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April 4, 2017

Mr. James Clemence, Sr.
Hampton Rod & Gun Club, Inc.
P. O. Box 826
North Hampton, NH 03842-0826

Re: Site Investigation
Hampton Rod & Gun Club Property (DES # 201310001)
189 Atlantic Avenue
North Hampton, New Hampshire

Dear Mr. Clemence:

We have completed our Site Investigation of this property. The Site Investigation was conducted to satisfy the regulations of the NH Department of Environmental Services (DES) Env-Or 606.03 and Env-Or 606.01, as requested by DES in their letter dated December 3, 2013 and amended with more recent correspondence.

The results of our investigation are contained in this report. Please feel free to call if you have any questions or comments.

Sincerely,

Steven B. Shope, PG
President
Exeter Environmental Associates, Inc.
SBS

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SITE INVESTIGATION REPORT

HAMPTON ROD & GUN CLUB PROPERTY

ATLANTIC AVENUE, NORTH HAMPTON, NEW HAMPSHIRE

DES SITE # 201310001

REPORT PREPARED FOR:

Hampton Rod & Gun Club, Inc
P.O. Box 826
North Hampton, NH 03824-0826
Attn: Mr. James Clemence, Sr.

April 4, 2017

EEA 1814.01

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1.0 INTRODUCTION and BACKGROUND

This report presents the results of a Site Investigation of the Hampton Rod & Gun Club property located on Atlantic Avenue in North Hampton, New Hampshire. The property is identified on North Hampton Tax Map 13 as Lot 83. In addition to several club buildings, the property is developed with a pistol/rifle range (Photo #1) and a separate trap range (Photo #6).

On August 15, 2013, personnel from the NH Department of Environmental Services (DES) conducted an inspection of the subject property. DES observed that an area of forested wetland and perennial stream had been filled or otherwise impacted as a result of trap shooting activities, which included the deposition of clay targets, shotgun wads, and lead shot. It was further noted by DES that the pistol/rifle range berm was observed to have a trenched area in front of it that showed evidence of occasional water flow.

DES requested that a Site Investigation be performed in accordance with Env-Or 606.01 Contaminated Site Management Rules. It is the objective of this investigation to evaluate the extent of impacts of regulated waste (lead shot/bullets, clay targets, shotgun wads) in the soil, sediment, surface water and groundwater at the site. Our work to date indicates that lead (Pb) is the primary contaminant of concern.

It is the intent of this study to satisfy the requirements of a Site Investigation Report as stated in DES regulations Env-Or 606.03. We have made several exceptions to the requirements of Env-Or 606.03, as follows. First, property lines shown on the site plan are approximate. The east and west boundaries have been delineated by Jones & Beach Engineers (Stratham, NH) based on information available at the Rockingham County Registry of Deeds. The northern boundary is not shown on the site plan due to its distance from the shooting ranges, but is shown on the potential receptors map. Second, geologic cross-sections are not provided due to the shallow (<15') depth of the borings at this property. The contaminant of concern, lead (Pb), does not readily migrate

through groundwater as would dissolved contaminants such as gasoline or chlorinated solvents[1]. In the opinion of Professional Geologist Steven Shope, the additional effort necessary to develop detailed cross-sections is not justified based upon the migration characteristics of lead and site-specific conditions.

The site investigation has included: site inspections; the installation of four initial groundwater monitoring wells; the installation of four additional shallow groundwater monitoring wells at the pistol/rifle range; two rounds of groundwater sampling and analysis of water samples for the presence of dissolved lead, copper, and arsenic; sampling the on-site supply well for the presence of total lead, copper and arsenic; the collection of 78 soil samples from the pistol/rifle range and the analysis of all soil samples for lead and analysis of 3 samples for copper and arsenic; the collection of 64 soil samples from the trap range and the analysis of all soil samples for lead, analysis of 4 samples for copper and arsenic and 2 for polynuclear aromatic hydrocarbons; the collection of 18 sediment and 11 surface water sample locations and analysis of the samples for lead; a potential receptor survey; and preparation of this report. This investigation is subject to the limitations stated in Section 10.0 of this report.

2.0 SITE DESCRIPTION

The Hampton Rod & Gun Club property is located off the northern side of Route 111 (aka Atlantic Avenue) in North Hampton, New Hampshire. The property covers approximately 15.9± acres of land area, primarily used as a shooting range. The site location is shown on the attached US Geological Survey topographic map (Figure 1). The site layout is shown on Figure 2.

The property is developed with several buildings including a clubhouse, a one-bay garage, a shooting shed associated with the pistol/rifle range, and a canopy and

[1] Freeze & Cherry, 1979. *Groundwater*, Englewood, NJ, Chapter 9.

observation tower associated with the trap range. The clubhouse building is constructed on a poured slab-on-grade foundation with a concrete floor. There are no floor drains in the building. The clubhouse is heated with fuel oil and serviced by an on-site drilled bedrock well and a septic leachfield. The depth of the well is not known. The location of the supply well is shown on Figure 3a. The clubhouse building is surrounded by asphalt paving to the northeast, and by wooded land on all other sides.

A pistol/rifle range is located to the east of the clubhouse building (Figure 2). An earthen backstop berm is located along the eastern edge of this range and a north-south trending drainage channel is located just to the west of the berm.

A trap range is located to the north of the clubhouse building (Figure 2). The trap range is level and bisected by a drainage channel that discharges in an easterly direction to the Little River. The floor of the trap range floods on a seasonal basis (Photo #7).

The overall topography of the site slopes down gently to the north-northeast, towards the Little River. The Little River is located 350± feet north of the northern extent of the trap range and 600± feet north of the pistol/rifle range and flows in an easterly direction, eventually emptying into the Atlantic Ocean. Additional surface waters at the site include a drainage channel originating at the pistol/rifle range, a drainage channel that traverses the trap range and is joined by the pistol/rifle range channel, and the associated wetland areas surrounding the trap range and the Little River. Flow directions within the drainage channels and streams are shown on Figure 6a.

The property is abutted by woods on all sides.

Property Ownership
Hampton Rod & Gun Club, Inc.
P. O. Box 826
North Hampton, NH 03842-0826

3.0 SITE HISTORY

Our understanding of the Hampton Rod & Gun Club history is based upon interviews in 2014 with members Michael Harris, Jim Clemence and Peter Eaton. Mr. Eaton has been a member of the club since the 1960s.

The gun club property was first developed pre-1940 as farmland. Evidence of the farm includes an old tote road leading to a dug well in the northeastern portion of the property as well as linear drainage channels on the westerly abutting property. The channels are visible on the aerial photograph below.

West facing aerial photograph of the gun club *circa* 2013 (source: Google)

The trap and pistol/rifle ranges have been in their approximate current configuration since the 1940s, although both Mr. Eaton and Mr. Harris have knowledge that shooting at the pistol/rifle range was historically to the north of the existing berm location. Based upon historical aerial photography, the existing berm and the associated drainage channel have been in place since the 1990s. The existing berm was historically used for rifles and pistols were fired into a smaller berm that was formerly located approximately 50 feet east of the existing shooting shed. The pistol berm was removed in 2013 when the range was reconstructed. Some of the material was placed onto the rifle berm, which was also built up with new material at that time. The remaining material was spread out over the range floor in the vicinity of the former pistol berm.

Maintenance activities at the gun club include removing plastic shotshell wads on an annual basis and liming the trap fields each spring to increase soil pH. Clay pigeons and lead shot remain on the ground. Bullet traps were deployed at the pistol/rifle range in early 2015 to prevent future impacts to soil, sediment and surface water.

The clubhouse building was originally constructed in the 1940s and was renovated in 2005. The garage building was constructed in 2007. The shooting shed associated with the pistol/rifle range was erected in 2010. The Hampton Rod and Gun Club has always supported the Police Departments of North Hampton, Rye, occasionally Portsmouth and Stratham, Homeland Security (Two Coast Guard Cutters out of New Castle) and the US Border Patrol. All of these agencies have used the site to qualify their personnel /officers in firearms training. Lead distribution has not been limited to club members.

Air Photo Review. A review of historical aerial photography has been conducted as part of the Site Investigation. Aerial photographs from the years 1962, 1974, 1978, 1992, 1998, 2003, 2011 and 2012 were available from the NETR Online database and are included in *Appendix I*. In all of the photographs, the clubhouse building and the main east-west channel across the trap range are visible. Additionally, the existing trap range

and pistol/rifle range are shown in their present locations in each of the aerial photos reviewed.

4.0 FIELD INVESTIGATIONS

4.1 Soil Borings and Monitoring Well Installations. A total of eight groundwater monitoring wells have been installed as part of this Site Investigation. The monitoring well locations are shown on Figures 3a and 3b. The wells were installed on two separate occasions. The first series of wells were installed on March 7, 2014 by Technical Drilling Services of Sterling Massachusetts. The wells were installed with a track-mounted auger rig and are identified on Figures 3a and 3b as wells MW-1 through MW-4. The objective of installing the monitoring wells was to evaluate potential groundwater impacts from shooting activities at the site.

Soil samples were collected at five-foot intervals using a split spoon sampler. Soil samples were logged by the on-site engineers (Julie Shope and Brian Campelia of Exeter Environmental Associates, Inc.). The overburden material in the upland area was found to be a dense glacial till. The soil in the trap range and associated wetlands was generally found to consist of a marine fine to medium silty sand unit overlying clay. The overburden in the vicinity of well MW-2 was found to consist of a dark gray fine to coarse sand with rock fragments. The origin and extent of this unit is uncertain, but is not believed to be related to glacial till. Bedrock was not encountered in any of the four borings, up to a maximum depth of 17 feet. The water table was generally encountered at a depth of one to four feet below grade at the time of drilling.

The monitoring wells were constructed of two-inch PVC well screen and riser casing and were all installed with traditional sand and bentonite filling the annular space as shown on the well construction logs. Upon completion, each well was developed with a

dedicated Waterra hand pump to remove the fine sediments. Boring logs and well construction details are included in *Appendix III*.

Four additional shallow monitoring wells were installed at the pistol/rifle range at the request of DES. The wells were installed on July 14, 2014 using a GeoProbe drill rig operated by Technical Drilling Services. The objective of installing the monitoring wells was to characterize shallow groundwater quality at the pistol/rifle range to determine if it is a contributing factor towards the presence of lead that has been detected in surface water.

The monitoring well locations at the pistol/rifle range are shown on Figures 3a and 3b, identified as SGW-1, SGW-2, SGW-3 and SGW-4. In general, the borings encountered a silty clay soil. The monitoring wells were constructed of two-inch diameter PVC pipe with five-foot long well screens that extended approximately five feet into the water table. Boring logs and well construction details are included in *Appendix III*. Upon completion, each well was developed with a peristaltic pump and dedicated Teflon tubing to remove the fine sediments.

4.2 Water Elevation Survey. The top of the riser pipe for monitoring wells MW-1 to MW-4 and ground surface spot elevations were surveyed by Jones & Beach Engineers in 2014. A benchmark along Atlantic Avenue was used in the survey. The remaining four "SGW" wells and three surface water staff gauges were surveyed by Julie Shope and Sam Couture of Exeter Environmental in July 2014. Surveying was performed using a Leitz Automatic Level. The casing elevations for wells MW-1 through MW-4 were adjusted at this time as the riser pipes had been cut down.

The static water levels were measured at the monitoring locations with an electronic water level indicator on five separate occasions in 2014 and 2015. The results of the water elevation survey are presented in Table 1 and are discussed in Section 4.4.

In their comment letter dated March 2, 2015, DES inquired as to whether or not the lead impacted soil in the pistol/rifle range is below saturated water levels. The static water level measurements and our observations indicate that the maximum depth of impacted soil in the pistol/rifle range is 2± feet, which is below the seasonal high water table during the winter and spring months.

4.3 Groundwater Sampling and Analyses. An initial round of groundwater samples was collected from monitoring wells MW-1 through MW-4 on April 1, 2014. The supply well (DW-1) was sampled on April 24, 2014. Prior to sampling, the depth to water in the monitoring wells was measured and they were purged of three well volumes using dedicated Waterra hand pumps. The wells were sampled with a peristaltic pump and dedicated Teflon tubing lowered to the mid-depth of the well. Each of the groundwater samples was observed to be relatively silty at the time of sample collection. The groundwater samples were field-filtered using a 0.45-micron filter and collected into 40 mL plastic bottles preserved with nitric acid. The water sample from the clubhouse supply well was collected from the kitchen tap after purging the well for 15 minutes.

The samples were placed in an ice-containing cooler, and delivered by courier to Eastern Analytical, Inc. (EAI) for laboratory analysis. The groundwater samples were analyzed by EPA Method 200.8 for dissolved lead, copper and arsenic. The drinking water sample was analyzed for total lead, copper and arsenic. A copy of the laboratory report is provided in *Appendix II*. A summary of the groundwater results is presented in Table 2.

As shown in Table 2, arsenic, copper, and lead were each detected in at least one of the monitoring wells and in the bedrock supply well during the April 2014 sampling. The concentrations detected were below Ambient Groundwater Quality Standards (AGQS). Dissolved lead was only detected at one location (MW-3), at a concentration of 2 μg/L. Copper was also only detected at one location (MW-1), at a concentration of 2 μg/L.

Low concentrations of arsenic were detected at each of the four locations (<7 µg/L). In summary, the data indicate that shallow groundwater has not been impacted by the historical gun club activities.

All eight monitoring wells (the four original and the four at the pistol/rifle range) were sampled on July 29, 2014 using a peristaltic pump, Teflon tubing and a low-flow sampling rate of 0.2 ml/min. The samples were field filtered, placed in pre-preserved containers, and submitted for analysis of dissolved lead. Indicator parameters pH and specific conductance were measured in the field. The samples were placed in an ice-containing cooler, and delivered by courier to EAI for laboratory analysis. A copy of the laboratory report is provided in *Appendix II*. The results are summarized in Table 2.

Lead was not detected above reporting limits in the groundwater samples collected from MW-1, MW-2, MW-3 or MW-4. Trace concentrations (1 µg/L) of lead were identified in the samples collected from wells SGW-1 and SGW-4, and a lead concentration of 6 µg/L was identified in the sample from SGW-3. Lead was identified in the sample from SGW- 2 at a concentration of 21 µg/L, which exceeds the AGQS of 15 µg/L. pH levels were in the range of 5.8 to 6.6, which is considered to be slightly acidic and within a normal range for New Hampshire groundwater. In their letter of March 4, 2015, DES requested that a second groundwater quality sample be collected from SGW-2. This second sample was collected on March 16, 2015 using the same method (peristaltic pump) as was used during the first round of sampling. A lead concentration of 5 µg/L was identified. The monitoring results demonstrate that groundwater has not been significantly impacted by lead at either the pistol/rifle range or the trap range.

In their comment letter dated March 4, 2015, DES notes that the lead concentration of 6 µg/L detected in monitoring well SGW-3 (adjacent to the drainage channel) exceeds both the total and dissolved chronic lead surface water criteria of <1 µg/L at a hardness of 80 mg/L or less. Although this is true, it does not account for the dilution that would occur when groundwater seeps into a moving surface water body. It is our opinion that

shallow groundwater at the pistol/rifle range is a possible, but not likely significant, contributing source of dissolved lead to surface water.

4.4 Groundwater Flow. A summary of the surveyed top of casing elevations and the static water levels measured during six events are presented in Table 1. Based upon the water elevations measured during this study, the inferred direction of shallow groundwater flow is to the east-northeast, towards the Little River. Groundwater elevations measured on June 5, 2015 and November 8, 2106 are shown on Figures 3a and 3b.

We have measured a relatively flat horizontal water table gradient of 0.01 feet per feet (i.e., a 1% slope) across the site. Vertical hydraulic gradients cannot be measured as no well couplets have been installed as part of the site investigation. However, based on the visual observation of artesian conditions in wells MW-3 and SGW-1 during the April 2015 sampling round, a vertically upward hydraulic gradient is present during the spring season.

As pointed-out by Dr. Matthew Davis in his correspondence to the Town of North Hampton[2]; "Where the silt-clay layer is present, there is likely a perched water table that receives recharge from precipitation and discharges it locally to nearby surface water bodies." We are in agreement with Dr. Davis's comment.

4.5 Soil Sampling and Analysis (Pistol/Rifle Range). The soil sampling at the pistol/rifle range was conducted on six separate occasions. The soil sample locations are shown on Figure 4 and the laboratory data are summarized in Tables 3a and 3b.

[2] Matthew Davis, PhD., to Mr. Paul Apple, Town Administrator, Town of North Hampton, Summary of Document Review, Hampton Rod & Gun Club, Atlantic Ave., May 27, 2015.

For each location, samples were collected from a hand-dug test pit at depths of 0-6 and 6-12 inches. The shallow samples are identified as "A" and the deeper samples are identified as "B". The test pits were dug with a narrow soil spade, which was cleaned with clean tap water between locations. Each test pit was sub-sampled with a stainless steel spoon that was also cleaned between samples. Soil samples were collected into zip-lock bags and brought to a preparation table, where they were screened for the presence of bullets and bullet shards. The screening was done visually and not with a sieve, due to the high silt and moisture content of the fill soil. Bullets and bullet shards were observed and removed from selected soil samples as described in the field logs (*Appendix II*).

Following the screening, samples were taken from the Ziploc bag and placed into a 4-ounce glass jar for laboratory analysis. All of the samples were submitted to Eastern Analytical, Inc. of Concord, NH for analysis of lead; three were submitted for analysis of arsenic and copper, and the majority were analyzed for pH. The laboratory reports are included in *Appendix II*.

The initial sampling was conducted on April 24, 2014 (S-1 to S-12). Elevated concentrations of lead were found in several areas on the floor of the range. The concentration of lead in six of the initial samples exceeded the applicable Soil Remediation Standard[3] (SRS) of 400 mg/kg. Three of the floor locations were found to have lead concentrations above the Upper Concentration Limit (UCL) of 4,000 mg/kg as follows: S-2 (31,000 mg/kg), S-5 (28,000 mg/kg) and S-6 (38,000 mg/kg). These three locations form a triangle with a volume of 110± yd^3 of soil that exceeds UCLs, assuming an average depth of two feet. These elevated lead concentrations are attributable to the pistol berm formerly located in this area, as discussed in Section 3.0. Additional soil sampling was required to define the limits of soil exceeding SRS.

[3] NH DES, Env-Or 606.19, Table 600-2, Soil Remediation Standards.

On July 14, 2014, two additional soil samples (S-5 and S-9) were collected at a depth of 20 to 24 inches below ground. The soil samples were collected by hand excavating to a depth of 18 inches then using a GeoProbe sampler with an acetate sleeve to a depth of 24 inches. Total lead was reported in samples S-5 and S-9 at concentrations of 6 and 250 mg/kg respectively. Both of these values are less than the Soil Remediation Standard (SRS) of 400 mg/kg and document that the vertical extent of lead in soil at the pistol/rifle range is less than two feet.

Four additional shallow (0 to 6") soil samples were collected during the installation of four new monitoring wells at the pistol/rifle range on July 14, 2014. These samples were submitted for laboratory analysis of pH. The values were found to be between 6.0 to 7.2 pH units, which are considered to be slightly acidic to neutral.

In their response letter dated July 17, 2014, DES recommended that additional soil samples be conducted around the berm perimeter and west of the shooting shed to better define lead concentrations in those areas.

A total of 16 additional locations (S-13 to S-28 okay okay send this to Julie can you please look like? Sent) were sampled at the pistol/rifle range on October 3, 2014. The soil sampling was initiated off the west side of the shooting building at a location believed to be representative of upgradient conditions (S-13). The sampling progressed to the south of the pistol/rifle range, along the eastern side of the berm on property owned by Spruce Meadow Associates, then moving to the west past monitoring well MW-4, then along the north side of the pistol rifle range. The sampling was conducted at an approximate spacing of 50 feet. Relatively low concentrations of lead (<100 mg/kg), likely representative of background conditions, were identified in the samples from S-13 to S-17. Lead concentrations exceeding SRS were identified in the shallow samples at locations S-22 and S-24. These sampling locations are both located to the

northeast of the pistol/rifle range. The specific cause of elevated lead at these two locations is unknown, but may be related to historical shooting in that direction[4].

pH values for the soil samples were found to be acidic, ranging from a low of 2.9 to a high of 6.5, with an average of 4.8 pH units. The low pH of the soil is correlated to the native soil type encountered at the sampling locations, as opposed to the off-site fill encountered on the floor of the pistol/rifle range, which exhibited pH values of 6.0 to 7.2.

Additional soil samples were collected on December 30, 2014, May 26, 2015, and September 11, 2015 so that a delineation of lead data exceeding 400 mg/kg could be plotted. The resulting 400 mg/kg lead concentration contour is shown in red on Figure 4.

Based on this contour and with the use of the Data Mapper utility available on DES OneStop, we estimate an areal extent of 25,000± ft^2 of soil in the pistol/rifle range that exceeds SRS. Using a depth of 0.5 feet, this translates into a volume of 460± yd^3 of soil that exceeds SRS.

4.6 Soil Sampling and Analysis (Trap Range). The trap range soils were sampled on four dates. The soil sample locations are shown on Figure 5 and the laboratory data are summarized in Tables 4a and 4b. The laboratory report is presented in *Appendix II*. The first round of sampling was conducted on February 6, 2015 using a GeoProbe drill rig (TRS-1 to 20). The samples were collected into clear acetate sleeves and brought back to the office of Exeter Environmental for screening as described in Section 4.5 and packaged for laboratory analyses. Shotgun shells, clay targets and lead shot was observed and removed from selected soil samples as described in the field logs (*Appendix II*). For each location, samples were collected at depths of 0-6, 6-12 and 12-

[4] Telecommunication with Michael Harris, October 17, 2014.

24 inches (not analyzed). The shallow samples are identified as "A" and the deeper samples are identified as "B".

As shown in the tables, elevated lead concentrations were found to be limited to those samples less than six inches deep. This is expected given that the lead shot was deposited by falling shot as opposed to projectile bullets.

Additional rounds of soil samples were collected from the trap range on November 19, 2015 (TRS-21 to 34); March 7, 2016 (TRS-38 to 43) and March 24, 2016 (TRS-35, TRSS-44 to 46) to allow for the delineation of the 400 mg/kg lead contour. These samples were collected with the stainless steel spoon after opening up a shallow excavation with a hand spade. Samples were only collected from a depth of 0 to 6 inches as the previous round of sampling had shown the elevated lead concentrations to be limited to that depth range. The lead concentrations and the resulting 400 mg/kg SRS contour for the trap range are shown on Figure 5.

Based on this contour and with the use of the Data Mapper utility available on DES OneStop, we estimate an areal extent of 150,000± ft^2 of lead-impacted soil that exceeds SRS. Using a depth of 0.5 feet, this translates into a volume of 2,800± yd^3 of soil that exceeds SRS. Using the same technique and estimated depth, we estimate an areal extent of 35,000 ft^2 that exceed UCL, translating into a soil volume of 650 yd^3.

pH values for the trap range soil samples were found to be acidic, ranging from a low of 3.5 to a high of 6.9, with an average of 5.0 pH units.

Two soil samples collected from the trap range on February 15, 2015 were analyzed for the presence of polynuclear aromatic hydrocarbons (PAHs). No PAHs were identified in sample TRS-17B and only trace concentrations (<0.25 mg/kg) were reported in sample TRS-20B.

4.7 Sediment Sampling and Analysis. For the purposes of this report, sediment means *solid material, either mineral or organic, that is in suspension, is transported, or has been moved from its site of origin, situated on the bottom of lakes, ponds, streams, rivers or the ocean. Sediments are found in tidal waters below the mean high water line and below the upper boundary of a bank that abuts and confines a water body*.

Three initial sediment samples were collected from the top six inches of the base of the drainage channel adjacent to the pistol/rifle range berm on April 1, 2014. The sampling locations are shown on Figure 4, and are identified as SED-1, SED-2 and SED-3. As requested by DES, each of the three samples was collected along the firing line in front of the backstop berm. The samples were collected with a stainless steel spoon that was cleaned with distilled water between locations. Lead concentrations ranging from 440 to 1,000 mg/kg were identified in the sediment samples (Table 5). These concentrations are considered to be elevated relative to New Hampshire sediment quality guidelines[5]. All three sediment samples surpassed the thresholds for aquatic life at both the Threshold Effect Concentration (TEC- 36 mg/kg) and the Probable Effect Concentration (PEC- 128 mg/kg). TEC is a screening value below which adverse biological effects are unlikely; PEC is a screening value above which adverse biological effects are likely.

In a letter March 4 2015, DES requested that a Sampling and Analysis Plan be prepared to cover future surface water and sediment sampling events. That plan was prepared and submitted to DES on June 10, 2015, revised based on DES comments, and finalized on August 2, 2016.

Additional sediment samples were collected on September 28 and 30, 2016 using the techniques presented in the Sampling and Analysis Plan. The sampling locations are shown on Figure 6. Three sediment samples were collected from the pistol/rifle range drainage channel in addition to the three initial samples discussed above. Sample SED-1A is located to the south of the shooting berm and was chosen to identify any

[5] NHDES, 2005. Evaluation of Sediment Quality Guidance Document. DES-WD-04-9.

contamination in sediment upgradient of the shooting area. Sediment sample SED-4 is located just downstream of the pistol/rifle range and sample SED-5 is located further downstream just above the confluence with the trap range drainage channel. The locations of SED-4 and SED-5 were chosen to identify any contamination transported off the pistol/rifle range and into the drainage channel.

The trap range has three sediment sampling locations. The first location is positioned west of the trap range (SED-6) and was chosen to characterize sediment quality upgradient of the trap range. The second sampling location (SED-11) is positioned just prior to the confluence of the trap range drainage channel and the pistol/rifle range drainage channel. This location was chosen to characterize sediment quality where the channel leaves the trap range. The third sediment sampling location (SED-10) is located near the discharge point of another drainage channel that flows from north to south off the east side of the trap range. This location was selected to evaluate sediments where this channel enters the main tributary channel that flows east into the Little River. An additional sediment sampling location (SED-3A) was selected in the main drainage channel to characterize sediments leaving the site.

Seven sediment sampling locations are positioned in the Little River including an upstream location (SED-9), five adjacent to the site (SED-8, SED-12 to SED-15) and one downstream from the site (SED-7). These locations were chosen to identify background concentrations and to evaluate any impacts to sediments from the site.

The data are presented in Table 5 and plotted on Figures 5a and 5b. The sediment data exceeding the Threshold Effect Concentration (TEC) of 36 mg/kg are shown in red on Figure 5a, and those exceeding the Probable Effect Concentration (PEC) of 128 mg/kg are shown in red on Figure 5b. In summary, all but one sample (upgradient Little River SED-9) surpassed TEC and 10 of the 16 surpassed PEC. As stated earlier, TEC is a screening value below which adverse biological effects are unlikely and PEC is a screening value above which adverse biological effects are likely.

An ecological risk assessment has not been conducted and is out of the scope of a Site Investigation as defined by DES regulations.

4.8 Surface Water Sampling and Analysis. Seven rounds of surface water samples have been collected to date, as summarized below. The first five sampling events were conducted in 2014, prior to the implementation of the Sampling and Analysis Plan (SAP). The final two events were conducted in 2016 in accordance with the SAP, which included both dry weather and wet weather sampling events. Sampling locations are shown on Figure 6. The laboratory reports are presented in *Appendix II*.

2014 Surface Water Sampling Events. Surface waters samples were collected in 2014 on the following dates April 1, May 12, June 6, June 13 and August 14. Samples from the first four sampling rounds were analyzed for total lead, and selected samples were also analyzed for total hardness. In their letter of July 17, 2014, DES pointed out that the Surface Water Quality Standards were developed based on dissolved lead concentrations. This matter was discussed with Rebecca Williams of DES on July 18, 2014 and it was agreed that the total lead data should be submitted. Samples collected during subsequent events were field filtered and submitted for analysis of dissolved lead. The samples were also field analyzed for pH. The 2014 surface water data are summarized in the table on Page 20, as originally prepared by Dr. Mathew Davis and used with permission.

As initially requested by DES, two surface water samples were collected from the drainage channel located between the shooting area and the pistol/rifle range berm. The samples were collected from an upgradient location at the southern end of the drainage channel (SW-1) and from the middle of the range along the firing line (SW-2). In addition to total lead, sample SW-2 was also analyzed for total hardness. At the time of sampling (April 2014), there was no observable flow in the channel, which contained approximately four inches of water. We also note that upgradient sample SW-1 is

located at the source area of the pistol/rifle range drainage channel and there is no other upstream surface water present.

A lead concentration of 63 μg/L was detected in the downgradient surface water sample (SW-2) with a measured hardness of 28 mg/L, and a lead concentration of 72 μg/L was detected in upgradient sample (SW-1). The higher lead concentration detected in the upstream sample could be explained by the fact that there was no observable flow in the swale at the time of sampling. These concentrations exceed the chronic and acute total lead criteria of 0.6 and 16 ug/L, respectively, at both sampling locations (at a hardness of 28 mg/L).

To further evaluate surface water quality within the drainage channels and the Little River, additional samples were collected in May and June 2014. Samples collected in May included: three from along the trap range drainage channel (SW-4, SW-5 and SW-6) and one from the main drainage channel located downgradient of the confluence of the trap range and pistol/rifle range channels (SW-3). Samples collected in June included: three from the Little River (SW-7, SW-8 and SW-9); four additional samples from the pistol/rifle range channel (SW-1, PR-SW-1, PR-SW-2, PR-SW-3); one from the trap range channel (TR-SW-1); and one from the downgradient location within the main channel (SW-3). The six surface water samples collected on June 13, 2014 were collected during a low intensity storm event.

Total lead concentrations across the trap range drainage channel range from 3 to 5 µg/L, while the final sample (TR-SW-1), collected near the downstream end of the channel, exhibited an elevated total lead concentration of 67 µg/L. All five samples collected from the pistol/rifle drainage channel exhibited elevated concentrations of total lead ranging from 55 to 89 µg/L. Sample SW-3, collected downgradient of the confluence of the trap range and pistol/rifle range channels, exhibited the highest total lead concentration of 210 μg/L.

The total lead concentration in the upgradient sample from the Little River (SW-9) was below reporting limits (<1 µg/L). The midstream sample sample (SW-8) was reported as having an elevated lead concentration of 67 µg/L, and the downgradient sample (SW-7) was found to have a concentration of 3 µg/L.

Based on the data from the upgradient locations within both the trap range channel (SW-6) and the Little River (SW-9), background values of total lead in surface water at this site range from <1 to 3 µg/L.

A follow-up round of surface water sampling was conducted in August 2014, immediately following a 24-hour rain event. The samples were filtered in the field with a .45 μm filter and submitted for analysis of dissolved lead as opposed to total lead. pH levels were also measured in the field. The lead concentrations were essentially of the same order of magnitude as measured in the spring and early summer of 2014. pH levels were measured to be somewhat acidic, in the range of 5 to 6 pH units. These acidic levels are likely to promote lead mobility in the surface water[6]. As shown in the summary table on page 20, there is not a significant difference between the total lead results and the dissolved lead results, suggesting that the lead is soluble as opposed to being transported with small soil particles. In their comment letter dated March 4, 2015, DES has pointed out that the total and dissolved data were collected on separate dates, and that a concurrent set of total and dissolved samples would be required to determine the difference between the total and dissolved fraction.

[6] National Shooting Sports Foundation, 1996. Lead Mobility at Shooting Ranges. Prepared by EA Engineering, Science, and Technology, Inc., 11019 McCormick Road, Hunt Valley, MD

2014 Surface Water Summary Table, courtesy of Dr. Matthew Davis

Sample ID	Location	Date	Total Pb	Dissolved Pb	pH	Env.
SW-1	Pistol/Rifle swale (N/A)	4/24/2014	72			Dry
		8/14/2014		55	5.0	Post Rain
SW-2	Pistol/Rifle (N/A)	4/24/2014	63			Dry
		6/13/2014	60			Dry
		8/14/2014		76	5.1	Post Rain
SW-3	Downgradient of PR-SW-1, TR-SW-1, and PR berm	4/24/2014	3			Dry
		5/12/2014	21			Dry
		6/13/2014	210			Rain
		8/14/2014		310	5.1	Post Rain
SW-4	Trap range (middle)	5/12/2014	5			Dry
		8/14/2014		29	6.2	Post Rain
SW-5	Trap range (up-gradient)	5/12/2014	3			Dry
		8/14/2014		3	5.0	Post Rain
SW-6	Trap range (up-gradient)	5/12/2014	3			Dry
		8/14/2014		2	5.0	Post Rain
SW-7	Little River (down-gradient)	6/6/2014	3			Wet
		8/14/2014		3	5.7	Post Rain
SW-8	Little River (middle)	6/6/2014	76			Wet
		8/14/2014		37	5.1	Post Rain
SW-9	Little River (up-gradient)	6/6/2014	<1			Wet
		8/14/2014		1	5.1	Post Rain
PR-SW-1	Pistol/Rifle (down-gradient)	6/13/2014	89			Rain
		8/14/2014		62	4.6	Post Rain
PR-SW-2	Pistol/Rifle (middle)	6/13/2014	76			Rain
		8/14/2014		45	4.6	Post Rain
PR-SW-3	Pistol/Rifle (mid-gradient)	6/13/2014	55			Rain
		8/14/2014		37	4.8	Post Rain
TR-SW-1	Trap range (down-gradient)	6/13/2014	67			Rain
		8/14/2014		59	4.7	Post Rain

Summary of Observed Lead (Pb) concentrations (ppb) in surface waters. Blue font denotes concentrations in excess of acute limits for total (16.16 ppb) and dissolved (15.77 ppb) lead for waters with hardness of 28 mg/L. Red denotes concentrations in excess of acute limits for total (61.45 ppb) and dissolved (50.61 ppb) lead for waters with hardness of 80 mg/L. Environmental conditions are inferred from reports and USGS hydrographs for Winnicut River. Stations with measured concentrations consistently below the acute limts are shaded gray. *[REVISED June 10, 2015]*

2016 Surface Water Sampling Events. Following the submittal of the SAP to DES on June 10, 2015, surface water sampling was conducted at 11 locations in the drainage channels at the site and the Little River. The sampling was conducted on November 8, 2016 as part of a "dry weather" sampling event and on December 1, 2016 as part of a "wet weather" sampling event. The samples were collected for dissolved lead and hardness, and field-tested for pH. The 11 sampling locations are shown on Figure 6 and are summarized in the table below. As specified in the SAP, a blind duplicate sample was collected from location SW-3 along with a field blank. The duplicate sample is identified as SW-3A and the field blank is identified as FB-1.

Sampling Location/ID Number	Analytical Parameter	Rationale
SW-1	Dissolved Lead, pH, Hardness	Upgradient from pistol/rifle range
SW-2	Dissolved Lead, pH, Hardness	In front of pistol/rifle range berm
PR-SW-3	Dissolved Lead, pH, Hardness	Downgradient from pistol/rifle range
PR-SW-1	Dissolved Lead, pH, Hardness	Upgradient of confluence of surface water from the pistol/rifle range and the trap range
SW-6	Dissolved Lead, pH, Hardness	Up-gradient location from the trap range
TR-SW-1	Dissolved lead, pH, hardness	Downgradient from the trap range and upgradient of confluence of surface water from the pistol/rifle range and the trap range.
SW-3	Dissolved lead, pH, hardness	Downgradient location from both the pistol/rifle range and trap range Indicative of surface water flow from both areas
SW-10	Dissolved lead, pH, hardness	In drainage channel flowing south and away from Little River (due to beaver activity). Indicative of surface water flow from trap range.
SW-9	Dissolved lead, pH, hardness	Upgradient location from the site in the Little River
SW-8	Dissolved lead, pH, hardness	Location adjacent to the site in the Little River
SW-7	Dissolved lead, pH, hardness	Downgradient location from the site in the Little River

Surface Water Sampling - Dry Weather Event. The 11 surface water stations were sampled as part of a "dry weather" sampling event, defined in the SAP as having an antecedent period of at least five days with less than 0.25 inches of rainfall in the study area. The samples were collected according to the protocol defined in the SAP. The locations and the raw data are shown on Figure 6a. The data and the respective hardness-corrected[7] DES Water Quality Criteria[8] are summarized in Table 6a.

The two upgradient locations (SW-6 and SW-9) were found to have background lead concentrations of <1 µg/L, as well as concentrations less than both the Acute and the Chronic Water Quality Criteria.

As shown in Table 6a, lead concentrations detected in the samples collected from the seven sampling locations in the immediate proximity of the firing ranges are all elevated above the Chronic Water Quality Criteria, and four of the locations (SW-1, SW-10, PR-SW-3, TR-SW-1) were identified to have hardness-corrected lead concentrations greater than the Acute Water Quality Criteria. The highest lead concentrations of 270 and 290 µg/L were measured in sample TR-SW-1 and SW-10, respectively. SW-10 is located in a drainage channel that drains along the east side of the trap range and flows south (likely due to beaver activity), discharging near the confluence of the trap range and pistol/rifle range drainage channels. TRSW-1 is located downgradient from the trap range and upgradient of the area of confluence of surface water from the pistol/rifle range and the trap range.

Although the concentrations of lead in the midstream (SW-8) and downstream (SW-7) samples from the Little River are generally low, the concentrations do exceed conservative Chronic Water Quality Criteria.

[7] The criteria were adjusted using the equations shown in Env-Wq 1703.24.
[2] NH DES, Env-Wq 1700, Table 1703.01, Water Quality Criteria for Toxic Substances.

Surface Water Sampling - Wet Weather. The 11 surface water stations were as part of a "wet weather" sampling event, defined in the SAP as a storm with a minimum rainfall of 0.5 inches over a 24-hour period, with caveats. The samples were collected according to the protocol defined in the SAP. The locations and the raw data are shown on Figure 6b. The data and the respective hardness-corrected DES Water Quality Criteria are summarized in Table 6b.

The two upgradient locations (SW-6 and SW-9) were found to have background lead concentrations of ≤2 µg/L; however, only sample SW-9 had a concentration less than the Chronic Water Quality Criteria.

As shown in Table 6b, the lead concentrations at all seven locations in the immediate proximity of the firing ranges are elevated and have hardness-corrected lead concentrations greater than the Acute Water Quality Criteria. The highest concentrations of 560 and 230 µg/L were measured at stations SW-10 and SW-3, respectively. The SW-10 station has been discussed previously. SW-3 is located within the main channel downgradient from both the pistol/rifle range and trap range.

Although the concentrations of lead in the midstream (SW-8) and downstream (SW-7) samples from the Little River are generally low, the concentrations do exceed conservative Chronic Water Quality Criteria.

Comparison of Dry and Wet Weather Results. The differences between the dry and wet weather sampling were not entirely as expected. Typically, we would expect lead concentrations to increase during the storm water flow due to flushing. This was the case at three locations: SW-2, SW-3 and SW-10. However, wet weather concentrations were lower than dry weather at the following locations: SW-1, PR-SW-1 and TR-SW-1. Concentrations stayed essentially the same at the following locations: SW-6, SW-7, SW-8, SW-9 and PR-SW-3. Additional surface water sampling will clarify these trends.

In summary, lead was detected at concentrations exceeding the Chronic Water Quality Criteria during both dry and wet sampling events at all of the locations except for the upgradient Little River sample (both events) and the upgradient trap range sample (dry event only). The Acute Water Quality Criteria was also exceeded at some of the locations during the wet and dry sampling events.

5.0 CONCEPTUAL SITE MODEL

Our conceptual model of contaminant transport is as follows. Shooting activities have resulted in deposition of lead bullets and bullet fragments/dust in the pistol/rifle range proper (including the backstop berm) as well as to the north and east of the current berm from historic activities. A separate pistol backstop berm was formerly located between the shooting shed and the existing berm in the pistol/rifle range. A portion of the pistol berm was combined with the existing berm in 2013 and the remaining soil was spread out over the range floor. As a result, some of the lead-impacted soil was buried deeper, up to at least 12 inches, resulting in lead concentrations above UCLs in this area. Lead is also likely to enter the shallow soil around the firing line from the vaporization of the lead out of the gun muzzle and subsequent deposition onto the ground[9].

Shooting activities have also resulted in the deposition of lead shot in the trap range, and to the north of the range extending to the Little River. Elevated concentrations of lead do not extend north of the Little River except in one limited area. The maximum depth of lead-impacted soil above 400 mg/kg in the trap range is six inches.

We have not estimated the mass of lead in the soil using the laboratory concentrations measured as part of this investigation. This mass will be *de-minimus* as compared to the mass of the lead bullets and shot at the site, which has not been measured.

[9] ITRC, 2003. Characterization and Remediation of Soils at Closed Small Arms Firing Ranges.

Dissolved lead has not been consistently identified at elevated concentrations in the groundwater, suggesting that it is not mobile in groundwater at the property. Therefore, we have not estimated a seepage velocity for dissolved lead. Shallow groundwater at the pistol/rifle range is a possible, but not likely dominant, source of dissolved lead migration into surface water.

Lead has been identified in the soil, sediment and surface waters at the site. The lead has likely entered the sediment from either: 1) the direct deposition of lead shot and/or bullet fragments, or 2) erosion of lead-impacted soil into the drainage channels, 3) the oxidation/weathering of lead shot and/or bullet fragments and subsequent deposition of the oxidized lead particles into the sediment, or 4) a combination of these scenarios. The lead has entered into the local surface waters, either by: 1) direct deposition and subsequent oxidation, 2) leaching from the underlying impacted sediment, or 3) erosion of the surrounding acidic soil during storm runoff events and/or seasonal flooding of the ranges. The lead will adsorb onto the soil particles and migrate into and with the surface water in a north-northeast direction, towards the Little River. The concentration of dissolved lead will be diluted in the Little River but it remains detectable downstream after a distance of 1,800± feet (SW-7).

6.0 POTENTIAL RECEPTOR SURVEY

For the purposes of this site investigation, potential receptors are considered to include the following categories: soil, groundwater, sediment and surface water. Indoor air is not considered a potential receptor, as the compound of interest is not volatile.

Soil. Soil on the floor of the pistol/rifle range is impacted with elevated concentrations of lead due to historical shooting activities. Gun club members and guests using the range are considered to be potential receptors.

Groundwater and Groundwater Supplies. Groundwater has not been significantly impacted by the historical site activities. Lead was detected at a concentration greater than applicable standards at one location (SGW-2; 21 µg/L). However, this well was re-tested and found to have a concentration of 5 µg/L. Lead was not detected above standards in the remaining monitoring wells. Arsenic and copper were not detected in the site groundwater at concentrations exceeding applicable standards.

Properties located within a 1,000-foot radius of the release area are shown on Figure 7, *Potential Receptor Map*. The well that services the subject property is currently the only drilled bedrock supply well located within the 1,000-foot radius; therefore, neighborhood supply wells are not considered to be potential receptors relative to the gun club property. The depth of the on-site supply well has not been determined. This well was tested as part of this investigation. Lead was detected at a concentration of 7 µg/L, which is less than the applicable standard of 15 µg/L. Additional testing would be required to determine if the source of the lead is the piping vs. the bedrock groundwater. Copper and arsenic were not detected above DES standards in the supply well sample.

Sediments and Surface Waters. Surface waters at the site include a drainage channel originating at the pistol/rifle range, a drainage channel that traverses the trap range and is joined by the pistol/rifle range channel, and the associated wetland areas surrounding the trap range and the Little River. The Little River is located 350± feet north of the northern extent of the trap range and 600± feet north of the pistol/rifle range and flows in an easterly direction, eventually emptying into the Atlantic Ocean.

The biota in the drainage channels, surface waters and wetlands across the site and the Little River are all identified as potential receptors, as lead has been detected at elevated concentrations in these surface waters bodies and their sediments.

7.0 SUMMARY and CONCLUSIONS

Exeter Environmental Associates, Inc. has completed a Site Investigation of the Hampton Rod and Gun Club property, located at 189 Atlantic Avenue in North Hampton, New Hampshire. The following conclusions and opinions are offered, based upon the information collected to date.

- In August 2013, personnel from the NH DES conducted an inspection of the property. DES observed that an area of forested wetland and perennial stream had been impacted as a result of trap shooting activities. DES also observed a drainage channel in front of the pistol/rifle range berm. This Site Investigation was conducted to determine the extent of contamination at the site due to lead, copper and arsenic in soil, sediment, surface water and groundwater. Lead has been found to be the primary contaminant-of-concern.

- A total of eight groundwater monitoring wells were installed and sampled as part of the investigation. The inferred direction of shallow groundwater flow is to the north, towards the Little River. Site soils range from glacial till in the upland area near the parking lot, to primarily a fine silty sand overlying clay in the lowlands. The exception is a fine/coarse sand and rock fragment unit that was encountered in the boring for monitoring well MW-2. The depth to groundwater is generally very shallow in the lowland areas, including the pistol/rifle range; approximately one to two feet below grade during the summer and fall and completely water-saturated in the winter and spring. The depth to groundwater in the glacial till upland is 5± feet below grade.

- The historical shooting activities have generally not had an adverse impact on groundwater. Water quality in the shallow monitoring wells installed at the pistol/rifle range indicate that groundwater is a possible, but not likely dominant, source of lead migration into surface water.

- Elevated concentrations of lead have been documented in the pistol/rifle range soil. We estimate an areal extent of 25,000± ft^2 that exceeds SRS. Using a depth of 0.5 feet, this translates into a volume of 460± yd^3 of lead-impacted soil that exceeds SRS. An estimated soil volume of 110± yd^3 exceeds UCLs in the pistol/rifle range, assuming an average depth of two feet.

- Elevated concentrations of lead have been documented in the trap range soil. We estimate an areal extent of 150,000± ft^2 that exceeds SRS. Using a depth of 0.5 feet, this translates into a volume of 2,800± yd^3 of soil that exceed SRS. An estimated soil volume of 650± yd^3 exceeds UCLs in the trap range, assuming an average depth of 0.5 feet.

- Elevated concentrations of lead have been documented in the site sediments. pH of the sediment is acidic, in the range of 3.2 to 6.6 pH units. Lead concentrations ranging from 17 to 1,400 mg/kg were measured.

- Surface Water 2014: Four rounds of surface water samples were collected in 2014. Background concentrations of lead (<3 μg/L) were identified in two upgradient locations and in two of three Little River stations. Elevated concentrations of lead were measured in the remaining surface water stations. pH levels were measured to be acidic, in the range of 5 to 6 pH units. Hardness data were not uniformly collected in 2014.

- Surface Water 2016: Two rounds of surface water sampling were conducted in 2016, following DES's approval of the Sampling and Analysis Plan in August 2016. A total of 12 surface water stations were sampled for dissolved lead and hardness as part of a "dry weather" sampling event on November 8th and a "wet weather" event on December 1st. In general, four surface water locations (one surface water location in the trap range and all three surface water locations in the Little River) were found to have relatively low lead concentrations of <8 µg/L, but only the two upgradient locations exhibited concentrations less than the Chronic Water Quality Criteria. Lead levels are elevated at all surface water stations in the immediate proximity of the two firing ranges. During the dry event, four locations were identified to have hardness-corrected lead concentrations greater than the Acute Water Quality Criteria. During the wet event, seven locations were identified to have hardness-corrected lead concentrations greater than the Acute Water Quality Criteria. The highest concentrations (ranging from 230 to 560 µg/L) were measured at stations located downgradient of the trap range and pistol/rifle range drainage channels. The concentrations in the Little River are generally low, although levels at two stations exceed conservative Chronic Water Quality Criteria.

8.0 RECOMMENDATIONS

Based upon the information collected to date, Exeter Environmental Associates, Inc. offers the following recommendations.

- A Remedial Action Plan should be prepared for the site, in accordance with Env-Or 606.10.

- Lime should be periodically applied to the site soil to minimize lead mobility.

- Surface water quality should continue to be monitored in the future.

9.0 LIMITATIONS

The objective of the investigation was to evaluate soil, sediment, groundwater and surface water quality across the site. The work scope was limited to: site inspections; the installation of four initial groundwater monitoring wells; the installation of four additional shallow groundwater monitoring wells at the pistol/rifle range; two rounds of groundwater sampling and analysis of water samples for the presence of dissolved lead, copper, and arsenic; sampling the on-site supply well for the presence of total lead, copper and arsenic; the collection of 78 soil samples from the pistol/rifle range and the analysis of all soil samples for lead and analysis of 3 samples for copper and arsenic; the collection of 64 soil samples from the trap range and the analysis of all soil samples for lead, analysis of 4 samples for copper and arsenic and 2 for polynuclear aromatic hydrocarbons; the collection of 18 sediment and 11 surface water sample locations and analysis of the samples for lead; a potential receptor survey; and preparation of this report.

The conclusions presented in this report are based upon the information available to Exeter Environmental Associates, Inc., as of the date of this report. Any supplementary information that becomes available should be forwarded to Exeter Environmental Associates, Inc. for review and revisions as needed. The conclusions presented in this report are partially based upon information collected and/or provided by others. The accuracy of the opinions and conclusions drawn from this information is, therefore, based upon the accuracy of the information that was provided.

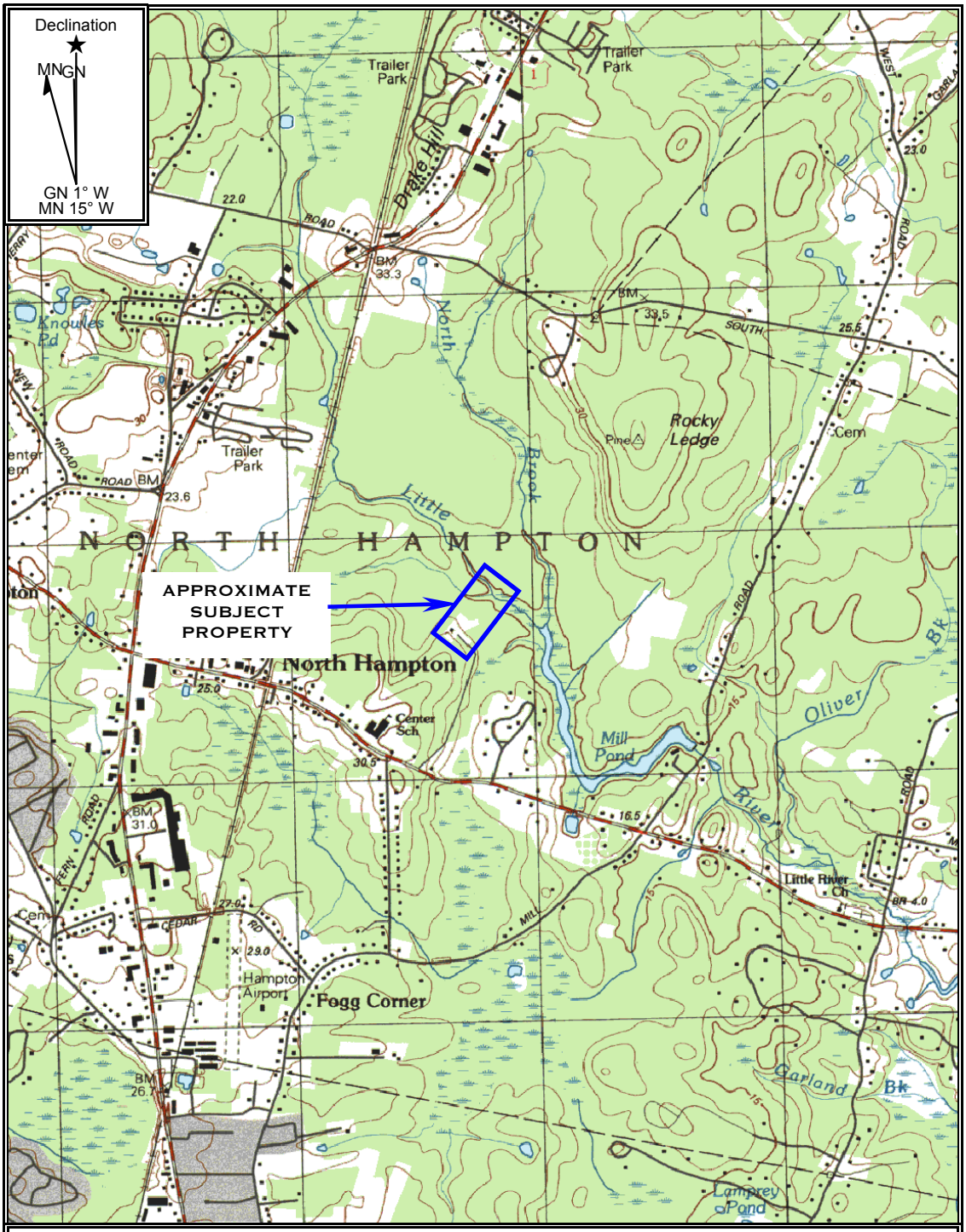
This report has been prepared in accordance with our standard *Terms and Conditions*. No other warranty, expressed or implied, is made.

FIGURES

USGS Site Locus Map

Site Plan

Potential Receptor Map



Map Name: EXETER
Print Date: 02/07/14

Scale: 1 inch = 2,000 ft.
Map Center: 042° 58' 26.34" N 0

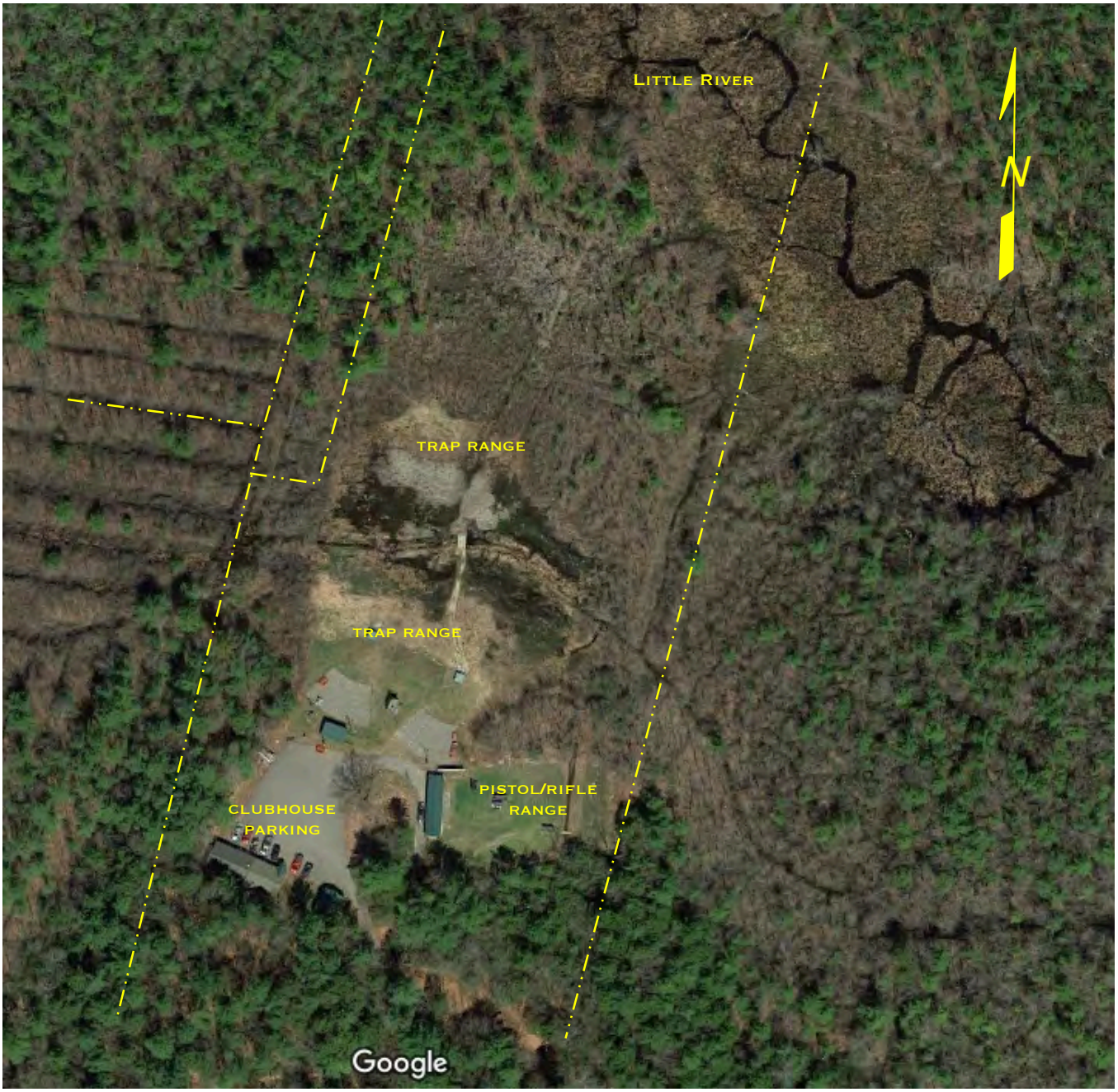
Horizontal Datum: NAD83

SCALE 1:24000

0 1
MILE

0 1000 2000 3000 4000 5000 6000 7000
FEET

Figure 1. USGS Locus Map
Hampton Rod & Gun Club
North Hampton, New Hampshire



0’ 140’

Figure 2. Overview Site Plan.
Hampton Rod & Gun Club, North Hampton, NH

EXETER ENVIRONMENTAL ASSOCIATES, INC

APPROXIMATE PROPERTY LINE

SW-6

TRIBUTARY TO
LITTLE RIVER

94.0 '

EDGE OF PAVEMENT

CLUBHOUSE
BUILDING

MW-1
(93.7')

DW-1

CANOPY

MW-2
(93.1')

93.0 '

GARAGE

OBSERVATION
TOWER

SHOOTING
SHED

CONCRETE
BARRIER

TRAP
RANGE

MW-3
(92.1')

92.0 '

SGW-2
(92.8')

SGW-1
(92.9')

PISTOL/RIFLE
RANGE

EDGE OF
WETLAND

SGW-3
(91.4')

PRSW-3
(91.3')

SW-2
(91.4')

SW-1
(91.6')

SGW-4
(91.4')

MW-4
(91.8')

BERM

Water elevations measured June 5, 2015.

ID	TOC	DTW	Water Elevation
MW-1	100.99	7.25	93.74
MW-2	95.45	2.37	93.08
MW-3	93.67	1.55	92.12
MW-4	93.23	1.47	91.76
SGW-1	93.65	0.78	92.87
SGW-2	93.51	0.70	92.81
SGW-3	91.94	0.50	91.44
SGW-4	91.98	0.60	91.38
SW-1	93.92	2.35	91.57
SW-2	94.10	2.75	91.35
PRSW-3	95.88	4.55	91.33

TOC = top of casing
DTW = depth to water

inferred direction of groundwater flow

monitoring well locations (water elevations)

tree line

Survey source: Jones & Beach Engineers

0 75'

EXETER ENVIRONMENTAL ASSOCIATES, INC.

Figure 3a. Site Plan Showing Water Elevations as of June 5, 2015
Hampton Rod & Gun Club, North Hampton, New Hampshire

APPROXIMATE PROPERTY LINE

SW-6

TRIBUTARY TO
LITTLE RIVER

94.0 ’

EDGE OF PAVEMENT

CLUBHOUSE
BUILDING

MW-1
(93.8’)

DW-1

CANOPY

GARAGE

OBSERVATION
TOWER

MW-2
(93.0’)

93.0 ’

SHOOTING
SHED

CONCRETE
BARRIER

TRAP
RANGE

92.0 ’

SGW-1
(92.3’)

SGW-2
(92.2’)

MW-3
(91.9’)

PISTOL/RIFLE
RANGE

EDGE OF
WETLAND

SGW-3
(90.6’)

SW-2
(91.4’)

PRSW-3

SW-1
(91.6’)

SGW-4
(90.7’)

MW-4
(91.7’)

BERM

Water elevations measured November 18, 2016.

ID	TOC	DTW	Water Elevation
MW-1	100.99	7.20	93.8
MW-2	95.45	2.48	93.0
MW-3	93.67	1.74	91.9
MW-4	93.23	1.53	91.7
SGW-1	93.65	1.40	92.3
SGW-2	93.51	1.33	92.2
SGW-3	91.94	1.34	90.6
SGW-4	91.98	1.30	90.7
SW-1	93.92	2.29	91.6
SW-2	94.10	2.75	91.4
PRSW-3	95.88	dry	-----

TOC = top of casing
DTW = depth to water

inferred direction of groundwater flow

monitoring well locations (water elevations)

tree line

Survey source: Jones & Beach Engineers

0 75'

EXETER ENVIRONMENTAL ASSOCIATES, INC.

Figure 3b. Site Plan Showing Water Elevations as of November 18, 2016
Hampton Rod & Gun Club, North Hampton, New Hampshire

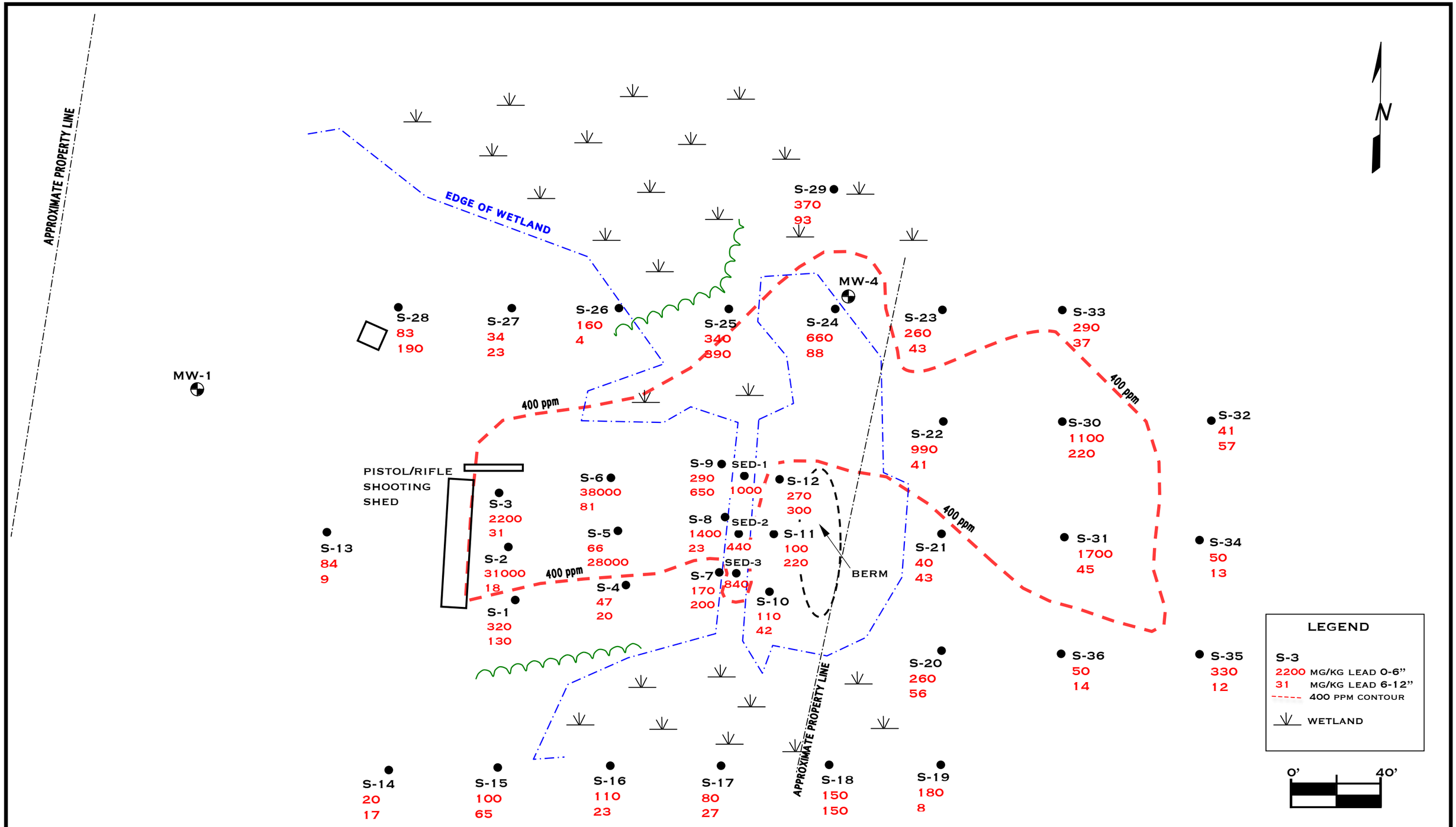


Figure 4. Site Plan of Pistol/Rifle Range, Hampton Rod & Gun Club, North Hampton, NH, Showing Total Pb Concentrations in Soil/Sediment.

LEGEND

EDGE OF WETLAND

TRS-1
(540)
SOIL SAMPLING LOCATION
(Pb conc mg/kg, 0-6")

SED-9
(17)

TRS-43
(42)

TRS-42
(400)

TRS-46
(110)

TRS-45
(690)

SED-12
(120)

TEC/PEC

TRS-41
(110)

TRS-44
(140)

TRS-40
(31)

TRS-25
(89)

TRS-24
(30,000)

TRS-39
(10)

SED-13
(140)

400 ppm Pb
CONTOUR

TRS-23
(840)

TRS-38
(9)

TRS-26
(85)

TRS-22
(35,000)

TRS-13
(33,000)

SED-14
(85)

TEC/PEC

TRS-21
(29,000)

TRS-27
(250)

TRS-14
(2,800)

SED-15
(74)

TRS-9
(1,400)

TRS-15
(1,800)

TRS-34
(1,300)

TRS-28
(36)

MW-2

TRS-10
(690)

TRS-16
(540)

TRS-36
(NOT SAMPLED)

TRS-19
(600)

TRS-5
(730)

TRS-20
(330)

TRS-11
(570)

TRS-33
(69)

TRS-12
(580)

TRS-29
(22)

CHANNEL

TRS-6
(350)

MW-3

TRS-35
(25)

SED-8
(250)

SED-6
(75)

TRS-17
(6)

TRS-1
(540)

TRS-7
(140)

SED-11
(48)

SED-10
(1,400)

TRS-32
(28)

TO SED-7
(110)
APPROX 1,350'

TRS-18
(49,000)

TRS-30
(20)

TRS-2
(40)

S-29
(370)

TRS-8
(NS)

SED-5
(280)

SED-3B
(860)

TRS-31
(21)

TRS-3
(380)

UPLAND

SED-4
(1,200)

MW-4

400 ppm Pb
CONTOUR

MW-1

TRS-4
(NS)

S-9
(290)

SGW-3

SGW-2

SED-2
(440)

SGW-4

SGW-1

BERM

APPROXIMATE PROPERTY LINE

DW-1

SED-1
(150)

N

0' 80'

EXETER ENVIRONMENTAL ASSOCIATES, INC.

Figure 5. Site Plan of Sampling Locations with TEC/PEC Limits for Pb
Hampton Rod & Gun Club, North Hampton, New Hampshire

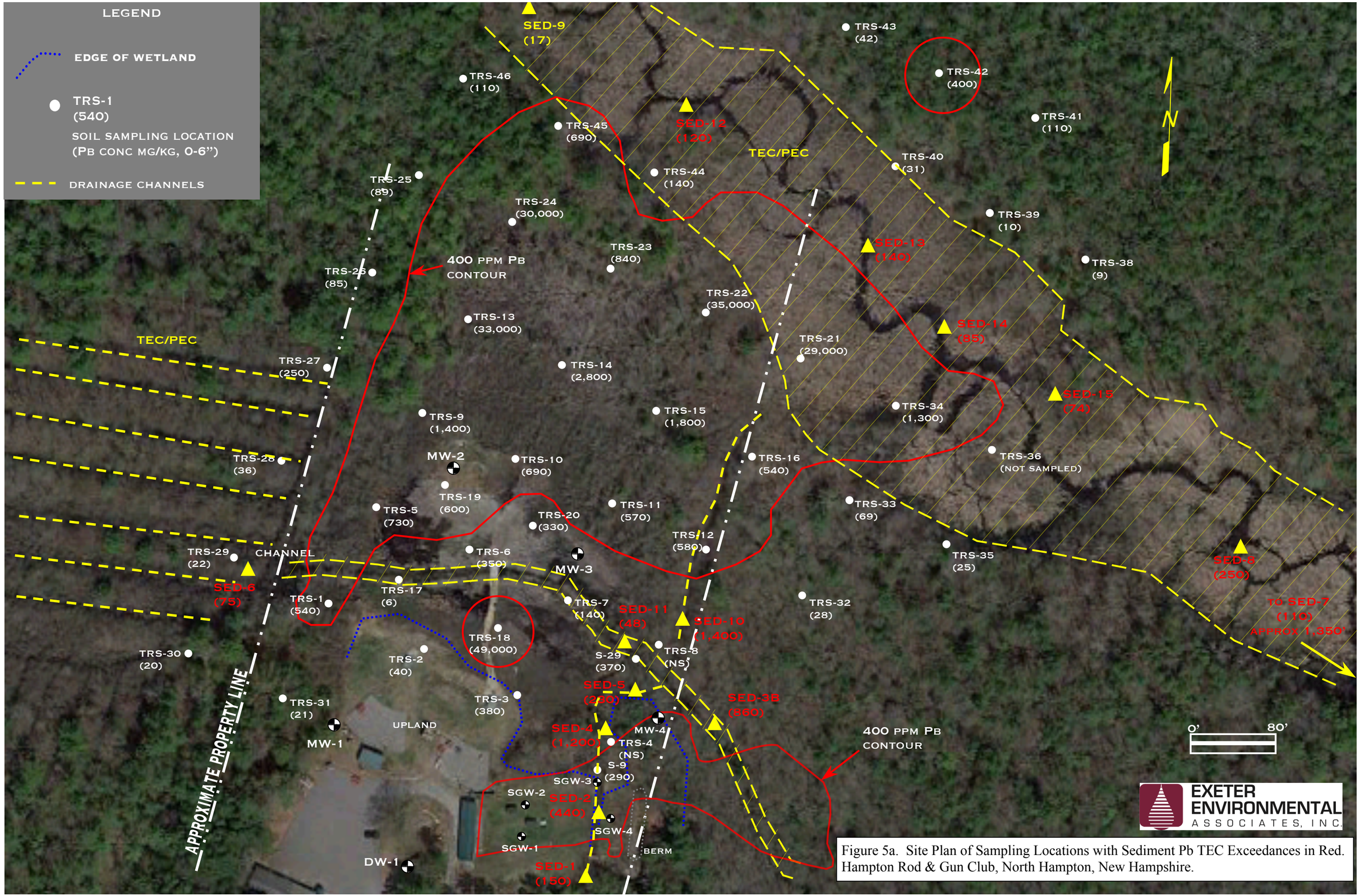


Figure 5a. Site Plan of Sampling Locations with Sediment Pb TEC Exceedances in Red. Hampton Rod & Gun Club, North Hampton, New Hampshire.

LEGEND

EDGE OF WETLAND

TRS-1
(540)
SOIL SAMPLING LOCATION
(Pb conc mg/kg, 0-6")

DRAINAGE CHANNELS

SED-9
(17)

TRS-43
(42)

TRS-46
(110)

TRS-42
(400)

TRS-45
(690)

SED-12
(120)

TEC/PEC

TRS-41
(110)

TRS-40
(31)

TRS-44
(140)

TRS-25
(89)

TRS-24
(30,000)

TRS-39
(10)

TRS-23
(840)

SED-13
(140)

400 ppm Pb
CONTOUR

TRS-26
(85)

TRS-38
(9)

TRS-22
(35,000)

TRS-13
(33,000)

SED-14
(85)

TEC/PEC

TRS-21
(29,000)

TRS-27
(250)

TRS-14
(2,800)

SED-15
(74)

TRS-9
(1,400)

TRS-15
(1,800)

TRS-34
(1,300)

TRS-28
(36)

MW-2

TRS-10
(690)

TRS-16
(540)

TRS-36
(NOT SAMPLED)

TRS-19
(600)

TRS-5
(730)

TRS-20
(330)

TRS-11
(570)

TRS-33
(69)

TRS-29
(22)

CHANNEL

TRS-6
(350)

TRS-12
(580)

TRS-35
(25)

MW-3

SED-8
(250)

SED-6
(75)

TRS-17
(6)

TRS-1
(540)

TRS-7
(140)

SED-11
(48)

SED-10
(1,400)

TRS-32
(28)

TO SED-7
(110)
APPROX 1,350'

TRS-18
(49,000)

TRS-30
(20)

TRS-2
(40)

S-29
(370)

TRS-8
(NS)

SED-5
(260)

SED-3B
(860)

TRS-31
(21)

TRS-3
(380)

UPLAND

SED-4
(1,200)

MW-4

400 ppm Pb
CONTOUR

MW-1

TRS-4
(NS)

S-9
(290)

SGW-3

SGW-2

SED-2
(440)

SGW-4

SGW-1

BERM

APPROXIMATE PROPERTY LINE

DW-1

SED-1
(150)

0' 80'

EXETER ENVIRONMENTAL ASSOCIATES, INC.

Figure 5b. Site Plan of Sampling Locations with Sediment Pb PEC Exceedances in Red. Hampton Rod & Gun Club, North Hampton, New Hampshire.

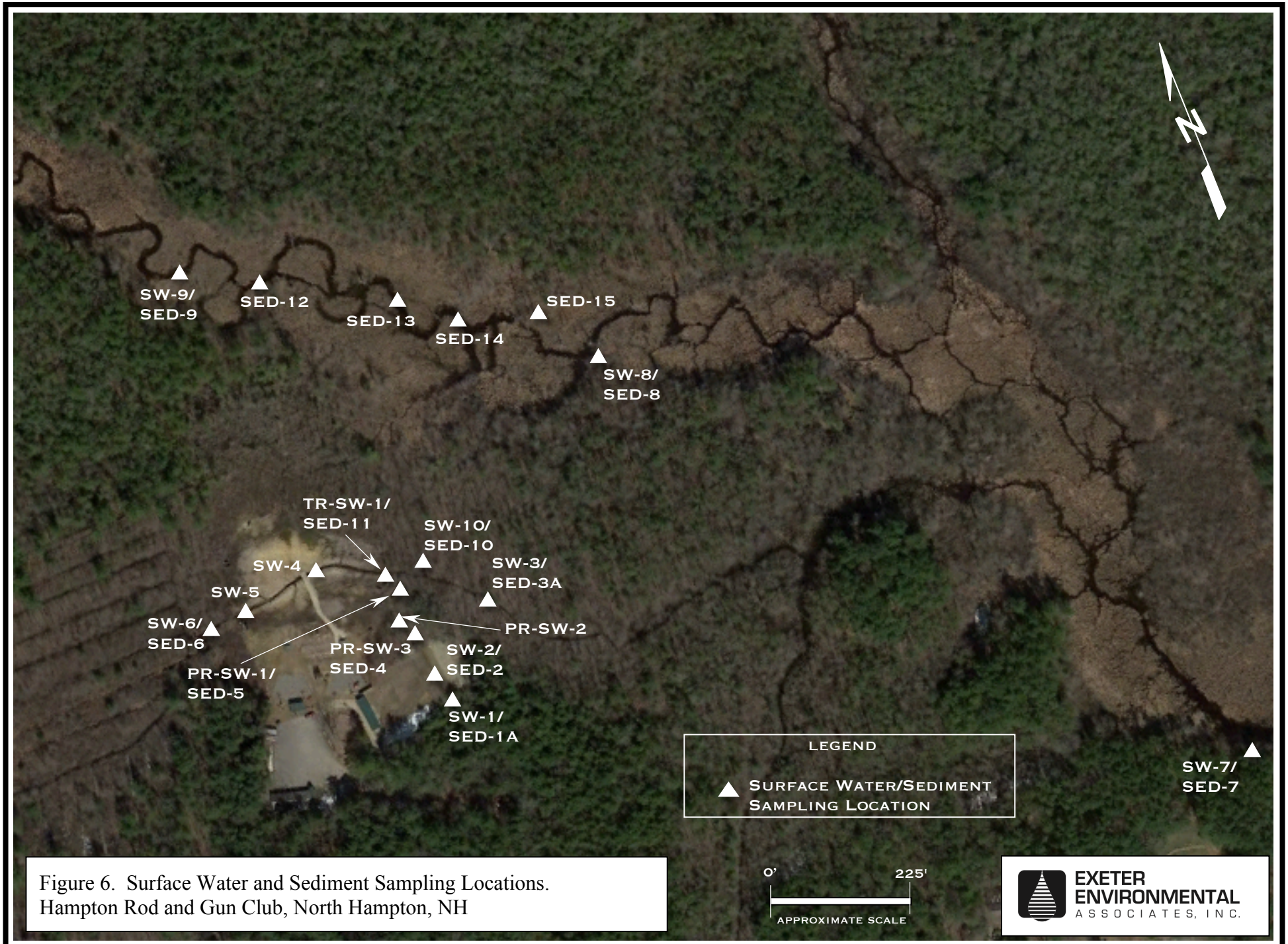


Figure 6. Surface Water and Sediment Sampling Locations.
Hampton Rod and Gun Club, North Hampton, NH

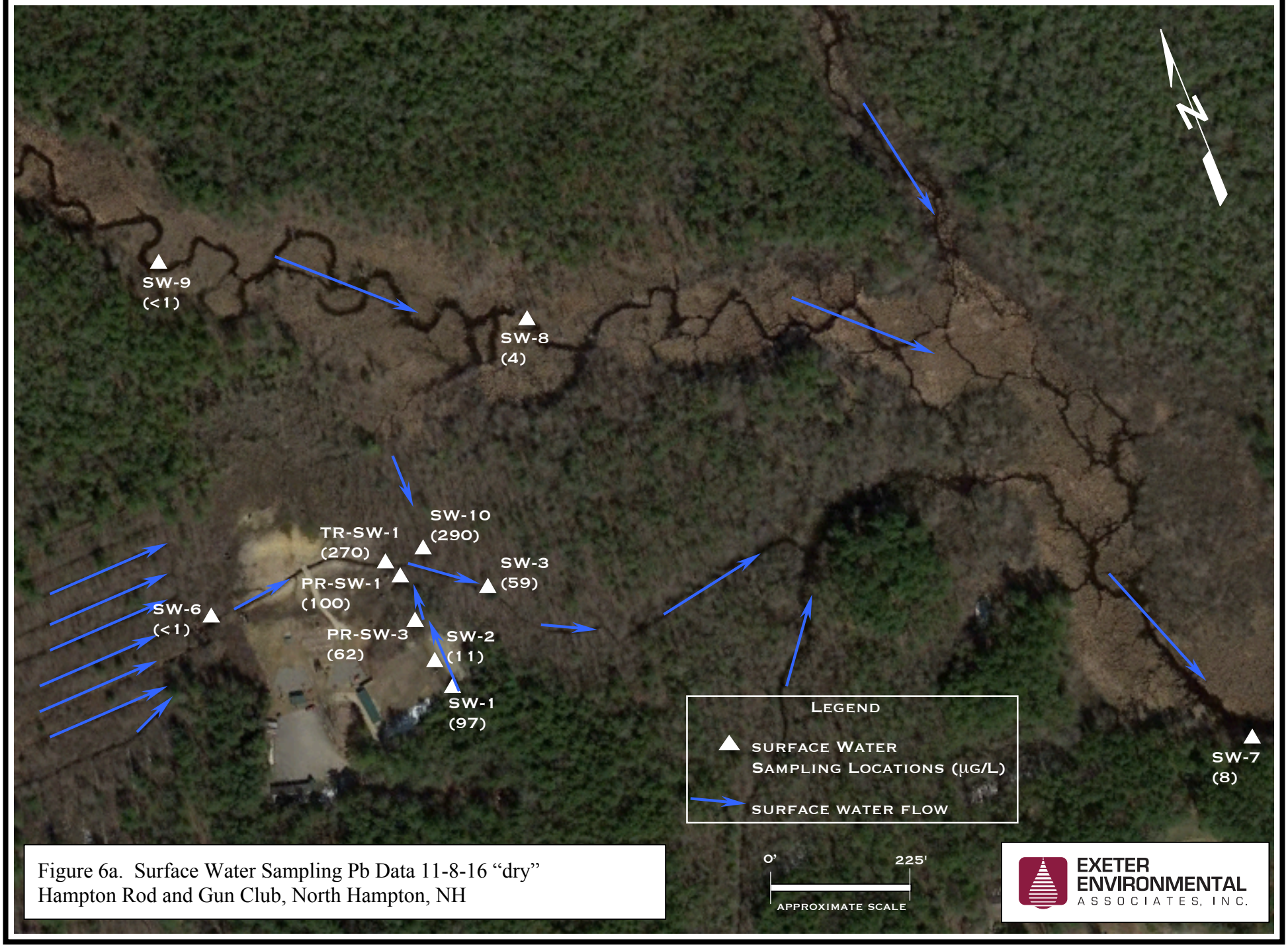


Figure 6a. Surface Water Sampling Pb Data 11-8-16 "dry"
Hampton Rod and Gun Club, North Hampton, NH

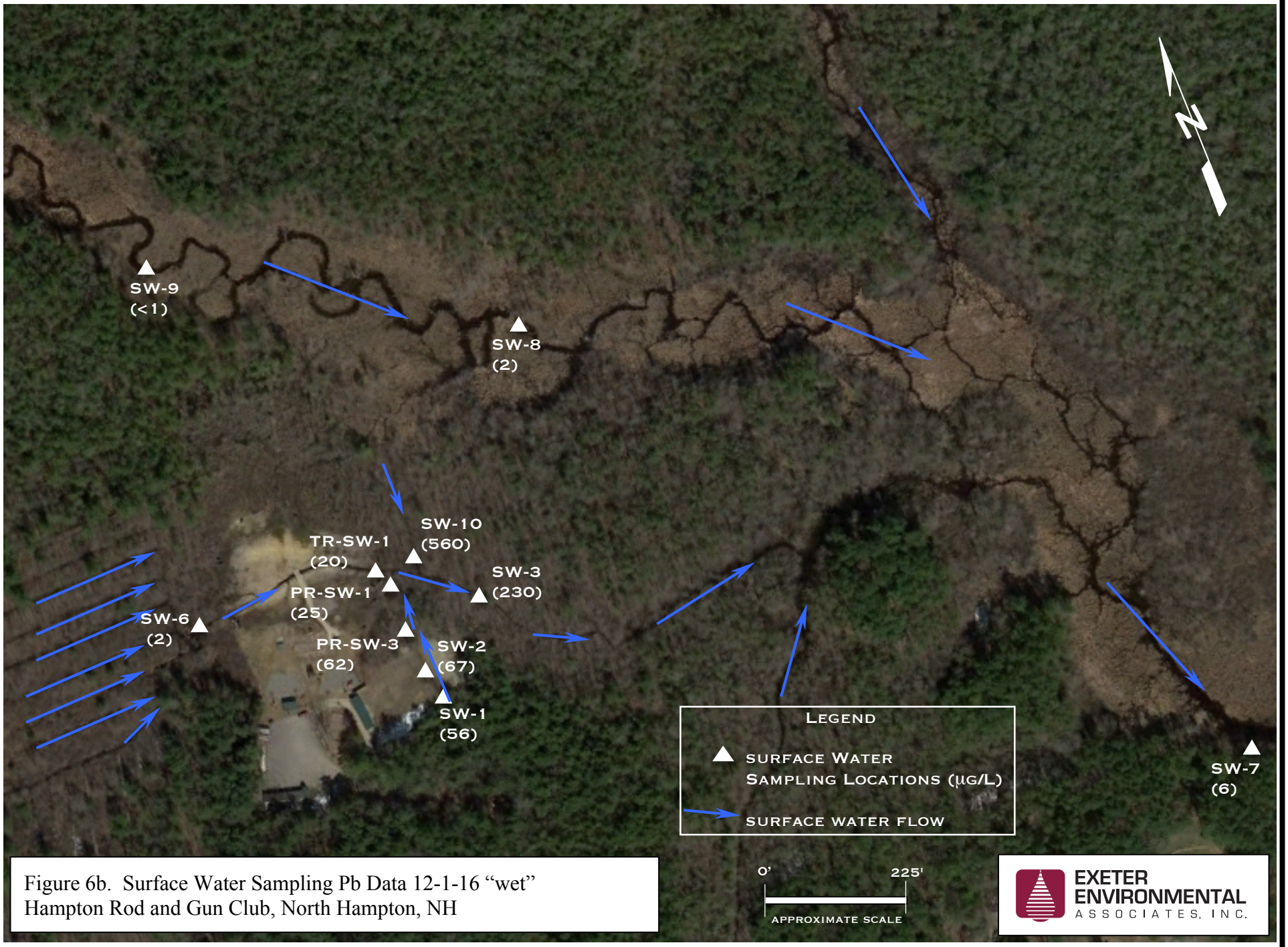


Figure 6b. Surface Water Sampling Pb Data 12-1-16 "wet"
Hampton Rod and Gun Club, North Hampton, NH

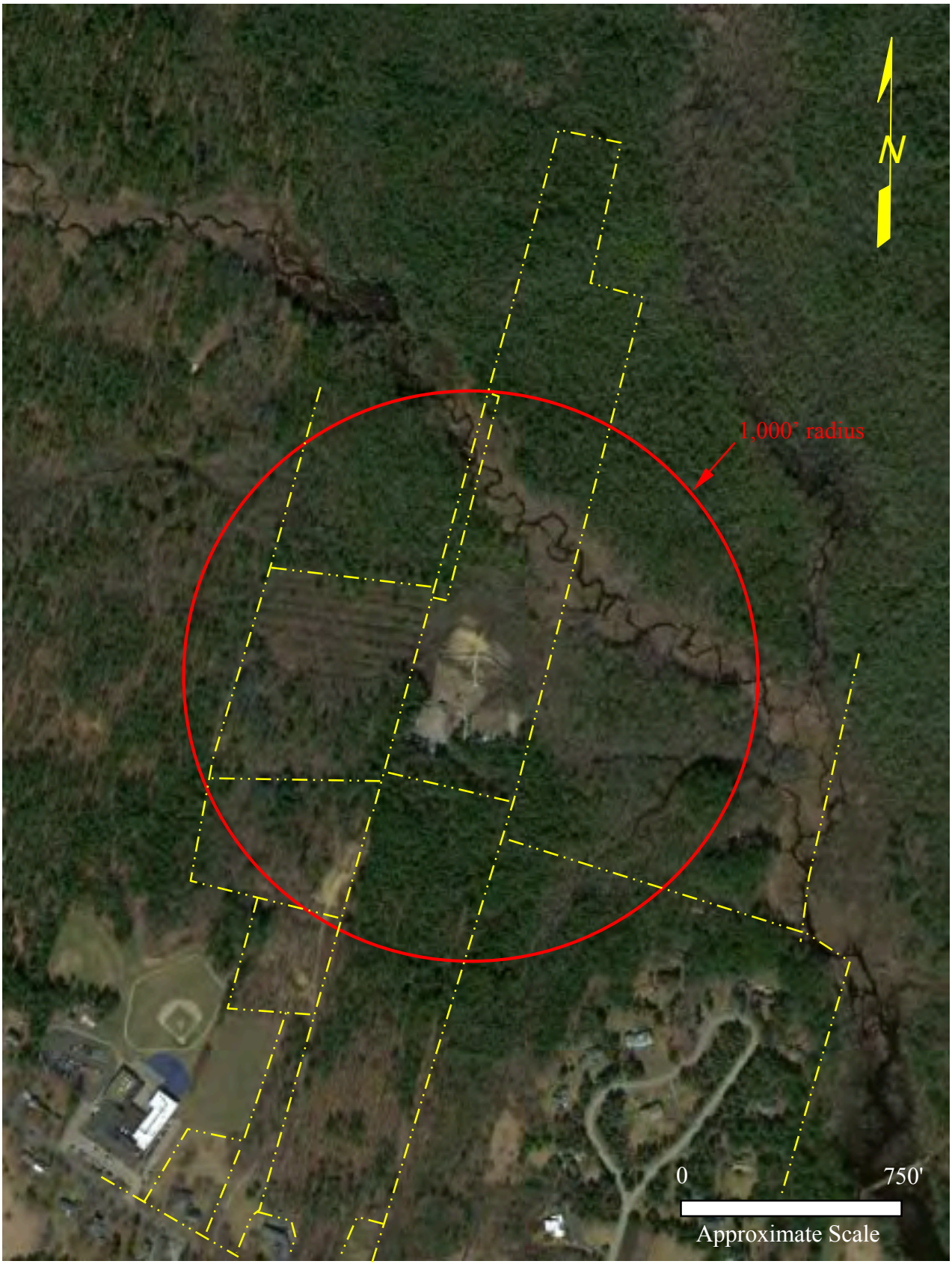


Figure 7. Potential Receptor Map, 1,000' Radius & Property Bounds, Hampton Rod & Gun Club, North Hampton, NH

EXETER ENVIRONMENTAL ASSOCIATES, INC

TABLES

Groundwater Elevation Data

Groundwater Quality Data

Soil Data

Sediment Data

Surface Water Quality Data

Table 1. Summary of Water Elevation Data.
Hampton Rod & Gun Club, North Hampton, NH

		7/29/14		4/16/15		6/5/15		11/12/15		11/18/16	
Well ID	Top of Casing Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
MW-1	100.99	7.64	93.4	7.17	93.8	7.25	93.7	7.73	93.3	7.20	93.8
MW-2	95.45	2.73	92.7	2.09	93.4	2.37	93.1	2.68	92.8	2.48	93.0
MW-3	93.67	1.80	91.9	1.37	92.3	1.55	92.1	1.78	91.9	1.74	91.9
MW-4	93.23	1.88	91.4	1.32	91.9	1.47	91.8	1.74	91.5	1.53	91.7
SGW-1	93.65	1.25	92.4	artesian	-	0.78	92.9	1.17	92.5	1.40	92.3
SGW-2	93.51	0.95	92.6	0.17	93.3	0.70	92.8	2.51	91.0	1.33	92.2
SGW-3	91.94	0.47	91.5	0.36	91.6	0.50	91.4	1.77	90.2	1.34	90.6
SGW-4	91.98	0.79	91.2	0.48	91.5	0.60	91.4	1.47	90.5	1.30	90.7
SW-1	93.92	NC	-	NC	-	2.35	91.6	2.42	91.5	2.29	91.6
SW-2	94.10	NC	-	2.64	91.5	2.75	91.4	2.68	91.4	2.75	91.4
PRSW-3	95.88	NC	-	4.47	91.4	4.55	91.3	4.65	91.2	Dry	N/A

Notes:

Top of casing refers to top of PVC casing.
NC = Not Collected

Table 2. Summary of Groundwater Analytical Results
Hampton Rod and Gun Club, North Hampton, NH

	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4	SGW-1	SGW-2	SGW-2	SGW-3	SGW-4	DW-1	AGQS
COMPOUND	4/1/14	7/29/14	4/1/14	7/29/14	4/1/14	7/29/14	4/1/14	7/29/14	7/29/14	7/29/14	3/16/15	7/29/14	7/29/14	4/1/14	(µg/L)
Lead	ND (<1)	ND (<1)	ND (<1)	ND (<1)	2	ND (<1)	ND (<1)	ND (<1)	1	**21**	5	6	1	7	15
Arsenic	1	NA	4	NA	6	NA	3	NA	NA	NA	NA	NA	NA	ND (<1)	10
Copper	2	NA	ND (<1)	NA	ND (<1)	NA	ND (<1)	NA	NA	NA	NA	NA	NA	81	1300
Conductance		590		228		267		276	798	848		591	407		-
pH		6.3		6.6		6.4		6.5	5.8	6.3		6	6		-

NOTES:
AGQS = Ambient Groundwater Quality Standard
Concentrations are in micrograms per liter (equivalent to parts per billion, ppb)
ND = None Detected; NS = No Standard; NA = Not Analyzed
Shaded data indicates the concentration exceeds the applicable standard.

Table 3a. Summary of Soil Analytical Results (mg/kg)
Pistol/Rifle Range, Hampton Rod & Gun Club

	Laboratory Results			
	Lead	Arsenic	Copper	pH
SRS	400	11	NS	
S-1A (0-6")	320	-	-	-
S-1B (6-12")	130	-	-	-
S-2A (0-6")	**31,000**	**46**	310	**-**
S-2B (6-12")	18	-	-	-
S-3A (0-6")	**2,200**	-	-	-
S-3B (6-12")	31	-	-	-
S-4A (0-6")	47	-	-	-
S-4B (6-12")	20	-	-	-
S-5A (0-6")	66	-	-	-
S-5B (6-12")	**28,000**	**64**	600	-
S-5 (20-24")	250	-	-	-
S-6A (0-6")	**38,000**	-	-	-
S-6B (6-12")	81	-	-	-
S-7A (0-6")	170	-	-	-
S-7B (6-12")	200	-	-	-
S-8A (0-6")	**1,400**	-	-	-
S-8B (6-12")	23	-	-	-
S-9A (0-6")	290	-	-	-
S-9B (6-12")	**650**	3.8	7.5	-
S-9 (20-24")	6	-	-	-
S-10A (0-6")	110	-	-	-
S-10B (6-12")	42	-	-	-
S-11A (0-6")	100	-	-	-
S-11B (6-12")	220	-	-	-
S-12A (0-6")	270	-	-	-
S-12B (6-12")	300	-	-	-
S-13A (0-6")	84	-	-	4.2
S-13B (6-12")	9	-	-	4.2
S-14A (0-6")	20	-	-	4.7
S-14B (6-12")	17	-	-	4.7
S-15A (0-6")	100	-	-	2.9
S-15B (6-12")	65	-	-	4
S-16A (0-6")	110	-	-	4.9
S-16B (6-12")	23	-	-	4.4
S-17A (0-6")	80	-	-	4.4
S-17B (6-12")	27	-	-	4.5
S-18A (0-6")	150	-	-	3.6
S-18B (6-12")	150	-	-	3.6
S-19A (0-6")	180	-	-	3.7
S-19B (6-12")	8	-	-	3.8
S-20A (0-6")	260	-	-	4.8
S-20B (6-12")	56	-	-	4.8

Notes
SRS = Soil Remediation Standard; NS = No Standard
Shaded data exceed SRS

Table 3b. Summary of Soil Analytical Results (mg/kg)
Pistol/Rifle Range, Hampton Rod & Gun Club

	Laboratory Results			
	Lead	Arsenic	Copper	pH
SRS	400	11	NS	
S-21A (0-6")	40	-	-	4.9
S-21B (6-12")	43	-	-	5.2
S-22A (0-6")	**990**	-	-	4.8
S-22B (6-12")	41	-	-	5.2
S-23A (0-6")	260	-	-	4.8
S-23B (6-12")	43	-	-	5
S-24A (0-6")	**660**	-	-	5.4
S-24B (6-12")	88	-	-	5.8
S-25A (0-6")	340	-	-	4.4
S-25B (6-12")	390	-	-	4.6
S-26A (0-6")	160	-	-	5.2
S-26B (6-12")	4	-	-	5.9
S-27A (0-6")	24	-	-	5
S-27B (6-12")	23	-	-	5.1
S-28A (0-6")	83	-	-	5.7
S-28B (6-12")	190	-	-	6.5
S-29 A (0-6")	370	-	-	-
S-29 B (6-12")	93	-	-	-
S-30 A (0-6")	**1,100**	-	-	-
S-30 B (6-12")	220	-	-	-
S-31 A (0-6")	**1,700**	-	-	5.2
S-31 B (6-12")	45	-	-	6.1
S-32 A (0-6")	41	-	-	5.1
S-32 B (6-12")	57	-	-	5.2
S-33 A (0-6")	290	-	-	5.1
S-33 B (6-12")	37	-	-	5.1
S-34 A (0-6")	50	-	-	-
S-34 B (6-12")	13	-	-	-
S-35 A (0-6")	330	-	-	-
S-35 B (6-12")	12	-	-	-
S-36 A (0-6")	50	-	-	-
S-36 B (6-12")	14	-	-	-
S-37 (0-6")	not sampled			
S-38 (0-6")	9	-	-	4.8
S-39 (0-6")	10	-	-	4.8
S-40 (0-6")	31	-	-	4.2
S-41 (0-6")	110	-	-	3.5
S-42 (0-6")	**400**	-	-	3.8
S-43 (0-6")	42	-	-	4.4

Notes
SRS = Soil Remediation Standard; NS = No Standard
Shaded data exceed SRS

Table 4a. Summary of Soil Analytical Results - Metals
Hampton Rod and Gun Club - Trap Range (mg/kg)

	Laboratory Results			
	Lead	Arsenic	Copper	pH
SRS	400	11	NS	
TRS-1A (0-6")	**540**	-	-	-
TRS-1B (6-12")	6	-	-	-
TRS-2A (0-6")	40	-	-	-
TRS-2B (6-12")	8	-	-	-
TRS-3A (0-6")	380	-	-	-
TRS-3B (6-12")	18	-	-	-
TRS-4A (0-6")	NT	-	-	-
TRS-4B (6-12")	NT	-	-	-
TRS-5A (0-6")	**730**	-	-	-
TRS-5B (6-12")	9	-	-	-
TRS-6A (0-6")	359	-	-	-
TRS-6B (6-12")	12	-	-	-
TRS-7A (0-6")	140	-	-	-
TRS-7B (6-12")	7	-	-	-
TRS-8A (0-6")	NT	-	-	-
TRS-8B (6-12")	NT	-	-	-
TRS-9A (0-6")	**1,400**	-	-	-
TRS-9B (6-12")	24	-	-	-
TRS-10A (0-6")	**690**	-	-	-
TRS-10B (6-12")	11	-	-	-
TRS-11A (0-6")	**570**	-	-	-
TRS-11B (6-12")	6	-	-	-
TRS-12A (0-6")	**580**	-	-	-
TRS-12B (6-12")	4	-	-	-
TRS-13A (0-6")	**33,000**	-	-	-
TRS-13B (6-12")	49	-	-	-
TRS-14A (0-6")	**2,800**	-	-	-
TRS-14B (6-12")	14	-	-	-
TRS-15A (0-6")	**1,800**	-	-	-
TRS-15B (6-12")	8	-	-	-
TRS-16A (0-6")	**540**	-	-	-
TRS-16B (6-12")	10	-	-	-
TRS-17A (0-6")	6	<1	2	5.7
TRS-17B (6-12")	12	-	-	-
TRS-18A (0-6")	**49,000**	**210**	15	5.7
TRS-18B (6-12")	180	-	-	-
TRS-19A (0-6")	**600**	**66**	7	6.9
TRS-19B (6-12")	7	-	-	-
TRS-20A (0-6")	330	**11**	5	4.3
TRS-20B (6-12")	13	-	-	-

Notes

SRS = Soil Remediation Standard; NS = No Standard

Shaded data exceed SRS

Table 4b. Summary of Soil Analytical Results - Metals
Hampton Rod and Gun Club - Trap Range

	Laboratory Results			
	Lead (400)	Arsenic (11)	Copper (NS)	pH
SRS	400	11	NS	
TRS-21 (0-6")	**29,000**	-	-	4
TRS-22 (0-6")	**35,000**	-	-	4.7
TRS-23 (0-6")	**840**	-	-	4.7
TRS-24 (0-6")	**30,000**	-	-	4.2
TRS-25 (0-6")	89	-	-	4.2
TRS-26 (0-6")	85	-	-	4.1
TRS-27 (0-6")	250	-	-	4.2
TRS-28 (0-6")	36	-	-	4.7
TRS-29 (0-6")	22	-	-	5
TRS-30 (0-6")	20	-	-	5
TRS-31 (0-6")	21	-	-	4.4
TRS-32 (0-6")	28	-	-	4.8
TRS-33 (0-6")	69	-	-	5.4
TRS-34 (0-6")	**1,300**	-	-	5.5
TRS-35 (0-6")	25	-	-	4.2
TRS-36 (0-6")	Not Sampled			
TRS-37 (0-6")	Not Sampled			
TRS-38 (0-6")	9	-	-	4.8
TRS-39 (0-6")	10	-	-	4.8
TRS-40 (0-6")	31	-	-	4.2
TRS-41 (0-6")	110	-	-	3.5
TRS-42 (0-6")	**400**	-	-	3.8
TRS-43 (0-6")	42	-	-	4.4
TRS-44 (0-6")	140	-	-	5.4
TRS-45 (0-6")	**690**	-	-	4.4
TRS-46 (0-6")	110	-	-	4.1

Notes
SRS = Soil Remediation Standard; NS = No Standard
Shaded data exceed SRS

Table 5. Summary of Sediment Analytical Results

Hampton Rod & Gun Club

SAMPLE 0-6"		Pb Laboratory Results	
	pH	TEC 36 mg/kg	PEC 128 mg/kg
SED-1	-	**1000**	**1000**
SED-2	-	**440**	**440**
SED-3	-	**840**	**840**
SED-1A	5.3	**150**	**150**
SED-3A	6	**850**	**850**
SED-3B	6.2	**860**	**860**
SED-4	5	**1,200**	**1,200**
SED-5	3.4	**230**	**230**
SED-6	5.3	**75**	75
SED-7	5.9	**110**	**110**
SED-8	6.1	**250**	**250**
SED-9	6.6	17	17
SED-10	5.7	**1,400**	**1,400**
SED-11	3.5	**48**	48
SED-12	6.2	**120**	120
SED-13	6	**140**	**140**
SED-14	6	**85**	85
SED-15	5.7	**74**	74

Notes:

TEC = Threshold Effect Concentration

PEC = Probable Effect Concentration

SED-1, 2, 3 collected on 4-24-14

SED-1A to 12 collected 9-28-16

SED-13 to 15 collected 9-30-16

Table 6a. Summary of Surface Water Analytical Results - November 2016 "dry"
Hampton Rod and Gun Club, North Hampton, NH

COMPOUND	SW-1 11/8/16	SW-2 11/8/16	SW-3 11/8/16	SW-3A SW-3 dup	SW-6 11/8/16	SW-7 11/8/16	SW-8 11/8/16	SW-9 11/8/16	SW-10 11/8/16	PRSW1 11/8/16	PRSW3 11/8/16	TRSW1 11/8/16
Lead, dissolved	97	11	59	60	<1	8	4	<1	290	100	62	270
hardness	23	52	110	110	90	86	98	93	71	130	35	180
pH	5.7	6.4	6.6	6.6	7	6.6	6.9	7.1	6.5	5.8	7	5.6
Acute Std	14	35	92	92	71	67	80	74	53	114	21	173
Chronic Std	0.5	1	4	4	3	3	3	3	2	4	0.8	7

Table 6b. Summary of Surface Water Analytical Results - December 2016 "wet"

COMPOUND	SW-1 12/1/16	SW-2 12/1/16	SW-3 12/1/16	SW-3A SW-3 dup	SW-6 12/1/16	SW-7 12/1/16	SW-8 12/1/16	SW-9 12/1/16	SW-10 12/1/16	PRSW1 12/1/16	PRSW3 12/1/16	TRSW1 12/1/16
Lead, dissolved	56	67	230	230	2	6	2	0.5	560	25	62	20
hardness	6	21	33	33	22	28	30	30	30	29	16	29
pH	6.2	6.3	5.6	5.6	6.2	6.1	6.2	6.3	6.4	4.3	5.9	3
Acute Std	11	11	20	20	12	16	18	18	18	17	11	17
Chronic Std	0.4	0.4	0.8	0.8	0.5	0.6	0.7	0.7	0.7	0.7	0.4	0.7

NOTES:
concentrations are in micrograms per liter (equivalent to parts per billion, ppb)
Std = hardness-corrected surface water standard per Env-wq 1700 (μg/L)
bold type indicates value exceeds standard
field blank = 3 ppb

SITE PHOTOGRAPHS

Photo #1. Southeast-facing overview of the pistol/rifle range.

Photo #2. View of the drainage channel at the pistol/rifle range.

Photo #3. View of the isolated wetland area that is the origin of the drainage channel at the pistol/rifle range. May 26, 2015.

Photo #4. Low altitude aerial photograph of pistol/rifle range showing drainage channel and shallow groundwater at this time of year. April 17, 2015.

Photo #5. South facing view of drainage channel, facing PRSW-3. Pistol/rifle range and berm are visible at rear. April 16, 2014.

Photo #6. Northeast facing view of trap range. Clay target debris is visible. April 24, 2014.

Photo #7. Low angle aerial photograph of trap range showing typical spring flooding conditions. April 17, 2015.

Photo #8. High angle aerial photograph of trap range, showing extent of clay pigeon debris, seasonal flooding and drainage channels emanating from trap range. April 17, 2015.

Photo #9. Northeast facing view of the Little River. Trap range is out of view at bottom of photograph. April 17, 2015.

Photo #10. Winter soil sampling in the trap range. February 6, 2015.

Photo #11. View of trap range soil core from TRS-14; note the high clay content of the soil. February 7, 2015.

Photo #12. View of SW-10 surface water station at time of dry sampling event. November 8, 2016.

Photo #13. View of SW-10 surface water station at time of wet sampling event. December 1, 2016.

APPENDIX I

NETR Database Report

42.975502764821925, -70.81971041858172

Wednesday, May 06, 2015

Environmental Radius Report

2055 E. Rio Salado Pkwy
Tempe, AZ 85381
480-967-6752

Summary

Aerial Views 2012, 2011, 2003, 1998, 1992, 1978, 1974, 1962

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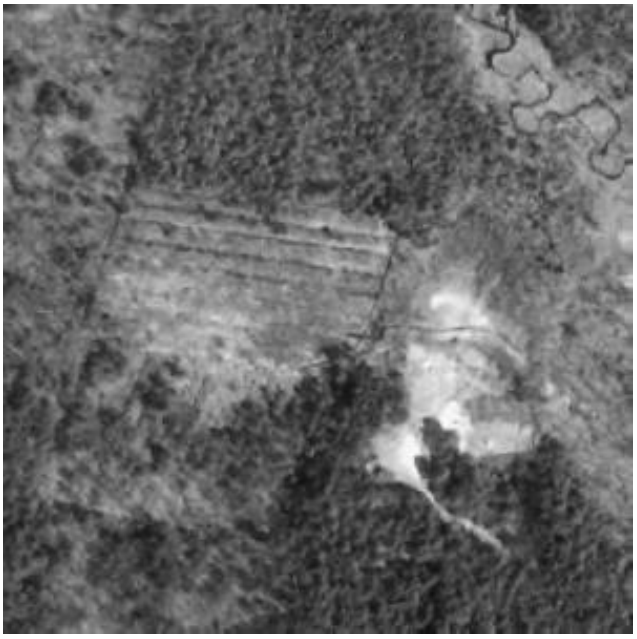
Aerial Views

2012

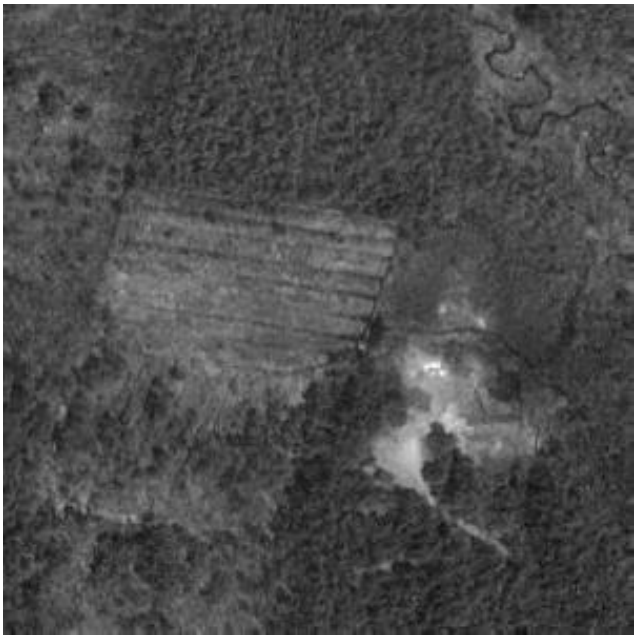
2011

2003

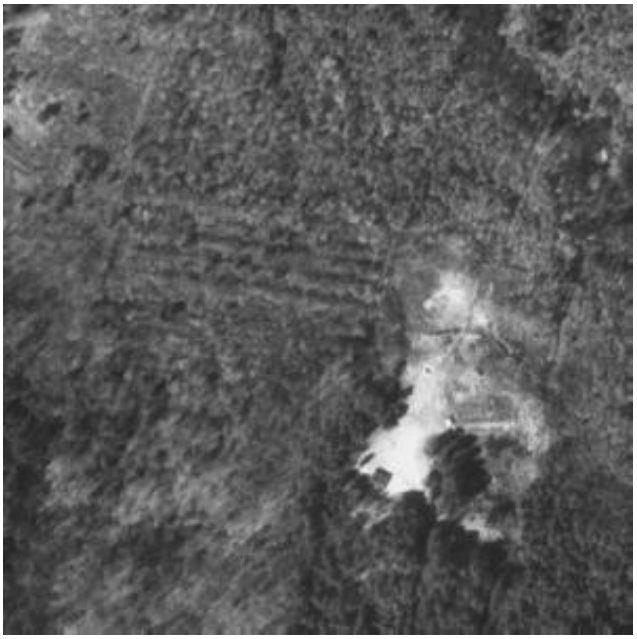


1998

Aerial Views



1992



1978

1974

1962

National Priorities List (NPL)

This database returned 0 results for your area.

The Superfund Program, administered under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is an EPA Program to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. The NPL (National Priorities List) is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. The boundaries of an NPL site are not tied to the boundaries of the property on which a facility is located. The release may be contained with a single property's boundaries or may extend across property boundaries onto other properties. The boundaries can, and often do change as further information on the extent and degree of contamination is obtained.

CERCLIS List

This database returned no results for your area.

The United States Environmental Protection Agency (EPA) investigates known or suspected uncontrolled or abandoned hazardous substance facilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA maintains a comprehensive list of these facilities in a database known as the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). These sites have either been investigated or are currently under investigation by the EPA for release or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation and ultimately placed on the National Priority List (NPL).

CERCLIS sites designated as "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an intitial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration.

CERCLIS NFRAP

This database returned no results for your area.

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" NFRAP have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the site being placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.
EPA has removed these NFRAP sites from CERCLIS to lift unintended barriers to the redevelopment of these properties. This policy change is part of EPA"s Brownfields Redevelopment Program to help cities, states, private investors and affected citizens promote economic redevelopment of unproductive urban sites.

RCRA CORRACTS Facilities

This database returned no results for your area.

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). The EPA maintains the Corrective Action Report (CORRACTS) database of Resource Conservation and Recovery Act (RCRA) facilities that are undergoing "corrective action." A "corrective action order" is issued pursuant to RCRA Section 3008(h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility"s boundary and can be required regardless of when the release occurred, even if it predated RCRA.

RCRA non-CORRACTS TSD Facilities

This database returned no results for your area.

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). The EPA''s RCRA Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilites database is a compilation by the EPA of facilities that report generation, storage, transportation, treatment, or disposal of hazardous waste. RCRA Permitted Treatment, Storage, Disposal Facilities (RCRA-TSD) are facilities which treat, store and/or dispose of hazardous waste.

Federal Institutional Control / Engineering Control Registry

This database returned no results for your area.

Federal Institutional Control / Engineering Control Registry

Emergency Response Notification System (ERNS)

This database returned no results for your area.

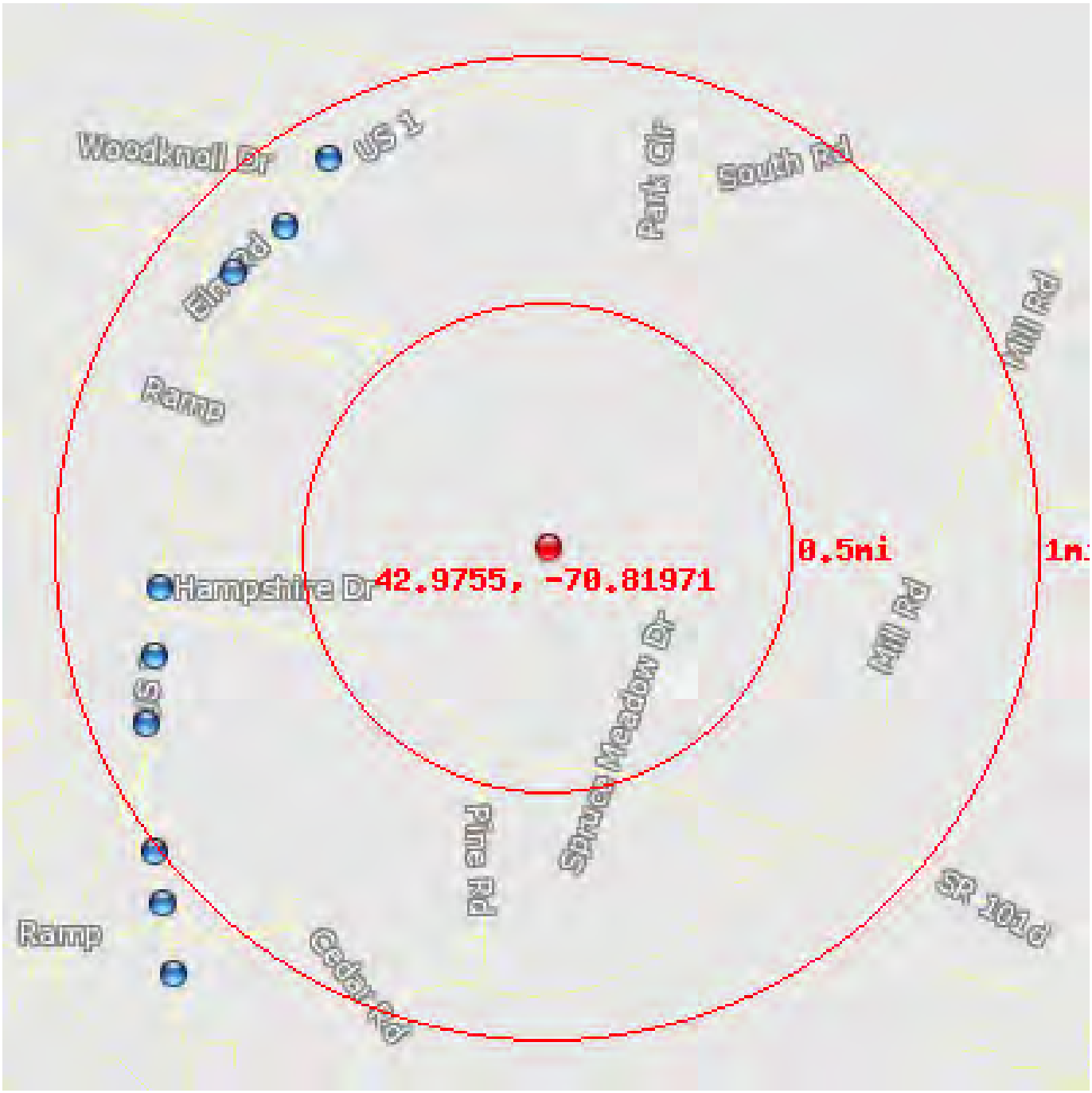
The Emergency Response Notification System (ERNS) is a national computer database used to store information on unauthorized releases of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration''s John Volpe National Transportation System Center and the National Response Center. There are primarily five Federal statutes that require release reporting: the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) section 103; the Superfund Amendments and Reauthorization Act(SARA) Title III Section 304; the Clean Water Act of 1972(CWA) section 311(b)(3); and the Hazardous Material Transportation Act of 1974(HMTA section 1808(b).

US Toxic Release Inventory

This database returned no results for your area.

The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. TRI reporters for all reporting years are provided in the file.

US RCRA Generators (CESQG, SQG, LQG)



This database returned 6 results for your area.

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). EPA maintains a database of facilities, which generate hazardous waste or treat, store, and/or dispose of hazardous wastes.

Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste.

Small Quantity Generators (SQG) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Large Quantity Generators (LQG) generate 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste.

US RCRA Generators (CESQG, SQG, LQG)

Location	42.97426, -70.83512
Distance to site	4140 ft / 0.78 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110024828533*
EPA Identifier	110024828533
Primary Name	RITE AID 3282
Address	72 LAFAYETTE RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
NAICS Codes	812922
Programs	RCRAINFO
Program Interests	CESQG
Updated On	21-OCT-09
Recorded On	03-JUN-06
NAICS Descriptions	ONE-HOUR PHOTOFINISHING.
Program ID	NHD510191240

Location	42.97226, -70.8354
Distance to site	4354 ft / 0.82 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110004103504*
EPA Identifier	110004103504
Primary Name	KIMBALL AUTO BODY INC
Address	68 LAFAYETTE RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
NAICS Codes	811121
Programs	RCRAINFO
Program Interests	CESQG
Updated On	27-JAN-12
Recorded On	01-MAR-00
NAICS Descriptions	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE.
Program ID	NHD510113780

US RCRA Generators (CESQG, SQG, LQG)

Location	42.98478, -70.83016
Distance to site	4387 ft / 0.83 mi NW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110004097183*
EPA Identifier	110004097183
Primary Name	NORTH HAMPTON CHIROPRACTIC OFF
Address	118 LAFAYETTE RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
Programs	RCRAINFO
Program Interests	CESQG
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	NHD500018528

Location	42.98348, -70.83223
Distance to site	4432 ft / 0.84 mi NW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110023055600*
EPA Identifier	110023055600
Primary Name	MATT WOODS EASTCOAST CLASSIC AUTO & RESTORAT
Address	12 ELM RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
NAICS Codes	811121
Programs	RCRAINFO
Program Interests	CESQG
Updated On	04-AUG-10
Recorded On	28-NOV-05
NAICS Descriptions	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE.
Program ID	NHD510187073

US RCRA Generators (CESQG, SQG, LQG)

Location	42.97021, -70.83567
Distance to site	4679 ft / 0.89 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110014354769*
EPA Identifier	110014354769
Primary Name	NORTH ATLANTIC AUTO BODY & REPAIR
Address	58 LAFAYETTE RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
NAICS Codes	811121
Programs	RCRAINFO
Program Interests	CESQG
Updated On	27-JAN-12
Recorded On	17-MAY-03
NAICS Descriptions	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE.
Program ID	NHD510074743

Location	42.98677, -70.82838
Distance to site	4719 ft / 0.89 mi NW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110017230904*
EPA Identifier	110017230904
Primary Name	HILTUNEN NASH & MAGUIRE PC
Address	2 JUNIPER RD
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03862
Programs	RCRAINFO
Program Interests	CESQG
Updated On	21-OCT-09
Recorded On	11-MAR-04
Program ID	NHD500022421

US ACRES (Brownfields)

This database returned no results for your area.

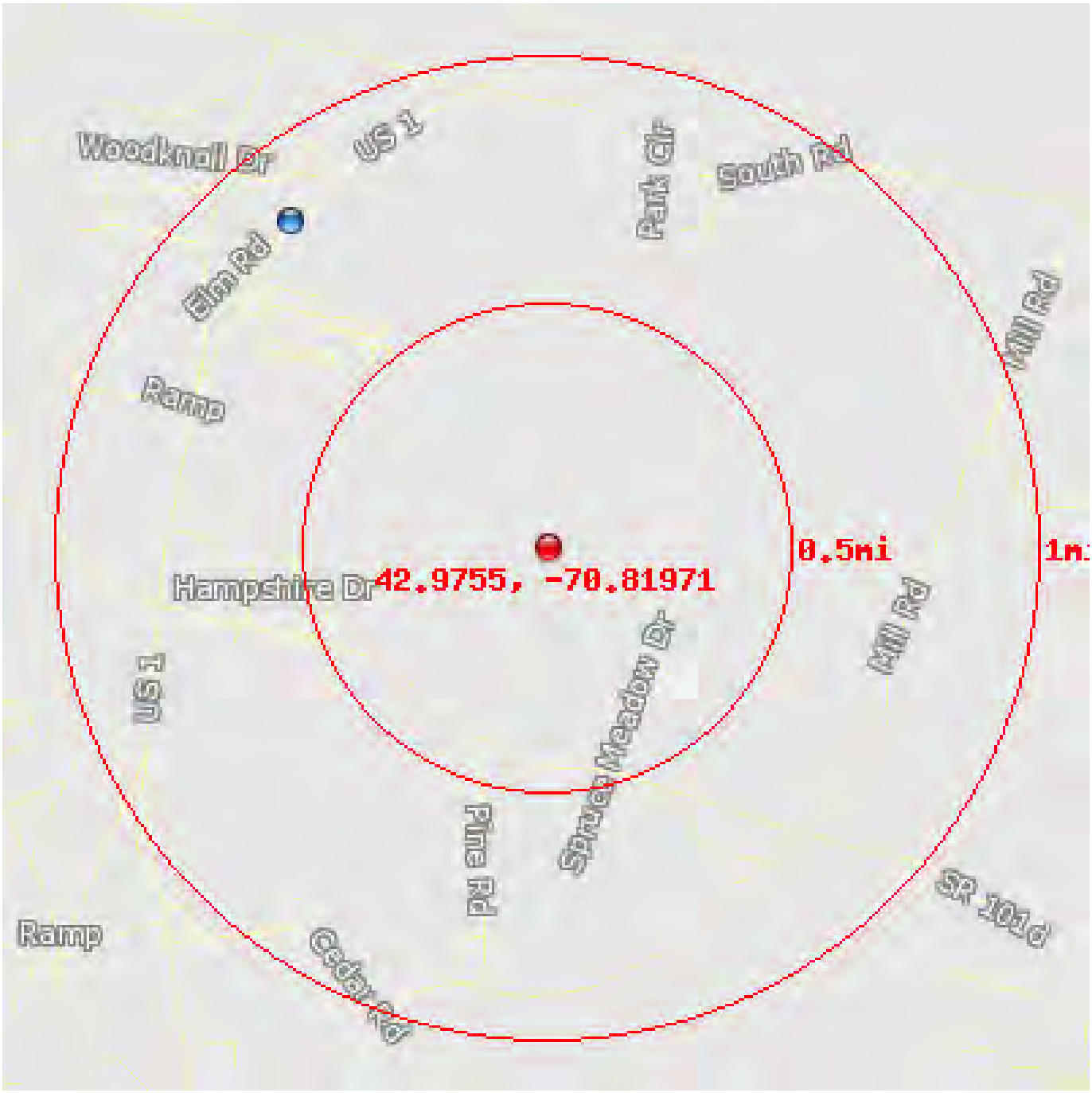
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. The Assessment, Cleanup and Redevelopment Exchange System (ACRES) is an online database for Brownfields Grantees to electronically submit data directly to The United States Environmental Protection Agency (EPA)

US NPDES

This database returned no results for your area.

The NPDES module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

US Air Facility System (AIRS / AFS)



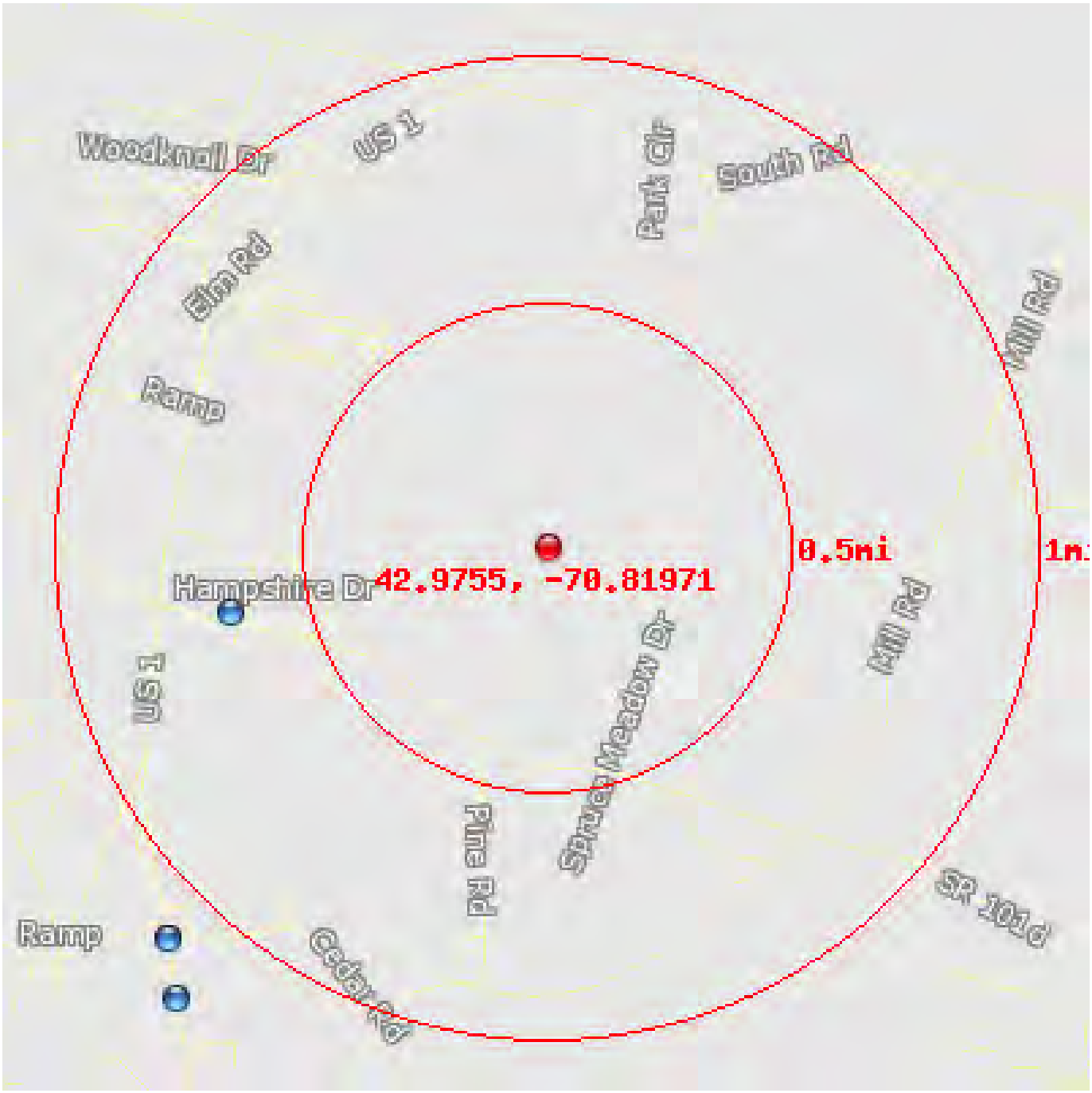
This database returned 1 results for your area.

The Air Facility System (AIRS / AFS) contains compliance and permit data for stationary sources of air pollution (such as electric power plants, steel mills, factories, and universities) regulated by EPA, state and local air pollution agencies. The information in AFS is used by the states to prepare State Implementation Plans (SIPs) and to track the compliance status of point sources with various regulatory programs under Clean Air Act.

US Air Facility System (AIRS / AFS)

Location	42.98497, -70.8299
Distance to site	4398 ft / 0.83 mi NW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002360668*
EPA Identifier	110002360668
Primary Name	MOBILE MANIA
Address	122 LAFAYETTE ST
City	NORTH HAMPTON
County	ROCKINGHAM
State	NH
Zipcode	03256
NAICS Codes	517210
SIC Codes	4812, PRIV
SIC Descriptions	RADIOTELEPHONE COMMUNICATIONS
Programs	AIRS/AFS
Program Interests	AIR MINOR
Updated On	30-APR-14
Recorded On	01-MAR-00
Program ID	3301590794

NH Aboveground Storage Tanks



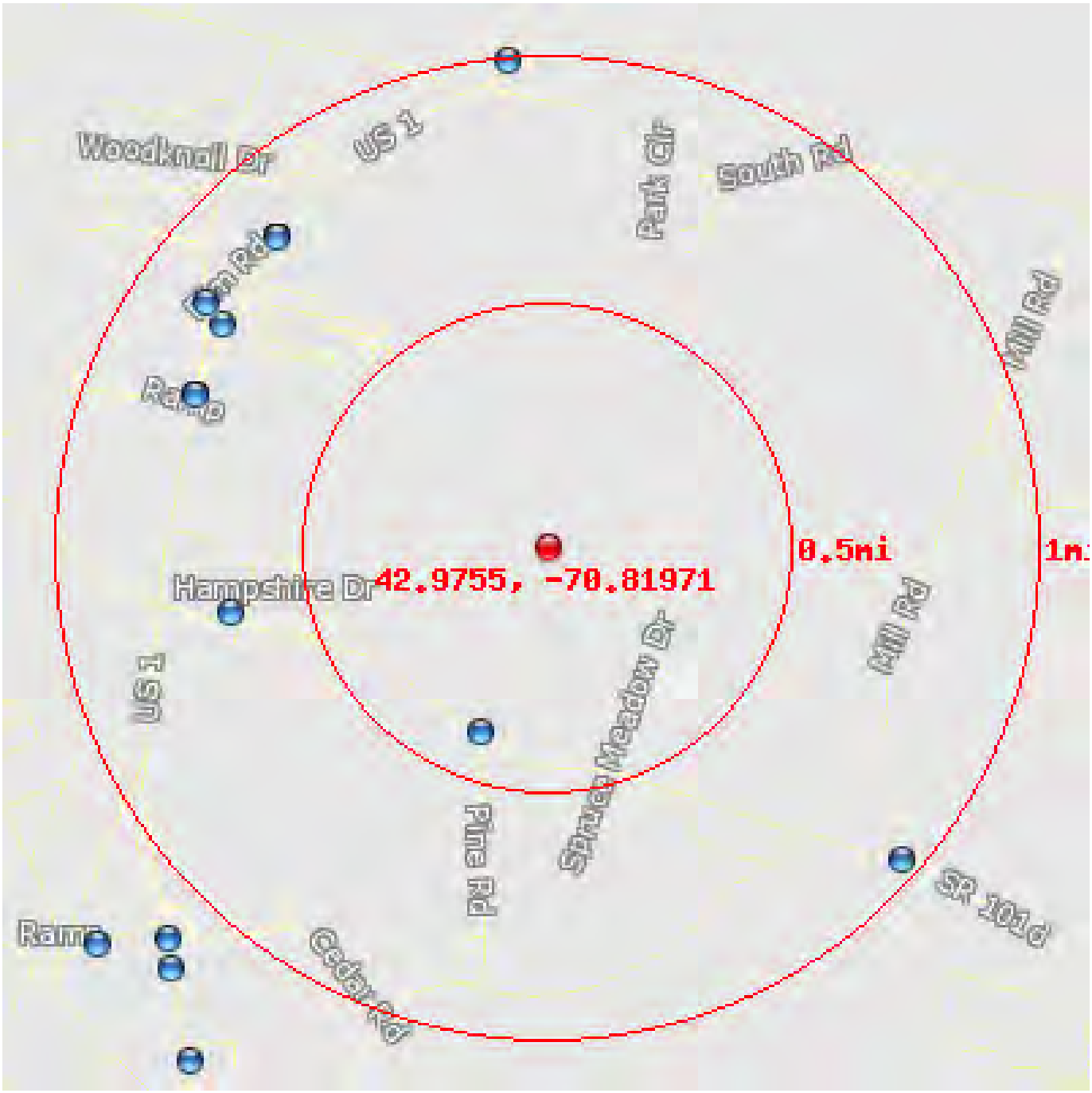
This database returned 1 results for your area.

The New Hampshire Department of Environmental Services provides information about registered above-ground storage tanks. The database includes tank site informatin such as name and location of the facility, the owner, registration date and whether the tanks are active or closed.

NH Aboveground Storage Tanks

Location	42.97348, -70.8323
Distance to site	3441 ft / 0.65 mi W
Facility ID	950333A
Site Number	199503033
Site Name	LAMPREY BROS BULK STORAGE
Facility Owner Name	LAMPREY BROTHERS INC
Registration Date	06/10/2002
Active Tanks	2
Closed Tanks	5
City	NORTH HAMPTON
Address	227R ATLANTIC AVE

NH Underground Storage Tanks



This database returned 13 results for your area.

Underground Storage Tanks (UST) containing hazardous or petroleum substances are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The New Hampshire Department of Environmental Services maintains a list of registered USTs. The database includes tank site informatin such as name and location of the facility, the owner, registration date and whether the tanks are active or closed.

NH Underground Storage Tanks

Location	42.97004, -70.82236
Distance to site	2115 ft / 0.4 mi SW
Facility ID	0110772
Site Number	199609043
Site Name	NORTH HAMPTON ELEMENTARY SCHOOL
Owner Name	NORTH HAMPTON SCHOOL DIST
Registration Date	02/12/2008
Active Tanks	1
Closed Tanks	2
City	NORTH HAMPTON
Address	201 ATLANTIC AVE

Location	42.97348, -70.8323
Distance to site	3441 ft / 0.65 mi W
Facility ID	0112109
Site Number	199503033
Site Name	LAMPREY BROS BULK STORAGE
Owner Name	LAMPREY BROTHERS INC
Registration Date	07/26/2001
Closed Tanks	7
City	NORTH HAMPTON
Address	227R ATLANTIC AVE

Location	42.97984, -70.83378
Distance to site	4076 ft / 0.77 mi W
Facility ID	0114957
Site Number	199904010
Site Name	HENDRY AUTOMOTIVE
Owner Name	PETER SIMMONS
Closed Tanks	4
City	NORTH HAMPTON
Address	74 LAFAYETTE ROAD

Location	42.97984, -70.83378
Distance to site	4076 ft / 0.77 mi W
Facility ID	0112608
Site Number	199101036
Site Name	NORTH HAMPTON CIRCLE K
Owner Name	IRVING OIL MARKETING INC
Registration Date	11/26/2008
Active Tanks	3
Closed Tanks	9
City	NORTH HAMPTON
Address	73 LAFAYETTE RD

NH Underground Storage Tanks

Location	42.97984, -70.83378
Distance to site	4076 ft / 0.77 mi W
Facility ID	0110144
Site Number	198604005
Site Name	GIANT LIFT EQUIPMENT CO INC
Owner Name	JOHN J PAONESSA
Registration Date	04/01/1986
Closed Tanks	1
City	NORTH HAMPTON
Address	136 LAFAYETTE RD

Location	42.98191, -70.83262
Distance to site	4165 ft / 0.79 mi NW
Facility ID	0112147
Site Number	198605287
Site Name	COMMUNITY MOTORS
Owner Name	RICHARD A CONSIDINE
Registration Date	05/14/1986
Closed Tanks	2
City	NORTH HAMPTON
Address	110 LAFAYETTE RD RTE 1

Location	42.98451, -70.83048
Distance to site	4367 ft / 0.83 mi NW
Facility ID	0113527
Site Number	199106020
Site Name	NORTH HAMPTON GROCERY
Owner Name	NORTH HAMPTON GROCERY
Registration Date	04/21/1995
Active Tanks	3
Closed Tanks	6
City	NORTH HAMPTON
Address	180 LAFAYETTE RD

Location	42.98451, -70.83048
Distance to site	4367 ft / 0.83 mi NW
Facility ID	0110231
Site Number	198603034
Site Name	PINE HAVEN MOTEL
Owner Name	WALTER WILHELM
Registration Date	03/25/1986
Closed Tanks	1
City	NORTH HAMPTON
Address	183 LAFAYETTE RD

NH Underground Storage Tanks

Location	42.98451, -70.83048
Distance to site	4367 ft / 0.83 mi NW
Facility ID	0111189
Site Number	199706049
Site Name	L & J GAS
Owner Name	L&J GAS C/O L TSOUMBANIKAS
Registration Date	03/09/2010
Active Tanks	3
Closed Tanks	5
City	NORTH HAMPTON
Address	116 LAFAYETTE RD

Location	42.98451, -70.83048
Distance to site	4367 ft / 0.83 mi NW
Facility ID	0220284
Site Number	199707013
Site Name	HAMPTON FORD, INC.
Owner Name	HAMPTON FORD INC
Registration Date	02/11/1991
Closed Tanks	1
City	NORTH HAMPTON
Address	178 LAFAYETTE ROAD

Location	42.9826, -70.83331
Distance to site	4461 ft / 0.84 mi NW
Facility ID	0115728
Site Number	200602018
Site Name	HOBBS RESIDENTIAL
Owner Name	PAUL W HOBBS 1989 TRUST
Closed Tanks	1
City	NORTH HAMPTON
Address	2 ELM RD

Location	42.96625, -70.8055
Distance to site	5079 ft / 0.96 mi SE
Facility ID	0115875
Site Number	201008029
Site Name	SMITH PROPERTY
Owner Name	HOWARD SMITH
Registration Date	10/11/2010
Closed Tanks	2
City	NORTH HAMPTON
Address	112 ATLANTIC AVE

NH Underground Storage Tanks

Location	42.98966, -70.82121
Distance to site	5182 ft / 0.98 mi N
Facility ID	0112749
Site Number	198606037
Site Name	ROBINSON CONSTRUCTION INC
Owner Name	RICHARD ROBINSON
Registration Date	06/10/1986
Closed Tanks	2
City	NORTH HAMPTON
Address	205 LAFAYETTE ROAD

NH Asbestos Disposal Sites

This database returned no results for your area.

The database of Asbestos Disposal Sites was provided by the New Hampshire Department of Environmental Services.

Asbestos is the common name for a group of naturally occurring mineral fibers which are known for their high tensile strength and thermal insulating properties. Asbestos is commonly found in heating system insulation, vinyl floor tiles and sheet flooring, roofing paper and shingles, cement siding shingles, and a variety of other building construction products.

When asbestos is disturbed, it can break down into microscopic fibers that may become airborne. Once airborne, these fibers can be inhaled and trapped in the lungs, posing a health threat. Breathing asbestos can cause respiratory diseases including asbestosis, lung cancer, and mesothelioma, a cancer of the chest cavity lining. Generally speaking, the symptoms of asbestos-caused diseases do not appear until 10-35 years after exposure.

In New Hampshire, asbestos-containing products were manufactured for many years in Nashua, Meredith, and Tilton. In Meredith, the Keasbey & Mattison company operated an asbestos plant from the 1930's until 1962 when the plant was purchased by Amatex. Amatex continued to make asbestos products at the plant until late 1982. In Tilton, the Quinn-T manufacturing facility produced asbestos paper products for many years. In Nashua, from approximately 1900 until 1985, asbestos-containing building materials were produced at a plant on Bridge Street, owned and operated by the Johns-Manville Corporation.

Asbestos-containing waste from the Nashua plant was delivered for free to area property owners for use as fill. As a result, many residential, commercial, industrial, and public properties in the city of Nashua and the nearby town of Hudson are filled with asbestos waste. At the Tilton plant site, the company landfilled asbestos waste in two separate areas on the property. Those areas are no longer in use and are capped with soil materials. In Meredith, asbestos waste was disposed of at the town landfill, which is now closed and capped. The existence of other dump sites in Tilton and Meredith, if any, is not known. Inhalation is the primary exposure route of concern, because breathing asbestos fibers may cause them to become trapped in the lungs. Ingestion is another pathway of concern, because swallowing asbestos fibers may also cause the fibers to be trapped in body tissues. Asbestos is not absorbed through the skin, so merely touching it does not pose a significant risk to human health. However, if skin, clothing, tools, machinery, or other items become contaminated with asbestos fibers, the fibers can be inadvertently carried into the home or elsewhere, where they may become airborne or contaminate other surfaces through direct contact. Therefore, all surfaces that come in contact with asbestos waste, including skin and clothing, should be decontaminated to prevent more widespread contamination.

Asbestos fibers are not water soluble and do not move through groundwater to any appreciable extent. Based on studies of other insoluble particles of similar size, the expected migration rate of an asbestos fiber through soils by the forces of groundwater is approximately 1 to 10 centimeters (0.4 to 4 inches) per 3,000 to 40,000 years. Thus, asbestos is not considered a groundwater contaminant.

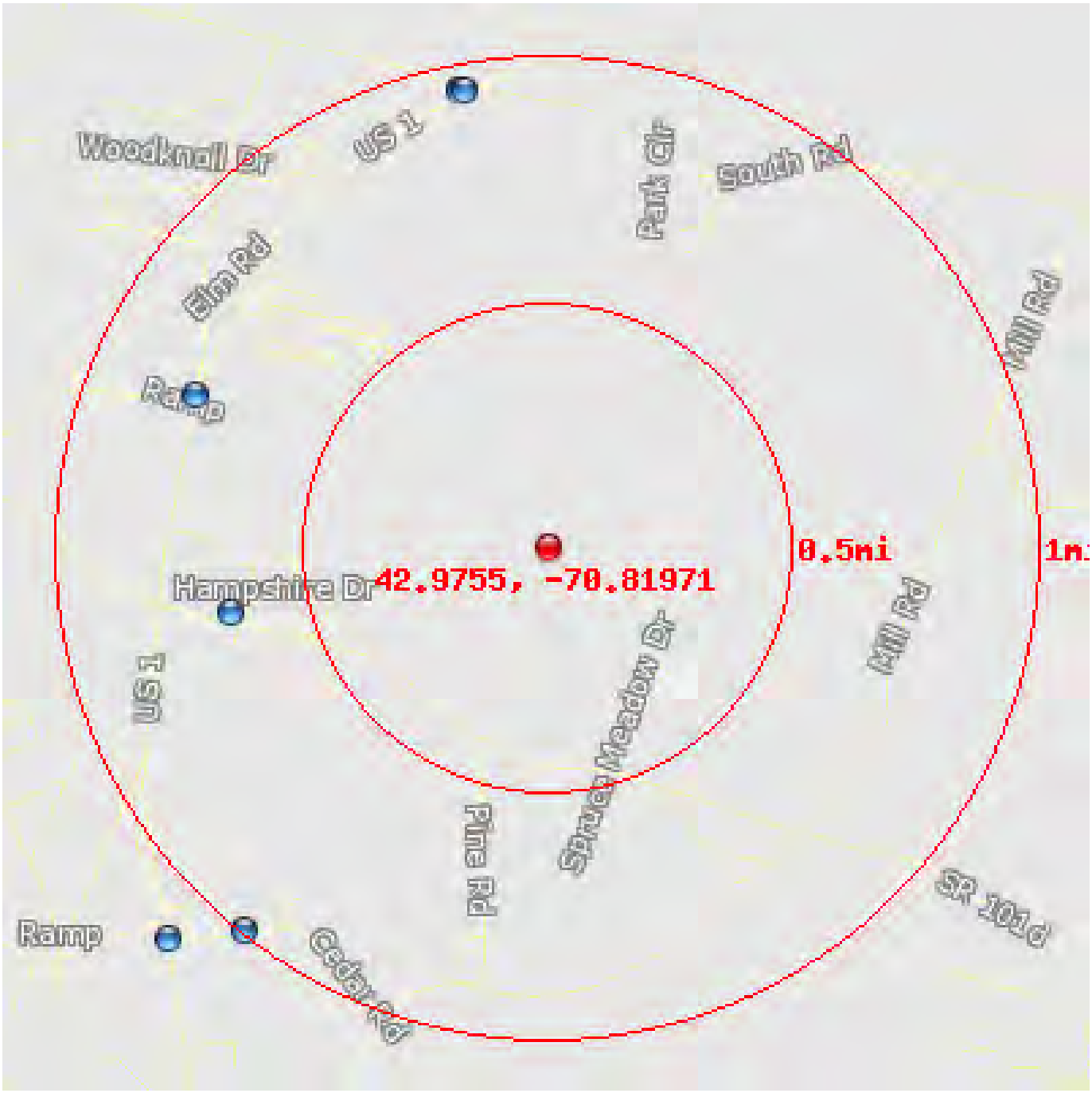
Although asbestos does not move with groundwater flow, it can move with surface water flow. Therefore, if asbestos waste is allowed to come in contact with rivers, wetlands and other surface water bodies, fibers may be transported to places that will result in human exposure, including intakes for drinking water supplies and recreation areas.

NH Auto Salvage Facility

This database returned no results for your area.

The New Hampshire Department of Environmental Services maintains a database of Auto Salvage Facilities. The primary environmental concern at motor vehicle recycling facilities is the potential for groundwater and surface water contamination due to mishandling of vehicular fluids, including gasoline, diesel fuel, oil, transmission fluid, power steering and brake fluids, gear oil, and mineral spirits. Motor vehicle recyclers also generate a number of other wastes, including: mercury from light switch assemblies, HID head lamps, display screen back lighting, and ABS brake sensors lead from leadacid batteries, wheel weights and battery cable ends chlorofluorocarbons (CFCs) and other refrigerants from airconditioning units sodium azide from air bags asbestos from brake shoes and clutches and waste tires.

NH Initial Spill Response



This database returned 5 results for your area.

The New Hampshire Department of Environmental Services maintains a database of unauthorized releases of oil and hazardous substances. The Spill Response and Complaint Investigation Section (SRCIS) covers a wide variety of functions including emergency response to petroleum and hazardous waste spills, and investigating complaints related to improper handling and disposal of petroleum, hazardous and solid wastes onto the ground or into surface waters of the state. SRCIS responds to a variety of spills and complaints including automotive accidents, residential heating oil spills, airplane crashes, illegal handling and disposal of infectious wastes, inspection of automobile salvage yards, asbestos disposal, leaking underground and leaking aboveground storage tank. The Spill Response and Complaint Investigation Section (SRCIS) covers a wide variety of functions including emergency response to petroleum and hazardous waste spills, and investigating complaints related to improper handling and disposal of petroleum, hazardous and solid wastes onto the ground or into surface waters of the state. SRCIS responds to a variety of spills and complaints including automotive accidents, residential heating oil spills, airplane crashes, illegal handling and disposal of infectious wastes, inspection of automobile salvage yards, asbestos disposal, leaking underground and leaking aboveground storage tank.

NH Initial Spill Response

Location	42.97348, -70.8323
Distance to site	3441 ft / 0.65 mi W
Site Number	199503033
Site Name	LAMPREY BROS BULK STORAGE
Address	227R ATLANTIC AVE
City	NORTH HAMPTON
Facility Owner	LAMPREY BROTHERS INC

Location	42.97984, -70.83378
Distance to site	4076 ft / 0.77 mi W
Site Number	199101036
Site Name	NORTH HAMPTON IRVING
Address	73 LAFAYETTE RD
City	NORTH HAMPTON
Facility Owner	IRVING OIL CORP.

Location	42.98877, -70.82316
Distance to site	4928 ft / 0.93 mi N
Site Number	200211056
Site Name	AUTO ACCIDENT
Address	65 NORTH RD
City	NORTH HAMPTON

Location	42.98882, -70.82297
Distance to site	4937 ft / 0.94 mi N
Site Number	200705021
Site Name	FREEMAN RESIDENCE
Address	160 LAFAYETTE RD UNIT 76
City	NORTH HAMPTON

Location	42.96421, -70.83184
Distance to site	5241 ft / 0.99 mi SW
Site Number	200606012
Site Name	PSNH
Address	39 CEDAR ST
City	NORTH HAMPTON
Facility Owner	PSNH

NH Solid Waste Facility

This database returned 0 results for your area.

The Solid Waste Facility database is provided by the New Hampshire Department of Environmental Services and consists of landfills, transfer stations and incinerators.

APPENDIX II

Laboratory Reports & Field Sampling Logs

EXETER ENVIRONMENTAL ASSOC., INC.
P.O. Box 451
Exeter, New Hampshire 03833-0451
(603) 778-3988

JOB Hampton Gun Club 1/4
SHEET NO. _____ OF _____
CALCULATED BY JMS DATE 4-24-14
CHECKED BY _____ DATE _____
SCALE _____

① Collect DW-1 : Total Lead, Copper, Arsenic

② Collect 2 SW's : Total Lead SW-
↙ ↘
Upstream center of berm

③ Collect 3 Sediments 0-6" : Total Lead SED-
↓
In front of berm

④ Collect 9 soils 0-6" (Grid) S—
9 soils 6-12"

3 soils 0-6" (front of Berm)
3 soils 6-12"

5 soils → lab Total Lead
↓
3 soils → Lab Total Arsenic & Copper

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JOB Hampton Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JMS / BPC DATE 4-24-14

CHECKED BY _____ DATE _____

SCALE _____

Soil Sample	Depth	Amt Shot / 8oz Jar	LAB	Time	XRF
S-1A	0-6"	2 bullet casing / 8oz		10:50	.07/.13/.05/.0
S-1B	6-12"	~~0~~		11:05	.05/.09/0/.04
S-2A	0-6"	~~0~~	Total Pb, As, Cu	11:20	.13/.17/.29/.19
S-2B	6-12"	~~0~~		11:25	0/0/0/0
S-3A	0-6"	~~0~~		11:30	.03/.07/.01/.0
S-3B	6-12"	~~0~~		11:35	0/0/.01/0
S-4A	0-6"	~~0~~		11:45	0/0/0/0
S-4B	6-12"	~~0~~		11:55	0/0/0/0
S-5A	0-6"	~~0~~		12:00	0/0/0.01/.02
S-5B	6-12"	1 bullet	Total Pb/Cu/As	12:05	2.5/4.6/1.6/16.
S-6A	0-6"	~~0~~	Total Pb	12:10	.19/.21/.25/.11
S-6B	6-12"	~~0~~		12:20	.1/.01/.04/.11
S-7A	0-6"	~~0~~		12:25	.02/.02/.01/.01
S-7B	6-12"	~~0~~		13:05	.02/.02/.01/.06
S-8A	0-6"	~~0~~		12:35	0/.08/.01/.01
S-8B	6-12"	~~0~~		1:00	0/0/0/0
S-9A	0-6"	~~0~~		13:10	.05/.04/.07/.06
S-9B	6-12"	1 bullet shard	Total Pb, As, Cu	13:15	.26/.15/.22/.06
S-10A	0-6"	~~0~~	Total Pb	13:20	.07/.01/.02/.04
S-10B	6-12"	~~0~~		13:40	.01/0/.01/0
S-11A	0-6"	~~0~~		13:40	0/0/.01/.01
S-11B	6-12"	~~0~~		13:45	.05/.08/.1/.04
S-12A	0-6"	~~0~~		13:50	.07/.1/.04/.08
S-12B	6-12"	~~0~~		14:05	.01/.12/.03/.01

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JOB Kingston Gun Club 3/4
SHEET NO. ____ OF ____
CALCULATED BY CMS DATE 4/24
CHECKED BY ____ DATE ____
SCALE ____

SW-1	=	upstream surface water		9:20
SW-2	=	midstream surface water		9:15
SED-1	=	9:30	- no lead shot	.06/.14/.2/.6
SED-2	=	9:45	- no lead shot	.05/.03/.2/.05
SE-3	=	9:50	- no lead shot	.3/.3/.29/.23
SE-4	=	10:00	- no lead shot	.16/.02/.18/.04

lab

DW-1	1540	total Pb, As, Cu	
Berm-1	0-6"	4 bullets shards	.18/.27/.27/.17
Berm-2	0-6"	6	.16/.15/.11/.15
Berm-3	0-6"	0 Shards	0/0/0/0

PRODUCT 204-1 (Single Sheets) 205-1 (Padded)

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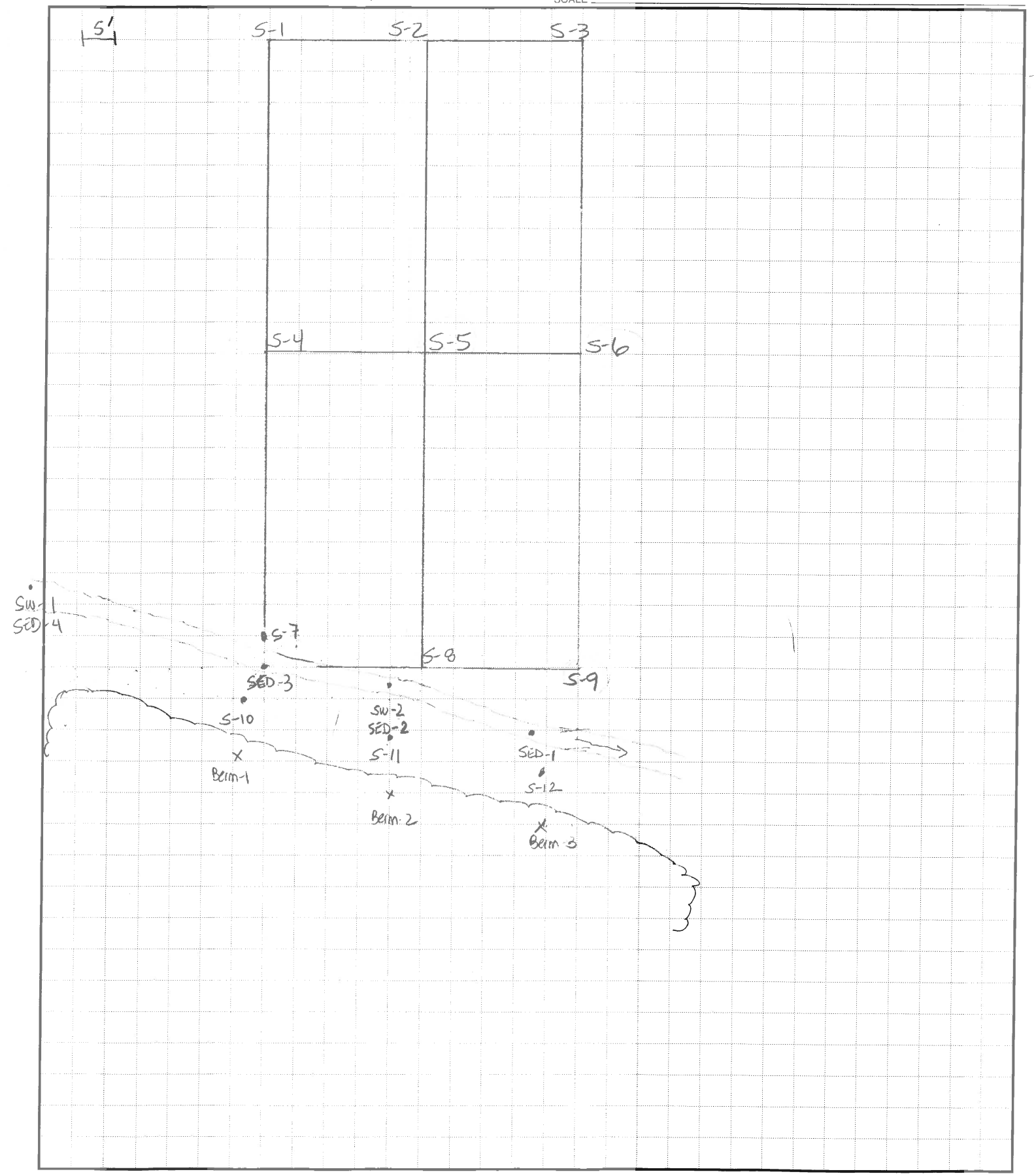
JOB Hampton Gun Club 4/4

SHEET NO. _____ OF _____

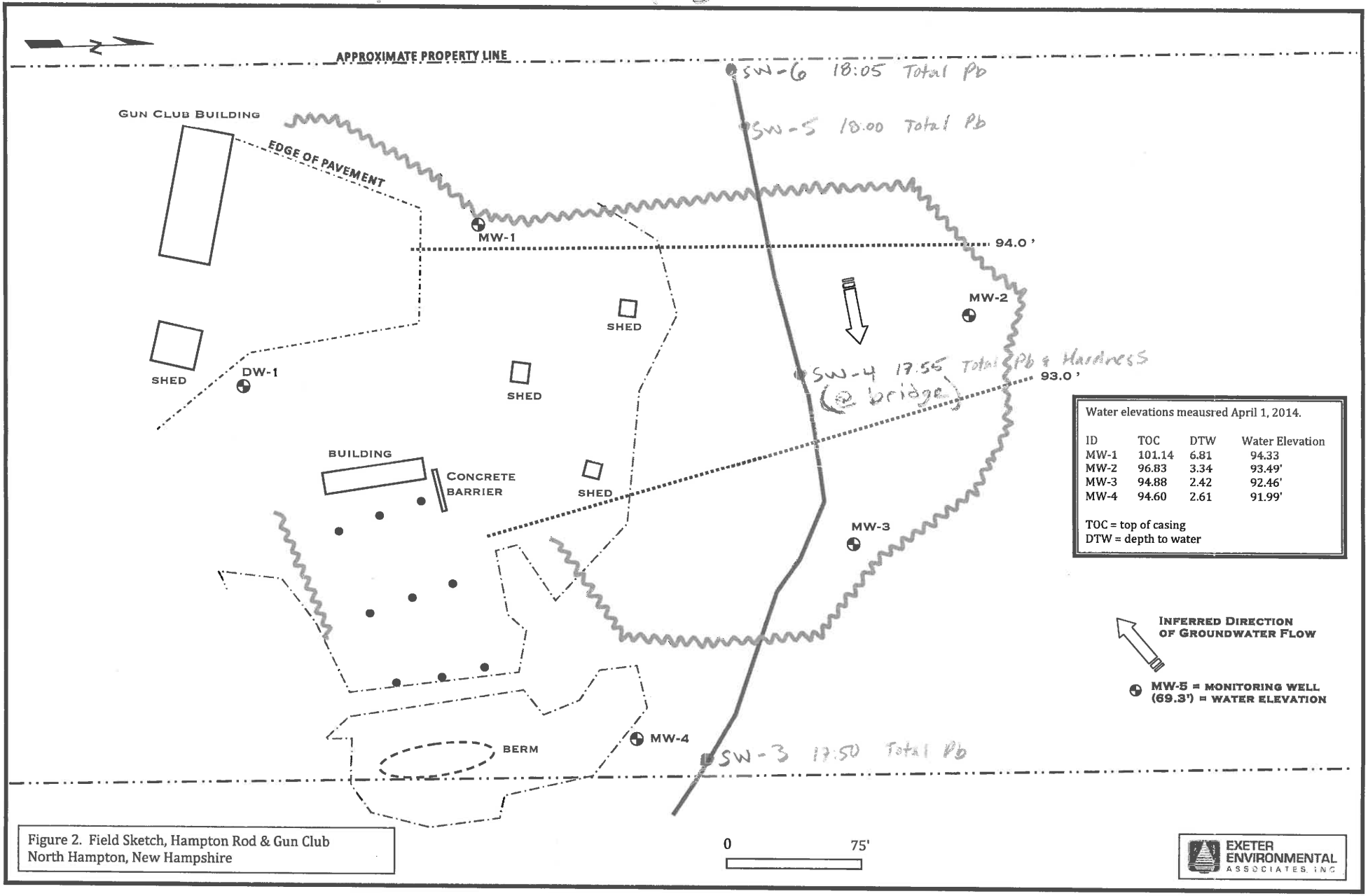
CALCULATED BY JMS DATE 4-24-14

CHECKED BY _____ DATE _____

SCALE _____



BPC 5/12/14 SW Sampling Locations



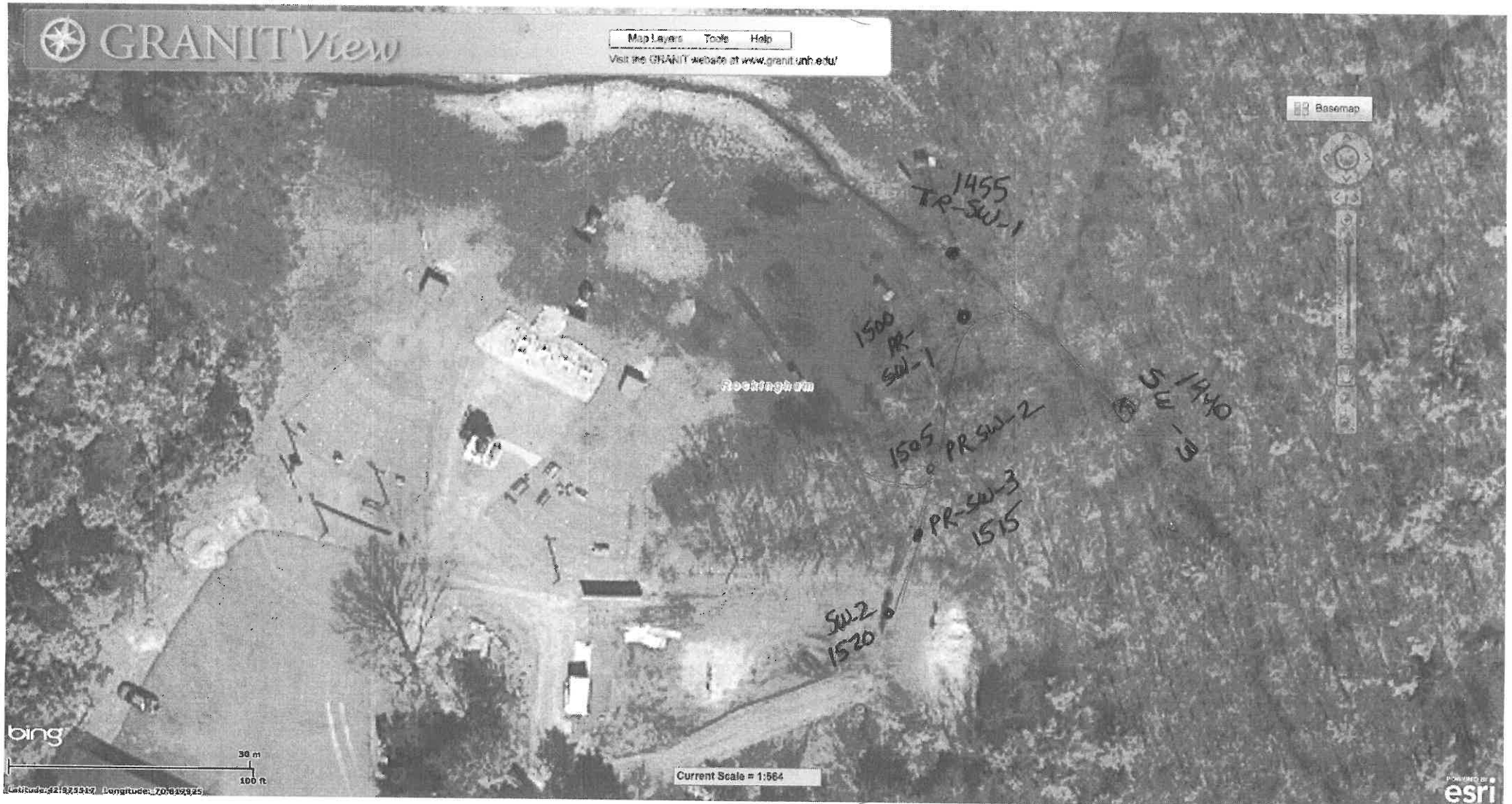
Water elevations meausred April 1, 2014.

ID	TOC	DTW	Water Elevation
MW-1	101.14	6.81	94.33
MW-2	96.83	3.34	93.49'
MW-3	94.88	2.42	92.46'
MW-4	94.60	2.61	91.99'

TOC = top of casing
DTW = depth to water

Figure 2. Field Sketch, Hampton Rod & Gun Club
North Hampton, New Hampshire

6/13/14 Surface H20 Sapling
JMS, BPC



PR SW-4 (X)

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JOB Hampton Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JMS/SC DATE 7/29/14

CHECKED BY _____ DATE _____

SCALE _____

845 - 1145

GW Sampling Round

WELL	WATER LEVEL	pH	Temp °C	S.C. mS	Time	WELL DEPTH
MW-1	7.64	6.30	18.5°	590	12:35	17'
MW-2	2.73	6.62	20.3	228	13:00	17'
MW-3	1.80	6.37	21.3	267	13:10	17'
MW-4	1.88	6.55	19.0	276	13:20	17'
SGW-1	1.25	5.82	22.8	798	12:00	10'
SGW-2	0.95	6.27	24.1	848	12:10	10'
SGW-3	0.47	5.98	23.0	591	12:20	10'
SGW-4	0.79	5.99	25.4	407	13:30	10'

SAMPLING RECORD

EXETER ENVIRONMENTAL ASSOCIATES, INC.

DATE: 8/14/14

PROJECT: Hampton Gun Club

SAMPLERS: J. Shope / S. Conture

SAMPLE ID	WATER LEVEL	# BAILS	PH	CONDUCTIVITY	TIME	NOTES
SW-1	—	—	5.03	123	8:15	20°C
SW-2	—	—	5.10	181	8:35	19.4°C
SW-3	—	—	5.06	260	9:00	19.6°C
SW-4	—	—	6.2	227	9:25	19.8°C
SW-5	—	—	5.01	210	9:30	19.8°C
SW-6	—	—	5.02	276	9:35	19.3°C
SW-7	—	—	5.73	127	11:10	21.1°C
SW-8	—	—	5.10	211	9:20	19.2°C
SW-9	—	—	5.08	202	8:40	19.5°C

SAMPLING RECORD

EXETER ENVIRONMENTAL ASSOCIATES, INC.

DATE: 8/14/14

PROJECT: Hampton Gun Club

SAMPLERS: J. Shope / S. Couture

SAMPLE ID	WATER LEVEL	# BAILS	pH	CONDUCTIVITY	TIME	NOTES
PR-SW-1	–	–	4.56	338	8:55	19.6 C
PR-SW-2	–	–	4.55	333	8:45	19.3°C
PR-SW-3	–	–	4.77	203	9:10	19.4°C
TR-SW-1	–	–	4.72	304	8:50	19.5°C

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JOB Hampton Gun Club 1/2
SHEET NO. ____ OF ____
CALCULATED BY JMS DATE 10-3-14
CHECKED BY ____ DATE ____
SCALE ____

Soil Sampling in Pistol / Rifle Range

- J. Shope EEA
- S Couture EEA
- J. Gagne EAI Jeffg@EAIlabs.com

No Water in streams except main channel thru trap range
Partly Sunny, 50's

Soil Sample	Depth	Amt Shot / 4oz Jar	Sample Time
S-13A	0-6"	0	10:37 JG/JMS
S-13B	6-12"	0	10:52 JG/JMS
S-14A	0-6"	0	11:10 JG JMS
S-14B	6-12"	0	11:16 JG/JMS
S-15A	0-6"	0	11:32 JG/JMS
S-15B	6-12"	0	11:41 JG/JMS
S-16A	0-6"	0	11:30 SC/JMS
S-16B	6-12"	0	11:35 SC/JMS
S-17A	0-6"	0	11:45 SC/JMS
S-17B	6-12"	0	11:50 SC/JMS
S-18A	0-6"	0	12:10 SC/JMS
S-18B	6-12"	0	12:15 SC/JMS
S-19A	0-6"	0	12:00 JG/JMS
S-19B	6-12"	0	12:03 JG/JMS
S-20A	0-6"	0	1225 SC/JMS
S-20B	6-12"	0	1230 SC/JMS
S-21A	0-6"	0	1220 JG/JMS
S-21B	6-12"	0	1225 JG/JMS

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JOB Hampton Gun Club 2/2
SHEET NO. _____ OF _____
CALCULATED BY JMS DATE 10-3-14
CHECKED BY _____ DATE _____
SCALE _____

Soil Sample	Depth	Amt Shot / Bot Jar		Sample Time	
S-22A	0-6"	0		1241	JG/JMS
S-22B	6-12"	0		1245	JG/JMS
S-23A	0-6"	0		1240	SC/JMS
S-23B	6-12"	0		1245	SC/JMS
S-24A	0-6"	0			
S-24B	6-12"	0		1328	JG/JMS
				1335	JG/JMS
S-25A	0-6"	0		1330	SC/JMS
S-25B	6-12"	0	Shot gun Shells @ 6" in excavation	1335	SC/JMS
S-26A	0-6"	4 pigeon fragments	Shells on ground surface	1345	JG/JMS
S-26B	6-12"	0	Shotgun	1350	JG/JMS
S-27A	0-6"	0		1345	SC/JMS
S-27B	6-12"	0		1350	SC/JMS
S-28A	0-6"	0		1400	SC/JMS
S-28B	6-12"	0	Glass in bottom of excavation	1405	SC/JMS

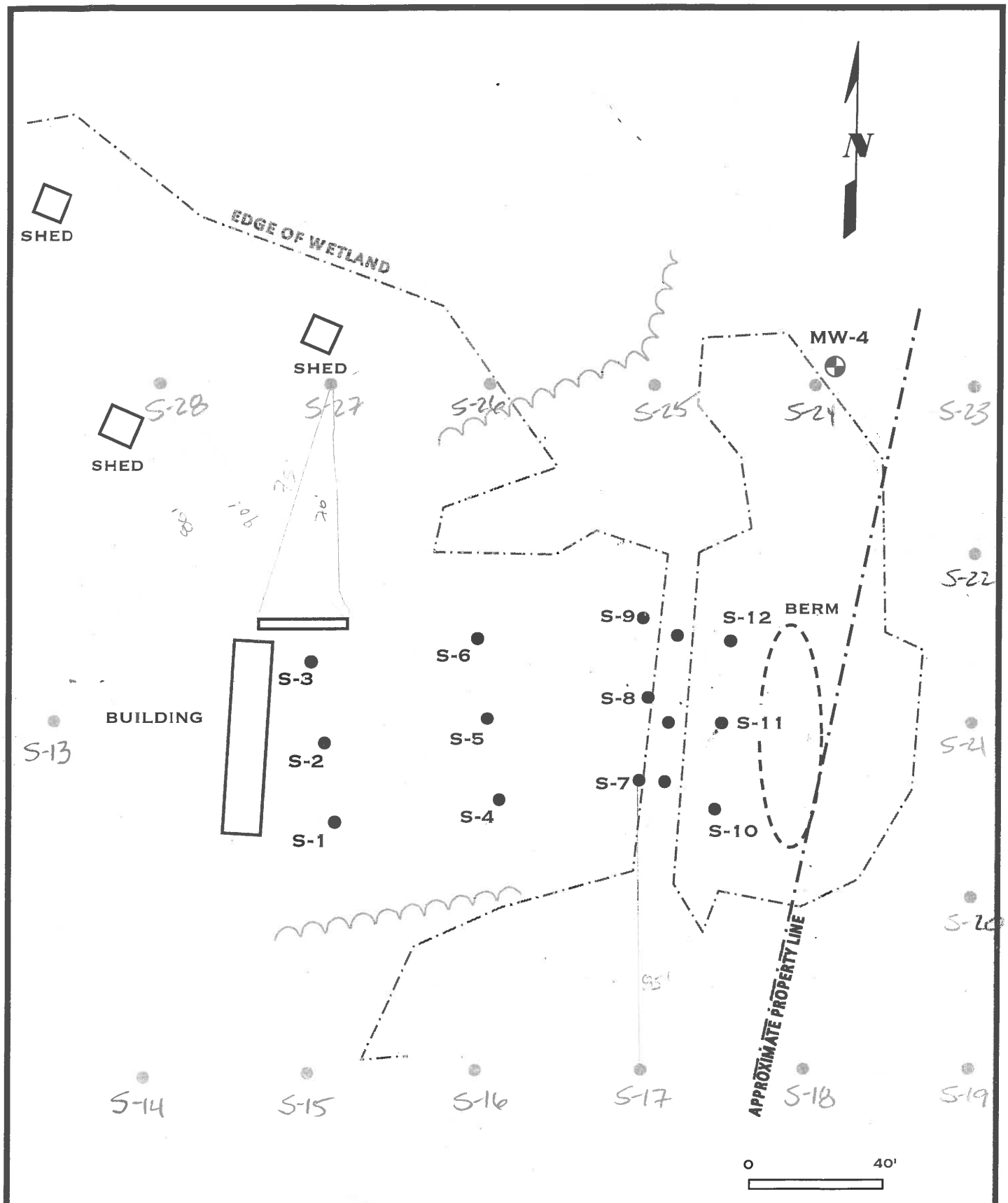

Figure 3. Field Sketch, Hampton Rod & Gun Club
North Hampton, New Hampshire

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JOB Hampton Gun Club
SHEET NO. _____ OF _____
CALCULATED BY GMS DATE 12/30/14
CHECKED BY _____ DATE _____
SCALE _____

Site Visit

1) Site visit w/ Sam to locate soil sampling locations in trap range & set up interim Grid Samples.

2) Locate / flag additional soil sample locations in pistol / riffle range and collect soil samples from 0-6" & 6-12"

3) Prep samples back in office for lab.

	Time	Notes
S-29A (0-6")	1430	No Shot or bullets
S-29B (6-12")	1435	No Shot or bullets
S-30A (0-6")	1445	No Shot or bullets (2 shot gun shells on ground surface near excavation)
S-30B (6-12")	1450	No Shot or bullets

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JOB Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JMS/SC DATE 2-7-15

CHECKED BY _____ DATE _____

SCALE _____

Soil Sampling Log - Trap Range

	Time	Description	Bullets, Shot Targets
TRS-1A (0-6")	1150	Black fibrous organic material with some f-m sand, little silt	None
TRS-1B (6-12")	1150	olive tan f silty sand	None
TRS-1C (24")		Olive clay, trace C. sand	None
TRS-2A (0-6")	1240	Dk br to brown, f-c sand and f-m gravel, little silt (Fill)	1 Shell
TRS-2B (6-12")	12:40	Same as above	None
TRS-2C (24")	1240	dk br f-c sand, tr. silt (Fill)	None
TRS-3A (0-6")	1300	Dk br, fibrous organic mat.	1 Target fragment at 6"
TRS-3B (6-12")	1300	Gray, f-c sand and gravel, tr. silt	None
TRS-3C (24")	1300	Gray f sand, some silt little clay	None
TRS-5A (0-6")	1325	Dk br, fibrous organic mat.	17 Target fragments at 6"
5B (6-12")	1325	mottled Gray & dk silty clay and clayey silt	None
5C (24")	1325	Gray and tan f sand, some silt and clay	None

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JOB Gun Club (2)
SHEET NO. 2 OF 5
CALCULATED BY JWS/SC DATE 2-7-15
CHECKED BY _____ DATE _____
SCALE _____

	Time	Description	Bullets, Shot-Targets
TRS-6A (0-6")	1520	DK br, silty topsoil	50% target fragments
TRS-6B (6-12")	1520	Olive f silty sand Δ to clay	None
TRS-6C (24")	1520	Gray Clay	None
TRS-7A (0-6")	1545	DK br & Gray f-m Sand and Silt, trace organics	Small Target fragments top 1"
TRS-7B (6-12")	1545	Olive f silty sand, little clay	none
TRS-7C (24")	1545	Olive gray, clay	None
TRS-9A (0-6")	1600	2" Black fibrous organic matl Δ to Olive silty clay	None
TRS-9B (6-12")	1600	Olive f silty sand, little clay	None
TRS-9C (24")	1600	Olive gray clay, some silt	None
TRS-10A (0-6")	1625	1" Black fibrous organic matl Δ Gray Clayey silt	6 Target fragments top 1.5"
TRS-10B (6-12")	1625	Olive silty clay with tr. m Sand	None
TRS-10C (24")	1625	Gray, clay with little f. Sand	None
TRS-11A (0-6")	1650	1.5" Black fibrous organic matl Δ Olive fine silty Sand, some clay	2 Target fragments top 1.5"
TRS-11B (6-12")	1650	Olive fine silty sand, some clay	none
TRS-11C (24")	1650	Olive silty clay, tr f. Sand	None

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JOB Gun Club (3)
SHEET NO. 3 OF 5
CALCULATED BY JMS/SC DATE 2-8-15
CHECKED BY _____ DATE _____
SCALE _____

	Time	Description	Bullets, Shot Targets
TRS-12A (0-6")	1035	3" Black fibrous organic matl Δ brown fine sand, little silt	None
TRS-12B (6-12")	10:35	Olive brown, fin sand, little silt tr. clay	None
TRS-12C (24")	1035	Grey silty clay	None
TRS-13A (0-6")	1045	2.5" Black fibrous organic matl Δ Olive silty clay	None
TRS-13B (6-12")	1045	Olive Silty Clay	None
TRS-13C (24")	1045	mottled olive & orange silty clay trace coarse sand	None
TRS-14A (0-6")	1100	Black topsoil, trace fibrous organic matl Δ DK br fine sand, tr silt	None
TRS-14B (6-12")	1100	DK br f sand, tr silt Δ mottled olive & orange fine silty sand and clay	None
TRS-14C (21")	1100	mottled olive and orange fine silty sand and clay	None
TRS-15A (0-6")	1130	1" Black, fibrous organic matl Δ Olive silty clay Δ olive brown fine sand	None
TRS-15B (6-12")	1130	Olive brown fine sand	None
TRS-15C (24")	1130	Gray clay with lenses of orange fine silty sand	None

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JOB Gun Club (4)
SHEET NO. 4 OF 5
CALCULATED BY JMS/SC DATE 2-8-15
CHECKED BY DATE
SCALE

	TIME	Description	Bullets, Shot Targets
TRS-16A (0-6")	1200	1.5" Black fibrous organic mat'l Δ Olive gray silty clay Δ olive gray fine silty sand	None
TRS-16B (6-12")	1200	olive gray clayey f silty sand	None
TRS-16C (24")	1200	gray clay with lenses of orange fine silty sand	None
TRS-17A (0-6")	1220	3" Black fibrous organic mat'l Δ gray fine sand, tr silt	20+ Target fragments Top 2"
TRS-17B (6-12")	1220	mottled gray clay with orange f-m sand	None
TRS-17C (24")	1220	Gray silty clay	None
TRS-18A (0-6")	1240	3" Black fibrous organic mat'l Δ Olive brown fine silty sand and clay	1 Shot gun shell <10 Target fragments top 1.5"
TRS-18B (6-12")	1240	Olive br f silty sand, little clay Δ 2" dk br-black peat	None
TRS-18C (24")	1240	Olive gray, silty clay w/ little mica	None
TRS-19A (0-6")	1300	4" Black fibrous organic mat'l Δ dk br silty clay, little f. sand	>20 Target fragments Top 4"
TRS-19B (6-12")	1300	Dk brown f-c Sand and gravel little silt	None
TRS-19C (24")	1300	Gray, clay and f-c Sand and Gravel, little silt	None

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JOB Gun Club (5)
SHEET NO. 5 OF 5
CALCULATED BY JMS/SC DATE 2-8-15
CHECKED BY _____ DATE _____
SCALE _____

	Time	Description	Bullets, shot Targets
TRS-20A (0-6")	1325	Black, fibrous peat	50% Target Fragments Top 3"
TRS-20B (6-12")	1325	Dk gray, silty clay	None
TRS-20C (24")	1325	Olive gray clay w/ lenses of orange f-c sand	None

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JOB Hampton Gun Club
SHEET NO. 1 OF 2
CALCULATED BY JMS/SC DATE 4-16-15
CHECKED BY ______ DATE ______

Arrived @ 910

SGW-1 - Carb box full of H_2O, bailed but water returned to original elevation

Can't get WL @ this location

SGW-2 - WL = 0.17'
purged 5 gal @ low flow peristaltic pump rate
then collected/filtered sample for dissolved Pb analysis Time = 11:50

SGW-3 - WL = 0.36'

SGW-4 - WL = 0.48'

SW-2 - WL = 2.64'

PRSW-3 - WL = 4.47'

MW-1 - WL = 7.17'

MW-2 - WL = 2.09'

MW-3 - WL = 1.37'

MW-4 - WL = 1.32'

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JOB Hapton Gun Club
SHEET NO. 2 OF 2
CALCULATED BY JMS/SC DATE 4-16-15
CHECKED BY _____ DATE _____
SCALE _____

	Elevation PVC	Reading	H.I.
SGW-3	91.94 + 6.34	6.34	98.28
PRSW-3	95.88	98.28 − 2.40	
SW-2	94.10	98.28 − 4.18	
SGW-1	93.70	98.28 − 4.58	

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JOB Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JNS/SC DATE 5/26/15

CHECKED BY _____ DATE _____

SCALE _____

GPS

- Installed Staff Gauges
- Surveyed SW-1
- Photos
- GPS

001 = SW1
002 = SW-2
003 = PRSW-3
004 = TRSW-1 ✓
005 = PRSW-1
006 = S-20
007 = S-21
008 = S-22
009 = S-23
010 = S-30
011 = SW-3
012 = S-19
013 = S-31 → 11[15]
014 = S-32 → 11[30] } Total Lead / pH
015 = S-33 → 11[45] } 0-6" / 6-12"
016 = S-24
017 = MW-4
018 = S-29
019 = S-25
020 = S-26
021 = S-27
022 = S-28
023 = S-13
024 = S-14
025 = S-15
026 = S-16
027 = S-17
028 = S-18
029 = S-1
030 = S-2
031 = S-3
032 = SGW-2
033 = SGW-1

No Shot or bullets observed in the three samples

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JOB Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JMS / SC DATE 5-26-15

CHECKED BY _____ DATE _____

SCALE _____

Location	Elevation	Reading	H.I.
SGW-3	91.94	6.14	98.08
			96.11
SW-2	94.11	98.08	
		3.97	
		94.11	
SW-1	93.92	98.08	
		4.16	
		93.92	
PRSW-3	95.88		

* See survey data 4/16/15

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JOB Hampton G.C

SHEET NO. _____ OF _____

CALCULATED BY Sam C. DATE 6/5/15

CHECKED BY _____ DATE _____

SCALE _____

GunClub Drone Videos:

4/17 - No good vid

Purpose: Took WL's @ the 8 mw's & to surface water locals...

6/5/15

Hampton GC - On Site 9:45 - 11:00
- 11:30 - 12:10

Water Levels

mw-1 - 7.25'	SG-1 - 0.78'	SW-1 - 2.35'
mw-2 - 2.37'	SG-2 - 0.70	SW-2 - 2.75'
mw-3 - 1.55'	SG-3 - 0.50'	PR-SW-3 - 4.55'
mw-4 - 1.47'	SG-4 - 0.60'	SW-7 = 4.13'

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JOB Hampton Gun Club

SHEET NO. _____ OF _____

CALCULATED BY JMS DATE 6-5-15

CHECKED BY _____ DATE _____

SCALE _____

Elevation Survey Summary

(JMS/SC)

PESW-3 = 95.88

SW-2 = 94.10

SW-1 = 93.92

(JMS/BS)

SGW-1 = 93.65
SGW-2 = 93.51
SGW-3 = 91.94
SGW-4 = 91.98

MW-1 = 100.99
MW-2 = 95.45
MW-3 = 93.67
MW-4 = 93.23

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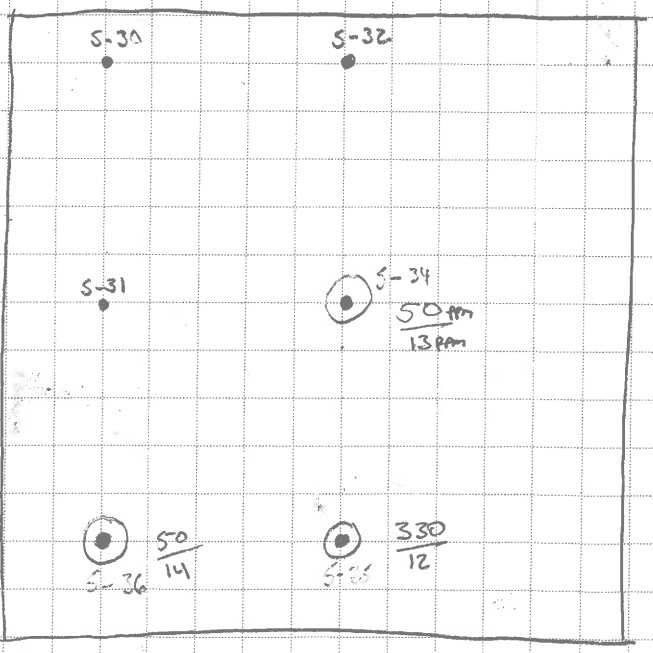
JOB Hampton G.C.
SHEET NO. _____ OF _____
CALCULATED BY Sam C DATE 9/11/15
CHECKED BY _____ DATE _____
SCALE _____

On Site - 9/11/15
Hampton G.C. 9-11

N ↑

Start w/ S-34



10th Staff guage in little tributary North of the main Brooks

3- Soil locals
0-6" & 6-12"

S-34 - 9:50 - Top soil / loam (0-6") - light gray very fine silty sand, little clay (6-12")
S-35 - 10:10 - Topsoil / loam (0-6") - "
S-36 - 10:30 - Topsoil / loam (0-6") - "

No Targets, Shot or bullets observed in the 3 soil samples

PRODUCT 204-1 (Single Sheets) 205-1 (Padded)

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JOB Gun Club
SHEET NO. _____ OF _____
CALCULATED BY SC/JMS DATE 11-19-15
CHECKED BY _____ DATE _____
SCALE _____

Soil Sampling Log - Trap Range

	Time	Description	Targets Buildup/Shot
TRS-21A (0-6")	1010	dk br-black, v fine silty sand	None
TRS-22A (0-6")	1000	li gray, v fine silty sand	None
TRS-23A (0-6")	950	br, v fine silty sand	None
TRS-24A (0-6")	945	li gray, v fine silty sand	None
TRS-25A (0-6")	935	gray, v fine silty sand	None
TRS-26A (0-6")	925	dk br, v fine silty sand	None
TRS-27A (0-6")	910	dk br-black, v fine silty sand	None
TRS-28A (0-6")	850	gray v fine silty sand	None
TRS-29A (0-6")	1210	dk gray, v fine silty sand	None
TRS-30A (0-6")	1155	gray, v fine silty sand	None
TRS-31A (0-6")	1140	br, v fine silty sand	None
TRS-32A (0-6")	1110	gray, v fine silty sand	None
TRS-33A (0-6")	1030	gray, v fine silty sand	None
TRS-34A (0-6")	1050	dk br-black v. fine silty sand and fibrous organic matl	None

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JOB HGC
SHEET NO. 1 OF 1
CALCULATED BY _____ DATE _____
CHECKED BY Sam C DATE 3/7/16
SCALE _____

- Purpose: To sample soil across the Little River. (D=0-6")
  - Sunny, 40's

TRS-38 - 0-6" ✓ (16:00) - wet

TRS-39 - 0-6" ✓ (15:50) wet

TRS-40 - 0-6" ✓ (15:40) wet

TRS-41 - 0-6" ✓ (15:20) wet

TRS-42 - 0-6" ✓ (15:10) wet

TRS-43 - 0-6" ✓ (15:00) wet

- No shot or fragments in any samples.

- Accessed area by crossing the dam downriver from the site.

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JOB Hampton Gun Club

SHEET NO. _____ OF _____

CALCULATED BY SC DATE 3-24-16

CHECKED BY _____ DATE _____

SCALE _____

Trap range Soil sampling - 0-6" total(Pb) & pH

HGC - 3/24 - 10:15 - 12:45

TRS-46 - 0-6" 10:55

TRS-45 - 0-6" 11:05

TRS-44 - 0-6" 11:20

TRS-35 - 0-6" 11:50

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JOB Hampton Gun Club
SHEET NO. _____ OF _____
CALCULATED BY UMS DATE 9-28-16
CHECKED BY _____ DATE _____
SCALE _____

Sediment Sampling Log

Arrived On-site @ 8:30 a.m. Sam Conture arrived on-site @ 10:00
Left site @ 2:55 p.m.
Weather: overcast, 55 degrees
Rain Gauge = 0

* No metal fragments in any of the samples
* Photos taken @ each location

George C (Treasurer) on-site @ 1:00 - 1:45
member Lawrence Dar on-site @ 2:20

SAMPLE	TIME	DEPTH	TYPE	NOTES *
SED-3A	9:00	0-6"	Sediment/Grab	Slow flow in channel 12 flecks of orange pigeon paint - Hand scoop - shallow H_2O
SED-3B	Duplicate of SED-3A			
SED-1D	9:29	0-6"	Sediment/Grab	Slow flow in channel - hand scoop (shallow H_2O)
SED-5	10:16	0-6"	Sediment/Grab	No flow, rotten egg odor - pole w/ spoon
SED-11	11:09	0-6"	Sediment/Grab	No H_2O - Hand scoop 1 plastic shell @ surface - rotten egg odor
SED-4	1143	0-6"	Sediment/Grab	very dry w/ roots no water - hand scoop.
SED-1A	1347	0-6"	Sediment/Grab	Dry - no H_2O hand scoop
SED-6	1428	0-6"	Sediment/Grab	Dry - No H_2O Hand scoop

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JOB HGC
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY Sam C DATE 9/28/16
SCALE _____

On Site @ 10:00 - Left @ 2:50/3

Sed-7 taken @ SW-7 location (pic) @ ~~10:45~~ 9:38
- water = slow moving, minor precip during sampling
- rod extended >10' from river bank
- No shot frags

Sed-8 - taken @ ~~11:00~~ 10:55 - deviation from plan!
- New Beaver activity along bank suspected to have changed surface water flow down-gradient from site
- ~10-15' of H_2O between bank & reeds to get to the location of SW-8 → had to move South appx 80'-100' in channel
- No shot frags

(12:38)
Sed-13 - taken @ 12:40 from small bridge that spans channel
No shot frags
- fine silty sand & blue clay/sand. Could not go west of the little island I was on due to heavy standing water -
- water shoes did not work
- actual location west of proposed location
- almost no flow

Sed-12 - taken @ 13:00 from proposed location
- almost no flow in water
- No shot frags

Sed-9 - Area being flooded by beaver dam
(14:07) - sample mostly clay (blue/gray)
- No shot frags

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JOB HGC
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY Sam C DATE 9/30/16
SCALE _____

Dave Correa on Site - 12:15

HGC - Sediment sampling - Day 2 (Across Cittle River)
↳ accessed by HGC
Analysis = Lead & pH planks bridges that span it...
(recently discovered)

Arrived on Site @ 10am / Left site @ 13:00

Sed - 13 - D = 0-6" (10:55) - Taken from channel, very low flow in channel. fine grained sandy silt, blueish gray / brown trace clay. No shot

Sed. 14 D = 0-6" (11:20) - Taken from channel, dense veg in and round channel slow moving H_2O No shot

Sed. 15 D = 0-6" (11:46) - Taken near channel, dense veg, standing water, no flow, brown fine grained silty sand, trace clay, rock frags, No shot.

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JOB Hampton Gun Club
SHEET NO. 1 OF 2
CALCULATED BY JMS/SC DATE 11-8-16
CHECKED BY _____ DATE _____
SCALE _____

Surface Water Sampling - DRY

Arrived @ 915 AM
Weather - sunny - 44° @ 915
Rain Gauge = 0

pH meter calibrated
SC on-site @ 10:30

11:40 Member Mike arrived to make repairs

Left jobsite @ 2:30pm

Location	Time	pH	Photo	Notes
SW-3	9:27	5.61	✓	low flow in channel
SW-3A - Duplicate of SW-3				
SW-10	9:34	6.43	✓	low flow in channel
FB-1	10:04	6.33		dissolved Pb
TRSW-1	1012	3.04	✓	low flow in channel
PRSW-1	1039	4.31	✓	no visible flow
(SC) SW-7	10:20	6.10	✓	no visible flow
PR-SW-3	10:59	5.86	✓✓	no H_2O @ stake, moved upstream 8' ft, collected from standing H_2O area
(SC) SW-9	11:15	6.27	✓	WL = 4.93' (dug hole next to stake) → Some flow in channel
SW-2	11:28	6.31	✓✓	Very low H_2O level used syringe to collect sample WL = 2.89'
SW-1	11??	6.16	✓✓✓	No visible flow WL = 2.29'

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JOB Gun Club

SHEET NO. 2 OF 2

CALCULATED BY _____ DATE 11-8-16

CHECKED BY _____ DATE _____

SCALE _____

Location	Time	pH	Photo	Notes
(SC) SW-6	1155	6.21	✓	No visible flow in channel
(SC) SW-8	1330	6.15	✓	Flow in channel beaver dam b/w it + at SW-8 stake

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JOB Hampton Gun Club
SHEET NO. 1 OF 1
CALCULATED BY JMS DATE 12-1-16
CHECKED BY _____ DATE _____
SCALE _____

Surface Water Sampling - Wet Weather

Arrived @ 900
Rain Gauge = 44mm
Temp 47°
Partly Cloudy

SC on-site @ 910

SC/JMS Left Site @ 1130

3 members in club house

Calibrated pH meter

Location	Time	pH	Photo	Notes
SW-3	9:22	6.62	✓✓	Flow / Flooded
SW-3A	9:22			Duplicate of SW-3
FB-1	9:45	6.82		
SW-10	9:57	6.52	✓	Flow/Flooded
PR-SW-1	10:15	5.77	✓	Visible Flow
TR-SW-1	10:16	5.59	✓	Visible Flow
SW-8	9:40	6.90	✓	High flow.
SW-9	10:00	7.09	✓	High flow
PR-SW-3	1035	7.03	✓	WL 4.55' - little flow
SW-2	1041	6.41	✓	WL - 2.58' - little visible flow
SW-1	1052	5.69	✓	WL - 2.16' No Flow
SW-6	10:55	7.00	✓	good flow
SW-7	11:30	6.56	✓	good flow

APPENDIX III

Soil Boring Logs and Well Construction Details

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BORING: MW-1

Project:	Hampton Rod and Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	March 7, 2014	Geologist:	Julie Shope, Brian Campelia

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1	S-1 (0-2')	3,2,2,2	N/A		No Recovery	
2						
3					top of bentonite at 3'	
4					top of sand at 4'	
5					top of screen at 5'	
6	S-2 (5-7')	4-8-8-7 R=20"	Brown, fine to coarse sand and gravel, some silt (TILL)			
7						
8						
9						
10						
11	S-3 (10-12')	12-18-22-7 R=8"	Brown/orange-brown fine to coarse sand and fine gravel, some silt, rock fragments (TILL)			
12						
13						
14						
15					bottom of screen at 15'	
16	S-4 (15-17')	23-32-25-22 R=18"	brown fine to coarse sand, gravel, and rock fragments, little silt changing to fine to coarse sand and gravel, trace silt (TILL)			
17					bottom of boring at 17'	
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted hollow-stem auger drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with protective standpipe			
24						
25						
26						

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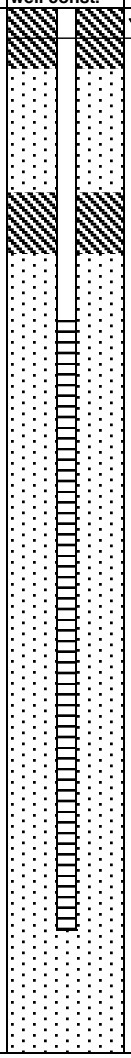
BORING: MW-2

Project:	Hampton Rod and Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	March 7, 2014	Geologist:	Julie Shope, Brian Campelia

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1	S-1 (0-2')	3-6-7-7 R=12"	3 inches of fibrous organic material changing to dark brown fine sand and silt, fine to coarse sand, trace rock fragments		▼	
2						
3					top of bentonite at 3'	
4					top of sand at 4'	
5					top of screen at 5'	
6	S-2 (5-7')	2-5-6-6 R=12"	Dark gray fine to coarse sand and rock fragments, little silt (MARINE?)			
7						
8						
9						
10						
11	S-3 (10-12')	5-4-4-3 R=6"	Dark gray fine to coarse sand and rock fragments, trace silt			
12						
13						
14						
15					bottom of screen at 15'	
16	S-4 (15-17')	5-7-7-7 R=2"	Fine to coarse sand, trace silt, dark gray			
17					bottom of boring at 17'	
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted hollow-stem auger drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with protective standpipe			
24						
25						
26						

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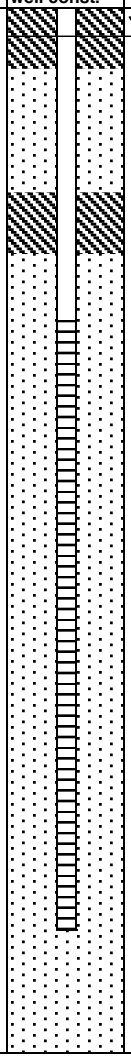
BORING: MW-3

Project:	Hampton Rod and Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	March 7, 2014	Geologist:	Julie Shope, Brian Campelia

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1	S-1 (0-2')	2-2-3-3 R=18"	1 inch of organic material followed by 3 inches of fine silt (gray), then fine sands and silt, with lenses of clay (MARINE)			
2						
3					top of bentonite at 3'	
4					top of sand at 4'	
5					top of screen at 5'	
6	S-2 (5-7')	2-2-2-2 R=10"	Gray, fine to medium sand with little sitl, changing to clay (MARINE)			
7						
8						
9						
10						
11	S-3 (10-12')	3-3-3-4 R=24"	Gray clay with lenses of fine sand and silt (MARINE)			
12						
13						
14						
15					bottom of screen at 15'	
16	S-4 (15-17')	1-1-0-0 R=24"	Gray clay changing to silt with some clay (MARINE)			
17					bottom of boring at 17'	
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted hollow-stem auger drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with protective standpipe			
24						
25						
26						

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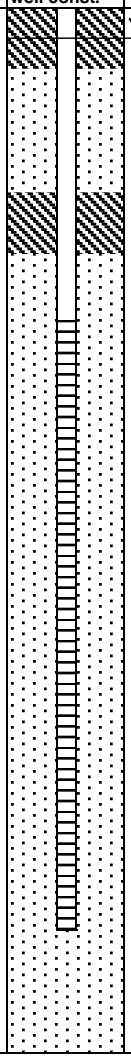
BORING: MW-4

Project:	Hampton Rod and Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	March 7, 2014	Geologist:	Julie Shope, Brian Campelia

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1	S-1 (0-2')	2-3-4-3 R=24"	Dark brown silt changing to gray and brown fine sand with trace silt, changing to gray clay (MARINE)			
2						
3					top of bentonite at 3'	
4					top of sand at 4'	
5					top of screen at 5'	
6	S-2 (5-7')	2-4-4-3 R=20"	Dark gray fine to coarse sand, some clay, little silt changing to fine sand with some silt, changing to gray clay (MARINE)			
7						
8						
9						
10						
11	S-3 (10-12')	2-1-2-1 R=24"	Dark gray silty clay (MARINE)			
12						
13						
14						
15					bottom of screen at 15'	
16	S-4 (15-17')	8-5-7-18 R=8"	Dark gray silty clay, rock fragments (TILL ~16')			
17					bottom of boring at 17'	
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted hollow-stem auger drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with protective standpipe			
24						
25						
26						

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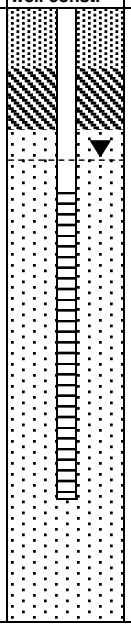
BORING: SGW-1

Project:	Hampton Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	July 14, 2014	Engineer:	Julie Shope

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1					native fill	
2					top of bentonite at 1'	
3	S-1 2-5'	R=3'	gray, fine SAND, trace silt, change to mottled gray and orange, silty clay, change to gray silty clay, moist		top of sand at 2' water at 2.5' upon completion top of screen at 3'	
4						
5						
6	S-2 5-10'	R=5'	mottled gray and orange CLAY and gray clay with lenses of fine sand, trace silt, moist			
7						
8						
9						
10					bottom of boring at 10'	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted geoprobe drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with flush mounted road box			
24						
25						
26						

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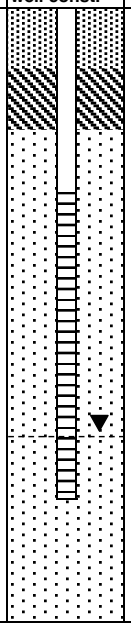
BORING: SGW-2

Project:	Hampton Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	July 14, 2014	Engineer:	Julie Shope

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1					native fill	
2					top of bentonite at 1'	
3	S-1 2-5'	R=3'	light brown, fine SAND change to mottled orange and gray, silty clay, moist		top of sand at 2'	
4					top of screen at 3'	
5						
6	S-2 5-10'	R=5'	mottled orange and gray, silty CLAY change to gray fine sand and silt change to gray, clay change to brown, fine sand, trace silt, moist			
7					water at 7' upon completion	
8						
9						
10					bottom of boring at 10'	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted geoprobe drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with flush mounted road box			
24						
25						
26						

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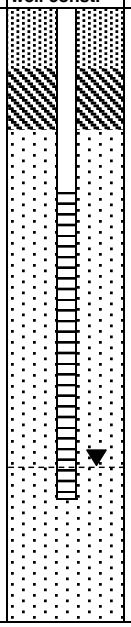
BORING: SGW-3

Project:	Hampton Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	July 14, 2014	Engineer:	Julie Shope

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1					native fill	
2					top of bentonite at 1'	
3	S-1 2-5'	R=3'	brown, fine SAND, trace silt, change to gray, fine silty sand change to gray, clay, moist		top of sand at 2'	
4					top of screen at 3'	
5						
6	S-2 5-10'	R=5'	gray, CLAY change to gray, fine silty sand in bottom 6" of sleeve, moist			
7						
8					water at 7.5' upon completion	
9						
10					bottom of boirng at 10'	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted geoprobe drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with flush mounted road box			
24						
25						
26						

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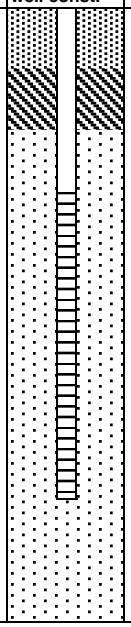
BORING: SGW-4

Project:	Hampton Gun Club	Sheet #:	1 of 1
Location:	see site plan	Driller:	Technical Drilling Services
Date:	July 14, 2014	Engineer:	Julie Shope

depth	sample number	blow counts	sample descriptions and classifications	well const.	remarks	PID (ppm)
1					native fill	
2					top of bentonite at 1'	
3	S-1 2-5'	R=3'	brown, fine SAND, trace silt, change to mottled orange and gray, silty clay change to brown, fine silty sand, trace coarse sand and fine gravel, moist		top of sand at 2'	
4					top of screen at 3'	
5						
6	S-2 5-10'	R=5'	gray, CLAY, moist		well dry upon completion	
7						
8						
9						
10					bottom of boring at 10'	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20			NOTES:			
21			(1) boring advanced with track-mounted geoprobe drill rig			
22			(2) well constructed of 2" PVC			
23			(3) well completed with flush mounted road box			
24						
25						
26						