopy layer is essentially absent from this community. The shrub layer and ground layer are notably sparse near the plantation's interior, presumably due to the dense spruce overstory. Both of these layers tend to be somewhat more prevalent near the edge of this community. Where present, the shrub and ground layers have a species composition similar to that of the Northern Hardwood Forest (see description above). We suspect this spruce plantation was planted about 40-50 years ago to provide a visual/sound barrier to Interstate 84 to the east.

Wetland Communities:

- RMS – Red Maple Swamp. A Red Maple Swamp community is located along the southern and western portions of the Site. This wetland formed within with the gently sloping drainageway of two unnamed intermittent streams. The first stream "originates" from a culvert along the Site's southern boundary (the culvert is actually located in the backyard of a residence on South Road). A second intermittent stream enters the Site from a culvert under Spruce Road. Ultimately, these two streams merge to form a somewhat poorly defined second-order stream channel (see Photo 5). This channel continues northward through the Site, turning slightly to the

northwest just before exiting the Site at the north end. Along either side of this channel is a relatively narrow band of Red Maple Swamp, which also continues off-site to the north (see discussion of off-site communities below). The wetland area south of the stream confluence, however, is much broader in extent, particularly near the Site's southern boundary. Representative photographs of the Red Maple Swamp community are provided in Photos 6-9. The wetland's canopy layer is overwhelmingly dominated by red maple, with American elm (*Ulmus americana*) and green ash (*Fraxinus pennsylvanica*) occasionally found throughout. These trees appear to be slightly older than those of the adjacent uplands, with most individuals having a dbh of 14-15 inches. The shrub layer is moderately diverse with spicebush, American elm, and Japanese barberry among the codominants. Other species in the shrub layer include winterberry (*Ilex verticillata*), arrowwood (*Viburnum recognitum*), green ash, red maple, and sugar maple. The sugar maple saplings are generally confined to the more elevated portions of the wetland, where they exhibit morphological adaptations to wet conditions (i.e., shallow root systems). The composition and abundance of the ground layer varies depending on the degree of canopy closure, microtopography, and proximity to the stream, among other factors. Characteristic species in the ground layer include spotted touch-me-not (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomea*), clearweed (*Pilea pumila*), jumpseed (*Polygonum virginianum*), poison ivy (*Toxicodendron radicans*), red maple, and Virginia-creeper. Other species such as Jack-in-the-pulpit (*Arisaema triphyllum*), tall meadow rue (*Thalictrum polygamum*), drooping woodreed (*Cinna latifolia*), skunk cabbage (*Symplocarpus foetidus*), royal fern (*Osmunda regalis*), sensitive fern (*Onoclea sensibilis*), rough-stemmed goldenrod (*Solidago rugosa*), sedge (*Carex* sp.), Japanese knotweed (*Polygonum cuspidatum*), Oriental bittersweet, and arrowwood seedlings tend to be less common or localized. More than 30 percent of the ground surface in this community is bare "mud" with partially embedded moss-covered rocks and exposed roots. The soils have been mapped as, and the field observations are consistent with, the Ridgebury series (see description above). The A horizon is characterized by a very dark and very firm silt loam, while the underlying B horizon contains a fragipan of dense sandy loam at 12 to 16 inches below the surface. This fragipan presumably creates a perched water table in this wetland during the wetter parts of the year. The wetland also appears to be fed by occasional overflow from the intermittent streams.

Off-Site Ecological Communities

Several additional ecological communities of potential relevance to the endangered and threatened species habitat assessment were identified just to the north of the Site. These communities are briefly described below and their approximate locations are depicted in the Figure "Ecological Communities," in Attachment A. The Site photographs referenced below are provided in Attachment C.

- RMS – Red Maple Swamp. The Red Maple Swamp community described above extends off-site to the north and west for some distance. Although many similarities exist between the on-site and off-site portions of this community, there are a few important differences that should be noted. Perhaps the most significant of these differences is the extent of surface inundation. The off-site portion of the Red Maple Swamp tends to be wetter, especially in the far southwestern corner where several relatively deep (6-8 inches) pools were observed (see Photo 10). These pools appear to persist longer into the growing season, which has favored the establishment of various "marsh" species not seen on-site. These species include water plantain (*Alisma subcordatum*), ditch stonecrop (*Penthorum sedoides*), arrowleaf tearthumb (*Polygonum*

sagittatum), halberd-leaved tearthumb (*P. arifolium*), rice cutgrass (*Leersia oryzoides*) and water willow (*Decodon verticillatus*). Differences in shrub and ground layer composition also exist for areas that are not inundated. Cover by cinnamon fern, for example, tends to be much greater within the off-site portion of this community (photo 11). These areas also include a number of species not observed on-site, such as highbush blueberry (*Vaccinium corymbosum*) and speckled alder (*Alnus incana* spp. *rugosa*) in the shrub layer, and false nettle (*Boehmeria cylindrica*), crested wood fern (*Dryopteris cristata*), and tussock sedge (*Carex stricta*), among others, in the ground layer. One particularly noteworthy addition to the ground layer is rough-leaved goldenrod (*Solidago patula*), which was only observed in an area of Red Maple Swamp immediately south and southwest of the Emergent Marsh – Sedge variant community (see Photo 12). This goldenrod is considered to be a calcicole or "calcium-loving" species. Its presence within this community suggests a slight calcareous influence (at least locally) from the soil and/or groundwater.

- EM – Emergent Marsh. A sizable Emergent Marsh community (see Photo 13) is located a short distance northwest of the Site, just south of Interstate 84. This wetland developed within a pronounced circular depression at the confluence of two intermittent streams (one of which flows through the Site, as described previously). The soils within this depression have been classified as Carlisle muck (see above) by the NRCS. Limited field observations confirm the presence of over 20 inches of sapric or highly decomposed organic matter. This organic soil was saturated at the surface (if not inundated) with a very soft, "mucky" texture. The plant community is characterized by a rather lush growth of tall herbaceous vegetation. We observed at least three variants of the Emergent Marsh community in this wetland. Each of these variants is dominated by a different species or group of species, as described below:

  - EM-C Emergent Marsh-Cattail variant. This community variant occurs near the center and northern tip of the Emergent Marsh. This area is dominated by narrowleaf cattail (*Typha angustifolia*), which has a total aerial cover of about 75 percent. Common cattail (*T. latifolia*) is also present, but at a much lower total cover (approximately 15 percent). The cattail hybrid (*T.* x *glauca*) may also be present or even dominant, but no attempt was made to identify it in the field. Collectively, the cattails form a very tall (> 6 feet), somewhat arching canopy over much of the ground surface (see Photo 14). There is also a considerable amount of cattail detritus "entangled" just above the ground surface. Despite these features, the ground layer does contain a number of other species, but at relatively lower total cover. These species include purple loosestrife (*Lythrum salicaria*), purple-stemmed aster (*Symphyotrichum puniceum* var. *puniceum*), swamp milkweed (*Asclepias incarnata*), shallow sedge (*Carex lurida*), tussock sedge, rice cutgrass, sensitive fern, spotted touch-me-not, arrowleaf tearthumb, and water plantain, among others. A few red maple and American elm saplings (dbh of 1-2 inches) are scattered throughout with a total cover of less than 10 percent. Up to 6 inches of surface water was observed near the northern tip during our site visits. The center area was not directly observed in the field, but we suspect it may be deeper.

  - EM-R Emergent Marsh-Common Reed variant. This community variant extends along the western, southern, and eastern edges of the Emergent Marsh (see Photo 13). This area is characterized by a near monoculture of common reed (*Phragmites australis*), an invasive. The common reed is extremely dense and has an average height in excess of 10 feet. These

conditions act to shade most of the ground surface, which in turn appears to limit the establishment of other species. Water depths generally ranged from 3 to 8 inches along the outer edge. The interior portion of this community was not directly observed in the field.

- EM-S Emergent Marsh-Sedge variant. This community variant occurs as a narrow band (ca. 50 feet wide x 150 feet long) along the far eastern edge of the Emergent Marsh. It is distinguished by a rather lush, moderately diverse ground layer of graminoids and herbaceous plants (see Photos 15-19). This vegetation was about 3 feet in height at the time of the site visit. Tussock sedge is the dominant species in the ground layer with a total aerial cover of about 65 percent. Other common species in this layer include sensitive fern, cinnamon fern, common cattail, spotted touch-me-not, purple loosestrife, arrowleaf tearthumb, purple-stemmed aster, poison ivy, rice cutgrass, crested wood fern, false nettle, rough-stemmed goldenrod, and seedlings of red maple, arrowwood, and speckled alder. Common reed also appears to be slowly encroaching on this community from the west. The lower shrub layer (ca. 3-6 feet tall) is somewhat localized or patchy, with red maple, spice bush, and meadowsweet (*Spirea latifolia*) co-dominant. Other shrubs include arrowwood, highbush blueberry, speckled alder, and at least one individual of swamp rose (*Rosa palustris*). The tall shrub/sub-canopy layer (10-30 feet tall) is rather conspicuous with a total aerial cover of nearly 40 percent. This layer is comprised almost exclusively of young (1-4 inch dbh) red maple. A few larger red maples (ca. 8 inch dbh) occur along the eastern boundary near the Red Maple Swamp community. As we discussed previously, rough-leaved goldenrod was observed within this adjacent Red Maple Swamp. We did not find this goldenrod or any other calcicole (i.e., fen indicator species) within the marsh community. We did, however, observe a very "tussocky" microtopography. These tussock sedge mounds are approximately 1-2 feet in height and densely vegetated (see Photos 20-21). The hollows in between the tussock mounds contained 2-8 inches (average = 6 inches) of standing water at the time of the site visit.

Endangered and Threatened Species Site Findings and Conclusions

The Site was investigated for the potential presence of federally and state-listed endangered and threatened species that may occur in the vicinity of the Site (See Table 1). The findings of our field investigation are presented below. Site photographs are provided in Attachment C.

Indiana Bat

Suitable roosting habitat for Indiana bats is limited within the Site. One particularly noteworthy shagbark hickory (see Photos 22-23) was identified on the east side of the wetland. Flagged as 'PBR #1' in the field, this tree is rather large with a measured dbh of 23 inches and a crown that partially extends above the surrounding forest canopy. Although it exhibits suitable physical traits (crevices, exfoliating bark, etc.) for roosting, only the top portion of this tree appears to have the solar exposure needed to support roosting bats.

Most other trees in the forested portions of the Site lack the physical traits commonly associated with Indiana bat roost trees. We did observe several smaller shagbark hickories (dbh < 10 inches) as well as a few trees with pronounced cavities or crevices. However, all of these trees were heavily shaded by the surrounding tree canopy. Thus, we believe it is unlikely that they provide optimal roosting habitat for

Indiana bats. No subterranean habitats (mines or caves) were found or are known to occur on-site, indicating that wintering habitat is not present.

To avoid a direct or indirect take of Indiana bats, it is recommended that the large shagbark hickory identified on the Site be avoided, and that all other necessary forest clearing in proposed disturbance areas take place between October and March. This is the time when Indiana bats will be hibernating and will not be present in on-site habitats. Please note that acceptance of this avoidance action is entirely at the discretion of the USFWS, State, and/or Town of Southeast. However, given avoidance of the large shagbark hickory, minimal levels of disturbance proposed at the Site, and implementation of a seasonal tree cutting restriction, it is our opinion that additional surveys to determine the presence of resident bats on the Site are not warranted.

Bog Turtle

Calcareous fens or fen-like wetlands were not identified within the Site. All of the on-site wetlands (see Photos 6-9) lacked suitable soils, hydrology, and vegetation to support resident bog turtle populations. The underlying wetland soils were firm with a dense sandy loam fragipan close to the surface. Such conditions hinder the burrowing activity of bog turtles, which can be critical during the cooler parts of the year. The wetland hydrology appears to be fed mainly by surface runoff and a seasonally perched water table. As a result, much of the wetland is expected to dry up during periods of low precipitation and low stream flow. Finally, the on-site portion of this wetland supports a relatively mature Red Maple Swamp community. The extensive tree canopy associated with this community limits solar exposure along the ground surface, thereby creating an unfavorable thermal environment for this turtle.

In short, bog turtles are not likely to be present within the on-site wetlands based on the lack of suitable habitat. It is Chazen's opinion that further surveys to determine if bog turtles are present on-site are not warranted.

There is one off-site wetland that does contain several features typically associated with suitable bog turtle habitat. Specifically, the Emergent Marsh-Sedge variant community appears to contain suitable soils and hydrology for this species. As discussed previously, this community is underlain by Carlisle muck. These organic soils are extremely deep and very soft or "mucky." Such features provide an ideal overwintering and burrowing habitat for the bog turtle. This community variant also appears to contain perennial surface water as shallow (< 12 inches deep) pools and rivulets dispersed in between elevated tussock mounds. This complex tussock/pool microtopography helps create ideal foraging and shelter habitat for this turtle.

There are, however, several features of the Emergent Marsh-Sedge variant community that are not typical of suitable bog turtle habitat. Most notable of these is the composition and stature of the vegetation. As described previously, the ground layer within this community was rather tall and lush during the height of the growing season (see Photos 15-21). It was also dominated by just one species of sedge (i.e., *Carex stricta*) and no calcicoles were observed.

These features contrast sharply with typical bog turtle habitat in the Hudson Valley, which consists largely of calcareous fens or fen-like wetlands. These systems are characterized by a plant community that is low in both stature and total aerial cover. In other words, these communities remain relatively stunted and somewhat sparse throughout the growing season. This permits greater solar radiation to

reach the ground and water surface, which in turn creates a more favorable thermal environment for the bog turtle. Such conditions are particularly critical during the early spring, when turtles must bask to regulate their body temperatures. Typical bog turtle habitat is also characterized by numerous tussocks and small mounds. While a considerable number of sedges may be associated with these mounds, most of the mounds are actually formed by mosses. In fact, many of the sedge species found within fens exhibit a non-cespitose (i.e., non-tuft forming) growth form. This has several important ramifications for the bog turtle. For one, it helps minimize shading from solar radiation. It also helps limit the amount of root material within the mound, which in turn facilitates burrowing and excavation by this species. Such mounds provide one of the most vital habitat components for the bog turtle – nesting habitat.

The tall, lush vegetation found within the Emergent Marsh-Sedge variant community likely hinders bog turtle thermoregulation by shading potential basking sites and adjacent pools. Equally important is the apparent lack of suitable nesting sites within this wetland. Although the tussock mounds do provide an elevated feature within this community, the fact that they are formed almost exclusively by *Carex stricta* may significantly diminish their suitability for nesting. Tussocks formed by this sedge tend to have an extremely dense root mass that can discourage nest excavation by this species (John Sullivan, personal observation).

Given these issues, Chazen has classified the off-site Emergent Marsh-Sedge variant community as marginal bog turtle habitat. Although the potential for this wetland to support a resident population of bog turtles is very low, we still recommend that efforts be taken to avoid direct and indirect impacts. Because this community is located off-site, we do not anticipate any direct impacts as a result of the proposed project. There is, however, a potential for indirect impact. Specifically, the planned extraction of groundwater could conceivably alter the nature of groundwater flows into this wetland (if any). To help evaluate the likelihood of this scenario, Chazen recommends that a series of piezometers be installed within and directly adjacent to this community, and that these piezometers be monitored during the initial pump tests for the project.

New England Cottontail

Suitable habitat for New England cottontails is identified as successional shrubland areas. No significant successional shrubland habitat is present at the site given its forested nature. New England Cottontail is not likely to be present within the site based on the lack of suitable habitat, and it is Chazen's opinion that further surveys to determine if New England Cottontail are present on-site are not warranted.

Bald Eagle

Suitable habitat for bald eagles was not observed within the site and further consideration of impacts to bald eagles is not warranted since no signs (i.e., direct observations or nesting sites) of bald eagles were observed within the surrounding area.

The Chazen Companies thank you for the opportunity to conduct this work. If you have any questions or require additional information, please do not hesitate to contact me at (518) 824-1934.

Sincerely,

Barbara B. Beall, PWS, LEED®AP
Director, Natural Resource Services

cc: Michael Fanning, P.E.
John T. Sullivan

Attachment A:
Figures

Area to be Flagged (Outlined in Red Above)
U.S.G.S. Topographic Map: USGS Ref. Code:
Brewster - 41074-D5-TF-024

THE Chazen COMPANIES®
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

Town of Southeast

Figure 1 - Site Location Map

Town of Southeast, Putnam County, New York

Source: USGS Topogrpahic Map of the Brewster, New York-Connecticut Quadrangle, Dated 1958 (Photorevised 1984), 7.5-Minute Series; Putnam County Office of Real Property Services 2007Tax Parcel Data.

Drawn:	EJO
Date:	September 2011
Scale:	1 inch = 1,000 feet
Project:	81026.01
Figure:	1

Map Document: (X:\8\81000-81099\81026 - Southeast Water District Revisions\GIS\maps\81026.00 Area to be Flagged (topo).mxd)
8/16/2011 -- 12:09:23 PM

THE Chazen COMPANIES®
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

Town of Southeast

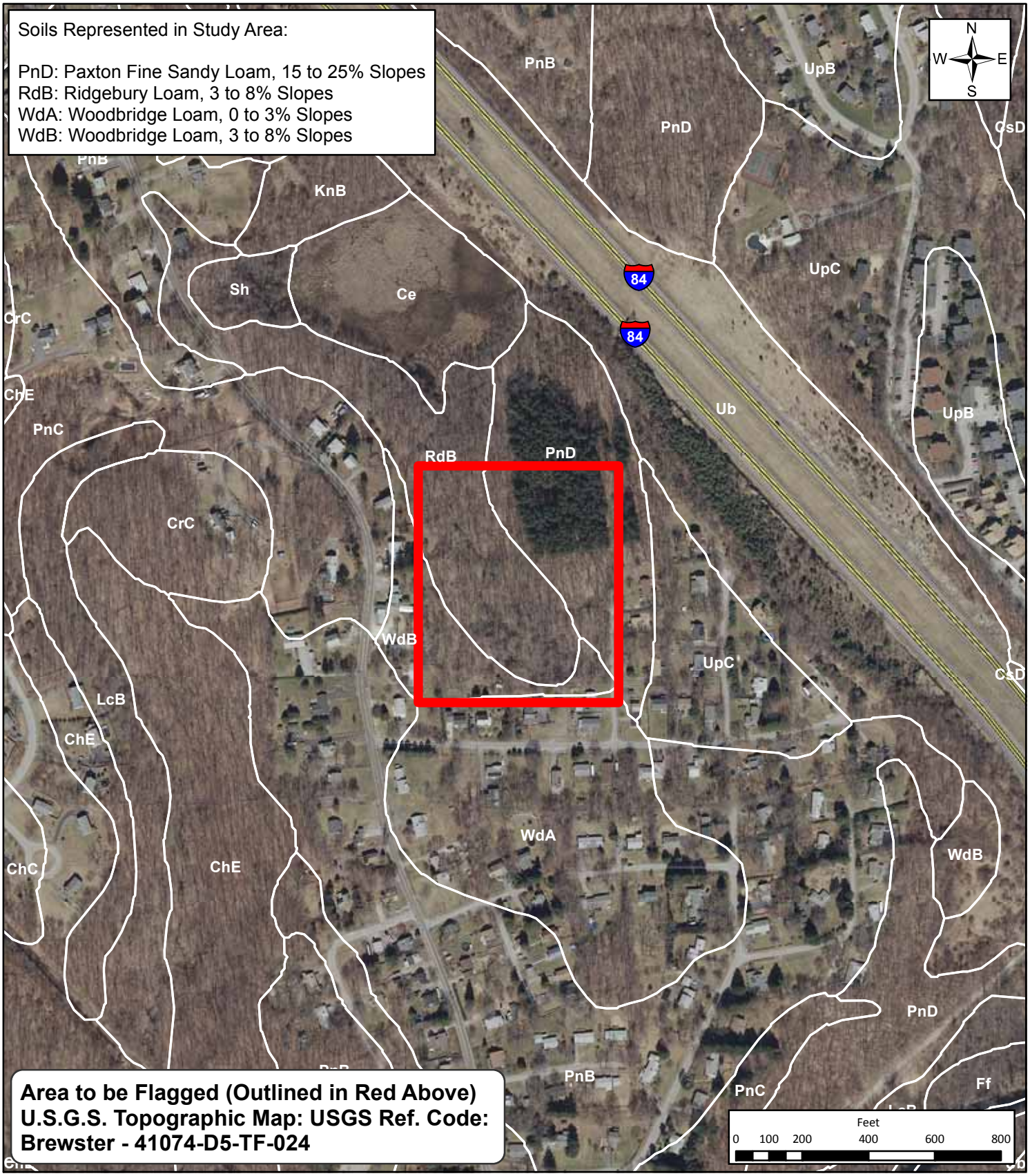
Figure 2: 2009 Orthophoto

Town of Southeast, Putnam County, New York

Source: NYS Department of Homeland Security and Emergency Services 2009 Orthoimagery; Putnam County Office of Real Property Services 2007 Tax Parcel Data.

Drawn:	EJO
Date:	September 2011
Scale:	1 inch = 400 feet
Project:	81026.01
Figure:	2

Map Document: (X:\8\81000-81099\81026 - Southeast Water District Revisions\GIS\maps\81026.00 Area to be Flagged (topo).mxd)
8/16/2011 -- 12:09:23 PM



THE Chazen COMPANIES
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

Town of Southeast

Figure 4: Wetlands Map

Town of Southeast, Putnam County, New York

Source: NYS Department of Homeland Security and Emergency Services 2009 Orthoimagery; Putnam County Office of Real Property Services 2007 Tax Parcel Data; USDA NRCS 2006 Soil Survey of Putnam County.

Drawn:	EJO
Date:	September 2011
Scale:	1 inch = 400 feet
Project:	81026.01
Figure:	3

Map Document: (X:\8\81000-81099\81026 - Southeast Water District Revisions\GIS\maps\81026.00 Area to be Flagged (topo).mxd)
8/16/2011 -- 12:09:23 PM

THE Chazen COMPANIES®
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

Town of Southeast

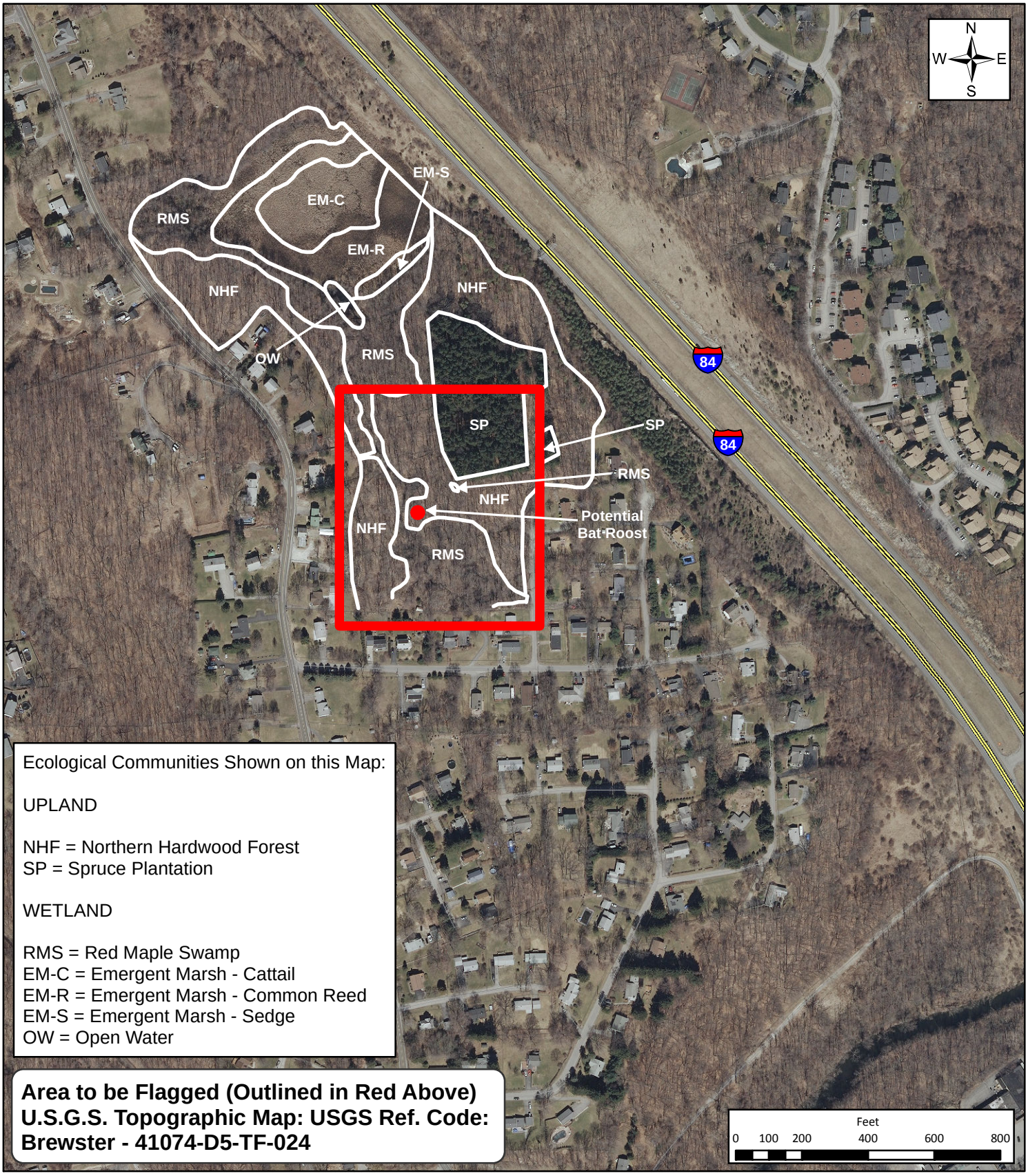
Figure 4: Wetlands Map

Town of Southeast, Putnam County, New York

Source: NYS Department of Homeland Security and Emergency Services 2009 Orthoimagery; Putnam County Office of Real Property Services 2007 Tax Parcel Data; NWI 2004 Wetlands Mapping.

Drawn:	EJO
Date:	September 2011
Scale:	1 inch = 400 feet
Project:	81026.01
Figure:	4

Map Document: (X:\8\81000-81099\81026 - Southeast Water District Revisions\GIS\maps\81026.00 Area to be Flagged (topo).mxd)
8/16/2011 -- 12:09:23 PM



Ecological Communities Shown on this Map:

UPLAND

NHF = Northern Hardwood Forest
SP = Spruce Plantation

WETLAND

RMS = Red Maple Swamp
EM-C = Emergent Marsh - Cattail
EM-R = Emergent Marsh - Common Reed
EM-S = Emergent Marsh - Sedge
OW = Open Water

Area to be Flagged (Outlined in Red Above)
U.S.G.S. Topographic Map: USGS Ref. Code: Brewster - 41074-D5-TF-024

THE Chazen COMPANIES®
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

Town of Southeast

Figure 5: Ecological Communites Map

Town of Southeast, Putnam County, New York

Source: NYS Department of Homeland Security and Emergency Services 2009 Orthoimagery; Putnam County Office of Real Property Services 2007 Tax Parcel Data; NWI 2004 Wetlands Mapping.

Drawn:	EJO
Date:	September 2011
Scale:	1 inch = 400 feet
Project:	81026.01
Figure:	5

Map Document: (X:\8\81000-81099\81026 - Southeast Water District Revisions\GIS\maps\81026.00 Area to be Flagged (topo).mxd)
8/16/2011 -- 12:09:23 PM

Attachment B:
Regulatory Correspondence

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES IN NEW YORK (By County)

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

COUNTY Common Name	Scientific Name	Status
ALBANY		
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle *(Historic)*	*Clemmys [=Glyptemys] muhlenbergii*	T
Indiana bat (W/S)	*Myotis sodalis*	E
Karner blue butterfly	*Lycaeides melissa samuelis*	E
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
ALLEGANY		
Bald eagle	*Haliaeetus leucocephalus*	D
BRONX		
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
BROOME		
Bald eagle	*Haliaeetus leucocephalus*	D
CATTARAUGUS		
Bald eagle	*Haliaeetus leucocephalus*	D
Clubshell	*Pleurobema clava*	E
Rayed bean	*Villosa fabalis*	P
CAYUGA		
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle	*Clemmys [=Glyptemys] muhlenbergii*	T
Indiana bat (S)	*Myotis sodalis*	E
CHAUTAUQUA		
Bald eagle	*Haliaeetus leucocephalus*	D
Clubshell	*Pleurobema clava*	E
Rayed bean	*Villosa fabalis*	P
CHEMUNG[2]		
Bald eagle	*Haliaeetus leucocephalus*	D

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES IN NEW YORK (By County)

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

COUNTY Common Name	Scientific Name	Status
OTSEGO		
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle *(Historic)*	*Clemmys [=Glyptemys] muhlenbergii*	T
PUTNAM		
Atlantic sturgeon[1]	*Acipenser oxyrinchus oxyrinchus*	C
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle	*Clemmys [=Glyptemys] muhlenbergii*	T
Indiana bat (S)	*Myotis sodalis*	E
New England cottontail	*Sylvilagus transitionalis*	C
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
QUEENS		
Piping plover	*Charadrius melodus*	T
Roseate tern	*Sterna dougallii dougallii*	E
Seabeach amaranth	*Amaranthus pumilus*	T
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
RENSSELAER		
Bald eagle	*Haliaeetus leucocephalus*	D
Indiana bat (S)[3]	*Myotis sodalis*	E
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
RICHMOND		
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
ROCKLAND		
Atlantic sturgeon[1]	*Acipenser oxyrinchus oxyrinchus*	P
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle	*Clemmys[=Glyptemys] muhlenbergii*	T
Indiana bat (S)	*Myotis sodalis*	E
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
Small whorled pogonia	*Isotria medeoloides (Historic)*	T

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES IN NEW YORK (By County)

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

COUNTY Common Name	Scientific Name	Status
WARREN		
Bog turtle *(Historic)*	*Clemmys [=Glyptemys] muhlenbergii*	T
Indiana bat (W/S)	*Myotis sodalis*	E
Karner blue butterfly	*Lycaeides melissa samuelis*	E
WASHINGTON		
Indiana bat (S)	*Myotis sodalis*	E
Small whorled pogonia *(Historic)*	*Isotria medeoloides*	T
WAYNE		
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle	*Clemmys [=Glyptemys] muhlenbergii*	T
Eastern prairie fringed orchid *(Historic)*	*Platanthera leucophea*	T
Indiana bat (S)	*Myotis sodalis*	E
WESTCHESTER		
Atlantic sturgeon[1]	*Acipenser oxyrinchus oxyrinchus*	P
Bald eagle	*Haliaeetus leucocephalus*	D
Bog turtle	*Clemmys [=Glyptemys] muhlenbergii*	T
Indiana bat (S)	*Myotis sodalis*	E
New England cottontail	*Sylvilagus transitionalis*	C
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E
WYOMING		
Bald eagle	*Haliaeetus leucocephalus*	D
YATES		
Bald eagle	*Haliaeetus leucocephalus*	D
Leedy's roseroot	*Rhodiola integrifolia* ssp. *leedyi* (=*Sedum integrifolium* ssp. *l.*)	T

E=endangered T=threatened P=proposed C=candidate D=delisted

W=winter S=summer - Please note that the Indiana bat may occur in additional counties but we have listed the counties with the greatest likelihood of Indiana bat presence.

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES IN NEW YORK (By County)

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

COUNTY Common Name	Scientific Name	Status

[1] Primarily occurs in the Hudson River. Principal responsibility for this species is vested with the National Oceanic and Atmospheric Administration's-Fisheries (NOAA-Fisheries).

[2] Except for occasional transient individuals, no Federally-listed or proposed endangered or threatened species, or candidate species under our jurisdiction are known to exist in these counties.

[3] While Indiana bats were known to winter in Albany County, we now believe they are likely extirpated or in such small numbers that it is unlikely that they would be present and impacted by any specific proposed projects in Albany, Rensselaer, Saratoga, Schenectady, and Schoharie Counties. This determination may change as we receive new information.

[4] Except for sea turtle nesting habitat, principal responsibility for these species is vested with the NOAA-Fisheries. Please visit the following website for more information http://www.nmfs.noaa.gov/pr/species/esa.htm.

[5] Piping plovers are found in Suffolk and Nassau County; however their early successional habitat is only found at the shoreline, on barrier islands, sandy beaches and dredged material disposal islands. Please see the fact sheet at http://nyfo.fws.gov/es/PipingPloverFactSheet07.pdf for more information on suitable habitat.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

August 17, 2011

RECEIVED
AUG 18 2011

Barbara B. Beale
Chazen Companies
21 Fox Street
Poughkeepsie, NY 12601

Dear Ms. Beale:

In response to your recent request, we have reviewed the New York Natural Heritage Program database, with respect to an Environmental Assessment for the proposed Water Well search for a Water Supply for the Town of Southeast, on the 10-Acre Parcel, Project # 81026, site as indicated on the map you provided, located in the Town of Southeast, Putnam County.

We have no records of rare or state listed animals or plants, significant natural communities or other significant habitats, on or in the immediate vicinity of your site.

The absence of data does not necessarily mean that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities and other significant habitats maintained in the Natural Heritage Data bases. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Jean Pietrusiak, Information Services
NYS Department Environmental Conservation

Enc.
cc: Region 3

838

Attachment C:
Site Photographs

Photo1. View of the Northern Hardwood Forest community west of Spruce Road (looking northward).

Photo 2. View of the Northern Hardwood Forest community west of Spruce Road (looking westward). Note the sparse shrub and ground layers.

Photo 3. Area of Northern Hardwood Forest community with dense shrub cover (located near upland/wetland boundary at center of Site). The dominant shrub is Japanese barberry (*Berberis thunbergii*).

Photo 4. View of the Spruce Plantation community in the northeast corner of the Site (looking southward). Note the sparse understory growth.

Photo 5. View of the Site's intermittent stream near the southern boundary, looking southward (upstream). Note the poorly defined banks associated with this stream channel.

Photo 6. View of the Red Maple Swamp community near the northern end of the site, looking northwestward.

Photo 7. View of the Red Maple Swamp community just south of delineation flag number "A-13," looking westward. Note the large expanse of bare mud, moss covered rocks, and exposed roots in the foreground.

Photo 8. View of the Red Maple Swamp community near the southern boundary of the Site, looking northward.

Photo 9. Dense patch of spotted touch-me-not, poison ivy, and other herbs associated with a canopy gap near the southeastern end of the Red Maple Swamp community.

Photo 10. Off-site portion of the Red Maple Swamp community, located near the far southwest corner (looking northward). Note the degree of inundation and the growth of “marsh” plants in the foreground.

Photo 11. Dense cover of cinnamon fern in the off-site portion of the Red Maple Swamp community (located near northwest corner, looking westward).

Photo 12. Rough-leaved goldenrod (*Solidago patula*) observed in the off-site portion of the Red Maple Swamp community (see text for location & significance).

Photo 13. View of the Emergent Marsh community from an embankment along I-84 (looking southwest). Note the cattail variant (right) and the common reed variant (left) of this community.

Photo 14. Close-up view of the Emergent Marsh – Cattail variant community at base of I-84 embankment (looking southward).

Photo 15. View of the Emergent Marsh-Sedge variant community from the southern boundary (looking northeastward).

Photo 16. View of the Emergent Marsh-Sedge variant community from the western boundary (looking eastward).

Photo 17. View of the Emergent Marsh-Sedge variant community from the northern boundary (looking southwestward).

Photo 18. View of the Emergent Marsh-Sedge variant community from the eastern boundary (looking westward).

Photo 19. Close up view of the Emergent Marsh-Sedge variant community. Note the “lush” herbaceous vegetation in the foreground.

Photo 20. Close up view of a tussock sedge mound within the Emergent Marsh-Sedge variant community. Note the dense sedge canopy associated with this tussock mound.

Photo 21. Close up view of the dense sedge cover within the Emergent Marsh-Sedge variant community. Note the shallow pool (red arrow).

Photos 22 and 23. Shagbark hickory identified as a potential bat roost tree (i.e., PBR #1). Located on an upland "peninsula" near the eastern edge of the wetland.

Appendix D:
Aquifer Pumping Test Report

Aquifer Pumping Test Report

Peaceable Hill Well Field Site

Spruce Road
Town of Southeast
Putnam County, New York

April 2014

THE Chazen COMPANIES®
Proud to be Employee Owned
Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Prepared for:

Town of Southeast
1360 U.S. Route 22
Brewster, New York 10509

Aquifer Pumping Test Report

Peaceable Hill Well Field Site

Spruce Road
Town of Southeast
Putnam County, New York

April 2014

THE Chazen COMPANIES®
Proud to be Employee Owned
Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Prepared by:

Chazen Environmental Services, Inc.
21 Fox Street
Poughkeepsie, New York 12601
(845) 454-3980

Capital District Office
(518) 273-0055

North Country Office
(518) 812-0513

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

1.0 INTRODUCTION 2

2.0 GEOLOGIC AND HYDRAULIC SETTING AND WELL INSTALLATIONS 3

3.0 WELL TEST PREPARATIONS 4

4.0 AQUIFER TEST 6

5.0 RESULTS 7

5.1 Discussion and Interpretation of Well PW-1 Pumping Test Results 7

5.2 Discussion and Interpretation of Well PW-2 Pumping Test Results 7

5.3 Sub-Part 5 Water Quality Criteria 8

6.0 CONCLUSIONS 8

7.0 DISCLAIMER 9

LIST OF FIGURES

Figure 1 – Site Location Map
Figure 2 – Site Layout Map
Figure 3 – Water level record in Production Well PW-1
Figure 4 – Projected drawdown plot for Production Well PW-1
Figure 5 – Water level record in Production Well PW-2
Figure 6 – Projected drawdown plot for Production Well PW-2
Figure 7 – Water level record in Healy Residence Well (25 Pine Road)
Figure 8 – Water level record in Facciabene Residence Well (21 Pine Road)

LIST OF TABLES

Table 1 – Weather observation during time period of pump testing
Table 2 – Water quality parameters observed in production wells during pump testing
Table 3 – Summary of Groundwater Analytical Results for NYSDOH Subpart 5 Parameters

APPENDICES

Appendix A: Well Completion Logs
Appendix B: List of Contacts and Informational Letter Sent to Homeowners
Appendix C: Laboratory Analytical Reports

EXECUTIVE SUMMARY

Two 72-hour aquifer pumping tests were conducted between February 24 and March 6, 2014, on candidate production wells PW-1 and PW-2 at the Peaceable Hill Well Field Site in the Town of Southeast, Putnam County, New York (Figure 1). The PW-1 test was conducted at a final discharge rate of 95 gallons per minute (GPM) (136,800 gallons per day) and the PW-2 test was conducted at a final discharge rate of 84 GPM (120,960 gallons per day). Drawdown projections suggest water levels in these wells will remain above the primary water-bearing fractures and most reasonable pump installation depths in each well during up to a 6 month period without groundwater recharge.

During the final hours of each flow test, groundwater samples were collected for analysis of quality criteria specified by New York State Department of Health (NYSDOH) personnel. Groundwater quality parameters were found to meet NYSDOH Subpart 5 maximum contaminant limits (MCLs).

The two test wells are situated within boundaries of an existing water district area, so few to no nearby homes rely on individual wells. Efforts were made to identify existing wells for monitoring during tests. Two wells were identified for monitoring, and neither identified significant drawdown during the tests.

1.0 INTRODUCTION

The Chazen Companies (Chazen) were contracted to manage installation and testing of two candidate water supply wells at the Peaceable Hill Well Field Site (the site) in the Town of Southeast, New York. The wells were installed between January and November of 2012. Well completion logs are provided in **Appendix A**.

Well yield and water quality testing for each of these new wells was conducted during February and March of 2014. During the first test, candidate well PW-1 was pumped between February 24 and 27, 2014 at a final flow rate of 95 gallons per minute (GPM) (136,800 gallons per day).

Candidate well PW-2 is proposed for alternating use with PW-1, or as a mechanical backup well, in association with use of well PW-1. Chazen conducted a pumping test on this well between March 3 and March 6, 2014 at a final flow rate of 84 GPM (120,960 gallons per day).

The two wells lie within an existing water district so there are few to no nearby active wells in service. Two were located and monitored during the tests.

2.0 GEOLOGIC AND HYDRAULIC SETTING AND WELL INSTALLATIONS

Wells PW-1 and PW-2 lie within a north-south oriented gently sloping valley located on granitic gneiss bedrock covered by generally thin glacial till soils. An ephemeral stream with associated wetlands drains north toward Tonetta Brook and Lake Tonetta.

Wells PW-1 and PW-2 were installed in 2012 as 6-inch diameter wells, advanced to 818 and 810 feet, respectively. These wells are separated from one another by approximately 25 feet. Bedrock is present within approximately fifteen feet of grade at these well locations.

Drilling of both wells encountered relatively competent grey to pink granitic gneiss bedrock. The rock consists of a tightly interlocked and somewhat foliated (layered) mineral assemblage of quartz, feldspar, hornblende and biotite mica. Few to no water-bearing fractures were noted in the upper several hundred feet of bedrock in both locations. Well PW-1 was initially advanced in January 2012 to a depth of 800 feet below grade before encountering primary water bearing fractures between 795 and 800 feet below grade. Initial yield estimates were in the 40 GPM range.

Well PW-2 was installed in October 2012 to serve as an alternating or mechanical backup to PW-1. This well was advanced to 810, and while it also showed no significant water-bearing fractures in the initial several hundred feet of drilling, this well encountered very significant yield between 795 and 810 feet below grade. Initial estimates of yield from this range were in the range of 100 GPM.

Following completion of PW-2, PW-1 was deepened to seek fractures noted in PW-2. The well was advanced from 800 to 818 feet below grade in November 2012 and estimated yield increased to approximately 100 GPM.

Driller's well completion logs are attached in **Appendix A**.

3.0 WELL TEST PREPARATIONS

Both wells were airlifted briefly following completion of well drilling activities. This work removed drill cuttings and allowed the preliminary estimates of each well's yield.

Prior to formal 72-hour well testing, Chazen drafted a well testing protocol that was subsequently reviewed and approved by both the NYSDOH and the Putnam County DOH. As agreed to under this protocol, Chazen attempted to make contact with owners of nearby properties believed to have individual wells. The new production wells lie in a neighborhood served by a public water system, so most homeowners do not have individual wells. Eight nearby homeowners which Town representatives believed might have wells on their properties were contacted (Addresses listed in **Appendix B**). Only one of these homeowners (Mr. Frank Facciabene at 21 Pine Road) provided permission to monitor his well. When Chazen staff met with Mr. Facciabene to assess his well and install a monitoring device, he indicated that his next door neighbor (at 25 Pine Road) also had a well. This property was on Chazen's contact list but apparently had recently been sold, to Chazen's initial letter had gone to the previous owner and received no response. Chazen staff spoke to the new owner of this property (Mr. Eric Healy), who agreed to allow monitoring in his well. These two off-site monitoring locations are identified on **Figure 2**. Monitoring devices (a.k.a data loggers) in these locations were programmed to record data before and during the test periods, as well as throughout the recovery phase. As permission to monitor the Healy well was obtained only just prior to test initiation, a data logger was not installed in this location until this first day of the test period so no pre-test data were collected from this location.

A copy of the notification letter sent to the homeowners as well as the signed documents providing Chazen permission to conduct monitoring are attached in **Appendix B**.

Data loggers were also secured in both candidate production wells and programmed to record data before and during the test periods, as well as throughout the recovery phase.

The pump utilized for this testing was procured by the Town of Southeast in anticipation of its eventual permanent installation in one of these wells. The pump was first set in well PW-1, at a depth of 360 feet below the top of each well's casing. This is approximately equal to 357 feet below grade at PW-1, and 359 feet below grade at PW-2 once the test pump was moved into PW-2 for the second test. For test purposes, when the pump was installed in each well, it was fitted with an appropriate well-head setup consisting of a flow meter, control valve, sample port, monitoring (stilling) tube and discharge line.

Pumped water was directed away from both wells via a two-inch diameter canvas hose. Water was discharged approximately 100 feet southwest of the wells on grassy flat ground near the perimeter of a wetland area and nearby seasonal stream. Discharge was allowed to sheet flow away, following natural drainage patterns (see **Figure 2**). No erosion was observed in the

discharge area and no turbid water was observed to enter the wetland areas near the wells during the tests. A staff gauge was not established in the stream/wetland as this area was solidly frozen during the test period.

Sub-Part 5 sampling analysis arrangements were completed with Phoenix Environmental Laboratories, Inc., The laboratory supplied sampling bottle-ware and took custody at the field site of sample bottles filled by Chazen on the last day of each test.

4.0 AQUIFER PUMPING TEST

Preliminary yield testing indicated that well PW-1 could potentially support yields of 100 or more GPM and well PW PW-2 could potentially support a yield of approximately 100 GPM.

PW-1 was tested first, initiating on February 24, 2014 and ending February 27, 2014. There were no flow interruptions during the test. This well test began at the maximum rate the pump could produce, falling quickly from 110 GPM to a stable discharge of 95 GPM as the well water level fell and hydraulic head increased. The 95 GPM flow rate was stable with minor adjustments throughout the final 47 hours and 24 minutes of the test period. Flow rate was periodically confirmed using barrel and stopwatch methods.

Following completion of PW-1 testing, the pump and associated equipment were relocated to PW-2 and a second 72-hour test was performed at this location to determine if this well could support a similar yield. The test was initiated on March 3, 2014 and ended March 6, 2014. This test was conducted at a consistent rate of 84 GPM based on pump head capacity observed during the first test and the initial slightly lower driller's initial yield estimate. This discharge remained stable with only minor adjustments throughout the test period. Flow rate was also periodically confirmed using barrel and stopwatch methods.

As backup to data being collected by water level data loggers, groundwater elevation data were collected manually by Chazen throughout daylight hours at all monitoring points.

During the final period of each 72-hour test, a water quality sample was collected. Sample containers were transported in chilled coolers by the certified lab for analysis. Sample results have been tabulated and compared to the maximum contaminant levels (MCLs) listed in NYSDOH Sub-Part 5 (**Table 1**). A copy of the laboratory analytical report is attached (**Appendix C**).

No measureable rainfall was recorded at the site during or several days after the pump testing period. Approximately 0.22 inches of rain fell two days prior to the PW-1 pump test but no notable effect from this precipitation was identified in any of the monitoring points. A summary of weather observations before, during and after the test period is provided in **Table 2**.

5.0 RESULTS

5.1 Discussion and Interpretation of Well PW-1 Pumping Test Results

During the Well PW-1 aquifer test, the water level in the well declined 147.21 feet below the pre-test static level. The pre-test saturated water column in PW-1 was nearly 800 feet. The rate of decline over the last 12 hours was 0.32 feet/hour, readily meeting the definition of stabilization in Sub-part 5-B.4(b)(2). The slow continuing decline at the test end is characteristic of wells not tapping a surface-water boundary condition and not benefiting during the test from any recharge by precipitation. The water level in Well PW-1 recovered upon termination of the test, following the inverse of the test's drawdown curve (**Figure 3**).

The only major water-bearing fractures in well PW-1 lie approximately 800 feet below grade. A semi-logarithmic straight-line projection of the PW-1 test drawdown data models that the water level in the well would remain more than 500 feet deep over this fracture depth, as well as not reach the level of the test pump (357 ft below grade), during a 6-month drought period (**Figure 4**). Drawdown observed in other monitored locations is summarized below:

<u>Well PW-2</u> is located 25 feet from well PW-1. The drawdown response recorded in well PW-2 (**Figure 5**) mirrors drawdown observed in well PW-1 (**Figure 3**) with 94.02 feet of drawdown and is consistent with drilling observations suggesting these wells tap interconnected fractures.

<u>Healy and Facciabene Residence Wells:</u> These wells are situated southeast of the well field, near the end of Pine Road. These wells are located approximately 10 feet apart and are each approximately 570 from the well field. Mr. Facciabene indicated that his well is drilled to a total depth of 312 feet below grade, with the pump installed at approximately 300 feet below grade. Mr. Healy did not know any construction details of his well.

Each of these two domestic wells recorded minor drawdown influences during the Well PW-1 pumping test. The Healy residence well recorded approximately seven feet of drawdown during the PW-1 test (**Figure 7**) and the Facciabene well recorded approximately the same drawdown (**Figure 8**). No electronic data record is provided for the Facciabene well due to a data logger malfunction; however, manually measured water levels in this well were comparable to those noted in the adjacent Healy well. Neither homeowner reported any water quantity or quality deficiencies to Chazen during this test.

5.2 Discussion and Interpretation of Well PW-2 Pumping Test Results

During the Well PW-2 aquifer test, the water level in the well fell a total of 170.65 feet below the pre-test static level. As with well PW—1, the pre-test saturated water column in well PW-2 is approximately 800 feet. The rate of decline was approximately 0.28 feet/hour of the last 12 hours of the test meeting the regulatory standard for stabilization. The water level in Well PW-

2 also recovered upon termination of the test, following the inverse of the test's drawdown curve (**Figure 5**). No electronic data record is available for this well due to data logger failure; however, manually-measured water levels document this well's performance (**Figure 3**).

A semi-logarithmic straight-line projection of the well PW-2 test drawdown data models that the water level in this well would remain more than 400 feet deep over the primary water supply fractures as well and also not reach the test pump level (359 ft below grade) during a 6-month drought period (**Figure 6**). Drawdown observed in other monitored locations is summarized below:

Well PW-1 as noted before is located 25 feet from well PW-2. The drawdown response recorded in well PW-1 (**Figure 3**) was also similar to drawdown observed in well PW-2 (**Figure 5**). This well experienced 90.72 feet of drawdown as compared to the 170.65 feet measured in well PW-1 confirming that these wells tap interconnected fractures.

Healy and Facciabene Residence Wells: As in the PW-1 test, each of these wells recorded drawdown influences during the Well PW-2 pumping test. The Healy residence well recorded approximately five feet of drawdown during the PW-2 test (**Figure 7**) and the Facciabene well recorded approximately the same drawdown (**Figure 8**). During testing of PW-2, Mr. Healy reported to Chazen a loss of water pressure in his home. Chazen inspected the recorded water level data (**Figure 6**) and noted no significant drop in the water level of this well. As such, the water quantity issue noted by Mr. Healy was confirmed to be unrelated to the PW-2 pumping test.

5.3 Sub-Part 5 Water Quality Criteria

Water quality data from water samples collected at the end of the well PW-1 and well PW-2 pumping tests have been tabulated (**Table 1**). All analyzed water quality parameters were detected at concentrations below their corresponding NYSDOH Maximum Contaminant Level (MCL). A copy of the laboratory report in attached as **Appendix C**.

6.0 CONCLUSIONS

Two new candidate production wells were installed at the Peaceable Hill Well Field in 2012 under Chazen oversight. These wells, PW-1 and PW-2, have been each subjected to 72-hour yield testing and water quality testing during the period of February and March 2014. Testing indicates they can individually support continuous discharges of 95 and 84 GPM, respectively. Sampling and analysis identified no exceedences of NYSDOH Subpart 5-1 analytes.

7.0 DISCLAIMER

This report documents aspects of a groundwater resource investigation conducted at the Peaceable Hill Well Field site by The Chazen Companies. All comments, observations, calculations, and conclusions were based on data available to The Chazen Companies at the times the data were collected and as reported at the time that this document was prepared. This report should not be construed in any way to guarantee the production of this water source. The Chazen Companies are not responsible for any extractions of this report or for any extrapolations made by others based on this report but which do not appear in this report.

FIGURES

THE Chazen COMPANIES

ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road, Queensbury, NY 12804
Phone: (518) 812-0513

Peaceable Hill Well Field Site

Figure 1 - Site Location Map

Spruce Road
Town of Southeast, Putnam County, New York

Source: USGS Topographic Maps of the Lake Carmel, New York and Brewster, New York-Connecticut Quadrangles, Dated 1960 (Photorevised 1981) and 1958 (Photorevised 1984), 7.5-minute Series.

Drawn:	EJO
Date:	April 2014
Scale:	1:24,000
Project:	81026.01
Figure:	1

THE Chazen COMPANIES

ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road, Queensbury, NY 12804
Phone: (518) 812-0513

Peaceable Hill Well Field Site

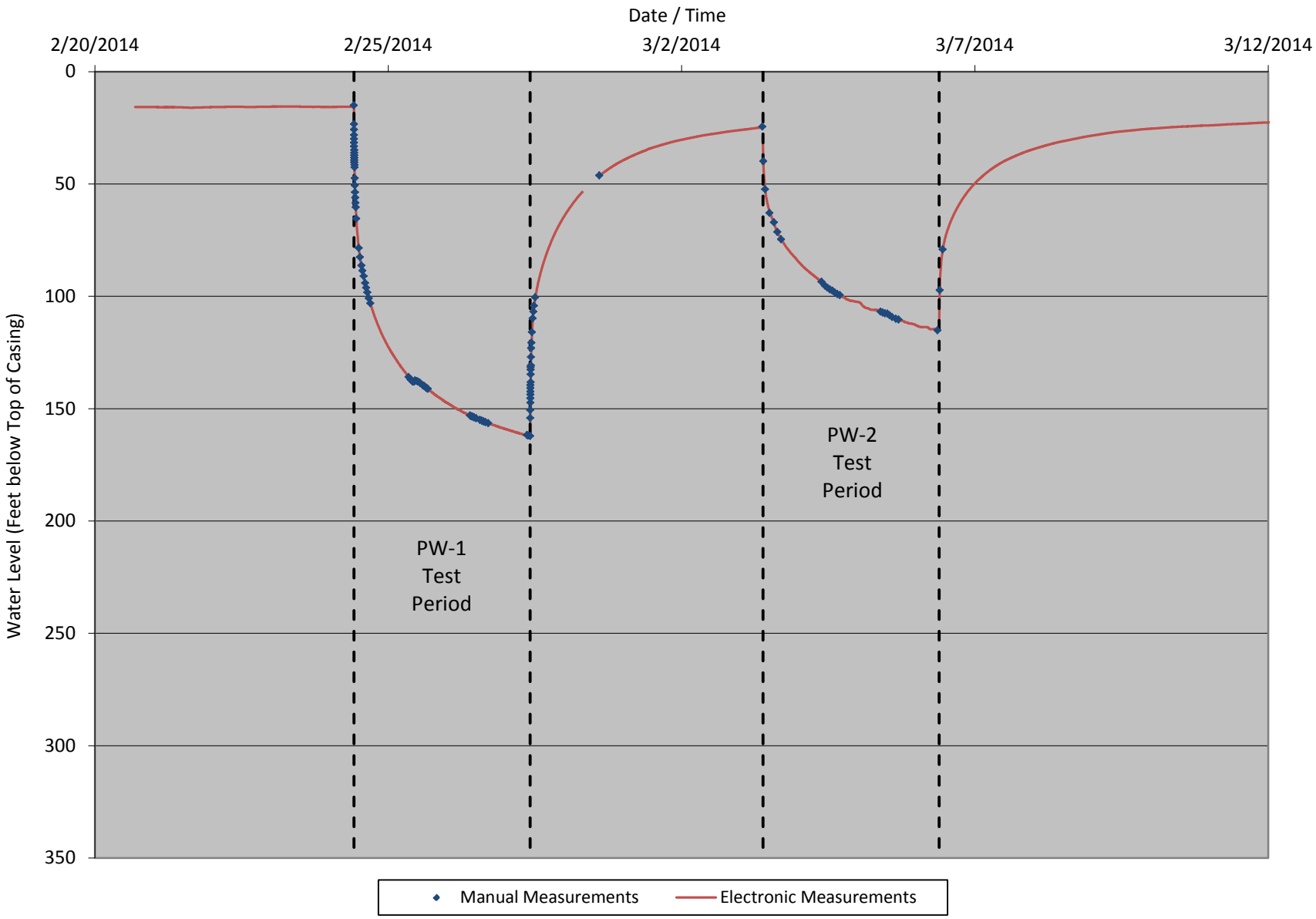
Figure 2 - Site Layout Map

Spruce Road
Town of Southeast, Putnam County, New York

Source: i-Cubed Nationwide orthoimagery program 2009-2013 data; Putnam County Real Property Services 2007 Tax Parcel Data; wells drawn by Chazen, 2014.

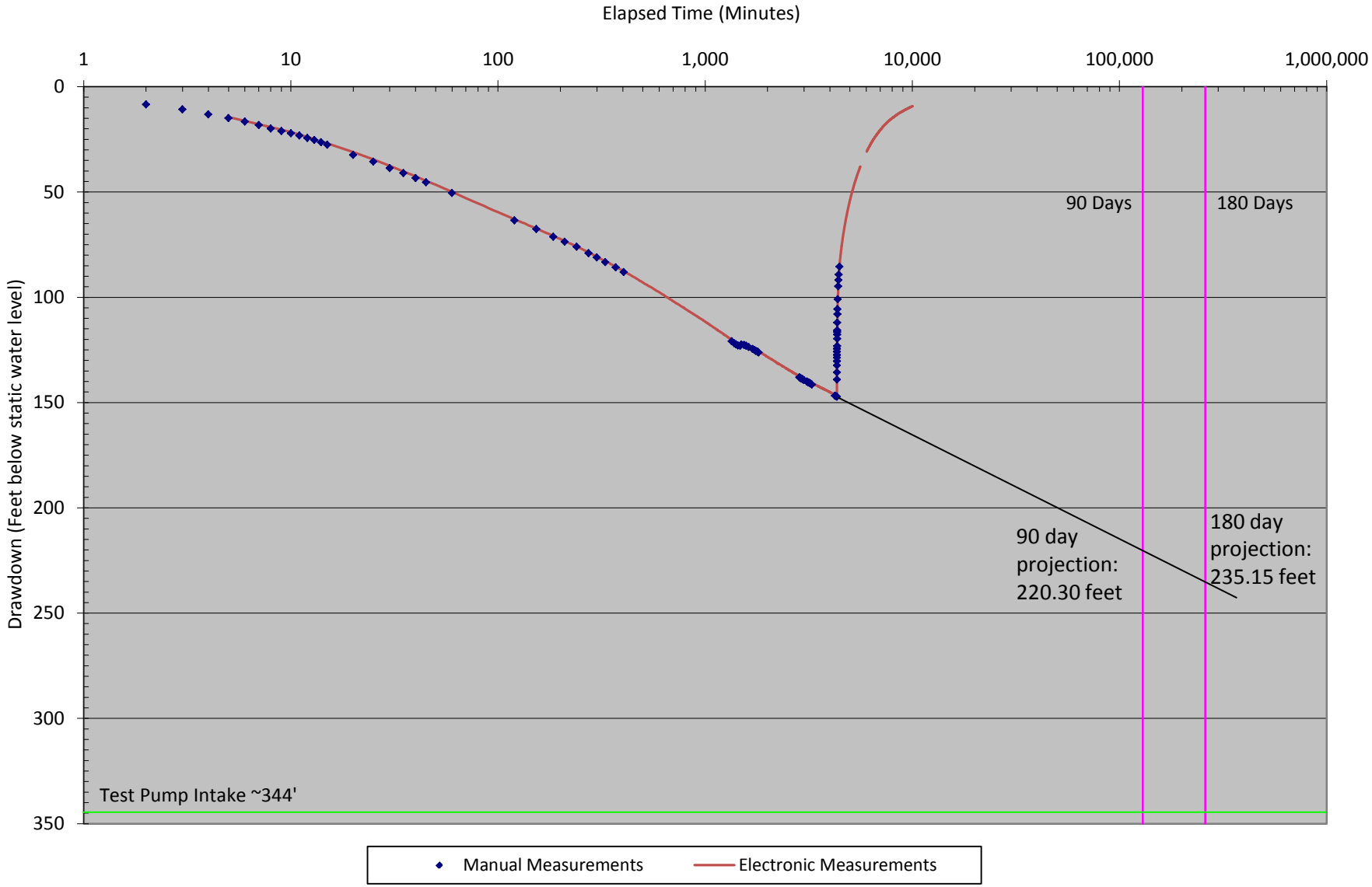
Drawn:	EJO
Date:	April 2014
Scale:	1:2,400
Project:	81026.01
Figure:	2

Figure 3: Water Level Record in Production Well PW-1
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



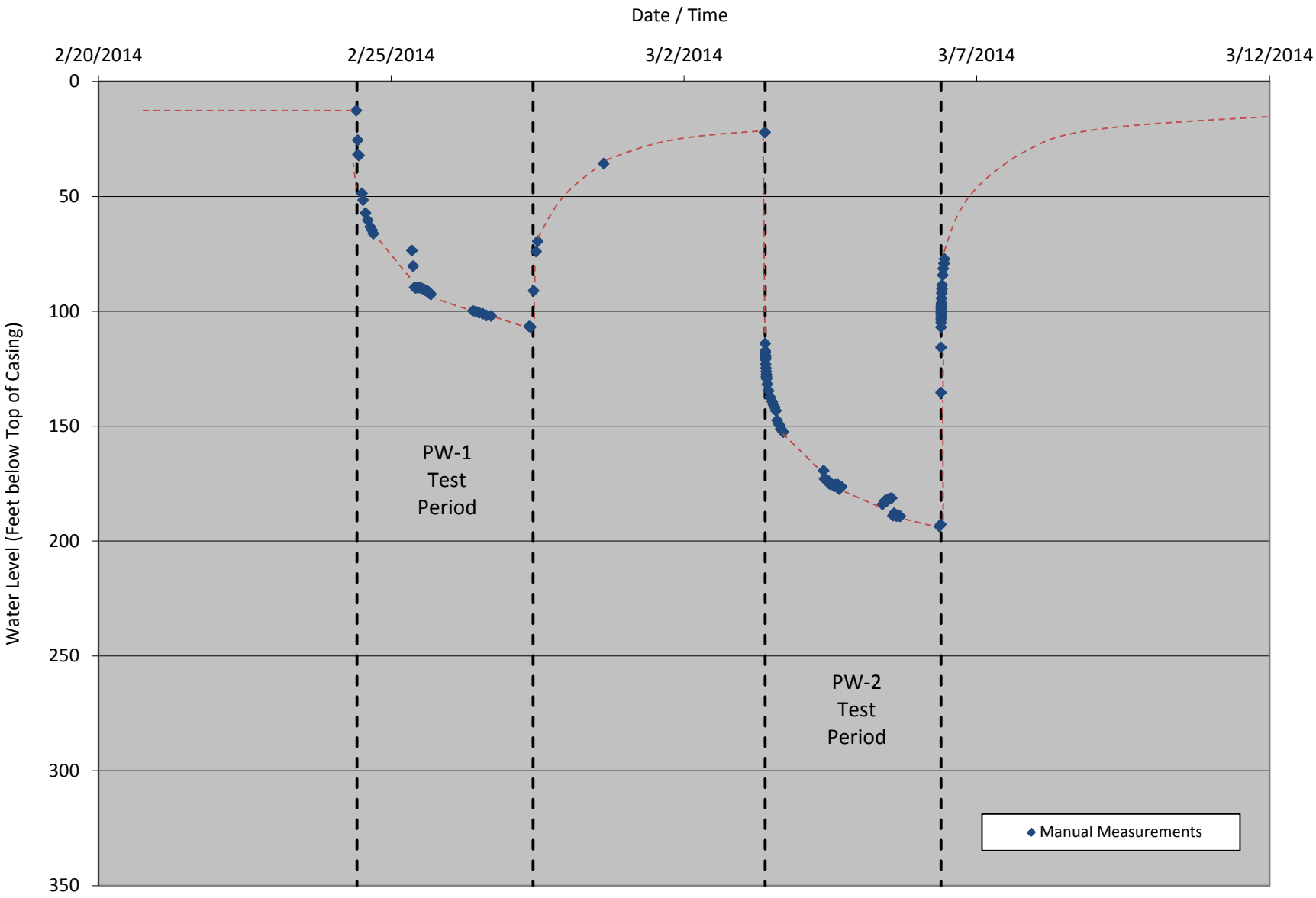
(c) 2014 The Chazen Companies

Figure 4: Projected drawdown plot for Production Well PW-1
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



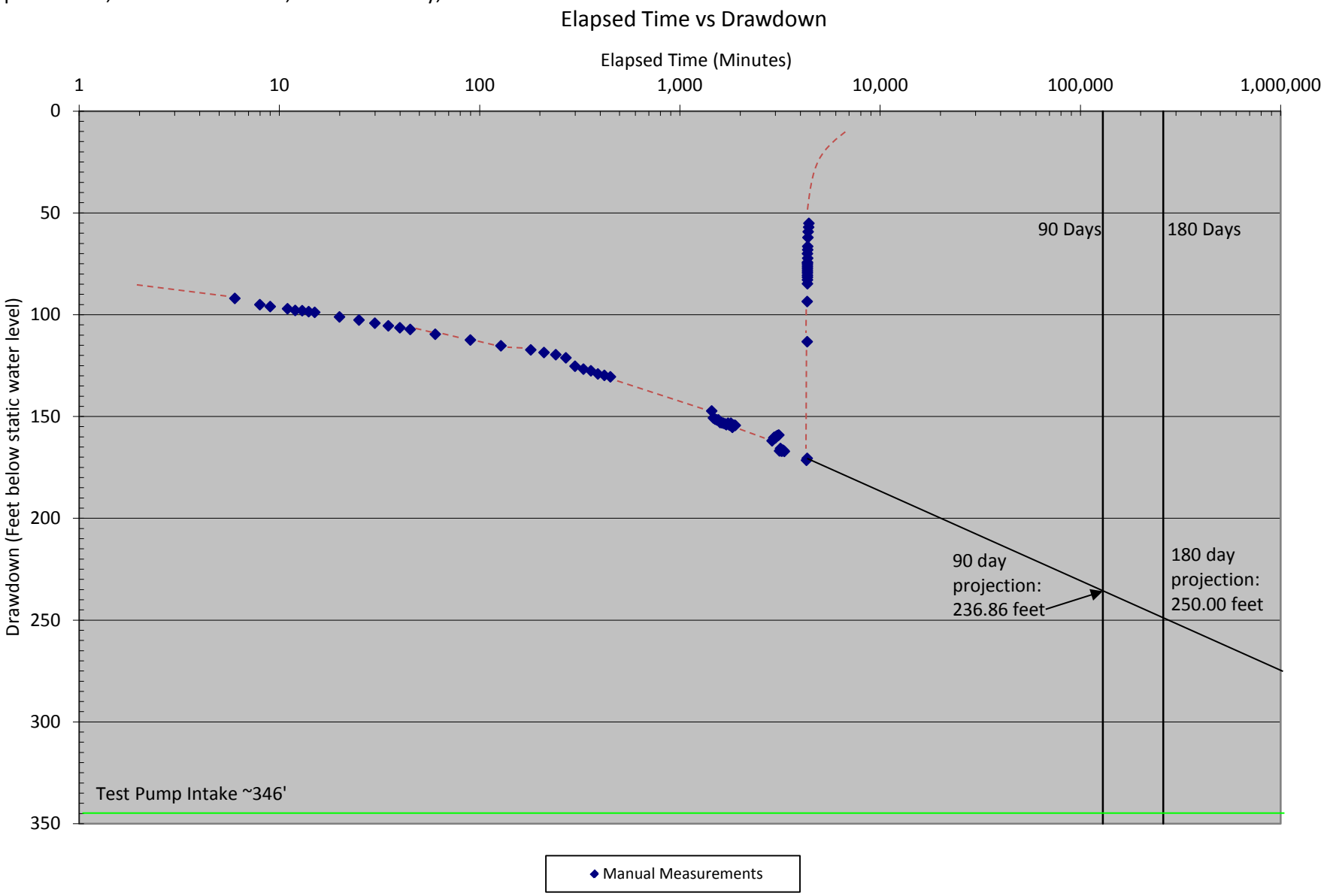
(c) 2014 The Chazen Companies

Figure 5: Water Level Record in Production Well PW-2
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



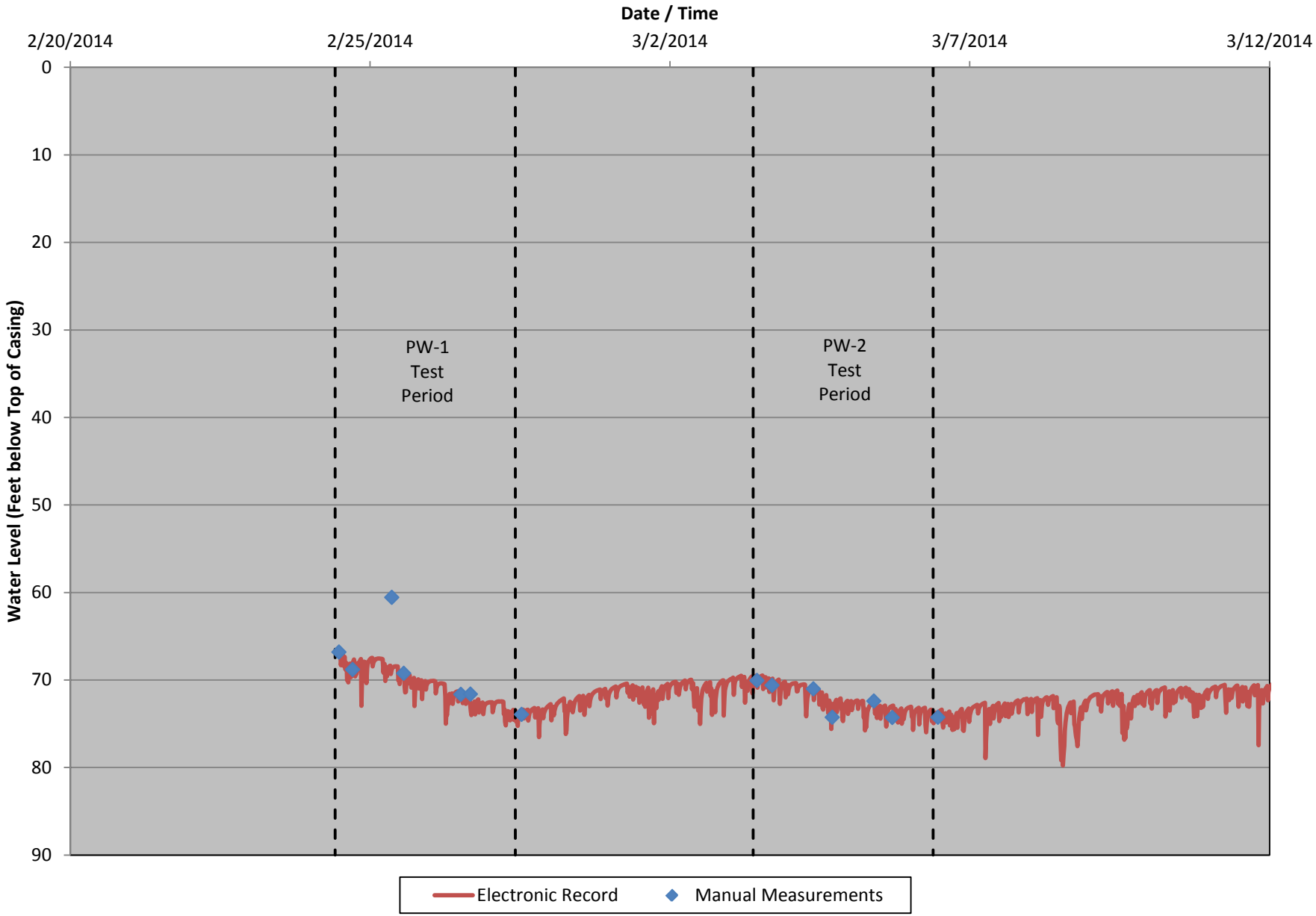
(c) 2014 The Chazen Companies

Figure 6: Projected drawdown plot for Production Well PW-2
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



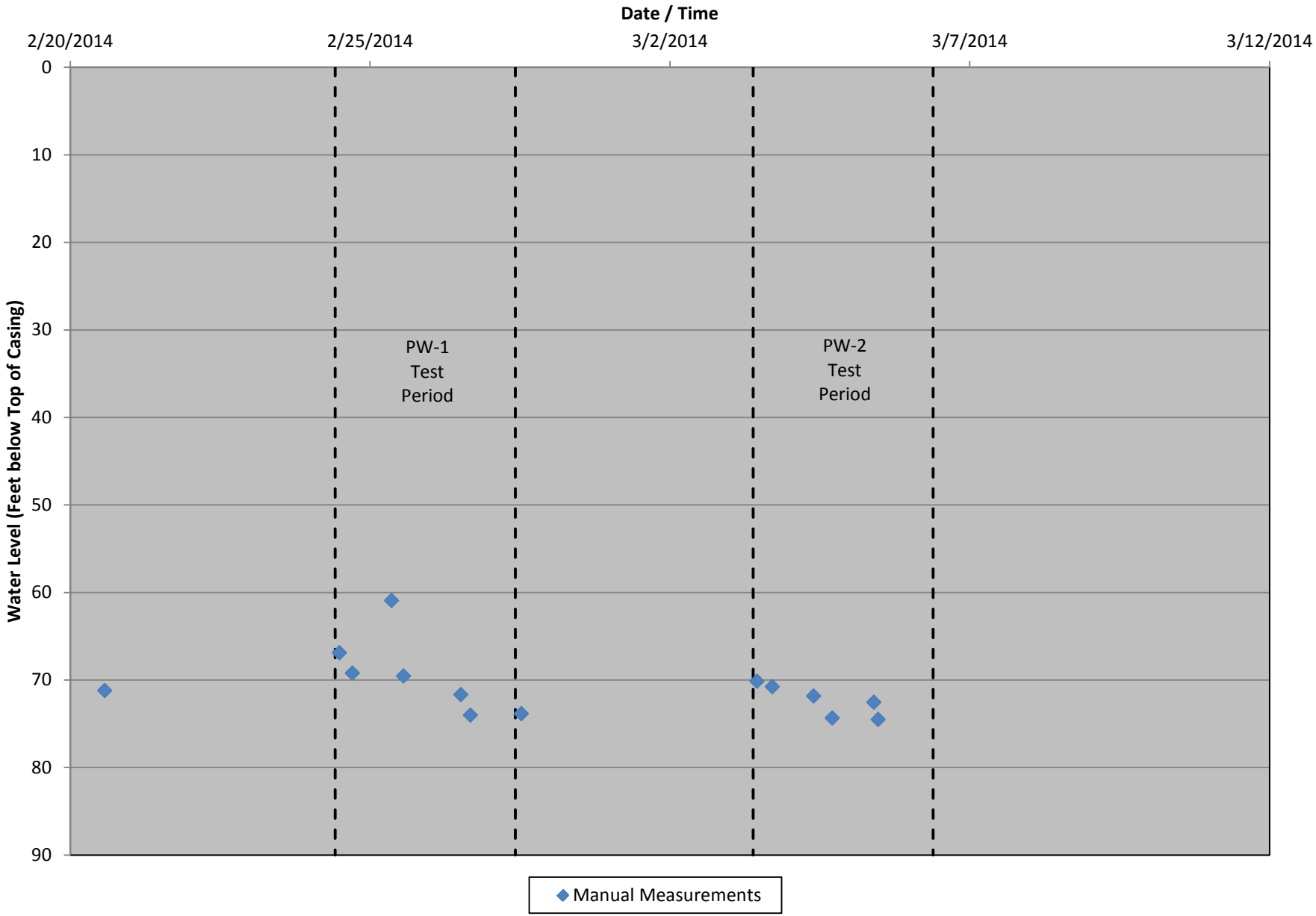
(c) 2014 The Chazen Companies

Figure 7: Water Level Record in the Healy Residence Well (25 Pine Road)
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



(c) 2014 The Chazen Companies

Figure 8: Water Level Record in the Facciabene Residence Well (21 Pine Road)
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York



(c) 2014 The Chazen Companies

TABLES

Table 1:
Pumping Test Water Quality Results compared to
NYSDOH Sub-Part 5 Maximum Contaminant Limits
Peaceable Hill Well Field Site

Contaminants	Maximum Contaminant Level	PW-1 2/27/2014 9:30	PW-2 3/6/2014 9:00
Total Coliform	Any Presence	Absent	Absent
Escherichia Coli	Any Presence	Absent	Absent
Hardness (as CaCO3)	No MCL	178 mg/L	174 mg/L
Alkalinity	No MCL	112 mg/L	96 mg/L
Chloride	250 mg/L	82.4 mg/L	83.0 mg/L
Color	15 Units	< 1 Unit	< 1 Unit
Cyanide (free)	0.2 mg/L	< 0.02 mg/L	< 0.01 mg/L
Fluoride	2.2 mg/L	< 0.10 mg/L	< 0.10 mg/L
Nitrate	10 mg/L	1.00 mg/L	1.33 mg/L
Nitrite	1 mg/L	< 0.01 mg/L	< 0.01 mg/L
Odor (at 60 dgerees C)	3 Units	< 1 Unit	1 Unit
pH	6.5 - 8.5 *	7.65	7.57
Sulfate	250 mg/L	18.0 mg/L	17.8 mg/L
Total Dissolved Solids	500 mg/L *	280 mg/L	280 mg/L
Turbidity	5 NTU	< 0.20 NTU	< 0.20 NTU
Antimony	0.006 mg/L	< 0.003 mg/L	< 0.003 mg/L
Arsenic	0.006 mg/L	< 0.001 mg/L	< 0.001 mg/L
Barium	2.00 mg/L	0.0867 mg/L	0.065 mg/L
Beryllium	0.004 mg/L	<0.00015 mg/L	< 0.0002 mg/L
Cadmium	0.005 mg/L	< 0.0005 mg/L	< 0.001 mg/L
Calcium	No MCL	51.6 mg/L	48.9 mg/L
Chromium	0.10 mg/L	< 0.0005 mg/L	< 0.001 mg/L
Copper	1.3 mg/L	< 0.0020 mg/L	< 0.002 mg/L
Mercury	0.002 mg/L	< 0.0002 mg/L	< 0.0002 mg/L
Selenium	0.05 mg/L	< 0.002 mg/L	< 0.002 mg/L
Silver	0.1 mg/L	< 0.0010 mg/L	< 0.001 mg/L
Thallium	0.002 mg/L	< 0.001 mg/L	< 0.001 mg/L
Iron	0.3 mg/L	0.0065 mg/L	0.016 mg/L
Magnesium	No MCL	11.9 mg/L	12.5 mg/L
Manganese	0.3 mg/L	0.109 mg/L	0.058 mg/L
Sodium	No MCL	22.0 mg/L *	23.9 mg/L *
Nickel	No MCL	< 0.0010 mg/L	< 0.001 mg/L
Lead	0.015 mg/L	< 0.0010 mg/L	< 0.001 mg/L
Zinc	5.0 mg/L	0.0097 mg/L	0.021 mg/L
Benzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Bromobenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Bromochloromethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Bromomethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
n-Butylbenzyene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
sec-Butylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
tert-Butylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Carbon Tetrachloride	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Chlorobenzene	100 ug/L	< 0.50 ug/L	< 0.50 ug/L
Chloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Chloromethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
2-Chlorotoluene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
4-Chlorotoluene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Dibromomethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2-Dibromo-3-chloropropane	5.0 ug/L	< 0.02 ug/L	< 0.02 ug/L
1,2-Dibromoethane	5.0 ug/L	< 0.02 ug/L	< 0.02 ug/L
1,2-Dichlorobenzene	600 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,3-Dichlorobenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L

(c) 2014 The Chazen Companies

Table 1:
Pumping Test Water Quality Results compared to
NYSDOH Sub-Part 5 Maximum Contaminant Limits
Peaceable Hill Well Field Site

Contaminants	Maximum Contaminant Level	PW-1 2/27/2014 9:30	PW-2 3/6/2014 9:00
1,4-Dichlorobenzene	75 ug/L	< 0.50 ug/L	< 0.50 ug/L
Dichlorodifluoromethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1-Dichloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2-Dichloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1-Dichloroethene	7.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
cis-1,2-Dichloroethene	70 ug/L	< 0.50 ug/L	< 0.50 ug/L
trans-1,2-Dichloroethene	100 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2-Dichloropropane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,3-Dichloropropane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
2,2-Dichloropropane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1-Dichloropropene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
cis-1,3-Dichloropropene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Trans-1,3-Dichloropropene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Ethylbenzene	700 ug/L	< 0.50 ug/L	< 0.50 ug/L
Hexachlorobutadiene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Isopropylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
p-Isopropyltoluene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Methylene Chloride	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
n-Propylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Styrene	100 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1,1,2-Tetrachloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1,2,2-Tetrachloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Tetrachloroethene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Toluene	1000 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2,3-Trichlorobenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2,4-Trichlorobenzene	70 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1,1-Trichloroethane	200 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,1,2-Trichloroethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Trichloroethene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Trichlorofluoromethane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2,3-Trichloropropane	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,2,4-Trimethylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
1,3,5-Trimethylbenzene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
m, p-Xylene	10,000 ug/L	< 1.0 ug/L	< 1.0 ug/L
o-Xylene	10,000 ug/L	< 0.50 ug/L	< 0.50 ug/L
Methyl tert butyl ether	10 ug/L	< 0.50 ug/L	< 0.50 ug/L
Vinyl Chloride	2 ug/L	< 0.50 ug/L	< 0.50 ug/L
Naphthalene	5.0 ug/L	< 0.50 ug/L	< 0.50 ug/L
Chloroform (Trichloromethane)	80 ug/L	< 0.50 ug/L	< 0.50 ug/L
Bromodichloromethane	80 ug/L	< 0.50 ug/L	< 0.50 ug/L
Dibromochloromethane	80 ug/L	< 0.50 ug/L	< 0.50 ug/L
Bromoform (Tribromomethane)	80 ug/L	< 0.50 ug/L	< 0.50 ug/L
Total Trihalomethanes	100 ug/L	< 1.0 ug/L	< 1.0 ug/L
Bromochloroacetic Acid	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L
Dibromoacetic Acid	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L
Dichloroacetic Acid	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L
Monobromoacetic Acid	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L
Monochloroacetic Acid	0.06 mg/L	< 0.002 mg/L	< 0.002 mg/L
Trichloroacetic Acid	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L
Total Haloacetic Acids	0.06 mg/L	< 0.001 mg/L	< 0.001 mg/L

(c) 2014 The Chazen Companies

Table 1:
Pumping Test Water Quality Results compared to
NYSDOH Sub-Part 5 Maximum Contaminant Limits
Peaceable Hill Well Field Site

Contaminants	Maximum Contaminant Level	PW-1 2/27/2014 9:30	PW-2 3/6/2014 9:00
Alachlor	0.002 mg/L	< 0.00044 mg/L	< 0.00044 mg/L
Atrazine	0.003 mg/L	< 0.00022 mg/L	< 0.00022 mg/L
Butachlor	No MCL	< 0.0001 mg/L	< 0.0001 mg/L
Metolachlor	No MCL	< 0.0001 mg/L	< 0.0001 mg/L
Metribuzin	No MCL	< 0.002 mg/L	< 0.002 mg/L
Simazine	0.004 mg/L	< 0.00015 mg/L	< 0.00015 mg/L
Aldrin	No MCL	< 0.00005 mg/L	< 0.00005 mg/L
Chlordane	0.002 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
Dieldrin	No MCL	< 0.0001 mg/L	< 0.0001 mg/L
Endrin	0.002 mg/L	< 0.0001 mg/L	< 0.0001 mg/L
Heptachlor	0.0004 mg/L	< 0.0001 mg/L	< 0.0001 mg/L
Heptachlor Epoxide	0.0002 mg/L	< 0.00005 mg/L	< 0.00005 mg/L
Hexachlorobenzene	0.001 mg/L	< 0.0001 mg/L	< 0.0001 mg/L
Hexachlorocyclopentadiene	0.050 mg/L	< 0.0001 mg/L	< 0.0001 mg/L
Lindane	0.0002 mg/L	< 0.00005 mg/L	< 0.00005 mg/L
Methoxychlor	0.040 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1016	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1221	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1232	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1242	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1248	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1254	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
PCB-1260	0.0005 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
Propachlor	No MCL	< 0.0005 mg/L	< 0.0005 mg/L
Toxaphene	0.003 mg/L	< 0.001 mg/L	< 0.001 mg/L
2,4,5-T	No MCL	< 0.0002 mg/L	< 0.0002 mg/L
2,4,5-TP	0.050 mg/L	< 0.0002 mg/L	< 0.0002 mg/L
2,4-D	0.070 mg/L	< 0.001 mg/L	< 0.001 mg/L
Dalapon	0.200 mg/L	< 0.001 mg/L	< 0.001 mg/L
Dicamba	No MCL	< 0.0003 mg/L	< 0.0003 mg/L
Dichloroprop	No MCL	< 0.0002 mg/L	< 0.0002 mg/L
Dinoseb	0.007 mg/L	< 0.0005 mg/L	< 0.0010 mg/L
Pentachlorophenol	0.001 mg/L	< 0.0002 mg/L	< 0.0002 mg/L
Picloram	0.500 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
Benzo(a)pyrene	0.0002 mg/L	< 0.000020 mg/L	< 0.000020 mg/L
Bis(2-ethylhexyl)adipate	0.400 mg/L	< 0.0006 mg/L	< 0.0006 mg/L
Bis(2-ethylhexyl)phthalate	0.006 mg/L	< 0.0006 mg/L	< 0.0006 mg/L
3-Hydroxycarbofuran	No MCL	< 0.00050 mg/L	< 0.00050 mg/L
Aldicarb	0.003 mg/L	< 0.00050 mg/L	< 0.00050 mg/L
Aldicarb Sulfone	0.002 mg/L	< 0.00080 mg/L	< 0.00080 mg/L
Aldicarb Sulfoxide	0.004 mg/L	< 0.00050 mg/L	< 0.00050 mg/L
Carbaryl	No MCL	< 0.00050 mg/L	< 0.00050 mg/L
Carbofuran	0.040 mg/L	< 0.00090 mg/L	< 0.00090 mg/L
Methomyl	No MCL	< 0.00050 mg/L	< 0.00050 mg/L
Oxamyl	0.200 mg/L	< 0.002 mg/L	< 0.002 mg/L
Gross Alpha	15 pCi/L	< 3 pCi/L +/- 1.4	3.3 pCi/L +/- 2.2
Gross Beta	No MCL	5.3 pCi/L +/- 2.2	5.7 pCi/L +/- 2.9
Radium 226	5 pCi/L	< 1 pCi/L +/- 0.09	< 1 pCi/L +/- 0.07
Radium 228	5 pCi/L	< 1 pCi/L +/- 0.38	< 1 pCi/L +/- 0.3
Radon	No MCL	2,390 pCi/L +/- 50	3,680 pCi/L +/- 70
Asbestos (fibers >0.5u and < 10u)	7.0 MFL	< 0.436 MFL	< 0.436 MFL
Asbestos (fibers >10u)	7.0 MFL	< 0.145 MFL	< 0.145 MFL

(c) 2014 The Chazen Companies

Table 2: Weather observations during time period of pump testing
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York

Date	High Temperature (deg F)	Low Temperature (deg F)	Precipitation (Inches)	Weather Description	
2/21/2014	43	26	0.22	Overcast, rainy, breezy	
2/22/2014	52	20	0.00	Mostly sunny, windy	
2/23/2014	48	23	0.00	Mostly sunny, breezy	
2/24/2014	39	22	0.00	Mostly sunny, windy	PW-1 Test Period
2/25/2014	30	12	Trace	Mostly sunny, windy	
2/26/2014	28	6	0.00	Cloudy, windy	
2/27/2014	30	2	Trace	Mostly sunny, windy	
2/28/2014	23	1	Trace	Mostly sunny, breezy	
3/1/2014	35	0	0.00	Sunny, windy	
3/2/2014	36	24	0.00	Mostly cloudy, breezy	
3/3/2014	24	4	0.00	Cloudy, windy	PW-2 Test Period
3/4/2014	27	-2	0.00	Partly cloudy, light breezes	
3/5/2014	31	16	0.00	Mostly sunny, windy	
3/6/2014	30	8	0.00	Mostly sunny, breezy	
3/7/2014	38	6	0.00	Mostly sunny, calm	
3/8/2014	52	25	0.00	Mostly sunny, breezy	
3/9/2014	40	27	0.00	Mostly sunny, windy	

(c) 2014 The Chazen Companies

Table 3: Water quality parameters observed in production wells during pump testing
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York

PW-1			
Date and Time	**Temperature (degrees C)**	**pH**	**Conductivity (uS/cm)**
2/24/2014 11:00	8.0	7.91	462
2/24/2014 12:00	8.1	7.76	451
2/24/2014 13:00	8.3	7.61	440
2/24/2014 14:00	8.2	7.43	735
2/24/2014 15:00	8.2	7.31	431
2/26/2014 10:00	7.6	7.24	426
2/26/2014 11:00	7.7	7.21	424
2/26/2014 12:00	7.9	7.22	426
2/26/2014 13:00	8.4	7.20	421
2/26/2014 14:00	8.2	7.18	422
2/26/2014 15:00	8.2	7.21	420
2/26/2014 16:00	8.2	7.22	422
2/26/2014 17:00	7.9	7.19	418
2/27/2014 8:30	5.4	7.40	481
2/27/2014 9:30	5.5	7.50	494

PW-2			
Date and Time	**Temperature (degrees C)**	**pH**	**Conductivity (uS/cm)**
3/3/2014 10:15	6.4	7.04	659
3/3/2014 11:15	11.8	7.10	621
3/3/2014 12:15	11.6	7.11	601
3/3/2014 13:15	12.4	6.88	597
3/3/2014 14:15	12.3	6.87	590
3/3/2014 15:15	12.5	6.84	583
3/3/2014 16:15	12.4	6.85	581
3/4/2014 9:00	12.6	6.91	596
3/4/2014 10:00	12.6	6.89	591
3/4/2014 11:00	12.9	6.84	589
3/4/2014 12:00	13.1	6.87	583
3/4/2014 13:00	13.4	6.86	584
3/4/2014 14:00	12.9	6.90	514
3/4/2014 15:00	13.1	6.86	507
3/4/2014 16:00	12.8	6.81	502
3/5/2014 9:30	12.5	7.12	536
3/5/2014 10:30	11.9	6.98	493
3/5/2014 11:30	12.4	6.94	479
3/5/2014 12:30	12.1	6.95	465
3/5/2014 13:30	12.5	6.91	471
3/5/2014 14:30	12.1	6.90	473
3/5/2014 15:30	12.3	6.90	472
3/5/2014 16:30	12.4	6.89	478
3/6/2014 8:50	11.6	6.92	479

(c) 2014 The Chazen Companies

APPENDIX A – WELL COMPLETION LOGS

PUTNAM COUNTY DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH SERVICES

Well Permit # _____

WELL COMPLETION REPORT

Well Location	**Street Address:** Peaceable Hill Rd.Well #1	**Town/Village:** Brewster	**Tax Map #** Map 56.20 Block -2 Lot(s) 12	**GPS:** 73°608785W 41°403664N
Well Owner:	**Name:** TheChazen Companies, 21 Fox Street, Poughkeepsie, NY 12601	**Address:**		
Use of Well: 1-Primary 2-Secondary	X Residential; Business; Industrial	Public Supply; Farm; Institutional	Air cond/heat pump; Test/monitoring; Standby	Irrigation; Other(specify)
Drilling Equipment	X Rotary; Cable percussion; X Compressed air percussion; Other(specify)			
Well Type	Screened; Open end casing; X Open hole in bedrock; Other			
Casing Details	Total Length 41 ft.; Length below grade 40 ft.; Diameter 6 in.; Weight per foot 19 lb/ft	Materials: X Steel; Plastic; Other; Joints: Welded; X Threaded; Other; Seal: X Cement grout; Bentonite; Other; Drive shoe: X Yes; No	Liner: Yes; X No	

Screen Details		Diameter (in)	Slot Size	Length (ft)	Dept to Screen (ft)	Developed?
	First					Yes No
	Second					Hours

Well Yield Test	Bailed; Pumped; X Compressed Air	Hours 6	Yield 150 gpm
Depth Date	Measure from land surface-static (specify ft) 15'	During yield test (ft) 778'	Depth of completed well in ft. 818'

Well Log
If more detailed information descriptions or sieve analyses are available, please attach.

Depth From Surface ft.	ft.	Water Bearing	Well Diameter (in)	Formation Description
Land Surface	15	Drilling in overburden, clay, and boulders		
		Hit rock at 15'		
15	41	Drilling in rock, set casing, grouted		
41	818	Drilling in rock granite		

If yield was tested at different depths during drilling list:

Feet	Gallons Per Minute

Pump/Storage Tank Information

Pump Type	Capacity
Depth	Model
Voltage	HP
Tank Type	Volume

Date Well Completed 11/16/12	Well Driller PC Certificate # 13019	NY State # NYRD10105	Date of Report 9/24/13
	Pump Installer PC Certificate #	NY State #	

Well Driller Name & Address: P. F. Beal & Sons, Inc., 4 Putnam Ave., Brewster, NY 10509	**Well Driller** (signature) Christopher Beal
Pump Installer Name & Address:	**Pump Installer** (signature)

NOTE: Exact Location of well with distances to at least two permanent landmarks to be provided on a separate sheet/plan.

White copy: HD File; Yellow copy - Building Inspector; Pink copy - Owner; Orange copy - Well driller

Form WC-97
Rev. 3/06

PUTNAM COUNTY DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH SERVICES

Well Permit # _____

WELL COMPLETION REPORT

Well Location	**Street Address:** Peaceable Hill Rd, Well #2	**Town/Village:** Brewster	**Tax Map #** Map 56.20 Block -2 Lot(s) -12	**GPS:** 41°403856N 73°608647W
Well Owner:	**Name:** The Chazen Companies, 21 Fox Street, Poughkeepsie, NY 12601	**Address:**		
Use of Well: 1-Primary 2-Secondary	X Residential ___ Business ___ Industrial	___ Public Supply ___ Farm ___ Institutional	___ Air cond/heat pump ___ Test/monitoring ___ Standby	___ Irrigation ___ Other(specify)
Drilling Equipment	X Rotary ___ Cable percussion X Compressed air percussion ___ Other(specify)			
Well Type	___ Screened ___ Open end casing X Open hole in bedrock ___ Other			

Casing Details	Total Length 51 ft.	Materials: X Steel ___ Plastic ___ Other	
	Length below grade 50 ft.	Joints: ___ Welded X Threaded ___ Other	
	Diameter 6 in.	Seal: X Cement grout ___ Bentonite ___ Other	
	Weight per foot 19 lb/ft	Drive shoe: X Yes ___ No	Liner: ___ Yes X No

Screen Details		Diameter (in)	Slot Size	Length (ft)	Dept to Screen (ft)	Developed?
	First					___ Yes ___ No
	Second					Hours ___

Well Yield Test	___ Bailed ___ Pumped X Compressed Air	Hours 6	Yield 75+ gpm
Depth Date	Measure from land surface-static (specify ft) 15'	During yield test (ft) 770'	Depth of completed well in ft. 810'

Well Log
If more detailed information descriptions or sieve analyses are available, please attach.

Depth From Surface ft.	ft.	Water Bearing	Well Diameter (in)	Formation Description
Land Surface	14	Drilling in overburden, clay, and boulders		
		Hit rock at 14'		
14	51	Drilling in rock, set casing, grouted		
51	810	Drilling in rock granite		

If yield was tested at different depths during drilling list:

Feet	Gallons Per Minute

Pump/Storage Tank Information

Pump Type ___	Capacity ___
Depth ___	Model ___
Voltage ___	HP ___
Tank Type ___	Volume ___

Date Well Completed 10/19/12	Well Driller PC Certificate # 13019	NY State # NYRD10105	Date of Report 9/24/13
	Pump Installer PC Certificate #	NY State #	

Well Driller Name & Address: P. F. Beal & Sons, Inc., 4 Putnam Ave., Brewster, NY 10509	**Well Driller** (signature) Christopher Beal
Pump Installer Name & Address:	**Pump Installer** (signature)

NOTE: Exact Location of well with distances to at least two permanent landmarks to be provided on a separate sheet/plan.

White copy: HD File; Yellow copy - Building Inspector; Pink copy - Owner; Orange copy - Well driller

Form WC-97
Rev. 3/06

APPENDIX B – LIST OF CONTACTS AND INFORMATION LETTER SENT TO HOMEOWNERS

Appendix B: List of Nearby Homeowners Contacted for Well Monitoring Access
Peaceable Hill Well Field Site
Spruce Road, Town of Southeast, Putnam County, New York

Resident	Street Address	Town, State
Jeffrey Magri	63 Panorama Drive	Brewster, NY 10509
Clinton Piersall, Jr.	33 Hubbard Drive	Brewster, NY 10509
Frank Facciabene	21 Pine Road	Brewster, NY 10509
Paul Lauro	25 Pine Road	Brewster, NY 10509
James Cassano	175 Peaceable Hill Road	Brewster, NY 10509
Susan Grady	18 Griffen Road	Brewster, NY 10509
Mrs. C. Anderson	197 Peaceable Hill Road	Brewster, NY 10509
G. Marvin	237 Peaceable Hill Road	Brewster, NY 10509

(c) 2014 The Chazen Companies

THE Chazen COMPANIES®
Proud to be Employee Owned
Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Hudson Valley Office
21 Fox St., Poughkeepsie, NY 12601
P: (845) 454-3980 F: (845) 454-4026
www.chazencompanies.com

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

February 4, 2013

Frank Facciabene
21 Pine Road
Brewster, New York 10509

Re: Proposed Well Testing Program
Peaceable Hill Water District
Town of Southeast, New York
TCC Job No. 81026.01

Dear Frank Facciabene:

The Town of Southeast has retained The Chazen Companies (Chazen) to test two new water supply wells located near Peaceable Hill Road. The aquifer testing will involve conducting pumping of each new well and monitoring water levels, including an option to observe water levels in any nearby wells to assess changes in the surrounding aquifer by operation of the wells .

We understand that you may have a well on your property. We would be pleased to provide monitoring of your well, to determine if your water well level may be affected by pumping of these new wells. There would be no charge to you for monitoring your water level during the Town tests and we would be pleased to share the resulting data with you upon request.

If you wish to approve monitoring in your well, and to help us determine if your well is suitable for monitoring, please complete and return the attached questionnaire, using the enclosed self-addressed stamped envelope. The questionnaire includes a signature-consent letter authorizing monitoring of your well. Providing your consent does not mean that your well will be monitored. We will inspect your well to determine if your well is suited for effective monitoring. This is because, in general, we are reluctant to monitor wells that are completed below grade (pit wells) or wells that appear particularly aged or in uncertain condition. Please note that neither Chazen nor the Town of Southeast will take responsibility for any pre-existing damage of your well although we would of course repair any damage attributable to our monitoring work for you.

If your well is selected to be monitored, most of our work will take place within a test period of approximately three weeks. The monitoring procedure requires the insertion of a small electronic water level probe into your well. The probe is disinfected before insertion. It is approximately one inch wide and eight inches long and constructed of stainless steel and Teflon, and hangs on a cable. This water level sensor can continuously record water levels in your well throughout the test period.

Please be assured that you do not need to change your normal water usage during the test period. Daily fluctuations in your well water level caused by your own water uses are normal and will be easy to distinguish from any long-term water level changes caused by the more distant and extensive testing of the new Peaceable Hill test wells.

A Chazen field technician experienced in this work will visit the well to install and then periodically monitor the equipment during the several week test period. At times, the technician may visit your home up to twice daily to ensure that recording equipment is operating correctly. These visits will last less than 15 minutes and there is no need for us to disturb you or for you to be present during these visits. After the conclusion of the testing period, Chazen will remove the probe and properly close your well.

Monitoring activities have no detrimental flow or quality effects on your wells, as the meter simply records the water level in your well. Occasionally, especially in older wells or wells with the presence of higher iron and/or manganese concentrations, insertion of a test probe may cause the well water to become temporarily cloudy due to agitation of fine particulates frequently already present in older wells. This condition typically clears within 24-hours.

By consenting to allow Chazen to monitor your well, you will be helping evaluate potential aquifer response to the test. The results of the test are intended to later help evaluate potential impacts of the overall project. The monitoring data from your well will be made available to you at no charge after the test, and may prove useful to you in understanding the existing condition of your well.

Please sign and print your name, address and telephone number below. By checking the first box below and signing this letter, you hereby agree to permit Chazen and its agents (e.g. a well driller to help assess your well condition) to enter upon your property, with prior notice for the first visit and without notice for follow-up visits, for the purpose of monitoring your well. If you do not want your well monitored, please check the second box and kindly return the letter using the enclosed addressed pre-stamped envelope. Please mail this along with the completed questionnaire in the enclosed envelope by February 15, 2013.

If you have any questions, please do not hesitate to contact me at 845-486-1520 or Russell Urban-Mead at 845-486-1551. Thank you.

Sincerely,

Eric J. Orlowski
Hydrogeologist

CC : Russell Urban-Mead, CPG, Chazen
Town of Southeast, Special District Office
File

Authorization to Monitor Your Well

Please check one:

_____ **I *do* agree to permit my well to be monitored as described above.**

_____ **I *do not* agree to allow my well to be monitored.**

Signature :_____

Printed Name :_____ **Date :** _____

Address :_____ **Zip :**_____

Evening Telephone : _____ **Day Telephone :**_____

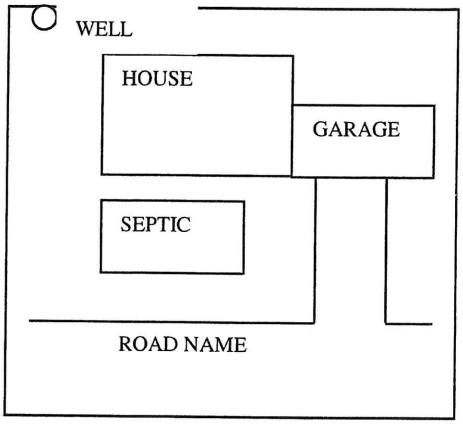
Email :_____

Homeowner Well Monitoring Questionaire

This questionnaire is being sent to homeowners within the vicinity of proposed new water supply well(s) for the Peaceable Hill Water District in conjunction with a well monitoring program for the project.

Please answer the questions below, if you can. If you do not have the necessary information or are unsure how to answer a question, please indicate so.

Please provide a rough sketch of your property, including well and septic location, as in the example provided to the right. Use the back of this page for your sketch.



Name :_____ Date :_____

Address :_____ Zip :_____

Evening Telephone :_____ Day Telephone :_____

What year was your well installed ? _____

What is the total depth of your well ? _____

What is the approximate depth to the water table, if known ? _____

Does your well tap bedrock or sand and gravel aquifer ? _____

How much casing was used during the installation of your well ? _____

Is the top of your well above ground, in a pit, buried, or other ? _____

What is the approximate depth to water-bearing fractures, if known ? _____

Does your well have a submersible pump, a jet pump or centrifugal pump ? _____

What is the approximate yield of your well ? _____

How far is your well from your neighbor's septic leaching field ? _____

Does your well ever run dry ?

During high usage
During Dry weather
Because of mechanical/electrical problems

Does your well have water quality problems ?

Bacterial
Sulfur
Iron
Hardness
Cloudiness
Taste
Chemical

Authorization to Monitor Your Well

Please check one:

✓ **I *do* agree to permit my well to be monitored as described above.**

_____ **I *do not* agree to allow my well to be monitored.**

Signature : Frank Facciabene

Printed Name : FRANK FACCIABENE **Date :** 2/8/13

Address : 21 Pine Rd Brewster, NY **Zip :** 10509

Evening Telephone : 845-582-0119 **Day Telephone :** 845-582-0119

Email :_____

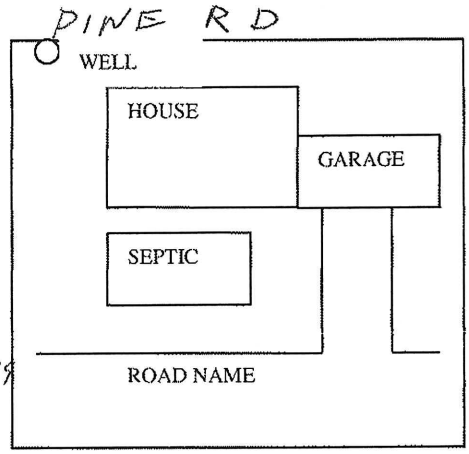
RECEIVED
FEB 13 2013

Homeowner Well Monitoring Questionaire

This questionnaire is being sent to homeowners within the vicinity of proposed new water supply well(s) for the Peaceable Hill Water District in conjunction with a well monitoring program for the project.

Please answer the questions below, if you can. If you do not have the necessary information or are unsure how to answer a question, please indicate so.

Please provide a rough sketch of your property, including well and septic location, as in the example provided to the right. Use the back of this page for your sketch.



Name : FRANK FACCIABENE Date : _____

Address : 21 Pine Rd Brewster NY Zip : 10509

Evening Telephone : 845-582-0119 Day Telephone : 845-582-0119

What year was your well installed ? 1996

What is the total depth of your well ? Pump At 300 FT 312

What is the approximate depth to the water table, if known ? DO NOT KNOW ~70'

Does your well tap bedrock or sand and gravel aquifer ? TAP BEDROCK

How much casing was used during the installation of your well ? DO NOT KNOW

Is the top of your well above ground, in a pit, buried, or other ? ABOVE GROUND

What is the approximate depth to water-bearing fractures, if known ? DO NOT KNOW

Does your well have a submersible pump, a jet pump or centrifugal pump ? DO NOT KNOW Sub

What is the approximate yield of your well ? DO NOT KNOW

How far is your well from your neighbor's septic leaching field ? DO NOT KNOW

Does your well ever run dry ?

During high usage
During Dry weather
Because of mechanical/electrical problems

NO

Does your well have water quality problems ?

Bacterial
Sulfur
Iron
Hardness
Cloudiness
Taste
Chemical

NO

Authorization to Monitor Your Well

Please check one:

✓ **I *do* agree to permit my well to be monitored as described above.**

_____ **I *do not* agree to allow my well to be monitored.**

Signature : _____

Printed Name : Eric Healy **Date :** 2/24/14

Address : 25 Pine Rd Brewster **Zip :** 10509

Evening Telephone : _____ **Day Telephone :** 516 424 6824

Email : _____

APPENDIX C – LABORATORY ANALYTICAL REPORTS

PHOENIX
Environmental Laboratories, Inc.

Friday, March 21, 2014

Attn: Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Project ID: 81026.01 PEACABLE HILL
Sample ID#s: BG13757, BG13866

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 21, 2014

FOR: Attn: Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:	EO	02/27/14	9:30
Location Code:	CHAZEN	Received by:	LDA	02/27/14	16:19
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	P15591				

Laboratory Data

SDG ID: GBG13757
Phoenix ID: BG13757

Project ID: 81026.01 PEACABLE HILL
Client ID: PW-1

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Escherichia Coli	Absent	0	/100 mls	0		02/27/14 18:15	RS/KDB	SM 9223B	
Total Coliforms	Absent	0	/100 mls	0		02/27/14 18:15	RS/KDB	9223B	
Hardness (CaCO3)	178	0.1	mg/L			02/28/14		E200.7	
Alkalinity-CaCO3	112	20	mg/L			02/28/14	BS/EG	SM 2320B	
Chloride	82.4	3.0	mg/L		250	02/28/14	BS/EG	300.0	
Color	< 1	1	Color Units		15	02/27/14 19:00	DH/KDB	SM 2120B	
Cyanide, Free	< 0.02	0.02	mg/L	0.2		03/07/14	GD	335.4/9014	
Fluoride	< 0.10	0.10	mg/L	4		02/28/14	BS/EG	E300.0	1
Langelier Index	-0.428		pH units			03/03/14	KG	SM2330B	1
Nitrite as Nitrogen	< 0.01	0.01	mg/L	1		02/28/14 01:32	BS/EG	300.0	
Nitrate as Nitrogen	1.00	0.05	mg/L	10		02/28/14 01:32	BS/EG	300.0	
Odor at 60 Degrees C	< 1	1	T.O.N.		3	02/28/14 12:00	MA	SM 2150B	1
pH	7.65	0.10	pH Units		6.5-8.5	02/28/14 08:39	BS/EG	4500-H B/9040	1
Sulfate	18.0	3.0	mg/L		250	02/28/14	BS/EG	300.0	
Total Cyanide (Drinking water)	< 0.02	0.02	mg/L	0.2		02/27/14	O/GD	EPA 335.4	
Tot. Diss. Solids	280	10	mg/L		500	02/28/14	KG/KDB	SM2540C	
Turbidity	< 0.20	0.20	NTU		5	02/28/14 05:50	KDB	SM2130B	
Silver	< 0.0010	0.0010	mg/L		0.1	02/28/14	LK	E200.7	
Arsenic	< 0.001	0.001	mg/L	0.01		03/04/14	RS	E200.9	
Barium	0.0867	0.0010	mg/L	2		02/28/14	LK	E200.7	
Beryllium	< 0.00015	0.00015	mg/L	0.004		02/28/14	LK	E200.7	
Calcium	51.6	0.005	mg/L			02/28/14	LK	E200.7	
Cadmium	< 0.0005	0.0005	mg/L	0.005		02/28/14	LK	E200.7	
Chromium	< 0.0005	0.0005	mg/L	0.1		02/28/14	LK	E200.7	
Copper	< 0.0020	0.0020	mg/L	1.3		02/28/14	LK	E200.7	
Iron	0.0065	0.0020	mg/L		0.3	02/28/14	LK	E200.7	
Mercury	< 0.0002	0.0002	mg/L	0.002		02/28/14	RS	E245.1	
Magnesium	11.9	0.005	mg/L			02/28/14	LK	E200.7	

Project ID: 81026.01 PEACABLE HILL
Client ID: PW-1

Phoenix I.D.: BG13757

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Manganese	0.109	0.0010	mg/L		0.05	02/28/14	LK	E200.7	
***** Manganese exceeds Secondary Goal *****									
Sodium	22.0	0.05	mg/L			02/28/14	LK	E200.7	
Nickel	< 0.0010	0.0010	mg/L			02/28/14	LK	E200.7	
Lead	< 0.0010	0.0010	mg/L	0.015		02/28/14	LK	E200.5	
Antimony	< 0.003	0.003	mg/L	0.006		02/28/14	RS	E200.9	
Selenium	< 0.002	0.002	mg/L	0.05		03/03/14	RS	E200.9	
Thallium	< 0.001	0.001	mg/L	0.002		03/04/14	RS	E200.9	
Zinc	0.0097	0.0010	mg/L		5	02/28/14	LK	E200.7	
Extraction	Completed					03/06/14	W/W		
Extraction for 525.2	Completed					03/10/14		EPA525.2	
Extraction for Haloacetic Acids	Completed					03/03/14	D	E552.2	
Mercury Digestion	Completed					02/28/14	I/I	245.1	
Extraction of DW Pesticides	Completed					03/06/14	W/W	508	
Extraction of DW Herbicides	Completed					03/03/14	D/D	515	
Total Metal Digestion	Completed					02/27/14	AG	E200.9	1
Total Metal Digestion	Completed					02/27/14	AG	E200.7	

EDB and DBCP Analysis

1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	ug/L	0.2		03/06/14	JRB	504.1
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	0.02		03/06/14	JRB	504.1

Organophosphorus Pesticides

Alachlor	ND	0.44	ug/L	2		03/18/14	CE	E507
Atrazine	ND	0.22	ug/L	3		03/18/14	CE	E507
Butachlor	ND	0.1	ug/L			03/18/14	CE	E507
Metolachlor	ND	0.1	ug/L			03/18/14	CE	E507
Metribuzin	ND	2.00	ug/L			03/18/14	CE	E507
Simazine	ND	0.15	ug/L	4		03/18/14	CE	E507
QA/QC Surrogates								
% 1,3 Dimethyl-2-nitrobenzene	88		%			03/18/14	CE	70 - 130 %

Pesticides/PCB Screen

Aldrin	ND	0.05	ug/L			03/14/14	MH	EPA508
Chlordane	ND	0.5	ug/L	2		03/14/14	MH	EPA508
Dieldrin	ND	0.1	ug/L			03/14/14	MH	EPA508
Endrin	ND	0.1	ug/L	2		03/14/14	MH	EPA508
Heptachlor	ND	0.1	ug/L	0.4		03/14/14	MH	EPA508
Heptachlor Epoxide	ND	0.05	ug/L	0.2		03/14/14	MH	EPA508
Hexachlorobenzene	ND	0.1	ug/L	1		03/14/14	MH	EPA508
Hexachlorocyclopentadiene	ND	0.1	ug/L	50		03/14/14	MH	EPA508
Lindane	ND	0.05	ug/L	0.2		03/14/14	MH	EPA508
Methoxychlor	ND	0.5	ug/L	40		03/14/14	MH	EPA508
PCB-1016	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1221	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1232	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1242	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1248	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1254	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508
PCB-1260	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508

Project ID: 81026.01 PEACABLE HILL
Client ID: PW-1

Phoenix I.D.: BG13757

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Propachlor	ND	0.5	ug/L			03/14/14	MH	EPA508	
Toxaphene	ND	1.0	ug/L	3		03/14/14	MH	EPA508	
QA/QC Surrogates									
%DCBP (Surrogate Rec)	94		%			03/14/14	MH	70 - 130 %	
Herbicides									
2,4,5-T	ND	0.2	ug/L			03/06/14	CE	EPA 515.1	1
2,4,5-TP	ND	0.2	ug/L	50		03/06/14	CE	EPA 515.1	
2,4-D	ND	1.0	ug/L	70		03/06/14	CE	EPA 515.1	
Dalapon	ND	1.0	ug/L	200		03/06/14	CE	EPA 515.1	
Dicamba	ND	0.3	ug/L			03/06/14	CE	EPA 515.1	
Dichloroprop	ND	0.2	ug/L			03/06/14	CE	EPA 515.1	1
Dinoseb	ND	0.5	ug/L	7		03/06/14	CE	EPA 515.1	
Pentachlorophenol	ND	0.2	ug/L	1		03/06/14	CE	EPA 515.1	
Picloram	ND	0.5	ug/L	500		03/06/14	CE	EPA 515.1	
QA/QC Surrogates									
% DCAA	101		%			03/06/14	CE	70 - 130 %	
Volatiles									
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1,1-Trichloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1,2-Trichloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1-Dichloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1-Dichloroethene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,1-Dichloropropene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2,3-Trichlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2,3-Trichloropropane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2,4-Trichlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L	0.2		03/01/14	MH	524.2	1
1,2-Dibromoethane	ND	0.50	ug/L	0.02		03/01/14	MH	524.2	1
1,2-Dichlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2-Dichloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,2-Dichloropropane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,3-Dichlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,3-Dichloropropane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
1,4-Dichlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
2,2-Dichloropropane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
2-Chlorotoluene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
4-Chlorotoluene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Benzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Bromobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Bromochloromethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Bromodichloromethane	ND	0.50	ug/L			03/01/14	MH	524.2	
Bromoform	ND	0.50	ug/L			03/01/14	MH	524.2	
Bromomethane	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Carbon tetrachloride	ND	0.50	ug/L	5		03/01/14	MH	524.2	
Chlorobenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2	

Project ID: 81026.01 PEACABLE HILL
Client ID: PW-1

Phoenix I.D.: BG13757

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Chloroethane	ND	0.50	ug/L	5		03/01/14	MH	524.2
Chloroform	ND	0.50	ug/L			03/01/14	MH	524.2
Chloromethane	ND	0.50	ug/L	5		03/01/14	MH	524.2
cis-1,2-Dichloroethene	ND	0.50	ug/L	5		03/01/14	MH	524.2
cis-1,3-Dichloropropene	ND	0.40	ug/L	5		03/01/14	MH	524.2
Dibromochloromethane	ND	0.50	ug/L			03/01/14	MH	524.2
Dibromomethane	ND	0.50	ug/L	5		03/01/14	MH	524.2
Dichlorodifluoromethane	ND	0.50	ug/L	5		03/01/14	MH	524.2
Ethylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Hexachlorobutadiene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Isopropylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
m&p-Xylene	ND	1.0	ug/L			03/01/14	MH	524.2
Methyl t-butyl ether (MTBE)	ND	0.50	ug/L	10		03/01/14	MH	524.2
Methylene chloride	ND	0.50	ug/L	5		03/01/14	MH	524.2
Naphthalene	ND	0.50	ug/L			03/01/14	MH	524.2
n-Butylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
n-Propylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
o-Xylene	ND	0.50	ug/L	5		03/01/14	MH	524.2
p-Isopropyltoluene	ND	0.50	ug/L	5		03/01/14	MH	524.2
sec-Butylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Styrene	ND	0.50	ug/L	5		03/01/14	MH	524.2
tert-Butylbenzene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Tetrachloroethene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Toluene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Total Trihalomethanes	ND	1.0	ug/L	80		03/01/14	MH	524.2
Total Xylenes	ND	1.0	ug/L	10000		03/01/14	MH	524.2
trans-1,2-Dichloroethene	ND	0.50	ug/L	5		03/01/14	MH	524.2
trans-1,3-Dichloropropene	ND	0.40	ug/L	5		03/01/14	MH	524.2
Trichloroethene	ND	0.50	ug/L	5		03/01/14	MH	524.2
Trichlorofluoromethane	ND	0.50	ug/L	5		03/01/14	MH	524.2
Vinyl chloride	ND	0.50	ug/L	2		03/01/14	MH	524.2
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98		%			03/01/14	MH	70 - 130 %
% Bromofluorobenzene	98		%			03/01/14	MH	70 - 130 %
Semivolatile Organic								
Benzo(a)pyrene	ND	0.020	ug/L	0.2		03/13/14	MH	E525.2
Bis(2-ethylhexyl)adipate	ND	0.60	ug/L	400		03/13/14	MH	E525.2
Bis(2-ethylhexyl)phthalate	ND	0.60	ug/L	6		03/13/14	MH	E525.2
QA/QC Surrogates								
% 1,3-Dimethyl-2-nitrobenzene	92		%			03/13/14	MH	70 - 130 %
% Perylene-d12	73		%			03/13/14	MH	70 - 130 %
% Triphenylphosphate	107		%			03/13/14	MH	70 - 130 %
Carbamates HPLC								
3-Hydroxycarbofuran	ND	0.50	ug/L			03/07/14	RM	EPA531.2
Aldicarb	ND	0.50	ug/L	3		03/07/14	RM	EPA531.2
Aldicarb Sulfone	ND	0.80	ug/L	2		03/07/14	RM	EPA531.2
Aldicarb Sulfoxide	ND	0.50	ug/L	4		03/07/14	RM	EPA531.2
Carbaryl	ND	0.50	ug/L			03/07/14	RM	EPA531.2

Project ID: 81026.01 PEACABLE HILL
Client ID: PW-1

Phoenix I.D.: BG13757

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Carbofuran	ND	0.90	ug/L	40		03/07/14	RM	EPA531.2	
Methomyl	ND	0.50	ug/L			03/07/14	RM	EPA531.2	
Oxamyl	ND	2.0	ug/L	200		03/07/14	RM	EPA531.2	
QA/QC Surrogates									
% BDMC	106		%			03/07/14	RM	70 - 130 %	
Haloacetic Acids									
Bromochloroacetic Acid	ND	1.0	ug/L			03/11/14	BB	EPA552.2	
Dibromoacetic Acid	ND	1.0	ug/L			03/11/14	BB	EPA552.2	
Dichloroacetic Acid	ND	1.0	ug/L			03/11/14	BB	EPA552.2	
Monobromoacetic Acid	ND	1.0	ug/L			03/11/14	BB	EPA552.2	
Monochloroacetic Acid	ND	2.0	ug/L			03/11/14	BB	EPA552.2	
Total Haloacetic Acids	ND	1.0	ug/L			03/11/14	BB	EPA552.2	1
Trichloroacetic Acid	ND	1.0	ug/L			03/11/14	BB	EPA552.2	
QA/QC Surrogates									
% 2,3-DBPA	154		%			03/11/14	BB	70 - 130 %	3
Asbestos in Water									
Asbestos fibers (>0.5u and <10u)	ND	0.436	MFL			03/05/14	*	EPA600/4-84	S
Asbestos fibers (>10u)	ND	0.145	MFL			03/05/14	*	EPA600/4-84	S
Gross Alpha Water	ND ± 1.4	3	pci/L	15		03/12/14	*	900.0	S
Gross Beta Water	5.3 ± 2.2	4	pci/L			03/12/14	*	900.0	S
Radium 226	ND ± 0.09	1	pci/L	5		03/13/14	*	7500 Ra B/903.0	S
Radium 228	ND ± 0.38	1	pci/L	5		03/12/14	*	7500 Ra D/904.0	S
Radon	2390 ± 50	13	pCi/l			02/28/14	*	7500 Rn B	S

Project ID: 81026.01 PEACABLE HILL

Client ID: PW-1

Phoenix I.D.: BG13757

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.
3 = This parameter exceeds laboratory specified limits.
S = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.) MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; Public Health Law, Section 225 Part 5, Subpart 5-1. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): 40 CFR Part 143. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

552: Surrogate recovery was high for the sample, but the sample was reported ND for all analytes

Asbestos in Water was analyzed by NY certified lab #10851.
Radon was analyzed by NY certified lab #11417.
Gross Alpha Water, Gross Beta Water, Radium 226, Radium 228 were analyzed by NY certified lab #11777.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

March 21, 2014

Reviewed and Released by: Bobbi Aloisa, Vice President

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 21, 2014

FOR: Attn: Mr Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		02/27/14	0:00
Location Code:	CHAZEN	Received by:	SW	02/27/14	16:19
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	P15591				

Laboratory Data

SDG ID: GBG13757
Phoenix ID: BG13866

Project ID: 81026.01 PEACEABLE HILL
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
EDB and DBCP Analysis						
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	ug/L	03/06/14	JRB	504.1
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	03/06/14	JRB	504.1

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

TRIP BLANK INCLUDED.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
March 21, 2014
Reviewed and Released by: Bobbi Aloisa, Vice President

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 21, 2014

QA/QC Data

SDG I.D.: GBG13757

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 267566, QC Sample No: BG12851 (BG13757)												
ICP Metals - Aqueous												
Barium	BRL	<0.001	<0.001	NC	103			109			75 - 125	20
Beryllium	BRL	<0.001	<0.002	NC	97.1			101			75 - 125	20
Cadmium	BRL	<0.0005	<0.001	NC	91.5			97.4			75 - 125	20
Calcium	BRL	0.011	0.010	NC	91.9			103			75 - 125	20
Chromium	BRL	<0.002	<0.001	NC	96.6			102			75 - 125	20
Copper	BRL	0.668	0.654	2.10	101			106			75 - 125	20
Iron	BRL	0.115	0.114	0.90	96.6			99.7			75 - 125	20
Lead	BRL	<0.001	0.002	NC	94.6			98.9			75 - 125	20
Magnesium	BRL	0.022	0.021	NC	96.5			101			75 - 125	20
Manganese	BRL	0.001	<0.001	NC	96.7			102			75 - 125	20
Nickel	BRL	<0.001	<0.001	NC	95.3			99.7			75 - 125	20
Silver	BRL	<0.001	<0.001	NC	94.9			101			75 - 125	20
Sodium	BRL	67.6	66.8	1.20	101			NC			75 - 125	20
QA/QC Batch 267726, QC Sample No: BG13477 (BG13757)												
Mercury - Water	BRL	<0.0002	<0.0002	NC	111	112	0.9	111	112	0.9	70 - 130	20
Comment:												
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.												
QA/QC Batch 267700, QC Sample No: BG13757 (BG13757)												
Antimony	BRL	<0.003	0.047	NC	94.4			93.4				
Arsenic	BRL	<0.001	<0.001	NC	104			111			75 - 125	20
Selenium	BRL	<0.002	<0.002	NC	97.1			78.5				
Thallium	BRL	<0.001	<0.001	NC	93.6			92.5				

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 21, 2014

QA/QC Data

SDG I.D.: GBG13757

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 267591, QC Sample No: BG12878 (BG13757)												
Total Cyanide	BRL	<0.01	<0.01	NC	91.3			90.5			85 - 115	20
QA/QC Batch 267787, QC Sample No: BG13438 (BG13757)												
Chloride	BRL	19.2	19.1	0.50	96.5			102			85 - 115	20
Fluoride	BRL	1.80	1.83	1.70	94.0			101			85 - 115	20
Nitrate as Nitrogen	BRL	<0.05	<0.05	NC	103			107			85 - 115	20
Nitrite as Nitrogen	BRL	<0.01	<0.01	NC	92.9			76.1			85 - 115	20
Sulfate	BRL	62.3	62.1	0.30	96.2			101			85 - 115	20
QA/QC Batch 267862, QC Sample No: BG13757 (BG13757)												
Alkalinity-CaCO3	BRL	112	106	5.50	113						85 - 115	20
QA/QC Batch 267857, QC Sample No: BG13757 (BG13757)												
pH		7.65	7.66	0.10	96.3						85 - 115	20
QA/QC Batch 267736, QC Sample No: BG13808 (BG13757)												
Tot. Diss. Solids	BRL	160	160	0	99.0						85 - 115	20

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 21, 2014

QA/QC Data

SDG I.D.: GBG13757

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 268662, QC Sample No: BG09924 (BG13757)										
Carbamates HPLC - Drinking Water										
3-Hydroxycarbofuran	ND	73	76	4.0	94	102	8.2	70 - 130	20	
Aldicarb	ND	72	76	5.4	89	93	4.4	70 - 130	20	
Aldicarb Sulfone	ND	79	86	8.5	115	89	25.5	70 - 130	20	r
Aldicarb Sulfoxide	ND	80	79	1.3	85	101	17.2	70 - 130	20	
Carbaryl	ND	80	82	2.5	87	92	5.6	70 - 130	20	
Carbofuran	ND	76	71	6.8	89	93	4.4	70 - 130	20	
Methomyl	ND	79	85	7.3	95	105	10.0	70 - 130	20	
Oxamyl	ND	79	85	7.3	97	103	6.0	70 - 130	20	
% BDMC	102	117	103	12.7	110	210	62.5	70 - 130	20	m,r
QA/QC Batch 267853, QC Sample No: BG11451 (BG13757)										
Herbicides - Drinking Water										
2,4,5-T	ND	96			103			70 - 130	20	
2,4,5-TP	ND	88			88			70 - 130	20	
2,4-D	ND	100			110			70 - 130	20	
Dalapon	ND	112			118			70 - 130	20	
Dicamba	ND	86			90			70 - 130	20	
Dichloroprop	ND	95			98			70 - 130	20	
Dinoseb	ND	92			55			70 - 130	20	m
Pentachlorophenol	ND	95			90			70 - 130	20	
Picloram	ND	89			94			70 - 130	20	
QA/QC Batch 268442, QC Sample No: BG12830 (BG13757)										
Semivolatile Organic Compounds - Drinking Water										
Benzo(a)pyrene	ND	87			110			70 - 130	20	
Bis(2-ethylhexyl)adipate	ND	150			155			70 - 130	20	l,m
Bis(2-ethylhexyl)phthalate	ND	124			107			70 - 130	20	
% 1,3-Dimethyl-2-nitrobenzene	92	93			96			70 - 130	20	
% Perylene-d12	83	90			97			70 - 130	20	
% Triphenylphosphate	102	123			122			70 - 130	20	
QA/QC Batch 267744, QC Sample No: BG12838 (BG13757)										
Haloacetic Acids - Drinking Water										
Bromochloroacetic Acid	ND	104			118			70 - 130	20	
Dibromoacetic Acid	ND	109			95			70 - 130	20	
Dichloroacetic Acid	ND	109			87			70 - 130	20	
Monobromoacetic Acid	ND	93			95			70 - 130	20	
Monochloroacetic Acid	ND	107			89			70 - 130	20	
Total Haloacetic Acids								70 - 130	20	
Trichloroacetic Acid	ND	107			NR			70 - 130	20	
% 2,3-DBPA	121	126			111			70 - 130	20	

QA/QC Data

SDG I.D.: GBG13757

QA/QC Batch 267894, QC Sample No: BG13493 (BG13757)

Volatiles - Drinking Water

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,1,2-Tetrachloroethane	ND	101	101	0.0	99	106	6.8	70 - 130	30
1,1,1-Trichloroethane	ND	100	101	1.0	99	107	7.8	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	97	97	0.0	96	102	6.1	70 - 130	30
1,1,2-Trichloroethane	ND	101	102	1.0	97	105	7.9	70 - 130	30
1,1-Dichloroethane	ND	102	103	1.0	103	111	7.5	70 - 130	30
1,1-Dichloroethene	ND	96	95	1.0	97	105	7.9	70 - 130	30
1,1-Dichloropropene	ND	98	97	1.0	98	103	5.0	70 - 130	30
1,2,3-Trichlorobenzene	ND	102	101	1.0	97	103	6.0	70 - 130	30
1,2,3-Trichloropropane	ND	97	99	2.0	97	102	5.0	70 - 130	30
1,2,4-Trichlorobenzene	ND	101	101	0.0	99	105	5.9	70 - 130	30
1,2,4-Trimethylbenzene	ND	108	107	0.9	99	107	7.8	70 - 130	30
1,2-Dibromo-3-chloropropane	ND	96	93	3.2	88	94	6.6	70 - 130	30
1,2-Dibromoethane	ND	97	98	1.0	94	105	11.1	70 - 130	30
1,2-Dichlorobenzene	ND	100	99	1.0	99	106	6.8	70 - 130	30
1,2-Dichloroethane	ND	102	102	0.0	100	106	5.8	70 - 130	30
1,2-Dichloropropane	ND	100	99	1.0	101	106	4.8	70 - 130	30
1,3,5-Trimethylbenzene	ND	103	102	1.0	98	107	8.8	70 - 130	30
1,3-Dichlorobenzene	ND	101	100	1.0	100	107	6.8	70 - 130	30
1,3-Dichloropropane	ND	98	97	1.0	97	106	8.9	70 - 130	30
1,4-Dichlorobenzene	ND	100	100	0.0	100	106	5.8	70 - 130	30
2,2-Dichloropropane	ND	104	101	2.9	74	78	5.3	70 - 130	30
2-Chlorotoluene	ND	98	97	1.0	99	106	6.8	70 - 130	30
4-Chlorotoluene	ND	104	105	1.0	101	108	6.7	70 - 130	30
Benzene	ND	103	100	3.0	101	109	7.6	70 - 130	30
Bromobenzene	ND	100	99	1.0	98	107	8.8	70 - 130	30
Bromochloromethane	ND	93	92	1.1	97	99	2.0	70 - 130	30
Bromodichloromethane	ND	100	98	2.0	101	105	3.9	70 - 130	30
Bromoform	ND	99	98	1.0	99	103	4.0	70 - 130	30
Bromomethane	ND	97	95	2.1	92	104	12.2	70 - 130	30
Carbon tetrachloride	ND	98	98	0.0	97	106	8.9	70 - 130	30
Chlorobenzene	ND	101	101	0.0	100	108	7.7	70 - 130	30
Chloroethane	ND	93	94	1.1	100	108	7.7	70 - 130	30
Chloroform	ND	99	96	3.1	99	104	4.9	70 - 130	30
Chloromethane	ND	79	81	2.5	89	96	7.6	70 - 130	30
cis-1,2-Dichloroethene	ND	99	98	1.0	99	109	9.6	70 - 130	30
cis-1,3-Dichloropropene	ND	98	97	1.0	95	102	7.1	70 - 130	30
Dibromochloromethane	ND	99	100	1.0	99	107	7.8	70 - 130	30
Dibromomethane	ND	99	99	0.0	98	105	6.9	70 - 130	30
Dichlorodifluoromethane	ND	80	77	3.8	90	96	6.5	70 - 130	30
Ethylbenzene	ND	106	102	3.8	103	111	7.5	70 - 130	30
Hexachlorobutadiene	ND	102	100	2.0	96	102	6.1	70 - 130	30
Isopropylbenzene	ND	103	101	2.0	97	107	9.8	70 - 130	30
m&p-Xylene	ND	103	101	2.0	100	108	7.7	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	94	96	2.1	97	104	7.0	70 - 130	30
Methylene chloride	ND	91	90	1.1	93	102	9.2	70 - 130	30
Naphthalene	ND	102	104	1.9	88	104	16.7	70 - 130	30
n-Butylbenzene	ND	108	106	1.9	96	104	8.0	70 - 130	30
n-Propylbenzene	ND	109	106	2.8	98	105	6.9	70 - 130	30
o-Xylene	ND	98	97	1.0	101	107	5.8	70 - 130	30
p-Isopropyltoluene	ND	104	104	0.0	98	105	6.9	70 - 130	30

QA/QC Data

SDG I.D.: GBG13757

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
sec-Butylbenzene	ND	100	100	0.0	98	105	6.9	70 - 130	30	
Styrene	ND	99	99	0.0	101	109	7.6	70 - 130	30	
tert-Butylbenzene	ND	102	102	0.0	101	107	5.8	70 - 130	30	
Tetrachloroethene	ND	100	98	2.0	97	103	6.0	70 - 130	30	
Toluene	ND	102	101	1.0	101	108	6.7	70 - 130	30	
trans-1,2-Dichloroethene	ND	99	95	4.1	101	107	5.8	70 - 130	30	
trans-1,3-Dichloropropene	ND	97	98	1.0	90	103	13.5	70 - 130	30	
Trichloroethene	ND	102	101	1.0	101	109	7.6	70 - 130	30	
Trichlorofluoromethane	ND	95	93	2.1	100	105	4.9	70 - 130	30	
Vinyl chloride	ND	93	90	3.3	97	105	7.9	70 - 130	30	
% 1,2-dichlorobenzene-d4	101	101	100	1.0	102	103	1.0	70 - 130	30	
% Bromofluorobenzene	100	102	100	2.0	102	101	1.0	70 - 130	30	

Comment:

A blank MS/MSD was analyzed with this batch.

QA/QC Batch 268155, QC Sample No: BG13757 (BG13757)

Organophosphorus Pesticides - Drinking Water

Alachlor	ND	79			90			70 - 130	20	
Atrazine	ND	83			92			70 - 130	20	
Butachlor	ND	79			86			70 - 130	20	
Metolachlor	ND	77			87			70 - 130	20	
Metribuzin	ND	81			90			70 - 130	20	
Simazine	ND	84			93			70 - 130	20	

QA/QC Batch 268156, QC Sample No: BG13757 (BG13757)

Pesticides - Drinking Water

a-Chlordane	ND	99			114			70 - 130	20	
Aldrin	ND	92			105			70 - 130	20	
Chlordane	ND	NA			NA			70 - 130	20	
Dieldrin	ND	103			117			70 - 130	20	
Endrin	ND	106			122			70 - 130	20	
g-BHC	ND	98			111			70 - 130	20	
g-Chlordane	ND	98			112			70 - 130	20	
Heptachlor	ND	102			117			70 - 130	20	
Heptachlor epoxide	ND	99			113			70 - 130	20	
Hexachlorobenzene	ND	78			90			70 - 130	20	
Hexachlorocyclopentadiene	ND	57			63			70 - 130	20	l,m
Methoxychlor	ND	106			118			70 - 130	20	
Propachlor	ND	81			92			70 - 130	20	
Toxaphene	ND	NA			NA			70 - 130	20	
% DCBP	87	90			98			70 - 130	20	

l = This parameter is outside laboratory lcs/lcsd specified recovery limits.
m = This parameter is outside laboratory ms/msd specified recovery limits.
r = This parameter is outside laboratory rpd specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 21, 2014

QA/QC Data

SDG I.D.: GBG13757

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

Sample Criteria Exceedences Report

GBG13757 - CHAZEN

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BG13757	MN-DW	Manganese	EPA / 40 CFR 141 DW / 143.3 Secondary MCLs	0.109	0.0010	0.05	0.05	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY Temperature Narration

March 21, 2014

SDG I.D.: GBG13757

The samples in this delivery group were received at 4°C.
(Note acceptance criteria is above freezing up to 6°C)

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 4° MPB Cor 1

Data Delivery:
☐ Fax #:
☐ Email:

Customer: CHAZEN
Address: 21 FOX ST, SUITE 201
POUGHKEEPSIE, NY 12601

Project: 81026.01 – Peaceable Hill
Report to: Eric Orlowski
Invoice to: Accts Payable

Project P.O: P15591
Phone #: 845-454-3980 x 1520
Fax #: 845-454-4026

Client Sample - Information - Identification

Sampler's Signature: EJOrlowski Date 2/27/14

Matrix Code:
DW=drinking water WW=wastewater S=soil/solid O=other
GW=groundwater SL=sludge A=air

Analysis Request

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	NYSDOH Support S-1 (Tables 1-7)				531	524	THM	Ketones	250 ml Amber NH4Cl	500 ML ASLS	950 ML ASLS					Soil VOA [ ] Methanol [ ] S. Bisulfate [ ] H20	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 1500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
13757	PW-1	DW	2/27/14	0930	✓				2	2	3	2	1	1	4							3	-	2	-	1	1	1	
																						~~3~~							
13866	TRIP BLANK																					1							

Relinquished by:	Accepted by:	Date:	Time:
EJOrlowski	[signature]	2/27/14	1050
[signature]	[signature]	2/27/14	1619

Comments, Special Requirements or Regulations:
1 Amber 507
1 " 508
2 " 515
2 " 525

1 - Amber extra

* Rcvd (2) HCL vials for T.B.
(1) broke @ Lab. SW

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☑ Standard
☐ Other

* SURCHARGE APPLIES

CT/RI
☐ RCP Cert.
☐ GW Protect.
☐ GA Mobility
☐ GB Mobility
☐ SW Protect.
☐ Res. Vol.
☐ Ind. Vol.
☐ Res. Criteria
☐ Other

MA
☐ MCP Cert.
☐ GW-1
☐ GW-2
☐ GW-3
☐ S-1
☐ S-2
☐ S-3
☐ MWRA eSMART
☐ Other

Data Format
☐ ~~Excel~~
☑ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ ASP-A
☐ NJ Reduced Deliv. *
☐ NJ Hazsite EDD
☐ Phoenix Std Report
☐ Other

State where samples were collected: NYS

GBG 13757

Shannon - Phoenixlabs

From: Buddy Beames [buddy.phoenixlabs@verizon.net]
Sent: Monday, March 03, 2014 11:59 AM
To: 'Shannon - Phoenixlabs'
Subject: RE: Fwd: Chazen-Peaceable Hill

These are not needed.
Thanks,

Clarence (Buddy) Beames
Regional Sales Manager
Phoenix Environmental Laboratories, Inc.
Ph: (518) 232-2420
Fax: (518) 792-0033

This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is priveledged, confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended receipient, you are hereby notified that any dissemination, distribution, forwarding, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately by e-mail or telephone, and delete the original message immediately. Thank you.

From: Shannon - Phoenixlabs [mailto:shannon@phoenixlabs.com]
Sent: Monday, March 3, 2014 11:52 AM
To: 'Buddy Beames'
Subject: RE: Fwd: Chazen-Peaceable Hill

Okay. The only thing I see in there that we don't have the proper bottles for is the Bromate & Chlorite. Please confirm these are not needed. Thanks.

From: Buddy Beames [mailto:buddy.phoenixlabs@verizon.net]
Sent: Monday, March 03, 2014 11:41 AM
To: Shannon - Phoenixlabs
Subject: FW: Fwd: Chazen-Peaceable Hill

See below, Eric's response to what is needed.
Thanks,

Clarence (Buddy) Beames
Regional Sales Manager
Phoenix Environmental Laboratories, Inc.
Ph: (518) 232-2420
Fax: (518) 792-0033

This message is intended only for the use of the individual or entity to which it is addressed and may contain

information that is priveledged, confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended receipient, you are hereby notified that any dissemination, distribution, forwarding, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately by e-mail or telephone, and delete the original message immediately. Thank you.

From: Eric Orlowski [mailto:eorlowski@chazencompanies.com]
Sent: Monday, March 3, 2014 10:29 AM
To: Buddy
Subject: Re: Fwd: Chazen-Peaceable Hill

Hey Buddy-

Please run all analytes on tables 1 through 7, except the four pesticides we've excluded (dioxin, diquat, endothall, glyphosate). Thank you for following up and asking!

Also, could we schedule another pick up for our site in Brewster for this Thursday? I'll be sampling around 9 am, so samples will be ready anytime after that. Thanks!

Best,

Eric

Sent from my Verizon Wireless 4G LTE DROID

Buddy <buddy.phoenixlabs@verizon.net> wrote:

Please confirm on the haa5's, rads and tables.
Thanks,

Buddy Beames
Phoenix Environmental Laboratories, Inc.

Sent from my iPhone

Begin forwarded message:

> **From:** "Shannon - Phoenixlabs" <shannon@phoenixlabs.com>
> **Date:** February 28, 2014 at 9:35:03 AM EST
> **To:** "'Buddy Beames'" <buddy.phoenixlabs@verizon.net>
> **Subject: Chazen-Peaceable Hill**
>
> Buddy,
> I had some samples come in yesterday for NYSDOH Subpart 5-1 (tables 1-7) Should we do the same parameters we did last time? I'm not sure if they need Radon, Uranium, Haloacetic acids? Please let me know. Thanks.
>
> Shannon Wilhelm
> Phoenix Environmental Labs

PHOENIX
Environmental Laboratories, Inc.

Friday, April 04, 2014

Mr. Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Project ID: 81026.01 PEACEABLE HILL
Sample ID#s: BG16366, BG16468

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

April 04, 2014

FOR: Mr. Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:	EO	03/06/14	9:00
Location Code:	CHAZEN	Received by:	LPB	03/06/14	16:09
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	P15592				

Laboratory Data

SDG ID: GBG16366
Phoenix ID: BG16366

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Escherichia Coli	Absent	0	/100 mls	0		03/06/14 19:20	RS/KDB	SM 9223B	
Total Coliforms	Absent	0	/100 mls	0		03/06/14 19:20	RS/KDB	9223B	
Hardness (CaCO3)	174	0.1	mg/L			03/07/14		E200.7	
Alkalinity-CaCO3	96	20	mg/L			03/07/14	BS/EG	SM 2320B	
Chloride	83.0	3.0	mg/L		250	03/07/14	BS/EG	300.0	
Color	< 1	1	Color Units		15	03/06/14 19:15	DH/KDB	SM 2120B	
Cyanide, Free	< 0.01	0.01	mg/L	0.2		03/12/14	GD	335.4/9014	
Fluoride	< 0.10	0.10	mg/L	4		03/07/14	BS/EG	E300.0	1
Langelier Index	-0.598		pH units			03/11/14	KG	SM2330B	1
Nitrite as Nitrogen	< 0.01	0.01	mg/L	1		03/07/14 04:06	BS/EG	300.0	
Nitrate as Nitrogen	1.33	0.05	mg/L	10		03/07/14 04:06	BS/EG	300.0	
Odor at 60 Degrees C	1	1	T.O.N.		3	03/07/14 12:00	MA	SM 2150B	1
pH	7.57	0.10	pH Units		6.5-8.5	03/07/14 06:41	BS/EG	4500-H B/9040	1
Sulfate	17.8	3.0	mg/L		250	03/07/14	BS/EG	300.0	
Total Cyanide (Drinking water)	< 0.01	0.01	mg/L	0.2		03/07/14	O/GD	EPA 335.4	
Tot. Diss. Solids	280	10	mg/L		500	03/07/14	KG	SM2540C	
Turbidity	< 0.20	0.20	NTU		5	03/07/14 06:41	BS/EG	SM2130B	
Silver	< 0.001	0.001	mg/L		0.1	03/07/14	LK	E200.7	
Arsenic	< 0.001	0.001	mg/L	0.01		03/10/14	RS	E200.9	
Barium	0.065	0.001	mg/L	2		03/07/14	LK	E200.7	
Beryllium	< 0.0002	0.0002	mg/L	0.004		03/07/14	EK	E200.7	
Calcium	48.9	0.005	mg/L			03/07/14	EK	E200.7	
Cadmium	< 0.001	0.001	mg/L	0.005		03/07/14	EK	E200.7	
Chromium	< 0.001	0.001	mg/L	0.1		03/07/14	EK	E200.7	
Copper	< 0.002	0.002	mg/L	1.3		03/07/14	LK	E200.7	
Iron	0.016	0.002	mg/L		0.3	03/07/14	LK	E200.7	
Mercury	< 0.0002	0.0002	mg/L	0.002		03/10/14	RS	E245.1	
Magnesium	12.5	0.01	mg/L			03/07/14	LK	E200.7	

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Phoenix I.D.: BG16366

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Manganese	0.058	0.001	mg/L		0.05	03/07/14	LK	E200.7	
***** Manganese exceeds Secondary Goal *****									
Sodium	23.9	0.05	mg/L			03/07/14	EK	E200.7	B
Nickel	< 0.001	0.001	mg/L			03/07/14	LK	E200.7	
Lead	< 0.001	0.001	mg/L	0.015		03/07/14	LK	E200.5	
Antimony	< 0.003	0.003	mg/L	0.006		03/12/14	RS	E200.9	
Selenium	< 0.002	0.002	mg/L	0.05		03/11/14	RS	E200.9	
Thallium	< 0.001	0.001	mg/L	0.002		03/11/14	RS	E200.9	
Zinc	0.021	0.001	mg/L		5	03/07/14	LK	E200.7	
Extraction	Completed					03/12/14	W/W		
Extraction for 525.2	Completed					03/18/14	K	EPA525.2	
Extraction for Haloacetic Acids	Completed					03/13/14	D/D	E552.2	
Mercury Digestion	Completed					03/10/14	I/I	245.1	
Extraction of DW Pesticides	Completed					03/12/14	W/W	508	
Extraction of DW Herbicides	Completed					03/18/14	D/D	515	
Total Metal Digestion	Completed					03/06/14	AG	E200.9	1
Total Metal Digestion	Completed					03/06/14	AG	E200.7	
EDB and DBCP Analysis									
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	ug/L	0.2		03/18/14	JRB	504.1	
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	0.02		03/18/14	JRB	504.1	
Organophosphorus Pesticides									
Alachlor	ND	0.44	ug/L	2		03/18/14	CE	E507	
Atrazine	ND	0.22	ug/L	3		03/18/14	CE	E507	
Butachlor	ND	0.1	ug/L			03/18/14	CE	E507	
Metolachlor	ND	0.1	ug/L			03/18/14	CE	E507	
Metribuzin	ND	2.00	ug/L			03/18/14	CE	E507	
Simazine	ND	0.15	ug/L	4		03/18/14	CE	E507	
QA/QC Surrogates									
% 1,3 Dimethyl-2-nitrobenzene	86		%			03/18/14	CE	70 - 130 %	
Pesticides/PCB Screen									
Aldrin	ND	0.05	ug/L			03/14/14	MH	EPA508	
Chlordane	ND	0.5	ug/L	2		03/14/14	MH	EPA508	
Dieldrin	ND	0.1	ug/L			03/14/14	MH	EPA508	
Endrin	ND	0.1	ug/L	2		03/14/14	MH	EPA508	
Heptachlor	ND	0.1	ug/L	0.4		03/14/14	MH	EPA508	
Heptachlor Epoxide	ND	0.05	ug/L	0.2		03/14/14	MH	EPA508	
Hexachlorobenzene	ND	0.1	ug/L	1		03/14/14	MH	EPA508	
Hexachlorocyclopentadiene	ND	0.1	ug/L	50		03/14/14	MH	EPA508	
Lindane	ND	0.05	ug/L	0.2		03/14/14	MH	EPA508	
Methoxychlor	ND	0.5	ug/L	40		03/14/14	MH	EPA508	
PCB-1016	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1221	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1232	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1242	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1248	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1254	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	
PCB-1260	ND	0.5	ug/L	0.5		03/14/14	MH	EPA508	

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Phoenix I.D.: BG16366

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Propachlor	ND	0.5	ug/L			03/14/14	MH	EPA508	
Toxaphene	ND	1.0	ug/L	3		03/14/14	MH	EPA508	
QA/QC Surrogates									
%DCBP (Surrogate Rec)	107		%			03/14/14	MH	70 - 130 %	
Herbicides									
2,4,5-T	ND	0.2	ug/L			03/26/14	CE	EPA 515.3	1
2,4,5-TP	ND	0.2	ug/L	50		03/26/14	CE	EPA 515.3	1O
2,4-D	ND	1.0	ug/L	70		03/26/14	CE	EPA 515.3	1O
Dalapon	ND	1.0	ug/L	200		03/26/14	CE	EPA 515.3	1O
Dicamba	ND	0.3	ug/L			03/26/14	CE	EPA 515.3	1O
Dichloroprop	ND	0.2	ug/L			03/26/14	CE	EPA 515.3	1
Dinoseb	ND	1.0	ug/L	7		03/26/14	CE	EPA 515.3	1O
Pentachlorophenol	ND	0.2	ug/L	1		03/26/14	CE	EPA 515.3	1O
Picloram	ND	0.5	ug/L	500		03/26/14	CE	EPA 515.3	1O
QA/QC Surrogates									
% DCAA	111		%			03/26/14	CE	70 - 130 %	
Volatiles									
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1,1-Trichloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1,2-Trichloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1-Dichloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1-Dichloroethene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,1-Dichloropropene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2,3-Trichlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2,3-Trichloropropane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2,4-Trichlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L	0.2		03/09/14	MH	524.2	1
1,2-Dibromoethane	ND	0.50	ug/L	0.02		03/09/14	MH	524.2	1
1,2-Dichlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2-Dichloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,2-Dichloropropane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,3-Dichlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,3-Dichloropropane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
1,4-Dichlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
2,2-Dichloropropane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
2-Chlorotoluene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
4-Chlorotoluene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Benzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Bromobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Bromochloromethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Bromodichloromethane	ND	0.50	ug/L			03/09/14	MH	524.2	
Bromoform	ND	0.50	ug/L			03/09/14	MH	524.2	
Bromomethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Carbon tetrachloride	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Chlorobenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Phoenix I.D.: BG16366

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Chloroethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Chloroform	ND	0.50	ug/L			03/09/14	MH	524.2	
Chloromethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
cis-1,2-Dichloroethene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
cis-1,3-Dichloropropene	ND	0.40	ug/L	5		03/09/14	MH	524.2	
Dibromochloromethane	ND	0.50	ug/L			03/09/14	MH	524.2	
Dibromomethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Dichlorodifluoromethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Ethylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Hexachlorobutadiene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Isopropylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
m&p-Xylene	ND	1.0	ug/L			03/09/14	MH	524.2	
Methyl t-butyl ether (MTBE)	ND	0.50	ug/L	10		03/09/14	MH	524.2	
Methylene chloride	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Naphthalene	ND	0.50	ug/L			03/09/14	MH	524.2	
n-Butylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
n-Propylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
o-Xylene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
p-Isopropyltoluene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
sec-Butylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Styrene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
tert-Butylbenzene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Tetrachloroethene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Toluene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Total Trihalomethanes	ND	1.0	ug/L	80		03/09/14	MH	524.2	
Total Xylenes	ND	1.0	ug/L	10000		03/09/14	MH	524.2	
trans-1,2-Dichloroethene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
trans-1,3-Dichloropropene	ND	0.40	ug/L	5		03/09/14	MH	524.2	
Trichloroethene	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Trichlorofluoromethane	ND	0.50	ug/L	5		03/09/14	MH	524.2	
Vinyl chloride	ND	0.50	ug/L	2		03/09/14	MH	524.2	
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	95		%			03/09/14	MH	70 - 130 %	
% Bromofluorobenzene	99		%			03/09/14	MH	70 - 130 %	
Semivolatile Organic									
Benzo(a)pyrene	ND	0.020	ug/L	0.2		03/20/14	MH	E525.2	
Bis(2-ethylhexyl)adipate	ND	0.60	ug/L	400		03/20/14	MH	E525.2	
Bis(2-ethylhexyl)phthalate	ND	0.60	ug/L	6		03/20/14	MH	E525.2	
QA/QC Surrogates									
% 1,3-Dimethyl-2-nitrobenzene	96		%			03/20/14	MH	70 - 130 %	
% Perylene-d12	62		%			03/20/14	MH	70 - 130 %	3
% Triphenylphosphate	95		%			03/20/14	MH	70 - 130 %	
Carbamates HPLC									
3-Hydroxycarbofuran	ND	0.50	ug/L			03/08/14	RM	EPA531.2	
Aldicarb	ND	0.50	ug/L	3		03/08/14	RM	EPA531.2	
Aldicarb Sulfone	ND	0.80	ug/L	2		03/08/14	RM	EPA531.2	
Aldicarb Sulfoxide	ND	0.50	ug/L	4		03/08/14	RM	EPA531.2	
Carbaryl	ND	0.50	ug/L			03/08/14	RM	EPA531.2	

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Phoenix I.D.: BG16366

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Carbofuran	ND	0.90	ug/L	40		03/08/14	RM	EPA531.2	
Methomyl	ND	0.50	ug/L			03/08/14	RM	EPA531.2	
Oxamyl	ND	2.0	ug/L	200		03/08/14	RM	EPA531.2	
QA/QC Surrogates									
% BDMC	97		%			03/08/14	RM	70 - 130 %	
Haloacetic Acids									
Bromochloroacetic Acid	ND	1.0	ug/L			03/13/14	BB	EPA552.2	
Dibromoacetic Acid	ND	1.0	ug/L			03/13/14	BB	EPA552.2	
Dichloroacetic Acid	ND	1.0	ug/L			03/13/14	BB	EPA552.2	
Monobromoacetic Acid	ND	1.0	ug/L			03/13/14	BB	EPA552.2	
Monochloroacetic Acid	ND	2.0	ug/L			03/13/14	BB	EPA552.2	
Total Haloacetic Acids	ND	1.0	ug/L			03/13/14	BB	EPA552.2	1
Trichloroacetic Acid	ND	1.0	ug/L			03/13/14	BB	EPA552.2	
QA/QC Surrogates									
% 2,3-DBPA	101		%			03/13/14	BB	70 - 130 %	
Asbestos in Water									
Asbestos fibers (>0.5u and <10u)	ND	0.436	MFL			03/12/14	*	EPA600/4-84	S
Asbestos fibers (>10u)	ND	0.145	MFL			03/12/14	*	EPA600/4-84	S
Gross Alpha Water	3.3 ± 2.2	3	pci/L	15		03/19/14	*	900.0	S
Gross Beta Water	5.7 ± 2.9	4	pci/L			03/19/14	*	900.0	S
Radium 226	ND ± 0.07	1	pci/L	5		03/20/14	*	7500 Ra B/903.0	S
Radium 228	ND ± 0.3	1	pci/L	5		03/19/14	*	7500 Ra D/904.0	S
Radon	3680 ± 70	13	pCi/l			03/07/14	*	7500 Rn B	S

Project ID: 81026.01 PEACEABLE HILL
Client ID: PW-2

Phoenix I.D.: BG16366

Parameter	Result	RL/ PQL	Units	DW MCL	Sec Goal	Date/Time	By	Reference

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.
1O = This parameter is not certified by NY NELAC for this matrix.
3 = This parameter exceeds laboratory specified limits.
S = This parameter is subcontracted.
B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.) MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; Public Health Law, Section 225 Part 5, Subpart 5-1. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): 40 CFR Part 143. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

For 525s, The perylene d-12 surrogate was low. Due to hold time constraints the sample could not be re-extracted.

Asbestos in Water was analyzed by NY certified lab #10851.
Radon was analyzed by NY certified lab #11417.
Gross Alpha Water, Gross Beta Water, Radium 226, Radium 228 were analyzed by NY certified lab #11777.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
April 04, 2014
Reviewed and Released by: Bobbi Aloisa, Vice President

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

April 04, 2014

FOR: Attn: Mr Eric Orlowski
Chazen
21 Fox Street
Poughkeepsie, NY 12601

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/06/14	0:00
Location Code:	CHAZEN	Received by:	SW	03/06/14	16:09
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	P15592				

Laboratory Data

SDG ID: GBG16366
Phoenix ID: BG16468

Project ID: 81026.01 PEACEABLE HILL
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
EDB and DBCP Analysis						
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	ug/L	03/18/14	JRB	504.1
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	03/18/14	JRB	504.1

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

Trip blank included.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
April 04, 2014
Reviewed and Released by: Bobbi Aloisa, Vice President

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

April 04, 2014

QA/QC Data

SDG I.D.: GBG16366

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 268215, QC Sample No: BG15799 (BG16366)												
Antimony	BRL	<0.003	<0.003	NC	92.8			90.1				
Arsenic	BRL	<0.001	<0.001	NC	105			112			75 - 125	20
Selenium	BRL	<0.002	<0.002	NC	102			85.9				
Thallium	BRL	<0.001	<0.001	NC	104			88.8				
QA/QC Batch 268136, QC Sample No: BG15987 (BG16366)												
ICP Metals - Aqueous												
Barium	BRL	0.011	0.011	0	106			106			75 - 125	20
Beryllium	BRL	<0.0002	<0.0002	NC	100			100			75 - 125	20
Cadmium	BRL	<0.001	<0.001	NC	90.5			90.4			75 - 125	20
Calcium	BRL	6.40	6.30	1.60	92.9			NC			75 - 125	20
Chromium	BRL	<0.001	<0.001	NC	96.9			98.0			75 - 125	20
Copper	BRL	0.005	0.005	NC	106			107			75 - 125	20
Iron	BRL	0.021	0.018	15.4	99.2			98.5			75 - 125	20
Lead	BRL	<0.001	<0.001	NC	93.7			94.4			75 - 125	20
Magnesium	BRL	2.16	2.15	0.50	98.3			96.4			75 - 125	20
Manganese	BRL	0.004	0.004	NC	98.4			98.3			75 - 125	20
Nickel	BRL	0.002	<0.001	NC	98.7			99.1			75 - 125	20
Silver	BRL	<0.001	<0.001	NC	95.6			95.6			75 - 125	20
Sodium	0.12	11.3	11.2	0.90	121			NC			75 - 125	20
QA/QC Batch 268396, QC Sample No: BG16366 (BG16366)												
Mercury - Water	BRL	<0.0002	<0.0002	NC	111	111	0.0	111	107	3.7	70 - 130	20

Comment:

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

April 04, 2014

QA/QC Data

SDG I.D.: GBG16366

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 268360, QC Sample No: BG15643 (BG16366)													
Total Cyanide	BRL	<0.01	0.04	NC	97.4			< 75			85 - 115	20	m
QA/QC Batch 268294, QC Sample No: BG16211 (BG16366)													
Chloride	BRL	15.1	15.4	2.00	95.2			95.9			85 - 115	20	
Fluoride	BRL	<0.10	<0.10	NC	94.6			96.0			85 - 115	20	
Nitrate as Nitrogen	BRL	2.53	2.52	0.40	99.8			100			85 - 115	20	
Nitrite as Nitrogen	BRL	<0.01	<0.01	NC	97.7			98.3			85 - 115	20	
Sulfate	BRL	24.5	24.5	0	92.6			97.5			85 - 115	20	
QA/QC Batch 268277, QC Sample No: BG16285 (BG16366)													
Tot. Diss. Solids	BRL	290	290	0	101						85 - 115	20	
QA/QC Batch 268305, QC Sample No: BG16366 (BG16366)													
Alkalinity-CaCO3	BRL	96	91	NC	105						85 - 115	20	
QA/QC Batch 268299, QC Sample No: BG16366 (BG16366)													
pH		7.57	7.56	0.10	98.0						85 - 115	20	
QA/QC Batch 268311, QC Sample No: BG16366 (BG16366)													
Turbidity	BRL	<0.20	<0.20	NC	98.3						85 - 115	20	

m = This parameter is outside laboratory ms/msd specified recovery limits.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

April 04, 2014

QA/QC Data

SDG I.D.: GBG16366

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 268662, QC Sample No: BG09924 (BG16366)										
Carbamates HPLC - Drinking Water										
3-Hydroxycarbofuran	ND	73	76	4.0	94	102	8.2	70 - 130	20	
Aldicarb	ND	72	76	5.4	89	93	4.4	70 - 130	20	
Aldicarb Sulfone	ND	79	86	8.5	115	89	25.5	70 - 130	20	r
Aldicarb Sulfoxide	ND	80	79	1.3	85	101	17.2	70 - 130	20	
Carbaryl	ND	80	82	2.5	87	92	5.6	70 - 130	20	
Carbofuran	ND	76	71	6.8	89	93	4.4	70 - 130	20	
Methomyl	ND	79	85	7.3	95	105	10.0	70 - 130	20	
Oxamyl	ND	79	85	7.3	97	103	6.0	70 - 130	20	
% BDMC	102	117	103	12.7	110	210	62.5	70 - 130	20	m,r
QA/QC Batch 268737, QC Sample No: BG16000 (BG16366)										
Haloacetic Acids - Drinking Water										
Bromochloroacetic Acid	ND	100			95			70 - 130	20	
Dibromoacetic Acid	ND	116			115			70 - 130	20	
Dichloroacetic Acid	ND	116			107			70 - 130	20	
Monobromoacetic Acid	ND	105			110			70 - 130	20	
Monochloroacetic Acid	ND	118			84			70 - 130	20	
Total Haloacetic Acids								70 - 130	20	
Trichloroacetic Acid	ND	90			99			70 - 130	20	
% 2,3-DBPA	92	115			87			70 - 130	20	
QA/QC Batch 269061, QC Sample No: BG16230 (BG16366)										
Semivolatile Organic Compounds - Drinking Water										
Benzo(a)pyrene	ND	73			97			70 - 130	20	
Bis(2-ethylhexyl)adipate	ND	109			112			70 - 130	20	
Bis(2-ethylhexyl)phthalate	ND	107			123			70 - 130	20	
% 1,3-Dimethyl-2-nitrobenzene	95	95			96			70 - 130	20	
% Perylene-d12	78	86			100			70 - 130	20	
% Triphenylphosphate	93	108			111			70 - 130	20	
QA/QC Batch 268430, QC Sample No: BG16357 (BG16366)										
Volatiles - Drinking Water										
1,1,1,2-Tetrachloroethane	ND	106	113	6.4	107	102	4.8	70 - 130	30	
1,1,1-Trichloroethane	ND	105	110	4.7	104	96	8.0	70 - 130	30	
1,1,2,2-Tetrachloroethane	ND	102	111	8.5	107	103	3.8	70 - 130	30	
1,1,2-Trichloroethane	ND	105	112	6.5	105	101	3.9	70 - 130	30	
1,1-Dichloroethane	ND	111	119	7.0	112	108	3.6	70 - 130	30	
1,1-Dichloroethene	ND	100	104	3.9	107	98	8.8	70 - 130	30	
1,1-Dichloropropene	ND	103	106	2.9	105	98	6.9	70 - 130	30	
1,2,3-Trichlorobenzene	ND	99	108	8.7	102	99	3.0	70 - 130	30	
1,2,3-Trichloropropane	ND	101	107	5.8	101	101	0.0	70 - 130	30	
1,2,4-Trichlorobenzene	ND	94	104	10.1	98	98	0.0	70 - 130	30	
1,2,4-Trimethylbenzene	ND	113	118	4.3	106	103	2.9	70 - 130	30	

QA/QC Data

SDG I.D.: GBG16366

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,2-Dibromo-3-chloropropane	ND	102	112	9.3	98	100	2.0	70 - 130	30
1,2-Dibromoethane	ND	106	113	6.4	105	100	4.9	70 - 130	30
1,2-Dichlorobenzene	ND	102	110	7.5	103	101	2.0	70 - 130	30
1,2-Dichloroethane	ND	105	113	7.3	109	106	2.8	70 - 130	30
1,2-Dichloropropane	ND	107	115	7.2	106	104	1.9	70 - 130	30
1,3,5-Trimethylbenzene	ND	108	113	4.5	106	103	2.9	70 - 130	30
1,3-Dichlorobenzene	ND	102	107	4.8	101	100	1.0	70 - 130	30
1,3-Dichloropropane	ND	103	110	6.6	105	102	2.9	70 - 130	30
1,4-Dichlorobenzene	ND	103	108	4.7	104	101	2.9	70 - 130	30
2,2-Dichloropropane	ND	103	106	2.9	103	96	7.0	70 - 130	30
2-Chlorotoluene	ND	103	107	3.8	104	101	2.9	70 - 130	30
4-Chlorotoluene	ND	106	111	4.6	104	102	1.9	70 - 130	30
Benzene	ND	105	111	5.6	106	101	4.8	70 - 130	30
Bromobenzene	ND	102	109	6.6	102	99	3.0	70 - 130	30
Bromochloromethane	ND	92	100	8.3	96	91	5.3	70 - 130	30
Bromodichloromethane	ND	103	112	8.4	108	103	4.7	70 - 130	30
Bromoform	ND	104	111	6.5	105	99	5.9	70 - 130	30
Bromomethane	ND	105	111	5.6	100	103	3.0	70 - 130	30
Carbon tetrachloride	ND	100	104	3.9	97	92	5.3	70 - 130	30
Chlorobenzene	ND	106	111	4.6	105	100	4.9	70 - 130	30
Chloroethane	ND	102	109	6.6	105	103	1.9	70 - 130	30
Chloroform	ND	100	107	6.8	100	95	5.1	70 - 130	30
Chloromethane	ND	103	107	3.8	105	97	7.9	70 - 130	30
cis-1,2-Dichloroethene	ND	96	100	4.1	94	95	1.1	70 - 130	30
cis-1,3-Dichloropropene	ND	99	106	6.8	102	98	4.0	70 - 130	30
Dibromochloromethane	ND	104	114	9.2	106	102	3.8	70 - 130	30
Dibromomethane	ND	103	109	5.7	103	99	4.0	70 - 130	30
Dichlorodifluoromethane	ND	82	87	5.9	93	87	6.7	70 - 130	30
Ethylbenzene	ND	105	111	5.6	106	101	4.8	70 - 130	30
Hexachlorobutadiene	ND	89	98	9.6	99	94	5.2	70 - 130	30
Isopropylbenzene	ND	107	113	5.5	105	99	5.9	70 - 130	30
m&p-Xylene	ND	107	111	3.7	105	102	2.9	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	102	111	8.5	108	106	1.9	70 - 130	30
Methylene chloride	ND	93	97	4.2	92	91	1.1	70 - 130	30
Naphthalene	ND	109	116	6.2	100	105	4.9	70 - 130	30
n-Butylbenzene	ND	106	114	7.3	106	105	0.9	70 - 130	30
n-Propylbenzene	ND	112	115	2.6	103	100	3.0	70 - 130	30
o-Xylene	ND	105	110	4.7	106	100	5.8	70 - 130	30
p-Isopropyltoluene	ND	107	111	3.7	106	101	4.8	70 - 130	30
sec-Butylbenzene	ND	103	108	4.7	106	101	4.8	70 - 130	30
Styrene	ND	103	111	7.5	106	102	3.8	70 - 130	30
tert-Butylbenzene	ND	106	113	6.4	106	102	3.8	70 - 130	30
Tetrachloroethene	ND	102	105	2.9	100	96	4.1	70 - 130	30
Toluene	ND	108	113	4.5	104	101	2.9	70 - 130	30
trans-1,2-Dichloroethene	ND	102	106	3.8	106	100	5.8	70 - 130	30
trans-1,3-Dichloropropene	ND	105	112	6.5	104	99	4.9	70 - 130	30
Trichloroethene	ND	103	106	2.9	102	97	5.0	70 - 130	30
Trichlorofluoromethane	ND	97	100	3.0	97	92	5.3	70 - 130	30
Vinyl chloride	ND	98	102	4.0	105	98	6.9	70 - 130	30
% 1,2-dichlorobenzene-d4	94	100	98	2.0	99	99	0.0	70 - 130	30
% Bromofluorobenzene	97	101	99	2.0	100	98	2.0	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

QA/QC Data

SDG I.D.: GBG16366

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 269039, QC Sample No: BG16366 (BG16366)										
Herbicides - Drinking Water										
2,4,5-T	ND	109			110			70 - 130	20	
2,4,5-TP	ND	102			105			70 - 130	20	
2,4-D	ND	120			125			70 - 130	20	
Dalapon	ND	98			107			70 - 130	20	
Dicamba	ND	102			108			70 - 130	20	
Dichloroprop	ND	82			83			70 - 130	20	
Dinoseb	ND	108			104			70 - 130	20	
Pentachlorophenol	ND	105			105			70 - 130	20	
Picloram	ND	101			99			70 - 130	20	
QA/QC Batch 268598, QC Sample No: BG16366 (BG16366)										
Organophosphorus Pesticides - Drinking Water										
Alachlor	ND	88			93			70 - 130	20	
Atrazine	ND	90			96			70 - 130	20	
Butachlor	ND	84			90			70 - 130	20	
Metolachlor	ND	84			89			70 - 130	20	
Metribuzin	ND	88			94			70 - 130	20	
Simazine	ND	91			96			70 - 130	20	
QA/QC Batch 268599, QC Sample No: BG17254 (BG16366)										
Pesticides - Drinking Water										
a-Chlordane	ND	110			104			70 - 130	20	
Aldrin	ND	93			96			70 - 130	20	
Chlordane	ND	NA			NA			70 - 130	20	
Dieldrin	ND	113			109			70 - 130	20	
Endrin	ND	117			113			70 - 130	20	
g-BHC	ND	108			105			70 - 130	20	
g-Chlordane	ND	108			107			70 - 130	20	
Heptachlor	ND	111			106			70 - 130	20	
Heptachlor epoxide	ND	109			108			70 - 130	20	
Hexachlorobenzene	ND	86			78			70 - 130	20	
Hexachlorocyclopentadiene	ND	54			53			70 - 130	20	l,m
Methoxychlor	ND	115			105			70 - 130	20	
Propachlor	ND	93			81			70 - 130	20	
Toxaphene	ND	NA			NA			70 - 130	20	
% DCBP	ND	99			88			70 - 130	20	

l = This parameter is outside laboratory lcs/lcsd specified recovery limits.
m = This parameter is outside laboratory ms/msd specified recovery limits.
r = This parameter is outside laboratory rpd specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
April 04, 2014

Criteria: NY: DWP5
State: NY

Sample Criteria Exceedences Report

GBG16366 - CHAZEN

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BG16366	MN-DW	Manganese	EPA / 40 CFR 141 DW / 143.3 Secondary MCLs	0.058	0.001	0.05	0.05	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY Temperature Narration

April 04, 2014

SDG I.D.: GBG16366

The samples in this delivery group were received at 4°C.
(Note acceptance criteria is above freezing up to 6°C)

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

4°W | C+IP

Temp

Pg 1 of 1

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Data Delivery:
- [ ] Fax #:
- [ ] Email:

Customer: CHAZEN ENVIRONMENTAL
Address: 21 FOX ST SUITE 201
POUGHKEEPSIE, NY 12601

Project: 31026.01 Peaceable Hill
Report to: Eric Orlowski
Invoice to: Accounts Payable

Project P.O: P15592
Phone #: 845-486-1520
Fax #: 845-454-4026

Client Sample - Information - Identification

Sampler's Signature: EJOrlowski 3/6/14 Date

Matrix Code:
DW=drinking water WW=wastewater S=soil/solid O=other
GW=groundwater SL=sludge A=air

Analysis Request

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	24/5DOH Subpart 5-1 **	Tables 1-7	531 VOA	THM VOAs	as-is VOAs	4oz glass amber	250mL HNO3	Soil VOA [ ] Methanol [ ] S. Bisulfate [ ] H20	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [✓] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [✓] 500ml [✓] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 ~~250ml~~ 100mL	PL NaOH 250ml	Bacteria Bottle
16366	PW-2	DW	3/6/14	900	✓		2	3	4	1	1				3	7	3		4	1	1
* 16468	TB - 504								1												

Relinquished by:	Accepted by:	Date:	Time:
EJOrlowski	[signature]	3/6/14	1005
[signature]	Chevadine	3/6/14	1609

Comments, Special Requirements or Regulations:

* Trip blank rec'd

** same analysis as BG 13757 per Buddy (SW)

Turnaround:
- [ ] 1 Day*
- [ ] 2 Days*
- [ ] 3 Days*
- [✓] Standard
- [ ] Other

* SURCHARGE APPLIES

CT/RI
- [ ] RCP Cert.
- [ ] GW Protect.
- [ ] GA Mobility
- [ ] GB Mobility
- [ ] SW Protect.
- [ ] Res. Vol.
- [ ] Ind. Vol.
- [ ] Res. Criteria
- [ ] Other

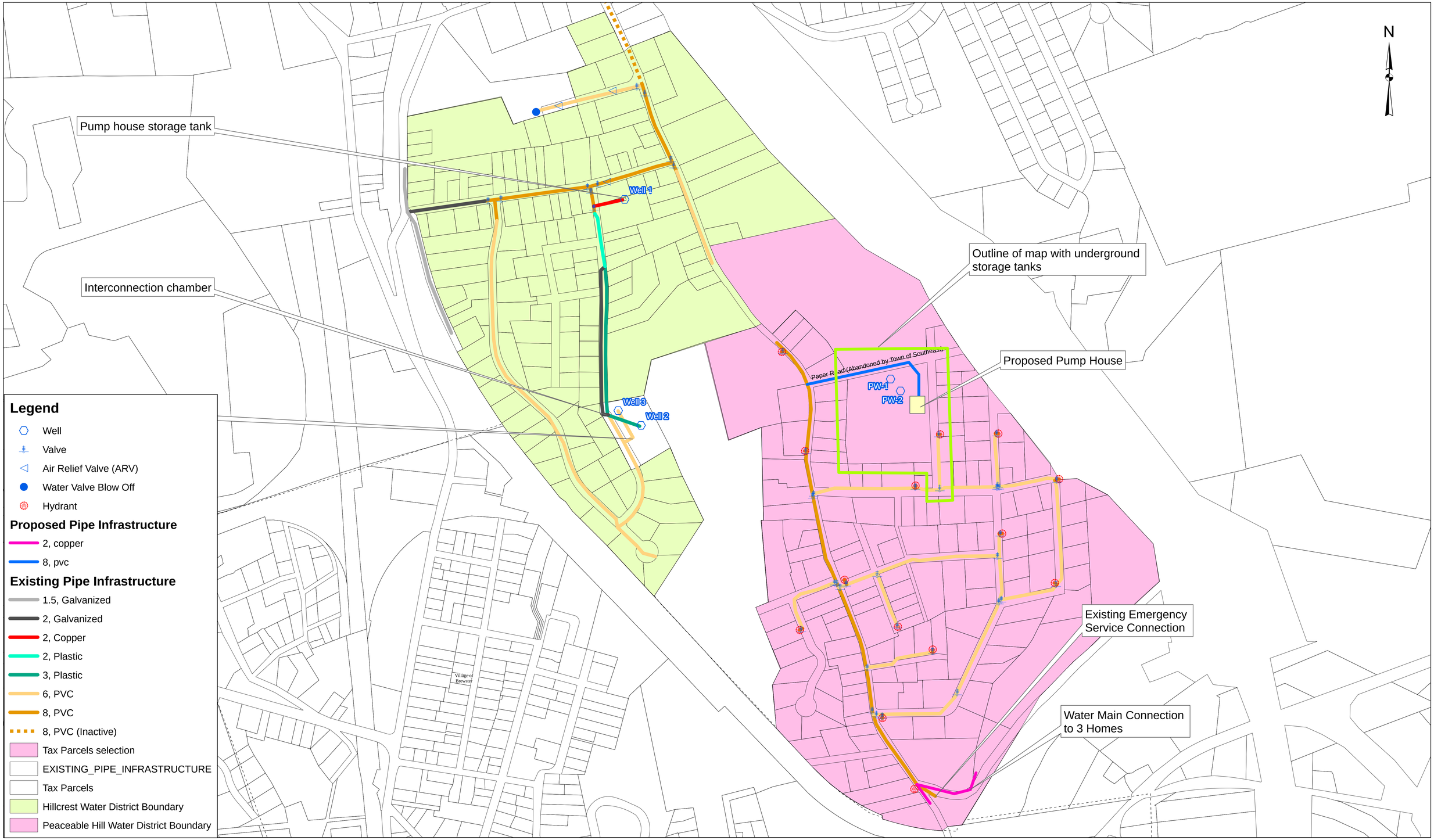
MA
- [ ] MCP Cert.
- [ ] GW-1
- [ ] GW-2
- [ ] GW-3
- [ ] S-1
- [ ] S-2
- [ ] S-3
- [ ] MWRA eSMART
- [ ] Other

Data Format
- [✓] Excel
- [✓] PDF
- [ ] GIS/Key
- [ ] EQuIS
- [ ] Other

Data Package
- [ ] ASP-A
- [ ] NJ Reduced Deliv. *
- [ ] NJ Hazsite EDD
- [ ] Phoenix Std Report
- [ ] Other

State where samples were collected: NY

Appendix E:
Proposed Water Main Map



THE Chazen COMPANIES®

Engineers/Surveyors
Planners
Environmental Scientists
Landscape Architects

CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTS CO., P.C.

Dutchess County Office:
21 Fox Street
Poughkeepsie, NY. 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street
Troy, NY. 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road
Queensbury, NY. 12804
Phone: (518) 812-0513

This map is a product of The Chazen Companies. It should be used for reference purposes only. Reasonable efforts have been made to ensure the accuracy of this map. The Chazen Companies expressly disclaims any responsibilities or liabilities from the use of this map for any purpose other than its intended use.

PEACEABLE HILL WATER DISTRICT

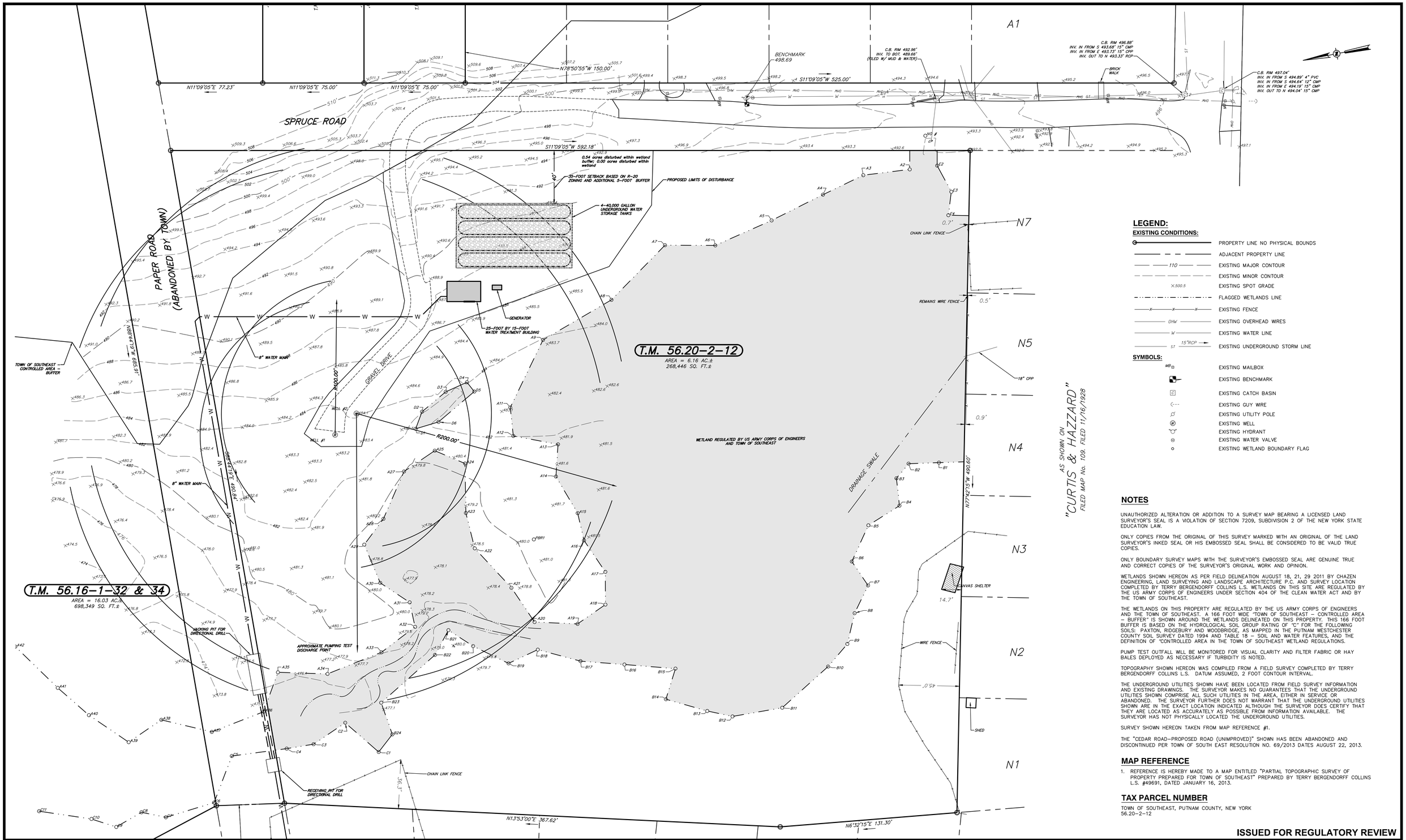
PROPOSED WATER MAIN MAP

TOWN OF SOUTHEAST, PUTNAM COUNTY, NEW YORK

Drawn:	RGL
Date:	06/02/2014
Scale:	1 inch=245 feet
Project:	81026.01
Figure:	1

Path: X:\8\81000-81099\81026.01 - Peaceable Hill Supply Identification\GIS\maps\81026_01_WaterSystem_052314_rgl_PROPOSED.mxd

Appendix F:
Proposed Infrastructure Plan



LEGEND:

EXISTING CONDITIONS:

- PROPERTY LINE NO PHYSICAL BOUNDS
- ADJACENT PROPERTY LINE
- 110 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- ×500.5 — EXISTING SPOT GRADE
- FLAGGED WETLANDS LINE
- X — EXISTING FENCE
- OHW — EXISTING OVERHEAD WIRES
- W — EXISTING WATER LINE
- ST 15"RCP — EXISTING UNDERGROUND STORM LINE

SYMBOLS:

- MB — EXISTING MAILBOX
- EXISTING BENCHMARK
- EXISTING CATCH BASIN
- EXISTING GUY WIRE
- EXISTING UTILITY POLE
- EXISTING WELL
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING WETLAND BOUNDARY FLAG

NOTES

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S INKED SEAL OR HIS EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

ONLY BOUNDARY SURVEY MAPS WITH THE SURVEYOR'S EMBOSSED SEAL ARE GENUINE TRUE AND CORRECT COPIES OF THE SURVEYOR'S ORIGINAL WORK AND OPINION.

WETLANDS SHOWN HEREON AS PER FIELD DELINEATION AUGUST 18, 21, 29 2011 BY CHAZEN ENGINEERING, LAND SURVEYING AND LANDSCAPE ARCHITECTURE P.C. AND SURVEY LOCATION COMPLETED BY TERRY BERGENDORFF COLLINS L.S. WETLANDS ON THIS SITE ARE REGULATED BY THE US ARMY CORPS OF ENGINEERS UNDER SECTION 404 OF THE CLEAN WATER ACT AND BY THE TOWN OF SOUTHEAST.

THE WETLANDS ON THIS PROPERTY ARE REGULATED BY THE US ARMY CORPS OF ENGINEERS AND THE TOWN OF SOUTHEAST. A 166 FOOT WIDE "TOWN OF SOUTHEAST – CONTROLLED AREA – BUFFER" IS SHOWN AROUND THE WETLANDS DELINEATED ON THIS PROPERTY. THIS 166 FOOT BUFFER IS BASED ON THE HYDROLOGICAL SOIL GROUP RATING OF "C" FOR THE FOLLOWING SOILS: PAXTON, RIDGEBURY AND WOODBRIDGE, AS MAPPED IN THE PUTNAM WESTCHESTER COUNTY SOIL SURVEY DATED 1994 AND TABLE 18 – SOIL AND WATER FEATURES, AND THE DEFINITION OF "CONTROLLED AREA IN THE TOWN OF SOUTHEAST WETLAND REGULATIONS.

PUMP TEST OUTFALL WILL BE MONITORED FOR VISUAL CLARITY AND FILTER FABRIC OR HAY BALES DEPLOYED AS NECESSARY IF TURBIDITY IS NOTED.

TOPOGRAPHY SHOWN HEREON WAS COMPILED FROM A FIELD SURVEY COMPLETED BY TERRY BERGENDORFF COLLINS L.S. DATUM ASSUMED, 2 FOOT CONTOUR INTERVAL.

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

SURVEY SHOWN HEREON TAKEN FROM MAP REFERENCE #1.

THE "CEDAR ROAD–PROPOSED ROAD (UNIMPROVED)" SHOWN HAS BEEN ABANDONED AND DISCONTINUED PER TOWN OF SOUTH EAST RESOLUTION NO. 69/2013 DATES AUGUST 22, 2013.

MAP REFERENCE

1. REFERENCE IS HEREBY MADE TO A MAP ENTITLED "PARTIAL TOPOGRAPHIC SURVEY OF PROPERTY PREPARED FOR TOWN OF SOUTHEAST" PREPARED BY TERRY BERGENDORFF COLLINS L.S. #49691, DATED JANUARY 16, 2013.

TAX PARCEL NUMBER

TOWN OF SOUTHEAST, PUTNAM COUNTY, NEW YORK
56.20–2–12

ISSUED FOR REGULATORY REVIEW

ALL RIGHTS RESERVED. COPY OR REPRODUCTION OF THIS DRAWING OR DOCUMENT, OR ANY PORTION THEREOF, WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., P.C. IS PROHIBITED. THIS DRAWING OR DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR ANY PURPOSE OTHER THAN THE SPECIFIC PROJECT, APPLICATION AND SITUATION FOR WHICH IT WAS INTENDED. ANY MODIFICATION OF THIS DRAWING OR DOCUMENT, OR ANY USE FOR ANY PROJECT, APPLICATION OR SITUATION OTHER THAN THAT FOR WHICH IT WAS INTENDED, WILL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY TO CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., P.C.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DRAWING OR DOCUMENT IN ANY WAY, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED DESIGN PROFESSIONAL (PROFESSIONAL ENGINEER, LAND SURVEYOR, ARCHITECT OR LANDSCAPE ARCHITECT). IF THIS DRAWING OR DOCUMENT IS ALTERED, THE ALTERING DESIGN PROFESSIONAL SHALL AFFIX TO THE DRAWING OR DOCUMENT HIS OR HER SEAL, THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THE Chazen COMPANIES®
Engineers/Surveyors
Planners
Environmental Scientists
Landscape Architects

CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., P.C.

Office Locations:

Dutchess County Office:
21 Fox Street
Poughkeepsie, New York 12601
Phone: (845) 454–3980

Capital District Office:
547 River Street
Troy, New York 12180
Phone: (518) 273–0055

North Country Office:
100 Glen Street
Glens Falls, New York 12801
Phone: (518) 812–0513

rev.	date	description
1	9/11/2013	GENERAL REVISION

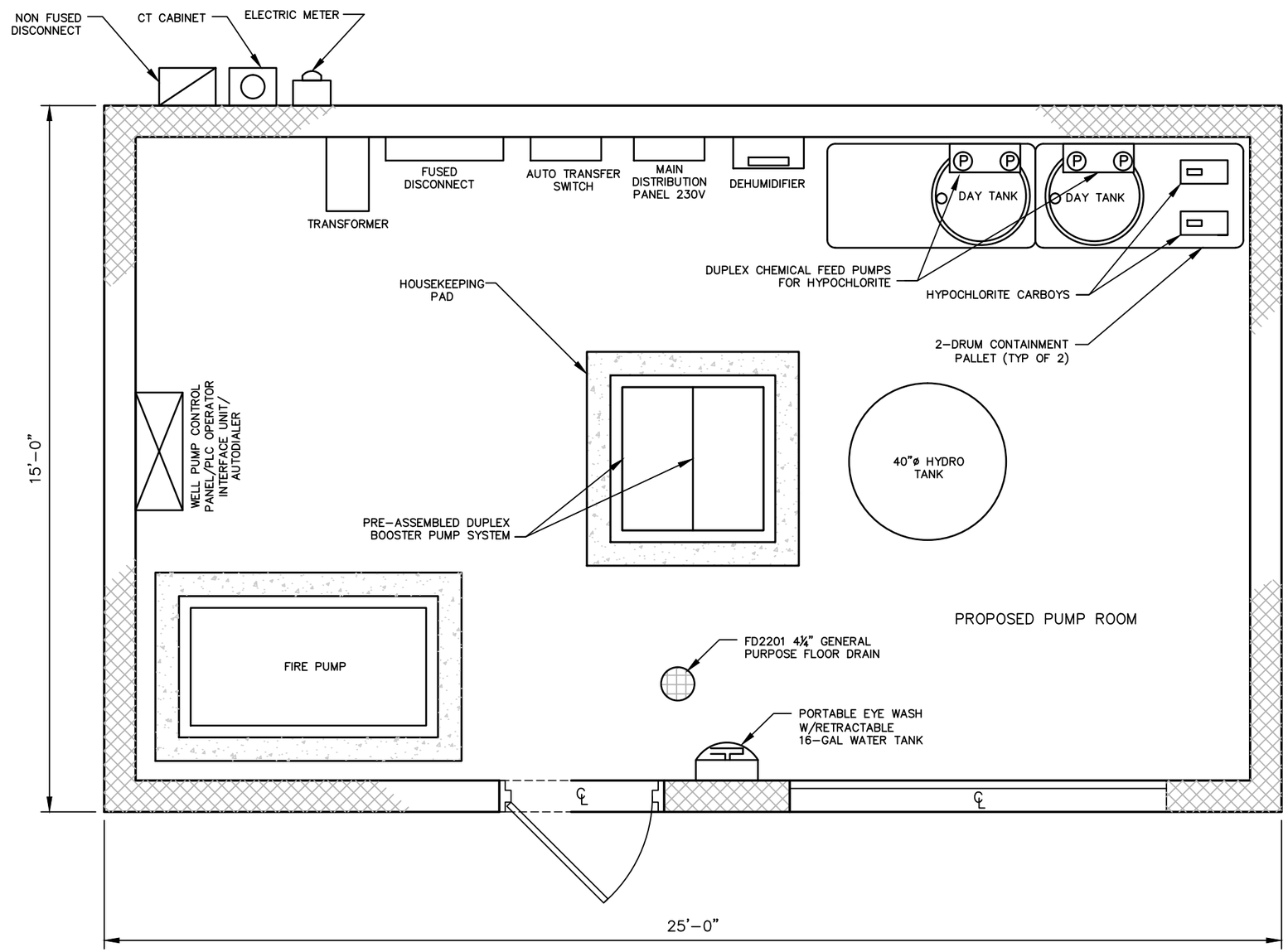
PEACEABLE HILL WATER DISTRICT

PROPOSED LAYOUT WITH UNDERGROUND STORAGE TANKS

TOWN OF SOUTHEAST, PUTNAM COUNTY, NEW YORK STATE

designed RGL	checked
date 2/4/13	scale 1"=30'
project no. 81026.01	
sheet no. SP1 2 OF 3	

Drawing Name: X:\B\81000–81099\81026.01 – Peaceable Hill Supply Identification\Eng\dwg\02–SP1–81026–01–PROPOSED LAYOUT WITH UNDERGROUND TANKS.dwg
Xref's Attached: XTB–24X36–81026–01; XENG–BASE–81026–01; XLAYOUT–81026–01
Date Printed: Aug 19, 2014, 12:16pm



NOT FOR CONSTRUCTION

ALL RIGHTS RESERVED. COPY OR REPRODUCTION OF THIS DRAWING OR DOCUMENT, OR ANY PORTION THEREOF, WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C. IS PROHIBITED. THIS DRAWING OR DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR ANY PURPOSE OTHER THAN THE SPECIFIC PROJECT, APPLICATION AND SITUATION FOR WHICH IT WAS INTENDED. ANY MODIFICATION OF THIS DRAWING OR DOCUMENT, OR ANY USE FOR ANY PROJECT, APPLICATION OR SITUATION OTHER THAN THAT FOR WHICH IT WAS INTENDED, WILL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY TO CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DRAWING OR DOCUMENT IN ANY WAY, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED DESIGN PROFESSIONAL (PROFESSIONAL ENGINEER, LAND SURVEYOR, ARCHITECT OR LANDSCAPE ARCHITECT). IF THIS DRAWING OR DOCUMENT IS ALTERED, THE ALTERING DESIGN PROFESSIONAL SHALL AFFIX TO THE DRAWING OR DOCUMENT HIS OR HER SEAL, THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.

Office Locations:

Dutchess County Office:
21 Fox Street
Poughkeepsie, New York 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street
Troy, New York 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road
Queensbury, New York 12804
Phone: (518) 812-0513

PEACEABLE HILL WATER DISTRICT

GENERAL PUMP STATION LAYOUT

TOWN OF SOUTHEAST, PUTNAM COUNTY, NEW YORK

designed TCC	checked
date 6/20/14	scale 3/8"=1'
project no. 81026.01	
sheet no. **FIG 1** 1 OF 1	

Drawing Name: X:\8\81000-81099\81026.01 - Peaceable Hill Supply Identification\Eng\dwg\101_FIG1_81026-01_BUILDING PLANS.dwg Date Printed: Aug 19, 2014, 11:57am

Appendix G:
Peaceable Hill Parcel Property Type

2014 Peaceable Hill Water District

print key	property class	special district code	special district tax value	second units	owner name
56.20-2-17	210	WD016	190000	0	Gorman, Kathleen
56.20-2-78	210	WD016	194800	0	Shisler, Mark D.
56.20-2-56	210	WD016	203500	0	Tanahashi, Kazuya
56.20-2-5	210	WD016	204900	0	Natale, Jessica
56.20-2-4	210	WD016	207700	0	Polishchuk, Vasyl
56.20-2-30	210	WD016	211100	0	Oldham, Edward
56.20-1-9	210	WD016	211200	0	Franco, Jose
56.20-2-11	210	WD016	211200	0	Gertig, Cindy
56.20-1-21	210	WD016	212100	0	Pilla, Alfonso
56.20-2-36	210	WD016	212100	0	Moorehead, Raymond
56.20-2-84	210	WD016	213100	0	Dyas, Michael
56.20-1-17.1	210	WD016	213800	0	Wells, Henry Hubbard
67.8-1-15	210	WD016	214700	0	Fitzsimmons, Donna T.
56.20-2-22	210	WD016	216300	0	Birkenstock, John
56.20-1-11	210	WD016	216500	0	Varela, Patricia T.
56.20-2-43	210	WD016	217400	0	Bisgier, Jeff
56.20-1-17.2	210	WD016	220900	0	Yazzo, Frank J. Jr
56.20-1-19	210	WD016	221200	0	Decowski, Wladyslaw
56.20-2-64	210	WD016	221900	0	Piersall, Wallace
67.8-1-12	210	WD016	225300	0	MacCrae, Douglas
67.8-1-27	210	WD016	225500	0	Moncuse, Philip L.
56.20-2-29	210	WD016	229000	0	Owens, James T.
67.8-1-26	210	WD016	229000	0	Vanderlyn, Harvey Jr
56.20-2-34	210	WD016	229000	0	Berman, Marius
67.8-1-39	210	WD016	229800	0	Piazza, John
67.8-1-40	210	WD016	230800	0	Dunn, Leukadia A.
56.20-2-10	210	WD016	233200	0	Manzo, Douglas
56.20-2-79	210	WD016	239200	0	Scolpino, Douglas
56.20-2-60	210	WD016	240000	0	Nichols, Peter M.
67.8-1-30	210	WD016	240900	0	Howe, Therese E.
56.20-2-58	210	WD016	241700	0	Conklin, Alice M.
56.20-2-37	210	WD016	241700	0	Ball, Michael J.
67.8-1-29	210	WD016	243000	0	Peifer, Richard E.
56.20-1-12	210	WD016	243900	0	Bottge, Bette
56.20-2-44	210	WD016	244200	0	Hennings, Frederick W.
56.20-2-62	210	WD016	245500	0	McNeill, John
56.20-2-59	210	WD016	245800	0	Sherblom, Harry M.
56.20-1-20	210	WD016	247400	0	Crawford, Daniel
56.20-2-65	210	WD016	247400	0	Pegnim, Donald
56.20-2-16	210	WD016	247700	0	King, Barbara
56.20-1-15	210	WD016	248500	0	Piersall, Clinton L.
56.20-2-20	210	WD016	251900	0	Whyte, Mark
56.20-2-72	210	WD016	252700	0	Cameron, James
56.20-2-82	210	WD016	254400	0	Pigan, Robert Branislaw
56.20-2-8	210	WD016	256200	0	Somoskey, John

2014 Peaceable Hill Water District

print key	property class	special district code	special district tax value	second units	owner name
56.20-2-76	210	WD016	256200	0	Albertassi, Gilberto
67.8-1-9	210	WD016	257600	0	Blake, Gregory
56.20-2-77	210	WD016	259700	0	Neuner, Michael E.
67.8-1-3	210	WD016	260000	0	Buckner, David A.
56.20-2-74	210	WD016	261000	0	Sinclair, Ruth T.
67.8-1-37.3	210	WD016	262100	0	Moschetti, Gregory J.
56.20-2-46	210	WD016	263700	0	Babon, Edward
56.20-1-24	210	WD016	264000	0	Ceo, Lucille
67.8-1-2	210	WD016	264200	0	Tombline, Curtis
56.20-2-73	210	WD016	264700	0	Cambareri, Nicola
56.20-1-22	210	WD016	265100	0	Kavalski, Darcy
67.8-1-10	210	WD016	268800	0	Maher, Kevin M.
56.20-2-24	210	WD016	269700	0	Klingner, Richard J.
56.20-1-30	210	WD016	271400	0	Infantino, Stanlee M.
56.20-2-23	210	WD016	271500	0	Murphy, Robert
56.20-2-75	210	WD016	271600	0	Pilla, Alfonso
67.8-1-11	210	WD016	273900	0	Ramirez, Pablo
56.20-2-6	210	WD016	273900	0	Scipioni, Renzo
56.20-2-45	210	WD016	278200	0	Quaranta, Christopher L.
67.8-1-25	210	WD016	278400	0	Smith, William J.
56.20-2-51	210	WD016	279100	0	Quinn, Conor L.
56.20-2-52	210	WD016	280700	0	Saccomanno, James
56.20-2-83	210	WD016	280900	0	Nugent, Peter B.
56.20-2-63	210	WD016	282700	0	128 Peaceable Hill LLC,
56.20-2-69	210	WD016	282700	0	Boshart, Frederick W.
67.8-1-35	210	WD016	283600	0	Diaz, Richard
67.8-1-16	210	WD016	284400	0	McGrath, Brian A.
56.20-2-53	210	WD016	284500	0	Gersch, Michael
56.20-2-57	210	WD016	285800	0	Yeager, Neil G.
67.8-1-34	210	WD016	286700	0	Silva, Charlene
56.20-2-68	210	WD016	288400	0	Mancuso, Thomas G.
67.8-1-1	210	WD016	291600	0	Woolcott, Roger W.
67.8-1-28	210	WD016	292400	0	Tapio, Raymond
56.20-1-31	210	WD016	293400	0	Vehaba, Dror
67.8-1-7	210	WD016	293400	0	Alexander, Erskine
56.20-2-19	210	WD016	293900	0	Tavarez, Auturo
56.20-2-21	210	WD016	296000	0	Ball, Kevin
67.8-1-20	210	WD016	296000	0	Sacchetti , Nicholas
56.20-1-25	210	WD016	298600	0	Weizenecker, Richard
56.20-2-31	210	WD016	301200	0	Chtioui, Rachid
56.20-2-18	210	WD016	301200	0	King, Thomas R.
67.8-1-13	210	WD016	302200	0	Lennon, Thomas P.
56.20-2-54	210	WD016	302800	0	Yekutiel, Miriam
56.20-2-50	210	WD016	303100	0	Sherry, William J.
56.20-2-28	210	WD016	304100	0	Jacobs, Jill C.

2014 Peaceable Hill Water District

print key	property class	special district code	special district tax value	second units	owner name
56.20-2-1	210	WD016	305400	0	DeCicco, Jack A.
56.20-2-70	210	WD016	305700	0	Dwyer, William J.
56.20-2-40	210	WD016	307200	0	Hughes, Agnes G.
56.20-1-33	210	WD016	309200	0	Pember, Barbara A.
67.8-1-8	210	WD016	309200	0	Valvano, Rosario
56.20-1-16	210	WD016	309600	0	Weizenecker , Dorothy
67.8-1-36	210	WD016	311200	0	Galili, Ruben
56.20-1-14	210	WD016	313600	0	Della Valle, Rita
67.8-1-4	210	WD016	313700	0	Outhouse, Michael
56.20-2-49	210	WD016	319800	0	Bartholdi, Thomas
56.20-2-48	210	WD016	322800	0	Hood, Patricia A.
56.20-2-47	210	WD016	323100	0	Mosey, John
56.20-2-67	210	WD016	328700	0	Spannaus, Peter A.
56.20-2-25.2	210	WD016	329600	0	Healy, Eric
67.8-1-33	210	WD016	335000	0	Truran, John III
67.8-1-31	210	WD016	335000	0	Lessa, Francis
67.8-1-19	210	WD016	337500	0	Berger, Linda
67.8-1-6	210	WD016	339200	0	Clar, Alan W.
56.20-2-32	210	WD016	340000	0	Business Solutions, Inc., Safe Environment
56.20-2-42	210	WD016	341000	0	Pizzorusso, John
56.20-1-23	210	WD016	350700	0	Miller, John W.
56.20-2-55	210	WD016	353400	0	Hulaj, Idriz
56.20-2-25.1	210	WD016	355200	0	Facciabene, Frank
56.20-2-7	210	WD016	359000	0	Somoskey, John Anthony
56.20-1-27	210	WD016	360500	0	Arroyo, Rudolph W.
56.20-2-2	210	WD016	360800	0	Rivadeneira, Wilson
56.20-2-35	210	WD016	361400	0	DeThomas, Patrick
67.8-1-18	210	WD016	366700	0	Souza, Paulo H.
56.20-2-39	210	WD016	367400	0	Sinclair, Ruth T.
67.8-1-21	210	WD016	375500	0	Gromofsky, Alan
67.8-1-22	210	WD016	379900	0	Cuevas, Ricardo
56.20-2-66	210	WD016	381700	0	Cucinell, Anthony
56.20-2-71	210	WD016	386100	0	Magri, Jeffrey
67.8-1-17	210	WD016	399400	0	Freyer, Glen
Total Single Family			**124 Single Family**		

2014 Peaceable Hill Water District

print key	property class	special district code	special district tax value	second units	owner name
56.20-2-80	215	WD016	260800	0	Panetta, Rocco
67.8-1-37.1	215	WD016	320200	0	Riofrio, Richard A.
67.8-1-38	215	WD016	346300	0	Poccia, Matteo
56.20-2-38	220	WD016	279100	0	Villavicencio, Linda
56.20-1-26	220	WD016	284600	0	Buccellato, Ronald
67.8-1-5	220	WD016	293900	0	Mule, Angelo A.
67.8-1-32	220	WD016	299700	0	Gersch, Robert
67.8-1-37.2	220	WD016	354000	0	Lopez Duran, Carlos O.
56.20-2-9	220	WD016	370800	0	Fanelli, Joseph V.
Total Two Family			**9 Two Family/Accessory Apartments**		
56.20-1-10	280	WD016	226600	0	Domenico Corp.,
56.20-1-32	280	WD016	260800	0	Jonke, Paul
56.20-1-28	280	WD016	417000	0	Cassano, James T.
56.20-1-18	280	WD016	482000	0	Kropelnicki, Kenneth J.
56.20-2-61	280	WD016	506300	0	Nalbone, Ralph
Total Multi-Residences			**5 Multi-Residences**		
Total Residential			**138 Residential**		
56.20-1-34	311	WD016	0	0	Town of Southeast,
56.20-2-13	311	WD016	0	0	Town of Southeast,
56.20-2-14	311	WD016	0	0	Town of Southeast,
56.20-2-15	311	WD016	0	0	Town of Southeast,
56.20-2-33	311	WD016	0	0	Town of Southeast,
67.8-1-24	311	WD016	178800	0	Piersall, Clinton L.
56.20-2-41	322	WD016	153000	0	Poccia, Matteo
56.20-1-8	682	WD016	0	0	Town of Southeast (Vacant, Recreation)
Total Vacant			**8 Vacant**		
56.20-2-3	484	WD016	96000	0	Wunner, Gregory F.
56.20-2-12	822	WD016	0	0	Town of Southeast (Water Supply)
Total Commercial			**2 Commercial**		
Total All Parcels			**148 Total Parcels**		