June 16, 2016

Mr. Michael Wood
Town Manager
Town of Burrillville
100 Main Street
Harrisville, RI 02830

Re: Clear River Energy Center MTBE Issue Review

Dear Mr. Wood:

At your request, CDR Maguire and Sovereign Consulting Inc. (Sovereign) has provided a review of the issues related to the use of the Pascoag Utility District Water and disposal of waste process water at the Burrillville Sewer Treatment Facility.

SUMMARY

Invenergy has submitted an application to the Energy Facility Siting Board (EFSB) for construction of the Clear River Energy Center. In their application they are proposing to utilize water from the Pascoag Utility District (PUD) Well #3A for the proposed power plants process water, potable water will be provided to the plant from a potable water source. Well 3A was closed in 2001 due to petroleum contamination including methyl tert-butyl ether (MTBE) from an off-site gasoline storage tank. The plant will require approximately 104,000 gallons per day (gpd) (72 gpm) firing natural gas under normal full-load conditions, in the summer the plant will require approximately 225,000 gpd (156 gpm). During periods when the plant is firing oil, expected for periods of time during the winter months, the daily water demand will increase to 925,000 gpd (642 gpm). Following treatment with granular activated carbon (GAC) at Well #3A, and use as process water at the CREC facility, Invenergy is proposing to discharge the waste process water as well as sanitary flows to the Burrillville Sewer Treatment Facility.

In their EFSB application Invenergy is proposing to treat the well water through an activated carbon treatment system. They are proposing to treat the MTBE levels to a maximum of 55 µg/l, one µg/l is equal to one part per billion (ppb). The water will then be piped to the power plant through a dedicated water line to a raw water tank on the site. The raw water will be further treated at the power plant site through a reverse osmosis and electro-deionization process to produce high purity water required by the projects generation steam cycle process.

Invenergy is proposing to discharge wastewater to the Burrillville Sewer Treatment facility. Wastewater will include the wastewater generated from the high purity treatment process; blowdown from the steam generators and evaporative coolers; housecleaning; and sanitary wastewater from the staff. Wastewater will be pumped from the site to a Burrillville sewer manhole on Wallum Lake Road. Typical daily flows will vary between 69,000 gpd to 89,000 gpd with peak flows of 200,000 gpd when the plant is fired with oil.

Invenergy has submitted additional information on the use of the PUD well water in response to the Town's Data Requests 8-1 and 8-2. In response to Data Request 8-1 Invenergy states that the well water

will be treated through a two stage granular activated carbon (GAC) system, the first stage will treat the well water to 40 µg/l and the second stage will be capable of treating the water to a non-detect level (i.e. - <0.5 µg/l as achieved by USEPA Method 524). In response to 8-2 Invenergy explains that they have calculated the 200 µg/l maximum MTBE in the sewer discharge based on the well water being treated to a maximum MTBE level of 40 µg/l. At the power plant the process water will be further treated to provide high purity process water, during this treatment the MTBE will become more concentrated.

CDR Maguire and Sovereign have reviewed the impacts of Invenergy's proposal to use the MTBE contaminated water from the PUD Well 3A. The review focused on the issues related to treatment of the well water and impacts of discharging wastewater with MTBE contamination to the Burrillville Sewer Treatment Facility. The RIDEM is evaluating the impacts to the aquifer. The Burrillville Sewer Commission is evaluating impacts of the Invenergy discharge with the Sewer Treatment Facilities capacity.

SUMMARY OF RECOMMENDATIONS

CDR Maguire and Sovereign recommend that Invenergy design the treatment system for the well water to remove the MTBE to a non-detect level as Invenergy has stated in their response to Data Request 8-1. We recommend that the maximum allowable limit be reduced to less than 0.5 µg/l (ppb) of MTBE as well as other related petroleum constituents.

Since data on the contaminants in Well #3A vary due to flow rate from the pump, we recommend that Invenergy perform a pump test and sampling and testing from Well #3A as well as the remedial wells and the Pascoag River. In their response to Data Request 11-1 that was received on June 13, Invenergy stated that they intend to perform pump testing on Well 3A. Invenergy included a draft "Request for Well Investigation for the Reactivation of PUD Well 3A". We recommend that Sovereign review the pump test protocol as it becomes available.

Re-activation of Well #3A could result in the potential for vapor from contaminated groundwater to enter buildings. We recommend that Invenergy perform a vapor intrusion assessment of commercial and residential properties located in the vicinity of the site. The assessment should include baseline sampling and testing prior to activating the well with additional sampling and testing during an extended pump test and during normal operation of the well. This will establish baseline vapor intrusion data and monitor impacts of the well operation on vapor intrusion. In their response to Data Request 11-2 Invenergy states that they do not intend to perform any vapor intrusion assessments on the properties in the vicinity of Well 3A. Contingency arrangements should be presented for response actions from CREC in the event that indoor air impact to properties with buildings occurs from reactivation of Well #3A.

We recommend that Invenergy confirm that there is no hydraulic connection between the Pascoag and Harrisville Utility Districts.

We recommend that Invenergy confirm that the reactivation of well #3A for use as process water is not a concern for the 7Q10 stream flow data for the Clear River.

Based on the capacity of Well #3A, and the potential concerns related to the 7Q10 stream flow data for the Clear River, CREC should consider discharging a portion or the entirety of the spent process water into the Clear River, to recharge the river. This would likely require additional treatment and cooling at the power plant as well as piping to the Clear River or a tributary of the Clear River.

The potential building size and process and instrumentation diagram for the water treatment at the Wellhead #3A should be estimated for planning purposes in the design process.

As a contingency we recommend that Invenergy identify alternative sources of process water that can supplement the water supplied by the PUD. This may become advantageous in the event that Well #3A has mechanical problems following reactivation.

While the 200 µg/l level of MTBE in the proposed sewer discharge does not violate any current regulations, we recommend that the maximum allowable levels be set at 20 to 40 µg/l, this will reduce the chance of the discharge having a detectable odor. If the Well 3A water is treated to non-detect levels the actual levels in the sewer discharge will be well below these recommended levels. We also recommend that Invenergy have an Industrial User Permit with the Sewer Commission, this will set limits for contaminants in the discharge and protect the Sewer Commission in the event that future regulations or treatment changes require more stringent controls. RIDEM is currently reviewing the facility plan and will determine what level of contaminants are acceptable.

In their response to Data Request 10-1 Invenergy explains that no MTBE will be released with the plant emissions, any MTBE that did reach the turbines would be destroyed by the in the high temperature combustion process.

WELL 3A TREATMENT EVALUATION

The Pascoag Utility District (PWS ID# RI 1592020), created in 2001 as a successor to the Pascoag Fire District provides water service to 1,111 metered connections with a user population of approximately 3,000, in the Village of Pascoag, within the Town of Burrillville, RI.

Water is presently provided to the system from one (1), drilled bedrock water supply well (PUD Well #5) and from a connection with the neighboring Harrisville Fire District. Well #5 contributes approximately 20% of the daily user demand, with the majority of the water supply provided from the Harrisville system. The water is stored in two (2) standpipes (water tanks), a 1.5 million gallon tank on Rock Avenue and a 265,000 gallon tank located on South Main Street (opposite Lapham Farm Road). The storage tanks are sized to meet both potable water and fire protection requirements for the District.

The PUD system originally imported water from the Harrisville Fire District, however following the installation of Well #1, in 1946, the District began providing water from its own source wells. This gravel-packed well was installed in the Silver Street well field, within the building that now serves the PUD at the Maintenance Barn, initially providing a capacity of 350 gpm (or 504,000 gallons per day – gpd). Well #1 continued in service until April 1972 when it was abandoned due to elevated levels of iron and manganese (0.4 mg/l) in the water creating aesthetic problems, and clogging of the gravel packing around the well screen that reduced the apparent well capacity.

Well #2 was installed in the Silver Street well field, approximately 600 feet SE of Well #1, in 1947, to augment the system capacity. This gravel-packed well, installed within a small pump house building, had an initial capacity of approximately 150 gpm (or 216,000 gpd), however it declined over time, ultimately being redeveloped in 1989 to a capacity of approximately 125 gpm. When this well was abandoned in 2001, due to VOC contamination, it had a capacity of approximately 70 gpm (or 100,800 gpd).

Well #3 was also installed into the Silver Street well field, approximately 650 feet SE of Well #1 and 220 feet SW of Well #2, in 1970. This gravel-packed well was installed within a pump house building, providing a capacity of approximately 440 gpm (or 633,600 gpd). The well capacity had declined to approximately 220 gpm at the time it was abandoned in 2001 due to VOC contamination.

Well #3A was installed in 1999, adjacent to Well #3 in the Pump House, in response to declining capacity of Wells #2 and #3. During test programs in 2000/2001, this well demonstrated a capacity of 600 gpm (or 864,000 gpd), however the well had to be abandoned in 2001 shortly after start-up, due to VOC contamination of the well field, from an off-site source.

Following the shut-down of the Silver Street well field due to VOC contamination in 2001, the PUD has imported water from the Harrisville fire District via a 10”Ø connection in Harrisville Road, initially depending upon this source to make up 100% of the PUD user demand. Well #5, a drilled bedrock well, was constructed in 2007 on the Sugarman Property, going on-line in early 2008. This well presently provides a capacity of approximately 42 gpm (or 60,000 gpd) to lessen reliance upon the Harrisville Fire

District. The table below was obtained from the Pascoag Utility District and presents a summary of the water supply wells installed by the PUD since 1946.

Table 1: Pascoag Utility District Water Supply Well Summary

Well ID	Well #1	Well #2	Well #3	Well #3A	Well #5
Date Installed	1946	1947	1970	1999	2007
Type of Well	Gravel Pack	Gravel Pack	Gravel Pack	Gravel Pack	Bedrock
Total Well Depth	48 ft.	43'-3"	56 ft.	64 ft.	665 ft.
Casing Diameter Ø	12" x 18"	10" x 18"	8"	16"	8"
Casing Length	34 ft.	33 ft.	53 ft.	56.3 ft.	20 ft.
Screen Length	15 ft.	10 ft.	5 ft.	7 ft.	NA
Screen Diameter	12"	10"	8"	14.5"	NA
Screen Slot Size (0.001")[1]	125	125	125	140	NA
Screen Install Depth – BGS	34 – 48 ft.	33.3–43.3 ft.	52-56 ft.	56.3-64 ft.	NA
Est. Capacity	350 gpm	150-70 gpm	440-220 gpm	600 gpm	75-42 gpm
Water Quality Issues	Fe, Mn	Fe, VOC	VOC	VOC	NA
Service Status	Off-Line	Off-Line	Off-Line	Off-Line	On-Line

Note: Screen slot size is measured in thousandths of an inch (125 = 0.125")

Based on information provided by Mr. Robert Ferrari, PE of Northeast Water Solutions, consultant for the Pascoag Utility District (PUD), there would be no impact to Harrisville Utility District water supply wells if no remediation of the petroleum contamination was conducted going forward as a result of the Invenergy project failing to proceed. Since there is no water production at Well #3A, the natural groundwater flow is the Pascoag River located west and northwest followed by discharge to the Clear River. It is the opinion of Mr. Ferrari that the current petroleum contamination levels are low in the aquifer and may not be present in the surface water of the Clear River. PUD also endorses that the reactivation of Well #3A has the potential or likelihood to greatly reduce the time needed to restore groundwater quality in the former wellfield, and eliminate threats to public and private wells in the area.

For presentation purposes, **Figure 1** presents the location of Pascoag Well #3A and the Harrisville Utility District production wells. **Figure 2** presents the location of the Interim Wellhead Protection Areas (IWPA's). Even though there is an apparent overlap between the IWPA's of Pascoag Well #3A and the Harrisville Eccleston production field, available information indicates that the Clear River represents an apparent boundary condition that prevents the hydraulic connection and potential contaminant transport between the two IWPA's. This condition should be confirmed as part of the evaluation process for the proposed CREC.

Sovereign has reviewed the available historical site data in the context of how reactivating PUD Well #3A will impact the local residents and commercial businesses. The extent of the gasoline release from the former North Main Street Mobil gasoline service station, located at 24 North Main Street, was exacerbated by the operation of PUD Well #3A which drew the contaminants approximately 1,500 feet

in a northerly direction from the Source Area across an area covering approximately up to 17.4 acres (the Site).

The 17.4 acre area is based on a petroleum contamination groundwater plume analysis that was conducted immediately after the identified release in 2002. A re-evaluation of the groundwater plume impact was conducted in 2006 after four years of groundwater remediation and the impacted area was calculated to be approximately 15.9 acres. In 2012, the groundwater plume impact was calculated to be approximately 5.1 acres. **Attachment A** presents the groundwater plume impact figures that was included in a 2013 groundwater monitoring report.

Remedial Actions:

Since 2001, a variety of remedial actions have been implemented to address the gasoline release. Remedial actions have included vacuum trucks and recovery well pumps to remove free product that was found in Area 1, a soil vapor extraction system (SVE) in Area 1 to remove the contaminated soil vapors near the source area and from the Herald Square Shops parking lot, a groundwater pump-and-treat system to treat contaminated overburden and bedrock groundwater near the source area, the area between to the source area and the Herald Square Shops, and behind the Herald Square Shops in the south central section of Area 4, the removal of all underground storage tanks (UST) and UST system components and approximately 1,800 tons of gasoline contaminated soil, and an emergency carbon filtration system was connected to public well PW-3A from November of 2001 through January 11, 2002 to remove contaminants that allowed the water supply to be used for bathing. At the time of these report, groundwater was being pumped continuously from four remedial wells (BETA-1, BETA-2, MW-28BR, and MW-58BR) located at the southern end of Area 4 at a combined rate of 4 to 5 gpm. Pumped groundwater is conveyed to an activated carbon treatment system prior to discharge to the Town of Burrillville's wastewater collection system. As of July 2013, approximately 12.5 million gallons of groundwater has been pumped and treated through activated carbon filters and discharged either to the Pascoag River or to the Town of Burrillville's wastewater collection system. It was estimated that approximately 3,100 equivalent gallons of gasoline had been removed from the Site. Groundwater pumpingand treatment/remediation has not occurred since that time.

Groundwater Analytical Data:

Based on groundwater sampling results from 2012, MTBE, benzene, toluene, ethylbenzene and naphthalene remain above the applicable RIDEM Groundwater Standards in several monitoring wells located throughout the site. The highest concentration of MTBE is present in well LE-15D having ranged from 340 µg/l to 970 µg/l over the four quarterly sampling events in 2012. In assessing the vertical distribution of contaminants, it is evident that higher concentrations of contaminants are found in the "deep" and "bedrock" wells throughout the Site. In addition, strong gasoline odors and visible sheens have been consistently noted in bedrock wells MW-33BR and MW-34BR. It is likely that as public well PW-3A was drawing contaminants to the north and east it was also pulling the contaminants downward toward and through bedrock. As a result, gasoline related contaminants could remain trapped in bedrock fractures.

As depicted on Figures 6A, 6B and 6C of the 2013 *Groundwater Remediation Project Summary Report, Pascoag, Rhode Island* prepared by BETA Group, since PUD Well #3A was shut down, and no longer influences groundwater flow direction, the area of groundwater impact has receded. Reactivating PUD Well #3A, will not necessarily impact "new" areas, but might result in the re-expansion of the current VOC impacted plume. In addition, any residual petroleum impacted areas may migrate under the influence of the reactivation of PUD Well #3A.

Surface Water Sampling:

In 2012, surface water samples were also collected and tested for VOCs. The results for the surface water samples collected in January of 2012 were all below laboratory detection limits. Based on the laboratory results, contaminants previously present in the groundwater proximate to the Pascoag River and in the surface water have been reduced to below current GAA Standards. GAA standards are the current drinking water standards for groundwater in Rhode Island.

Vapor Intrusion Potential:

Vapor intrusion to indoor air describes the transfer (volatilization) of chemicals from contaminated groundwater or soil into subsurface gas (vapor), the migration of the gas to the base of an overlying building, and the entry (intrusion) and dispersion of the gas within the building. Diffusion and advection are the two main mechanisms by which subsurface soil gas is transported into a building. Diffusion describes subsurface gas movement from areas of high to low concentrations due to a concentration gradient. Advection describes subsurface gas movement from higher to lower in pressure, due to factors such as forced pressure differences from building ventilation systems or temperature changes. Subsurface gases generally enter the building through foundation cracks by advection due to the indoor-outdoor building pressure differences.

Various factors influence the extent to which subsurface gases from contaminated groundwater or soil can migrate to, enter, and disperse within a building. These factors include the characteristics of the soil through which the gases will flow (e.g., its porosity and moisture content), the distance between the groundwater surface and the building, the nature of the structure itself (e.g. size, intact or cracked foundation, active or passive ventilation), and properties of the chemical.

To evaluate whether groundwater has the potential to result in unacceptable indoor air concentrations to exposed occupants of the building, U.S. EPA developed a vapor intrusion screening level (VISL) calculator. Using various conservative assumptions, the calculator can identify a groundwater concentration of an individual constituent below which an indoor air concentration of health concern in an overlying building is not likely to occur through vapor intrusion. Generally, at properties where subsurface concentrations of vapor-forming chemicals (e.g., concentrations in groundwater) fall below the applicable VISL, no further action or study is warranted, as long as site and exposure conditions are consistent with the assumptions of the model. Exceeding a VISL generally suggests that further evaluation of the vapor intrusion pathway is appropriate.

In 2001, in response to reports of petroleum odors, RIDEM conducted a soil vapor intrusion assessment. Volatile vapors were found to be present in three residential buildings located at 92 North Main Street, 99 North Main Street and at Bradford Manor. On September 28, 2001 volatile vapors measured at 92 North Main Street were between two to three parts per million (ppm) in a sump pump pit located in the basement. The sump pump pit was filled in and subsequent testing indicated that volatile vapors were not present. Volatile vapors were also measured at Bradford Court at concentrations between two to three ppm on November 13, 2001. Subsequent testing indicated that elevated volatile vapor concentrations were not present at Bradford Court after the initial reading. Volatile vapors were detected at 99 North Main Street at concentrations between two to three ppm and a vapor recovery system was placed into operation until it was removed by the property owner in April of 2002. Indoor air laboratory analytical data was not located during Sovereigns file review.

In 2006, approximately four years after PUD well #3A was shut down, an additional soil vapor intrusion assessment was performed and involved the installation and sampling of eight exterior soil vapor points located around residential properties downgradient of the MTBE source area (VP-4, VP-5, VP-21, VP-22, VP-25, VP-26, VP-27 and VP-60). The assessment was performed using protocol developed by the United States Environmental Protection Agency (EPA). Vapor samples were collected in tedlar bags and submitted for laboratory analysis via EPA methodology TO-15 and 8260B. Vapor points VP-4, VP-21, VP-5 and VP-22 (analyzed via TO-15 but only benzene, toluene, ethyl benzene and xylenes and MTBE were reported), had detections above the laboratory detection limit of all reported analytes (i.e. - MTBE, benzene, toluene, ethyl benzene and xylenes). The concentration of each analyte was as follows: MTBE ranged from 5.8 to 10 micrograms per cubic meter ($\mu g/m^3$), benzene ranged from 11 to 67 $\mu g/m^3$, toluene ranged from 39 to 83 $\mu g/m^3$, ethyl benzene ranged from 9.7 to 13 $\mu g/m^3$, and total xylenes ranged from 33 to 46 $\mu g/m^3$. Please note that the units $\mu g/m^3$ is a measurement of chemical mass in a cubic meter of air.

Vapor points VP-25, VP-26, VP-27 and VP-60 were analyzed by EPA Method 8260B, with the reporting unit of µg/L, which is a measurement used when reporting the concentration in a water sample in parts per billion (ppb). No VOCs were detected above the laboratory reporting limits.

Based on the information presented above, the groundwater data from 2012, and improved sampling procedures and techniques, the potential for vapor intrusion exists and might be influenced by the reactivation of PUD Well #3A when pumped at full capacity The assessment completed in 2006 documents low level VOCs present in soil gas, but the assessment has limitations. For instance, the assessment was completed after PUD Well #3A was shut down, and therefore does not provide data that can be correlated to the proposed pumping conditions. To better understand the potential vapor intrusion risk, Sovereign recommends that vapor assessment be completed (see recommendations below). Contingency arrangements should be presented for response actions from CREC in the event that indoor air impact to properties with buildings occurs from reactivation of Well #3A.

PUD Well #3A 2005 Pump Test:

Pump tests completed on PUD Well #3A document that MTBE concentrations increase as the pump rate increases. In 2005, during a pump test completed by RIDEM, PUD and the University of Rhode Island's Department of Geosciences this increasing MTBE trend was observed. PUD Well #3A was pumped

initially at a rate of 240 GPM and the MTBE concentration reached 43 µg/l. The pumping rate was decreased to 150 GPM on April 19, which resulted in a decrease in the MTBE concentration to 35 µg/l. Laboratory analysis documented that MTBE and TAME were the only VOC-type contaminants that were detected at the pumping wellhead which indicated that these contaminants have moved ahead of other contaminants, such as benzene, toluene, ethylbenzene, and xylenes – total (BTEX). It was noted that the duration of this pump test was insufficient to come to a definite conclusion of the long-term MTBE concentration at the wellhead and that long-term trends in BTEX concentrations could not be determined.

Pursuant to Invenergy Thermal Development LLC's Responses to the Town of Burrillville's 5th and 8th Set of Data Request, Responses 5-3 and 8-1, Pare Engineering is designing the treatment facility that is proposed to be installed at PUD Well #3A. A basic Activated Carbon System Process Flow Diagram was provided and it depicts that the system will consist of two activated carbon vessels (capable of handling 700 gpm), a 30,000-gallon treated water storage tank, a 30,000-gallon backwash tank, pumps, sample ports and flow valves. Specific details on the treatment system were not provided, such as actual GAC vessel size, number of GAC vessels, resonating time, carbon breakthrough calculations, contingency for fouling due to metals, or a contingency for drawing in non-aqueous phase liquids that could be liberated from the bedrock due to long term pumping and a maximum pumping rate of 700 gpm.

In general, GAC is an effective media to remove MTBE as well as BTEX from groundwater. GAC relies on an adsorption process that transfers the contaminants from groundwater to the GAC. Contaminants will partition from the water to the GAC until it reaches the saturation point for the specific contaminant. However, multi-contaminants can affect the adsorption capacity of the carbon, and if naturally occurring minerals or metals, such as iron or manganese, are present in the groundwater, then the GAC may have to backwashed or be replaced more frequently to prevent backpressure.

In order to design a treatment system, Invenergy will need to complete a pump test and collect representative groundwater samples. The pump test should be conducted at an appropriate flow rate and duration, representative of the proposed withdrawal rates for the Clear River Energy Center (CREC) project, until the stabilization of contaminants of concern, which will be drawn from the source area, is achieved. Upon achieving stabilization of the contaminants of concern, groundwater samples should be collected for metals, VOCs (by drinking water analysis EPA Method 524.1), gasoline oxygenates and TPH. Upon receipt and review of this analytical data, a treatment system can be designed and the adequacy of the treatment system can be reviewed.

The potential building size and process and instrumentation diagram for the water treatment at the Wellhead #3A should be estimated for planning purposes in the design process.

Clear River Stream Flow

CREC should verify that the reactivation of Well #3A for use as process water at the proposed facility will not adversely affect the streamflow of the Clear River. The lowest flow conditions in a stream or river is based on the 7Q10 flow. The definition of 7Q10 is, the lowest average discharge over a period of one week, 7 days, with a recurrence interval of 10 years.

CREC should confirm that the reactivation of well #3A for use as process water is not a concern for the 7Q10 stream flow data for the Clear River.

CREC should consider discharging a portion or the entirety of the spent process water into the Clear River. This would require treatment not only at the wellhead, but also potentially at the power plant prior to discharge to the Clear River. Although another stage of treatment would be required, it is a more sustainable solution that may be potentially beneficial for the Clear River. The potential treatment area at the CREC should be estimated for planning purposes in the design process.

Recommendations:

- It should be confirmed that there is not a hydraulic connection between the water sources for the Pascoag and Harrisville Utility Districts. In the event that the CREC project does not proceed, it would be beneficial to demonstrate that the residual contamination related to the petroleum release in Pascoag will not impact the water supply sources in Harrisville. The Harrisville Utility District is currently providing 85% of the water for the Pascoag Utility District.

- Prior to reactivating PUD Well #3A, which has been shown to draw the contaminants approximately 1,500 feet in a northerly direction from the Source Area across an area covering as much as 20 acres, additional data should be collected to be protective of human health and the environment. A pump test should be conducted at an appropriate flow rate and duration until the stabilization of contaminants of concern is achieved. During this pump test, water samples should be collected from the PUD Well #3A, select overburden and bedrock wells located throughout the Site, and the Pascoag River. All samples should be submitted for laboratory analysis of total petroleum hydrocarbon, VOCs and gasoline oxygenates. This data will assist in monitoring local conditions for vapor intrusion potential and to monitor for plume migration.

- To be protective of human health, a vapor intrusion assessment of commercial and residential properties located within Site should be conducted. Through pump testing of PUD Well #3A, it has been shown that when the well is operational, the groundwater flow direction shifts toward PUD Well #3A. This results in an expanding VOC impacted groundwater plume underlying a larger area, which includes numerous residential properties. The impact of operating PUD Well #3A should be evaluated by collecting baseline vapor intrusion data (i.e. – TO-15 and APH) prior to utilizing PUD Well #3A as a water source for the proposed Clear River Energy Center, during a pump test, and during continued operation until the effects of the shifting VOC impacted plume and the potential off-gassing from the migrating VOC impacted groundwater plume are well understood. Sub-slab soil vapor (and indoor air samples if needed) should be collected utilizing laboratory supplied SUMMA canisters and submitted for laboratory analysis TO-15 and APH.

  If a pump test is not conducted for an adequate duration prior to reactivating PUD Well #3A, a vapor intrusion assessment plan should be designed and implemented prior to the reactivation of PUD Well #3A. An example of this might include the collection of baseline indoor air or sub-slab soil gas samples prior to reactivating PUD Well #3A. Upon reactivating PUD Well #3A,

continued air monitoring should be conducted until aquifer and contaminant stabilization has been achieved and the seasonal effect on the concentration of VOCs is well understood.

Contingency arrangements should be presented for response actions from CREC in the event that indoor air impact to properties with buildings occurs from reactivation of Well #3A.

- Per Invenergy Thermal Development LLC's Responses to the Town of Burrillville's 5th and 8th Set of Data Request, Responses 5-3 and 8-1, Pare Engineering is designing the treatment facility that is proposed to be installed at PUD Well #3A and it will consist of two activated carbon vessels. Specific details on the treatment system were not provided. Based on the 2008 *Design and Cost Estimate For Groundwater Treatment System, Pascoag Water Supply Well 3A, Burrillville, Rhode Island*, prepared by GZA GeoEnvironmental, Inc., an assessment was completed to design, build and operate a treatment system for the PUD Well #3A to remove gasoline constituents to below laboratory detection limits. It was assumed that the well would pump at a rate of 500 GPM for 12 hours per day, with a total daily volume of 360,000 gpd. GZA determined 4,400 pounds of carbon would be required per day (1,606,000 pounds per year) to effectively remove the known VOC and gasoline oxygenate contaminates. The approximate 2009 cost to operate the system per year for the first six years was estimated at $2,875,000.00. GZA estimated that each additional year would cost approximately $1,597,000.00. Per Invenergy Thermal Development LLC's Responses to the Town of Burrillville's 6th Set of Data Request, Response 6-11, it is stated that PUD will own and operate the proposed treatment system.

  A revised study should be completed to determine treatment system requirements based on current conditions, conditions when the well is pumping at full capacity resulting in the impacted VOC plume migration toward PUD Well #3A, and the feasibility of either PUD or Invenergy Thermal Development LLC (Invenergy) to fund the construction and ongoing operation of this system. The revised study should demonstrate that any petroleum constituents would be removed from the water prior to conveyance to the CREC facility for use as process water. The performance criteria for removed from the water should be below laboratory quantification limits. A dual train system with at least 3 GAC units on each train should be considered for redundancy and performance.

  The potential building size and process and instrumentation diagram for the water treatment at the Wellhead #3A should be estimated for planning purposes in the design process.

- Confirm that the reactivation of well #3A for use as process water is not a concern for the 7Q10 stream flow data for the Clear River.

- Based on the capacity of Well #3A, and the potential concerns related to the 7Q10 stream flow data for the Clear River, CREC should consider discharging a portion or the entirety of the spent process water into the Clear River.

- As a contingency, additional water sources beyond the Pascoag Utility District should be considered to supplement the process water demand. This may become advantageous in the event that Well #3A has mechanical problems following reactivation.

MTBE IMPACTS ON BURRILLVILLE SEWER TREATMENT

The EFSB application includes a summary of the discharge parameters anticipated, the projected maximum discharge parameter for MTBE is 200 µg/l. Table 6.2-2 from the EFSB application summarizes the well water and wastewater discharge parameters. CDR Maguire reviewed the impacts of the MTBE on the operation of the sewer treatment plant and on the discharge from the sewer treatment plant to the Clear River.

Background. Clear River Energy Center indicates that the water to be used in the process of producing electricity will be obtained from the Pascoag Utility District. The well that will produce the water is contaminated with Methyl-Tertiary-Butyl-Ether (MTBE) is proposed to be treated to a maximum concentration of 55 µg/l prior to delivery to the power plant.

As part of the evaluation for their submittal, pre and post concentrations of 32 parameters have been summarized in Table 6.2-2. Table 6.2-2 also states the applicability of regulations to those parameters. As seen in Table 6.2-2 the projected concentration in the wastestream is different than in the water from the well. This is attributed to reactions that occur during the high purity treatment process and in the production of the energy.

Invenergy states in the EFSB permit application that the MTBE levels in the sewer discharge will be below 200 µg/l at a temperature below 140 degrees F. The major questions are will the discharge be harmful to the operation of the plant and will the quality of the discharge affect the Town's wastewater discharge permit.

MTBE is a gasoline additive that was designed to maintain the octane (power) of gasoline, reduce engine knocking and reduce tailpipe emissions. It was designed to be a soluble additive; that is, it maintains a homogeneous mixture without additional agitation. This trait also makes it difficult to remove by a normally efficient treatment process.

Research

Plant. It is unclear if MTBE at the concentrations presented will cause any problems at the plant. Much of the research discovered has contaminated sites reducing the MTBE level down to 200 µg/l with no further treatment and this is the proposed discharge concentration from the Clear River Energy Center plant.

Discharge limits. Since MTBE is not currently regulated, there will not be an immediate concern with the discharge of any residual MTBE in the discharge from the plant.

Odors. The odor threshold for a chemical is the concentration at which it can be perceived. These numbers vary from chemical to chemical and person to person. The Fact Sheet for the State of New Hampshire states:

> The MtBE odor and taste thresholds from several studies fall within the range of 20-40 µg/l, identified by EPA as an approximate threshold for aesthetic effects. EPA states that this range can be used as advisory guidance to help ensure consumer acceptance of the taste and odor of MtBE in drinking water. The State secondary standard of 20 µg/l for MtBE is based on the lower

> end of EPA's recommended odor and taste threshold range. This value is anticipated to provide protection for most individuals.

Since the proposed discharge from Clear River Energy is 200 µg/l, it is highly likely that the discharge will have a detectable odor of MTBE to most if not all people.

Impact of future change at plant could be significant. It is a complete unknown as to whether or not EPA decides to regulate MTBE in the future. According to an unmaintained page (last updated Feb. 20, 2016) on the EPA website:

> "EPA is continuing to study both the potential health effects and the occurrence of MTBE, and it is on a list of contaminants (Contaminant Candidate List) for which EPA is considering setting health standards. As a means of gathering occurrence information, beginning in 2001, EPA will require all large drinking water systems and a representative sample of small systems to monitor and report the presence of MTBE (Unregulated Contaminant Monitoring Regulation)."

To protect the Town from this occurrence, we suggest adding language to the IUP that allows the Town to change the discharge requirements if the current concentrations are detrimental to the treatment plant process or to the meeting the discharge limits in the permit.

Impact of future regulation change. Currently the discharge from the plant is regulated by the RIDEM and USEPA through the National Pollution Discharge Elimination System (NPDES) program. Under this program, the EPA has developed a list of Priority Pollutants that are regulated. The list is included with this memorandum. The priority pollutant list is a dynamic list of elements and compounds that the EPA deems as detrimental to the receiving waterways. The list is dynamic and changes over time as new pollutants are developed or discovered.

Currently MTBE is not a regulated constituent under the program. However, the nature of the list is that it is dynamic. Because MTBE is not currently on the list, which does not mean that it won't be regulated at some point in the future.

Temperature. It should be noted that the proposed temperature of the discharge (140 degrees F) is greater that what is typically seen (50-60 degrees) but is less than applicable discharge standards. Given the average daily flow of 96,000 gpd (at 140 degrees) and the average daily flow of the plant at 887,500 (at 53 degrees), the combined temperature at the plant would be approximately 61 degrees. Please note that this calculation does not include any heat loss through the 4 miles of the collection system.

Recommendations

Based on the fact that the full effects of MTBE on the treatment plant and the discharge are not fully known, we recommend that the Town develop a method for protecting itself. The typical method for establishing this kind of protection is through the development of an Industrial Users Permit (IUP). An IUP will allow the Town set enforceable limits on the discharge from the Clear River Energy Center and also protect itself in the future if the discharges affects the current processes at the wastewater plant and regulations or treatment technologies change.

Many options are available for the development of an IUP. For example, the USEPA has a template available that we have included in Attachment B. Other communities and RIDEM likely have templates available for the Town to utilize as well.

For the elimination of possible odors, we recommend that a maximum level of MTBE in the discharge be capped at 20 to 40 µg/l.

We appreciate the opportunity to assist the Town of Burrillville with these issues. If you have questions please contact me at your convenience

Very truly yours,

CDR MAGUIRE INC.

James A Jackson, P.E.
Project Manager

Figures
Attachment A
Attachment B

FIGURES

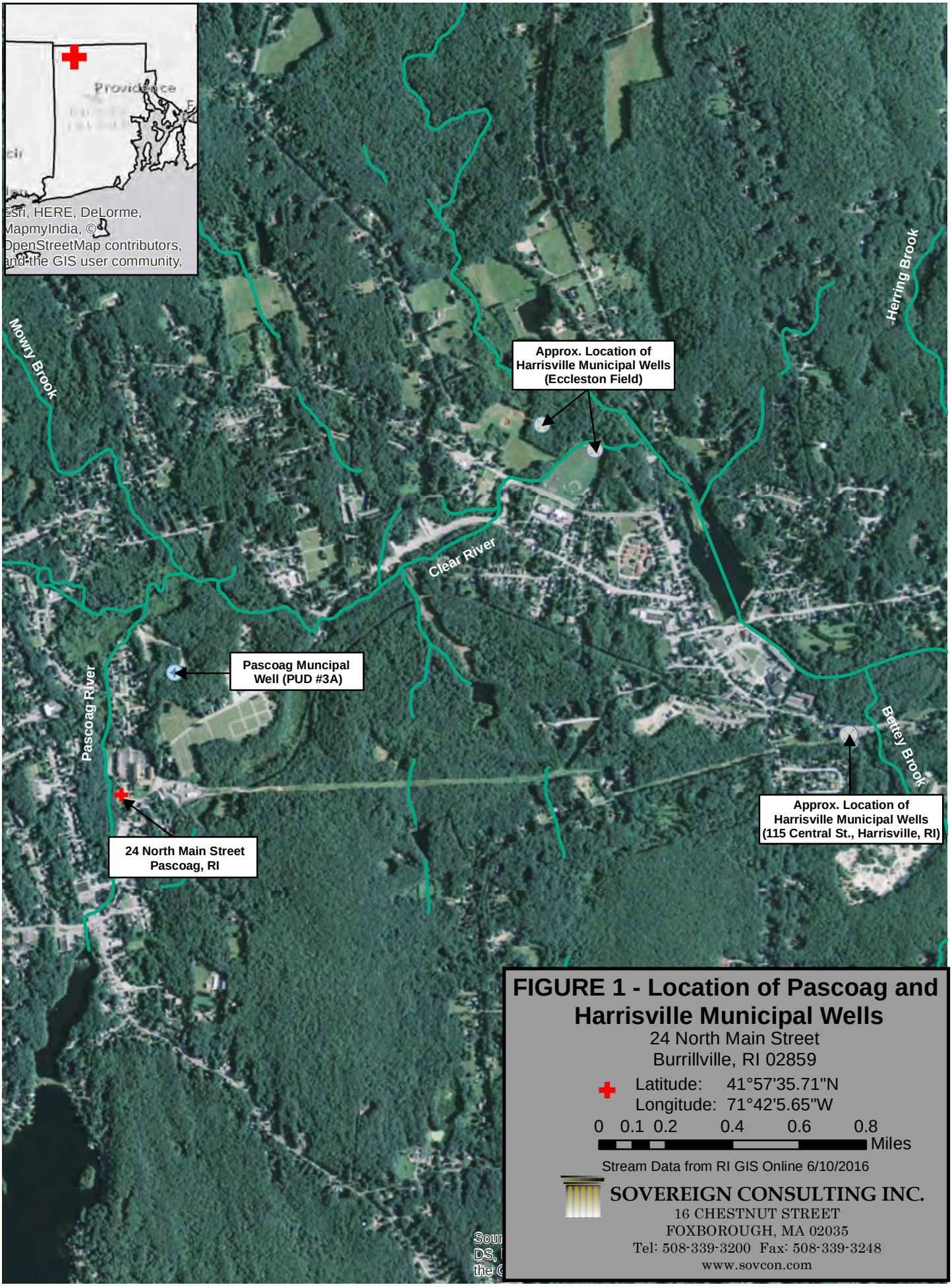


FIGURE 1 - Location of Pascoag and Harrisville Municipal Wells

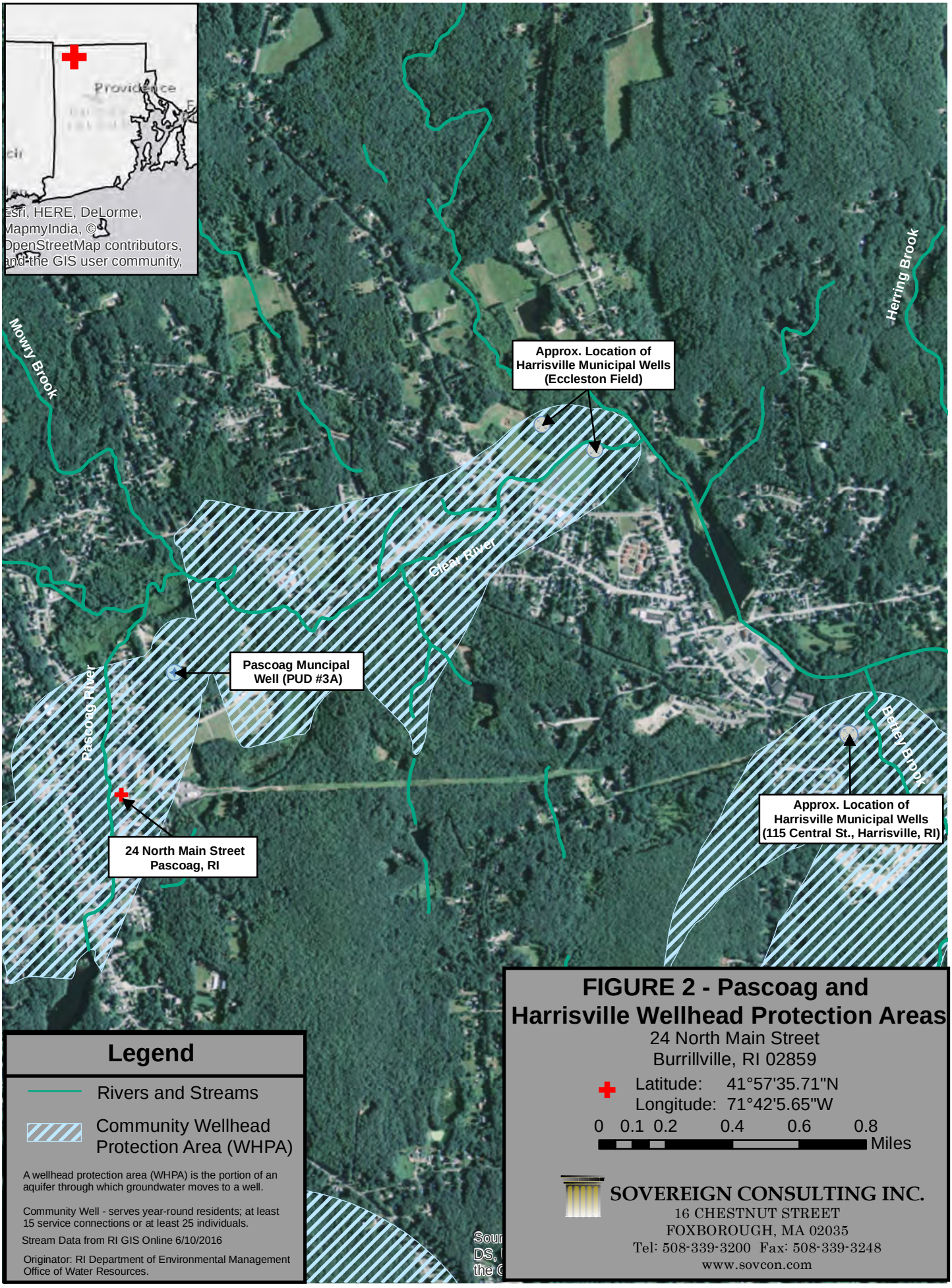
24 North Main Street
Burrillville, RI 02859

Latitude: 41°57'35.71"N
Longitude: 71°42'5.65"W

0 0.1 0.2 0.4 0.6 0.8
Miles

Stream Data from RI GIS Online 6/10/2016

SOVEREIGN CONSULTING INC.
16 CHESTNUT STREET
FOXBOROUGH, MA 02035
Tel: 508-339-3200 Fax: 508-339-3248
www.sovcon.com



Legend

Rivers and Streams

Community Wellhead Protection Area (WHPA)

A wellhead protection area (WHPA) is the portion of an aquifer through which groundwater moves to a well.

Community Well - serves year-round residents; at least 15 service connections or at least 25 individuals.

Stream Data from RI GIS Online 6/10/2016

Originator: RI Department of Environmental Management Office of Water Resources.

FIGURE 2 - Pascoag and Harrisville Wellhead Protection Areas

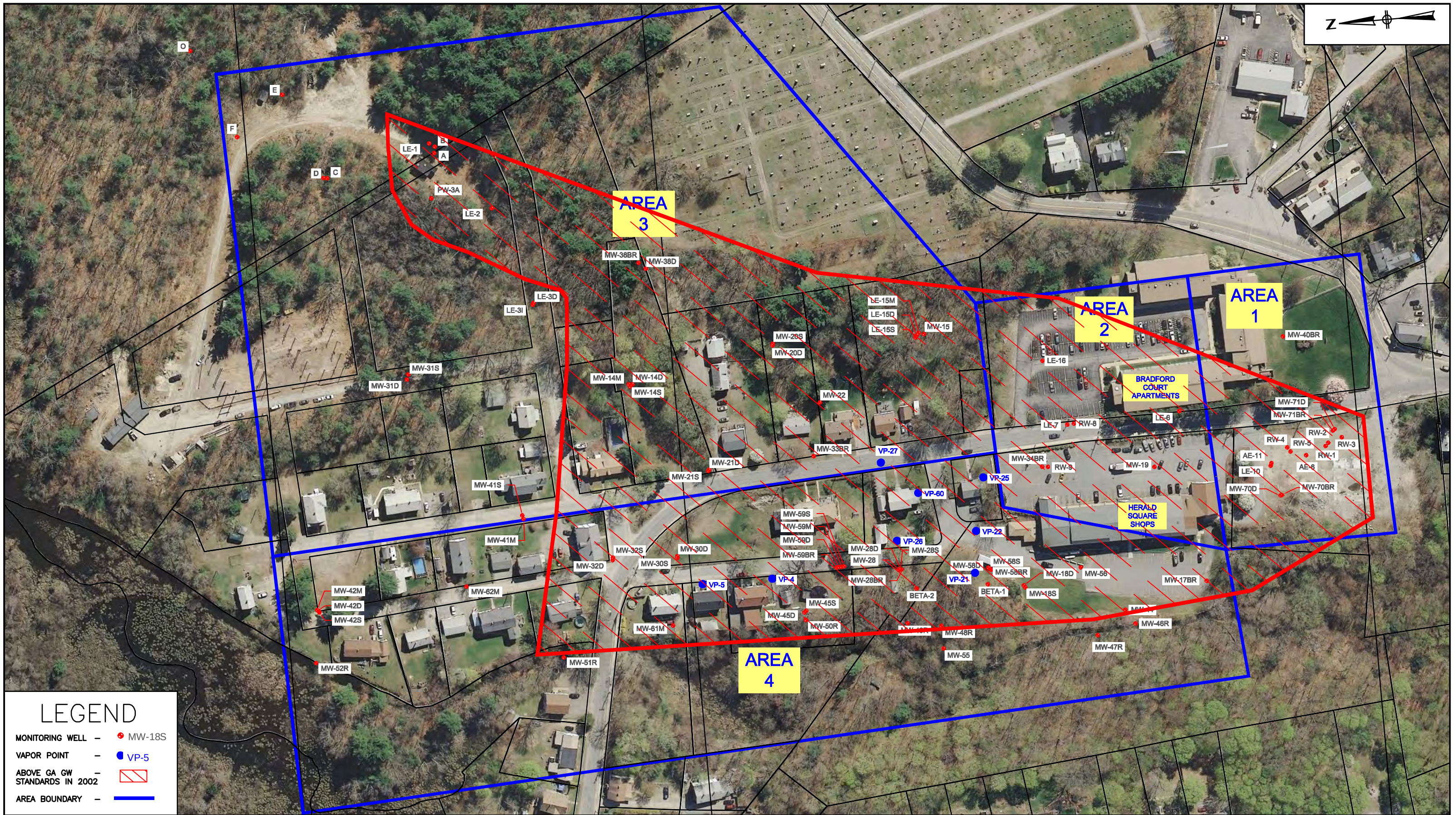
24 North Main Street
Burrillville, RI 02859

Latitude: 41°57'35.71"N
Longitude: 71°42'5.65"W

0 0.1 0.2 0.4 0.6 0.8 Miles

SOVEREIGN CONSULTING INC.
16 CHESTNUT STREET
FOXBOROUGH, MA 02035
Tel: 508-339-3200 Fax: 508-339-3248
www.sovcon.com

ATTACHMENT A



LEGEND

- MONITORING WELL – MW-18S
- VAPOR POINT – VP-5
- ABOVE GA GW STANDARDS IN 2002 –
- AREA BOUNDARY –

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AJG

DEPT. CHECK: SR

PROJ. CHECK: SR

BETA Group, Inc.
Engineers, Scientists, Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-inc.com

SCALE: 1" = 140'

0 70 140 210

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

FIGURE 6A

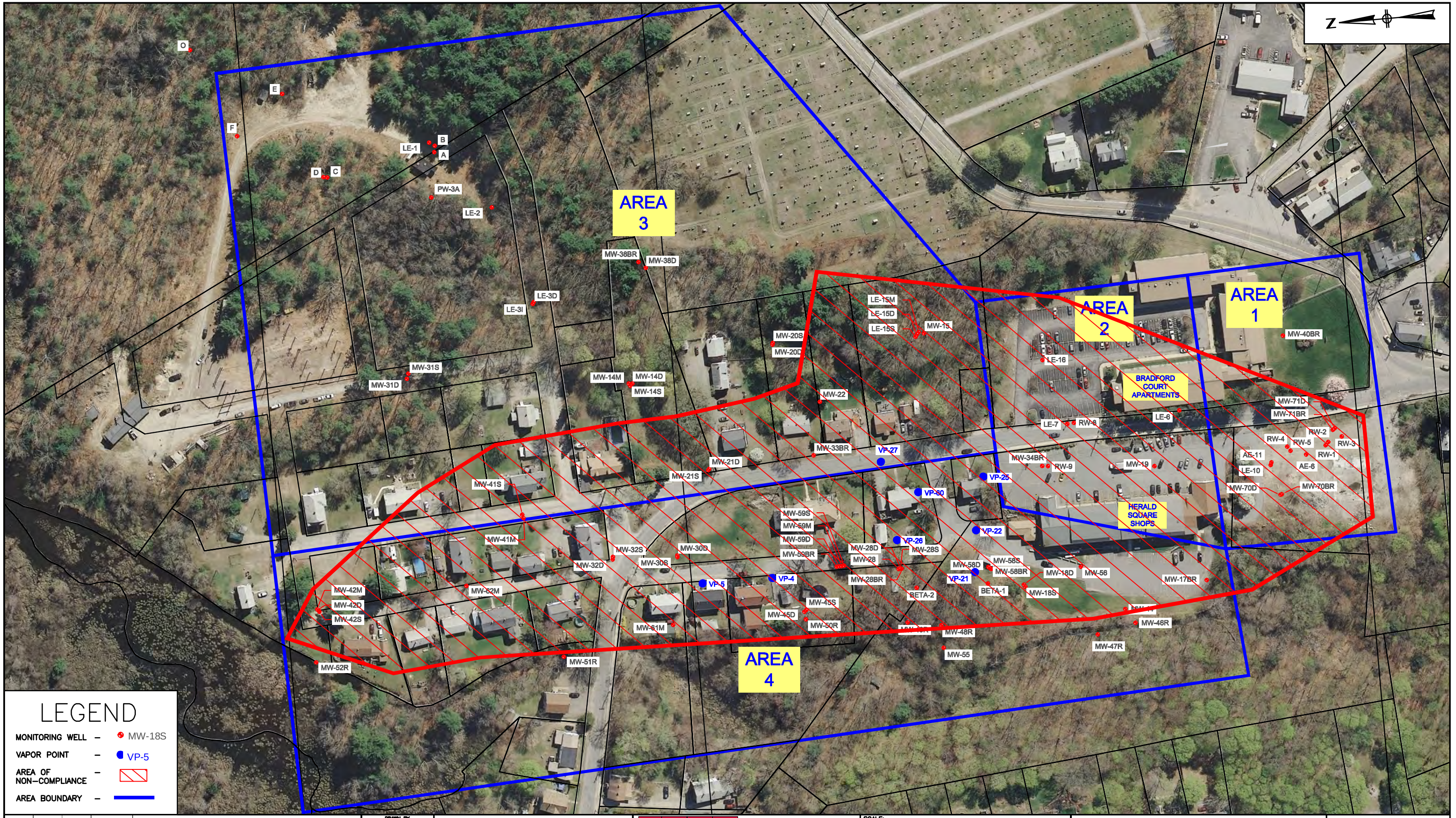
APPROXIMATE AREA ABOVE RIDEM GA GROUNDWATER OBJECTIVES 2002

PASCOAG, RI

JOB 3954

FILE NO.

SHEET 1



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION
				REVISIONS

DRAWN BY: AJG
DEPT. CHECK: SR
PROJ. CHECK: SR

BETA Group, Inc.
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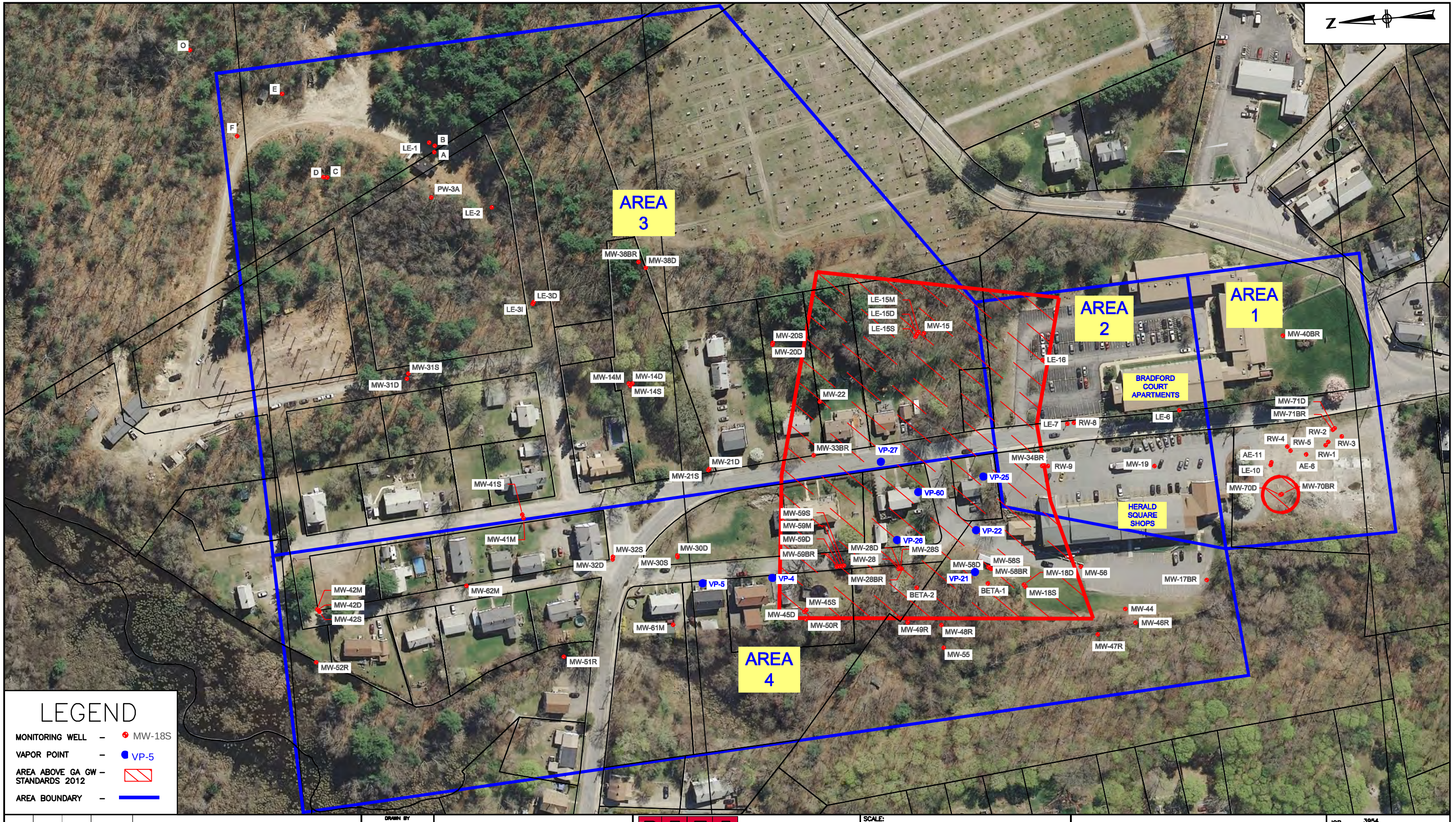
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-inc.com

SCALE:
1" = 140'
0 70 140 210
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

FIGURE 6B
APPROXIMATE AREA ABOVE RIDEM GA GROUNDWATER OBJECTIVES 2006
PASCOAG, RI

JOB 3954
FILE NO.
SHEET 1



LEGEND

- MONITORING WELL – MW-18S
- VAPOR POINT – VP-5
- AREA ABOVE GA GW STANDARDS 2012 –
- AREA BOUNDARY –

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AJG

DEPT. CHECK: SR

PROJ. CHECK: SR

BETA Group, Inc.
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Lincoln, RI 02865
401.333.2382
email: BETA@BETA-inc.com

SCALE: 1" = 140'

0 70 140 210

FIGURE 6C

APPROXIMATE AREA ABOVE RIDEM GA GROUNDWATER OBJECTIVES 2012

PASCOAG, RI

JOB 3954

FILE NO.

SHEET 1

ATTACHMENT B

APPENDIX C

Sample Permit Application Form

Disclaimer

The U.S. Environmental Protection Agency (EPA), Office of Wastewater Management, Water Permits Division has prepared this sample permit application as a guide for Control Authorities in developing a permit application form. The Control Authority is not required to use this permit application form and may develop either its own form or choose to modify the sample form to reflect specific conditions at the publicly owned treatment works (POTW) and requirements of state and local law. For the Control Authority choosing to use a modified version of the sample application, the EPA sample permit application provides, as an aid to the Control Authority, blank spaces or brackets throughout the application. These identify areas in which additions and changes to the sample application might be needed to address the circumstances at a POTW. The sample has additional bracketed notes that further explain issues the Control Authority might wish to consider when developing its permit application form.

APPENDIX C.
SAMPLE PERMIT APPLICATION FORM

Note: Please read all attached instructions prior to completing this application.

SECTION A – GENERAL INFORMATION

1.	Facility Name:			
	a. Operator Name:			
	b. Is the operator identified in 1.a., the owner of the facility?		Yes	No
	If no, provide the name and address of the operator and submit a copy of the contract and/or other documents indicating the operator's scope of responsibility for the facility.			
2.	Facility Address: Street:			
	City:	State:	Zip:	
3.	Business Mailing Address: Street or P.O. Box:			
	City:	State:	Zip:	
4.	Designated signatory authority of the facility: [Attach similar information for each authorized representative]			
	Name:			
	Title:			
	Address:			
	City:	State:	Zip:	
	Phone #			
5.	Designated facility contact:			
	Name:			
	Title:			
	Phone #			
6.	***[Note: This question might not be applicable to all pretreatment programs. The following question is only applicable to those programs implementing this optional streamlining provision.]*** Do you wish to be considered for regulation under a general permit, if the Control Authority considers it to be appropriate? If so, you must file a request for coverage under a general control mechanism. **[POTW's should include list of available general control mechanisms]**		Yes	No

SECTION B – BUSINESS ACTIVITY

1. If your facility employs or will be employing processes in any of the industrial categories or business activities listed below (regardless of whether they generate wastewater, waste sludge, or hazardous wastes), place a check beside the category of business activity (check all that apply).

	Industrial Categories
☐	Aluminum Forming
☐	Asbestos Manufacturing
☐	Battery Manufacturing
☐	Can Making
☐	Canned and Preserved Fruit and Vegetable Processing
☐	Canned and Preserved Seafood
☐	Carbon Black Manufacturing
☐	Cement Manufacturing
☐	Centralized Waste Treatment
☐	Coal Mining
☐	Coil Coating
☐	Concentrated Animal Feeding Operation and Feedlots
☐	Concentration Aquatic Animal Production
☐	Copper Forming
☐	Dairy Product Processing or Manufacturing
☐	Electric and Electronic Components Manufacturing
☐	Electroplating
☐	Explosives Manufacturing
☐	Fertilizer Manufacturing
☐	Ferroalloy Manufacturing
☐	Foundries (Metal Molding and Casting)
☐	Glass Manufacturing
☐	Grain Mills
☐	Gum and Wood Chemicals Manufacturing
☐	Hospital
☐	Ink Formulation
☐	Inorganic Chemicals
☐	Iron and Steel
☐	Landfill
☐	Leather Tanning and Finishing
☐	Meat and Poultry Products
☐	Metal Finishing
☐	Metal Products and Machinery
☐	Mineral Mining and Processing
☐	Nonferrous Metals Forming
☐	Nonferrous Metals Manufacturing
☐	Oil and Gas Extraction
☐	Ore Mining
☐	Organic Chemicals Manufacturing
☐	Paint and Ink Formulating

	☐	Paving and Roofing Manufacturing
	☐	Pesticides Chemical Manufacturing, Formulating, and/or Packaging
	☐	Petroleum Refining
	☐	Pharmaceutical Manufacturing
	☐	Phosphate Manufacturing
	☐	Photographic Processing
	☐	Plastic and Synthetic Materials Manufacturing
	☐	Porcelain Enameling
	☐	Printed Circuit Board Manufacturing
	☐	Pulp, Paper, and Fiberboard Manufacturing
	☐	Rubber Manufacturing
	☐	Soap and Detergent Manufacturing
	☐	Steam Electric Power Generating
	☐	Sugar Processing
	☐	Textile Mills
	☐	Timber Products
	☐	Transportation Equipment Cleaning
	☐	Waste Combustors
	☐	Other (Describe)

2. Give a brief description of all operations at this facility including primary products or services (attach additional sheets if necessary):

3. Indicate applicable North American Industry Classification System (NAICS) for all processes:

a.	
b.	
c.	
d.	
e.	

4. Production Rate

Product	Past Calendar Year Amounts per Day (Daily Units)		Estimate This Calendar Year Amounts Per Day (Daily Units)	
	Average	Maximum	Average	Maximum

5. For production-based categorical IUs only:

What is the facility's long-term average categorical production rate for the past 5 years?

SECTION C – WATER SUPPLY

1.	Water Sources: (Check as many as are applicable.)			
		Private Well		
		Surface Water		
		Municipal Water Utility (Specify City):		
		Other (Specify):		
2.	Name (as listed on the water bill):			
	Street:			
	City:		State:	Zip:
3.	Water service account number:			
4.	List average water usage on premises: [new facilities may estimate]			
		Type	Average Water Usage (GPD)	Indicate Estimated (E) or Measured (M)
	a.	Contact cooling water		
	b.	Non-contact cooling water		
	c.	Boiler feeding		
	d.	Process		
	e.	Sanitary		
	f.	Air pollution control		
	g.	Contained in product		
	h.	Plant and equipment washdown		
	i.	Irrigation and lawn watering		
	j.	Other		
	k.	Total of a through j		

SECTION D – SEWER INFORMATION

1. a. For an existing business:
Is the building presently connected to the public sanitary sewer system?

Yes	Sanitary sewer account number—		
No	Have you applied for a sanitary sewer hookup?	Yes	No

b. For a new business:

(i).	Will you be occupying an existing vacant building (such as in an industrial park)?	Yes	No
(ii).	Have you applied for a building permit if a new facility will be constructed?	Yes	No
(iii).	Will you be connected to the public sanitary sewer system?	Yes	No

2. List size, descriptive location, and flow of each discharge pipe or discharge point which connects to the City's sewer system. (If more than three, attach additional information on another sheet.)

Descriptive Location of Sewer Connection or Discharge Point	Average Flow (GPD)

SECTION E – WASTEWATER DISCHARGE INFORMATION

1.	Does (or will) this facility discharge any wastewater other than from restrooms to the City sewer?						
	Yes	If the answer to this question is "yes," complete the remainder of the application.					
	No	If the answer to this question is "no," skip to Section I.					
2.	Provide the following information on wastewater flow rate. [New facilities may estimate.]						
	a. Hours/day discharged (e.g., 8 hours/day)						
	M	T	W	TH	F	SAT	SUN
	b. Hours of discharge (e.g., 9 a.m. to 5 p.m.)						
	M	T	W	TH	F	SAT	SUN
	c. Peak hourly flow rate	(GPD)					
	d. Maximum daily flow rate	(GPD)					
	e. Annual daily average	(GPD)					
3.	If batch discharge occurs or will occur, indicate: [New facilities may estimate.]						
	a. Number of batch discharges	(per day)					
	b. Average discharge per batch	(GPD)					
	c. Time of batch discharges	(days of week)				(hours of day)	
	d. Flow rate	(gallons per minute)					
	e. Percent of total discharge						

4.	Schematic Flow Diagram – For each major activity in which wastewater is or will be generated, draw a diagram of the **flow of materials, products, water, and wastewater** from the start of the activity to its completion, showing all unit processes. Indicate which processes use water and which generate wastestreams. Include the average daily volume and maximum daily volume of each wastestream [new facilities may estimate]. If estimates are used for flow data this **must** be indicated. **Number each unit process** having wastewater discharges to the community sewer. Use these numbers when showing this unit processes in the building layout in Section H.

5. List average wastewater discharge, maximum discharge, and type of discharge (batch, continuous, or both), for each plant process. Include the reference number from the process schematic that corresponds to each process. [New faculties should provide estimates for each discharge].

No.	Process Description	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge (batch, continuous, none)

6. List the average wastewater discharge, maximum discharge, and type of discharge (batch, continuous, or both) for each of nonprocess wastewater flows (i.e., cooling tower blowdown, boiler blowdown)

No.	Nonprocess Description	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge (bath, continuous, none)

7. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow equipment at this facility?

		Yes	No	N/A
Current	Flow Metering			
	Sampling Equipment			
Planned	Flow Metering			
	Sampling Equipment			

If so, please indicate the present or future location of this equipment on the sewer schematic and describe the equipment below:

8. Are any process changes or expansions planned during the next three years that could alter wastewater volumes or characteristics? Consider production processes as well as air or water pollution treatment processes that may affect the discharge.

	Yes
	No, (skip to Question 10)

9.	Briefly describe these changes and their effects on the wastewater volume and characteristics: (attach additional sheets if needed).		
10.	Are any recycling or reclamation system in use or planned?		
		Yes	
		No (skip to Question 12)	
11.	Briefly describe recovery process, substance recovered, percent recovered, and the concentration in the spent solution. Submit a flow diagram for each process (attach additional sheets if needed):		
12.	***[Note: This question might not be applicable to all pretreatment programs. The following question is only applicable to those programs implementing this optional streamlining provision.]*** As allowed at 40 CFR 403.6(c)(5) when the limits in a categorical Pretreatment Standard are expressed only in terms of pollutant concentration, an Industrial User may request that the Control Authority convert the limits to equivalent mass limits. Do you anticipate that you will make this request?	Yes	No
13.	***[Note: This question might not be applicable to all pretreatment programs. The following question is only applicable to those programs implementing this optional streamlining provision.]*** As allowed at 40 CFR 403.6(c)(6), an Industrial User subject to the mass limits of categorical Pretreatment Standards to 40 CFR Parts 414, 419, and/or 455 may request that the Control Authority convert the mass limits to equivalent concentration limits. Do you anticipate that you will make this request?	Yes	No

SECTION F – CHARACTERISTICS OF DISCHARGE

All current industrial users are required to submit monitoring data on all pollutants that are regulated specific to each process. Use the tables provided in this section to report the analytical results. **Do not leave blanks.** For all other (nonregulated) pollutants, indicate whether the pollutant is known to be present (P), suspected to be present (S), or known not to be present (O), by placing the appropriate letter in the column for average reported values. Indicate on either the top of each table, or on a separate sheet, if necessary, the sample location and type of analysis used. Be sure methods conform to 40 CFR Part 136; if they do not, indicate what method was used.

New dischargers should use the table to indicate what pollutants will be present or are suspected to be present in proposed wastestreams by placing a P (expected to be present), S (may be present), or O (will not be present) under the average reported values.

Pollutant	Detection Level Used	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
		Conc.	Mass	Conc.	Mass		Conc.	Mass
Acenaphthene								
Acrolein								
Acrylonitrile								
Benzene								
Benzidine								
Carbon Tetrachloride								
Chlorobenzene								
1,2,4-Trichlorobenzene								
Hexachlorobenzene								
1,2-Dichloroethane								
1,1,1-Trichloroethane								
1,1,2,2,-Tetrachloroethane								
Chloroethane								
Bis(2-Chloroethyl)ether								
17 Bis (chloro methyl) ether								
2-Chloroethyl vinyl Ether								
2-Chloronaphthalene								
2,4,6-Trichlorophenol								
Parachlorometa cresol								
Chloroform								
2-Chlorophenol								
1,2-Dichlorobenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
3,3'-Dichlorobenzidine								
1,1-Dichloroethylene								
1,2-Trans-Dichloroethylene								
2,4-Dichlorophenol								
1,2-Dichloropropane								
1,2-Dichloropropylene								
1,3-Dichloropropylene								
2,4-Dimethylphenol								
2,4-Dinitrotoluene								
2,6-Dinitrotoluene								
1,2-Diphenylhydrazine								
Ethylbenzene								
Fluoranthene								

Pollutant	Detection Level Used	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
		Conc.	Mass	Conc.	Mass		Conc.	Mass
4-Chlorophenyl Phenyl Ether								
4-Bromophenyl Phenyl Ether								
Bis(2-Chloroethyl)ether								
Bis(2-chloroethoxy)methane								
Methylene Chloride								
Methyl Chloride								
Bromoform								
Dichlorobromomethane								
Chlorodibromomethane								
Hexachlorobutadiene								
Hexachlorocyclopentadiene								
Isophorone								
Naphthalene								
Nitrobenzene								
Nitrophenol								
2-Nitrophenol								
4-Nitrophenol								
2,4-Dinitrophenol								
4,6-Dinitro-O-Cresol								
N-Nitrosodimethylamine								
N-Nitrosodiphenylamine								
N-Nitrosodi-N-Propylamine								
Pentachlorophenol								
Phenol								
Bis(2-ethylyhexyl)phthalate								
Butylbenzyl Phthalate								
Di-N-Butyl Phthalate								
Di-N-Octyl Phthalate								
Diethyl Phthalate								
Dimethyl Phthalate								
Benzo(a)anthracene								
Benzo(a)pyrene								
3,4-Benzofluoranthene								
Benzo(k)fluoranthene								
Chrysene								
Acenaphthylene								
Anthracene								
Benzo(ghi)perylene								
Fluorene								
Phenanthrene								
Dibenzo(a,h)anthracene								
Indeno(1,2,3-cd)pyrene								
Pyrene								
Tetrachloroethylene								
Toluene								
Trichloroethylene								
Vinyl Chloride								
Aldrin								
Dieldrin								
Chlordane								
4,4'-DDT								
4,4'-DDE								

Pollutant	Detection Level Used	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
		Conc.	Mass	Conc.	Mass		Conc.	Mass
4,4'-DDD								
Alpha-Endosulfan								
Beta-Endosulfan								
Endosulfan Sulfate								
Endrin								
Endrin Aldehyde								
Heptachlor								
Heptachlor Epoxide								
Alpha-BHC								
Beta-BHC								
Gamma-BHC								
Delta-BHC								
PCB-1242								
PCB-1254								
PCB-1221								
PCB-1232								
PCB-1248								
PCB-1260								
PCB-1016								
Toxaphene								
(TCDD)								
Asbestos								
Acidity								
Alkalinity								
Bacteria								
BOD_3								
Chloride								
Chlorine								
Fluoride								
Hardness								
Magnesium								
NH_3-N								
Oil and Grease								
TSS								
TOC								
Kjeldahl N								
Nitrate N								
Nitrite N								
Organic N								
Orthophosphate P								
Phosphorous								
Sodium								
Specific Conductivity								
Sulfate (SO_4)								
Sulfide (S)								
Sulfite (SO_3)								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Chromium								

Pollutant	Detection Level Used	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
		Conc.	Mass	Conc.	Mass		Conc.	Mass
Copper								
Cyanide								
Lead								
Mercury								
Nickel								
Selenium								
Silver								
Thallium								
Zinc								
Any additional pollutants regulated by state or local laws:								

[Note: This question might not be applicable to all pretreatment programs. The following question is only applicable to those programs implementing this optional streamlining provision.] Do you anticipate requesting a monitoring waiver for regulated pollutants which you believe to not be present in your process wastestream(s)?	Yes	No
[Note: This question might not be applicable to all pretreatment programs. The following question is only applicable to those programs implementing this optional streamlining provision.] In order to request a monitoring waiver for pollutants not present, you must provide data from at least one sampling of your facility's wastewater prior to any treatment present at your facility that is representative of all wastewater from all processes. The request of a monitoring waiver must be signed in accordance with 40 CFR 403.12(l), and include the certification statement in 40 CFR 403.6(a)(2)(ii). Do you wish to make this request?	Yes	No

SECTION G - TREATMENT

1.	Is any form of wastewater treatment (see list below) practiced at this facility?	
	☐	Yes
	☐	No
2.	Is any form of wastewater treatment (or changes to an existing wastewater treatment) planned for this facility within the next three years?	
	☐	Yes, describe:
	☐	No
3.	Treatment devices or processes used or proposed for treating wastewater or sludge (check as many as appropriate).	
	☐	Air flotation
	☐	Centrifuge
	☐	Chemical precipitation
	☐	Chlorination
	☐	Cyclone
	☐	Filtration
	☐	Flow equalization
	☐	Grease or oil separation, type:
	☐	Grease trap
	☐	Grinding filter
	☐	Grit removal
	☐	Ion exchange
	☐	Neutralization, pH correction
	☐	Ozonation
	☐	Reverse osmosis
	☐	Screen
	☐	Sedimentation
	☐	Septic tank
	☐	Solvent separation
	☐	Spill protection
	☐	Sump
	☐	Rainwater diversion or storage
	☐	Biological treatment, type:
	☐	Other chemical treatment, type:
	☐	Other physical treatment, type:
	☐	Other, type:
4.	Is process wastewater mixed with nonprocess wastewater prior to the sampling point?	
	☐	Yes, describe:
	☐	No

4.	Description Describe the pollutant loadings, flow rates, design capacity, physical size, and operating procedures of each treatment facility checked above.			
5.	Attach a process flow diagram for each existing treatment system. Include process equipment, by-products, by-product disposal method, waste and by-product volumes, and design and operating conditions.			
6.	Describe any changes in treatment or disposal methods planned or under construction for the wastewater discharge to the sanitary sewer. Please include estimated completion dates.			
7.	Do you have a treatment operator?		Yes	No
	(If Yes)	Name:		
		Title:		
		Phone:		
		Full time (specify hours):		
		Part time (specify hours):		
8.	Do you have a manual on the correct operation of your treatment equipment?		Yes	No
9.	Do you have written maintenance schedule for your treatment equipment?		Yes	No

SECTION H – FACILITY OPERATIONAL CHARACTERISTICS

1. Shift Information

		Mon	Tues	Wed	Thur	Fri	Sat	Sun
Work days								
Shifts per work day								
Employees per shift	1st							
	2nd							
	3rd							
Shift start and end times	1st							
	2nd							
	3rd							

2. Indicate whether the business activity is:

☐ Continuous through the year, or

☐ Seasonal (circle the months of the year during which the business occurs):

J	F	M	A	M	J	J	A	S	O	N	D

Comments:

3. Indicate whether the facility discharge is:

☐ Continuous through the year, or

☐ Seasonal (circle the months of the year during which the business occurs):

J	F	M	A	M	J	J	A	S	O	N	D

Comments:

4. Does operation shut down for vacation, maintenance, or other reasons?

☐ Yes, indicate reasons and period when shutdown occurs

☐ No

5. List types and amounts (mass or volume per day) of raw materials used or planned for use (attach list if needed):

6. List types and quantity of chemicals used or planned for use (attach list if needed). Include copies of Material Safety Data Sheets (if available) for all chemicals identified.

Chemical	Quantity

7. Building Layout – Draw to scale the location of each building on the premises. Show map orientation and location of all water meters, storm drains, numbered unit processes (from schematic flow diagram), public sewers, and each facility sewer line connected to the public sewers. **Number each sewer** and show existing and proposed sampling locations.

   A blueprint or drawing of the facilities showing the above items may be attached in lieu of submitting a drawing on this sheet.

SECTION I – SPILL PREVENTION

1.	Do you have chemical storage containers, bins, or ponds at your facility?	Yes	No
	If yes, please give a description of their location, contents, size, type, and frequency and method of cleaning. Also indicate in a diagram or comment on the proximity of these containers to a sewer or storm drain. Indicate if buried metal containers have cathodic protection.		
2.	Do you have floor drains in your manufacturing or chemical storage area(s)?	Yes	No
	If yes where do they discharge to?		
3.	If you have chemical storage containers, bins, or ponds in manufacturing area, could an accidental spill lead to a discharge to (check all that apply):		
	☐ an onsite disposal system		
	☐ public sanitary sewer system (e.g., through a floor drain)		
	☐ storm drain		
	☐ to ground		
	☐ other, specify:		
	☐ not applicable, no possible discharge to any of the above routes		
4.	Do you have an accidental spill prevention plan (ASPP) to prevent spills of chemicals or slug discharges from entering the Control Authority's collection systems?		
	☐ Yes – **[Please enclose a copy with the application.]**		
	☐ No		
	☐ N/A, not applicable since there are no floor drains and/or the facility discharge(s) only domestic wastes.		
5.	Please describe below any previous spill events and remedial measures taken to prevent their reoccurrence.		

SECTION J – BEST MANAGEMENT PRACTICES

1.	Describe the types of best management practices (BMPs) you employ to prevent pollutants from entering a facility's wastestream or from reaching a discharge point. BMPs are management and operational procedures such as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the general and specific prohibitions listed in 40 CFR 403.5(a)(1) and (b). BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.		
2.	Do you have the potential for a slug discharge to the sewer system? A slug discharge is any discharge of a non-routine episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, which has a reasonable potential to cause interference or pass through, or in any other way violate the POTW's regulations, local limits or permit conditions [40 CFR 403.8(f)(2)(v).	Yes	No
	Please describe the type of the potential slug discharge, including quality and content.		
	Please describe current mechanisms for prevention of slug discharges.		
	Please describe where and how raw materials are stored.		

SECTION K – NON-DISCHARGED WASTES

1. Are any waste liquids or sludges generated and not disposed of in the sanitary sewer system?

   ☐ Yes, please describe below

   ☐ No, skip the remainder of Section J

Waste Generated	Quantity (per year)	Disposal Method

2. Indicate which wastes identified above are disposed of at an off-site treatment facility and which are disposed of on-site.

3. If any of your wastes are sent to an off-site centralized waste treatment facility, identify the waste and the facility.

4. If an outside firm removes any of the above checked wastes, state the name(s) and address(es) of all waste haulers:

a.	b.
Permit No. (if applicable):	Permit No. (if applicable):

5. Have you been issued any Federal, State, or local environmental permits?

   ☐ Yes

   ☐ No

   If yes, please list the permit(s):

6. Describe where and how waste liquids and sludges are stored.

SECTION L – AUTHORIZED SIGNATURES

Compliance certification:

1.	Are all applicable Federal, State, or local pretreatment standards and requirements being met on a consistent basis?	
		Yes
		No
		Not yet discharging
2.	If **No**:	
	a.	What additional operations and maintenance procedures are being considered to bring the facility into compliance? Also, list additional treatment technology or practice being considered in order to bring the facility into compliance.
	b.	Provide a schedule for bringing the facility into compliance. Specify major events planned along with reasonable completion dates. Note +that if the Control Authority issues a permit to the applicant, it may establish a schedule for compliance different from the one submitted by the facility.

Milestone Activity	Completion Date

Authorized Representative Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name(s) Title

Signature Date Phone