ALBEMARLE COUNTY PLANNING
STAFF REPORT SUMMARY

Proposal: SP202000005 Ivy Proper	**Staff:** Mariah Gleason, Senior Planner
Planning Commission Public Hearing: July 14, 2020	**Board of Supervisors Hearing:** TBD
Owner: LENVIC LLC	**Applicant:** Reid A. Murphy, BMC Holdings Group
Acreage: 0.87 acres	**Special Use Permit for:** Request for a veterinary office on a C-1 Commercial property in accordance with Zoning Ordinance 18-22.2.2.5.
TMP: 058A2000002000 and 058A2000001400 **Location:** Two undeveloped parcels at the intersection of Route 250/Ivy Rd and Ivy Depot Rd, between the railroad and 4282 Ivy Rd. These parcels are across Route 250 from the Ivy Post Office.	**By-right use:** C-1 Commercial – retail sales and service; residential by special use permit (15 units/ acre)
Magisterial District: Samuel Miller	**Conditions:** Yes **EC:** Yes
Proposal: Request for approval of a 2,500-3,000 square foot veterinary office within a new 6,500 square foot, multiple-tenant building. The proposed site design requires two special exceptions: (1) To allow the disturbance of critical slopes (slopes greater than 25% in the rural area) and (2) To allow the proposed location of veterinary use within a building within 200 feet of a residential property line.	**Requested # of Dwelling Units:** None
DA: **RA: X**	**Comp. Plan Designation:** Rural Area – preserve and protect agricultural, forestal, open space, and natural, historic and scenic resources; residential (0.5 unit/ acre in development lots).
Character of Property: The subject property is undeveloped and currently comprised of wild, mixed vegetation and open area with gravel areas and broken asphalt located closer to Route 250/Ivy Road.	**Use of Surrounding Properties:** Surrounding properties to the east, south, and west of the subject property are similarly zoned for commercial/retail uses. Properties to the north are zoned for residential uses and are separated from the subject property by an elevated railroad line. Nearby businesses include the Ivy Post Office, Ivy Corner Garden Store, Charlottesville Wine & Country Shop, Ivy Life & Style Media and Ivy Exxon.

Factors Favorable:	Factors Unfavorable:
1. The proposed use will not adversely affect uses permitted by-right on nearby or adjacent properties. 2. The veterinary use is consistent with the character of commercial/service uses offered in this area. 3. The proposed use meets the relevant supplementary regulations of the zoning ordinance.	1. The proposing building height is allowed by the zoning ordinance but does not reflect a size and scale that complements the character of the area, as recommended by the Comprehensive Plan in Rural Areas.

RECOMMENDATION:

Special Use Permit: Staff recommends approval of SP202000005, Ivy Proper, with conditions.

Special Exception: Staff recommends approval of the special exception to waive the requirement for the veterinary building to be located more than 200 feet from a residential property line.

Special Exception: Staff recommends approval of the special exception to allow the disturbance of 5,282 square feet of critical slope areas on the property with conditions.

STAFF PERSON: Mariah Gleason, Senior Planner
PLANNING COMMISSION: July 14, 2020
BOARD OF SUPERVISORS: TBD

SP202000005 Ivy Proper

PETITION:
PROJECT: SP202000005 Ivy Proper
MAGISTERIAL DISTRICT: Samuel Miller
TAX MAP/PARCEL: 058A2000002000 and 058A2000001400
LOCATION: Two undeveloped parcels at the intersection of Route 250/Ivy Rd and Ivy Depot Rd, between the railroad and 4282 Ivy Rd. These parcels are across Route 250 from the Ivy Post Office.
PROPOSAL: Request for a 2,500-3,000 square foot veterinary office within a new 6,500 square foot, multi-tenant building.
PETITION: Veterinary offices under Section 22.2.2.5 of the zoning ordinance on a subject property totaling 0.87 acres. Request for two special exceptions: (1) To waive the requirements of Section 4.2 of the zoning ordinance to allow the disturbance of critical slopes (slopes greater than 25% in the rural area) and (2) To waive the requirements of Section 5.1.11(b) of the zoning ordinance to allow the proposed location of veterinary building to be within 200 feet of a residential property line. No dwelling units proposed.
ZONING: C-1 Commercial – retail sales and service; residential by special use permit (15 units/ acre)
OVERLAY DISTRICT: Entrance corridor; Steep Slopes - Critical
PROFFERS: No
COMPREHENSIVE PLAN: Rural Area – preserve and protect agricultural, forestal, open space, and natural, historic and scenic resources; residential (0.5 unit/ acre in development lots).

CHARACTER OF SURROUNDING AREA:
The subject property is located at the intersection of Route 250/Ivy Road and Ivy Depot Rd, between the elevated railroad line, known as Buckingham Branch Railroad, and 4282 Ivy Road. Parcels surrounding the property to the east and south are zoned C-1 Commercial and are occupied by primarily community-centric commercial/service uses. Surrounding businesses include the Ivy Post Office and Ivy Corner Garden Shop across the street, Charlottesville Wine & Country Shop and Ivy Life & Style Media directly east, and Ivy Exxon further east along Route 250/Ivy Road. The elevated railroad line forms the northwestern boundary line of the subject property. On the other side of the railway lie Village Residential zoned properties which are primarily comprised of single-family residences but also St. Paul's, Ivy Episcopal Church.

PLANNING AND ZONING HISTORY:
- 1980 County Comprehensive Rezoning: This property was rezoned to C-1, Commercial in 1980 as part of the comprehensive rezoning of the County. This property, and others in the immediate area are within the Rural Area as designated by the Comprehensive Plan. The County has not initiated a comprehensive rezoning since 1980 to rezone any properties that are outside of the Development Areas but zoned with "urban" zoning designations. This property and others in the immediate area were previously within the former Ivy Village (formerly a Development Area), as designated by previous Comprehensive Plans. Ivy was removed as a Village in the 1989 Comprehensive Plan update, as the area was considered mostly built-out and is within a water supply watershed, however, the existing non-rural zoning designations remained on the properties. (Attachment 2)
- There are no prior planning and zoning activities associated with the subject property.

DETAILS OF THE PROPOSAL:

The applicant, BMC Holdings Group LLC, has submitted a special use permit request for a veterinary use on a C-1 Commercial-zoned property, in accordance with Section 22.2.2.5 of the zoning ordinance (Attachment 3). The property is comprised of two parcels totaling 0.87 acres.

The proposed veterinary use will occupy 2,500-3,000 square feet within a new 6,500 square foot, multiple-tenant building. The remaining tenant space(s), 3,500-4,000 square feet, is anticipated as general office space, according to the Conceptual Plan submitted by the applicant (Attachment 4). General office uses are permitted by-right in this zoning district.

There are two special exceptions associated with this special use permit request. The first special exception is to waive the requirement of Section 5.1.11(b) for the veterinary building to be located more than 200 feet from a residential property line (Attachment 3). The second special exception is a request to allow the disturbance of 5,282 square feet of critical slope areas on the subject property (Attachment 11). This request is made under Section 4.2 of the zoning ordinance.

Should the special use permit be approved, any future site plan for this property would be reviewed for compliance with all applicable requirements of the zoning ordinance. Also, as this property is located within a designated Entrance Corridor, review and approval by the Albemarle County Architectural Review Board, ARB would also be required prior to final site plan approval.

COMMUNITY MEETING:

In light of COVID-19, several options for feedback were provided for this application, including phone, email, a website form, and a virtual community meeting. The virtual community meeting for this Rural Area proposal was held on Thursday, June 4, 2020. No comments were submitted through the website form, outside of the community meeting, and comments provided by email can be referenced in Attachment 5.

The virtual community meeting was attended by members of the surrounding community, the 250 West Task Force, and the area's Board of Supervisors and Planning Commission representatives.

Questions and concerns raised by community members that attended the meeting and/or submitted comments directly to staff included:

- **Traffic**. This was the most frequent concern raised by community members. Many noted existing challenges entering and existing Route 250/Ivy Road and how congestion could be exacerbated with the added traffic generated by the development of this site. Similarly, community members voiced concerns around safety, including a tendency for many drivers to speed along this thoroughfare, the obstruction to site distance created by the railroad overpass, and a general desire for traffic improvements in this segment of Route 250.
- **Water Quality**. Questions and concerns regarding water quality were generally around how the development would handle runoff and sewage. Some community members noted particular concern for the continued health of Little Ivy Creek which is approximately 325 feet away and downhill from the subject property.
- **Scale and Aesthetic**. Community members expressed concern regarding the size of the proposed building, which would be larger than buildings on surrounding parcels, and a general desire for the development to be harmonious with existing developments nearby and the context of the area.

- Additional comments from the public included concerns for the grading of the steep slopes associated with the elevated railroad and the minimal setback of the building from the road.

ANALYSIS OF THE SPECIAL USE PERMIT REQUEST:

Special Use Permits are evaluated under reasonable standards, based on zoning principles which includes the proposal's compliance with the Comprehensive Plan. Any impacts caused by the proposal may be addressed through conditions and those conditions must be reasonably related and roughly proportional to the impacts.

The appropriateness of the C-1 Commercial zoning designation on the property is not under consideration. The property was comprehensively rezoned by the County in 1980 and no action has been taken to amend or modify the zoning of the property. What is being reviewed under this Special Use Permit request is the proposal to locate a 2,500-3,000 square foot veterinary use on this property. The building proposed by the applicant can be constructed on this C-1 Commercial property by-right.

Section 33.39(B) states that the Commission, in making its recommendation, shall consider the same factors found in Section 33.40 (B):

1. ***No substantial detriment. Whether the proposed special use will be a substantial detriment to adjacent parcels.***

   Staff has evaluated the potential impacts of the proposed veterinary use, including those expressed by community members. The following are the potential impacts of the proposal, with staff's analysis and any relevant proposed conditions.

   Traffic

   The applicant submitted information related to the impact of the proposed use on traffic in their Conceptual Plan. The Conceptual Plan estimates the number of vehicular trips generated by this use will be 54 per day. Including other tenant spaces, the proposed building is estimated to generate a total of 93 vehicle trips per day (54 vehicular trips generated by the veterinary use and 39 vehicular trips generated by general office uses by other tenants). In consultation with Transportation Planning staff, staff had no concerns with the estimates provided by the applicant nor was it found that the increase in traffic would create substantial detriment to adjacent parcels. Compared to the average daily vehicular trips along this segment of U.S. Route 250, which is approximately 13,000, the veterinary use will constitute a 0.4% increase in daily vehicular trips and, if built as proposed, the total proposed development will constitute a 0.7% increase in daily trips.

   The applicant has also worked with the existing development east of the subject property, 4282 Ivy Road (TMP 58A2-20A), to propose a shared site entrance/exit. There is an existing entrance for the neighboring development already. The proposed design will shift the existing entrance slightly to the west. By avoiding the creation of a new access point along Route 250, the proposed design aligns with VDOT's STARS Study recommendation to limit access points along Route 250 in this area. Regarding site distance, the proposed design also provides separation between the site entrance and railroad overpass by locating the entrance in the southeastern corner of the subject property, away from the railway, creating adequate site distance.

   Planning, Transportation Planning, and VDOT have no concerns regarding traffic impacts anticipated with this proposed use.

Water and Sewer

The subject parcel is within the Albemarle County Service Authority, ACSA, service area for public water service, however, due to the cost of making the connection to an existing water line (approximately $545,000) the applicant requested to instead provide a private well onsite. Pursuant to Section 4.1(a)(2), a private system can be approved for the use/site when the cost of extension of service exceeds the cost of installation of a private system. The request to a use private system was submitted to the Community Development Department, CDD. CDD, in consultation with ACSA, reviewed and approved this request on June 16, 2020 (Attachment 6).

Onsite water usage for commercially zoned properties in the Rural Area that are not served by public water is also a consideration of the County. In accordance with Section 22.2.2 of the C-1 zoning districts, water usage for most uses (or combination of uses) permitted on a parcel which exceed 400 gallons of water per site acre per day require approval of a Special Use Permit. Based on the size of the subject property, the collective uses on this site will be limited to (without an SP) a maximum water usage of 348 gallons per day (gpd) (0.87 acres x 400gpd). According to the Concept Plan offered by the applicant, the proposed water consumption for the veterinary use (250gpd) is below the maximum water usage allowed per County Code. However, to ensure that the use remains below this level, staff is recommending a condition to regulate and limit the water usage of this site to the 348gpd rate through the installation of a water restriction device (Condition 5).

The site is not in the ACSA Jurisdictional Area for sewer service. The applicant submitted a septic system approval letter, dated December 2018, from the Virginia Department of Health, VDH, in the Project Narrative. According to VDH, the proposed septic system is comprised of a basic pretreatment system with inground dispersal via a gravel pad. VDH expressed that this is a fairly common septic system design. The approved plan also provides for a 100% reserve drainfield area (Attachment 7). The system that was approved by VDH in December was for a physical therapy use, not a veterinary use. However, VDH has stated the approved septic design takes into account a peak daily water usage of 1225 gallons per day (gpd), which is to be dispersed to the dispersal area at a rate of 875 gpd. This capacity is in excess of the expected water withdrawal and usage for the use and building as identified in Condition 5. Because of some history of septic system capacity issues or failures in this general area (Duner's and Toddsbury), staff opinion is that Condition 5 limiting water usage on site is warranted to better insure that the septic system capacity will not be exceeded.

VDH has indicated that a new permit and VDH review will be required if applicant wishes to change the proposed use of the building to a veterinary use. Review and approval of this use by VDH will be needed prior to final site plan approval.

In summary, with Condition 5 recommended by staff, staff does not anticipate that a private well and septic system or onsite water usage by the proposed use will create substantial detriment to adjacent parcels.

Stormwater Management

Members of the public expressed concerns with potential runoff and impacts to Little Ivy Creek which lies southeast of the subject property approximately 325 feet downhill. Development on this site will require a Virginia Stormwater Management Program (VSMP) application. Stormwater management on the subject property will need to demonstrate adherence to State and County regulations prior to VSMP and final site plan approval.

Engineering staff have no concerns with the proposed veterinary use.

Groundwater Contamination

Albemarle County's GIS data identifies four sources of underground contaminants within 250 feet of the subject property, one on TMP 58A2-13 and three on TMP58A2-21. The applicant provided a benzene, toluene, ethylbenzene, and xylenes (BTEX) study from 2013 which concluded that contaminates on TMP58A2-21, the Ivy Exxon site, are moving away from subject property for the proposed veterinary use (Attachment 8). Also, the Department of Environmental Quality (DEQ), which is the entity responsible for monitoring hazardous underground contaminants, provided studies and information to staff which indicate that the contamination release sources on TMP 58A2-21 were recently sampled in February 2020 and have shown improvement since the 2013 BTEX study. Despite the 2018 flood, the underground contaminants on TMP58A2-21 continue to dissolve and attenuate as they move farther from the subject property for the proposed veterinary use (Attachment 9). In addition, DEQ confirmed that contamination sources on TMP 58A2-13, the old Toddsbury store site, no longer present a risk to the environment or existing users (i.e. drinking water supply wells or Little Ivy Creek or its tributaries) (Attachment 10).

Based on the BTEX report provided by the applicant and studies and information provided by DEQ, staff do not have concerns regarding well and groundwater contamination.

Visual Impacts

Community members expressed concern regarding the design of the proposed building and a desire for the development to be harmonious with existing buildings nearby. The maximum building height allowed in the C-1 Commercial district is 65 feet. However, Chapter 7 of the Comprehensive Plan, recommends new development in the Rural Area reflect a size and scale that complement the character of the area in which they will be located. Most surrounding buildings in this area range from approximately 16-40 feet. This is an example of where the zoning ordinance and Comprehensive Plan do not align.

The Conceptual Plan offered by the applicant proposes a maximum building height of 45 feet, which is less than the maximum height allowed in C-1 Commercial districts. Staff recommends a condition to limit the building height to that proposed by the applicant (Condition 1).

Also, since the proposed building will be visible from the Entrance Corridor, it must be reviewed and approved by the Albemarle County Architectural Review Board (ARB) prior to final site plan approval. Additional information on scale and ARB review is included in the next factor section: "*2. Character of the nearby area is unchanged. Whether the character of the adjacent parcels and the nearby area will be changed by the proposed special use.*".

Providing a condition to limit the maximum building height, staff do not have concerns regarding the visual impacts of the proposed use on adjacent properties.

Noise Impacts

Noise impacts were evaluated based upon the proposed use and not those future uses that are by-right.

The proposed use is not anticipated to cause substantial detriment to neighboring properties provided the conditions offered by staff, which restrict outdoor exercise areas and runs and limit overnight boarding activities (Conditions 1 and 3, respectively). More information regarding noise is provided below in: "*3. Harmony. Whether the proposed special use will be in harmony with the purpose and intent of this chapter…with the regulations provided in*

Section 5 as applicable" in the assessment of a special exception related to proximity and noise.

In conclusion, with the conditions recommended by staff, staff find that no substantial detriment to adjacent or nearby parcels will be created by the addition of the proposed veterinary use.

2. Character of the nearby area is unchanged. Whether the character of the adjacent parcels and the nearby area will be changed by the proposed special use.

Staff finds a veterinary use on the subject property to be consistent with the context and character of this area. The character of the area is generally that of a local neighborhood-service hub, comprised of residential services such as a post office, garden center, restaurant, office/retail space (Ivy Commons), and vehicle service and repair. A veterinary can similarly be considered supportive of residential uses and services as it provides local and community-centric opportunities for animal/pet care.

Nearby commercial and institutional buildings range from approximately 16 feet to more than 30 feet in height. The proposed building that will house the 2,500-3,000 square foot vet use is 6,500 sq. feet. Nearby commercial and institutional uses have a range of building footprints as well. For example: the Toddsbury commercial building across the street has a footprint of approximately 2,500 square feet; the garden center footprint is approximately 4,200 square feet; the nearby row of commercial and office buildings at Ivy Commons is approximately 9,600 square feet; and the nearby church is approximately 10,000 square feet. The nearby service station is 3,200 square feet and is proposed to be enlarged to 5,152 square feet.

As mentioned above in the assessment of "*Visual Impacts*", Condition 1 recommended by staff addresses the maximum structure height of the proposed building. This condition aligns with the Conceptual Plan submitted by the applicant and will reduce the maximum building height from the by-right height of 65 feet to 45 feet. Please be aware, if this were a by-right development not needing a special use permit, the proposed building height could be up to 65 feet. As nearby commercial and institutional building heights range from approximately 16 feet to 40 feet, staff believes this reduced building height maximum will support a more harmonious development pattern.

As the applicant describes in their narrative, the proposed 6,500 square foot structure is anticipated to be one-story, which is consistent with the many of commercial/service structures on nearby commercial properties. The applicant has also recognized that existing building footprints in the area (about 2,300-3,300) are smaller than what they are proposing (approximately 6,500). The applicant has thus communicated an intention for the design of the proposed building to simulate a reflection of the existing buildings sizes by constructing a two- or three-unit, modular building that repeats an approximately 2,500 square foot building footprint. The proposed veterinary use is expected to occupy one of these units.

Since the proposed building will be visible from an Entrance Corridor (Route 250/Ivy Road), review and approval of the proposed development, inclusive of the proposed veterinary use, by the ARB will be required during the site plan review process.

ARB review staff, in coordination with Planning staff, recommend two conditions associated with the approval of the proposed use. One to relegate parking to the side and rear of the building (Condition 1) and the other to require the building elevation facing the street to be a

fully designed façade with the appearance of a building front (Condition 4). With these proposed conditions, staff find that the character of the area will remain unchanged.

3. Harmony. Whether the proposed special use will be in harmony with the purpose and intent of this chapter,

Section 18-22 of the Zoning Ordinance outlines the intent of the C-1 Commercial zoning district: "*C-1 districts are hereby created and may hereafter be established by amendment to the zoning map to permit selected retail sales, service and public use establishments which are primarily oriented to central business concentrations. It is intended that C-1 districts be established only within the urban area, communities and villages in the comprehensive plan*."

The proposed veterinary use is consistent with the uses described in the intent of the zoning district. It is not consistent with the intent that these districts be established only in the Development Areas of the Comprehensive Plan. However, this property has been zoned C-1 Commercial since 1980. Additionally, Ivy was previously designated a Village in the Comprehensive Plan until 1989.

Staff finds that the proposed use is in harmony with the purpose and intent of this chapter.

…with the uses permitted by right in the district,
With the proposed conditions offered by staff, which restrict outdoor exercise areas or runs, limit the hours of operation, and restrict boarding animals overnight (Conditions 1, 2, and 3, respectively), this use is not anticipated to significantly impact current or other by-right uses on adjacent and nearby properties.

The addition of a veterinary use in this area is in harmony with the current collection of commercial/service businesses that reside here, particularly as this will increase and broaden the number of community-centric services that support local community members and their families.

…with the regulations provided in Section 5 as applicable,
The proposal has demonstrated compliance with the applicable supplemental regulations contained in Section 5.1.11 of the County Code, except for those required by subsection (b), from which the applicant is requesting special exception.

> **SECTION 5.1.11 - COMMERCIAL KENNEL, VETERINARY SERVICE, OFFICE OR HOSPITAL, ANIMAL HOSPITAL, ANIMAL SHELTER.**
>
> b. **For soundproofed confinements, no such structure shall be located closer than 200 feet to any agricultural or residential lot line. For soundproofed and non-soundproofed confinements, sound measured at the nearest agricultural or residential property line shall not exceed 55 decibels;**

Section 5.1.11(b) requires that soundproofed structures for this use be located no closer than 200 feet from a residential or agricultural lot line. The intent of this regulation is to protect surrounding properties from noise that may be associated with this use.

The closest residential lot line is located approximately 50 feet north of the proposed multiple-tenant building, however the residential *structure* is located about 150 feet

from the proposed building. Located between the proposed multiple-tenant building and residential lots north of the subject property is an elevated railroad. The elevated railway creates at least a 12 foot topographic barrier that will likely buffer or dampen noise that may be generated onsite by the proposed veterinary use. Also, in comparison, potential noise impacts associated the veterinary use may be less impactful to nearby residences than that associated with more proximate railway.

With the understanding that the proposed building is expecting to have multiple tenants, the applicant's materials suggest that the proposed veterinary use may be located in the tenant space furthest from the residential lots. In which case, the proximity of the veterinary use would be approximately 150 feet from the nearest residential lot line and 270 feet from the nearest residential structure on that lot.

There is also a residential structure located on a nearby C-1 Commercial lot (TMP 58A2-21) about 175 feet from the proposed building and veterinary use. This lot contains a residential structure as well as an existing auto service and fuel station. Existing commercial/service activities on the lot may mask noise that is generated by the veterinary use.

In all cases, County Code Section 4.18 will protect nearby property owners and tenants – residential, institutional, and commercial – from noises that may be generated by this use. Section 4.18.04, which addresses maximum sound levels, dictates that noises generated onsite cannot exceed the following:

- At rural area, residential, or institutional property lines: 60 decibels (daytime) and 55 decibels (nighttime)
- At commercial property lines: 65 decibels

If the requested waiver from subsection(b) were approved, the requirements of Section 4.18 would still be in place to protect surrounding neighbors.

Therefore, based on the topographic barrier created by the elevated railway and the noise regulations contained in Section 4.18 to which the proposed use would continue to be subject, staff supports the special exception request to allow the proposed use to be located less than 200 feet from the nearest residential lot line.

Additional regulations contained in Section 5.1.11 require:

a. Except where animals are confined in soundproofed, air-conditioned buildings, no structure or area occupied by animals shall be closer than 500 feet to any agricultural or residential lot line. For non-soundproofed animal confinements, an external solid fence not less than six feet in height shall be located within 50 feet of the animal confinement and shall be composed of concrete block, brick, or other material approved by the zoning administrator;

This subsection is not applicable. Animals associated with the veterinary use will be confined to a soundproofed, air-conditioned building.

c. In all cases, animals shall be confined in an enclosed building from 10:00 p.m. to 6:00 a.m.

The applicant has expressed that the veterinary use will not offer overnight boarding services. Staff recommends a proposed condition to formalize this aspect of the applicant's proposal and ensure no additional conditions are needed to protect surrounding property owners and tenants from overnight boarding activities (Condition 3).

d. In areas where such uses may be in proximity to other uses involving intensive activity such as shopping centers or other urban density locations, special attention is required to protect the public health and welfare. To these ends the commission and board may require among other things: Separate building entrance and exit to avoid animal conflicts; Area for outside exercise to be exclusive from access by the public by fencing or other means.

The proposed building is not anticipated to draw intensive activity like that associated with traditional shopping centers. The applicant's Conceptual Plan notes that other tenant spaces within the building are anticipated to be occupied by general office uses. Also, this requirement will be evaluated during site planning. If a separate entrance or exit to the veterinary use is found to be needed, it can be required at that time.

Staff find the proposal can meet all the supplemental regulations in Section 5.1.11 with a special exception from subsection (b).

…and with the public health, safety, and general welfare.
Public health, safety, and welfare comments are expounded above in the first factor section: "*No substantial detriment. Whether the proposed special use will be a substantial detriment to adjacent parcels.*"

Based on staff's review of information provided by the applicant, evaluation against the Zoning Ordinance, and supplemental information provided by partner agencies, including VDH and DEQ, staff did not find evidence that the proposed veterinary use would be detrimental to public health, safety, or general welfare.

4. Consistency with the Comprehensive Plan. Whether the proposed special use will be consistent with the Comprehensive Plan.

The zoning of this property, C-1 Commercial, is inconsistent with the Comprehensive Plan land use recommendation which directs development into the Development Areas. However, as has been previously stated, the decision to zone this property C-1 Commercial has been made and the County has initiated no action since 1980 to change the zoning designation. Additionally, the property was previously within a Village (Development Area) until 1989.

Also note that veterinary services and animal hospitals are allowed by special use permit in the Rural Area (RA) zoning district. Therefore, if the subject property were zoned RA to be consistent with the Comprehensive Plan, the proposed use would still be allowed by special use permit on the subject property (Sec. 10.2.2.18).

<u>Chapter 3: Growth Management</u>
Strategy 1a of Chapter 3 (Growth Management) reads in part: *"Only approve new development proposals in the Rural Area that are supported by Rural Area goals, objectives, and strategies."* The Growth Management Policy encourages the protection of the following

elements that define the Rural Area: agricultural resources, forestry resources, land preservation, land conservation, water supply resources, natural resources, scenic resources, and historical, archaeological, and cultural resources as well as promoting development within Development Areas.

In comparison with the aforementioned list of elements, the development of this parcel for a veterinary use is found to be generally consistent with the Growth Management Policy. There are no agricultural/forestall districts, conservation easements or open space agreements affecting the subject property. Staff is recommending a condition to ensure that water supply resources are not negatively impacted by this development (Condition 5). The applicant has submitted a special exception to disturb some of the critical slopes on the property and staff is supporting this request, see Attachments 11 and 12, respectively. Alignment with and protection of scenic resources in this area will be addressed through review of the site plan by ARB. There are no known historical, archaeological, or cultural resources on this site. Finally, development of the subject property for commercial uses is allowed by-right and cannot be changed with this special use permit request. It is arguable that many other commercial uses could be located here by-right, however a veterinary use is a commercial use that is readily compatible with the other local, residential-oriented businesses in this area.

Chapter 7: Rural Area
The preferred land uses in the Rural Area are agricultural and forestry uses. New structures and uses in the Rural Area, when permitted, should be of appropriate scale and character for the Rural Area. As discussed previously in factor section 2, "*Character of the nearby area is unchanged. Whether the character of the adjacent parcels and the nearby area will be changed by the proposed special use.*", the height of the proposed development associated with the veterinary use, is higher than nearby commercial, office, and institutional structures that exist in the area today. However, this height is less than what could be developed by-right, which is 65 feet.

While staff acknowledge that development of this undeveloped subject property can be perceived as having a negative impact on the adjoining and nearby properties within the Rural Area, proposed conditions recommended by staff which limit the maximum building height and require the building elevation facing the street to be a fully designed façade with the appearance of a building front work to support the Comprehensive Plan's goals for new development that is of an appropriate scale and character within the Rural Area (Conditions 1 and 4, respectively).

SUMMARY:

Staff finds the following factors favorable to this request:

1. The proposed use will not adversely affect uses permitted by-right on nearby or adjacent properties.
2. The veterinary use is consistent with the character of commercial/service uses offered in this area.
3. The proposed use meets the relevant supplementary regulations of the zoning ordinance.

Staff finds the following factor(s) unfavorable to this request:

1. The proposing building height is allowed by the zoning ordinance but does not reflect a size and scale that complements the character of the area, as recommended by the Comprehensive Plan in Rural Areas.

RECOMMENDED ACTION for SP202000005:
Staff recommends approval of special use permit application SP202000005 with the following conditions:

CONDITIONS:

1. Development of the use must be in general accord (as determined by the Director of Planning and the Zoning Administrator) with the conceptual plan titled "Ivy Proper – Special Use Permit Conceptual Plan," prepared by Timmons Group, with the latest revision date of 4/17/2020. To be in general accord with the Conceptual Plan, development must reflect the following essential major elements of the Conceptual Plan:
    - Parking areas that are relegated to the side and rear of the building;
    - Building height; and
    - No outdoor exercise areas or runs.
2. The hours of operation for the clinic may not begin earlier than 7:00 a.m. and may not end later than 8:00 p.m.
3. No overnight boarding use, other than for those animals under medical care, may take place at the veterinary clinic.
4. The building elevation facing the street must be a fully designed façade with the appearance of a building front, as determined by the Director of Planning.
5. The applicant must install and maintain a tamper-proof, flow restriction device limiting water flow to not more than three hundred and forty-eight (348) gallons per day.

SPECIAL EXCEPTION – VETERINARY BUILDING LOCATION
The applicant is requesting a special exception to waive the requirements of Section 5.1.11(b) of the zoning ordinance to allow the veterinary building to be located within 200 feet to a residential lot line. Staff analysis of this request is included above in "*3. Harmony. Whether the proposed special use will be in harmony with the purpose and intent of this chapter…with the regulations provided in Section 5 as applicable*".

RECOMMENDED ACTION
Based on the analysis contained herein, staff recommends approval of the applicant's request to locate the veterinary building within 200 feet of a residential lot line.

SPECIAL EXCEPTION REQUEST – CRITICAL SLOPES WAIVER
The applicant is requesting a special exception to waive the requirements of Section 4.2 of the zoning ordinance to allow the disturbance of 5,282 square feet of critical slopes (slopes greater than 25% in the rural area). The applicant's request is provided in Attachment 11 which demonstrates locations where disturbance is requested. Staff analysis of this request is provided in Attachment 12.

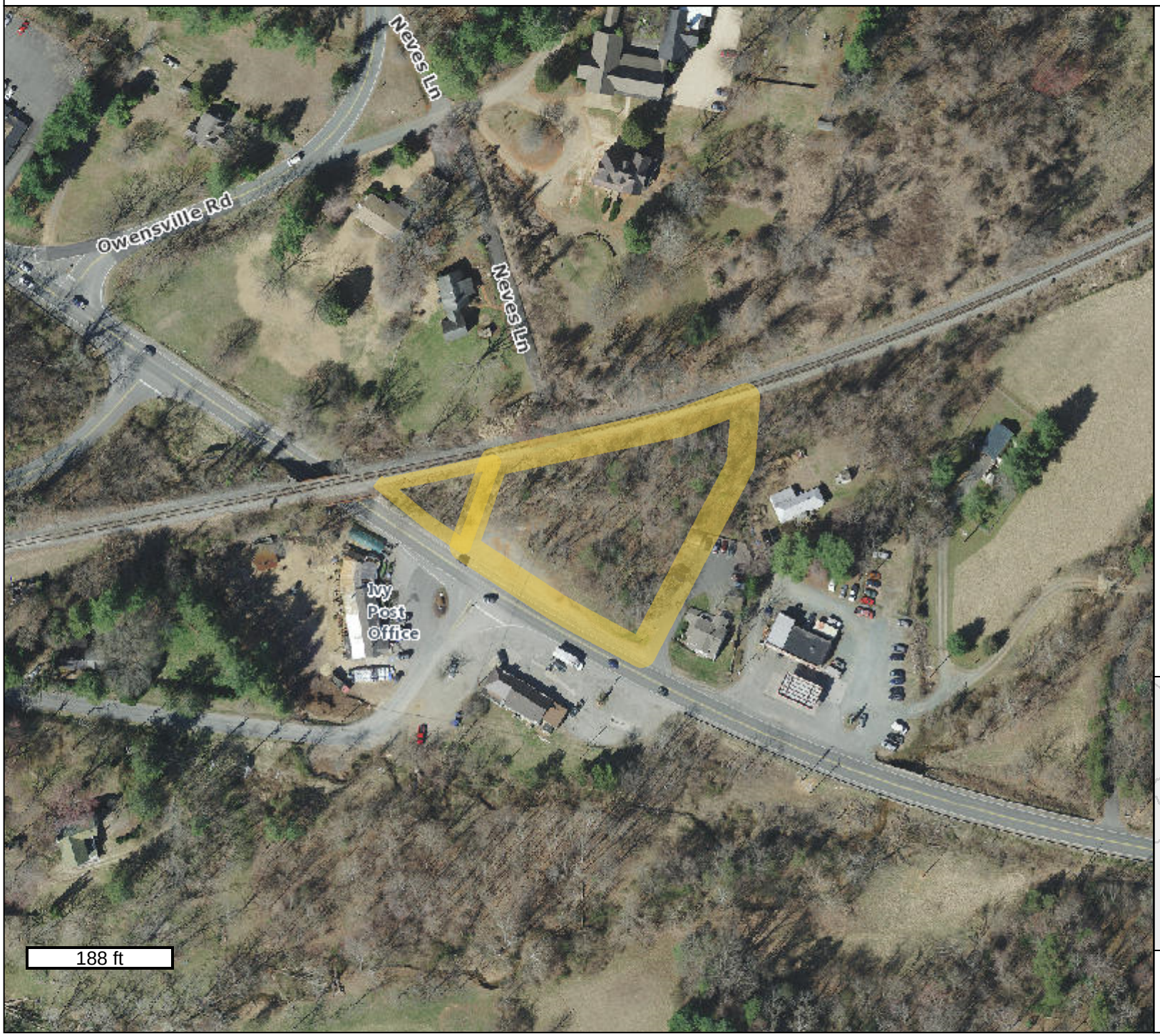
RECOMMENDED ACTION:
In consideration of the analysis and recommendation provided by the County Engineer, staff recommends approval of the applicant's request to disturb critical slopes with the following conditions:

1. The area of land disturbance on critical slopes must not exceed 5,282 square feet as described and shown in the request entitled "Ivy Proper Critical Slopes Waiver – Special Exception Request" prepared by Timmons Group and dated April 20, 2020.

2. A geotechnical report, recommendation, and design drawings for the retaining walls must be submitted and approved to the satisfaction of the County Engineer prior to approval of the VSMP application.

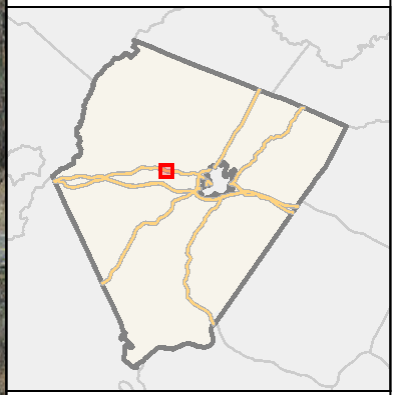
ATTACHMENTS

Attachment 1 – Vicinity Map
Attachment 2 – Zoning of Surrounding Area
Attachment 3 – Project Narrative, submitted April 20, 2020
Attachment 4 – Conceptual Plan, latest revision date of April 17, 2020
Attachment 5 – Community Comments submitted via email
Attachment 6 – Approved Waiver for Water Connection, dated June 16, 2020
Attachment 7 – Approved Septic System Plan
Attachment 8 – BTEX Report, dated April 12, 2013
Attachment 9 – Monitoring Report for Ivy Exxon Site, dated March 3
Attachment 10 – 2020 Close Out Report for Toddsbury Site, dated May 2, 2019
Attachment 11 – Critical Slopes Waiver Request, dated April 20, 2020
Attachment 12 – Staff Analysis of Critical Slopes



Legend

(Note: Some items on map may not appear in legend)

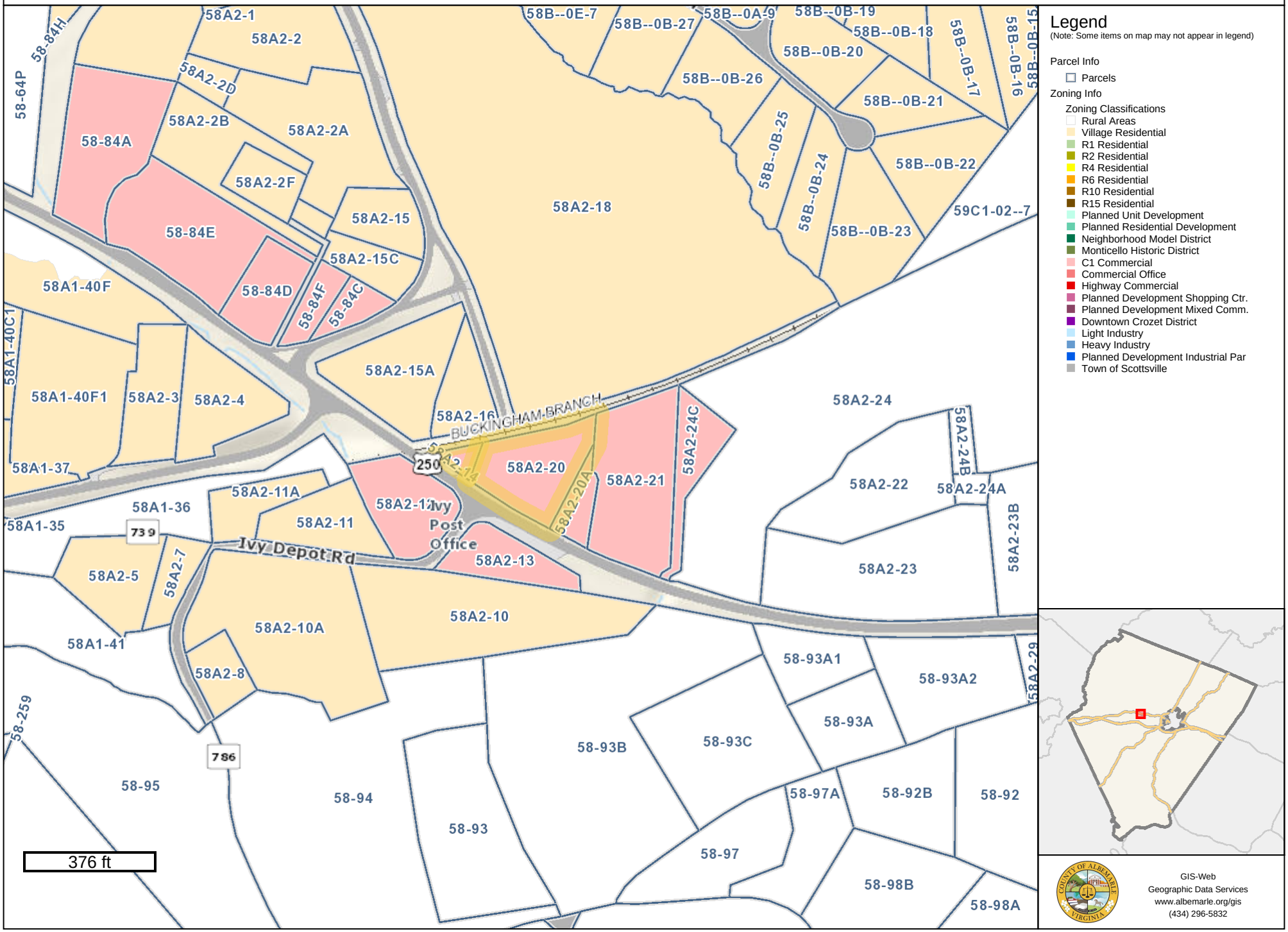


GIS-Web
Geographic Data Services
www.albemarle.org/gis
(434) 296-5832

Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination.

June 26, 2020

Map elements may scale larger than GIS data measured in the map or as provided on the data download page due to the projection used. Map Projection: WGS84 Web Mercator (Auxiliary Sphere) (EPSG 3857)



Legend

(Note: Some items on map may not appear in legend)

Parcel Info

- Parcels

Zoning Info

Zoning Classifications

- Rural Areas
- Village Residential
- R1 Residential
- R2 Residential
- R4 Residential
- R6 Residential
- R10 Residential
- R15 Residential
- Planned Unit Development
- Planned Residential Development
- Neighborhood Model District
- Monticello Historic District
- C1 Commercial
- Commercial Office
- Highway Commercial
- Planned Development Shopping Ctr.
- Planned Development Mixed Comm.
- Downtown Crozet District
- Light Industry
- Heavy Industry
- Planned Development Industrial Par
- Town of Scottsville

GIS-Web
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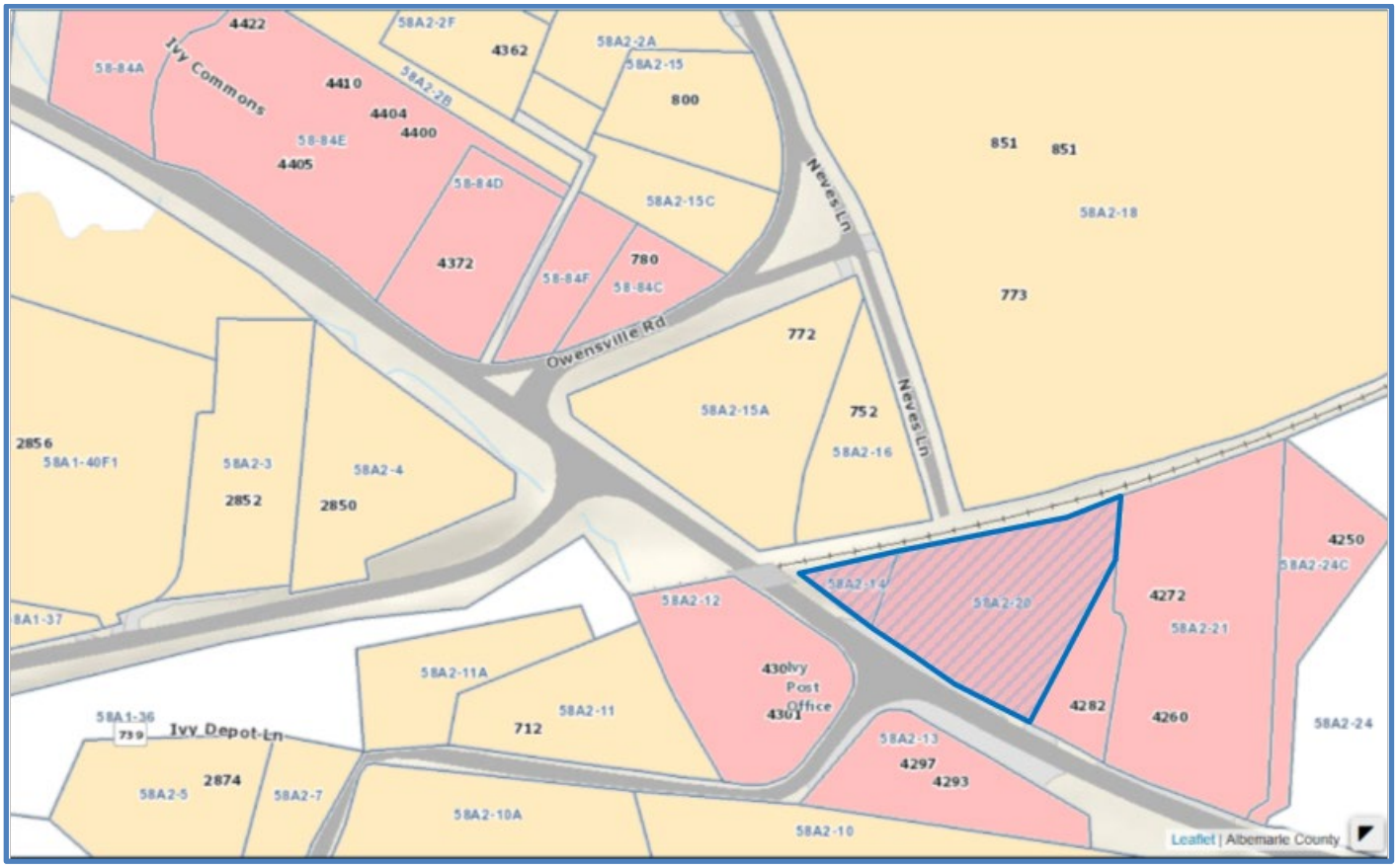
Map elements may scale larger than GIS data measured in the map or as provided on the data download page due to the projection used. Map Projection: WGS84 Web Mercator (Auxiliary Sphere) (EPSG 3857)

PROJECT PROPOSAL

Introduction

BMC Holdings Group (the "Applicant") is the contract purchaser for TMP 58A2-14 and TMP 58A2-20 (the "Property") which are currently owned by LENVIC LLC. Both parcels are currently zoned C-1 but are embedded Albemarle County's Rural Area in the iconic *"crossroads community"* of Ivy. See Image 1.

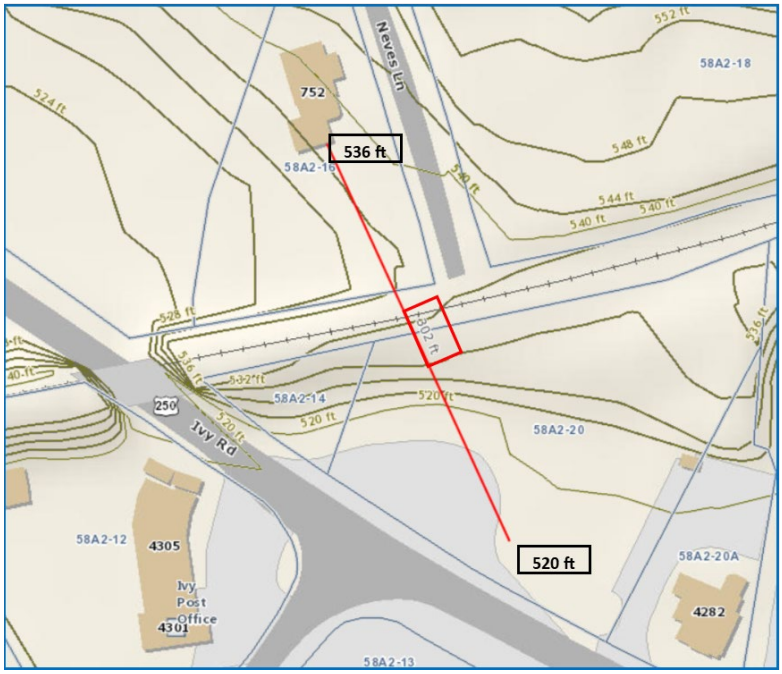
Image 1.



The Applicant requests a Special Use Permit for a 2,500-3,000 square foot veterinarian's office located within a +/- 6,500 square foot, multi-tenant structure on the Property. Anticipated potential hours of operation are from 7:00 am to 7:00 pm seven days per week.

The SUP is required under the C-1 zoning and additional subject to Sec. 5.1.11.b because the proposed structure is closer than 200 feet to residential lots lines. However, to the south the residential lot lines are separated from the Property by other parcels zoned C-1 and U.S. Route 250 and to the north by Buckingham Branch Railroad. The closest residentially zoned dwelling is over 300 feet from the proposed structure separated by 16 feet of elevation and the railroad, both of which will mitigate noise. Applicant acknowledges the rest of Section 5.1.11, including but limited to, the requirement for soundproofing such that sounds measured at the property line shall not exceed 55 decibels. There is a residential use on parcel 58A2-21; however, that parcel is also zoned C-1 with a service station and garage also on the property. This current use is arguably more disruptive to the co-located, residential use than the proposed veterinary office. See Image 2.

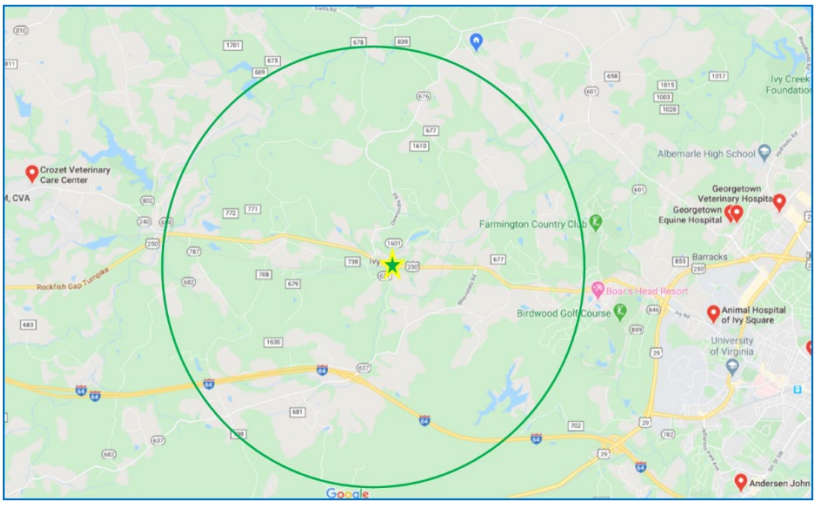
Image 2.



Public Need and Benefit

Ivy epitomizes one of Albemarle County's *crossroads communities* complete with a full-service garage, a U.S. Post Office, a four-season nursery and garden center, and an old motel converted to retail and service oriented enterprises servicing the community, and, of course, Duner's. We proposed to add 6,500 sf of light medical office space to the community anchored by a small-animal veterinary office. Currently, the closet veterinary services are at least five miles in either direction. A new office in this location would service potentially 24.6 square miles of Albemarle County. The following map shows existing veterinary services with red pins and the proposed location as a green and gold star. See Image 3.

Image 3.



Factors for Consideration (per 18-33.40)

- **No Substantial Detriment**

The proposed development of these parcels contributes to the Ivy crossroads community by adding additional services. The site has been used for illegal dumping and parking and unkempt for quite some time. In its current state it is a blight on the Ivy entrance corridor. We are working with the adjacent property owner, and the respective tenants, on an updated, shared entrance that benefits both properties.

- **Character of the Nearby Area is Unchanged**

Our development team, including the architecture firm of Design Develop, studied all of the existing commercial building in Ivy. Our intention is to add a structure that acknowledges its context while adding more contemporary adaptation of these designs. The veterinary use does not adversely change the character of the proximate uses, which include a service station, a post office, a nursery and garden center, offices, a convenience store, and others. The ARB review process will ensure that the aesthetic of the building is appropriate.

- **Harmony**

A veterinary office is harmonious with other uses designated on the Comprehensive plan as rural areas, especially considering the C-1 zoning. Consider VCA Albemarle Veterinary Health Care on Westfield Road, Pantops Veterinary Hospital on Winding River Lane, and Animal Medical Center of Charlottesville on S. Pantops Drive as precedent examples.

- **Consistency with Albemarle County's Comprehensive Plan**

The Comprehensive Plan recognizes that "traditional crossroads communities" are an essential and vibrant part of our unique fabric. These crossroads are supposed to "provide support services and opportunities to engage in community life" (Comprehensive Plan, Rural Areas, 7.3). For many of our friends and neighbors, their pets are members of their families. Having local care for these family members is an ideal support service and a truly viable aspect of community life. The size and scale of the project will ultimately be determined during site plan and ARB review and are not specific to the requested use. For reference, however, the proposed 6,500 sf building is one-story, which is consistent with all the other commercial properties in the community. The old Toddsbury building is +/- 2,338 sf. The post office and Ivy Garden building is +/- 3,360 sf. Ivy Exxon is +/- 2,628 sf. The proposed building intentionally picks up this scale by repeating 2 or 3 modules of similar size.

Impacts on Public Facilities and Infrastructure

The proposed commercial building located on parcels TMP 58A2-14 and TMP 58A2-20 seeks to demonstrate substantial conformance with County zoning requirements for commercial developments, as well as meeting State, Albemarle County, and VDOT engineering standards for proposed infrastructure. The proposed commercial building includes approximately 2,500 square feet of Veterinary Clinic use, and approximately 4,000 square feet of General Office Space.

The project proposes one entrance into the parking facility from Ivy Road. The proposed entrance will be shared by the proposed development as well the existing building located on the adjacent parcel at 4282 Ivy Road. VDOT engineers have expressed its support of the proposed shared entrance in lieu of individual site entrances. The proposed uses will generate an additional 93 vehicular trips per day based on the ITE Trip Generation Manual. No adverse impacts are anticipated to the adjacent road system given the relatively low amount of traffic volume generated.

Stormwater will be captured on site with drainage inlets and directed underground to a proposed underground stormwater management facility. The proposed facility will detain and release stormwater at a rate this less than the runoff generated in the site's pre-developed condition. All state and local Stormwater Quantity regulations will be met.

No impacts to the public sanitary sewer or water infrastructure are proposed. This project will utilize a private well and private septic system.

Impacts on Environmental Features

The applicant desires to develop the land in an environmentally conscious way. The site in its currently condition is partially covered by asphalt and gravel surface. This project aims to make improvements to the management of stormwater runoff. The site's runoff is currently directed towards Ivy Road, where the runoff follows an undefined shallow channel just outside of the pavement. Sediment and gravel generated from the erosive runoff appears to be carried to a nearby inlet, before out-falling directly into Ivy Creek. The proposed stormwater management approach is to capture the site's stormwater in drainage inlets onsite, pipe it to an underground storage facility, and eventually pipe the water to the existing drainage inlet adjacent to Ivy Road. This approach will greatly reduce the volume of stormwater runoff directed over land towards Ivy Road, and thus mitigate the sediment laden water which currently spills into Ivy Creek.

Water quality impacts will be achieved via onsite stormwater treatment, or though the stormwater nutrient credit purchasing program. Applicable Erosion and Sediment Control measures will be provided per State and local regulations in order to ensure adjacent waterways and properties are protected during construction.

Groundwater quality has also been considered with this project. This site has been identified as being within 2,000' of a Leaking Tank Site. As such, a "BTEX" water quality test will be prepared by the applicant for review by Albemarle County Service Authority, DEQ, and/or County Engineer in order to demonstrate the availability of safe drinking water.

Disturbance of critical slopes are proposed with this project. The slopes in question appear to be engineered slopes that are the result of the adjacent railroad construction. Efforts will be made to minimize impacts to the slopes, and to minimize the height of proposed retaining walls. A critical slopes waiver will be submitted to the County of Albemarle for review and approval prior to Site Plan Approval.

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Albemarle County Health Department
1138 Rose Hill Drive
Charlottesville, VA 22903
(434) 972-6219
(434) 972-4310 Fax

PE Sewage Disposal System Construction Permit Letter (COV 32.1-163.6)

December 05, 2018

BMC Holdings, LC
400 Locust Avenue Suite 3
Charlottesville, VA 22902

☑ APPROVED

Tax Map: 58A2-14 & 20
HDID: 101-18-0506 **Reserve:** 100% reserve area provided
System Capacity: Non-Residential, Flow equalized to disperse 875 gallons per day max
System Description: AOSS to serve a commercial office complex to include a physical therapy office along with other potential uses as outlined in the design
Well Class: Class IIIB (Cased and grouted 50' minimum)
Permit Notes: Existing well MUST be abandoned prior to system installation

Dear BMC Holdings, LC :

This letter and the attached drawings, specifications and calculations dated November 19, 2018 constitute your **permit** to install a sewage disposal system and private well on the property referenced above. Your application for a permit was submitted pursuant to §32.1-163.6 of the *Code of Virginia,* which requires the Virginia Department of Health (VDH) to accept designs for onsite sewage systems from individuals licensed as Professional Engineers (PEs). This law allows PEs to design onsite sewage systems that do not fully comply with the *Sewage Handling and Disposal Regulations* (12 VAC 5-610-10 *et seq.)* and requires VDH to accept such designs provided they comply with standard engineering practices, performance requirements set by the Board of Health, and certain horizontal setback requirements necessary to protect public health and the environment. VDH hereby recognizes that the design submitted by **Michael Craun, P.E.** complies with the requirements of the *Code of Virginia* and the applicable regulations and grants permission to install the system as designed in the area shown on the attached plans and specifications.

If modifications or revisions are necessary between now and when the system is constructed, please contact the PE who designed the system upon which this permit is based. Should revisions be necessary during construction, your contractor should consult with the PE. The PE is authorized to make minor adjustments in the location or design of the system provided that adequate documentation is provided to the Albemarle County Health Department.

The PE that submitted the design for this permit is required by the *Sewage Handling and Disposal Regulations* to conduct a final inspection of this sewage system when it is installed and to submit an inspection report and completion statement to the Albemarle County Health Department. The health department is not required to inspect the installation, but may do so at its sole discretion. The sewage system may not be placed into operation until you have obtained an Operation Permit from the Albemarle County Health Department.

OWNER
Keep For Your Records

This Construction Permit is null and void if site and soil conditions are changed from those shown on your application or if conditions are changed from those shown on the attached plans and specifications. VDH may revoke or modify any permit if, at a later date, it finds that the system would threaten public health or the environment.

This permit approval has been issued in accordance with applicable regulations based on the information and materials provided at the time of application. There may be other local, state, or federal laws or regulations that apply to the proposed construction of this onsite sewage system. The owner is responsible at all times for complying with all applicable local, state, and federal laws and regulations. This construction permit is transferrable until expired or deemed null and void. A permit transfer form may be found on the VDH website at http://www.vdh.virginia.gov/environmental-health/gmp-2015-01-forms/ .

If you have any questions, please contact me.

This permit expires **June 05, 2020**.

Sincerely,

Josh Kirtley
Environmental Health Technical Specialist

Cc: Craun, Michael, P.E.

WHAT YOU WILL NEED TO GET YOUR SEPTIC SYSTEM OPERATION PERMIT

- Your system must have a **satisfactory inspection** at the time of installation. This will be done by the designer of your permitted system, a private OSE or PE. Your OSE or PE must submit a copy of the inspection results, complete with an as-built diagram, to the Health Department.
- Please ensure that your contractor turns in a **Completion Statement** to the local Health Department after installation.
- If your permit is for an alternative system, you must sign, have notarized, and record the attached **Notice of Recordation** in your locality's land records. Please bring proof of this recordation to the local Health Department

IF YOUR PERMIT IS FOR BOTH A SEPTIC SYSTEM AND WELL YOU WILL ALSO NEED

- Your well must have **satisfactory inspection** results after installation. Please give the Health Department several days notice to schedule this inspection before your Operation Permit will be requested.
- The Health Department must receive a copy of your **water sample test result** being negative/satisfactory for coliform bacteria. You are responsible for performing this test and ensuring the results are received at the Health Department
- Please ensure that your Well Driller submits a Uniform **Water Well Completion Statement or GW-2** to the Health Department, including documentation of a proper well abandonment if required by permit

Allow 5 business days after the last piece of documentation is received for the Operation Permit to be issued. To avoid delays, clearly label each piece of documentation with the property Tax Map number and HDID number shown above and on your construction permit. *Please note that due to the individual circumstances of your permit there may be additional required items not covered by this checklist.*

If you have any questions about any of the items on this list, please do not hesitate to contact the Albemarle County Health Department at (434) 972-6219.

IVY PROPER

SPECIAL USE PERMIT CONCEPTUAL PLAN

SP202000005

COUNTY OF ALBEMARLE

FEBRUARY 18, 2020

SITE DATA:

TAX MAP PARCEL AND OWNER INFO: PARCEL(S) 340090B00, 340090C00 & 340090100
LENVIC LLC
2506 BRANDERMILL PL
CHARLOTTESVILLE, VA 22911

TOTAL SITE AREA: 0.87 ACRES (PARCELS 58A2-14 AND 58A2-20 COMBINED)

PROPOSED IMPERVIOUS AREA: 0.466 ACRES

LIMITS OF DISTURBANCE: 0.61 ACRES

SOURCE OF SURVEY, BOUNDARY, AND TOPOGRAPHY: BASED ON FIELD SURVEY BY TIMMONS GROUP DATED 1/11/19.

VERTICAL DATUM REFERENCE: NAVD 88

CURRENT USE: VACANT

PROPOSED USE: 2,500 SF VETERINARY CLINIC
4,000 SF GENERAL OFFICE
6,500 SF TOTAL BUILDING FOOTPRINT

ZONED: C1 (COMMERCIAL)
ENTRANCE CORRIDOR OVERLAY

SETBACKS: PRIMARY STREET FRONTAGE (IVY ROAD): 10' MINIMUM
SIDE AND REAR: NONE

ADJACENT AREAS: NORTH - RAILROAD
EAST - COMMERCIAL
SOUTH - IVY ROAD
WEST - IVY ROAD

UTILITIES: PRIVATE WELL AND SEPTIC ON SITE. SEPTIC SYSTEM APPROVED BY VDH FOR UP TO 875 GPD.

ESTIMATED WATER USAGE:
USE: VETERINARIAN OFFICE: 250 GPD PER PRACTITIONER/SHIFT
1 PRACTITIONER X 250 GPD = 250 GPD
USE: GENERAL OFFICE: 25 GPD PER EMPLOYEE/SHIFT
13 EMPLOYEES X 25 GPD = 325 GPD
TOTAL ESTIMATED WATER USAGE: 575 GPD
(UNIT USAGE FROM NORTH CAROLINA CODE, 15A NCAC 02T.0114)

REQUIRED PARKING:

VETERINARY CLINIC: 1 SPACE PER 200 SQUARE FEET OF GROSS FLOOR AREA EXCLUSIVE OF THAT AREA TO HOUSE ANIMALS.
1 SPACE X 1,200 SF / 200 SF = 6 SPACES
GENERAL OFFICE: 1 SPACE PER 200 SQUARE FEET OF GROSS FLOOR AREA.
1 SPACE X (4,000 SF X 0.8) / 200 SF = 16 SPACES
PARKING FOR ADJACENT PARCEL (4282 IVY ROAD): 7 SPACES

TOTAL PARKING REQUIRED: 29 SPACES

PARKING PROVIDED: 34 SPACES

MAXIMUM ALLOWABLE BUILDING HEIGHT: 65 FT (COMMERCIAL DISTRICT)

PROPOSED BUILDING HEIGHT: 45 FT MAXIMUM

NOTES:
1. PROPERTY FALLS WITHIN IVY CREEK WATER SUPPLY WATERSHED.
2. LANDSCAPING SHALL BE PROVIDED PURSUANT TO SECTION 32.7.9 OF THE COUNTY ZONING ORDINANCE AND THE ARB DESIGN GUIDELINES.
3. SITE LIGHTING SHALL BE PROVIDED PURSUANT TO SECTION 4.17 OF THE COUNTY ZONING ORDINANCE AND THE ARB DESIGN GUIDELINES.

VEHICLE TRIP GENERATION

LAND USE: GENERAL OFFICE
ITE CODE: 710
4,000 SF
ADT (WEEKDAY): 9.74 TRIPS PER 1000 SF -> 39 ADT

LAND USE: ANIMAL HOSPITAL/VETERINARY CLINIC
ITE CODE: 640
2,500 SF
ADT (WEEKDAY): 21.5 TRIPS PER 1000 SF -> 54 ADT

TOTAL AVERAGE DAILY TRIPS: 93

WATER QUALITY ANALYSIS (PRELIMINARY):

SITE DATA
PRE DEVELOPED AREA
IMPERVIOUS = 0.122 AC
TURF = 0.069 AC
WOODED = 0.689 AC

PRE DEVELOPMENT LOAD (TP) (LB/YR) = 0.32 LB/YR

POST DEVELOPED AREA
IMPERVIOUS = 0.466 AC
TURF = 0.144 AC
WOODED = 0.260 AC

POST DEVELOPMENT LOAD (TP) (LB/YR) = 1.10 LB/YR

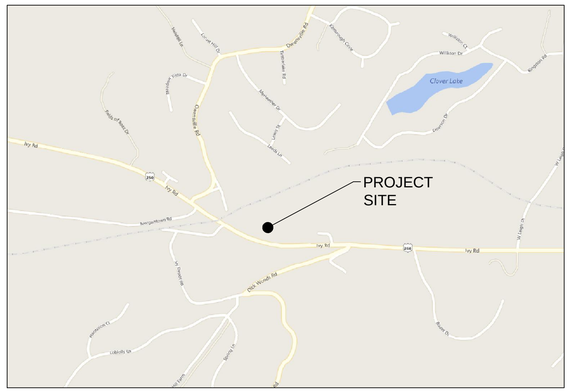
MAXIMUM PERCENT REDUCTION REQUIRED FOR REDEVELOPMENT = 10%

TOTAL LOAD REDUCTION REQUIRED (LB/YR) = 0.68 LB/YR

VIRGINIA STORMWATER MANAGEMENT PROGRAM REQUIREMENTS FOR WATER QUALITY WILL BE MET THROUGH EITHER ONSITE TREATMENT OR THROUGH THE NUTRIENT CREDIT PROGRAM.

WATER QUANTITY NARRATIVE:

CHANNEL PROTECTION AND FLOOD PROTECTION REQUIREMENTS WILL BE MET THROUGH THE USE OF AN ONSITE UNDERGROUND STORMWATER MANAGEMENT STORAGE PIPE.



VICINITY MAP

SCALE 1":1000'

OWNER:

LENVIC LLC
2506 BRANDERMILL PL
CHARLOTTESVILLE, VA 22911

DEVELOPER:

BUILDING MANAGEMENT CO.
400 LOCUST AVE, SUITE 3
CHARLOTTESVILLE, VA 22902
CONTACT: ROBBY NOLL
PHONE: 434-977-6400

ENGINEER OF RECORD:

TIMMONS GROUP
608 PRESTON AVENUE, SUITE 200
CHARLOTTESVILLE, VA 22903
CONTACT: CLINT SHIFFLETT, P.E.
TELEPHONE: 434-327-1690

Sheet List Table

Sheet Number	Sheet Title
C0.0	COVER
C2.0	SITE CONTEXT PLAN
C3.0	EXISTING CONDITIONS
C4.0	SUP CONCEPT PLAN
C4.1	SIGHT DISTANCE PROFILE

TOTAL: 5 SHEETS

SITE PLAN LEGEND

EXISTING	PROPOSED
PROPERTY LINE	WATER
POST/BOLLARD	GAS
SIGN	STORM
BUMPER BLOCK	SANITARY
SATELLITE DISH	COMM DUCT BANK
TRAFFIC CONTROL BOX	ELECTRIC DUCT BANK
UNKNOWN MANHOLE	CATCH BASIN
STORM SEWER	STORM MANHOLE
STORM SEWER MANHOLE	SANITARY MANHOLE
CATCH BASIN	SANITARY CLEAN OUT
CATCH BASIN WITH DOME GRATE	FIRE HYDRANT
TRENCH DRAIN	FDC
SANITARY SEWER	METER
SANITARY SEWER MANHOLE	SETBACK - AT/FP STANDOFF
WATER LINE	WATER VALVE
WATER MANHOLE	GAS VALVE
WATER VALVE	BOLLARD
WATER LINE MARKER	STREET SIGN
FIRE HYDRANT	GAS METER
MONITORING WELL	LIMITS OF DISTURBANCE
GAS LINE	GUARDRAIL
GAS METER	FENCE
GAS VENT	MAJOR CONTOUR
GAS MARKER	MINOR CONTOUR
COMMUNICATIONS/TELEPHONE LINE	SITE LIGHT
TELEPHONE/COMMUNICATIONS MANHOLE	PARKING SPACE COUNT
TELEPHONE PEDESTAL	
COMMUNICATIONS VAULT	
ELECTRIC LINE	
ELECTRIC MANHOLE	
ELECTRIC PULLBOX	
ELECTRIC METER	
UTILITY POLE	
DECIDUOUS TREE	
GUARDRAIL	
FENCE	
MAJOR CONTOUR	
MINOR CONTOUR	
SOIL BORING	
SURVEY CONTROL MONUMENT	
SURVEY CONTROL POINT	

GRADING

TC = TOP OF CURB
BC = BOTTOM OF CURB
EP = EDGE OF PAVEMENT
EC = EDGE OF CONCRETE
TW = TOP OF WALL
BW = BOTTOM OF WALL
TS = TOP OF STAIRS
BS = BOTTOM OF STAIRS
N/A = NOT APPLICABLE TO THIS PROJECT

THIS DRAWING PREPARED AT THE
CHARLOTTESVILLE OFFICE
608 Preston Avenue, Suite 200 | Charlottesville, VA 22903
TEL 434.295.5624 FAX 434.295.8317 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION
SUP STAFF COMMENTS

DATE 04/17/2020

DATE 02-18-2020
DRAWN BY Z. DAHL
DESIGNED BY C. SHIFFLETT
CHECKED BY C. SHIFFLETT
SCALE

TIMMONS GROUP

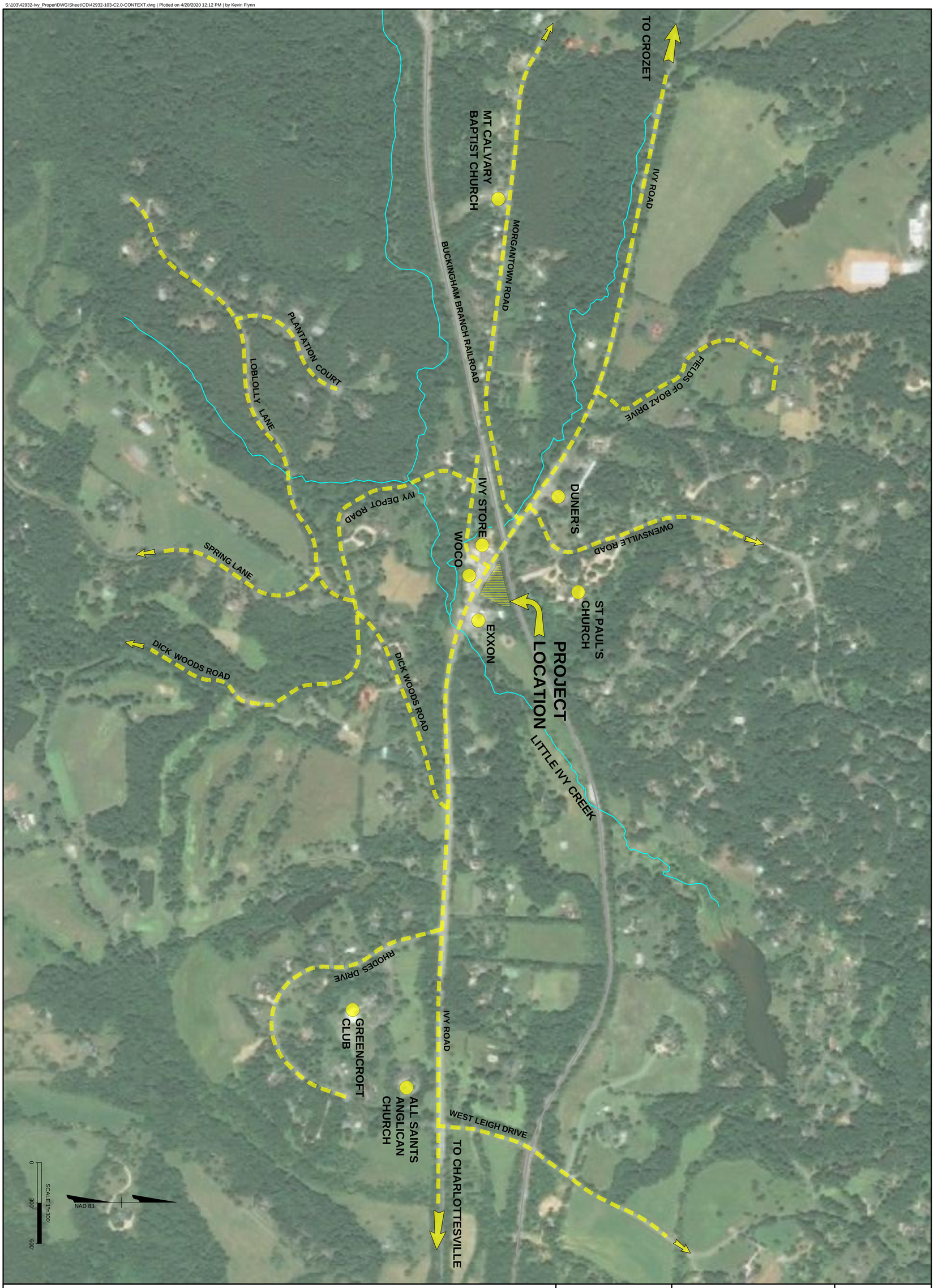
IVY PROPER - SPECIAL USE PERMIT CONCEPTUAL PLAN
ALBEMARLE COUNTY, VIRGINIA
COVER

JOB NO. 42932
SHEET NO. C0.0

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S:\10342\42932-Ivy_Proper\DWG\Sheet\CD\42932-103-C1.0-COVER.dwg | Plotted on 4/20/2020 12:12 PM | by Kevin Flynn

S:\103\42932-Ivy_Proper\DWG\Sheet\CD\42932-103-C2.0-CONTEXT.dwg | Plotted on 4/20/2020 12:12 PM | by Kevin Flynn



TIMMONS GROUP

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CHARLOTTESVILLE OFFICE
608 Preston Avenue, Suite 200 | Charlottesville, VA 22903
TEL 434.295.5624 FAX 434.295.8317 www.timmons.com

SHEET NO. C2.0

JOB NO. 42932

IVY PROPER - SPECIAL USE PERMIT CONCEPTUAL PLAN

ALBEMARLE COUNTY, VIRGINIA

SITE CONTEXT PLAN

SCALE

C. SHIFLETT — CHECKED BY

C. SHIFLETT — DESIGNED BY

Z. DAHL — DRAWN BY

02-18-2020 — DATE

DATE	REVISION DESCRIPTION
04/17/2020	SUP STAFF COMMENTS

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TIMMONS GROUP

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CHARLOTTESVILLE OFFICE
608 Preston Avenue, Suite 200 | Charlottesville, VA 22903
TEL 434.295.5624 FAX 434.295.8317 www.timmons.com

IVY PROPER - SPECIAL USE PERMIT CONCEPTUAL PLAN

ALBEMARLE COUNTY, VIRGINIA

EXISTING CONDITIONS

SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
C3.0	42932	1" = 20'	C. SHIFFLETT	C. SHIFFLETT	Z. DAHL	02-18-2020

DATE	REVISION DESCRIPTION
04/17/2020	SUP STAFF COMMENTS

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24" HDPE
INV=537.13

BUCKINGHAM BRANCH RAILROAD

24" HDPE
INV=535.88

APPROX. LOCATION OF
PROP. RETAINING WALLS
MAX. HEIGHT = 6'

TC 524.44

CRITICAL SLOPES, TYP.

TMP 58A2-21
ROGER L. GIBSON AND
STEPHENSON L. GIBSON
D.B. 1597, PG. 226
D.B. 231, PG.585
D.B. 130, PG.109

1.5' CONC. BLOCK
BRIDGE ABUTMENT

TC 521.50

TC 521.40

TC 521.50

TC 523.70

DUMPSTER PAD
AND ENCLOSURE

6,500 SF
FFE = 522.00

TMP 58A2-20
LENVIC, LLC
D.B. 3801, PG. 750
D.B.470, PG.01
D.B. 469, PG. 009
0.76 ACRES

TC 521.30

PROPOSED 54" CMP PIPE
STORAGE FACILITY
±90 L.F.

TIE TO EXISTING PAVEMENT

CONCEPTUAL PLANTING LOCATIONS
SHOWN. LANDSCAPE PLAN PROVIDED
WITH FINAL SITE PLAN SHALL MEET ALL
APPLICABLE COUNTY REQUIREMENTS.

10' BUILDING SETBACK

TC 521.50

TC 521.40

TC 520.70

SHARED PARKING AGREEMENT SHALL
BE SUBMITTED AND APPROVED PRIOR
TO FINAL SITE PLAN APPROVAL.

15.4'

TC 521.40

TMP 58A2-20A
JOSEPH W. RICHMOND, JR
TRUSTEE
D.B. 4992, PG. 686
D.B. 821, PG.218
D.B. 268, PG.151

PROPOSED INLET
TOP = 517.43
INV IN = 512.70
INV OUT = 512.6

2 STORY
FRAME

TC 519.00

EX. EP
517.64

SD INLET/W GRATE
TOP=515.15
INV. IN=513.45' 4" PVC
*CONNECTION UNKNOWN
INV. OUT=511.60' 24" CMP

+/- 15" HDPE PIPE (TYP.)

24" CMP W/BROKEN
HEADWALL
INV. 511.07'

24" CMP

NAD 83

SCALE 1"=20'
0 20' 40'

S:\1\00\42932\Ivy_Proper\DWG\Sheet\C04\42932_103-C4.0-SITE.dwg | Plotted on 4/20/2020 12:12 PM | by Kevin Flynn

THIS DRAWING PREPARED AT THE
CHARLOTTESVILLE OFFICE
608 Preston Avenue, Suite 200 | Charlottesville, VA 22903
TEL 434.295.5624 FAX 434.295.8317 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
SUP STAFF COMMENTS	04/17/2020

DATE
02-18-2020

DRAWN BY
Z. DAHL

DESIGNED BY
C. SHIFFLETT

CHECKED BY
C. SHIFFLETT

SCALE
1" = 20'

TIMMONS GROUP

IVY PROPER - SPECIAL USE PERMIT CONCEPTUAL PLAN

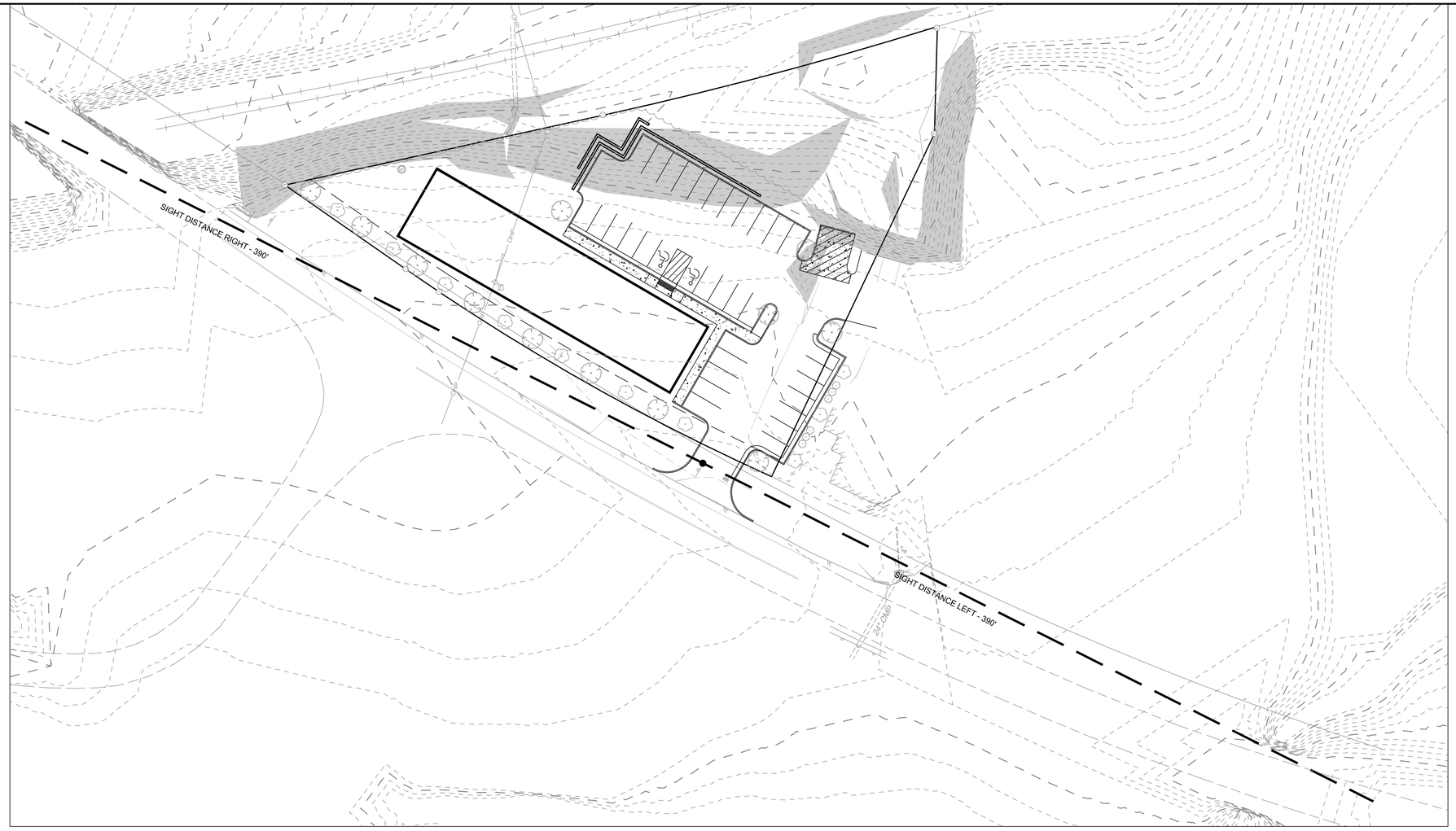
ALBEMARLE COUNTY, VIRGINIA

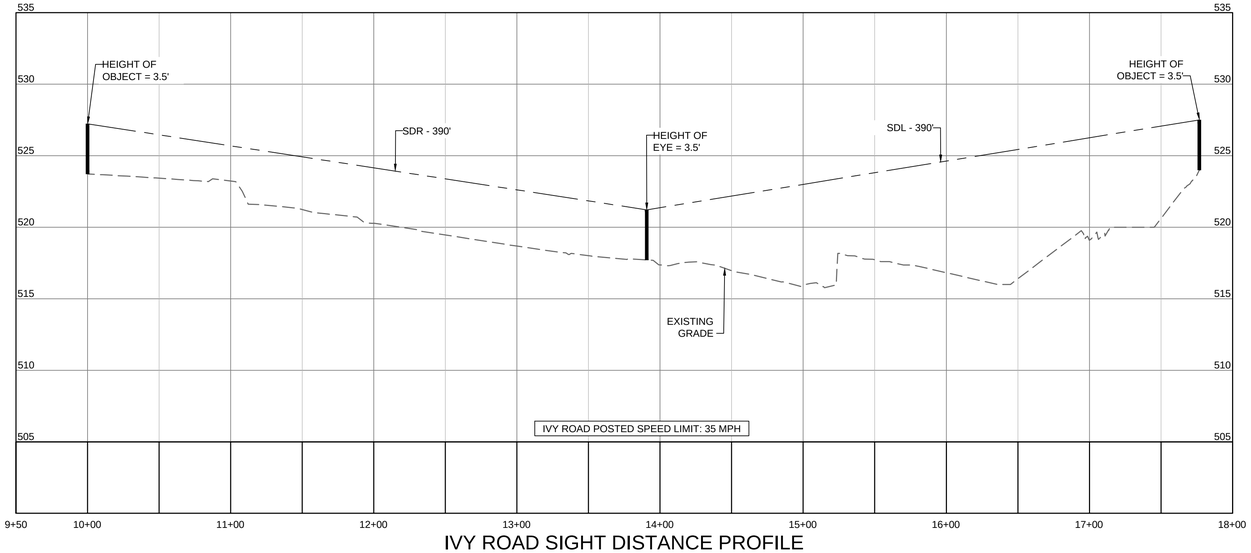
SUP CONCEPT PLAN

JOB NO.
42932

SHEET NO.
C4.0

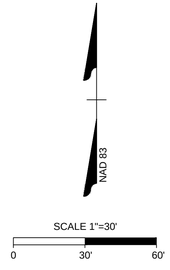
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IVY ROAD SIGHT DISTANCE PROFILE

HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5



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REVISION DESCRIPTION	DATE
SUP STAFF COMMENTS	04/17/2020

DATE
02-18-2020

DRAWN BY
Z. DAHL

DESIGNED BY
C. SHIFFLETT

CHECKED BY
C. SHIFFLETT

SCALE
1" = 30'

TIMMONS GROUP

IVY PROPER - SPECIAL USE PERMIT CONCEPTUAL PLAN

ALBEMARLE COUNTY, VIRGINIA

SIGHT DISTANCE PROFILE

JOB NO.
42932

SHEET NO.
C4.1

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S:\1839\42932-Ivy_Proper\DWG\Sheet\C3\42932-103-C4.1-SIGHT DISTANCE.dwg | Plotted on 4/20/2020 12:13 PM | by Kevin Flynn

To: Tori Kanellopoulos <vkanellopoulos@albemarle.org>
Subject: Fw: Ivy Proper Community Meeting

Tori, would you be kind enough to foward this input to ms Gleason. Believe her mailbox is full or being worked on.

Thanks so much,
Lou Eaton

From: Louis Eaton
Sent: Wednesday, June 3, 2020 10:27 AM
To: mgleason@albemarle <mgleason@albemarle>
Subject: Ivy Proper Community Meeting

1. The request for a Special Use Permit for the 6,500 square foot multi-tenant located in the Ivy Village community will further compound existing traffic problems for this neighborhood.

2. Current businesses and local residents are experiencing extremely difficult challenges attempting to enter or exit US 250 especially during rush hour.

3. As a geologist I believe that drilling under the railroad or grading the slope to enhance the area would be extremely unwise. The railroad is constructed on a high (25-30ft) filled bank constructed in approximately 1840. The embankment suffered severe damage in flood of May 2018 shutting down rail travel for weeks.

4. The tenants for this building coupled with Scott's Ivy Exxon request to virtually double the size of his operations will greatly increase the traffic congestion.

5. Growth from Crozet's population increase has had a substantial impact on traffic congestion and the speed limit of 35mph is obeyed by 10% of drivers.

6. Ivy has a huge traffic congestion problem today and additional vehicles exiting and entering will only exasperate the problem.

7. Therefore, we are totally against the request for Special Use Permit.

Respectfully,

Louis S. and Susan E. Eaton

Mariah Gleason

From: Julie Farrell <juliefarmom@yahoo.com>
Sent: Wednesday, June 10, 2020 3:15 PM
To: Mariah Gleason
Subject: Ivy Property community mtg SP202000005

Follow Up Flag: Follow up
Flag Status: Completed

CAUTION: This message originated outside the County of Albemarle email system. DO NOT CLICK on links or open attachments unless you are sure the content is safe.

Dear Ms Gleason,
My concerns about the veterinarians office are many: the slope factor, parking and safe access into and out of the area and the fact that it is so close to Ivy Creek.
I live off Owensville Road and access to 250 from Owensville can be tricky especially at commuter hours. The railroaded bridge blocks the view and presents a danger to drivers.
How does the business plan to handle run off and sewage? With the gas station already digging deep for tanks and parking lot run off to the creek, where can their waste go?
The slope factor is a concern because the huge building will be visible and present an eye sore to our serene neighborhood.
Thank you for hearing my concerns,
Julie Farrell
2665 Meriwether Dr
Charlottesville, Va. 22901

COUNTY OF ALBEMARLE
Department of Community Development
401 McIntire Road, North Wing
Charlottesville, Virginia 22902-4596
Phone (434) 296-5832 **Fax (434) 972-4126**

June 16, 2020

Reid Murphy
400 Locust Ave, Ste 3
Charlottesville, VA 22902

Re: SP202000050 Ivy Proper

Dear Mr. Reid Murphy,

In consultation with the Albemarle County Service Authority, the Community Development Department finds that the cost of connecting the proposed development to the public water supply, exclusive of connection fees, exceeds the cost of installing an on-site well and/or an onsite sewage system; therefore, pursuant to County Code § 18-4.1(a)(2), the connection to public water supply is not required. The development will still be required to meet all other building code and zoning regulations for the proposed project.

Please contact the Planning Division within the Community Development Department with any additional questions.

Sincerely,

J Filardo

Jodie Filardo
Community Development Director

Albemarle County Service Authority
Serving & Conserving

Ivy Water Main Extension Project - 2020 Estimate

Item No.	Item	Estimated Quantities	Unit	Unit Price	Item Amount
1	Mobilization	1	Lump Sum	$11,239.04	$11,239.04
2	24" Steel Casing Pipe*	96	LF	$1,890.00	$181,440.00
3	6" Class 53 Ductile Iron Water Main	784	LF	$98.00	$76,832.00
4	8" Class 53 Ductile Iron Water Main	329	LF	$115.00	$37,835.00
5	1" Water Service Connection	4	EA	$700.00	$2,800.00
6	1" Copper Pipe	40	LF	$40.00	$1,600.00
7	Meter Box and 1" Setter	4	EA	$1,900.00	$7,600.00
8	Pressure Reducing Valve and Meter Box*	4	EA	$1,900.00	$7,600.00
9	6" Gate Valve and Box	4	EA	$1,250.00	$5,000.00
10	Fire Hydrant Assembly	2	EA	$3,500.00	$7,000.00
11	Base Stone Aggregate (21A or B)	40	CY	$50.00	$2,000.00
12	Asphalt Concrete Base Pavement (BM-25.0)	190	SY	$174.00	$33,060.00
13	Asphalt Concrete Surface Course (VDOT SM-9.5A)	775	SY	$10.70	$8,292.50
14	Additional Unclassified Excavation Ordered by the Engineer or Inspector	20	CY	$50.00	$1,000.00
15	Additional Concrete - as Directed by the Engineer or Inspector	20	CY	$50.00	$1,000.00
16	Additional Select Fill	20	CY	$35.00	$700.00
17	Over Excavation of Unsuitable Sub-grade with Porous Refill	25	CY	$35.00	$875.00
			TOTAL OF ALL ITEMS		**$385,873.54**

* Contractor performing work to confrim unit price.
Estimate provided for parcels 58A2-14 and 58A2-20.
Developer's contractor to verify final cost of construction.
Additional engineering fees may be added if the current design changes.

Richard K Nelson

Richard Nelson
Civil Engineer

PREAPP-2019-00111
SP2020-00005 Ivy Propet

Contact: Reid Murphy
434-825-1560
reid@bmcholdingsgroup.com

COUNTY OF ALBEMARLE
Department of Community Development
401 McIntire Road, Room 227
Charlottesville, Virginia 22902-4596

Phone (434) 296-5832 **Fax (434) 972-4126**

PUBLIC WATER / SEWER CONNECTION EVALUATION

THIS SECTION IS TO BE COMPLETED BY THE ALBEMARLE COUNTY SERVICE AUTHORITY ENGINEERING DIVISION

1. Distance to public water connection: _____
2. Access across adjoining property will / will not be required: _____
3. Distance to public sewer connection: _____
4. Access across adjoining property will / will not be required: _____

COMMENTS: _____

SIGNATURE: _____ A.C.S.A.

THIS SECTION IS TO BE COMPLETED BY THE PROPERTY OWNER

1. Provide contractor's written estimates. see attached
2. Estimated cost to install a well and associated electrical and plumbing equipment: $7,821
3. Estimated cost to install a water line for public connection (do not include ACSA fees): $544,725 (estimate attached)
4. Estimated cost to install a septic system: $55,000.00 / $59,929
5. Estimated cost to install a sewer line for public connection: Sewer connection not available

THIS SECTION IS TO BE COMPLETED BY THE AGENT

Connection to public water will / will not be required: _____

Connection to public sewer will / will not be required: _____

Signature: _____

FOSTER WELL & PUMP COMPANY, INC.
P.O. Box 260
Earlysville, Virginia 22936
(434) 973-9079
Fax (434) 973-8838

TO: **REID MURPHY** **DATE:** **FEBRUARY 24, 2020**

FROM: **SHANE FOSTER** **RE:** **NEW WELL PRICING**

PROPOSAL

Listed below you will find the costs for drilling a 305' well and hooking it up to the office building.

Drilling	$11.00/ft
PVC casing	$8.00/ft
Well cap	$45.00
IIIB 50' grout	$900.00

305' of drilling, IIIB 50' grout, 52' of PVC casing, well cap **$4,716.00**

Pump job for a 305' well **$3,105.00**
-3/4 horse power Franklin Electric motor, 10 gallon per minute Franklin Electric pump end, 275' of 1" poly pipe in the well, 280' of 12/2 flat wire with ground in the well, 1" pitless adapter, 100' of ditch to the house, 100' of 1" poly pipe in the ditch to the house, 120' of 12/2 uf wire with ground in the ditch to the house, 44 gallon Well X-Trol pressure tank with kit, miscellaneous plumbing and electrical material, labor

Total job cost for 305' IIIB well **$7,821.00**

We appreciate the opportunity to price this work. If you have any questions you can contact me at (434)973-9079.

Thank you,

Albemarle County Service Authority
Ivy Water Main Extension Project
Construction Cost Estimate - 100% Design Submittal

Item No.	Item	Estimated Quantities	Unit	Unit Price	Item Amount
1	Mobilization	1	Lump Sum	$26,000.00	$26,000.00
2	18" Steel Casing Pipe	96	LF	$1,350.00	$129,600.00
3	6” Class 52 Ductile Iron Water Main	819	LF	$140.00	$114,660.00
4	4” Class 53 Ductile Iron Water Main	569	LF	$100.00	$56,900.00
5	1" Water Service Connection (WSCB)	6	EA	$750.00	$4,500.00
6	1.5" Water Service Connection (WSCB)	2	EA	$750.00	$1,500.00
7	1" Copper Pipe	258	LF	$45.00	$11,610.00
8	1.5" Copper Pipe	19	LF	$55.00	$1,045.00
9	2" Copper Pipe	14	LF	$65.00	$910.00
10	Meter Box and 1" Setter	3	EA	$1,700.00	$5,100.00
11	Meter Box and 5/8" Setter	3	EA	$1,500.00	$4,500.00
12	Pressure Reducing Valve and Meter Box	6	EA	$1,900.00	$11,400.00
13	1" Polyethylene Pipe (PE)	1,300	LF	$35.00	$45,500.00
14	6-inch Dia. Gate Valve with Valve Box	5	EA	$2,800.00	$14,000.00
15	4-inch Dia. Gate Valve with Valve Box	5	EA	$2,200.00	$11,000.00
16	Type A Blow-off Assembly	1	EA	$3,100.00	$3,100.00
17	Fire Hydrant Assembly	2	EA	$3,100.00	$6,200.00

Item No.	Item	Estimated Quantities	Unit	Unit Price	Item Amount
18	Automatic Flushing Assembly	1	EA	$2,500.00	$2,500.00
19	Base Stone Aggregate (21A or B)	63	CY	$50.00	$3,150.00
20	Asphalt Concrete Base Pavement (BM-25.0)	227	SY	$150.00	$34,050.00
21	Asphalt Concrete Surface Course (VDOT SM-9.5A)	1,064	SY	$50.00	$53,200.00
22	Additional Unclassified Excavation Ordered by the Engineer or Inspector	20	CY	$40.00	$800.00
23	Additional Concrete - as Directed by the Engineer or Inspector	20	CY	$40.00	$800.00
24	Additional Select Fill	20	CY	$60.00	$1,200.00
25	Over-Excavation of Unsuitable Sub-grade with Porous Refill	25	CY	$60.00	$1,500.00

TOTAL OF ALL ITEMS $544,725.00

Assumptions:

1. E&S measures, trenching, backfilling, final grading, testing, seeding, maintenance of trafffic, and incidental restoration included in unit prices for water main.
2. Easement acquisition costs not included.
3. Estimate based on 2016 dollars.
4. Abandonment of existing water supply wells not included.
5. Relocation of existing utilities, if required, is not included.

Easton Construction

4978 Richmond Rd.
Keswick, VA 22947

CHIP EASTON
434-531-5814

Estimate

Date	Estimate #
12/27/2018	110

Name / Address
BMC Holding, LC c/o Tim Coulter 400 Locust Ave. Ste. 3 Charlottesville, VA 22902

Project

Description	Qty	Rate	Total
Sewage Disposal System Installation Estimate for TM 58A2-14, 58A2-20 TBD Ivy Rd., Charlottesville, VA 22903 per Old Dominion Engineering Design Specs dataed November 19, 2018			
Complete installation of drainfield per ODE Design specs (includes all labor and materials)	1	59,929.23	59,929.23
* MATERIALS INCLUDE TRAFFIC RATED TANKS IN PARKING AREA AND ROCK DUST USED FOR BACKFILL AROUND TANKS TO ENSURE A PROPER COMPACTION			
** ELECTRICAL IS TO BE BROUGHT TO SUB PANEL LOCATION BY BUILDER			
*** ROCK/WATER CLAUSE - If rock or ground water is discovered, all work will stop and it will be discussed with the Owner as to what steps need to take place to remove the rock or work around the ground water. Any additional cost incurred from removal of rock and working with ground water will be the responsibility of the Owner and is not included in this estimate.			
VA Contractors License No.: 2705071284 VA Master Alternative Waterworks No.: 1944001155			

	Total	$59,929.23

434-981-2215 Cell #

1-11-19

Roger A Payne Jr
Roger Payne Backhoe Service

335969

NAME: BMC Holdings LC
ADDRESS: 400 Locust Ave Suite 3
CITY, STATE, ZIP: Charlottesville VA 22902

SHIP TO: Bid for TBD Ivy Rd
ADDRESS: Charlottesville VA 22903
CITY, STATE, ZIP: TM 58AZ-14, 58AZ-28

ORDER NUMBER | DEPARTMENT | SALESPERSON | WHEN SHIP | TERMS | HOW SHIP | DATE: 1/10/19

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	This Proposal is for Property @ Ivy		
	for Permit by Old Dominion Engineering		
	Septic Tank's		
	1 Set Sate AS 600 x 2		13000 00
	Gravel		12000 00
	Pump's & Control's		5000 00
	All Electrical AND Pipes		5000 00
			5000 00
	Total Parts		$40000 00
	Labor		
	Total Labor		$15,000 00
	Total Job		$55000 00

Thank You

This Not include well or abandon old well

Notes:
1. Exact location of Aqua Safe will vary based upon topography and landscaping.
2. Provide Engineer with proposed as-built triangulation measurements at preconstruction conference.
3. Before pricing system installation, the contractor shall inspect the site and verify dimensions, elevations, and layout of system.
4. Separation distance between building and septic tank, pump tank, header line or force main:
   10' - when located below basement floor
   20' - when located above basement floor
5. 5' separation distance between property line or easement from any septic or dripfield component
6. Bed and backfill piping in stone dust under parking lot.

PAD:
20' X 66' (1320 SQFT)
BOTTOM OF PAD MUST BE LEVEL
48" TO 96" DEEP

LOW PRESSURE DISTRIBUTION
4 LINES @ 5' OC
1 1/4" DIAMETER SCH 40
HOLE SIZE 3/16"
HOLE SPACING 5'
FIRST HOLE @ 3' FROM END
4' OF HEAD AT EACH LINE
ADJUST HEADER VALVE TO EQUALIZE FLOW AND PRESSURE

LINE 1-4 - 13 HOLES EACH
9" GRAVEL BELOW CENTERLINE PIPE
3" GRAVEL ABOVE CENTERLINE PIPE
(10-1) (10-2)

VB1 - TYPICAL OF 4
DETAIL 10-4

VB2 - TYPICAL OF 4
DETAIL 10-5

2" SCH 40 PVC MANIFOLD LATERAL 1 TO 4
DETAIL 10-3

2" SCH 40 PVC

1500 GALLON MID SEAM PUMP TANK
ORENCO MVP S1/2 DM
ORENCO PF500511
DETAIL 9-1

NEW POLYLOK D BOX WITH RISER LID
NEW 2 X AS600 EZ TOP
DETAIL 7-1,8-1

2500 GALLON FE PUMP TANK
ORENCO MVP S1/2 DM
ZOELLER N140
DETAIL 6-1

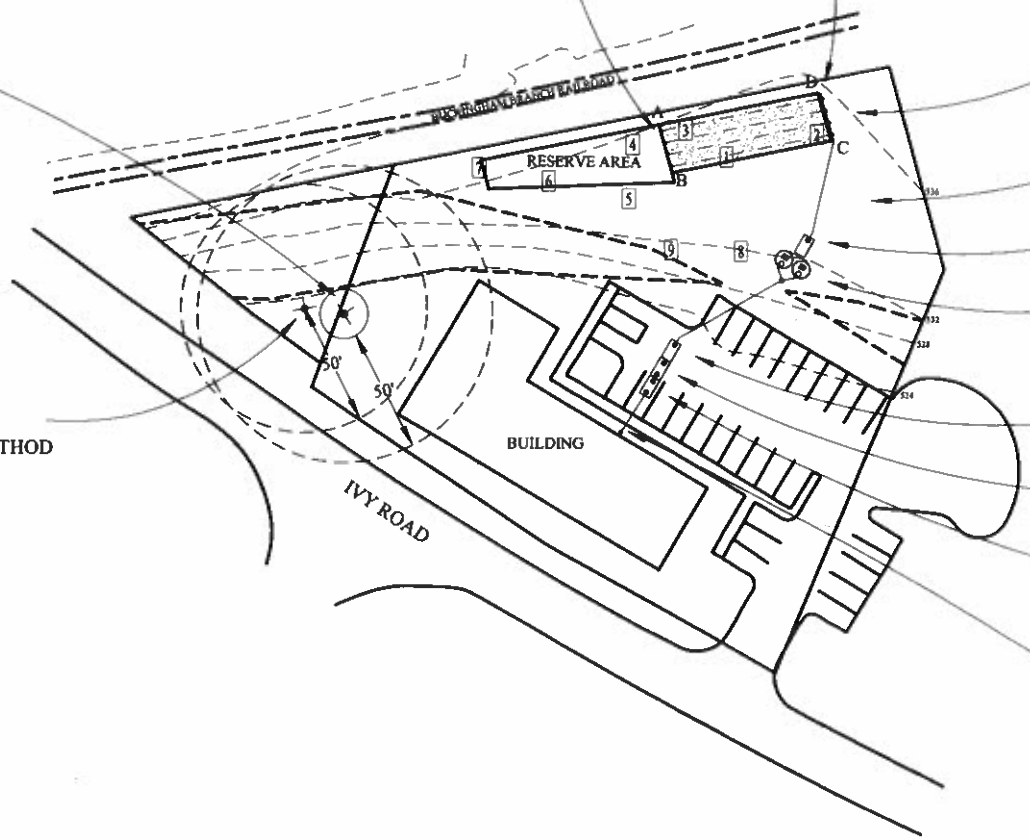
1500 GALLON SEPTIC TANK
24" RISER INLET/OUTLET
ZABEL A300 12X20-VC
DETAIL 5-2

1500 GALLON SEPTIC TANK
24" RISER INLET/OUTLET
DETAIL 5-1

4" SCH 40 PVC
4" SCH 40 PVC CLEANOUT
DETAIL 6-2

NEW IIIB WELL AREA
10' DIAMETER
50' CASING
50' GROUT

EXISTING WELL
ABANDON
VDH BENTONITE PLUG METHOD



COMMONWEALTH OF VIRGINIA
MICHAEL F. CRAUN
LICENSE NO.
036859
PROFESSIONAL ENGINEER
11/6/12

Sewage Dispos
Site Plan

TBD Ivy Rd.
Charlottesville, VA 22903
Scale 1" = 60'

1 AOSE Soil Boring -Approximate Location

Site Characterization Addendum Report

Scott's Ivy Exxon Site
4260 Ivy Road
Charlottesville, Virginia

Pollution Complaint Number
PC#: 13-6113

Prepared for:

Mr. Roger Gibson
4804 Break Heart Road
Crozet, Virginia 22932

Prepared by:

Sullivan International Group, Incorporated
402 N. West Street
Culpeper, Virginia 22701

SIG Project No. 3361-100
August 15, 2013

Site Characterization Addendum Report

Scott's Ivy Exxon Site
4260 Ivy Road
Charlottesville, Virginia

Prepared for:

Mr. Roger Gibson
4804 Break Heart Road
Crozet, Virginia 22932

Prepared by:

Sullivan International Group, Incorporated
402 N. West Street
Culpeper, Virginia 22701

Michael L. Maloy, CPG
Senior Geologist, Vice President

Thomas P. Nelson, CPG
Hydrogeologist

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Appendices

Appendix A Geologic and Well Construction Logs
Appendix B Laboratory Analytical Results

1.0 BACKGROUND

Sullivan International Group, Inc., (SIG) (formerly Analytical Services, Inc. [ASI]) is pleased to submit the following Site Characterization Addendum Report (SCAR) on behalf of our client, Mr. Roger Gibson, who is the owner of the Scott's Ivy Exxon site located at 4260 Ivy Road in Charlottesville, Virginia (Figure 1). The site is currently being leased and operated by Mr. Scott Ramm, President of Wise Street Corporation. This SCAR study was required by the Virginia Department of Environmental Quality (VDEQ) following their receipt of a Phase II Subsurface Investigation and a Site Characterization Report (SCR) that documented a release of petroleum at the site. The VDEQ assigned the site PC#2013-6113 and requested the SCAR in a directive dated June 17, 2013.

The Scott's Ivy Exxon site is currently being operated as a gasoline and diesel fueling station and as an automotive repair shop. Two buildings are present at the site; the southern building is used as an automotive repair shop (service building) and the northern building is a residential rental property. Gasoline and diesel fueling dispensers are present to the south of the service building. The gasoline fueling island is supplied by two active underground storage tanks (USTs). According to the VDEQ UST database, these tanks have capacities of 8,000 gallons and 12,000 gallons, and were installed in 1998. The diesel fueling dispenser is supplied by a 500-gallon aboveground storage tank (AST). The site's residential building is supplied by a heating oil UST of unknown capacity. A railroad runs along the northern boundary of the site. An aerial photograph site layout map is included as Figure 2 and an illustrated site plan map is included as Figure 3.

1.1 Summary of Previous Investigations at Subject Site

Phase I Environmental Site Assessment

SIG, then operating as ASI, was contracted by Mr. Scott Ramm to conduct a Phase I Environmental Site Assessment (ESA) (ASI 2013a) as part of the due diligence process for a future real estate transaction. The ESA revealed that the site has been used as a gasoline station since at least the 1950s, and possibly longer. It also revealed that there have been two documented past releases from USTs at the site. The first release was reported in February 1997 (PC#1997-5102) and the second release was reported in November 1998 (PC#1999-5133) following the removal of three 6,000-gallon gasoline USTs. Both releases have since been closed. The conclusions of the Phase I ESA included the recommendation that a Phase II Subsurface Investigation be conducted at the site.

Phase II Subsurface Investigation

SIG, then operating as ASI, was contracted to conduct a limited Phase II Subsurface Investigation (ASI 2013b) to address concerns that were identified during the Phase I ESA. The purpose of the limited Phase II Subsurface Investigation was to provide a screening-level assessment of overburden soils and groundwater for the presence of potential contaminants at the site.

The limited Phase II Subsurface Investigation revealed that the area in the vicinity of the site's gasoline UST basin had been impacted by a petroleum release, as evidenced by elevated levels of gasoline constituents in soil and groundwater samples collected hydraulically downgradient from the UST basin. An elevated concentration of total petroleum hydrocarbons (TPH) -gasoline range organics (GRO) was detected in a soil sample collected from a boring located downgradient from the UST basin, and elevated concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in a groundwater sample collected from the same boring. The TPH-GRO concentration detected in the soil sample exceeded VDEQ UST reporting levels. Additionally, benzene, ethylbenzene, o-xylene, and total xylenes concentrations detected in the groundwater sample exceeded Virginia Voluntary Remediation Program Tier III screening levels. Limited subsurface investigation and sampling conducted at other areas of concern did not yield evidence of environmental impact at the time of the investigation and at the locations investigated. The VDEQ Valley Regional office was contacted by telephone and email, and was notified of the discovery of contamination in the vicinity of the site's UST basin.

Site Characterization Study

Following the results of the Phase II Subsurface Investigation, the VDEQ issued a directive dated April 17, 2013, requesting that a Site Characterization Study be conducted at the Scott's Ivy Exxon site. SIG, then operating as ASI, was contracted to conduct this study (ASI 2013c). The SCR study focused on identifying the magnitude and extent of contamination associated with a release of petroleum hydrocarbons at the site. The study included installing four monitoring wells near and downgradient from the site's UST basin. These wells (MW-1, MW-2, MW-3, and MW-4) were then surveyed, gauged, purged, sampled, and analyzed for petroleum constituents. A falling-head slug test was then conducted on MW-2 to determine the aquifer's hydraulic conductivity. Additionally, soil samples were collected and analyzed for petroleum constituents during drilling of the borings for the wells. Two surface water samples were also collected from Little Ivy Creek, and were analyzed for petroleum constituents. The subject site's domestic well was also sampled and analyzed for petroleum constituents.

Elevated concentrations of petroleum contaminants were discovered at the site in the adsorbed-phase. Laboratory analysis of soil samples collected at the site during the limited Phase II Subsurface Investigation and the SCR study yielded TPH-GRO concentrations ranging between 240−1,300,000 micrograms per kilogram (µg/kg). The highest concentrations were measured in samples collected in the vicinity of the site's UST basin, although a concentration of 650 µg/kg was measured at the furthest hydraulically downgradient location (MW-4). Soil samples collected from the monitor well locations were also analyzed for TPH- diesel range organics (DRO), and the only sample to exceed laboratory detection levels was MW-1 (31 milligrams per kilogram).

Elevated concentrations of TPH-GRO, total BTEX, and MTBE were discovered in groundwater samples collected during the SCR study. The highest concentrations of these constituents were measured in the vicinity of the site's UST basin, which was determined to be the most likely primary source of gasoline contamination at the site.

The timing of this release is unknown. Elevated concentrations of these constituents were also measured in the furthest hydraulically downgradient well (MW-4), which is located 46 feet west of and hydraulically upgradient from Little Ivy Creek. The primary direction of groundwater contaminant plume migration was determined to be toward the east-northeast, which is comparable to the direction of groundwater flow at the site.

The SCR study determined that existing contaminant concentrations posed a potential threat to human receptors, as the site's domestic supply well was found to be impacted by MTBE. It was also determined that the possibility of impact to the western adjacent property's domestic water supply well existed. Existing groundwater contaminant concentrations were also determined to pose a potential threat to Little Ivy Creek, which is located 120 feet east of the UST basin, because it is likely that groundwater from the subject site discharges to the creek.

The SCR study concluded with a recommendation that an addendum to the SCR study be completed to further characterize soil and groundwater conditions at the subject site. SIG recommended the following course of action: (1) installation and sampling of additional monitor wells to further delineate upgradient and lateral extents of groundwater and soil contamination at the site; (2) installation and sampling of piezometers near Little Ivy Creek; and (3) sampling and analysis of a sample from the western adjacent property's domestic water supply well.

2.0 SITE LOCATION, HYDROLOGY, AND REGIONAL GEOLOGY

The Scott's Ivy Exxon site is located at 4260 Ivy Road in Charlottesville, Virginia. The elevation of the study area portion of the subject site is approximately 514 feet above mean sea level (amsl). The subject site slopes gently to the east. The site is within the western portion of the Piedmont Physiographic Province, and is underlain by crystalline rock of the Blue Ridge Anticlinorium. Bedrock lithology beneath the site is porphyroblastic-biotite-plagioclase-augen gneiss (stratigraphic symbol Ybg), which is Middle Proterozoic (Grenville) in age (Virginia Division of Mineral Resources, 2003).

Storm water drainage from the site would be expected to drain to the southeast toward Little Ivy Creek, which is located immediately adjacent to the site's southeastern boundary at a distance of 120 feet from the subject site's UST basin (Figure 2). Little Ivy Creek flows to the northeast, where it becomes a tributary to the Rivanna River. The Rivanna River supplies water to the Rivanna River Reservoir, which provides water to the City of Charlottesville, Virginia. The Rivanna River converges with the James River, which is a major tributary of the Chesapeake Bay, after flowing out of the Rivanna River Reservoir. No surface water bodies exist on the site.

According to the U.S. Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS), the Hiwassee clay loam with 7 to 15 percent slopes (soil series 42C3) underlies the northern half of the site, and the Chewacla silt loam (soil series 16) underlies the southern half of the site. The Hiwassee clay loam is generally present on 7 to 15 percent slopes and forms stream terraces. It is typically a well-drained soil,

with a depth to groundwater of greater than 80 inches (USDA NRCS 2013). The Chewacla silt loam is typically present on 0 to 2 percent slopes and forms stream flood plains. It is generally a somewhat poorly-drained soil, with a depth to groundwater of 6−18 inches, depending on proximity to a stream (USDA NRCS 2013). It should be noted that depth to groundwater measurements at the site were observed to range from approximately 7−9 feet below ground surface (bgs) during this SCAR study. The Chewacla silt loam underlies the SCR study's entire area of investigation.

3.0 SOIL INVESTIGATION

3.1 Soil Sampling Methodology

Prior to completing soil borings at the site, Miss Utility was contacted and a request was made for utility clearance. Due to the presence of numerous underground utilities at the site, a private utility locator was also mobilized to the site. The locations of the soil borings/wells were not marked prior to Miss Utility clearance, so it was requested that the entire site be marked. The final locations of the soil borings/wells were determined during private utility marking to ensure that the borings would not be drilled into existing utility lines.

Soil sampling was conducted during the drilling of four soil borings at the site on July 12, 2013. Drilling was conducted by Certified Environmental Drilling, from Charlottesville, Virginia. A hollow-stem auger drilling rig was used to complete the borings, which were drilled to a diameter of eight inches and to total depths ranging between 15−20 feet bgs. All of the produced drill cuttings were contained and placed in 55-gallon drums. Soil cores were collected at 5-feet depth intervals with a 2-foot length, 2-inch diameter split-spoon sampler during drilling. These soil cores were logged by an SIG geologist to create geologic logs of each of the borings. Soil was collected from the cores and placed in Ziploc® bags at 5-foot intervals. The soil was then screened using a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). Monitoring wells were then installed in the borings after drilling was completed (see Section 4.1). Figure 4 illustrates the locations of these wells (MW-5 through MW-8), as well as the locations of wells installed in May 2013 (MW-1 through MW-4). Appendix A includes geologic logs and well completion details for wells MW-1 through MW-8, as well as for Borings 1 and 2, which were drilled during the limited Phase II Subsurface Investigation.

A soil sample was only collected from well MW-7, at a depth of 9.0−11.0 feet bgs, because this was the only screened sample to record an elevated PID reading. This sample was submitted to Phase Separation Sciences, Inc. (Phase Sciences), of Baltimore, Maryland, for laboratory analysis of TPH-GRO and TPH-DRO via EPA Method 8015B.

3.2 Soil Screening and Analytical Results

PID readings of soil collected from wells MW-5 through MW-8 ranged between 0.1 and 138.2 parts per million. An elevated PID reading was only recorded in MW-7, at a depth of 9.0−11.0 feet bgs. PID readings of soil collected from wells MW-5 through MW-8 are

summarized in Table 1, below. Table 1 also contains PID readings from wells MW-1 through MW-4, which were drilled during the initial SCR investigation.

Sampling results indicate that both TPH-GRO and TPH-DRO were detected in the MW-7 soil sample. At a concentration of 37,000 µg/L, the detected TPH-GRO concentration was significantly elevated. Analytical results of the aforementioned soil sampling, as well as results from the initial SCR investigation and the Phase II Subsurface Investigation, are summarized in Table 2, below. The laboratory data report and chain-of-custody documentation, as provided by Phase Separation Science, is included in Appendix B.

Table 1
Summary of Soil Sample PID Readings

Sampling Depth (feet below ground surface)	PID Readings in parts per million							
	Collected May 14, 2013				*Collected July 12, 2013*			
	MW-1	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**
0.0−5.0	1.1	96.2	35.5	15.4	---	---	---	---
4.0−6.0	---	---	---	---	0.4	0.4	0.4	0.1
5.0−8.5	---	145.6	---	---	---	---	---	---
5.0−9.0	---	---	53.5	---	---	---	---	---
5.0−10.0	1.9	---	---	19.8*	---	---	---	---
8.5−10.0	---	14.1	---	---	---	---	---	---
9.0−11.0	---	---	---	---	0.5	0.6	138.2*	0.3
9.0−12.0	---	---	330.2*	---	---	---	---	---
10.0−12.0	---	202.1*	---	---	---	---	---	---
10.0−14.0	---	---	---	6.1	---	---	---	---
10.0−15.0	255*	---	---	---	---	---	---	---
14.0−16.0	---	---	---	---	0.5	0.7	1.7	---

* = sample submitted for laboratory analysis; --- = sample not collected from this interval

3.3 Discussion of Soil Analytical Results

Significantly elevated TPH-GRO concentrations were detected in soil collected near the site's UST basin during the SCAR, initial SCR, and limited Phase II studies (Figure 5). Elevated concentrations were discovered both hydraulically upgradient (MW-1) and downgradient (Boring 1, MW-3, MW-7) from the UST basin. Soil contamination appears to extend primarily in a downgradient direction from the UST basin. TPH-GRO soil contamination also appears to extend laterally to the south of the UST basin, but does not appear to extend north of the UST basin. TPH-DRO concentrations in soil were below laboratory detection levels in all of the borings except MW-1 and MW-7. The highest PID readings were recorded in saturated silty clay layers present at a depth of approximately 9-15 feet bgs, which are subsequently the depths from which the majority of the soil samples were collected.

Table 2

Summary of Soil Sampling Analytical Results

Soil Sample ID	Sampling Depth (feet)	TPH-GRO (µg/kg)	TPH-DRO (mg/kg)
Soil Samples Collected July 12, 2013			
MW-7	9.0−11.0	37,000	7.4
Soil Samples Collected May 14, 2013			
MW-1	10.0−15.0	570,000	31
MW-2	10.0−12.0	15,000	<4.9
MW-3	9.0−12.0	70,000	<5.4
MW-4	5.0−10.0	650	<5.1
Soil Samples Collected March 21, 2013			
Boring 1	10.8−11.8*	1,300,000	NA
Boring 2	7.0−8.0	240	NA

µg/kg = microgram per kilogram; mg/kg = milligram per kilogram; * = majority of sample collected from this interval; NA = sample not analyzed for this constituent

The presence of a significantly elevated TPH-GRO concentration in Boring 1 and the apparently minimal concentration in the proximal well MW-6 suggests that zones of high TPH-GRO concentrations (i.e. hot spots) exist in the immediate vicinity of the UST basin. While the exact source and timing of the petroleum release is not known, a previous VDEQ pollution complaint case was assigned to the property following UST closure activities that did require the removal of petroleum impacted soil.

3.4 Localized Site Geology from Soil Cores

Soil cores and drill cuttings collected during SCAR, initial SCR, and the limited Phase II Subsurface Investigation provided insight into geologic conditions at the subject site. The borings indicate that 13−20 feet of unconsolidated soil (overburden) overlies augen gneiss bedrock in the study area portion of the subject site (Appendix B). The nature and orientation of fracturing in the bedrock is unknown.

The borings installed at the subject site's study area indicate that, in general, approximately 11 feet of silty-clay overlies more permeable silty-sand, sand, and/or sand and gravel layers. The permeable layers are comprised of sandy layers of variable thickness interbedded with silty-clay layers. The exact thicknesses and sediment characteristics of the permeable layers varies between the borings. Apparent bedrock outcrops exist along the western portion of the property, indicating that depth to rock may vary across the site.

4.0 GROUNDWATER INVESTIGATION

4.1 Monitor Well and Piezometer Installation

Four soil borings were completed as monitoring wells at the site on July 12, 2013. These wells were designated as MW-5, MW-6, MW-7, and MW-8 (Figure 4). The well locations were selected based on groundwater contaminant data obtained during the initial SCR study, with the purpose of the wells being to further delineate the magnitude and extent of the groundwater contamination plume. Additionally, two shallow piezometers (P-1 and P-2) were installed with a hand-auger near Little Ivy Creek on July 23, 2013. Both of these piezometers were installed on the eastern adjoining property to the subject site (Eaton property). SIG was given permission to install these piezometers by the property owner, Mr. Louis Eaton, during a phone conversation on June 28, 2013. The purpose of the piezometers was to allow for determination of whether a detectable concentration of petroleum-contaminated groundwater from the subject site was migrating to Little Ivy Creek.

All of the site's monitoring wells were constructed of 2-inch diameter, threaded polyvinyl chloride (PVC) well casing and slotted screen, completed to depths ranging between 13−20 feet bgs (Table 3). The bottom 10 feet of each well is comprised of slotted screen, with blank casing comprising the remainder of the well. The wells were completed in the following manner: (1) the well's screen and casing were placed in the open borehole; (2) the annular space around the screen and casing was filled with #2 or #3 silica sand from the bottom of the boring to a depth of 1−2 feet above the top of the well screen; (3) a 1-foot thick layer of bentonite pellets was placed above the silica sand; (4) the remaining annular space was grouted, and flush-mounted well covers were cemented in place. Illustrations of the individual well completions are included with the Appendix A geologic logs.

Both of the site's piezometers were installed in 3-inch diameter hand-augered borings. They were constructed of 2-inch diameter, threaded PVC well casing and slotted screen. Completion depths of P-1 and P-2 were 6.78 feet bgs and 8.27 feet bgs, respectively. The bottom four feet of both piezometers are comprised of slotted screen, with blank casing comprising the remainder of the piezometers. The annular space around the screen and casing was filled with #3 silica sand, from the bottom of the boring to approximately one foot bgs. Bentonite pellets were then used to fill the annular space from the top of the sand to the ground surface. Both piezometers were completed with 1−2 feet of casing stickup and a locking cap. On July 23, 2013, the distances from P-1 and P-2 to the water surface of Little Ivy Creek were 21 feet and eight feet, respectively.

The relative elevations of the new monitoring wells' and piezometers' top-of-casings (TOCs) were surveyed in reference to MW-1 through MW-4 TOC elevations, which had been surveyed at the site during SCR activities. The benchmark utilized to survey MW-1 through MW-4 was the northeastern corner of the UST basin's easternmost rectangular fuel-fill access box, which was assumed to have an elevation of 514.00 feet amsl, based on Google Earth elevation data. Additionally, the elevations of Little Ivy Creek's water surface at points directly adjacent to P-1 and P-2 were measured. TOC elevations of all monitoring wells and piezometers, as well as the total depths of the wells, are included in Table 3, below.

Table 3
Summary of Well, Piezometer, and Little Ivy Creek Gauging Results

Gauging Location	Total Well Depth (feet bgs)	TOC Elevation (feet amsl)	Date Gauged	Depth to Water from TOC (feet)	Product Thickness (feet)	Groundwater Elevation (feet amsl)
MW-1	15	514.29	5/16/2013	9.55	0	504.74
			5/28/2013	9.82	0.01	504.47
			7/23/2013	9.29	0	505.00
MW-2	14	513.25	5/16/2013	8.78	0	504.47
			5/28/2013	9.08	0	504.17
			7/23/2013	8.54	0	504.71
MW-3	13	513.39	5/16/2013	8.66	0	504.73
			5/28/2013	9.07	0	504.32
			7/23/2013	8.57	0	504.82
MW-4	14	513.15	5/16/2013	9.09	0	504.06
			5/28/2013	9.32	0	503.83
			7/23/2013	8.89	0	504.26
MW-5	20	512.23	7/23/2013	7.31	0	504.92
MW-6	15	513.20	7/23/2013	8.26	0	504.94
MW-7	15	514.29	7/23/2013	9.43	0	504.86
MW-8	15	514.14	7/23/2013	7.93	0	506.21
P-1	6.78	509.83	7/23/2013	5.81	0	504.02
			7/31/2013	5.96	0	503.87
P-2	8.27	509.85	7/23/2013	6.51	0	503.34
			7/31/2013	6.45	0	503.40
LIC, adjacent to P-1	NA	NA	7/23/2013	NA	0	503.50
			7/31/2013		0	503.45
LIC, adjacent to P-2	NA	NA	7/23/2013	NA	0	503.43
			7/31/2013		0	503.50

bgs = below ground surface; TOC = top-of-casing; amsl = above mean sea level; LIC = Little Ivy Creek; NA = not applicable

4.2 Groundwater Sampling

SIG personnel returned to the Scott's Ivy Exxon site on July 23, 2013 to gauge, develop, and collect samples from all of the site's monitoring wells. SIG determined the relative groundwater elevations in the wells by first measuring the depth-to-water (DTW) in the wells. The DTW value was then subtracted from the well's TOC elevation, yielding the

elevation of groundwater in the well. Table 3 below summarizes the resulting groundwater elevations, as well as the elevations of Little Ivy Creek's water surface at points directly adjacent to P-1 and P-2. Table 3 also includes groundwater elevations in P-1 and P-2 and water surface elevations in Little Ivy Creek near these piezometers, which were re-measured on July 31, 2013.

Based on the groundwater elevations measured during the July 23, 2013 sampling event, a groundwater equipotential map was created and is included as Figure 6. The map shows that groundwater flow direction at the site is influenced by the presence of Little Ivy Creek. The groundwater equipotential lines exhibit the pattern of a typical gaining-stream hydraulic setting, where groundwater discharges to a surface stream. The range of water table fluctuation at the site is not well known, due to a limited number of monitoring events. However, it was observed that groundwater levels in wells MW-1 through MW-4 were approximately 0.5 feet higher than levels measured on May 28, 2013.

Free product was observed in MW-1 during the May 28, 2013 well gauging event (Table 3). Although free product was not observed in MW-1 during the July 23, 2013 well gauging event, product globules and a significant sheen were noted on the surface of MW-1's purge water.

A minimum of three well volumes of water was purged from each well prior to collecting groundwater samples. Groundwater samples were then collected from all of the wells using disposable bailers, and were placed in a refrigerated cooler. A duplicate sample was collected from MW-2, and was labeled as Field Duplicate. Samples collected from the monitoring wells were submitted to Phase Sciences for laboratory analysis of TPH-GRO via EPA method 8015B, BTEX via EPA method 8021B, and methyl tert-butyl ether (MTBE) via EPA method 8021B. Samples collected from the piezometers were submitted for laboratory analysis of VOCs via EPA method 8260B.

A groundwater sample was also collected from the subject site's domestic well on July 23, 2013. Additionally, upon receiving authorization from Mr. Joseph Richmond, the owner of the western adjoining property, the domestic well on the Richmond property (Richmond Well) was sampled on July 31, 2013. The locations of the subject site's domestic well and the Richmond Well are shown in Figure 2. Both samples were submitted to Phase Sciences for laboratory analysis of VOCs via EPA method 8260B.

4.3 Groundwater Analytical Results

Groundwater samples collected from the site's monitoring wells were submitted for laboratory analysis of TPH-GRO, total BTEX, and MTBE. The resulting analytical data showed that these constituents were detected at concentrations exceeding laboratory detection levels in samples collected from all of the site's monitor wells except MW-5 and MW-8. TPH-GRO concentrations ranged from below laboratory detection levels to 18,000 µg/L. Total BTEX concentrations ranged from below laboratory detection to 4,489 µg/L. MTBE concentrations ranged from below laboratory detection level to 65 µg/L. The highest concentrations of all of these constituents were measured in MW-1.

Groundwater samples were collected from both piezometers installed along the banks of Little Ivy Creek, and were submitted for laboratory analysis of VOCs. Analytical results showed that VOC concentrations in P-1 were below laboratory detection levels for all analyzed constituents. VOC concentrations in P-2 were below laboratory detection levels for all analyzed constituents except MTBE, which had a concentration of 1.1 µg/L.

Groundwater samples collected from the subject site's domestic well and the adjoining Richmond Well were collected and submitted for laboratory analysis of VOCs. It should be noted that the VDEQ's water treatment contractor (Culligan) installed treatment equipment at the site that was in place prior the SCAR sampling event. In the sample collected from the subject site's domestic well, all analyzed VOC constituents were below laboratory detection levels except chloromethane, which had a concentration of 2.9 µg/L. In the sample collected from the Richmond Well, all analyzed VOC constituents were below laboratory detection levels except MTBE, which had a concentration of 6.0 µg/L.

Analytical results yielded from groundwater sampling of the monitor wells, piezometers, and domestic water supply wells are summarized in Table 4, below. Additionally, groundwater sampling results from the initial SCR study and limited Phase II Subsurface Investigation are included in this table. Laboratory certifications and chain-of-custody documentation from the SCAR sampling event are included in Appendix B.

4.4 Discussion of Groundwater Analytical Results

The installation of wells MW-5 through MW-8, as well as piezometers P-1 and P-2, provided improved insight into groundwater flow at the site. Shallow groundwater flow direction at the site during the July 2013 sampling event, as determined by gauging data from the monitor wells and piezometers, is toward the east-southeast (Figure 6). Groundwater appears to be flowing directly toward Little Ivy Creek, in a more easterly-southeasterly direction than initially thought during the SCR study.

Installation of the piezometers has lead to an improved understanding of groundwater-surface water interactions between the shallow groundwater system and Little Ivy Creek. Groundwater elevations in the piezometers and surface water elevations in Little Ivy Creek at locations adjacent to the piezometers were determined on two separate occasions (July 23, 2013 and July 31, 2013). Both monitoring events yielded similar results; the groundwater elevation in P-1 was approximately 0.5-foot higher than the adjacent Little Ivy Creek water surface elevation, and the groundwater elevation in P-2 was approximately 0.1-foot lower than the adjacent Little Ivy Creek water surface elevation.

Table 4
Summary of Groundwater Sampling Analytical Results

Well ID	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	TPH-GRO (µg/L)	MTBE (µg/L)	Chloro-methane (µg/L)
MW-1	5/16/2013	73	<10	4,700	510	5,283	17,000	95	NA
	7/23/2013	58	11	3,900	520	4,489	18,000	65	NA
MW-2	5/16/2013	4.0	<1.0	10	6.4	20.4	520	8.5	NA
	7/23/2013	4.3	<1.0	1.0	5.1	10.4	780	10	NA
Field Duplicate (MW-2)	7/23/2013	3.7	<1.0	1.0	5.2	9.9	630	8.1	NA
MW-3	5/16/2013	21	<1.0	47	16.2	84.2	1,800	25	NA
	7/23/2013	13	<1.0	53	15.1	81.1	1,600	14	NA
MW-4	5/16/2013	31	<1.0	33	15.5	79.5	1,600	14	NA
	7/23/2013	30	<1.0	25	15.8	70.8	2,400	15	NA
MW-5	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	<1.0	NA
MW-6	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	5.7	NA
MW-7	7/23/2013	44	14	110	135.8	303.8	3,600	21	NA
MW-8	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	<1.0	NA
P-1	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0
P-2	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1.1	<1.0
Scott's Ivy Domestic Well	5/28/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	20	<1.0
	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	2.9
Richmond Domestic Well	7/31/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	6.0	<1.0
Boring 1	3/21/2013	210	180	4,200	12,470	17,060	NA	NA	NA

µg/L = micrograms per liter or parts per billion; BTEX = benzene, toluene, ethylbenzene, and xylenes; TPH-GRO = total petroleum hydrocarbons-gasoline range organics; MTBE = methyl tert-butyl ether; NA = not analyzed for this constituent

The relationship between P-1 and the creek indicates that groundwater is being discharged to the creek (i.e. gaining-stream system), and the relationship between P-2 and the creek indicates that surface water is being discharged to the groundwater system (i.e. losing-stream system). Prior to collecting gauging data from the piezometers, it was expected that gauging data would indicate the presence of a gaining-stream system at both locations, as groundwater at the site flows toward Little Ivy Creek. A possible explanation for the losing-stream system observed near P-2 is that Little Ivy Creek has incised to bedrock at this stream gauging location, which has slowed incision and resulted in an elevated stream

level. The uneven bedrock surface observed during monitoring well installation makes it possible for a short section of the creek to have incised to bedrock while other sections of the creek have not. The relationship between P-2's groundwater level and the elevation of Little Ivy Creek adjacent to P-2 should be monitored during future sampling events.

Elevated concentrations of dissolved-phase TPH-GRO, total BTEX, and MTBE were detected in samples collected during SCAR sampling. Isoconcentration maps of dissolved-phase benzene, total BTEX, and MTBE were developed to aid in contaminant plume analysis, based on analytical data collected during the July 2013 sampling event (Figures 7, 8, and 9, respectively). The resulting MTBE concentrations from the site's domestic well and the Richmond Well were not included in Figure 9 because these wells were completed in fractured bedrock, whereas the monitoring wells were completed in overburden. The general direction of contaminant plume migration appears to follow groundwater flow direction, toward the east-southeast. The highest concentrations of these constituents were measured in MW-1. The total BTEX concentration measured in MW-1 was significantly higher than concentrations measured in any of the other monitoring wells.

The additional monitoring wells and piezometers installed during the SCAR study have aided in defining the extent of contamination at the site. The upgradient, north-lateral, and downgradient extents of contamination appear to be well defined, although the full downgradient extent of MTBE is unknown, as MTBE was detected in the furthest downgradient monitoring location (P-2). The south-lateral extent of contamination remains unknown, as elevated contaminant concentrations were measured in the furthest south monitoring well (MW-7).

MTBE was detected in the subject site's domestic well during the initial SCR study at a concentration of 20 µg/L, and also during a separate sampling event conducted on June 25, 2013 by the VDEQ's water treatment contractor, at a concentration of 14.9 µg/L (Appendix B). The SCAR sample from the site's domestic well was collected "downstream" of the treatment equipment and MTBE was not detected. Chloromethane was detected at a concentration of 2.9 µg/L. The source of the Chloromethane is unknown, but could potentially be associated with any chlorination activity that may have occurred as part of the water treatment equipment installation, as chlorination of petroleum-impacted water can generate chloromethane as a byproduct (U.S. Department of Health and Human Services 1998).

MTBE was also detected in the adjacent Richmond Well at a concentration of 6.0 µg/L. This detection, along with the documented presence of MTBE in the subject site's domestic well, suggests that contamination has migrated to the deeper, fractured bedrock aquifer into which these wells are completed.

Contaminant levels detected in the Field Duplicate sample, which was a duplicate sample collected from MW-2, were within 19% of concentrations measured in the MW-2 sample for all analyzed constituents. The analyzed Field Duplicate concentrations differed from the MW-2 concentrations by the following percentage differences: benzene -14%, toluene 0%, ethylbenzene 0%, total xylenes +2%, TPH-GRO 19%, and MTBE -19%.

5.0 FINDINGS AND RISK ASSESSMENT

This SCAR study focused on building upon work completed during the initial SCR study, with the focus being to further identify the magnitude and extent of contamination associated with a release of petroleum hydrocarbons at the Scott's Ivy Exxon site. Work completed as part of the SCAR study included the installation of an additional four monitoring wells, the installation of two shallow piezometers near Little Ivy Creek, gauging and sampling of monitoring wells and piezometers, and sampling of the subject site's domestic well and the adjacent Richmond Well. Adsorbed-phase (Figure 5) and dissolved-phase (Figures 7, 8, and 9) isoconcentration maps were prepared to estimate the areal extent of impacted soil and groundwater at the subject site.

Adsorbed-phase contaminant concentrations indicate that "hot spots" are present immediately surrounding the UST basin. These hot spots exhibit significantly elevated TPH-GRO concentrations, while nearby sampled locations exhibit concentrations that were either detected at low concentrations or were below laboratory detection levels. The hot spots that have been found to contain the highest concentrations of adsorbed-phase TPH-GRO were at the location of Boring 1 and MW-1. The exact source and timing of the petroleum release is unknown. A previous DEQ pollution complaint case was assigned to the property in 1998 and was later closed. Work conducted during the case's active status included excavation of petroleum impacted soil.

Dissolved-phase isoconcentration mapping revealed that groundwater contamination consisting of elevated levels of benzene, total BTEX, and MTBE appears to have migrated from the subject site and onto the eastern adjoining property. The additional monitoring locations installed as part of the SCAR study aided in plume delineation, as the upgradient, north-lateral, and downgradient plume extents appear to be fairly well-defined. However, the south-lateral plume extent has not yet been defined, as elevated contaminant concentrations were measured in the westernmost monitoring well (MW-7). Of the dissolved-phase petroleum constituents detected at the site, the MTBE contamination plume appears to have migrated the furthest onto the eastern adjoining property, as MTBE was detected in the furthest downgradient monitoring location (P-2). Little Ivy Creek appears to be a gaining-stream system at the location of (P-2), which could enable a direct pathway for migration of contaminated groundwater to be discharged into the creek.

MTBE has been documented in groundwater samples collected from the subject site's domestic well. Based on the presence of MTBE contamination, the VDEQ had water treatment equipment installed at the site. Additionally, MTBE was detected in a groundwater sample collected from the adjacent Richmond Well during this SCAR study. Although groundwater flow direction in the shallow, unconsolidated aquifer beneath the subject site has been established, groundwater flow direction in the deeper, fractured bedrock aquifer is unknown. Based on this lack of information, it is unknown whether the source of contamination in the fractured bedrock aquifer is from a release of petroleum on the subject property or from a different source. Based on the relatively

shallow depth to weathered rock (saprolite) encountered during installation of MW-8 and the presence of apparent bedrock outcrops observed along the western portion of the site, the potential for petroleum contamination identified near the existing UST fuel system to impact the bedrock aquifer does exist.

The highest concentrations of both dissolved-phase and adsorbed-phase petroleum compounds were found in the vicinity of the subject site's UST basin and fuel dispensers. Although the timing of the release is unknown, the size of the dissolved-phase contaminant plumes and the weathered appearance of product globules purged from MW-1 during both the SCR and SCAR studies indicate that the release may have occurred years ago.

Based on data obtained during the limited Phase II Subsurface Investigation, the initial SCR study, and this SCAR study, existing contaminant concentrations appear to pose a potential threat to human receptors, as the site's domestic supply well and the adjacent Richmond Well were found to be impacted by MTBE. Existing groundwater contaminant concentrations also appear to pose a threat to Little Ivy Creek, which is located 120 feet east of the UST basin. Detection of MTBE in the furthest downgradient monitoring location, which is located within 10 feet of Little Ivy Creek, indicates that low levels of MTBE may be discharging to the creek.

6.0 CONCLUSIONS

SIG has conducted a SCAR at the Scott's Ivy Exxon site, located at 4260 Ivy Road in Charlottesville, Virginia. Based on data acquired through groundwater and soil sampling, laboratory analysis, and a review of published geologic and topographic data, SIG concludes the following:

1. A release of petroleum has impacted soil and groundwater at the Scott's Ivy Exxon site. The highest concentrations of both adsorbed- and dissolved-phase contamination appears to be present in the vicinity of the subject site's UST basin and fuel dispensers. The exact source and timing of the release are unknown. While the upgradient, north-lateral, and downgradient extents of both adsorbed- and dissolved-phase contamination have been defined, the south-lateral extent of contamination remains unknown at this time.

2. Groundwater wells are utilized in the area for domestic water supply. Sampling of the subject site's domestic well and the adjacent Richmond Well have shown that both wells have been impacted by MTBE.

3. Contaminated groundwater from the subject site has migrated onto the eastern adjoining property, and appears to pose a threat to Little Ivy Creek, based on a detection of MTBE in a piezometer located within 10 feet of the creek.

7.0 RECOMMENDATIONS

Based on the findings of this SCAR study, SIG recommends that actions be taken to protect human and environmental receptors vulnerable to contamination originating from the subject site. SIG recommends that a Corrective Action Plan (CAP) be developed for the site to address these actions.

The CAP would identify measures designed to provide clean drinking water to impacted supply wells, protect groundwater quality within the bedrock aquifer, and protect water quality within Little Ivy Creek. The site vicinity is not serviced by public water, based on discussions with the Albemarle County Service Authority. Therefore, the feasibility of installing alternate water supply wells would be evaluated in the CAP. The CAP would also present a strategy for protecting the bedrock aquifer and Little Ivy Creek from contamination originating from the subject site. Both passive and active remedial methods would be evaluated in the CAP.

SIG also recommends further monitoring of contaminant levels at the site. Monitoring wells and piezometers should be sampled on a quarterly basis to evaluate dissolved-phase contaminant migration. Additionally, the subject site's domestic well and the Richmond Well should be sampled during these monitoring events to monitor VOC concentrations in the fractured bedrock aquifer that supplies drinking water to their respective properties.

8.0 LIMITATIONS

The work performed in conjunction with this project, and the data developed, are intended as a description of available information at the sample locations indicated and the dates specified. Generally accepted industry standards were used in the preparation of this report.

Laboratory data are intended to approximate actual conditions at the time of sampling. Results from future sampling and testing may vary significantly as a result of natural conditions, a changing environment, or the limits of analytical capabilities. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a specific location not investigated. The limited sampling conducted was intended to approximate subsurface conditions by extrapolation between data points. Actual subsurface conditions may vary.

SIG has based its conclusions and recommendations on observable conditions and analytical results from an independent analytical laboratory, which is solely responsible for the accuracy of its methods and results.

9.0 REFERENCES

[ASI] Analytical Services, Inc. 2013a. Phase I Environmental Site Assessment for Scott's Ivy Exxon Site. Report dated 2/28/2013.

[ASI] Analytical Services, Inc. 2013b. Limited Phase II Investigation Report for Scott's Ivy Exxon Site. Report dated 4/12/2013.

[ASI] Analytical Services, Inc. 2013c. Site Characterization Report for Scott's Ivy Exxon Site. Report dated 5/30/2013.

[USDA NRCS] U.S. Department of Agriculture's Natural Resource Conservation Service 2013. Web soil survey. Available online at <http://websoilsurvey.nrcs.usda.gov>. Accessed 4/29/2013.

U.S. Department of Health and Human Services 1998. Toxicological profile for chloromethane. Agency for Toxic Substances and Disease Registry.

U.S. Environmental Protection Agency 2013. Methyl chloride (chloromethane) air toxics website. Available online at <http://www.epa.gov/ttnatw01/hlthef/methylch.html >. Accessed 6/07/2013.

Virginia Division of Mineral Resources 2003. Digital representation of the 1993 geologic map of Virginia. Virginia Division of Mineral Resources Publication 174. Map scale: 1:500,000.

Figures



FIGURE 1: SITE LOCATION MAP

Scott's Ivy Exxon
4260 Ivy Road
Charlottesville, VA

Legend

Scott's Ivy Exxon Site

0 1.25 2.5 5 Miles

N

SULLIVAN

SIG Project # 3361-100

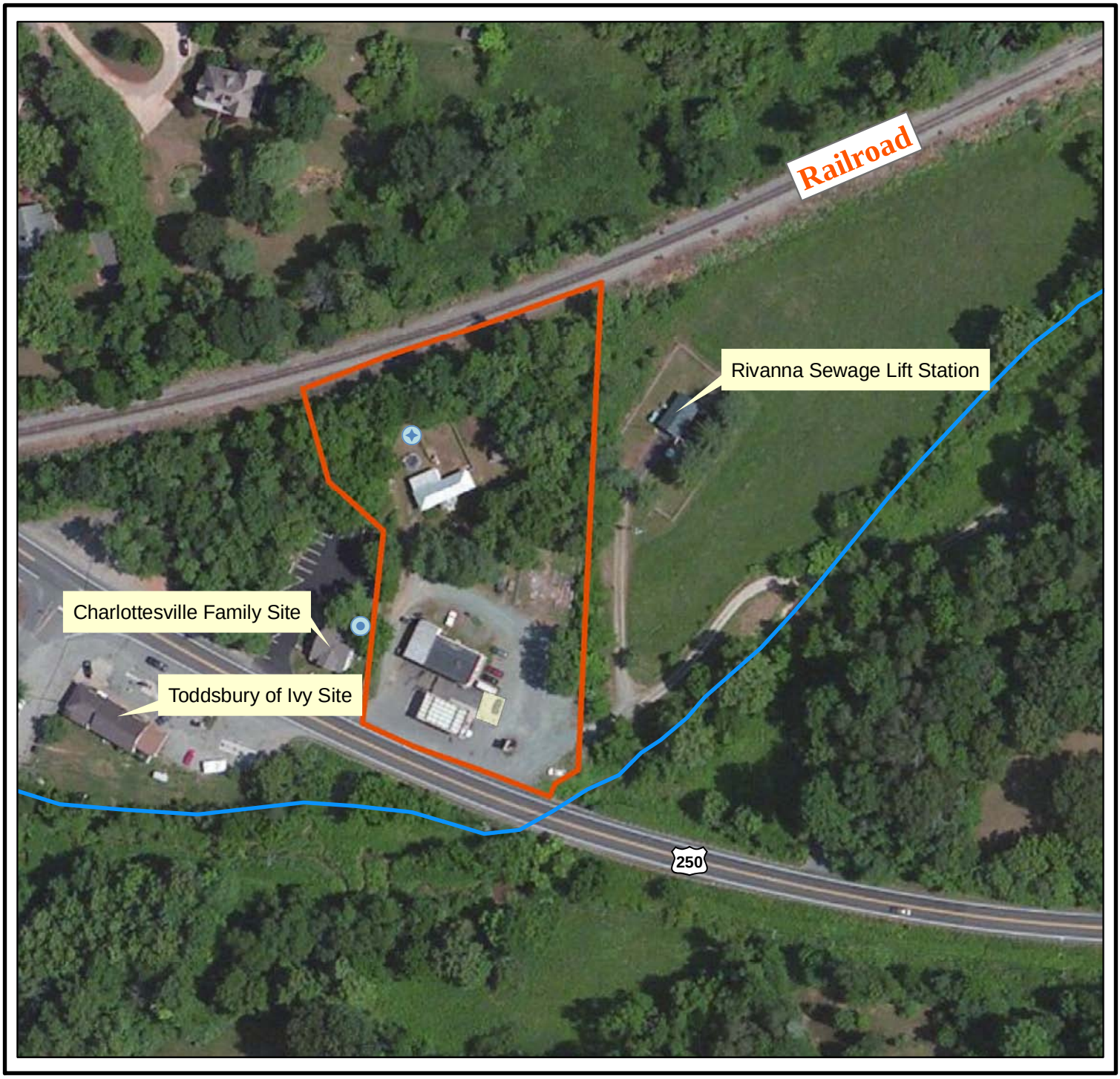


FIGURE 2: SITE LAYOUT MAP

Legend

- Site Domestic Well
- Richmond Domestic Well
- Little Ivy Creek
- UST Basin
- Property Boundary

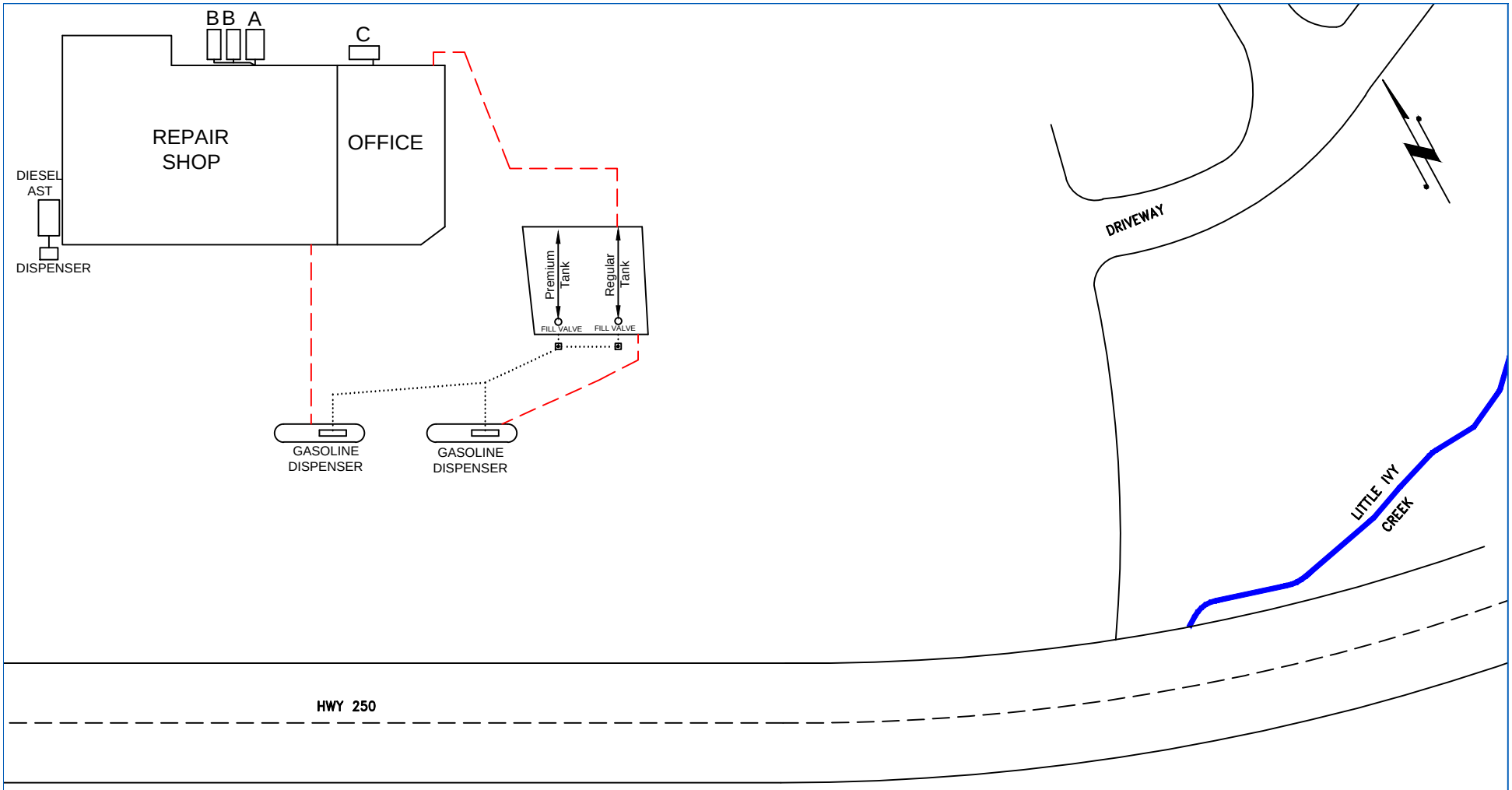
0 100 200 400 Feet

Scott's Ivy Exxon
4260 Ivy Road
Charlottesville, VA

N

SULLIVAN

SIG Project # 3361-100



TANK SCHEDULE
A = USED OIL TANK (5'x3')
B = NEW OIL TANK (5'x2.25')
C = HEATING OIL TANK (5'x2.25')

SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy,Virginia

LEGEND:

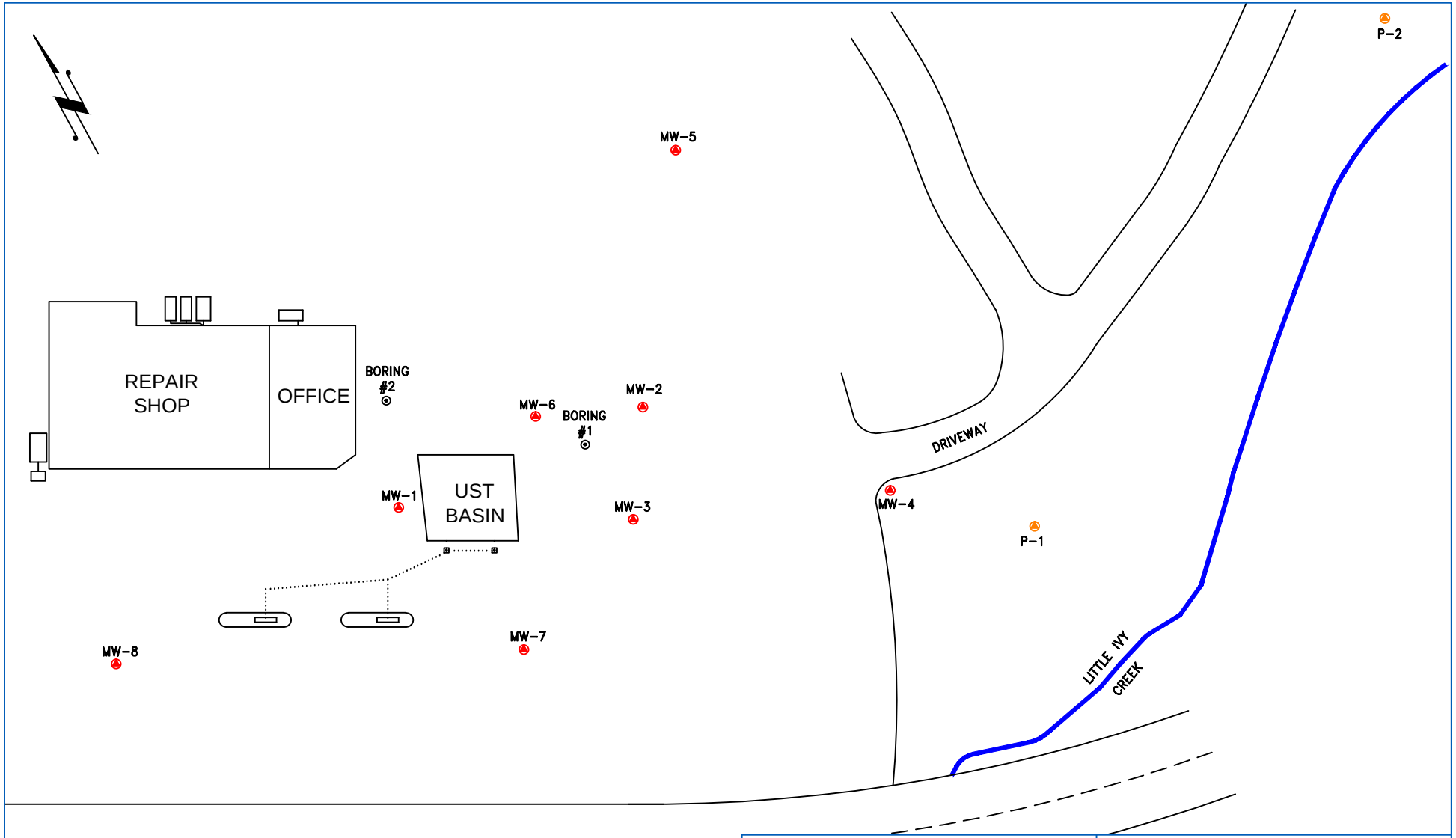
····· FUEL LINE

– – – ELECTRIC UTILITIES LINE

SULLIVAN
402 N. West Street
Culpeper, Virginia 22702

FIGURE 3: SITE PLAN MAP

DRAWN BY	DATE
CLD	07/26/13
SCALE	JOB#
1" = 25'-0"	3361-100
FILE NAME	PROJECT MANAGER
3361.dwg	Mike Maloy



SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy, Virginia

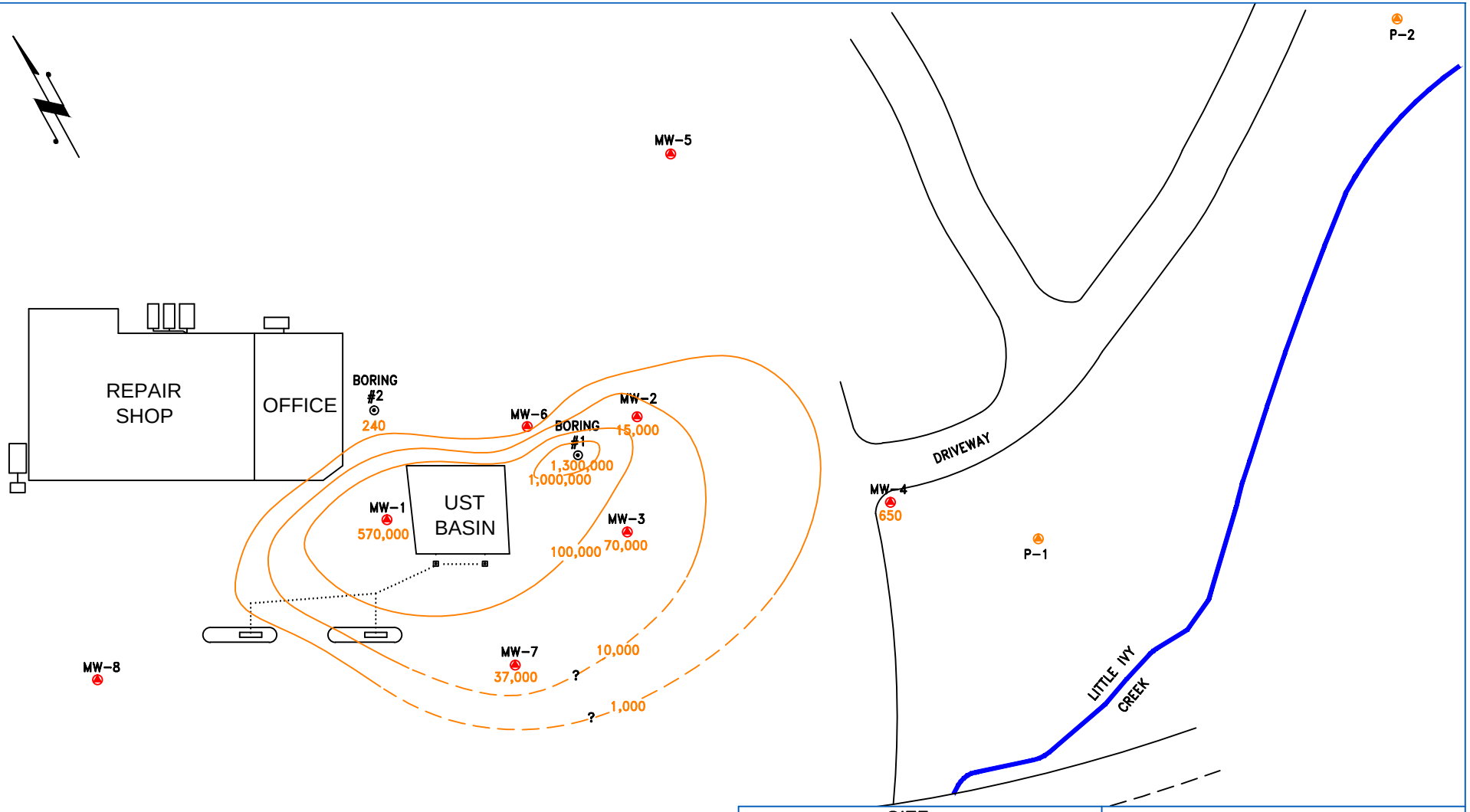
LEGEND:

- MONITOR WELL LOCATION
- PIEZOMETER LOCATION
- BORING LOCATION

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402 N. West Street
Culpeper, Virginia 22702

FIGURE 4: MONITOR WELL & PIEZOMETER LOCATIONS MAP

DRAWN BY	DATE
CLD	07/26/13
SCALE	JOB#
1" = 30'-0"	3361-100
FILE NAME	PROJECT MANAGER
3361-100.dwg	Mike Maloy



SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy, Virginia

LEGEND:

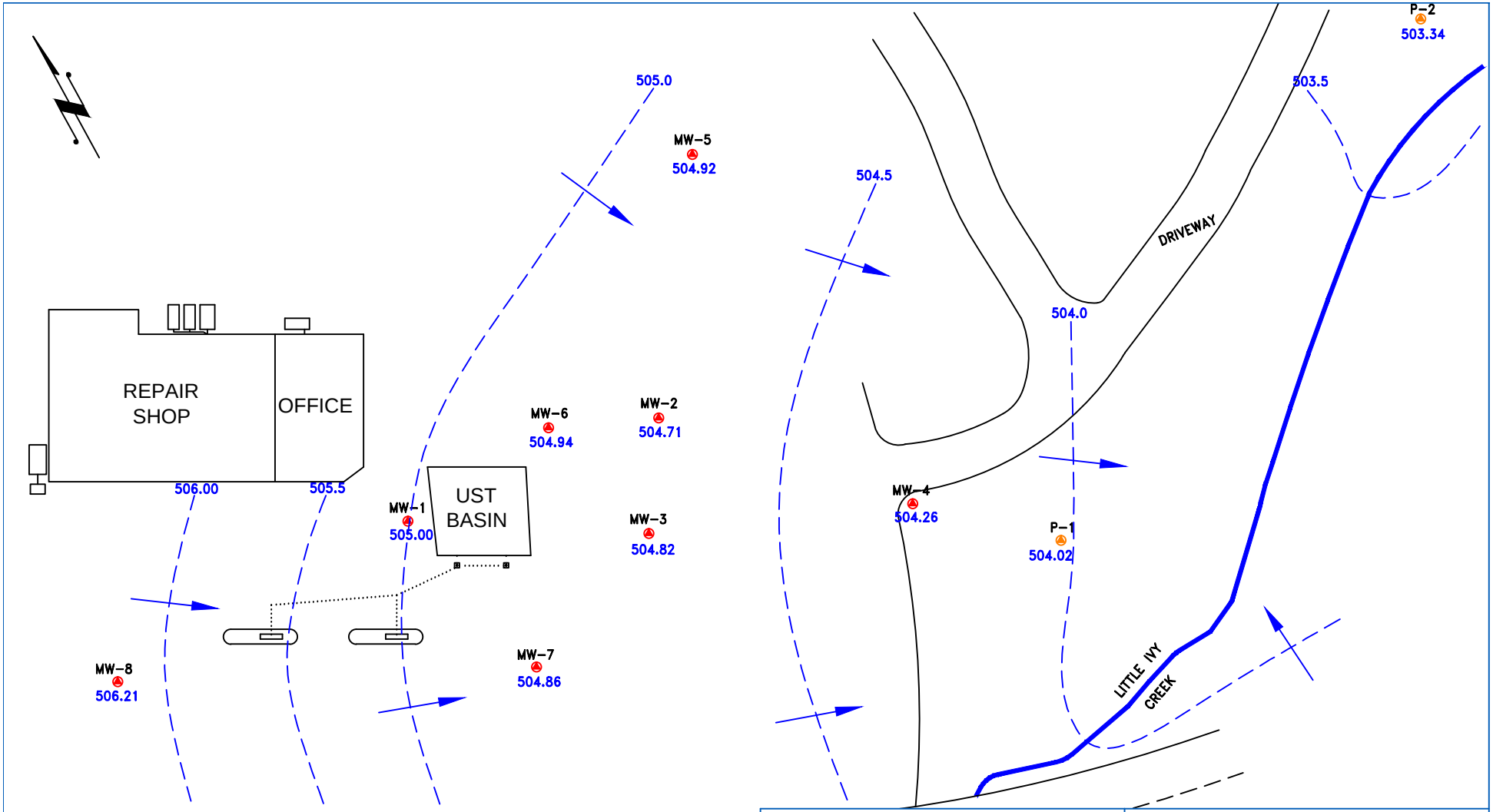
- MW-1 / 570,000 — MONITOR WELL LOCATION (ppb)
- PIEZOMETER LOCATION
- 1,300,000 — BORING LOCATION (ppb)
- TPH-GRO ISO-CONCENTRATION CONTOUR (ppb)

DATA OBTAINED 03-21-2013, 05-14-2013, or 7-12-2013

SULLIVAN
402 N. West Street
Culpeper, Virginia 22702

FIGURE 5: TPH-GRO CONCENTRATIONS IN SOIL

DRAWN BY	DATE
CLD	07/26/13
SCALE	JOB#
1" = 30'-0"	3361-100
FILE NAME	PROJECT MANAGER
3360-100.dwg	Mike Maloy



SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy, Virginia

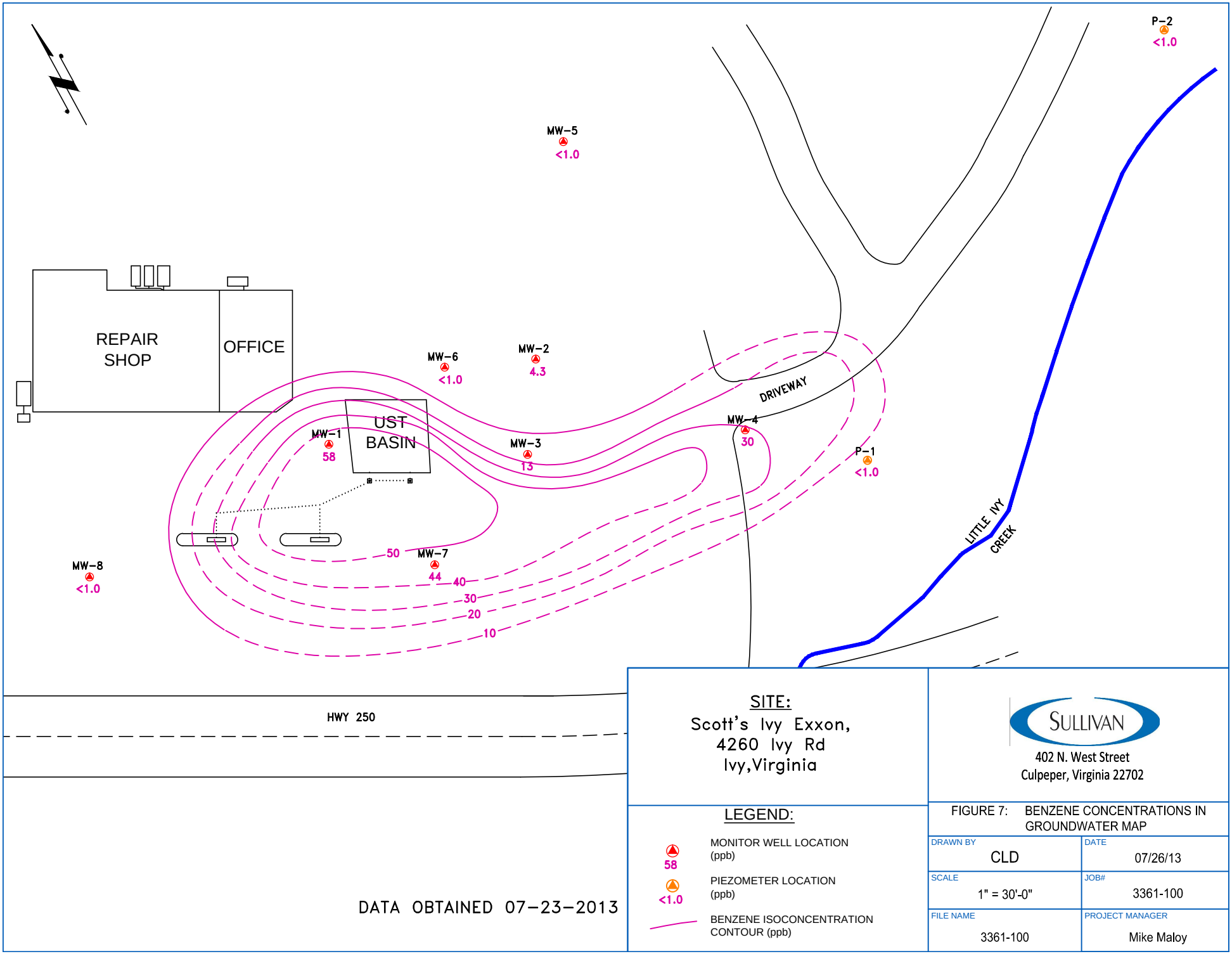
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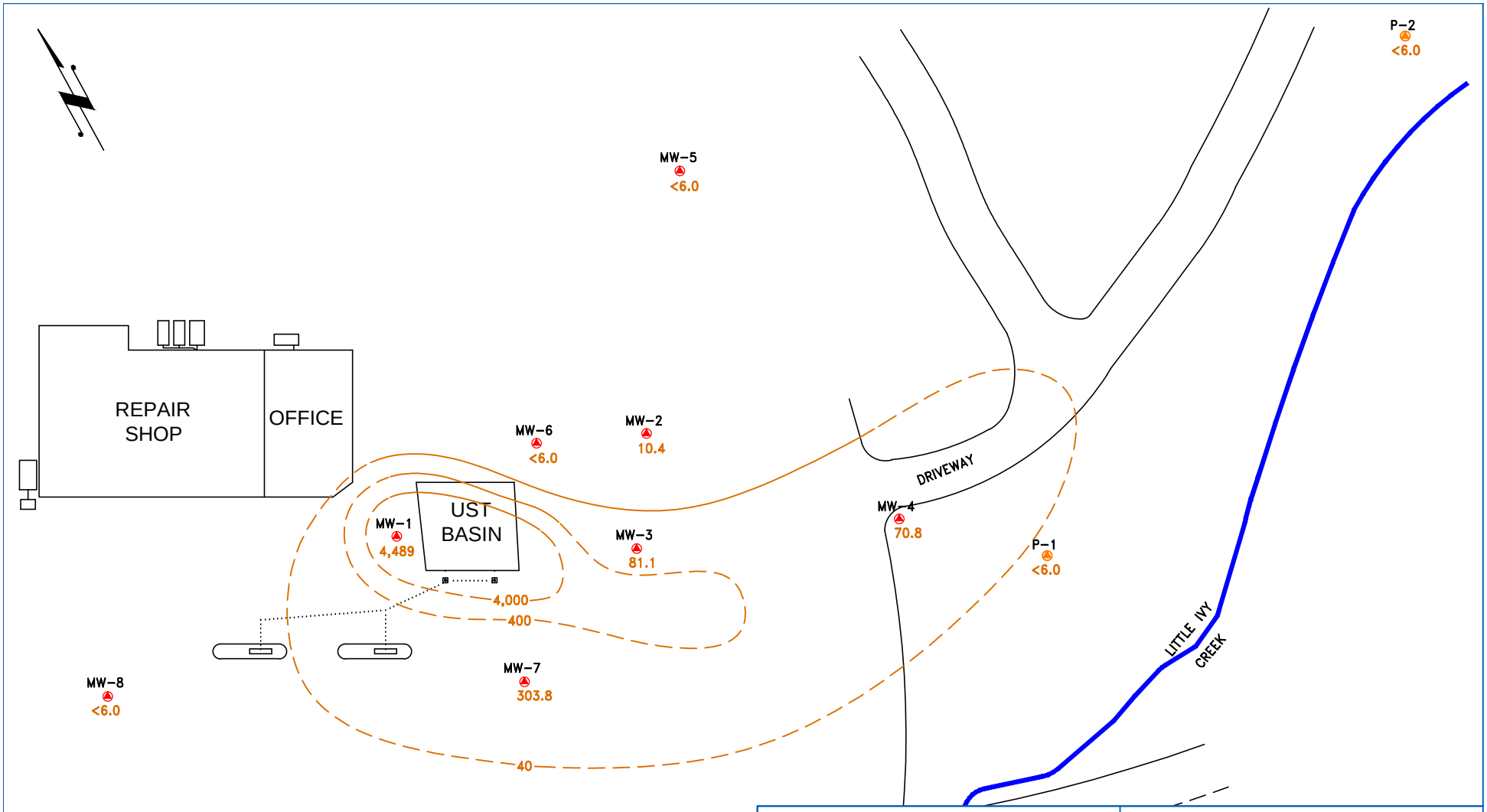
- MW-1 / 505.00 — MONITOR WELL LOCATION W/GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- PIEZOMETER LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR

SULLIVAN
402 N. West Street
Culpeper, Virginia 22702

FIGURE 6: GROUNDWATER EQUIPOTENTIAL MAP

DRAWN BY	DATE
CLD	07/26/13
SCALE	JOB#
1" = 30'-0"	3361-100
FILE NAME	PROJECT MANAGER
3361-100.dwg	Mike Maloy


P-2
<1.0
MW-5
<1.0
REPAIR SHOP
OFFICE
MW-6
<1.0
MW-2
4.3
DRIVEWAY
UST BASIN
MW-1
58
MW-3
13
MW-4
30
P-1
<1.0
LITTLE IVY CREEK
MW-8
<1.0
50
MW-7
44
40
30
20
10
HWY 250
SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy,Virginia
LEGEND:
58
MONITOR WELL LOCATION (ppb)
<1.0
PIEZOMETER LOCATION (ppb)
BENZENE ISOCONCENTRATION CONTOUR (ppb)
DATA OBTAINED 07-23-2013
SULLIVAN
402 N. West Street
Culpeper, Virginia 22702
FIGURE 7: BENZENE CONCENTRATIONS IN GROUNDWATER MAP
DRAWN BY
CLD
DATE
07/26/13
SCALE
1" = 30'-0"
JOB#
3361-100
FILE NAME
3361-100
PROJECT MANAGER
Mike Maloy



DATA OBTAINED 07-23-2013

SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy, Virginia

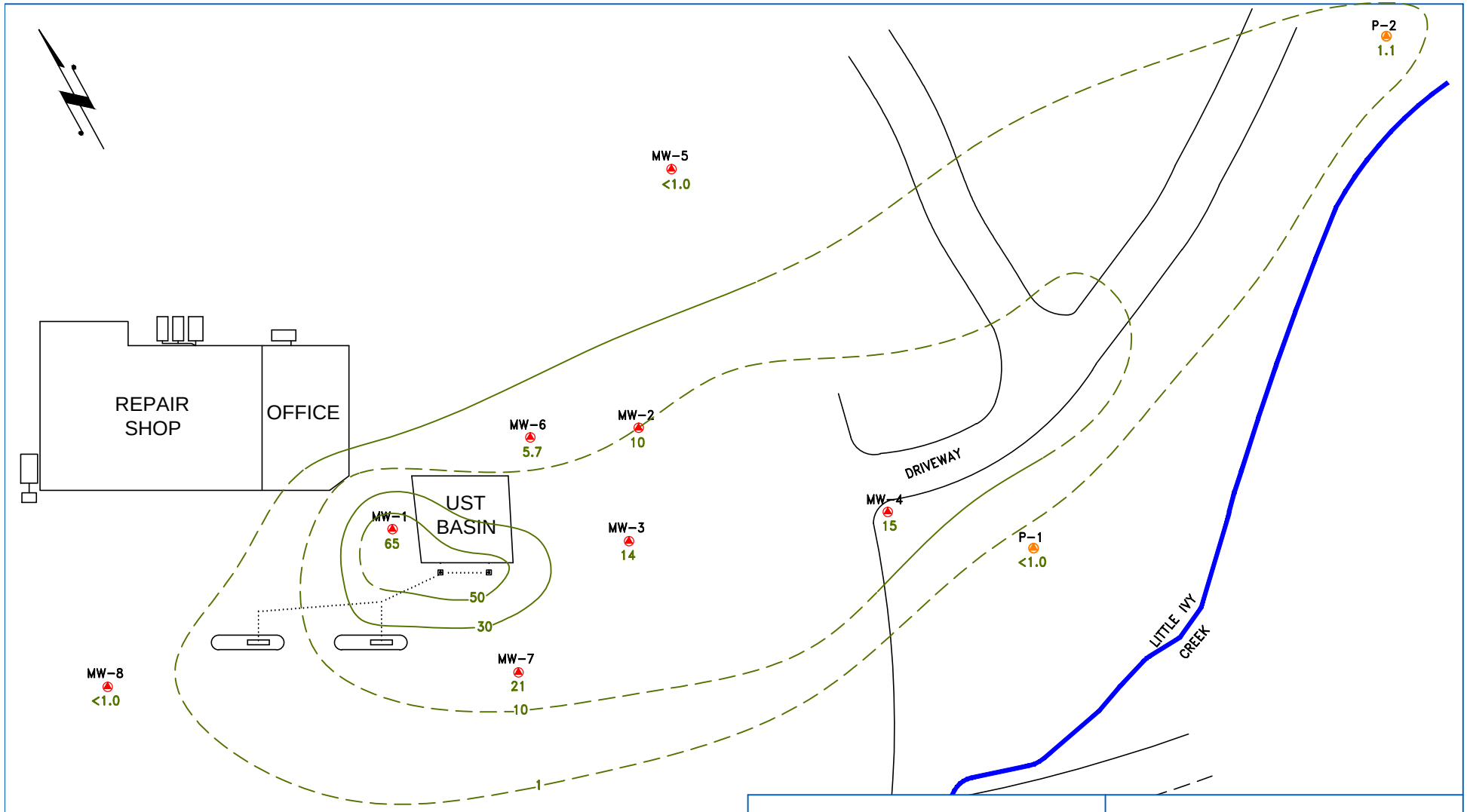
LEGEND:

- 4,489 — MONITOR WELL LOCATION (ppb)
- <6.0 — PIEZOMETER LOCATION (ppb)
- BTEX ISOCONCENTRATION CONTOUR (ppb)

SULLIVAN
402 N. West Street
Culpeper, Virginia 22702

FIGURE 8: BTEX CONCENTRATIONS IN GROUNDWATER MAP

DRAWN BY	DATE
CLD	07/26/13
SCALE	JOB#
1" = 30'-0"	3361-100
FILE NAME	PROJECT MANAGER
3361-100	Mike Maloy



DATA OBTAINED 07-23-2013

SITE:
Scott's Ivy Exxon,
4260 Ivy Rd
Ivy, Virginia

LEGEND:

- 10 — MONITOR WELL LOCATION (ppb)
- 1.1 — PIEZOMETER LOCATION (ppb)
- MTBE ISOCONCENTRATION CONTOUR (ppb)

SULLIVAN
402 N. West Street
Culpeper, Virginia 22702

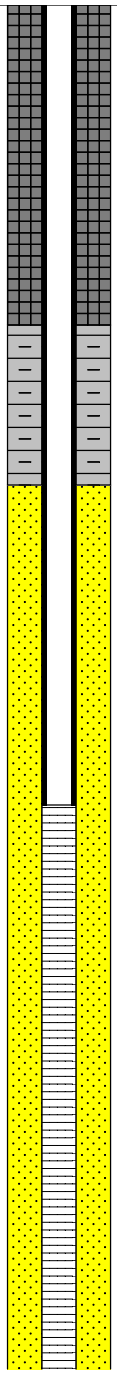
FIGURE 9: MTBE CONCENTRATIONS IN GROUNDWATER MAP

DRAWN BY	DATE
CLD	7/26/13
SCALE	JOB#
1" = 30'-0"	3361-100
FILE NAME	PROJECT MANAGER
3361-100	Mike Maloy

Appendix A

Geologic and Well Construction Logs

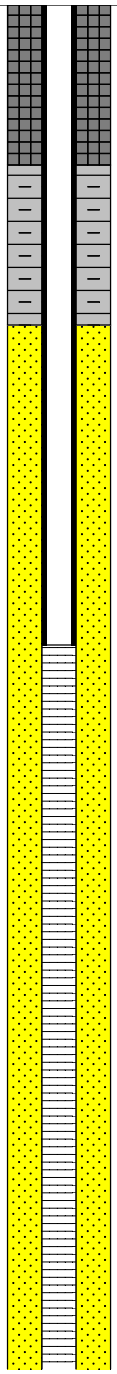
Project 3357	**Monitoring Well ID:** MW-1	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** 15.5 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE: Asphalt underlain by road base.**		
1		**SILTY CLAY: with trace SAND and GRAVEL (90% silty clay, 10% sand, trace gravel); silty clay is light brown colored, high plasticity; sand is fine grained, subangular; gravel is angular, up to 1 centimeter diameter.**		**PID: 1.1 ppm**
2				
3				
4				
5		**SILTY CLAY: light brown colored, high plasticity.**		
6				
7				**PID: 1.9 ppm**
8				

Project 3357	**Monitoring Well ID:** MW-1	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** 15.5 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				
10				
11		SILTY CLAY: dark grey colored, micaceous, high plasticity, strong petroleum odor.		
12		SAND: fine to medium grained, moderately sorted, angular, saturated, strong petroleum		
13		SILTY CLAY: with trace SAND and GRAVEL (90% silty clay, 10% sand, trace gravel); GRAVEL layer present at base; silty clay is light brown colored, soft, saturated, strong petroleum odor; gravel layer present from 13.0-13.2 feet bgs, angular, saturated,		PID: 255.0 ppm
14		CLAYEY SAND: (60% sand, 40% silty clay); light grey colored, sand is fine grained, subangular, well sorted, saturated, strong petroleum odor.		
15		SAND: fine grained, quartz, subangular, well sorted, saturated, strong petroleum odor.		
16		BEDROCK		

Project 3357	**Monitoring Well ID:** MW-2	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 14 feet bgs	
Logger: TPN	**Depth to Bedrock:** 14 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

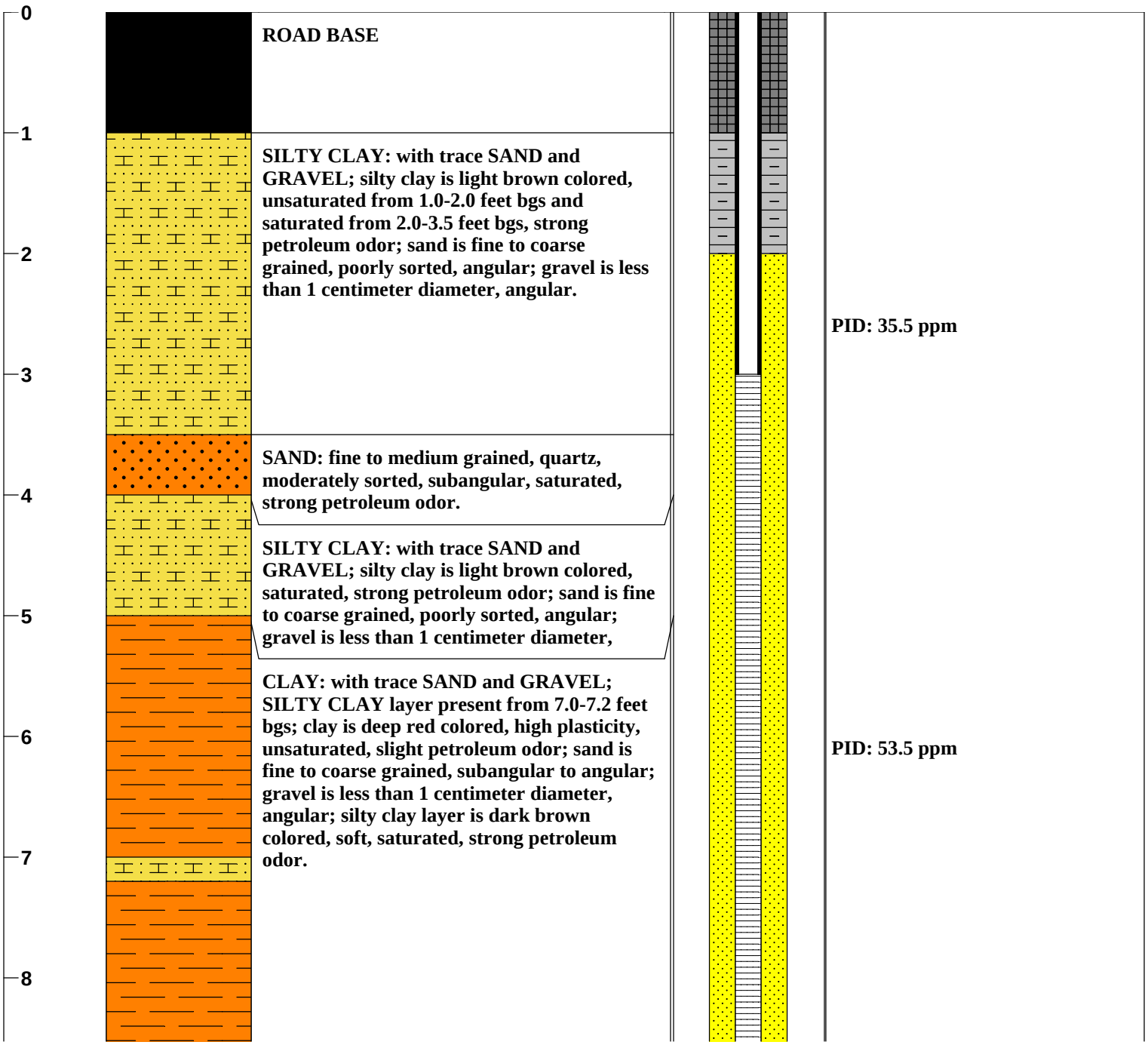
Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY AND CLAYEY SAND INTERBEDS: entire interval is saturated and has a slight to strong petroleum odor; silty clay with trace sand is present from 1.0-3.8, 4.0-5.0, and 6.0-7.0 feet bgs, light brown colored, high plasticity; clayey sand (50-80% sand, 20-50% silty clay) with tracel gravel is present from 3.8-4.0, 5.0-6.0, and 7.0-8.5 feet bgs, light brown to dark grey colored, sand is fine to medium grained, moderately to well sorted, subangular.**		**PID: 96.2 ppm** **PID: 145.6 ppm**
2				
3				
4				
5				
6				
7				
8				

Project 3357	**Monitoring Well ID:** MW-2	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 14 feet bgs	
Logger: TPN	**Depth to Bedrock:** 14 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9		**SAND: fine grained, quartz, well sorted, subangular, unsaturated, slight petroleum odor.**		**PID: 14.1 ppm**
10		**SILTY CLAY: with trace SAND and GRAVEL; silty clay is light brown colored, soft, saturated, strong petroleum odor; sand is fine to coarse grained, angular.**		
11				**PID: 202.1 ppm**
12		**GRAVEL AND SAND: poor core recovery from this interval, recovered core composed of fine to coarse grained sand and gravel with less than 1 centimeter diameter, poorly sorted, subangular to subrounded, saturated, slight petroleum odor.**		
13				
14		**BEDROCK**		

Project 3357	**Monitoring Well ID:** MW-3	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 13 feet bgs	
Logger: TPN	**Depth to Bedrock:** 13 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes

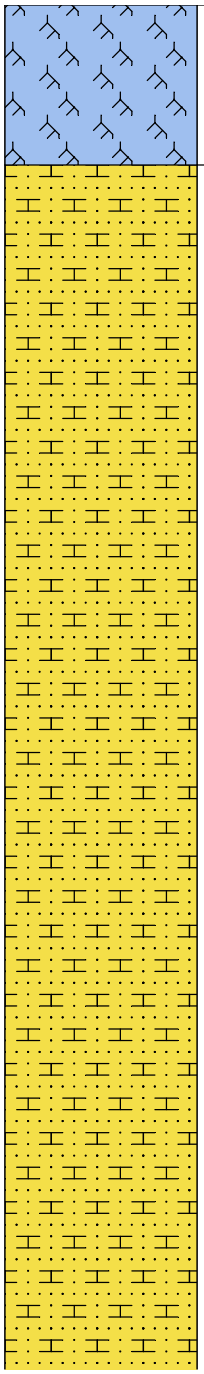


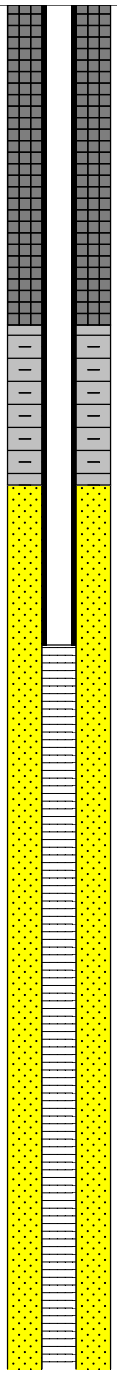
Project 3357	**Monitoring Well ID:** MW-3	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 13 feet bgs	
Logger: TPN	**Depth to Bedrock:** 13 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9		**SILTY CLAY: light grey colored, soft, damp from 9.0-10.0 feet bgs and saturated from 10.0-11.8 feet bgs, strong petroleum odor.**		**PID: 330.2 ppm**
10				
11				
12		**GRAVEL AND SAND: poor core recovery from this interval, recovered core composed of fine to coarse grained sand and gravel; poorly sorted, subangular to subrounded, saturated, slight petroleum odor.**		
13		**BEDROCK**		

Project 3357	**Monitoring Well ID:** MW-4	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 14 feet bgs	
Logger: TPN	**Depth to Bedrock:** 14 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Cuttings instead of core were used to compile MW-4 geologic log	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**TOPSOIL: grass and topsoil.**		
1		**SILTY CLAY: with trace SAND and GRAVEL; silty clay is light brown colored, high plasticity, unsaturated; sand is fine to coarse grained, subangular; gravel is less than 1 centimeter diameter, subangular.**		
2				**PID: 15.4 ppm**
3				
4				
5				
6				
7				**PID: 19.8 ppm**
8				





Project 3357	**Monitoring Well ID:** MW-4	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 14 feet bgs	
Logger: TPN	**Depth to Bedrock:** 14 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: Bedford Drilling	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 2 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 5/14/2013	**Notes:** Cuttings instead of core were used to compile MW-4 geologic log	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				
10		**CLAYEY SAND: (60% sand, 40% silty clay); sand is fine to coarse grained, moderately sorted, subangular, saturated; silty clay matrix is light grey colored, soft.**		
11				
12				**PID: 6.1 ppm**
13				
14		**BEDROCK**		

Project 3361-100	**Monitoring Well ID:** MW-5	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 20 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY: with trace SAND; silty clay is red to tan colored, moderate plasticity, moderate hardness; sand is fine grained, subangular; unsaturated. Thin clayey sand (60% sand 40% clay) layer present from approximately 11.0-11.2 feet bgs; sand is fine to medium grained, subangular, moderately sorted; clay is red colored, unsaturated.**		
2				
3				
4				
5				**PID: 0.4 ppm**
6				
7				
8				
9				
10				**PID: 0.5 ppm**
11				

Project 3361-100	**Monitoring Well ID:** MW-5	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 20 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
12				
13		**SAND AND CLAY: (60% sand 40% clay); sand is fine to coarse grained, poorly sorted, subangular to angular; clay is dark red colored, moderate plasticity, unsaturated. Thin clayey sand (80% sand 20% clay) layer present from 14.0-14.2 feet bgs; sand is fine grained, well sorted, subrounded; clay is tan colored; saturated.**		**PID: 0.5 ppm**
14				
15				
16		**GRAVEL AND SAND: No core recovered from this interval; drill cuttings comprised of fine to coarse grained sand and gravel, poorly sorted, subangular to subrounded, saturated.**		
17				
18				
19				
20				

Project 3361-100	**Monitoring Well ID:** MW-6	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY: with trace SAND; silty clay is red to tan colored, moderate plasticity, moderate hardness; sand is fine grained, subangular; unsaturated. Thin sand layer present from approximately 11.0-11.2 feet bgs; sand is fine to coarse grained, subangular to subrounded, poorly sorted, unsaturated.**		
2				
3				
4				
5				**PID: 0.4 ppm**
6				
7				
8				

Project 3361-100	**Monitoring Well ID:** MW-6	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

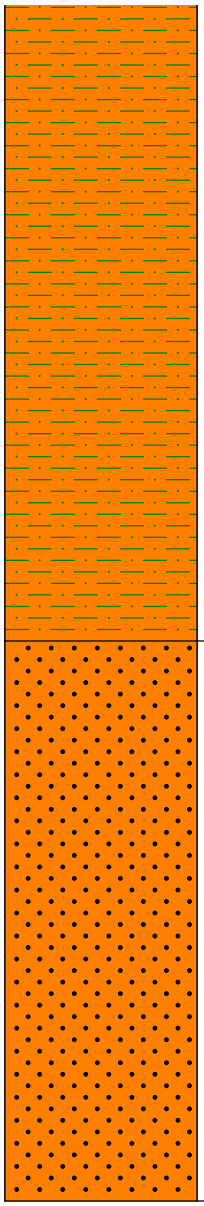
Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				
10				PID: 0.6 ppm
11				
12				
13		SAND: with trace GRAVEL; sand is fine to coarse grained, poorly sorted, subangular to subrounded, saturated; gravel clasts up to 1-inch diameter.		
14				
15		SAND: with minor CLAY (80% sand 20% clay); sand is fine to coarse grained, poorly sorted, subangular to subrounded, saturated; clay is grey colored.		PID: 0.7 ppm
16				

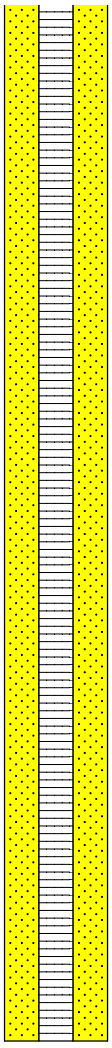
Project 3361-100	**Monitoring Well ID:** MW-7	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY: with trace SAND; silty clay is red colored, moderate plasticity, moderate hardness; sand is fine to medium grained, subangular; unsaturated.**		
2				
3				
4				
5				**PID: 0.4 ppm**
6				
7				
8		**SAND, SOME CLAY: (70% sand 30% clay); sand is fine grained, well sorted, subrounded; clay is grey colored, soft, micaceous; damp, slight petroleum odor.**		

Project 3361-100	**Monitoring Well ID:** MW-7	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at 5 ft. depth intervals	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				
10				PID: 138.2 ppm
11				
12				
13		SAND: sand is fine to coarse grained, poorly sorted, subrounded to rounded, saturated, slight petroleum odor.		
14				
15				PID: 1.7 ppm
16				





Project 3361-100	**Monitoring Well ID:** MW-8	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at following intervals: 4-6 & 9-11 ft. bgs.	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ASPHALT**		
1		**SILTY CLAY: tan colored, low plasticity, moderate hardness. Thin silty sand layer (60% silt 40% sand) present from approximately 4.5-4.6 feet bgs. orange colored, unsaturated; sand is fine grained, subrounded.**		
2				
3				
4				
5				**PID: 0.1 ppm**
6				
7				
8		**SAPROLITE: saprolite chemically altered to a clayey sand (70% clay 30% sand); clay is tan colored, low plasticity, moderate hardness, damp; sand is fine to medium grained, subrounded to subangular. Thin sand layer present at approximately 9.0-9.1 feet bgs, fine to coarse grained, subangular, poorly sorted, saturated. Drill cuttings saturated from approximately 13-15 feet bgs.**		
9				
10				**PID: 0.3 ppm**

Project 3361-100	**Monitoring Well ID:** MW-8	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	
Location: Ivy, Virginia	**Well Depth:** 15 feet bgs	
Logger: TPN	**Depth to Bedrock:** Not Encountered	
Manager: Michael L. Maloy	**Casing Diameter:** 2 inches	**Borehole Diameter:** 8 inches
Drilling Company: CED	**Casing Type:** Sch. 40 PVC	**Filter Pack:** No. 3 quartz sand
Drilling Method: Hollow-Stem Auger	**TOC Elevation:** Surveyed for relative elevation only	
Completion Date: 7/12/2013	**Notes:** Logged from 2 ft. cores collected at following intervals: 4-6 & 9-11 ft. bgs.	

Depth (feet bgs)	**Lithology**	**Lithologic Description** Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	**Well Construction Diagram**	**Notes**



Project 3357	**Monitoring Well ID:** Boring 1	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 16 feet bgs	
Logger: TPN	**Depth to Bedrock:** 16 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:**	**Borehole Diameter:** 2 inches
Drilling Company: Bedford Drilling	**Casing Type:**	**Filter Pack:**
Drilling Method: Geoprobe	**TOC Elevation:** Not surveyed	
Completion Date: 3/21/2013	**Notes:** Well not installed in Boring 1; logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY: light brown to deep red colored, moderate plasticity, damp, slight petroleum odor.**		
2				**PID: 1.0 ppm**
3				
4				
5				**PID: 1.6 ppm**
6				
7				**PID: 32.3 ppm**
8				

Project 3357	**Monitoring Well ID:** Boring 1	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 16 feet bgs	
Logger: TPN	**Depth to Bedrock:** 16 feet bgs	
Manager: Michael L. Maloy	**Casing Diameter:**	**Borehole Diameter:** 2 inches
Drilling Company: Bedford Drilling	**Casing Type:**	**Filter Pack:**
Drilling Method: Geoprobe	**TOC Elevation:** Not surveyed	
Completion Date: 3/21/2013	**Notes:** Well not installed in Boring 1; logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				PID: 326 ppm
10				
11		SAND AND SILTY CLAY INTERBEDS: sand present from 11.0-11.8, 13.5-13.9, and 14.1-15.5 feet bgs, silty clay is present from 11.8-13.5, 13.9-14.1, and 15.5-16.0 feet bgs; sand is fine to coarse grained, poorly sorted, angular, saturated, strong petroleum odor, 1-inch diameter clasts present in 14.1-15.5 feet bgs interval; silty clay is light brown to light grey colored, moderate plasticity, damp, slight petroleum odor.		PID: 1,875 ppm
12				
13				
14				PID: 348 ppm
15				PID: 106 ppm
16		BEDROCK		

Project 3357	**Monitoring Well ID:** Boring 2	**Page 1 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 12 feet bgs	
Logger: TPN	**Depth to Bedrock:**	
Manager: Michael L. Maloy	**Casing Diameter:**	**Borehole Diameter:** 2 inches
Drilling Company: Bedford Drilling	**Casing Type:**	**Filter Pack:**
Drilling Method: Geoprobe	**TOC Elevation:** Not surveyed	
Completion Date: 3/21/2013	**Notes:** Well not installed in Boring 2; logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
0		**ROAD BASE**		
1		**SILTY CLAY: with GRAVEL layer present from 5.0-5.2 feet bgs; silty clay is light brown to dark red colored, moderate plasticity, damp and has a slight petroleum odor from 7.0-11.0 feet bgs; gravel layer has clasts up to 1 centimeter diameter, subangular, unsaturated.**		
2				**PID: 0.7 ppm**
3				
4				
5				
6				
7				**PID: 22.3 ppm**
8				

Project 3357	**Monitoring Well ID:** Boring 2	**Page 2 of 2**
Name: Scott's Ivy Exxon	**Monitoring Well Data**	ANALYTICAL SERVICES, INC.
Location: Ivy, Virginia	**Well Depth:** 12 feet bgs	
Logger: TPN	**Depth to Bedrock:**	
Manager: Michael L. Maloy	**Casing Diameter:**	**Borehole Diameter:** 2 inches
Drilling Company: Bedford Drilling	**Casing Type:**	**Filter Pack:**
Drilling Method: Geoprobe	**TOC Elevation:** Not surveyed	
Completion Date: 3/21/2013	**Notes:** Well not installed in Boring 2; logged from cores	

Depth (feet bgs)	Lithology	Lithologic Description Trace = 0-10 %, Little = 10-20%, Some = 20-30%, And = 30-50%	Well Construction Diagram	Notes
9				
10				
11		SAND: fine to coarse grained, quartz, poorly sorted, subangular, saturated, slight petroleum odor.		PID: 1.2 ppm
12				

Appendix B

Laboratory Analytical Results

Analytical Report for

Sullivan International Group, Inc.

Certificate of Analysis No.: 13071603

Project Manager: Mike Maloy
Project Name : Scott's Ivy Exxon SCR Add.
Project Location: Charlottesville, VA
Project ID : 3361-100

July 23, 2013

Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

July 23, 2013

Mike Maloy
Sullivan International Group, Inc.
402 N West Street
Culpepper, VA 22701

Reference: PSS Work Order(s) No: **13071603**
Project Name: Scott's Ivy Exxon SCR Add.
Project Location: Charlottesville, VA
Project ID.: 3361-100

Dear Mike Maloy :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **13071603**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on August 20, 2013. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

John Richardson
Laboratory Director

Sample Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy Exxon SCR Add.

Work Order Number(s): 13071603

Project ID: 3361-100

The following samples were received under chain of custody by Phase Separation Science (PSS) on 07/16/2013 at 10:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
13071603-001	MW-7 @ 9-11 ft.	SOIL	07/12/13 12:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for non-potable water samples tested for compliance for Virginia Pollution Discharge Elimination System (VDPES) permits and Virginia Pollutant Abatement (VPA) permits, have a maximum holding time of 15 minutes established by 40CFR136.3.

Standard Flags/Abbreviations:

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C Results Pending Final Confirmation.
E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J The target analyte was positively identified below the reporting limit but greater than the LOD.
LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect**.** An LOD is analyte and matrix specific.
ND Not Detected at or above the reporting limit.
RL PSS Reporting Limit.
U Not detected.

Case Narrative Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy Exxon SCR Add.

Work Order Number(s): 13071603
Project ID: 3361-100

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Sample Receipt:

Sample(s) received at a temperature greater than 6 degrees C and ice was melted.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13071603

Sullivan International Group, Inc., Culpepper, VA

July 23, 2013

Project Name: Scott's Ivy Exxon SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: MW-7 @ 9-11 ft. **Date/Time Sampled: 07/12/2013 12:00** **PSS Sample ID: 13071603-001**
Matrix: SOIL **Date/Time Received: 07/16/2013 10:45** **% Solids: 78**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3550

LF/DF - Lighter fuel/oil and No. 2/diesel fuel patterns observed in sample.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	**7.4**	mg/kg	5.1	LF	1	07/19/13	07/19/13 19:15	1040

Total Petroleum Hydrocarbons-GRO — Analytical Method: SW-846 8015C — Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	**37,000**	ug/kg	1,300		10	07/17/13	07/17/13 06:44	1035

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: Sullivan Int'l Group, Inc. *OFFICE LOC. Culpeper, VA
*PROJECT MGR: Mike Maloy *PHONE NO.: (540) 829-5640
EMAIL: mmaloy@onesullivan.com FAX NO.: ( )
*PROJECT NAME: Scott's Ivy Exxon SCR Add. PROJECT NO.: 3361-100
SITE LOCATION: Charlottesville, VA P.O. NO.:
SAMPLER(S): TPN DW CERT NO.:

PSS Work Order #: 13071603 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used		Analysis/ Method Required (3) * TPH-GRO 8015B	TPH-DRO 8015B	REMARKS
1	MW-7 @ 9-11 ft.	7/12/13	12:00	S	2	G			X	X	

(5)

Relinquished By: (1)	Date	Time	Received By:
Tom Nelson	7/15/13	3:00pm	UPS
Relinquished By: (2) UPS 1ZX097V30392565182	Date 7/16/13	Time 1045a	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ☐

# of Coolers: 1
Custody Seal: INTACT - COOLER
Ice Present: MELTED Temp: 14°C
Shipping Carrier: UPS-G

Special Instructions: *Please copy results to Tom Nelson at tnelson@onesullivan.com

DW COMPLIANCE? YES ☐ EDD FORMAT TYPE ____ STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	13071603	**Received By**	Rachel Davis
Client Name	Sullivan International Group, Inc.	**Date Received**	07/16/2013 10:45:00 AM
Project Name	Scott's Ivy Exxon SCR Add.	**Delivered By**	UPS
Project Number	3361-100	**Tracking No**	1ZX097V30392565182
Disposal Date	08/20/2013	**Logged In By**	Robyn Rhudy

Shipping Container(s)

No. of Coolers	1	Ice	Melted
		Temp (deg C)	14
Custody Seal(s) Intact?	Yes	Temp Blank Present	No
Seal(s) Signed / Dated?	Yes		

Documentation

		Sampler Name	Tom Nelson
		MD DW Cert. No.	N/A
COC agrees with sample labels?	Yes		
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received	1
Total No. of Containers Received	2

Preservation

Metals	(pH<2)	N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, COD, Phenols	(ph<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Sample(s) received at a temperature greater than 6 degrees C and ice was melted.

Samples Inspected/Checklist Completed By: Robyn Rhudy — Date: 07/16/2013

PM Review and Approval: Amy Friedlander — Date: 07/16/2013

Analytical Report for

Sullivan International Group, Inc.

Certificate of Analysis No.: 13072503

Project Manager: Mike Maloy
Project Name : Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID : 3361-100

August 1, 2013

Phase Separation Science, Inc.
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PHASE SEPARATION SCIENCE, INC.

August 1, 2013

Mike Maloy
Sullivan International Group, Inc.
402 N West Street
Culpepper, VA 22701

Reference: PSS Work Order(s) No: **13072503**
Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID.: 3361-100

Dear Mike Maloy :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **13072503**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on August 29, 2013. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy SCR Add.

Work Order Number(s): 13072503

Project ID: 3361-100

The following samples were received under chain of custody by Phase Separation Science (PSS) on 07/25/2013 at 10:29 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
13072503-001	MW-1	GROUND WATER	07/23/13 12:00
13072503-002	MW-2	GROUND WATER	07/23/13 12:00
13072503-003	MW-3	GROUND WATER	07/23/13 12:00
13072503-004	MW-4	GROUND WATER	07/23/13 12:00
13072503-005	MW-5	GROUND WATER	07/23/13 12:00
13072503-006	MW-6	GROUND WATER	07/23/13 12:00
13072503-007	MW-7	GROUND WATER	07/23/13 12:00
13072503-008	MW-8	GROUND WATER	07/23/13 12:00
13072503-009	Domestic Well	GROUND WATER	07/23/13 12:00
13072503-010	P-1	GROUND WATER	07/23/13 12:00
13072503-011	P-2	GROUND WATER	07/23/13 12:00
13072503-012	Field Duplicate	GROUND WATER	07/23/13 12:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for non-potable water samples tested for compliance for Virginia Pollution Discharge Elimination System (VDPES) permits and Virginia Pollutant Abatement (VPA) permits, have a maximum holding time of 15 minutes established by 40CFR136.3.

Standard Flags/Abbreviations:

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C Results Pending Final Confirmation.
E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J The target analyte was positively identified below the reporting limit but greater than the LOD.
LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect**.** An LOD is analyte and matrix specific.
ND Not Detected at or above the reporting limit.
RL PSS Reporting Limit.
U Not detected.

Case Narrative Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy SCR Add.

Work Order Number(s): 13072503
Project ID: 3361-100

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Sample Receipt:

All sample receipt conditions were acceptable.

Analytical:

Purgeable Aromatics

Batch: 107551

LCS GRO recovery was 119%. The QC limit is 65%-103%.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: MW-1 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-001**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**58**	ug/L	10		10	07/25/13	07/25/13 19:48	1035
Toluene	**11**	ug/L	10		10	07/25/13	07/25/13 19:48	1035
Ethylbenzene	**3,900**	ug/L	25		25	07/25/13	07/26/13 18:41	1035
m,p-Xylenes	**520**	ug/L	20		10	07/25/13	07/25/13 19:48	1035
o-Xylene	ND	ug/L	10		10	07/25/13	07/25/13 19:48	1035
Methyl-t-butyl ether	**65**	ug/L	10		10	07/25/13	07/25/13 19:48	1035
TPH-GRO (Gasoline Range Organics)	**18,000**	ug/L	1,000		10	07/25/13	07/25/13 19:48	1035

Sample ID: MW-2 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-002**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**4.3**	ug/L	1.0		1	07/25/13	07/25/13 16:01	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 16:01	1035
Ethylbenzene	**1.0**	ug/L	1.0		1	07/25/13	07/25/13 16:01	1035
m,p-Xylenes	**3.8**	ug/L	2.0		1	07/25/13	07/25/13 16:01	1035
o-Xylene	**1.3**	ug/L	1.0		1	07/25/13	07/25/13 16:01	1035
Methyl-t-butyl ether	**10**	ug/L	1.0		1	07/25/13	07/25/13 16:01	1035
TPH-GRO (Gasoline Range Organics)	**780**	ug/L	100		1	07/25/13	07/25/13 16:01	1035

Sample ID: MW-3 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-003**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**13**	ug/L	1.0		1	07/25/13	07/25/13 16:26	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 16:26	1035
Ethylbenzene	**53**	ug/L	1.0		1	07/25/13	07/25/13 16:26	1035
m,p-Xylenes	**11**	ug/L	2.0		1	07/25/13	07/25/13 16:26	1035
o-Xylene	**4.1**	ug/L	1.0		1	07/25/13	07/25/13 16:26	1035
Methyl-t-butyl ether	**14**	ug/L	1.0		1	07/25/13	07/25/13 16:26	1035
TPH-GRO (Gasoline Range Organics)	**1,600**	ug/L	100		1	07/25/13	07/25/13 16:26	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: MW-4 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-004**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**30**	ug/L	1.0		1	07/25/13	07/25/13 16:52	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 16:52	1035
Ethylbenzene	**25**	ug/L	1.0		1	07/25/13	07/25/13 16:52	1035
m,p-Xylenes	**12**	ug/L	2.0		1	07/25/13	07/25/13 16:52	1035
o-Xylene	**3.8**	ug/L	1.0		1	07/25/13	07/25/13 16:52	1035
Methyl-t-butyl ether	**15**	ug/L	1.0		1	07/25/13	07/25/13 16:52	1035
TPH-GRO (Gasoline Range Organics)	**2,400**	ug/L	100		1	07/25/13	07/25/13 16:52	1035

Sample ID: MW-5 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-005**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:17	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:17	1035
Ethylbenzene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:17	1035
m,p-Xylenes	ND	ug/L	2.0		1	07/25/13	07/25/13 17:17	1035
o-Xylene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:17	1035
Methyl-t-butyl ether	ND	ug/L	1.0		1	07/25/13	07/25/13 17:17	1035
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	07/25/13	07/25/13 17:17	1035

Sample ID: MW-6 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-006**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:42	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:42	1035
Ethylbenzene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:42	1035
m,p-Xylenes	ND	ug/L	2.0		1	07/25/13	07/25/13 17:42	1035
o-Xylene	ND	ug/L	1.0		1	07/25/13	07/25/13 17:42	1035
Methyl-t-butyl ether	**5.7**	ug/L	1.0		1	07/25/13	07/25/13 17:42	1035
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	07/25/13	07/25/13 17:42	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: MW-7 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-007**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**44**	ug/L	1.0		1	07/25/13	07/25/13 18:07	1035
Toluene	**14**	ug/L	1.0		1	07/25/13	07/25/13 18:07	1035
Ethylbenzene	**110**	ug/L	1.0		1	07/25/13	07/25/13 18:07	1035
m,p-Xylenes	**130**	ug/L	2.0		1	07/25/13	07/25/13 18:07	1035
o-Xylene	**5.8**	ug/L	1.0		1	07/25/13	07/25/13 18:07	1035
Methyl-t-butyl ether	**21**	ug/L	1.0		1	07/25/13	07/25/13 18:07	1035
TPH-GRO (Gasoline Range Organics)	**3,600**	ug/L	100		1	07/25/13	07/25/13 18:07	1035

Sample ID: MW-8 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-008**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	ND	ug/L	1.0		1	07/25/13	07/25/13 18:32	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 18:32	1035
Ethylbenzene	ND	ug/L	1.0		1	07/25/13	07/25/13 18:32	1035
m,p-Xylenes	ND	ug/L	2.0		1	07/25/13	07/25/13 18:32	1035
o-Xylene	ND	ug/L	1.0		1	07/25/13	07/25/13 18:32	1035
Methyl-t-butyl ether	ND	ug/L	1.0		1	07/25/13	07/25/13 18:32	1035
TPH-GRO (Gasoline Range Organics)	ND	ug/L	100		1	07/25/13	07/25/13 18:32	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: Domestic Well **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-009**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Chloromethane	**2.9**	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Vinyl Chloride	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Bromomethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Chloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Acetone	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
Cyclohexane	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	07/29/13	07/29/13 18:58	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Methylene Chloride	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
2-Butanone (MEK)	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Bromochloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Chloroform	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Benzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Methyl Acetate	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
Methylcyclohexane	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
Trichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Carbon Disulfide	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
Bromodichloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	07/29/13	07/29/13 18:58	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: Domestic Well **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-009**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Toluene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
2-Hexanone	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Dibromochloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Bromoform	ND	ug/L	5.0		1	07/29/13	07/29/13 18:58	1011
Tetrachloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Chlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Ethylbenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
m,p-Xylenes	ND	ug/L	2.0		1	07/29/13	07/29/13 18:58	1011
Styrene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
o-Xylene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Isopropylbenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	10		1	07/29/13	07/29/13 18:58	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
Naphthalene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 18:58	1011

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BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: P-1 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-010**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Chloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Vinyl Chloride	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Bromomethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Chloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Acetone	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
Cyclohexane	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	07/29/13	07/29/13 19:27	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Methylene Chloride	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
2-Butanone (MEK)	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Bromochloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Chloroform	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Benzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Methyl Acetate	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
Methylcyclohexane	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
Trichloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Carbon Disulfide	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
Bromodichloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	07/29/13	07/29/13 19:27	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: P-1 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-010**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Toluene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
2-Hexanone	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Dibromochloromethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Bromoform	ND	ug/L	5.0		1	07/29/13	07/29/13 19:27	1011
Tetrachloroethene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Chlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Ethylbenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
m,p-Xylenes	ND	ug/L	2.0		1	07/29/13	07/29/13 19:27	1011
Styrene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
o-Xylene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Isopropylbenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	10		1	07/29/13	07/29/13 19:27	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
Naphthalene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	07/29/13	07/29/13 19:27	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: P-2 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-011**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Chloromethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Vinyl Chloride	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Bromomethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Chloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Acetone	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
Cyclohexane	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	07/26/13	07/27/13 08:04	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Methylene Chloride	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Methyl-t-butyl ether	**1.1**	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
2-Butanone (MEK)	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Bromochloromethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Chloroform	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Benzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Methyl Acetate	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
Methylcyclohexane	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
Trichloroethene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Carbon Disulfide	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
Bromodichloromethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	07/26/13	07/27/13 08:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: P-2 **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-011**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Toluene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
2-Hexanone	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Dibromochloromethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Bromoform	ND	ug/L	5.0		1	07/26/13	07/27/13 08:04	1011
Tetrachloroethene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Chlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Ethylbenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
m,p-Xylenes	ND	ug/L	2.0		1	07/26/13	07/27/13 08:04	1011
Styrene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
o-Xylene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Isopropylbenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	10		1	07/26/13	07/27/13 08:04	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
Naphthalene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	07/26/13	07/27/13 08:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13072503

Sullivan International Group, Inc., Culpepper, VA

August 1, 2013

Project Name: Scott's Ivy SCR Add.
Project Location: Charlottesville, VA
Project ID: 3361-100

Sample ID: Field Duplicate **Date/Time Sampled: 07/23/2013 12:00** **PSS Sample ID: 13072503-012**
Matrix: GROUND WATER **Date/Time Received: 07/25/2013 10:29**

BTEX, MTBE plus TPH-GRO — Analytical Method: SW-846 8021B & 8015C — Preparation Method: 5030B

USEPA methods recommend that the appearance of detectable levels of the 8021B compounds below be confirmed when unfamiliar samples are analyzed.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzene	**3.7**	ug/L	1.0		1	07/25/13	07/25/13 18:58	1035
Toluene	ND	ug/L	1.0		1	07/25/13	07/25/13 18:58	1035
Ethylbenzene	**1.0**	ug/L	1.0		1	07/25/13	07/25/13 18:58	1035
m,p-Xylenes	**3.4**	ug/L	2.0		1	07/25/13	07/25/13 18:58	1035
o-Xylene	**1.8**	ug/L	1.0		1	07/25/13	07/25/13 18:58	1035
Methyl-t-butyl ether	**8.1**	ug/L	1.0		1	07/25/13	07/25/13 18:58	1035
TPH-GRO (Gasoline Range Organics)	**630**	ug/L	100		1	07/25/13	07/25/13 18:58	1035

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: Sullivan International Group *OFFICE LOC. Culpeper, VA
*PROJECT MGR: Mike Maloy *PHONE NO.: (540) 829-5640
EMAIL: mmaloy@onesullivan.com FAX NO.: (540) 829-5641
*PROJECT NAME: Scott's Ivy SCR Add. PROJECT NO.: 3361-100
SITE LOCATION: Charlottesville, VA P.O. NO.:
SAMPLER(S): TPN, MLM DW CERT NO.:

PSS Work Order #: 1307250 3 PAGE 1 OF 2

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	HCl	HCl	HCl									REMARKS
							Analysis/ Method Required (3) *	BTEX/MTBE → 8021B	TPH-GRO → 8015B	VOCs → 8260									
1	MW-1	7/23/13	12:00	GW	3	G		X	X										
2	MW-2							X	X										
3	MW-3							X	X										
4	MW-4							X	X										
5	MW-5							X	X										
6	MW-6							X	X										
7	MW-7							X	X										
8	MW-8							X	X										
9	Domestic Well									X									
10	MW-1									X									

(5)

Relinquished By: (1)	Date	Time	Received By:
Tom	7/24/13	14:00	UPS
Relinquished By: (2) UPS 1Z X097V30395465258	Date 7/25/13	Time 10:29	Received By: Robyn Blundy
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

# of Coolers: 1
Custody Seal: Ares Intact Cooler
Ice Present: Yes Temp: 6 °C
Shipping Carrier: UPS

Special Instructions: Please CC results to Tom Nelson at tnelson@onesullivan.com

DW COMPLIANCE? YES ☐ EDD FORMAT TYPE ____ STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: Sullivan International Group *OFFICE LOC. Culpeper, VA
*PROJECT MGR: Mike Maloy *PHONE NO.: (540) 829-5640
EMAIL: mmaloy@onesullivan.com FAX NO.: (540) 829-5641
*PROJECT NAME: Scott's Ivy SCR Add. PROJECT NO.: 3361-100
SITE LOCATION: Charlottesville VA P.O. NO.:
SAMPLER(S): TPN, MLM DW CERT NO.:

PSS Work Order #: 1307 2503 PAGE 2 OF 2

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used		HCl	HCl	HCl										REMARKS
							(3) * Analysis/ Method Required		BTEX/MTBE → 8021B	TPH-GRO → 8015B	VOCs → 8260										
11	[redacted] P-2	7/23/13	12:00	GW	3	G					X										
12	Field Duplicate	↓	↓	GW	3	G	X	X													

(5)

Relinquished By:	Date	Time	Received By:
(1) Tom Nelson	7/24/13	14:00	UPS
(2) UPS 1Z X097V303 9546 5258	7/25/13	10:29	Robyn Flanagan
(3)			
(4)			

(4) *Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ☐

# of Coolers: 1
Custody Seal: Pres Intact Cooler
Ice Present: Pres Temp: 6°C
Shipping Carrier: UPS

Special Instructions: Please cc results to Tom Nelson at tnelson@onesullivan.com

DW COMPLIANCE? YES ☐ EDD FORMAT TYPE: ____ STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	13072503	**Received By**	Robyn Rhudy
Client Name	Sullivan International Group, Inc.	**Date Received**	07/25/2013 10:29:00 AM
Project Name	Scott's Ivy SCR Add.	**Delivered By**	UPS
Project Number	3361-100	**Tracking No**	1ZX097V30395465258
Disposal Date	08/29/2013	**Logged In By**	Robyn Rhudy

Shipping Container(s)

No. of Coolers	1	Ice	Present
		Temp (deg C)	6
Custody Seal(s) Intact?	Yes	Temp Blank Present	No
Seal(s) Signed / Dated?	Yes		

Documentation

		Sampler Name	Tom Nelson
		MD DW Cert. No.	N/A
COC agrees with sample labels?	Yes		
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 12

Total No. of Containers Received 36

Preservation

Metals	(pH<2)	N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, COD, Phenols	(ph<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Robyn Rhudy — Date: 07/25/2013

PM Review and Approval: Amy Friedlander — Date: 07/25/2013

Analytical Report for

Sullivan International Group, Inc.

Certificate of Analysis No.: 13080205

Project Manager: Mike Maloy
Project Name : Scott's Ivy Exxon SCR Add.
Project Location: Ivy, VA
Project ID : 3361-100

August 9, 2013

Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

August 9, 2013

Mike Maloy
Sullivan International Group, Inc.
402 N West Street
Culpepper, VA 22701

Reference: PSS Work Order(s) No: **13080205**
Project Name: Scott's Ivy Exxon SCR Add.
Project Location: Ivy, VA
Project ID.: 3361-100

Dear Mike Maloy :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **13080205**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on September 6, 2013. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy Exxon SCR Add.

Work Order Number(s): 13080205

Project ID: 3361-100

The following samples were received under chain of custody by Phase Separation Science (PSS) on 08/02/2013 at 10:36 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
13080205-001	Richmond Well	GROUND WATER	07/31/13 14:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for non-potable water samples tested for compliance for Virginia Pollution Discharge Elimination System (VDPES) permits and Virginia Pollutant Abatement (VPA) permits, have a maximum holding time of 15 minutes established by 40CFR136.3.

Standard Flags/Abbreviations:

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C Results Pending Final Confirmation.
E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J The target analyte was positively identified below the reporting limit but greater than the LOD.
LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect**.** An LOD is analyte and matrix specific.
ND Not Detected at or above the reporting limit.
RL PSS Reporting Limit.
U Not detected.

Case Narrative Summary

Client Name: Sullivan International Group, Inc.

Project Name: Scott's Ivy Exxon SCR Add.

Work Order Number(s): 13080205
Project ID: 3361-100

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13080205

Sullivan International Group, Inc., Culpepper, VA

August 9, 2013

Project Name: Scott's Ivy Exxon SCR Add.
Project Location: Ivy, VA
Project ID: 3361-100

Sample ID: Richmond Well **Date/Time Sampled: 07/31/2013 14:00** **PSS Sample ID: 13080205-001**
Matrix: GROUND WATER **Date/Time Received: 08/02/2013 10:36**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Dichlorodifluoromethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Chloromethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Vinyl Chloride	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Bromomethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Chloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Acetone	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
Cyclohexane	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	08/02/13	08/02/13 18:48	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Methylene Chloride	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Methyl-t-butyl ether	**6.0**	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
2-Butanone (MEK)	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Bromochloromethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Chloroform	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Benzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Methyl Acetate	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
Methylcyclohexane	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
Trichloroethene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Carbon Disulfide	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
Bromodichloromethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	08/02/13	08/02/13 18:48	1011

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13080205

Sullivan International Group, Inc., Culpepper, VA

August 9, 2013

Project Name: Scott's Ivy Exxon SCR Add.
Project Location: Ivy, VA
Project ID: 3361-100

Sample ID: Richmond Well **Date/Time Sampled: 07/31/2013 14:00** **PSS Sample ID: 13080205-001**
Matrix: GROUND WATER **Date/Time Received: 08/02/2013 10:36**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Toluene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
2-Hexanone	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Dibromochloromethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Bromoform	ND	ug/L	5.0		1	08/02/13	08/02/13 18:48	1011
Tetrachloroethene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Chlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Ethylbenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
m,p-Xylenes	ND	ug/L	2.0		1	08/02/13	08/02/13 18:48	1011
Styrene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
o-Xylene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Isopropylbenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	10		1	08/02/13	08/02/13 18:48	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
Naphthalene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	08/02/13	08/02/13 18:48	1011

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: Sullivan Int'l Group *OFFICE LOC. Culpeper, VA
*PROJECT MGR: Mike Maloy *PHONE NO.: (540) 829-5640
EMAIL: MMaloy@onesullivan.com FAX NO.: ( )
*PROJECT NAME: Scott's Ivy Exxon SCR Add. PROJECT NO.: 3361-100
SITE LOCATION: Ivy, VA P.O. NO.:
SAMPLER(S): TPN DW CERT NO.:

PSS Work Order #: 13080205 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: HCl	Analysis/ Method Required (3) * VOCs - 8260	REMARKS
	Richmond Well	7/31/13	14:00	GW	3	G		X	

(5)

Relinquished By: (1)	Date	Time	Received By:
Tom Nelson	7/31/13	16:00	UPS
Relinquished By: (2) UPS 1Z X09 7V3 03 9756 6672	Date 8/1/13	Time 10:36	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☒ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ☐

# of Coolers: 1
Custody Seal: Intact-Cooler
Ice Present: Pres Temp: 5°
Shipping Carrier: UPS

Special Instructions: Please copy results to Tom Nelson at tnelson@onesullivan.com

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE:
STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	13080205	**Received By**	Robyn Rhudy
Client Name	Sullivan International Group, Inc.	**Date Received**	08/02/2013 10:36:00 AM
Project Name	Scott's Ivy Exxon SCR Add.	**Delivered By**	UPS
Project Number	3361-100	**Tracking No**	1ZX097V30397566672
Disposal Date	09/06/2013	**Logged In By**	Robyn Rhudy

Shipping Container(s)

No. of Coolers	1	Ice	Present
		Temp (deg C)	5
Custody Seal(s) Intact?	Yes	Temp Blank Present	No
Seal(s) Signed / Dated?	Yes		

Documentation

		Sampler Name	Tom Nelson
		MD DW Cert. No.	N/A
COC agrees with sample labels?	Yes		
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 1

Total No. of Containers Received 3

Preservation

Metals	(pH<2)	N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, COD, Phenols	(ph<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Robyn Rhudy — Date: 08/02/2013

PM Review and Approval: Amy Friedlander — Date: 08/02/2013

Culligan.

Stoner Quality Water, Inc.

273 CULLIGAN ROAD
FRIEDENS, PA 15541

PHONE (814) 445-7694
FAX (814) 445-4109

Mail To: 4804 ~~Break Heart Rd.~~ Break Heart Rd. Crozet VA 22932

Account #: 15100
Name: 13058 IVY EXXON
Address: 4260 IVY ROAD
CHARLOTTESVILLE, VA. 22903-7009
ROGER GIBSON
Phone: 434-823-5359 (WORK)
PC #: 20136113

Purpose of Visit: PM / Emergency / Upgrade / Other
ASSESSMENT-

Call received from: HARMON/EMAIL
Date Call Received: 06/21/2013
Meter Reading:

Person to contact for any problems:
Harmon Fisher
Dept. Environmental Quality
Water Division – OSRR
629 E. Main Street
Richmond, VA 23219
(804) 698-4292

Stoner Quality Water, Inc.
T/A Culligan of Friedens, PA
273 Culligan Rd.
Friedens, PA 15541
Attention: Rusty Stoner
(814) 445-7694

On Site Water Test

	Raw	Treated
pH	6.0	
Iron	0	
Hardness	6	
Sulfur		

IN CASE OF EMERGENCY CALL SCOTT HERBERT (814) 701-5549

Round Trip Mileage 488 from FRIEDENS office Previous Site Visited Office

Date of Work Performed 6/25/13 Hours Worked 1/2 Hour

Description of Work Performed:
Took Raw Water Sampler for 48 Hour Analysis by 8260 and 8270 From Outside Hose Bibb
No Water Feeds House and Gas station Crawl Space
Need Shed - Basic System
4x4 - 5 hr. -

List of Existing Equipment

List of Materials and/or Parts Installed or Replaced: 1/2 Hour, Mileage Tests

Customer Signature: Ryan Gibson **/Service Technician Signature:** Rusty Stoner

**Exhausted Carbon to be Handled in Accordance with Stoner Enterprises, Inc. Spent Carbon Policy.*

Site Assessment or Upgrade Recommendation

Maryland spectral Services

Analytical Chemistry Services

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
www.mdspectral.com
VELAP ID 460040

01 July 2013

Rusty Stoner
Stoner Quality Water
273 Culligan Rd
Friedens, PA 15541

RE: 13058-IVY EXXON

Enclosed are the results of analyses for samples received by the laboratory on 06/25/13 16:26.

Maryland Spectral Services, Inc. is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

Please visit our website at www.mdspectral.com for a complete listing of our NELAP accreditations.

If you have any questions concerning this report, please feel free to contact me.



Will Brewington
Staff Chemist

Analytical Results

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
www.mdspectral.com
VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

Client Sample ID	Alternate Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RAW		3062518-01	Water	06/25/13 13:05	06/25/13 16:26
FIELD BLANK		3062518-02	Water	06/24/13 13:00	06/25/13 16:26



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Will Brewington, Staff Chemist

As a NELAP accredited laboratory, MSS certifies that all applicable test results meet NELAC requirements.

Analytical Results

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
www.mdspectral.com
VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

RAW

3062518-01 (Water)
Sample Date: 06/25/13

Analyte	Result	Units	Reporting Limit	Dilution	Prepared	Analyzed	Analyst	Notes
VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS)								
tert-Amyl alcohol (TAA)	ND	ug/L	20.0	1	06/28/13	06/28/13 16:45	ECM	
tert-Amyl methyl ether (TAME)	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Ethyl tert-butyl ether (ETBE)	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Acetone	ND	ug/L	10.0	1	06/28/13	06/28/13 16:45	ECM	
Benzene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Bromodichloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Bromoform	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Bromomethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
2-Butanone (MEK)	ND	ug/L	10.0	1	06/28/13	06/28/13 16:45	ECM	
tert-Butanol (TBA)	ND	ug/L	15.0	1	06/28/13	06/28/13 16:45	ECM	
Carbon disulfide	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Carbon tetrachloride	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Chlorobenzene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Chloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Chloroform	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Chloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Dibromochloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,2-Dibromoethane (EDB)	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,1-Dichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,2-Dichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,1-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
cis-1,2-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
trans-1,2-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,2-Dichloropropane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
cis-1,3-Dichloropropene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
trans-1,3-Dichloropropene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Ethylbenzene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
2-Hexanone	ND	ug/L	10.0	1	06/28/13	06/28/13 16:45	ECM	
Diisopropyl ether (DIPE)	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Methylene chloride	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
4-Methyl-2-pentanone	ND	ug/L	10.0	1	06/28/13	06/28/13 16:45	ECM	
Methyl tert-butyl ether (MTBE)	**14.9**	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	

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Will Brewington, Staff Chemist

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Analytical Results

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
www.mdspectral.com
VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

RAW

3062518-01 (Water)
Sample Date: 06/25/13

Analyte	Result	Units	Reporting Limit	Dilution	Prepared	Analyzed	Analyst	Notes
VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS) (continued)								
Naphthalene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Styrene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Tetrachloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Toluene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,1,1-Trichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
1,1,2-Trichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Trichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Vinyl chloride	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Xylenes, Total	ND	ug/L	2.0	1	06/28/13	06/28/13 16:45	ECM	
Surrogate: 1,2-Dichloroethane-d4		*80-120*	*95 %*		*06/28/13*	*06/28/13 16:45*		
Surrogate: Toluene-d8		*88-110*	*96 %*		*06/28/13*	*06/28/13 16:45*		
Surrogate: 4-Bromofluorobenzene		*86-115*	*90 %*		*06/28/13*	*06/28/13 16:45*		
SEMIVOLATILE ORGANICS BY EPA METHOD 8270D (GC/MS)								
Acenaphthene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Acenaphthylene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Anthracene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Benzo[a]anthracene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Benzo[b]fluoranthene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Benzo[k]fluoranthene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Benzo[ghi]perylene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Benzo[a]pyrene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Chrysene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Dibenzo[a,h]anthracene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Fluoranthene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Fluorene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Indeno[1,2,3-cd]pyrene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
2-Methylnaphthalene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Naphthalene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Phenanthrene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Pyrene	ND	ug/L	2.1	1	06/26/13	06/26/13 16:45	WB	
Surrogate: 2-Fluorophenol		*21-110*	*42 %*		*06/26/13*	*06/26/13 16:45*		
Surrogate: Phenol-d5		*10-110*	*26 %*		*06/26/13*	*06/26/13 16:45*		
Surrogate: Nitrobenzene-d5		*35-114*	*72 %*		*06/26/13*	*06/26/13 16:45*		
Surrogate: 2,4,6-Tribromophenol		*10-123*	*75 %*		*06/26/13*	*06/26/13 16:45*		

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Analytical Results

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

RAW

3062518-01 (Water)
Sample Date: 06/25/13

Analyte	Result	Units	Reporting Limit	Dilution	Prepared	Analyzed	Analyst	Notes
SEMIVOLATILE ORGANICS BY EPA METHOD 8270D (GC/MS) (continued)								
Surrogate: 2-Fluorobiphenyl		*43-116*	*73 %*		*06/26/13*	*06/26/13 16:45*		
Surrogate: Terphenyl-d14		*33-141*	*78 %*		*06/26/13*	*06/26/13 16:45*		

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Analytical Results

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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

FIELD BLANK

3062518-02 (Water)
Sample Date: 06/24/13

Analyte	Result	Units	Reporting Limit	Dilution	Prepared	Analyzed	Analyst	Notes
VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS)								
tert-Amyl alcohol (TAA)	ND	ug/L	20.0	1	06/28/13	06/28/13 17:24	ECM	
tert-Amyl methyl ether (TAME)	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Ethyl tert-butyl ether (ETBE)	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Acetone	ND	ug/L	10.0	1	06/28/13	06/28/13 17:24	ECM	
Benzene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Bromodichloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Bromoform	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Bromomethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
2-Butanone (MEK)	ND	ug/L	10.0	1	06/28/13	06/28/13 17:24	ECM	
tert-Butanol (TBA)	ND	ug/L	15.0	1	06/28/13	06/28/13 17:24	ECM	
Carbon disulfide	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Carbon tetrachloride	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Chlorobenzene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Chloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Chloroform	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Chloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Dibromochloromethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,2-Dibromoethane (EDB)	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,1-Dichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,2-Dichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,1-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
cis-1,2-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
trans-1,2-Dichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,2-Dichloropropane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
cis-1,3-Dichloropropene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
trans-1,3-Dichloropropene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Ethylbenzene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
2-Hexanone	ND	ug/L	10.0	1	06/28/13	06/28/13 17:24	ECM	
Diisopropyl ether (DIPE)	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Methylene chloride	**2.0**	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
4-Methyl-2-pentanone	ND	ug/L	10.0	1	06/28/13	06/28/13 17:24	ECM	
Methyl tert-butyl ether (MTBE)	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Naphthalene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Styrene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	

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Will Brewington, Staff Chemist

Analytical Results

1500 Caton Center Dr Suite G
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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

FIELD BLANK

3062518-02 (Water)
Sample Date: 06/24/13

Analyte	Result	Units	Reporting Limit	Dilution	Prepared	Analyzed	Analyst	Notes
VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS) (continued)								
Tetrachloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Toluene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,1,1-Trichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
1,1,2-Trichloroethane	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Trichloroethene	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Vinyl chloride	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Xylenes, Total	ND	ug/L	2.0	1	06/28/13	06/28/13 17:24	ECM	
Surrogate: 1,2-Dichloroethane-d4		*80-120*	*96 %*		*06/28/13*	*06/28/13 17:24*		
Surrogate: Toluene-d8		*88-110*	*96 %*		*06/28/13*	*06/28/13 17:24*		
Surrogate: 4-Bromofluorobenzene		*86-115*	*90 %*		*06/28/13*	*06/28/13 17:24*		

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Analytical Results

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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B306222 - GCMS-WATER-VOLATILES										
Blank (B306222-BLK1)				Prepared & Analyzed: 06/28/13						
tert-Amyl alcohol (TAA)	ND	20.0	ug/L							
tert-Amyl methyl ether (TAME)	ND	2.0	ug/L							
Ethyl tert-butyl ether (ETBE)	ND	2.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	2.0	ug/L							
Bromodichloromethane	ND	2.0	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	2.0	ug/L							
2-Butanone (MEK)	ND	10.0	ug/L							
tert-Butanol (TBA)	ND	15.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	2.0	ug/L							
Chlorobenzene	ND	2.0	ug/L							
Chloroethane	ND	2.0	ug/L							
Chloroform	ND	2.0	ug/L							
Chloromethane	ND	2.0	ug/L							
Dibromochloromethane	ND	2.0	ug/L							
1,2-Dibromo-3-chloropropane	ND	2.0	ug/L							
1,2-Dibromoethane (EDB)	ND	2.0	ug/L							
1,1-Dichloroethane	ND	2.0	ug/L							
1,2-Dichloroethane	ND	2.0	ug/L							
1,1-Dichloroethene	ND	2.0	ug/L							
cis-1,2-Dichloroethene	ND	2.0	ug/L							
trans-1,2-Dichloroethene	ND	2.0	ug/L							
1,2-Dichloropropane	ND	2.0	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
Ethylbenzene	ND	2.0	ug/L							
2-Hexanone	ND	10.0	ug/L							
Diisopropyl ether (DIPE)	ND	2.0	ug/L							
Methylene chloride	ND	2.0	ug/L							
4-Methyl-2-pentanone	ND	10.0	ug/L							
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L							
Naphthalene	ND	2.0	ug/L							
Styrene	ND	2.0	ug/L							
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L							



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Analytical Results

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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B306222 - GCMS-WATER-VOLATILES										
Blank (B306222-BLK1)				Prepared & Analyzed: 06/28/13						
Tetrachloroethene	ND	2.0	ug/L							
Toluene	ND	2.0	ug/L							
1,1,1-Trichloroethane	ND	2.0	ug/L							
1,1,2-Trichloroethane	ND	2.0	ug/L							
Trichloroethene	ND	2.0	ug/L							
Vinyl chloride	ND	2.0	ug/L							
Xylenes, Total	ND	2.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	*47.71*		ug/L	*50.0*		*95*	*80-120*			
Surrogate: Toluene-d8	*47.18*		ug/L	*50.0*		*94*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*47.50*		ug/L	*50.0*		*95*	*86-115*			
LCS (B306222-BS1)				Prepared & Analyzed: 06/28/13						
tert-Amyl alcohol (TAA)	ND	20.0	ug/L				50-150			
tert-Amyl methyl ether (TAME)	4.2	2.0	ug/L	5.00		84	50-150			
Ethyl tert-butyl ether (ETBE)	4.5	2.0	ug/L	5.00		91	50-150			
Acetone	11.3	10.0	ug/L	10.0		113	50-150			
Benzene	5.1	2.0	ug/L	5.00		102	50-150			
Bromodichloromethane	4.8	2.0	ug/L	5.00		95	50-150			
Bromoform	4.9	2.0	ug/L	5.00		98	50-150			
Bromomethane	5.5	2.0	ug/L	5.00		110	50-150			
2-Butanone (MEK)	ND	10.0	ug/L	10.0			50-150			
tert-Butanol (TBA)	17.5	15.0	ug/L	25.0		70	50-150			
Carbon disulfide	5.1	2.0	ug/L	5.00		102	50-150			
Carbon tetrachloride	5.0	2.0	ug/L	5.00		101	50-150			
Chlorobenzene	5.3	2.0	ug/L	5.00		106	50-150			
Chloroethane	5.4	2.0	ug/L	5.00		109	50-150			
Chloroform	5.3	2.0	ug/L	5.00		106	50-150			
Chloromethane	5.0	2.0	ug/L	5.00		100	50-150			
Dibromochloromethane	5.2	2.0	ug/L	5.00		105	50-150			
1,2-Dibromo-3-chloropropane	5.4	2.0	ug/L	5.00		107	50-150			
1,2-Dibromoethane (EDB)	4.9	2.0	ug/L	5.00		98	50-150			
1,1-Dichloroethane	4.9	2.0	ug/L	5.00		98	50-150			
1,2-Dichloroethane	5.1	2.0	ug/L	5.00		103	50-150			
1,1-Dichloroethene	5.1	2.0	ug/L	5.00		103	50-150			
cis-1,2-Dichloroethene	4.6	2.0	ug/L	5.00		93	50-150			
trans-1,2-Dichloroethene	5.2	2.0	ug/L	5.00		103	50-150			

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Analytical Results

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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

VOLATILE ORGANICS BY EPA METHOD 8260B (GC/MS) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B306222 - GCMS-WATER-VOLATILES										
LCS (B306222-BS1)				Prepared & Analyzed: 06/28/13						
1,2-Dichloropropane	4.8	2.0	ug/L	5.00		96	50-150			
cis-1,3-Dichloropropene	4.0	2.0	ug/L	5.00		80	50-150			
trans-1,3-Dichloropropene	4.3	2.0	ug/L	5.00		85	50-150			
Ethylbenzene	4.9	2.0	ug/L	5.00		98	50-150			
2-Hexanone	ND	10.0	ug/L	10.0			50-150			
Diisopropyl ether (DIPE)	4.0	2.0	ug/L	5.00		81	50-150			
Methylene chloride	5.8	2.0	ug/L	5.00		116	0-200			
4-Methyl-2-pentanone	ND	10.0	ug/L	10.0			50-150			
Methyl tert-butyl ether (MTBE)	4.7	2.0	ug/L	5.00		94	50-150			
Naphthalene	3.6	2.0	ug/L	5.00		72	50-150			
Styrene	3.8	2.0	ug/L	5.00		75	50-150			
1,1,2,2-Tetrachloroethane	5.1	2.0	ug/L	5.00		103	50-150			
Tetrachloroethene	5.4	2.0	ug/L	5.00		107	50-150			
Toluene	4.7	2.0	ug/L	5.00		94	50-150			
1,1,1-Trichloroethane	4.9	2.0	ug/L	5.00		99	50-150			
1,1,2-Trichloroethane	5.1	2.0	ug/L	5.00		102	50-150			
Trichloroethene	5.1	2.0	ug/L	5.00		102	50-150			
Vinyl chloride	4.7	2.0	ug/L	5.00		94	50-150			
o-Xylene	3.4	2.0	ug/L	5.00		67	50-150			
m- & p-Xylenes	9.6	2.0	ug/L	10.0		96	50-150			
Surrogate: 1,2-Dichloroethane-d4	*47.82*		ug/L	*50.0*		*96*	*80-120*			
Surrogate: Toluene-d8	*46.78*		ug/L	*50.0*		*94*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*46.45*		ug/L	*50.0*		*93*	*86-115*			

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Analytical Results

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www.mdspectral.com
VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

SEMIVOLATILE ORGANICS BY EPA METHOD 8270D (GC/MS) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B306210 - 3510-GCMS(Sep Funnel)										
Blank (B306210-BLK1)				Prepared & Analyzed: 06/26/13						
Acenaphthene	ND	2.0	ug/L							
Acenaphthylene	ND	2.0	ug/L							
Anthracene	ND	2.0	ug/L							
Benzo[a]anthracene	ND	2.0	ug/L							
Benzo[b]fluoranthene	ND	2.0	ug/L							
Benzo[k]fluoranthene	ND	2.0	ug/L							
Benzo[ghi]perylene	ND	2.0	ug/L							
Benzo[a]pyrene	ND	2.0	ug/L							
Chrysene	ND	2.0	ug/L							
Dibenzo[a,h]anthracene	ND	2.0	ug/L							
Fluoranthene	ND	2.0	ug/L							
Fluorene	ND	2.0	ug/L							
Indeno[1,2,3-cd]pyrene	ND	2.0	ug/L							
2-Methylnaphthalene	ND	2.0	ug/L							
Naphthalene	ND	2.0	ug/L							
Phenanthrene	ND	2.0	ug/L							
Pyrene	ND	2.0	ug/L							
Surrogate: 2-Fluorophenol	*43.1*		ug/L	*100*		*43*	*21-110*			
Surrogate: Phenol-d5	*28.0*		ug/L	*100*		*28*	*10-110*			
Surrogate: Nitrobenzene-d5	*35.0*		ug/L	*50.0*		*70*	*35-114*			
Surrogate: 2,4,6-Tribromophenol	*73.7*		ug/L	*100*		*74*	*10-123*			
Surrogate: 2-Fluorobiphenyl	*35.7*		ug/L	*50.0*		*71*	*43-116*			
Surrogate: Terphenyl-d14	*38.1*		ug/L	*50.0*		*76*	*33-141*			
LCS (B306210-BS1)				Prepared & Analyzed: 06/26/13						
Acenaphthene	22.0	2.0	ug/L	25.0		88	70-130			
Acenaphthylene	22.7	2.0	ug/L	25.0		91	70-130			
Anthracene	22.0	2.0	ug/L	25.0		88	70-130			
Benzo[a]anthracene	21.6	2.0	ug/L	25.0		86	70-130			
Benzo[b]fluoranthene	22.7	2.0	ug/L	25.0		91	70-130			
Benzo[k]fluoranthene	22.9	2.0	ug/L	25.0		92	70-130			
Benzo[ghi]perylene	15.6	2.0	ug/L	25.0		62	70-130			
Benzo[a]pyrene	21.5	2.0	ug/L	25.0		86	70-130			
Chrysene	22.9	2.0	ug/L	25.0		92	70-130			
Dibenzo[a,h]anthracene	16.9	2.0	ug/L	25.0		68	70-130			
Fluoranthene	22.2	2.0	ug/L	25.0		89	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Will Brewington, Staff Chemist

Analytical Results

1500 Caton Center Dr Suite G
Baltimore MD 21227
410-247-7600
www.mdspectral.com
VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

SEMIVOLATILE ORGANICS BY EPA METHOD 8270D (GC/MS) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B306210 - 3510-GCMS(Sep Funnel)										
LCS (B306210-BS1)				Prepared & Analyzed: 06/26/13						
Fluorene	21.3	2.0	ug/L	25.0		85	70-130			
Indeno[1,2,3-cd]pyrene	16.6	2.0	ug/L	25.0		66	70-130			
2-Methylnaphthalene	ND	2.0	ug/L				70-130			
Naphthalene	21.9	2.0	ug/L	25.0		88	70-130			
Phenanthrene	22.4	2.0	ug/L	25.0		90	70-130			
Pyrene	23.1	2.0	ug/L	25.0		92	70-130			
Surrogate: 2-Fluorophenol	*43.0*		ug/L	*100*		*43*	*21-110*			
Surrogate: Phenol-d5	*27.5*		ug/L	*100*		*28*	*10-110*			
Surrogate: Nitrobenzene-d5	*35.9*		ug/L	*50.0*		*72*	*35-114*			
Surrogate: 2,4,6-Tribromophenol	*73.6*		ug/L	*100*		*74*	*10-123*			
Surrogate: 2-Fluorobiphenyl	*36.8*		ug/L	*50.0*		*74*	*43-116*			
Surrogate: Terphenyl-d14	*39.1*		ug/L	*50.0*		*78*	*33-141*			

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Will Brewington, Staff Chemist

Analytical Results

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VELAP ID 460040

Project: 13058-IVY EXXON

Project Number: PC-2013-6113
Project Manager: Rusty Stoner

Reported:
07/01/13 10:26

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Will Brewington, Staff Chemist

Company Name: Stoner Quality Water, Inc. t/a Culligan of Friedens, PA	Project Manager: Rusty Stoner						Parameters										CHAIN-OF-CUSTODY RECORD	
Project Name: VA Project	Project ID:15100																Maryland Spectral Services, Inc. 1500 Caton Center Drive, Suite G Baltimore, MD 21227 410–247–7600 • Fax 410–247–7602 labman@mdspectral.com	
Sampler(s): Rusty Stoner	P.O. Number:																	
Field Sample ID	Date	Time	Water	Soil	Other	No. of Containers	8260	8021	504.1	8270							Preservative/Remarks	MSS Lab ID
13058-IVY EXXON																		
PC 20136113																		
~~PREPM~~			x															
			x															
			x															
			x															
RAW	6/25/13	1:05 PM	x			5	1			1								3062518-01
Field Blank	6/25/13	1:00 PM	x			3	1											-02

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Rusty Stoner	6/25/13 4:26	Hunter Wilkins			
(Printed) Rusty Stoner		(Printed)	(Printed)		(Printed)
Relinquished by: (Signature)	Date/Time	Received by Lab: (Signature)	Deliverable Requirements: ☐ Data Summary ☐ Above + QC ☐ Above + Calibration ☐ Above + Raw Data ☐ EDD	Remarks: 4°C	
(Printed)		(Printed)		Page ____ of ____	

MSS-F001-09/12

Stoner Quality Water, Inc

T/A Culligan of Friedens PA

NEW EQUIPMENT OR UPGRADE RECOMMENDATION

273 Culligan Road
Friedens, PA 15541
Fed. # 25-1680689
800-552-6650

Commonwealth of Virginia
Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218
Attn: Harmon Fisher
Case Manager: Todd Pitsenberger

Subject: Recommendation for new equipment for contract # 15100 13058- Ivy Exxon

PC # 20136113

Type of Service System Installation

Date of Service 6/25/2013

Unit Cost Breakdown

# Units	Description	Unit Amount	Totals
2	Particulate Filters	77.00	154.00
8	Particulate Filter Cartridges	8.00	64.00
2	12x52 GAC Tanks	1229.00	2,458.00
1	UV Disinfection Unit	461.00	461.00
1	Water Meter	205.00	205.00
1	4x4 Freeze Shed w/Heater	2048.00	2,048.00
1	Bacteria Test	51.00	51.00
1	Misc. Installation Materials	205.00	205.00
5	Labor	41.00	205.00
488	Roundtrip Mileage from Friedens Office	0.85	414.80
		Total	**$6,265.80**

March 3, 2020

Mr. Todd A. Pitsenberger
Petroleum Program Manager
Virginia Department of Environmental Quality
Valley Regional Office
4411 Early Road
P.O. Box 3000
Harrisonburg, Virginia 22801

ECS Project No. 47-9894

Re: Subphase-5 Groundwater Monitoring Report
Ivy Exxon - 4260 Ivy Road, Charlottesville, Virginia
PC 2013-6113

Dear Mr. Pitsenberger,

On behalf of our client, Mr. Roger Gibson, we are pleased to submit this monitoring report with the results of the monitoring well gauging and sampling that was conducted at the Ivy Exxon site on February 13, 2020. All groundwater data and sampling data collected to date are presented in this report.

Background

In 2013, Analytical Services, Inc. (ASI) conducted a Phase I Environmental Site Assessment (ESA) on the Ivy Exxon, located at 4260 Ivy Road in Charlottesville, Virginia. The ESA revealed that the site has been used as a gasoline station since at least the 1950s. It also revealed that there have been two documented past releases from underground storage tanks (USTs) at the site. The first release was reported in February 1997 and the second release was reported in November 1998 following the removal of three 6,000-gallon gasoline USTs. Both releases have since been closed. ASI also conducted a Phase II Subsurface Investigation in 2013. The Phase II Subsurface Investigation revealed that the area near the site's gasoline UST basin had been impacted by a petroleum release. An elevated concentration of total petroleum hydrocarbons (TPH) gasoline range organics (GRO) above Virginia Department of Environmental Quality (DEQ) reporting limits was detected in a soil sample collected from a boring located down-gradient from the UST basin. Elevated concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in a groundwater sample collected from the same boring above Virginia Voluntary Remediation Program (VRP) Tier III screening levels.

On April 17, 2013, the DEQ directed that a Site Characterization Report (SCR) study be conducted at the site. The SCR study concluded that contaminant concentrations at the site posed a potential threat to human and environmental receptors, as the subject site's domestic well was found to be impacted by MTBE and the potential existed for impact to Little Ivy Creek. Two addendums were written for the SCR to further assess petroleum contamination at the site and the site was monitored quarterly in 2014.

Carbon filtration was installed in the onsite supply well and in the supply wells at the business to the west of the site and the Sponski-Lucas residence to the east of the site. Culligan has been monitoring these supply wells on behalf of the DEQ since the installation of the carbon treatment systems. The treatment systems at the business to the west of the site and the Sponski-Lucas residence were removed during the summer of 2018, as contaminant levels had decreased to the point that carbon filtration was determined to no longer be necessary. A carbon treatment system is still used by the subject site's supply well, although petroleum concentrations have steadily decreased in the well since release case inception such that no contamination was detected in the April and October 2019 sampling events completed by Culligan. On February 3, 2020, DEQ requested that ECS complete a round of gauging and groundwater monitoring of the site's monitoring wells to evaluate the possibility of modifying the sampling interval and use of carbon filtration at the site's supply well.

Site Location, Hydrology, and Regional Geology

The Ivy Exxon site is located at 4260 Ivy Road in Charlottesville, Virginia (Figure 1). The elevation of the study area portion of the subject site is approximately 514 feet above mean sea level (amsl). The subject site slopes gently to the east toward Little Ivy Creek. The site is within the western portion of the Piedmont Physiographic Province, and is underlain by crystalline rock of the Blue Ridge Anticlinorium. Bedrock lithology beneath the site is porphyroblastic-biotite-plagioclase-augen gneiss (stratigraphic symbol Ybg), which is Middle Proterozoic (Grenville) in age (Virginia Division of Mineral Resources, 2003).

Storm water drainage from the site drains to the southeast toward Little Ivy Creek, which is located immediately adjacent to the site's southeastern boundary at a distance of 120 feet from the subject site's UST basin (Figure 1). Little Ivy Creek flows to the northeast, where it becomes a tributary to the Rivanna River. The Rivanna River supplies water to the Rivanna River Reservoir, which provides water to the City of Charlottesville, Virginia. The Rivanna River converges with the James River, which is a major tributary of the Chesapeake Bay, after flowing out of the Rivanna River Reservoir. No surface water bodies exist on the site.

Monitoring Well Gauging, Purging, and Sampling

Monitoring well gauging and sampling was performed on February 13, 2020. ECS collected well gauging data from overburden monitoring wells MW-1, MW-2, MW-3, MW-6, MW-7, MW-8, piezometer P-1, and bedrock monitoring well BW-2. ECS did not collect a sample from MW-4, MW-5, and BW-1. The well casing at MW-4 was caved in approximately 7 feet below ground surface (bgs) and the well cap and manway had been removed. ECS was unable to locate monitoring well MW-5 and bedrock well BW-1 within the parking area.

The well gauging data is presented below in Table 1. Depth-to-groundwater measurements recorded during this monitoring event and past monitoring events are presented in Table A-1 within Attachment A. Groundwater elevation values are approximated based on topographic mapping. Laboratory reports are included as Attachment B. Locations of the wells at the site and groundwater equipotential mapping are depicted on Figure 2.

Table 1 - Monitoring Well Gauging Results from February 13, 2020.

Monitoring Well	Monitoring Well Type	Total Well Depth[a] (feet btoc[b])	TOC[c] Elevation (feet amsl[d])	Depth to Water (feet btoc)	Groundwater Elevation (feet amsl)
MW-1	Overburden	15	514.29	9.20	505.09
MW-2	Overburden	14	513.25	8.31	504.94
MW-3	Overburden	13	513.39	8.42	504.97
MW-4	Overburden	14	513.15	--[e]	--
MW-5	Overburden	20	512.23	--	--
MW-6	Overburden	15	513.20	8.17	505.03
MW-7	Overburden	15	514.29	9.38	504.91
MW-8	Overburden	15	514.14	8.08	506.06
P-1	Streambank Piezometer	6.78	509.83	5.26	504.57
P-2	Streambank Piezometer	8.27	509.85	--	--
BW-1	Bedrock	60	513.95	--	--
BW-2	Bedrock	70	513.07	8.21	504.86

[a]As measured during previous monitoring events.
[b]btoc = below top of casing.
[c]TOC = top of casing.
[d]amsl = above mean sea level.
[e]--- no data collected.

ECS purged approximately three well volumes from each well prior to completing sampling. The water was removed from the well with a dedicated disposable bailer and twine. Free product was not observed in any of the monitoring wells. The purge water was dumped on the ground. Approximately 3.5 gallons of water were removed from MW-1, MW-2, MW-3, MW-6, MW-7, and MW-8. Approximately 0.5 gallons of water were removed from P-1 and approximately 30 gallons of water were removed from BW-2. ECS collected a sample from MW-1, MW-2, MW-3, MW-6, MW-7, MW-8, P-1, and BW-2 and submitted the samples for laboratory analysis of BTEX and methyl tert-butyl ether (MTBE) via U.S. Environmental Protection Agency (EPA) Method 8021B. Groundwater samples were placed on ice and submitted for laboratory analysis to Pace Analytical in Mount Juliet, Tennessee.

Groundwater Analytical Results

Analytical results of all detected constituents from the February 13, 2020 monitoring event are shown in Table 2 below. Groundwater analytical data recorded during this monitoring event and past monitoring events are presented in Table A-2 within Attachment A and a map showing groundwater petroleum concentrations is included as Figure 3.

Table 2 - Groundwater Analytical Results from February 13, 2020.

Well ID	Benzene (µg/L[a])	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE[b] (µg/L)
MW-1	30.2	18.9	508	59.6	<1.0
MW-2	17.7	<1.0	1.27	11.1	<1.0
MW-3	20.9	5.96	19.2	17.1	<1.0
MW-6	5.88	<1.0	2.12	4.19	<1.0
MW-7	4.33	<1.0	14.0	13.3	<1.0
MW-8	<0.5	<1.0	<0.5	<1.5	<1.0
P-1	<0.5	<1.0	<0.5	<1.5	<1.0
BW-2	<0.5	<1.0	<0.5	<1.5	628
Virginia VRP[c] Tier II Residential Intrusion Groundwater Screening Level	*5.0*	*1,000.0*	*700.0*	*10,000.0*	*140.0*

[a]µg/L – micrograms per liter
[b]MTBE – methyl tert-butyl ether
[c]VRP – Voluntary Remediation Program

Benzene was detected in five of the eight monitoring wells at concentrations between 4.33 and 30.2 micrograms per liter (µg/L). Four of the five detected concentrations of benzene were above the Virginia VRP Tier II Residential Groundwater Screening Level of 5.0 µg/L. Toluene was detected in two of the eight groundwater wells (MW-1 at 18.9 µg/L and MW-3 at 5.96 µg/L). The detected concentrations of toluene were below the Virginia VRP Tier II Residential Groundwater Screening Level of 1,000.0 µg/L. Ethylbenzene was detected in five of the eight monitoring wells between 1.27 and 508 µg/L. The detected concentrations of ethylbenzene were below the Virginia VRP Tier II Residential Groundwater Screening Level of 700.0 µg/L. Total xylenes were detected in five of the eight monitoring wells between 4.19 and 59.6 µg/L. The detected concentrations of total xylenes were below the Virginia VRP Tier II Residential Groundwater Screening Level of 10,000.0 µg/L. MTBE was detected in one of the eight groundwater wells (BW-2 at 628 µg/L). The detected concentration of MTBE was above the Virginia VRP Tier II Residential Groundwater Screening Level of 140.0 µg/L.

The concentrations of toluene, ethylbenzene, total xylenes, and MTBE in MW-1 and MW-2 on February 13, 2020 were less than the concentrations of these constituents during the previous monitoring event completed in December 2014. The concentrations of benzene had increased in MW-1 and MW-2 from December 2014 to February 2020. The concentrations of ethylbenzene, total xylenes, and MTBE in MW-3 on February 13, 2020 were less than the concentrations of these constituents in December 2014. The concentrations of toluene and benzene had increased in MW-3 from December 2014 to February 2020. The concentrations of BTEX and MTBE in MW-6, MW-7, MW-8, P-1, and BW-2 on February 13, 2020 were less than the concentrations of these constituents in December 2014. Overall, the data collected during this monitoring event appear to indicate that petroleum concentrations in the site's overburden and bedrock aquifer have generally declined over the past five years.

Please feel free to contact me at (540) 785-6624 if you have any comments or questions regarding this report.

Sincerely,
ECS Mid-Atlantic, LLC

Michael L. Maloy, CPG
Principal Geologist

Thomas P. Nelson, CPG
Senior Hydrogeologist

Abby Conklin-Muchnick, EIT
Environmental Project Manager

cc: Mr. Roger Gibson, by mail

FIGURES



Figure 1: Site Layout Map

Ivy Exxon Site
4260 Ivy Road
Charlottesville, VA

Legend

- Subject Site
- Subject Site Supply Well
- Stream

N

0 50 100 200 Feet

ECS Project No. 47-9894



Figure 2: Site Monitoring Wells and Groundwater Elevations

Ivy Exxon Site
4260 Ivy Road
Charlottesville, VA

Legend

- Subject Site
- Groundwater Equipotential Contour (C.I. = 0.2 ft.)
- Stream

Monitoring Well

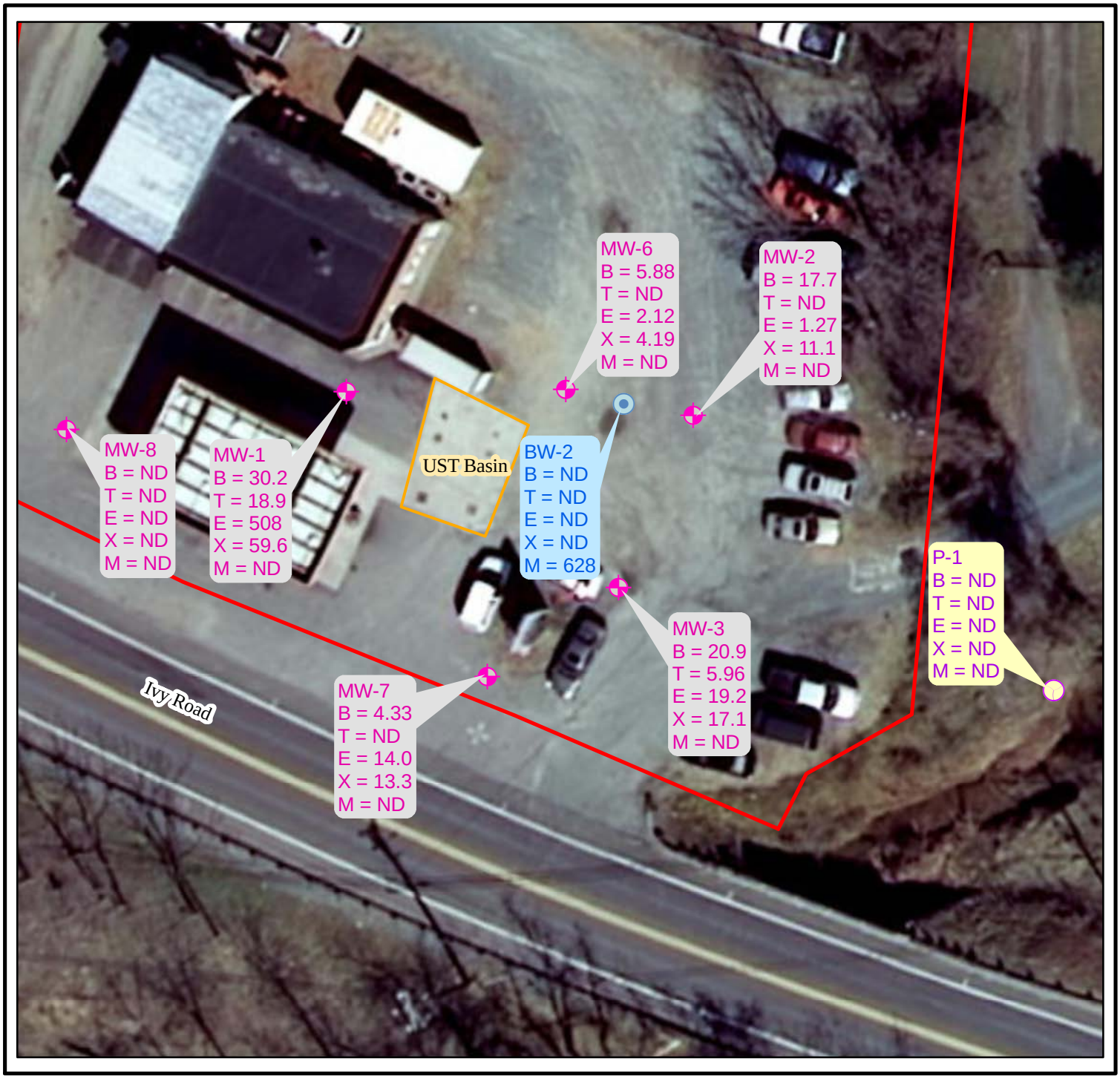
- Overburden Monitoring Well
- Bedrock Monitoring Well
- Streambank Piezometer

0 20 40 80 Feet

N

Map Notes:
(1) Groundwater elevations measured on 2/13/2020 in units of feet amsl;
(2) Only overburden and piezometer monitoring well data were used to generate groundwater equipotential contrours.

ECS Project No. 47-9894



Legend

- Subject Site
- UST Basin

Monitoring Well

- Overburden Monitoring Well
- Bedrock Monitoring Well
- Streambank Piezometer

0 20 40 80 Feet

Figure 3: Groundwater Sampling Results

Ivy Exxon Site
4260 Ivy Road
Charlottesville, VA

N

Map Notes:
(1) Sampling data from 2/13/2020;
(2) Units are micrograms per liter;
(3) B = benzene, T = toluene, E = ethylbenzene, X = total xylenes, M = methyl tert-butyl ether.

ECS Project No. 47-9894

ATTACHMENT A

DATA TABLES

Table A-1
Historical Groundwater Elevation Data
Ivy Exxon

Well Identification	Total Well Depth (feet bgs[a])	TOC [b] Elevation (feet amsl[c])	Date Gauged	Depth to Water from TOC (feet)	Product Thickness (feet)	Groundwater Elevation (feet amsl)
MW-1	15	514.29	5/16/2013	9.55	0	504.74
			5/28/2013	9.82	0.01	504.47
			7/23/2013	9.29	0	505
			9/9/2013	9.98	0	504.31
			2/6/2014	8.9	0	505.39
			5/20/2014	7.88	0	506.41
			9/5/2014	10.54	0	503.75
			12/4/2014	9.88	0	504.41
			2/13/2020	9.20	0	505.09
MW-2	14	513.25	5/16/2013	8.78	0	504.47
			5/28/2013	9.08	0	504.17
			7/23/2013	8.54	0	504.71
			9/9/2013	9.17	0	504.08
			2/6/2014	8.14	0	505.11
			5/20/2014	7.17	0	506.08
			9/5/2014	9.69	0	503.56
			12/4/2014	9.04	0	504.21
			2/13/2020	8.31	0	504.94
MW-3	13	513.39	5/16/2013	8.66	0	504.73
			5/28/2013	9.07	0	504.32
			7/23/2013	8.57	0	504.82
			2/6/2014	8.16	0	505.23
			5/20/2014	7.29	0	506.1
			9/5/2014	9.69	0	503.7
			12/4/2014	9.08	0	504.31
			2/13/2020	8.42	0	504.97
MW-4	14	513.15	5/16/2013	9.09	0	504.06
			5/28/2013	9.32	0	503.83
			7/23/2013	8.89	0	504.26
			9/9/2013	9.39	0	503.76
			2/6/2014	8.46	0	504.69
			5/20/2014	7.88	0	505.27
			9/5/2014	9.82	0	503.33

Well Identification	Total Well Depth (feet bgs[a])	TOC [b] Elevation (feet amsl[c])	Date Gauged	Depth to Water from TOC (feet)	Product Thickness (feet)	Groundwater Elevation (feet amsl)
			12/4/2014	9.25	0	503.9
			2/13/2020	--[d]	--	--
MW-5	20	512.23	7/23/2013	7.3	0	505.85
			9/9/2013	8.29	0	504.86
			2/6/2014	6.84	0	506.31
			5/20/2014	5.27	0	507.88
			9/5/2014	9.08	0	504.07
			12/4/2014	8.11	0	505.04
			2/13/2020	--	--	--
MW-6	15	513.20	7/23/2013	8.26	0	504.94
			2/6/2014	7.91	0	505.29
			5/20/2014	6.92	0	506.28
			9/5/2014	9.52	0	503.68
			12/4/2014	8.87	0	504.33
			2/13/2020	8.17	0	505.03
MW-7	15	514.29	7/23/2013	9.43	0	504.86
			9/9/2013	10.00	0	504.29
			2/6/2014	9.03	0	505.26
			5/20/2014	8.22	0	506.07
			9/5/2014	10.42	0	503.87
			12/4/2014	9.84	0	504.45
			2/13/2020	9.38	0	504.91
MW-8	15	514.14	7/23/2013	7.93	0	506.21
			9/9/2013	9.05	0	505.09
			2/6/2014	7.48	0	506.66
			5/20/2014	6.07	0	508.07
			9/5/2014	9.90	0	504.24
			12/4/2014	8.87	0	505.27
			2/13/2020	8.08	0	506.06
P-1	6.78	509.83	7/23/2013	5.81	0	504.02
			7/31/2013	5.96	0	503.87
			8/16/2013	6.07	0	503.76
			9/9/2013	6.18	0	503.65
			2/6/2014	5.33	0	504.50
			5/20/2014	4.86	0	504.97
			9/5/2014	6.59	0	503.24

Well Identification	Total Well Depth (feet bgs[a])	TOC [b] Elevation (feet amsl[c])	Date Gauged	Depth to Water from TOC (feet)	Product Thickness (feet)	Groundwater Elevation (feet amsl)
			12/4/2014	6.00	0	503.83
			2/13/2020	5.26	0	504.57
P-2	8.27	509.85	7/23/2013	6.51	0	503.34
			7/31/2013	6.45	0	503.40
			8/16/2013	6.50	0	503.35
			9/9/2013	6.56	0	503.29
			2/6/2014	6.00	0	503.85
			5/20/2014	5.87	0	503.98
			9/5/2014	6.75	0	503.10
			12/4/2014	6.43	0	503.42
			2/13/2020	--	--	--
BW-1	60	513.95	9/9/2013	9.11	0	504.84
			9/24/2013	9.49	0	504.46
			2/6/2014	7.79	0	506.16
			5/20/2014	6.70	0	507.25
			9/5/2014	6.75	0	507.2
			12/4/2014	6.43	0	507.52
			2/13/2020	--	--	--
BW-2	70	513.07	9/9/2013	9.01	0	504.06
			9/24/2013	9.27	0	503.8
			2/6/2014	7.96	0	505.11
			5/20/2014	7.03	0	506.04
			9/5/2014	9.53	0	503.54
			12/4/2014	8.91	0	504.16
			2/13/2020	8.21	0	504.86

[a]bgs = below ground surface
[b]Depth to water values are expressed as feet below top of well casing
[c]amsl = above mean sea level
[d]-- = no data collected

Table A-2
Historical Groundwater Quality Data

Well ID	Sampling Date	Benzene (µg/L[a])	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total BTEX[b] (µg/L)	TPH-GRO[c] (µg/L)	MTBE[d] (µg/L)	Chloro-methane (µg/L)	Notes
MW-1	5/16/2013	73	<10	4,700	510	5,283	17,000	95	NA[e]	Method 8021B
	7/23/2013	58	11	3,900	520	4,489	18,000	65	NA	
	2/6/2014	67	<25	3,500	410	3,977	NA	86	NA	
	5/20/2014	62	8.7	1,500	214	1,784.70	NA	78	NA	
	9/5/2014	74	46	3,000	293	3,413	NA	440	NA	
	12/4/2014	27	27	2,300	220	2,574	NA	45	NA	
	2/13/2020	30.2	18.9	508	59.6	NA	NA	<1.0	NA	
MW-2	5/16/2013	4.0	<1.0	10.0	6.4	20.4	520	8.5	NA	Method 8021B
	7/23/2013	4.3	<1.0	1.0	5.1	10.4	780	10	NA	
	2/6/2014	3.6	1.2	<1.0	8.2	13	NA	11	NA	
	5/20/2014	<1.0	<1.0	9.8	3.9	13.7	NA	6.5	NA	
	9/5/2014	6.0	2.8	3.2	7.2	19.2	NA	9.8	NA	
	12/4/2014	8.0	1.8	6.0	18.3	34.1	NA	9.2	NA	
	2/13/2020	17.7	<1.0	1.27	11.1	NA	NA	<1.0	NA	
MW-3	5/16/2013	21	<1.0	47	16.2	84.2	1,800	25	NA	Method 8021B
	7/23/2013	13	<1.0	53	15.1	81.1	1,600	14	NA	
	2/6/2014	15	3.8	51	31.1	100.9	NA	17	NA	
	5/20/2014	7.0	2.8	20	10.7	40.5	NA	12	NA	
	9/5/2014	29	4.0	50	40.4	123.4	NA	24	NA	
	12/4/2014	19	2.8	50	32.8	104.6	NA	25	NA	
	2/13/2020	20.9	5.96	19.2	17.1	NA	NA	<1.0	NA	
MW-4	5/16/2013	31	<1.0	33	15.5	79.5	1,600	14	NA	Method 8021B
	7/23/2013	30	<1.0	25	15.8	70.8	2,400	15	NA	
	2/6/2014	18	2.6	7.2	13.3	41.1	NA	14	NA	
	5/20/2014	3.1	1.2	1.6	5.5	11.4	NA	9.4	NA	
	9/5/2014	19	3.5	15	15.6	54.1	NA	11	NA	
	12/4/2014	17	6.2	9.2	12.1	44.5	NA	11	NA	

Well ID	Sampling Date	Benzene (µg/L[a])	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total BTEX[b] (µg/L)	TPH-GRO[c] (µg/L)	MTBE[d] (µg/L)	Chloro-methane (µg/L)	Notes
MW-5	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	<1.0	NA	Method 8021B
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1.0	NA	
MW-6	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	5.7	NA	Method 8021B
	2/6/2014	1.7	<1.0	1.7	<3.0	<7.4	NA	9.6	NA	
	5/20/2014	2.7	<1.0	<1.0	<3.0	2.7	NA	9.3	NA	
	9/5/2014	9.1	2.9	22	34.6	68.6	NA	14	NA	
	12/4/2014	6.7	1.3	13	23.2	44.2	NA	13	NA	
	2/13/2020	5.88	<1.0	2.12	4.19	NA	NA	<1.0	NA	
MW-7	7/23/2013	44	14	110	135.8	303.8	3,600	21	NA	Method 8021B
	2/6/2014	20	2.8	59	75.4	157.2	NA	16	NA	
	5/20/2014	55	15	150	227.6	447.6	NA	16	NA	
	9/5/2014	25	1.5	45	48.6	120.1	NA	13	NA	
	12/4/2014	5.2	1.2	16	18	40.4	NA	7.2	NA	
	2/13/2020	4.33	<1.0	14.0	13.3	NA	NA	<1.0	NA	
MW-8	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	<100	<1.0	NA	Method 8021B
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	NA	
	2/13/2020	<0.5	<1.0	<0.5	<1.5	NA	NA	<1.0	NA	
P-1	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	Method 8260B
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	
	2/13/2020	<0.5	<1.0	<0.5	<1.5	NA	NA	<1.0	<1.0	Method 8021B
P-2	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1.1	<1.0	Method 8260B
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	
BW-1	9/9/2013	<1.0	<1.0	<1.0	<3.0	<6.0	390	360	<1.0	Method 8260B
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	320	<1.0	
	5/20/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	330	<1.0	
	9/5/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	250	<1.0	
	12/4/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	310	<1.0	
BW-2	9/9/2013	<1.0	<1.0	<1.0	<3.0	<6.0	1,700	1,600	<1.0	Method

Well ID	Sampling Date	Benzene (µg/L[a])	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total BTEX[b] (µg/L)	TPH-GRO[c] (µg/L)	MTBE[d] (µg/L)	Chloro-methane (µg/L)	Notes
	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1,000	<1.0	8260B
	5/20/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	22	<1.0	
	9/5/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1,200	<1.0	
	12/4/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	1,500	<1.0	
	2/13/2020	<0.5	<1.0	<0.5	<1.5	NA	NA	628	NA	Method 8021B
Scott's Ivy Domestic Well	5/28/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	20	<1.0	Method 8260B
	7/23/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	2.9	Sample collected after installation of water treatment system using Method 8260B
Richmond Domestic Well	7/31/2013	<1.0	<1.0	<1.0	<3.0	<6.0	NA	6	<1.0	Method 8260B, western adjoining property
Eaton Domestic Well	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	Method 8260B, 4222 Ivy Road
Sponski Domestic Well	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	11	<1.0	Method 8260B, 4226 Ivy Road
Hammond Domestic Well	2/6/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	Method 8260B, 727 Pine Hill Lane. Note: detection of acetone
	5/20/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	
	9/5/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	

Well ID	Sampling Date	Benzene (µg/L[a])	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total BTEX[b] (µg/L)	TPH-GRO[c] (µg/L)	MTBE[d] (µg/L)	Chloro-methane (µg/L)	Notes
	12/4/2014	<1.0	<1.0	<1.0	<3.0	<6.0	NA	<1.0	<1.0	of 16 µg/L on May 20, 2014

[a] µg/L – micrograms per liter
[b] BTEX – benzene, toluene, ethylbenzene, and xylenes
[c] TPH-GRO – total petroleum hydrocarbons gasoline range organics
[d] MTBE – methyl tert-butyl ether
[e] NA – constituent not analyzed

ATTACHMENT B

LABORATORY REPORT

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 21, 2020

ECS Mid-Atlantic LLC - Charl. Va

Sample Delivery Group:	L1189664
Samples Received:	02/14/2020
Project Number:	
Description:	Scott's Ivy Exxon

Report To:

Mr. Tom Nelson
4004 Hunterstand Court; Ste 102
Charlottesville, VA 22911

Entire Report Reviewed By:

Heather J Wagner
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW-1 L1189664-01 GW

Collected by | Collected date/time 02/13/20 14:50 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 17:34	02/16/20 17:34	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021	WG1431581	10	02/20/20 21:34	02/20/20 21:34	ADM	Mt. Juliet, TN

MW-2 L1189664-02 GW

Collected by | Collected date/time 02/13/20 14:40 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 17:56	02/16/20 17:56	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021	WG1431581	1	02/20/20 21:57	02/20/20 21:57	ADM	Mt. Juliet, TN

MW-3 L1189664-03 GW

Collected by | Collected date/time 02/13/20 14:40 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 18:19	02/16/20 18:19	BMB	Mt. Juliet, TN

MW-6 L1189664-04 GW

Collected by | Collected date/time 02/13/20 14:55 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 18:41	02/16/20 18:41	BMB	Mt. Juliet, TN

MW-7 L1189664-05 GW

Collected by | Collected date/time 02/13/20 14:30 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 19:03	02/16/20 19:03	BMB	Mt. Juliet, TN

MW-8 L1189664-06 GW

Collected by | Collected date/time 02/13/20 14:35 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 19:25	02/16/20 19:25	BMB	Mt. Juliet, TN

BW-2 L1189664-07 GW

Collected by | Collected date/time 02/13/20 15:05 | Received date/time 02/14/20 08:45

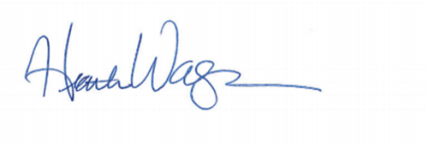
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 19:48	02/16/20 19:48	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021	WG1431581	10	02/20/20 22:19	02/20/20 22:19	ADM	Mt. Juliet, TN

P-1 L1189664-08 GW

Collected by | Collected date/time 02/13/20 14:15 | Received date/time 02/14/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021	WG1428932	1	02/16/20 20:10	02/16/20 20:10	BMB	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Heather J Wagner
Project Manager

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.0302		0.000500	1	02/16/2020 17:34	WG1428932
Toluene	0.0189		0.00100	1	02/16/2020 17:34	WG1428932
Ethylbenzene	0.508		0.00500	10	02/20/2020 21:34	WG1431581
Total Xylene	0.0596		0.00150	1	02/16/2020 17:34	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 17:34	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*122*		*79.0-125*		*02/16/2020 17:34*	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*101*		*79.0-125*		*02/20/2020 21:34*	WG1431581

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.0177		0.000500	1	02/16/2020 17:56	WG1428932
Toluene	ND		0.00100	1	02/16/2020 17:56	WG1428932
Ethylbenzene	0.00127		0.000500	1	02/20/2020 21:57	WG1431581
Total Xylene	0.0111		0.00150	1	02/16/2020 17:56	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 17:56	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*105*		*79.0-125*		*02/16/2020 17:56*	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*105*		*79.0-125*		*02/20/2020 21:57*	WG1431581

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.0209		0.000500	1	02/16/2020 18:19	WG1428932
Toluene	0.00596		0.00100	1	02/16/2020 18:19	WG1428932
Ethylbenzene	0.0192		0.000500	1	02/16/2020 18:19	WG1428932
Total Xylene	0.0171		0.00150	1	02/16/2020 18:19	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 18:19	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*109*		*79.0-125*		*02/16/2020 18:19*	WG1428932

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00588		0.000500	1	02/16/2020 18:41	WG1428932
Toluene	ND		0.00100	1	02/16/2020 18:41	WG1428932
Ethylbenzene	0.00212		0.000500	1	02/16/2020 18:41	WG1428932
Total Xylene	0.00419		0.00150	1	02/16/2020 18:41	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 18:41	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*101*		*79.0-125*		*02/16/2020 18:41*	WG1428932

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00433		0.000500	1	02/16/2020 19:03	WG1428932
Toluene	ND		0.00100	1	02/16/2020 19:03	WG1428932
Ethylbenzene	0.0140		0.000500	1	02/16/2020 19:03	WG1428932
Total Xylene	0.0133		0.00150	1	02/16/2020 19:03	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 19:03	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*104*		*79.0-125*		*02/16/2020 19:03*	WG1428932

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.000500	1	02/16/2020 19:25	WG1428932
Toluene	ND		0.00100	1	02/16/2020 19:25	WG1428932
Ethylbenzene	ND		0.000500	1	02/16/2020 19:25	WG1428932
Total Xylene	ND		0.00150	1	02/16/2020 19:25	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 19:25	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*99.6*		*79.0-125*		*02/16/2020 19:25*	WG1428932

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.000500	1	02/16/2020 19:48	WG1428932
Toluene	ND		0.00100	1	02/16/2020 19:48	WG1428932
Ethylbenzene	ND		0.000500	1	02/16/2020 19:48	WG1428932
Total Xylene	ND		0.00150	1	02/16/2020 19:48	WG1428932
Methyl tert-butyl ether	0.628		0.0100	10	02/20/2020 22:19	WG1431581
(S) a,a,a-Trifluorotoluene(PID)	*87.2*		*79.0-125*		*02/16/2020 19:48*	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*100*		*79.0-125*		*02/20/2020 22:19*	WG1431581

Volatile Organic Compounds (GC) by Method 8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.000500	1	02/16/2020 20:10	WG1428932
Toluene	ND		0.00100	1	02/16/2020 20:10	WG1428932
Ethylbenzene	ND		0.000500	1	02/16/2020 20:10	WG1428932
Total Xylene	ND		0.00150	1	02/16/2020 20:10	WG1428932
Methyl tert-butyl ether	ND		0.00100	1	02/16/2020 20:10	WG1428932
(S) a,a,a-Trifluorotoluene(PID)	*99.0*		*79.0-125*		*02/16/2020 20:10*	WG1428932

Method Blank (MB)

(MB) R3501672-2 02/16/20 15:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
Methyl tert-butyl ether	U		0.000340	0.00100
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3501672-1 02/16/20 14:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0536	107	77.0-122	
Toluene	0.0500	0.0535	107	80.0-121	
Ethylbenzene	0.0500	0.0508	102	80.0-123	
Total Xylene	0.150	0.147	98.0	47.0-154	
Methyl tert-butyl ether	0.0500	0.0492	98.4	68.0-122	
(S) a,a,a-Trifluorotoluene(PID)			*102*	*79.0-125*	

Method Blank (MB)

(MB) R3501989-3 02/20/20 17:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylbenzene	U		0.000160	0.000500
Methyl tert-butyl ether	U		0.000340	0.00100
(S) a,a,a-Trifluorotoluene(PID)	*99.3*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3501989-1 02/20/20 16:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ethylbenzene	0.0500	0.0508	102	80.0-123	
Methyl tert-butyl ether	0.0500	0.0473	94.6	68.0-122	
(S) a,a,a-Trifluorotoluene(PID)			*101*	*79.0-125*	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

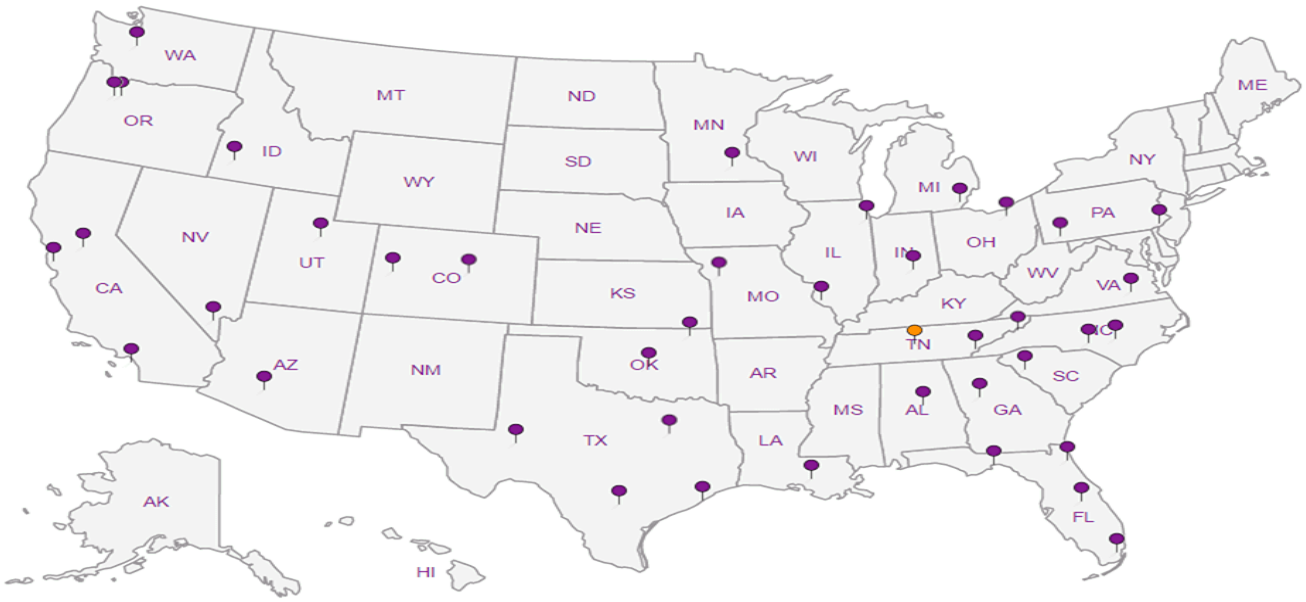
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1941621

Section A Required Client Information:

Company: ECS Mid-Atlantic
Address: 4004 Hunterstand Ct., Ste. 102
Charlottesville, VA 22911
Email To: tnelson@ecslimited.com
Phone: 540-785-6624 Fax:
Requested Due Date/TAT: Standard 5-day

Section B Required Project Information:

Report To: Tom Nelson
Copy To:
Purchase Order No.:
Project Name: Scott's Ivy Exxon
Project Number:

Section C Invoice Information:

Attention: Tom Nelson
Company Name:
Address: Same
Pace Quote Reference:
Pace Project Manager: Heather Wagner
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: VA

Requested Analysis Filtered (Y/N)

H034

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: BTEX (8021B)	MTBE (8021B)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			2/13/20	14:50		2	1			X					X	X		-01
2	MW-2						14:40						X					X	X		02
3	MW-3						14:40						X					X	X		03
4	~~MW-4~~												X					X	X		
5	~~MW-5~~												X					X	X		
6	MW-6						14:55						X					X	X		04
7	MW-7						14:30						X					X	X		05
8	MW-8						14:35						X					X	X		06
9	[redacted] ~~BW-1~~												X					X	X		
10	[redacted] BW-2						15:05						X					X	X		07
11	P-1						14:15						X					X	X		08
12																					

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

1189664

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	[signature] /ECS	2/13/20	16:00	[signature]	2/14/20	0845

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.2+			
.8=			
1.5			
HM A2			

*Note: Sample labels marked as preserved with other preservative but are actually preserved w/ HCl

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tom Nelson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/13/20

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

RAD SCREEN: <0.5 mR/hr

NCF

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: ECS CCVA	1189664	
Cooler Received/Opened On: 7/9/20 Temperature:	1.5	
Received By: Tanner Ln		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

Kelsey Stephenson



Login #: L1189664	Client:ECSCCVA	Date:02/14	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
X	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: Received 1 of 2 broken vials for MW-1

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:proceed with unbroken vial

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

VALLEY REGIONAL OFFICE
P.O. Box 3000, Harrisonburg, Virginia 22801
(540) 574-7800 Fax (540) 574-7878
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director

Amy Thatcher Owens
Regional Director

May 2, 2019

Mr. Mike Jones
Charlottesville Oil Company, Inc.
PO Box 6340
Charlottesville, VA 22906
(Sent via email only)

Re: Petroleum Release – Toddsbury of Ivy, 4297 Ivy Road, Albemarle County
Facility FAC ID: 6-015515
Decision to Close Case, DEQ Tracking Number: PC# 2001-6134

Dear Mr. Jones:

Based on a review of the file associated with the above-reference investigation, **this case is considered to be closed,** and no further investigation or corrective action is required at this time. Should significant environmental, health or safety problems develop in the future, additional testing and/or corrective action may be required in accordance with applicable State and Federal regulations.

In accordance with 12 VAC 5-630-450 of the Virginia Department of Health Private Well Regulations, **the monitoring wells installed in conjunction with this investigation should be properly abandoned within 90 days to prevent future degradation of groundwater at the site. Please properly abandon the monitoring wells and provide a brief report of the abandonment procedures to this office by August 2, 2019.** Since the monitoring well was installed to meet regulatory requirements administered by DEQ, no permits or fees are required by the local health department. Well abandonment is a reimbursable activity if the proper preapproval protocol is followed. In order for the work to be eligible for reimbursement, an Activity Authorization Form (AAF) must be submitted to, and approved by, our office **prior** to closure activities abandonment.

Virginia Law prohibits the payment of corrective action and third party liability reimbursement claims which are filed more than two years after DEQ closes a case. **All claims for this release must be received by DEQ no later than May 2, 2021 in order to be eligible**

for reimbursement. Thank you for your continued patience and cooperation. If you have any questions or concerns or if we can be of further assistance, please contact David Fitt at (540) 574-7851 or david.fitt@deq.virginia.gov.

Sincerely,

T.A. Pitsenberger

Todd A. Pitsenberger
Petroleum Program Manager

cc: Petroleum Remediation File
Jeff Sitler (JAS) – via email

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road Harrisonburg, VA 22801

SUBJECT: PC 01-6134 – RECOMMENDATION FOR CASE CLOSURE
FAC ID#: 6-015515
SITE NAME: Toddsbury of Ivy
LOCATION: 4297 Ivy Road, Ivy, Albemarle County
TO: UST File
FROM: David A. Fitt DAF
DATE: May 2, 2019

Case Initiation: 2/8/2001 – Compliance Inspector reported three inconclusive SIRs for the 3,000-gallon regular gasoline UST and two inconclusive SIRs for the 3,000-gallon plus gasoline UST. No previous PC investigations have been performed at this facility.

Work Requested/Performed: DEQ requested a site check, which included soil borings adjacent to the dispenser island and piping trench. The samples were collected approximately 18 inches below grade and analyzed for TPH-GRO. Based upon the results, DEQ requested submission of an SCR to include installation of three monitoring wells. The SCR was submitted in January 2002 with documentation of groundwater contamination, including impact to the onsite potable water supply well. A CFU was installed following Culligan's assessment of the well. The first SCR Addendum included installation of a fourth monitoring well and sampling of the creek in multiple locations. Based upon the widespread presence of MTBE concentrated around the tank basin (but no free product), DEQ requested one year of quarterly monitoring which concluded in mid-2003. A second year of monitoring was requested which included pumping on the most contaminated wells in an attempt to determine if free product was present on the groundwater. Following the third monitoring report of the second year, the consultant recommended that a Corrective Action Plan (CAP) be developed. DEQ requested CAP development in early 2004.

The CAP submitted in June 2004 proposed a low-flow pump-and-treat system pumping from two severely impacted monitoring wells. DEQ requested an amendment to the proposed CAP that was submitted in two parts, one in December 2004 and the other in March 2005. DEQ approved the CAP on March 10, 2005. Two of the three tanks at the facility were voluntarily removed from the ground (the third tank was oriented under a portion of the structure preventing its removal) by the RP in September 2005 which was documented in a Phase II Initial Abatement Measures Report dated October 4, 2005. A total of 578.69 tons of highly contaminated soil was removed for disposal at Reco Biotechnology in Richmond. Groundwater extraction piping was installed in the tank basin to enhance recovery. A fifth monitoring well was also installed at that time adjacent to the tank basin. New tanks were installed at the facility in January 2006 that prompted the removal of an additional 583.41 tons of contaminated soil down-gradient of the previous tank basin location. Documentation of CAP Implementation was submitted to DEQ in May 2006 following system start-up. The system consisted of a cargo trailer contained SVE system with an oil-water separator and aeration drums. Water was pumped from multiple extraction points (MW-2 and MW-5) and discharged to an infiltration trench installed in the vicinity of the former tank basin above the known contaminant plume. The CAP endpoints included CFU removal from the on-site potable well (or provisions for replacement if the well concentrations warrant) and the treatment endpoints of 1,000 µg/L for benzene and MTBE in groundwater beneath the site for two consecutive quarters.

The system was in service from May 2006 until August 2013. In December 2007, the potable well was connected to the treatment system so it could pump and treat contaminated water in the potable well at a rate of 0.5 gallons per minute as deemed necessary. SVE operation was stopped in November 2008 based upon the asymptotic petroleum vapor concentrations measured in the vadose zone. MW-6, a deeper MW installed to a depth of 80 feet below grade, was added as a groundwater extraction point in June 2009. With extraction from MW-6, the air stripping capabilities of the treatment system were augmented. Pumping from MW-6 ceased in March 2012 based upon no detections of MBTEXN in the potable well for several quarters. By September 2012, the contamination was again observed in the potable well, thus pumping and treating from MW-6 was restarted.

In August 2013, potable wells at 4272 and 4282 Ivy Road yielded analytical data indicating petroleum contamination. Those properties are adjacent to the Ivy Exxon (FAC ID: 6-028008). The contamination initiated a case at the Exxon (PC: 13-6113). At that time, Albemarle County was contacted about a possible municipal waterline extension to address the three impacted potable wells. As part of that investigation, groundwater investigation was performed at the subject site before the December 2013 CAPI report was submitted. Three monitoring wells, two deep and one shallow, were installed at the subject site. Data collected at the two facilities was not conclusive regarding responsibility for the identified potable well impacts. In April 2016, the on-site potable well was statistically analyzed for CFU deactivation and qualified for CFU removal. In September 2016, DEQ decided not to pursue the waterline extension. In February 2017, the state contractor removed the CFU from the property. No additional investigation or remediation was performed or required at the site.

Nature/Extent of Contamination: Widespread residual-phase contamination was identified during the tank closure and tank installation activities. Between the excavation and disposal of more than 1,000 tons of contaminated soil and SVE activities, any remaining soil contamination is minor and is not considered to be significantly impacting groundwater any longer. Dissolved-phase contamination in the shallow aquifer was also significant in two particular locations - adjacent to the former tank basin and 40 feet east of the former tank basin. MW-2 yielded MTBE concentrations as high as 56,000 µg/L and benzene as high as 11,500 µg/L. The shallow groundwater contamination was nearly cleaned up as remedial activities ceased. After the treatment system was shut down in 2013, MW-2 yielded no MTBE or benzene concentrations above the detectable limits. Dissolved-phase contamination within the on-site potable well indicated a deeper aquifer impact, but only minor, with maximum MTBE concentrations less than 15 µg/L and benzene concentrations less than 4 µg/L. The potable well concentrations have not been detectable since 2014.

The discovery of dissolved-phase impact to potable wells east of the site across Route 250 prompted additional deep aquifer characterization at the site. The two deep monitoring wells were both impacted by dissolved-phase contamination, with the worst being down-gradient of the former tank basin where MTBE concentrations were detected at a maximum of 9,800 µg/L, and less significant BTEX contamination, maximum concentrations of 7,782 µg/L of which benzene was only 108 µg/L. Between data collected at the subject site and at the Ivy Exxon facility, deep aquifer contamination appears to be heading easterly and likely becoming combined beneath the Ivy Exxon. The deep aquifer is recharged via fractured bedrock beneath the site. Ivy Creek which runs through the southeast portion of the property did not yield detectable petroleum concentrations. A rudimentary groundwater sampling point, a hand dug hole near the edge of the creek, yielded MTBE concentrations less than 5 µg/L in the early stages of remedial efforts, but was BDL afterwards.

Receptors/Risk Assessment: The site and surrounding area utilize groundwater wells for potable water supplies. The on-site well was impacted for nearly 13 years, but has yielded no detectable petroleum concentrations since 2014 and is no longer considered at risk from this release. The impact to the potable wells at 4272 and 4282 Ivy Road may or may not have been impacted by the contamination from the subject site, however, considering the contamination from and proximity to the Ivy Exxon; those impacts are being addressed by PC 13-6113. Although several other potable wells were identified during this investigation, they are not considered at risk based upon estimated groundwater flow direction and remedial efforts. Ivy Creek is located approximately 200 feet south of the former tank basin; however, sampling indicates that the creek has not been impacted by this release of petroleum. The structure on the subject site is slab-on-grade; however, no vapor impact was ever observed and based upon the excavation and remedial activities future vapor risk associated with this release is minimal. No underground utilities were identified to be at risk from the contamination beneath the site. Based upon the investigation performed, this release is no longer considered to pose a significant risk to human health or the environment.

Recommendation: No further action and case closure.

CONCURRENCES							
SYMBOL	Petroleum	Petroleum					
SURNAME	Fitt	Gregory L. Clark					
DATE	5/2/2019	5-2-19	5/2/19				

IVY PROPER

CRITICAL SLOPES WAIVER – SPECIAL EXCEPTION REQUEST

April 20, 2020

PREPARED BY:

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

608 PRESTON AVENUE, SUITE 200
CHARLOTTESVILLE, VA 22903
CRAIG KOTARSKI, PE

Introduction

A Special Exception is being requested per Section 4.2.5.a of the Albemarle County Zoning Ordinance for a waiver to grade within critical slopes to support the development of the Ivy Proper commercial development. Per Section 4.2 of the Albemarle County Zoning Ordinance, steep and critical slopes are protected and preserved throughout the County to reduce "rapid and/or large-scale movement of soil and rock, excessive stormwater run-off, siltation of natural and man-made bodies of water, loss of aesthetic resource … all of which constitute potential dangers to the public health, safety and/or welfare." Within this application, we hope to demonstrate both the need for the critical slopes impact as well as the mitigation efforts implemented to ensure slopes are impacted responsibly in order to protect downstream land.

Existing Conditions

The subject property (parcels 058A2-00-00-02000 and 058A2-00-00-01400) is located off Ivy Road within Albemarle County. It is zoned Commercial (C1), and the portion of the site being developed is currently undeveloped land. The land is partially paved, gravel surfaced, wooded, and pasture. The subject portion of the property is adjacent to the C&O Railroad Right-Of-Way to the north, Ivy Road to the South, commercial use to the East.

Per Albemarle County GIS, there is an area of critical slopes located within the subject property. The majority of the slopes are located on the north side of the property, adjacent to the railroad right-of-way.

Proposed Special Exception

As proposed by the Special Use Concept Plan, Per Section 4.2.5.a.3, a critical slopes waiver may be granted if it is found that it would "not be detrimental to public health, safety or welfare, to the orderly development of the area, or the adjacent properties; would not be contrary to sound engineering practices." Additionally, the waiver request must prove that "strict application of the requirements of Section 4.2 would not forward the purposes of this chapter or otherwise serve the public health, safety or welfare."

Site Data and Extents of Proposed Disturbance:

Site Area: 0.87 Acres (37,897 SF)

Critical Slopes Located Onsite: 6,880 SF

Proposed Critical Slopes Disturbance: 5,282 SF

The critical slopes disturbance (see **Image 1** below) is due to the geometry of the parcels, the need for a septic system due to lack of public sewer service availability and the need to provide adequate parking to serve the proposed commercial building. The proposed building and associated parking have been pushed towards the front of the property as much as possible in order to minimize disturbance of

slopes. Additionally, a shared entrance has been proposed in order to consolidate access and create less overall disturbance and proposed impervious area.

It is important to note, that the critical slopes located on site appear to be engineered and are a result of fill dirt placed during the railroad construction. Appropriate measures such as silt fence and sediment traps will be implemented during construction in accordance with the Virginia Erosion and Sediment Control Handbook. Post-construction stormwater runoff will be managed in accordance with the Virginia Stormwater Management Program procedures for water quality and quantity.

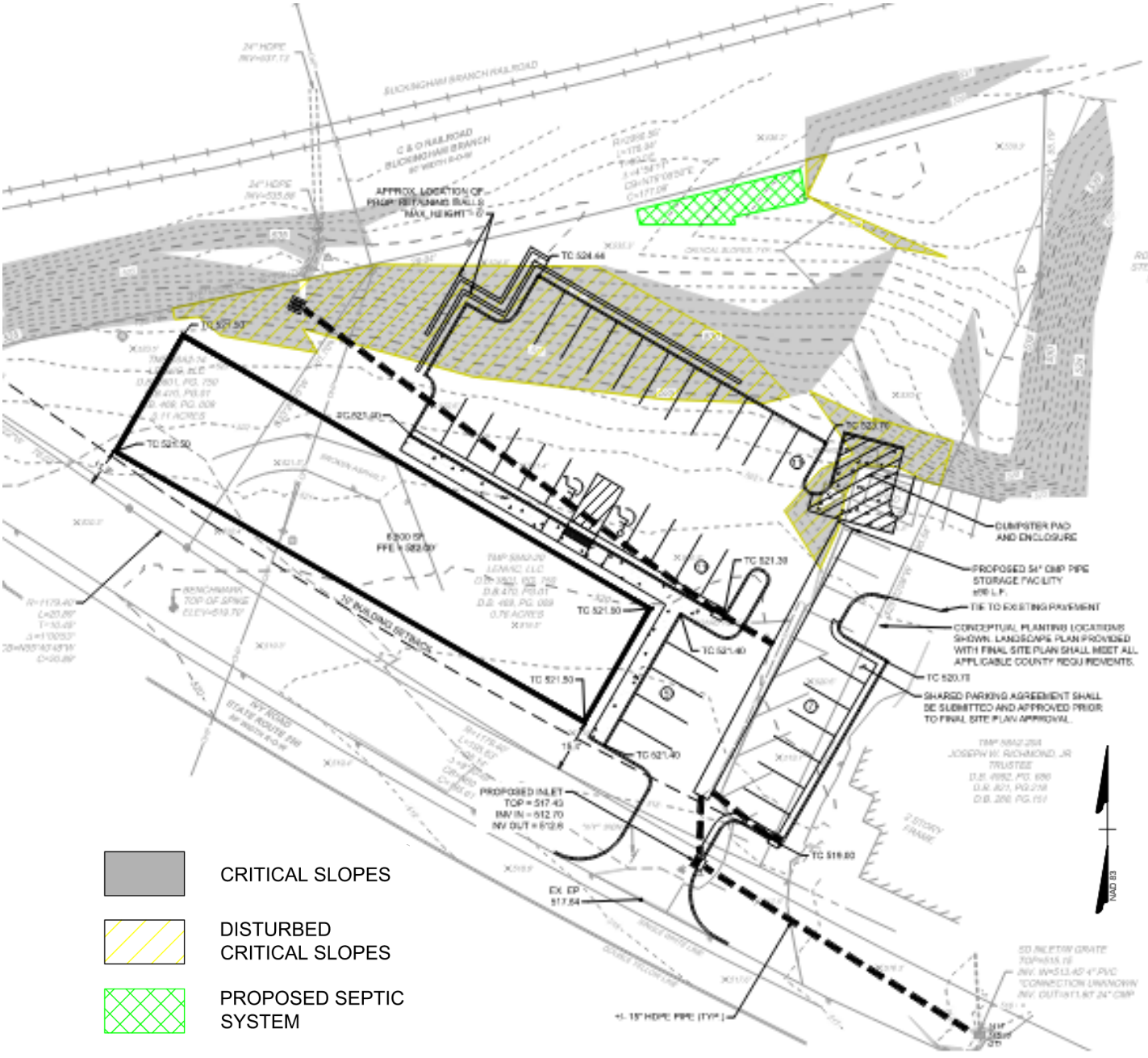


Image 1: Areas of critical slope disturbance proposed on site.

Conclusion

As detailed above, granting a waiver to disturb the critical slopes is not detrimental to the public health, safety and welfare or a detriment to the environment. The slopes in question are not environmentally sensitive, but rather are a result of fill dirt placed during the railroad construction. The site has been designed to minimize the impacts to the slopes, and care will be taken during construction to stabilize slopes and prevent silt-laden runoff and after construction to manage stormwater runoff. Granting the slopes waiver would allow for the site to be developed in such a way that that is in line with the Comprehensive Plan.

ATTACHMENT 12 – STAFF ANALYSIS OF CRITICAL SLOPES

The critical slope waiver request has been reviewed. The engineering analysis of the request follows:

Description of critical slope area and proposed disturbance:
The critical slopes proposed to be impacted appear to have been created as early as 1937 (based on historical aerial photography) for the construction of the railroad tracks. They are currently stabilized with understory shrubs, groundcover and trees and are located across the middle to upper portion of the site. The applicant proposes to grade within critical slopes for the construction of a parking lot, retaining walls, a dumpster pad, and a sanitary sewer drainfield.

Areas	Acres (sf)	
Total site	0.87 acres (37,897 sf)	
Critical slopes	6,880 sf	18.2% of total site
Critical slopes disturbed	5,282 sf	13.9% of total site 76.8% of total preserved slopes

Exemptions to critical slopes waivers for driveways, roads and utilities without reasonable alternative locations: The proposed disturbance is not one of the listed exemptions and therefore a waiver is required.

Compliance with Zoning Ordinance 18-4.2.5(a)(1):

"rapid and/or large-scale movement of soil and rock"

Existing critical slopes are stable. Disturbance of critical slopes will entail cutting/excavating earth to install retaining walls. The maximum height of cut will be approximately 10-ft. The applicant's first submittal showed an upper wall almost touching the railroad property line. The second submittal included adjustments to the parking lot layout to increase the distance between the railroad property line and the upper wall. A geotechnical engineer will need to verify the stability of soils and the contractor will need to proceed with caution during the excavation. If the slope fails during excavation, the height of cut is small enough to contain material from the failed slope within the site. However, there is a risk that a failure could impact the railroad right-of-way. Considering this, staff recommends a condition of approval to be that a geotechnical report and recommendation for retaining wall installation be required with the retaining wall design prior to approval of the VSMP application to minimize the chances of rapid and large-scale movement of soil and/or rock.

"excessive stormwater run-off"

The impacted critical slopes will be replaced with a combination of retaining walls, impervious areas (pavement), and pervious areas (landscaping). Additional runoff resulting from the change in land cover will be detained in an underground detention system so that post-development runoff meets minimum standards for channel and flood protection.

"siltation of natural and man-made bodies of water"

There are no nearby man-made bodies of water. Little Ivy Creek, a natural body of water, is approximately 300-ft from the site. The floodplain does not extend to this site. Grading of the critical slopes results in additional disturbed areas that would otherwise remain undisturbed. However, the slopes to be impacted are relatively small (e.g. less than 6,000 sf) so wall installation should be completed quickly as an initial phase of construction, which would minimize exposure and the potential of sediment release from this area of disturbance.

"loss of aesthetic resources"

The critical slopes to be impacted will be located behind the proposed building and between the proposed and existing building on the adjacent parcel. The site is partially wooded, and this development will result in the loss of most of the wooded area. Proposed walls will be limited to 6-ft tall to soften their visual impacts, if seen from 250.

"in the event of septic system failure, a greater travel distance of septic effluent"

The development proposes to install a drainfield near the railroad. Septic effluent will be pumped to the drainfield since it will be higher than the building finished floor elevation. VDH permitting will be required and the permit states VDH "may revoke or modify any permit if, at a later date, it finds that the system would threaten public health or the environment". Staff does not believe disturbance of the critical slopes would result in a greater travel distance of septic effluent in the event of system failure; the presence of retaining walls may even reveal a system failure sooner than if walls were not installed (smell and/or leaching through wall).

Findings under Zoning Ordinance 18-4.2.5(a)(3):
Per County Code § 18-4.2.5(a)(3), the Commission may grant a modification or waiver if it finds that the modification or waiver would not be detrimental:

to the public health, safety or welfare;

Staff does not believe granting of the waiver would be detrimental to the public health, safety or welfare, provided that a geotechnical report and recommendation for wall installation is provided with the retaining wall design prior to approval of the VSMP application to ensure slope failure does not occur adjacent the railroad right-of-way.

to the orderly development of the area, or to adjacent properties; and

Staff does not believe granting of the waiver would be detrimental to the orderly development of the area, or to adjacent properties.

would not be contrary to sound engineering practices;

Staff does not believe granting of the waiver would be contrary to sound engineering practices, provided that a geotechnical report and recommendation for wall installation is provided with the retaining wall design prior to approval of the VSMP application to ensure slope failure does not occur adjacent the railroad right-of-way. The required VSMP and Site Plan applications will further ensure that sound engineering practices and County design standards are upheld.

and at least one of the following:

a. Strict application of the requirements of section 4.2 would not forward the purposes of this chapter or otherwise serve the public health, safety or welfare;

Staff is unable to support this finding because the strict application of the requirements of section 4.2 would forward the purposes of this chapter and otherwise serve the public health, safety or welfare by prohibiting development on areas of critical slope.

b. Alternatives proposed by the developer or subdivider would satisfy the intent and purposes of section 4.2 to at least an equivalent degree;

Staff is unable to support this finding as alternative designs were not presented.

c. Due to the property's unusual size, topography, shape, location or other unusual conditions, excluding the proprietary interest of the developer or subdivider, prohibiting the disturbance of critical slopes would effectively prohibit or unreasonably restrict the use of the property or would result in significant degradation of the property or adjacent properties; or

Staff recognizes the site is unusual in topography and shape and is limited in size (0.76 acres). The applicant is limiting development to approximately 2/3s of the site. The critical slopes to be impacted extend through the middle portion of the site, making it difficult to

develop the site without impacting them. Also, staff recognize that these critical slope areas were likely man-made in creation and appear to be associated with the development of the railroad overpass. Therefore, staff's opinion is that prohibiting the disturbance of critical slopes would unreasonably restrict the use of the property.

d. Granting the modification or waiver would serve a public purpose of greater import than would be served by strict application of the regulations sought to be modified or waived.

Staff is unable to support this finding.

Based on the review above, there are no engineering concerns which should prohibit the disturbance of the critical slopes as shown and engineering staff recommends approval of the Critical Slopes waiver request.

RECOMMENDATION:

Based on the analysis provided herein, staff recommends approval of the applicant's request to disturb 5,282 square feet of critical slopes as requested with the following conditions:

1. The area of land disturbance on critical slopes must not exceed 5,282 square feet as described and shown in the request entitled "Ivy Proper Critical Slopes Waiver – Special Exception Request" prepared by Timmons Group and dated April 20, 2020.
2. A geotechnical report, recommendation, and design drawings for the retaining walls must be submitted and approved to the satisfaction of the County Engineer prior to approval of the VSMP application.