SANITARY SURVEY AND FUTURE WATER/SEWER SERVICE FEASIBILITY STUDY

FOR

CHARLES TOWN UTILITY BOARD
SUMMIT POINT MOTORSPORTS PARK

JUNE 2025

GD&F
GWIN DOBSON & FOREMAN ENGINEERS

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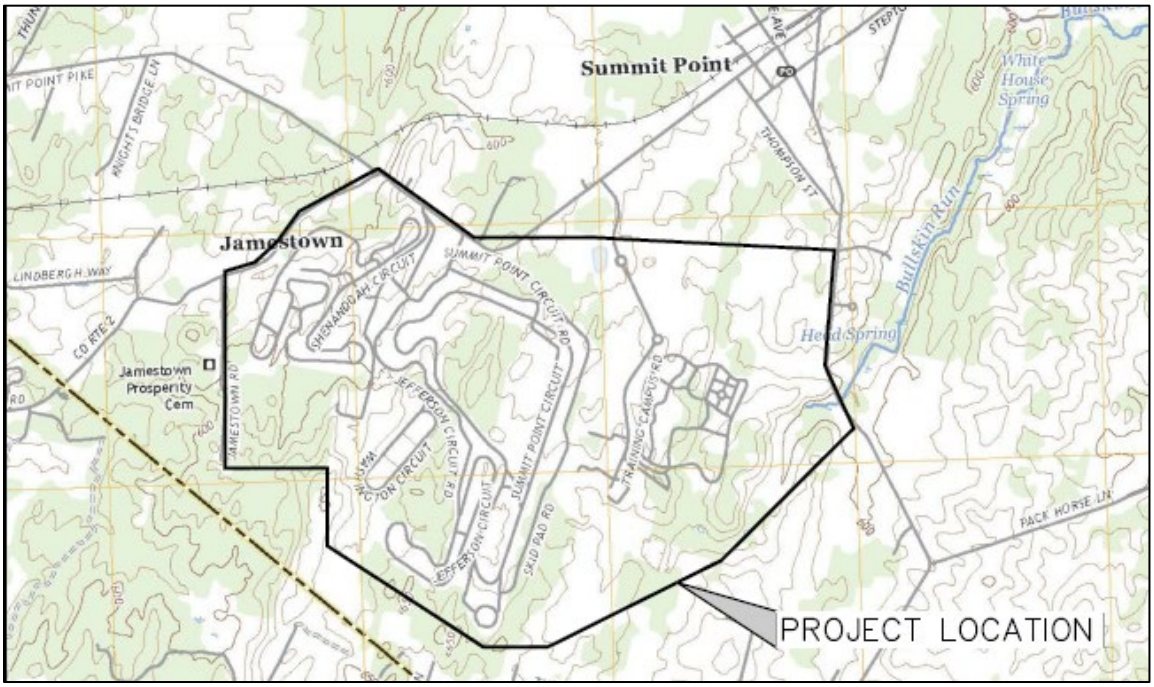
A. BACKGROUND

Gwin, Dobson & Foreman, Inc. (GD&F) has been retained by the Charles Town Utility Board (CTUB), in collaboration with Summit Point Motorsports Park (SPMP), to prepare this Sanitary Survey and evaluate future utility service for the area. Summit Point Motorsports Park and the Summit Point Training Facility (SPTF) operate jointly on the same campus and serve a dual-purpose mission - supporting both commercial motorsports and U.S. Government national security programs.

The primary purpose of this study is to establish the number, type, and current condition of on-lot disposal systems and to identify potential sources of contamination to existing and proposed drinking water systems throughout the campus. The findings will also support the feasibility assessment for developing new centralized water and wastewater treatment systems to serve current and future needs reliably.



This survey was initiated due to concerns regarding the reliability and sustainability of the existing individual well and septic systems supporting a diverse set of facilities across the property. These facilities include racetrack amenities, administrative buildings, and secure training environments. SPMP/SPTF management has emphasized the strategic importance of ensuring long-term dependable utility infrastructure - not only for public-facing motorsports operations but also for the many government contractor tenants who occupy the site to conduct training, research, testing, and national security mission support activities.

B. HISTORY AND DESCRIPTION OF SUMMIT POINT MOTOR SPORTS

The Summit Point facility originally opened in October 1969 as Summit Point Raceway and has since evolved into a nationally recognized campus integrating motorsports with critical U.S. Government training and testing functions. In 2018, the site was acquired by Xator Corporation, which maintained its motorsports legacy while expanding national security-focused operations.

In 2022, following Xator's acquisition by a U.S. Government organization, Summit Point Raceway Associates Inc. was divested and retained by Xator's two founding members as an independent small business. Today, the property operates under two synergistic divisions—Summit Point Motorsports Park (SPMP) and Summit Point Training Facility (SPTF) - from the same location.

The 785-acre campus supports a dual-purpose mission: delivering premier motorsports events and serving as a secure site for U.S. Government and contractor-led research, development, testing, evaluation (RDT&E), and mission readiness training. The facility averages 600 to 1,000 personnel on-site daily - including employees, customers, and government staff - making it a vital place of performance for national security and commercial operations alike.

In addition to its operational role, the site serves as a major economic hub for Jefferson County, generating local employment, tourism revenue, and contracting opportunities tied to motorsports, logistics, and federal programming.

Currently, all activity is supported by decentralized well and septic systems. Given the growing demands and strategic nature of the work conducted on-site, there is a critical need to transition to a centralized, modern utility infrastructure that ensures reliability, environmental protection, and support for continued economic and mission growth.

C. EXISTING WATER/SEWER SYSTEM CONFIGURATION & ASSESSMENT

1. Inventory of Existing Wells & Septic Systems

Based on information provided by SPMP management there are approximately 25 identified wells on the property. These wells vary significantly in terms of depth, reported yield, age and the specific facilities they serve. A summary of the existing wells and the sanitary systems they serve is included in Appendix A. Reported well depths range from approximately 100 feet to over 1,400 feet and approximate yields vary from a few gallons per minute (gpm) to as high as 50 gpm for individual wells. The age of these wells also varies, with some in operation for over 30 years and others being more recent installations. Several wells are not used for drinking water and as such, receive no treatment.

Sanitary Systems appear to have been installed as the enterprise continued to expand throughout the years. The sizes of septic tanks are generally adequate for typical occupancies for the individual buildings; however, several systems appear to have been expanded after the septic system installation as the maximum tank size is 1,500 gallons. Based on the *EPA Onsite Wastewater Treatment Systems Manual*, tanks of this size are acceptable for approximately 500 gallons per day, translating to an occupancy of approximately thirty-five (35) persons. Peak occupancies in excess of this are listed in Appendix A; however, these peaks are based on events when temporary sanitary facilities are brought on-site.

Maps of both water and sewer facilities have been included in Appendix B.

2. Water Quality Assessment

A sampling program was developed to identify failing septic systems that threaten the existing water systems. The program consisted of a general inspection of each well source, running the system at approximate maximum (running sinks, toilets, etc.) for an extended period of time to simulate drawdown condition, injecting tracer dye into the drainage system, and sampling the water for Fecal Coliform, E. coli, Nitrate and Nitrite. The subsurface infiltration areas were then inspected for any signs of pooling or other failures of the system.

The results of this sampling program showed that of the twenty-one (21) sources sampled, only two (2) show bacterial contamination. Some sources contain noticeable levels of Nitrate/Nitrite, but all were below the drinking water standards. The analytical results are summarized in Table 1 and included in Appendix C.

Table 1: Water Source Analytical Sampling Summary

Location	Total Coliform, MPN/100 mL	E. Coli., MPN/100 mL	Nitrate, mg/L	Nitrite, mg/L
Classroom	<1	<1	0.47	<0.20
Concession	15	7.5	2.59	<0.20
Maintenance	<1	<1	4.8	<0.20
EMS	<1	<1	4.82	<0.20
Range K	<1	<1	4.86	<0.20
Range B	<1	<1	1.01	<0.20
Washington	<1	<1	1.23	<0.20
Jefferson	<1	<1	7.27	<0.20
Main Office	<1	<1	6.21	<0.20
SBR 565	4.2	<1	3.1	<0.20
Bldg 55	<1	<1	2.59	<0.20
Bldg 53	<1	<1	2.58	<0.20
Bldg 73	<1	<1	2.58	<0.20
Bldg 65	<1	<1	2.49	<0.20
Bldg 45	<1	<1	2.51	<0.20
Bldg 60	<1	<1	2.5	<0.20
Bldg 860	<1	<1	2.5	<0.20
Bldg 785	<1	<1	2.5	<0.20
Bldg 73	<1	<1	2.5	<0.20
Bldg 53	<1	<1	2.5	<0.20
SCCA	<1	<1	0.41	<0.20

Similarly, the above ground inspection of each infiltration area during the high-flow sampling period did not indicate any failures in septic systems (i.e. no dye or pooling was observed).

3. Hydrogeological Assessment

A Stage 1 Hydrogeologic Study was undertaken to better understand the underlying geological conditions and how they may factor into contamination sources and source water quality. The study notes karst terrain which has the potential to rapidly transmit contamination throughout aquifers. The study additionally identified the known wells and compiled additional information. The full report may be found in Appendix D.

D. SANITARY SURVEY AND ALTERNATIVES EVALUATION

1. Summary of Sanitary Survey

While the Sanitary Survey identified some sources of contamination, most existing facilities operate as intended and within reasonable design standards. The nature of the facility demands a very wide range of potential occupancy demands. In the past, SPMS has addressed these swings with temporary facilities during high-occupancy events (race days, etc.). Despite the additional facilities, management has observed major stresses on the existing systems. Additionally, the decentralized nature of the individual systems creates difficulties in general upkeep and maintenance to ensure water quality.

The results of the sampling and inspection program show the majority of on-lot systems in acceptable working order. However, two (2) of the drinking water sources sampled were positive for bacteria. Almost all of the sources sampled had measurable levels of Nitrate, but none above drinking water standards. A malfunctioning on-lot septic system is more likely the source of the bacteria. However, an outside contamination source is possible due to the Karst geology in the area. The geology is also likely the cause of the elevated Nitrate levels, which can pose safety risks. The surrounding area served by on-lot systems is likely to have similar water quality regardless of individual well construction.

2. Future Alternatives for Source Water Protection

To ensure high quality source water in the SPMS, three (3) main alternatives exist:

- Alternative 1: Improvement of Existing Individual Systems (Water & Sewer),
- Alternative 2: Connection to Existing Regional Systems
- Alternative 3: Development of Centralized Facilities

2.a. Alternative 1: Improvement of Existing Individual Systems

Further investigation and improvement of the existing individual systems is a technically feasible option. A more thorough inspection of each septic system could be performed through camera inspection, test pitting, air testing, etc. to identify malfunctioning systems. This approach would be extremely cost prohibitive and would leave complexity in operations, maintenance. It would also do little to address the current reliability concerns in a timely manner. Further, the SPMS Facility would be unable to continue to expand using the current system of individual systems. SPMS has received multiple inquires to develop in areas currently used by the septic drain fields. Assuming the space to continue to build

on-lot systems existed, development of them would continue to pose a threat to th source water quality of the surround areas. For these reasons, this Alternative was not considered further.

2.b. Alternative 2: Connection to Existing Regional Systems

Connection of the SPMP to existing regional public water and wastewater utility systems was considered as a potential alternative. However, based on current information, the area immediately surrounding SPMP does not presently have access to such regional public utilities. Based on the WVIJDC GIS System, the nearest water system connection would be to CTUB's existing system on Summit Point Road. The waterline would be approximately 5 miles long and be an estimated $6.6-million to construct. Even if connection of this line were feasible, the overall length would drastically increase water age and lead to degraded water quality over time. Connection to a sewerage system would be similar and require a substantial pumping system. The total estimated cost to connect to exiting utilities is $13-million.

2.c. Alternative 3: Development of Centralized Facilities

Development of centralized facilities would provide great benefits for the water and sewerage systems in this area. This approach would provide a reliable, high-quality water supply and an environmentally sound wastewater management solution, capable of meeting both current operational demands and future growth. Centralized systems would also provide the potential for future service expansion to the surrounding areas.

Based on the Stage 1 Hydrogeologic Study, the potential for developing high-yield wells on the property is likely, with some already existing. Wells #17 and #18 specifically hold promise to initially support the entire SPMS demands. These wells along with any additional wells developed based on proposed need would provide water to a treatment facility and storage tank located centrally to the Facility. If this alternative is pursued, further testing would inform the treatment requirements and subsequent capability. A water distribution system could be easily implemented throughout the existing system with minimal disruptions, as the existing systems could continue to operate until final connections are made to each building.

Similarly, a wastewater collection system could be relatively easily implemented. Conceptually, the site could be divided into two (2) main gravity systems with pump stations to convey all flow to a wastewater treatment facility discharging to Bullskin Run. GD&F has developed a conceptual design layout for the distribution and collection system, included in Appendix E.

A centralized system would not only be able to handle the existing demands of the SPMS Facility, but also be easily expanded to meet its future demands and those of the surrounding area. More than fifty (50) acres are currently undeveloped on the existing site. These areas are zoned for General Commercial, at an estimated usage of 2,000-gallons/acre day, there is the potential to require

an additional 100,000-gallons per day of water supply and an equal amount of generated waste. Without construction of an easily expandable system, any proposed development of reasonable scale would be unreasonably hindered from becoming reality.

Of the three (3) alternatives presented here, only Alternative 3 addresses all the current issues identified by SPMS and this Sanitary Survey. A blend of Alternative 1 and 3 could be further identified in the future in order to bridge the time to initiate a full-scale centralized system project.

E. CONCLUSIONS

The SPMS Facility consists of numerous on-lot systems spread over the area. These systems are in various states of use and condition which makes operation and maintenance difficult. Additionally, the increased demands on the systems have compounded other issues. Several alternatives exist to address the long-term needs of the facility and surrounding areas, but the most cost effective and reliable option is to begin the process to develop centralized facilities for both Water and Wastewater. A planning level cost estimate for these facilities is shown in Table 2 and an implementation schedule is shown in Table 3. As time progresses, these estimates should be revisited for accuracy and inclusion of additional requirements.

Table 2: Centralized Facility Construction Cost Estimates

Water Treatment Facility/Storage Tank	$2,500,000
Well Development/Rehab	$200,000
Wastewater Treatment Facility/Pump Stations	$1,750,000
Distribution/Collection System	$2,750,000
Site Work/Miscellaneous	$500,000
Potential Expansion	$2,000,000-$3,000,000
Total Budgetary Construction Cost	**$7,700,000-$10,700,000**

Table 3: Preliminary Implementation Schedule

Hydrogeological Investigations	1 Year
Design/Permitting	2 Years
Funding Acquisition/Legal	6 months - 1 Year
Bidding/Construction	3 Years

The majority of the implementation schedule will be dependent on where funding is obtained, who the end operator/customers are to be, and permitting requirements throughout. Of particular note is the preliminary location for a Wastewater Treatment Facility.

The final recommendation of this report is to further consider local sources of contamination to the existing drinking water system. As time goes on, the condition of the existing facilities will continue to degrade unless given significant attention at high costs compared to constructing centralized facilities to replace them. Continuation of the existing on-lot generation and disposal method holds the very real potential to impact regional water quality die to the karst topography. To address the long-term solution of water supply and treatment, planning efforts should be undertaken to begin implementation of centralized facilities.

APPENDIX A

EXISTING WELLS AND SANITARY SYSTEMS

Existing Water and Sanitary Systems Summary

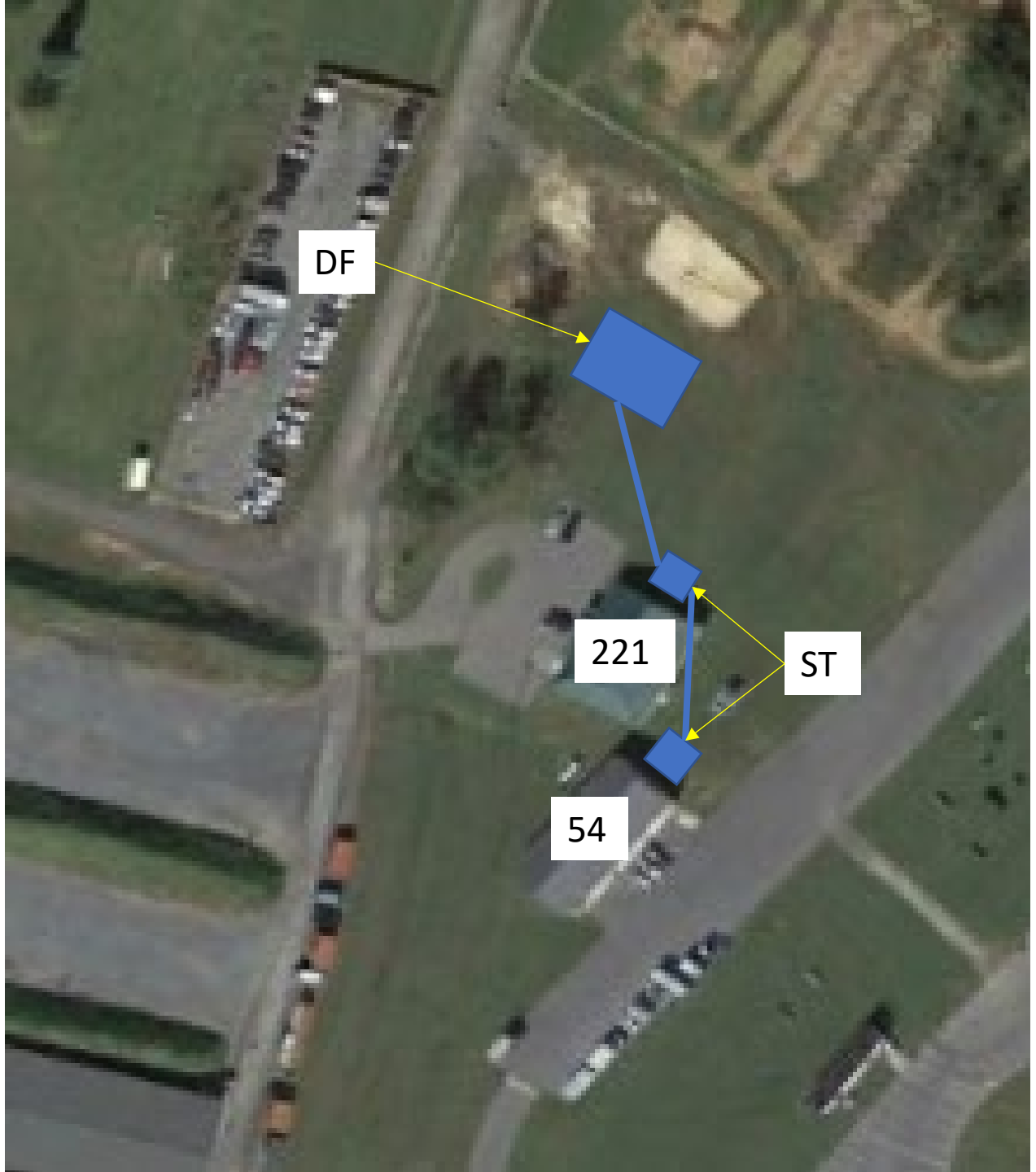
System	Building Served	Peak Occupancy	Typical Occupancy	Sanitary	Well						
				Septic Tank Size	Wells Serving	Storage	Well Depth	Years in Operation	Aprox. Flow	Water Quality	Pipe Diameter
1	Security Office	40	20	1000	1		260	20	20	U/V	6"
2	Admin HQ	100	30	1000	2,3	500	150	30	24	PWS Cl2	6"
3	Circuit Paddock SPC	3000	80	1500	6		290	20	20	Cl2	6"
4	Circuit Paddock 2 S.C	3000	80	1000	7,8	400	1200	1	6	Non Potable	6"
5	Facility Maint.	30	30	1500	22,23	400	1200	1	6	Non Potable	6"
6	Range K	30	20	1000	10		256	25	50	U/V	6"
7	Stone House	10	10	1000	11						
8	Range B	40	20	1500	12		396	23	15		6"
9	Washington Circuit Paddock	40	30	1000	12		396	23	15		6"
10	Fairfax Restroom	60	60	1000	2	500	150	30	24	PWS Cl2	6"
11	Gasoline Alley	70	50	1500	1		260	20	20	U/V	6"
12	SCCA Reg Bldg	40	30	1000	3	500	150	30	24	PWS Cl2	6"
13	Jefferson Co. Circuit Paddock	500	40	1000	14		200	30	25	U/V	6"
14	Summit Point Circuit Paddock	3000	30	1500	19,20			50	30	PWS Cl2	6"
15					5						
16	Shenandoah pump house				4				22		6"
17	Race Control & Obs Tower	20	5	1000	20				25		6"
18	Orchard Building		30	1000	22,23	11000		20			
19	Bldg 50	40	30	1500	22,23			20			
20	Bldg 93	40	40	1500	22,23			20			
21	Bldg 73	40	40	1500	22,23			20			
22	Bldg 53	40	40	1500	22,23			20			
23	Bldg 33	30	30	1500	22,23			20			
24	Bldg 55	40	40	1500	22,23			20			
25	Bldg 80	40	40	1500	22,23			20			
26	Bldg 90	40	40	1500	22,23			20			
27	Bldg 860	60	40	1500	22,23			20			
28	Bldg 65	40	40	1500	22,23			20			
29	Bldg 60	60	40	1500	22,23			20			
30	Bldg 45	60	40	1500	22,23			20			
31	Bldg 785	50	50	1500	22,23			20			

APPENDIX B

SUMMIT POINT MOTOR SPORTS MAPPING

Shenandoah Circuit
Range K
Administration Buildings

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump

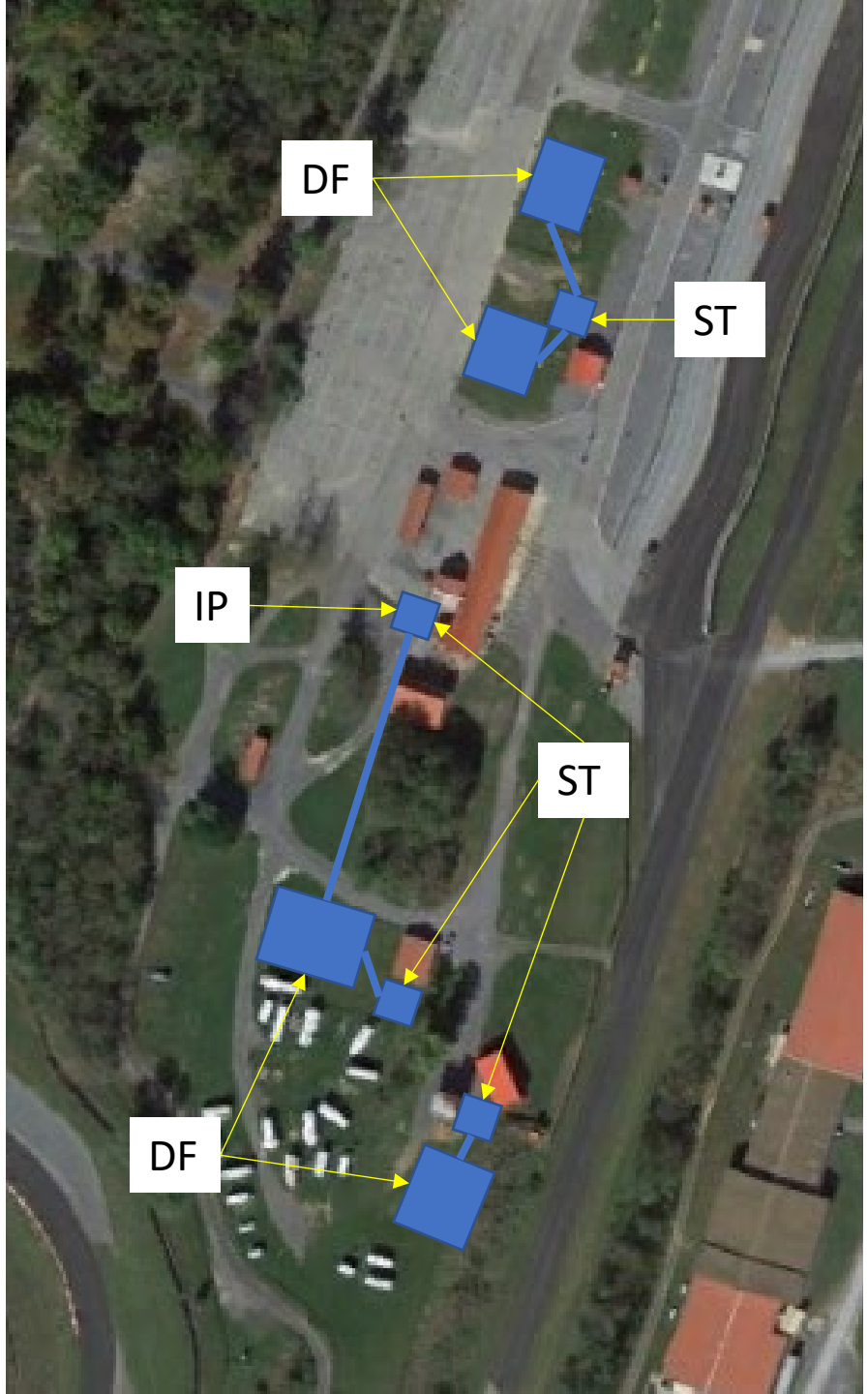


221 Kackley Range Road
54 Washington Circuit Road

- ST = Septic Tank
- DF = Drain Field

99 Summit Point Circuit Road

- ST = Septic Tank
- DF = Drain Field

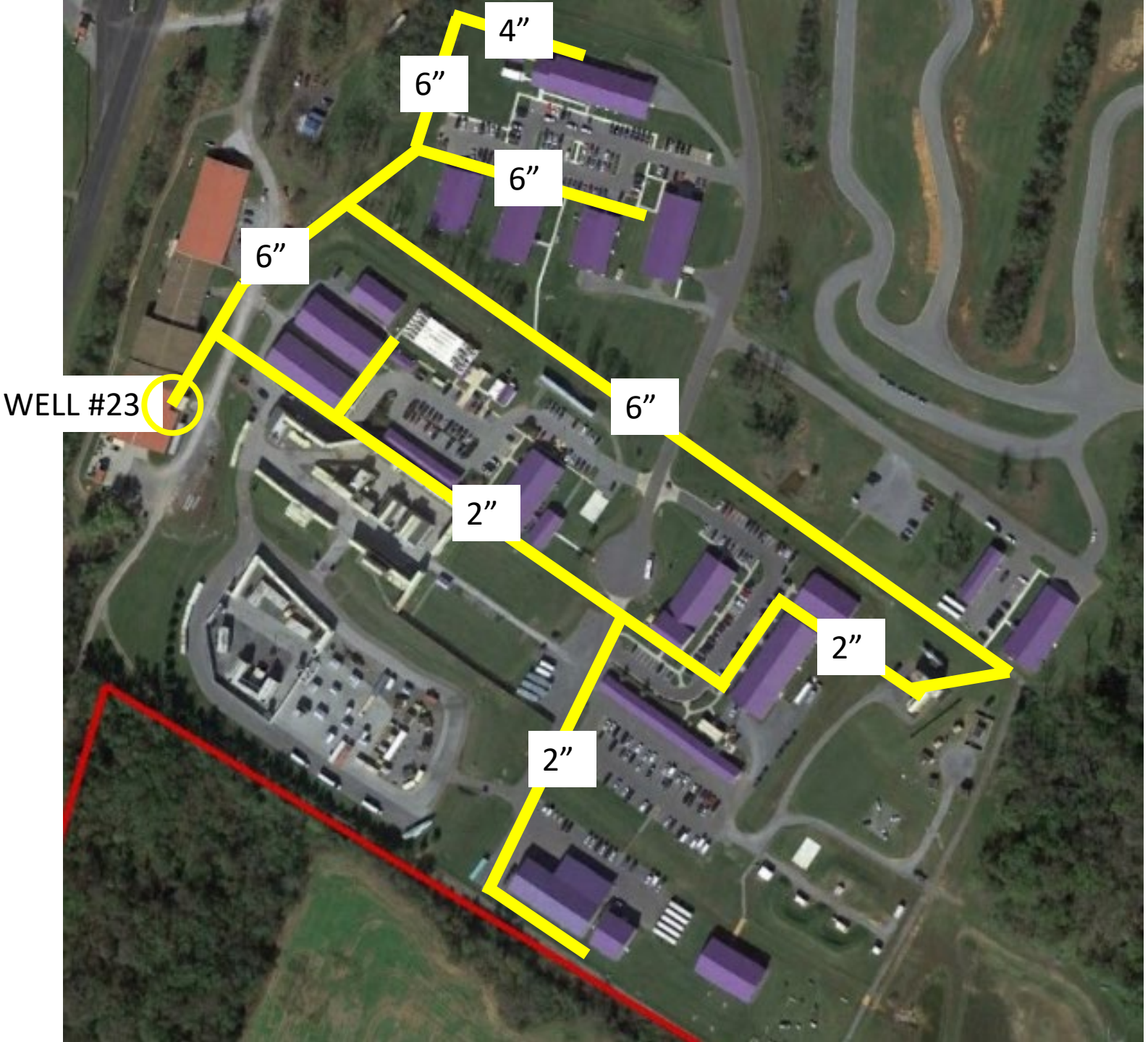


Summit Point Circuit

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump

Training Campus

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump



Training Campus

- 6” = Pipe Diameter
- 4” = Pipe Diameter
- 2” = Pipe Diameter

APPENDIX C

SAMPLING PROGRAM RESULTS

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

1 - Classroom

FZB0623-01 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:20**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	0.47	mg/L	0.20	10	2/19/25 19:09	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 19:09	NM		EPA 300.0

Sara E. Randall, President

Fredericktowne Labs, Inc. is a State Certified Water Quality Laboratory
Maryland Cert. No. 116 Virginia Cert. No. 00444
West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

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MYERSVILLE, MD 21773

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Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

2 - Concession

FZB0623-02 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:25**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	**15**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	**7.5**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is unsafe for human consumption. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.59	mg/L	0.20	10	2/19/25 23:35	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 23:35	NM		EPA 300.0

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24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

3 - Maintenance

FZB0623-03 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:35**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.80	mg/L	0.20	10	2/19/25 23:18	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 23:18	NM		EPA 300.0

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24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

4 - EMS

FZB0623-04 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:40**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.82	mg/L	0.20	10	2/19/25 22:28	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:28	NM		EPA 300.0

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24080

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Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

5 - Range K

FZB0623-05 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.86	mg/L	0.20	10	2/19/25 22:45	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:45	NM		EPA 300.0

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West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

6 - Range B

FZB0623-06 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	1.01	mg/L	0.20	10	2/19/25 21:55	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 21:55	NM		EPA 300.0

Sara E. Randall, President

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MYERSVILLE, MD 21773

FTL LABS
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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

7 - Washington

FZB0623-07 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:50**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	1.23	mg/L	0.20	10	2/19/25 22:12	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:12	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

8 - Jefferson

FZB0623-08 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:55**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	7.27	mg/L	0.20	10	2/19/25 17:29	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 17:29	NM		EPA 300.0

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FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

9 - Main Office

FZB0623-09 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:05**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	6.21	mg/L	0.20	10	2/19/25 17:46	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 17:46	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

10 - SBR 565

FZB0623-10 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:35**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	**4.2**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is unsafe for human consumption. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	3.10	mg/L	0.20	10	2/19/25 18:02	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:02	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

11 - 55

FZB0623-11 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:40**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.59	mg/L	0.20	10	2/19/25 18:19	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:19	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

12 - 53

FZB0623-12 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.58	mg/L	0.20	10	2/19/25 18:36	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:36	NM		EPA 300.0

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FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

13 - 73
FZB0623-13 (Drinking Water)(Grab)

Date Collected: 02/19/25 13:45

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.58	mg/L	0.20	10	2/19/25 18:52	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:52	NM		EPA 300.0

Notes and Definitions

Item	Definition
M2	Sample volume < 100 mL

Sara E. Randall
Sara E. Randall, President

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CHAIN OF CUSTODY

FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214
Email: dsantelli@gdfengineers.com
dpedersen@gdfengineers.com

FZB0623

FTL Acct. No.:

Project: Name & Address
24080

Collected By: (Please Print)
Dave Santelli

Affiliation: Gwin, Dobson + Foreman, Inc.

Analyses To Be Performed

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/WW	pH	Res. Cl	DO	Temp	Grab/Comp	Fecal Coliform	Nitrate / Nitrite					Preservation
1	Classroom	2/19/25	11:20							X	X					
2	Concession		11:25													
3	Maintenance		11:35													
4	EMS		11:40													
5	Range K		11:45													
6	Range B		12:45													
7	Washington		12:50													
8	Jefferson		12:55													
9	Main Office		13:05													
10	SBR 565		13:35													

Relinquished By: (Print): Dave Santelli (Signature): [signature] Date/Time 2/19/25 14:45

Received By: (Print): Cassie Jinks (Signature): Date/Time 2.19.25 1445

Relinquished By: (Print): (Signature): Date/Time

Received By: (Print): (Signature): Date/Time

Relinquished By: (Print): (Signature): Date/Time

Received By: (Print): (Signature): Date/Time

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:
Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☒

Condition of Sample(s) upon Receipt:
13.8 (T2)

CHAIN OF CUSTODY

FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214

Email: dsantelli@gdfengineers.com
dpedersen@gdfengineers.com

FZB0623

FTL Acct. No.:

Project: Name & Address 24080

Collected By: (Please Print)
Dave Santelli

Affiliation:
Gwin, Dobson & Foreman, Inc.

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/ WW	pH	Res. Cl	DO	Temp	Grab/ Comp	Analyses To Be Performed: Fecal coliform	Nitrate/Nitrite					Preservation
11	55	2/19/25	13:40							X	X					
12	53	↓	13:45													
13	73	↓	13:45													

Relinquished By:	Date/Time	Received By:	Date/Time
(Print): Dave Santelli	2/19/25 14:45	(Print): Cassie Fiery	2.19.25 1445
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:

Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☐

Condition of Sample(s) upon Receipt:

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

1 - 65
FZB0754-01 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:15**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.49	mg/L	0.20	10	2/26/25 14:10	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:10	NM		EPA 300.0

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FTL LABS
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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

2 - 45
FZB0754-02 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:20**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.51	mg/L	0.20	10	2/26/25 14:26	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:26	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

3 - 60

FZB0754-03 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:30**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 14:43	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:43	NM		EPA 300.0

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FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

4 - 860

FZB0754-04 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:35**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:00	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:00	NM		EPA 300.0

Sara E. Randall, President

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MYERSVILLE, MD 21773

FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

5 - 785
FZB0754-05 (Drinking Water)(Grab)

Date Collected: 02/26/25 10:40

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:16	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:16	NM		EPA 300.0

Sara E. Randall

Sara E. Randall, President

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

6 - 73

FZB0754-06 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:33	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:33	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
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3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

7 - 53
FZB0754-07 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:50**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:50	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:50	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

8 - SCCA

FZB0754-08 (Drinking Water)(Grab) **Date Collected: 02/26/25 11:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	0.41	mg/L	0.20	10	2/26/25 16:56	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 16:56	NM		EPA 300.0

Notes and Definitions

Item	Definition
18	Sample started using 18 hour media.

Sara E. Randall, President

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FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214
dsantelli@gdfengineers.com
Email: dpedersen@gdfengineers.com

FZB0754

FTL Acct. No.:

Project: Name & Address
24080

Collected By: (Please Print)
Dave Santelli

Affiliation:
Gwin, Dobson + Foreman, Inc.

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/ WW	pH	Res. Cl	DO	Temp	Grab/ Comp	Analyses To Be Performed: Fecal Coliform	Nitrate/Nitrite					Preservation
	65	2/26/25	10:15							X	X					
	45	↓	10:20							↓	↓					
	60		10:30													
	860		10:35													
	785		10:40													
	73		10:45													
	53		10:50													
	[redacted]		—													
	SCCA		11:45													
		↓								↓	↓					

Relinquished By:	Date/Time 2/26/25 1336	Received By: Cassie Jones	Date/Time 2.26.25 1336
(Print): Dave Santelli		(Print):	
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:

Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☐

Condition of Sample(s) upon Receipt:

9.2 T2

APPENDIX D

PHASE 1 HYDROGEOLOGIC STUDY

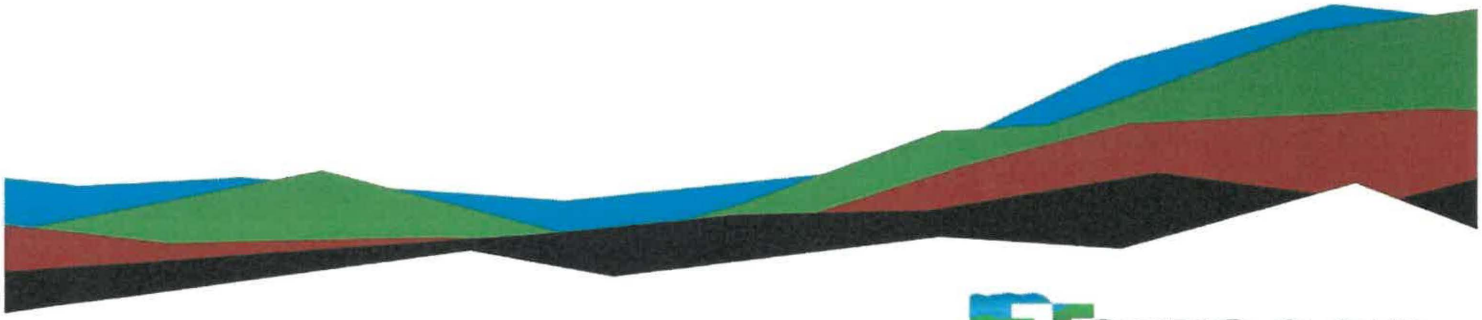
Summit Point Motor Sports Facility Water System

Stage 1 Hydrogeologic Study

April 16, 2025 | Terracon Project No. JD245325

Prepared for:

Gwin, Dobson and Foreman, Inc.
3121 Fairway Drive
Altoona, Pennsylvania 16602



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April 16, 2025

Gwin, Dobson and Foreman, Inc.
3121 Fairway Drive
Altoona, Pennsylvania 16602

Attn: David Santelli
P: 412-289-6875
E: dsantelli@gdfengineers.com

Re: Stage 1 Hydrogeologic Study
Summit Point Motor Sports Facility Water System
201 Motorsports Park Circle
Summit Point, West Virginia
Terracon Project No. JD245325

Dear Mr. Santelli:

We have completed the scope of Stage 1 Hydrogeologic Study for the above-referenced project in general accordance with Terracon Proposal No. PJD245325 dated March 10, 2025. This Stage 1 Hydrogeologic Study has been prepared for the proposed Summit Point Motor Sports Facility Water System in Summit Point, West Virginia.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Robert K. Denton Jr., CPG, LPSS, LRS
Senior Geologist

For
Rebecca-Smith Zakowicz, PG, PE
Senior Principal

Table of Contents

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

1.0 Project Information

This project assessed the feasibility of developing two water wells to supply the water system at the Summit Point Motorsports Facility and Training Campus (SPMF), located in Summit Point, Jefferson County, WV.

2.0 Scope of Services

The scope of services for the project were as follows:

- Terracon performed a desktop hydrogeological study in compliance with accepted and standard practices for developing two water wells with a combined capacity of 100 gallons per minute (gpm) yield,
- Terracon compiled this summary report which combines the results of the desktop hydrogeological study.

2.1 Methods and Procedures

Desktop Hydrogeologic Study

A desktop hydrogeological study was performed for possible well sites within the boundaries of the SPMF. The data review included the following:

1. United States Geological Survey (USGS) and Jefferson County geologic and topographic information, including fracture trace analysis and well testing data available from the USGS,
2. Property plats and aerial photographs,
3. Existing Jefferson County Health Department well data or descriptive statistical summary of the same (e.g., minimum, maximum, and mean of well data, etc.) if available,
4. Geologic maps and data reports (well logs, water quality analysis, geologic information including karst features, bedrock outcrops, etc.).

The results of the desktop hydrogeologic study were incorporated into the final report.

Summary Report

This summary report contains the results of the desktop hydrogeological study. The report includes potential locations of proposed wells and the hydrogeological rationale for their placement. It also includes the possibility of repurposing existing wells that

were tested by the USGS and may have transmissivity and specific capacity levels which could satisfy the client's requirements. Proposed locations and any pertinent mapping data for existing or new test wells have also been transmitted to the client as a GIS dataset.

3.0 Geology and Terrain

3.1 Physiography

The proposed well location sites occur primarily within the Valley and Ridge Physiographic Province of West Virginia.

The Valley and Ridge consists of alternating ridges and valleys which form from the differential weathering of sedimentary rock from the Paleozoic Geologic Era. The Valley and Ridge Province is bordered on the east by the Blue Ridge Physiographic Province and on the west by the Appalachian Plateau Physiographic Province.

There are many bedrock types present in the Valley and Ridge, but in general, less resistant limestone, dolostone, and shale bedrock underlie the valleys while the more resistant sandstone and conglomerate bedrock underlie the ridges. The Valley and Ridge can be naturally divided into two sub-provinces: an eastern Great Valley and western Valley and Ridge. The project site falls within the eastern portion of the province (i.e., the Great Valley subprovince). This area is underlain predominantly by carbonate rock units (limestone and dolomite), and clastic rocks (sandstone, siltstone, and shale) dating to the Cambrian, Ordovician, and Silurian Geologic Periods. The western Valley and Ridge and Ridge subprovince consists of alternating linear mountain ridges that are supported by sandstone and conglomerate bedrock, separated by valleys underlain by limestone, dolostone, or shale bedrock. These units are generally younger than the bedrock units in the Great Valley, and date primarily to the Ordovician through Mississippian Geologic Periods.

3.2 Topography

Referencing the USGS 7.5-minute topographic quadrangle (Berryville, VA, 1968, photo-revised 1979, the entire site is located in the northwestern corner of the quadrangle. The site is a gently rolling upland, with elevations ranging from EL590 to EL650. There are no perennial surface water bodies located within the site boundaries. The closest significant perennial water body is Bullskin Run, the headspring of which is located 0.7 miles east of the facility. Opequon Creek is located 3.24 miles to the west of the site, forming the boundary between Jefferson County and Berkeley County. There are a few excavated farm ponds in the area surrounding the site, but none within the site itself.

Based on the historic topographic maps, much of the southern part of what is now the SPMF was originally occupied by an orchard which encompassed approximately 142 acres in Jefferson County, WV, and extended into Clarke County, VA to the south. The WV portion encompassed 70.4 acres, roughly half of the original orchard. The orchard was still present in 1990 based on historic aerial photographs but was in the process of being removed by 2003 and was completely removed by 2005. Subsequent construction of the SPMF was completed between 2006 and 2009, with the southeastern portion of the facility occupying the northern section of the former orchard.

Areas of forested land have been preserved within the northeastern, southeastern, and western parts of the site, essentially unchanged from prior to the current development of the SPMF.

(A map showing the general topography and location of the SPMF is included as Exhibit 1, Appendix A.)

3.3 Geological Setting

The geology of the Berryville, VA, WV Quadrangle has been revised several times since it was first mapped. In general, the properties comprising the survey area have undergone a significant amount of faulting and deformation has occurred. The bedrock underlying the survey area is mapped as having been folded, faulted, and overturned yet the strike of the bedrock trends generally northeast, similar to the regional trend. It is of note that all of the geological units in the study area date to the Ordovician Geologic Period of the Paleozoic Era, and range in age from approximately 485.4 to 443.8 million years before the present. (A map showing the geological units and structural features underlying the survey area is included as Exhibit 2, Appendix A).

The following bedrock units are mapped (Edmundson and Nunan, 1973; Dean, et al, 1990) within the survey area.

Conococheague Formation (OCc) – The Conococheague Formation is the oldest of the geological units underlying the site. Overall, it is present as a light to medium gray algal limestone with interbedded aphanitic (extremely fine-grained) and dolomite. Siliceous and dolomitic laminations and sandy beds are common throughout the unit. The lower part contains oolites, intraformational conglomerates and algal structures (stromatolites). The unit is approximately 2,400 feet thick in the site area. The lower part of the Conococheague is dated to the Late Cambrian Geological Period, and the upper part dated to the Early Ordovician Period on the basis of fossil content. This unit only underlies a small area of the easternmost part of the Training Campus area of the site.

Stonehenge Limestone (Os) – The Stonehenge Limestone of the Beekmantown Group directly overlies the Conococheague Formation and is dated to the Early Ordovician Geologic Period. Its lower part is mainly light gray algal limestone with algal structures

(stromatolites). The upper part is algal limestone with abundant trilobite fossil fragments. The unit is silty and argillaceous (clayey) in the upper part. The Stonehenge Limestone is approximately 625 feet thick in the project area. This unit underlies the eastern part of the Training Campus and the central part of the Motor Sports Facility.

Pinesburg Station Dolomite and Rockdale Run Formation undivided (Opr) – This unit overlies the Stonehenge Formation and is also dated to the Early to Middle Ordovician Geologic Period. It is comprised of approximately 2,200 feet of light gray, buff, and bluish dolostone and limestone, but the thickness ranges from 2,100 to 2,400 feet.

Structural Features – Significant structural features (faults and folds) have been mapped across the project area. Two thrust faults run from northeast to southwest across the site, and are shown (labeled "T") on the geological map included as Exhibit 2, Attachment A. The eastern fault marks the contact between the Conococheague Formation and the Stonehenge Formation at the area of the Training Campus track. The second fault is located near the center of the main SPMF and marks the contact between the Stonehenge Limestone and the Rockdale Run Formation to its west. These are both "reverse faults", where the hanging wall to the west has moved up relative to the footwall to the east. Both of these faults occurred during the Alleghenian Orogeny (mountain building event) between 325 and 260 million years ago. They are not considered active.

Significant folds have also been mapped across the project area. These include anticlines (upward folds) and synclines (downward folds), the majority of which have been overturned as a result of the aforementioned thrust faulting. The overturned folds, and their possible association with high-yielding wells in Jefferson County (McCoy et al, 2005) will be discussed in greater detail later in this report. A map of folds, faults, and fractures are included as Exhibit 3.

3.4 Hydrogeology

The entire SPMF project site is mapped as underlain by soluble carbonate bedrock forming a regional karst terrain (i.e. a landscape characterized by the presence of sinkholes, caves, sinking and losing streams, and a highly irregular "pinnacled" overburden/bedrock interface). The geological units vary in their karst feature development, however within the study area the greatest number of surface karst features (sinkholes) are found within the Pinesburg Station Dolomite and Rockdale Run Formation undivided due to it having the greatest areal coverage of all the geological units. The highest concentration of features lies west of the SPMF. Nevertheless, there is no direct correlation between the number or concentration of surface karst features and the extent or potential productivity of the karst aquifer within these units.

In general, the karst-forming units in the study area possess no primary porosity (i.e., void space within the grain structure), so all water is stored in primary fractures, solution-enlarged fractures, and conduits. The distribution of these water-bearing subsurface features is extremely heterogeneous and non-uniform, and varies by depth.

The karst aquifer is essentially divided into two units: a shallow "epikarst" aquifer, which contains air and sediment-filled fractures and conduits that can fill with water during times of high precipitation and can be nearly dry during droughty periods. The epikarst connects with a perennially water-filled deep "phreatic" aquifer below (Figure 1).

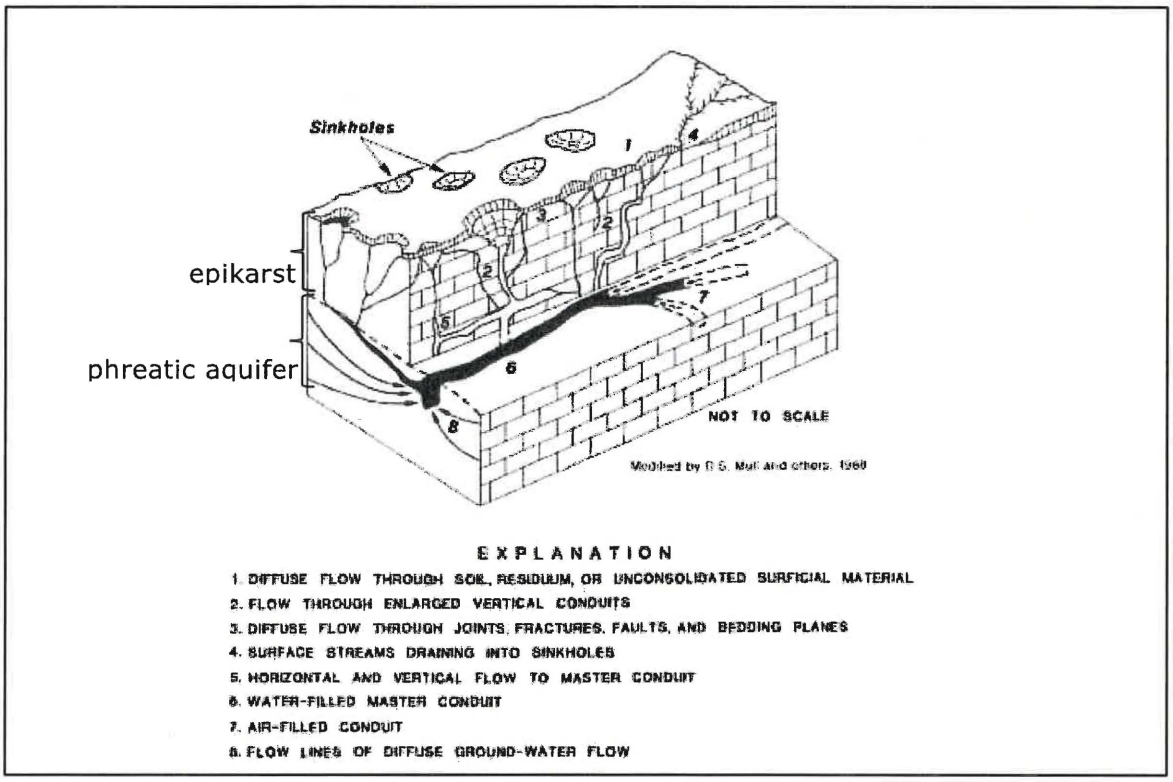


Figure 1. Components of ground-water flow through a cavernous carbonate aquifer (*from* Kozar, et al, 1991)

Unlike fractured bedrock systems in clastic rocks, where the fractures tend to decrease in size and extent with increasing depth, in karst systems, the fractures often remain consistent or can increase in size and relative storage with depth. A study by the United State Geological Survey (USGS) suggested that the phreatic aquifer in the Shenandoah Valley could reach depths of at least four kilometers (2.48 miles) below the surface (Figure 2), in particular where the bedding of the regional carbonate formations is steeply inclined along the western edge of the Blue Ridge Front (Yager, et al., 2008). It is of note that some of the highest yield wells in the Great Valley region are extremely deep (>1,000 feet below the surface), however, the cost of drilling wells to this depth is typically prohibitive for most jurisdictions.

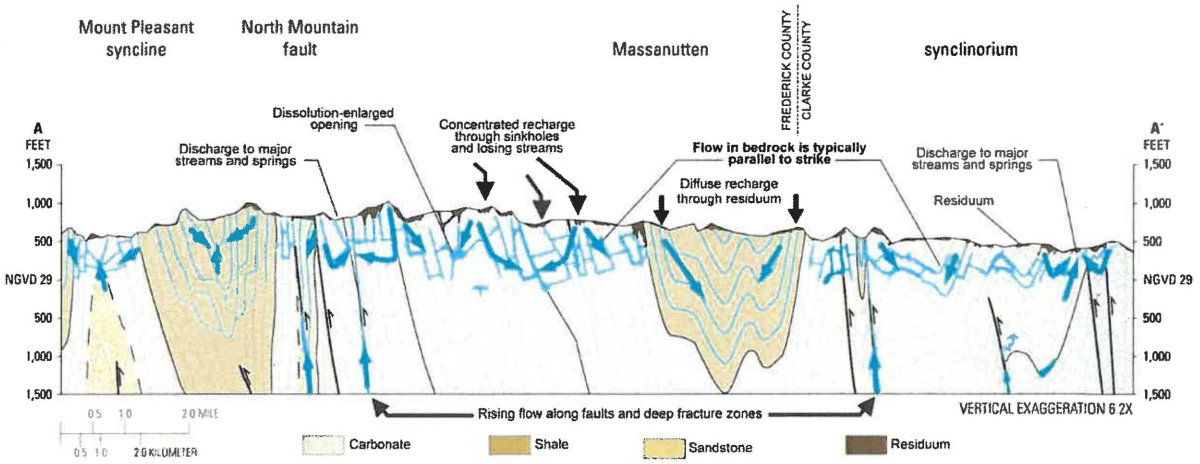


Figure 2. Model of deep circulation in the Shenandoah Valley (courtesy of Daniel Doctor, USGS)

4.0 Data Review and Desktop Analysis

4.1 Prior Well and Groundwater Studies

There have been a series of hydrological studies concerning the project area which included summaries of existing well data. The first of these was conducted by William Hobba for the West Virginia Geological Survey (WVGES) in 1978 and published in 1981. In his study, Hobba collected data on 218 wells and springs across Jefferson County, and using the data for static water level in the wells, was able to derive a groundwater contour map. His study also documented the locations of fracture traces from aerial photographs, lineaments from satellite data, geologic faults, cavernous zones, and areas of "losing" streams (i.e., streams that lose water along their channels into the subsurface). Within the current study area, Hobba's investigation suggested that the average groundwater elevation was approximately located at EL575 (an average of 25 feet below the surface in the central part of the site), with the highest groundwater elevation contour at EL600 in the eastern area of the site and dropping to EL550 in the western area.

A subsequent study conducted by the USGS (McCoy et al, 2005) documented fracture traces, structural geology, and transmissivity values for a series of wells and springs, in an attempt to show patterns of relationships between the structural geology and groundwater yield. The most interesting results of this study were the findings of a correlation between "cross-strike" fractures (i.e., fractures running perpendicular to the general southwest to northeast strike of the regional bedrock) and overturned folds, with

high-yield wells and springs. This study was followed in 2007 by a base flow[1] study by the USGS (Evaldi et al., 2007), which documented the measured base flow yields of watersheds based on stream and spring data across Jefferson County. This study suggested that the base-flow yield in the eastern part project area was approximately 160 gallons per day per acre (gpd/acre). Unfortunately, the base flow was not determined in the western part. It is of note that in the area northwest of the project site marked by the increase in number of sinkholes, the base flow was considered 0 gpd/acre.

4.2 Current Study

Fracture Trace Analysis - Based on the review of prior studies summarized in section 4.1, Terracon's geologists decided to locate potential high-yield well areas by analysis of the structural geology, specifically using prior fracture trace and fault analyses, and correlating the fracture trends with data on existing wells.

Methodology - Terracon completed a fracture trace within 2 miles of the SPMF. For this report, the fracture and lineament orientations are reported as strike, which is an azimuthal measurement (0° – 360°) where 0° is north (e.g., 45° = Northeast and 315° = Northwest). The fracture trace utilized existing geologic and geographic data sets, including:

- The USGS Fracture Trace Study for Jefferson County, WV (McCoy, et al., 2005);
- Two-foot and 4-foot contour interval maps derived from county level digital terrain models (DTMs), and 1- and 3-meter contour maps derived from state level digital elevation models (DEMs);
- Aerial photographs (both recent and historical);
- USGS Topographic 7.5-minute topographic quadrangles;
- Sinkhole and depression locations available from the USDA-NRCS soil survey of Jefferson County, and prior studies (and)
- LIDAR data.

Results – The analysis of identified fractures within 2 miles of the SPMF resulted in the identification of two major lineament families trending in the north-northeast (NNE), and west-southwest (WSW) directions. The longest lineaments follow the NNE direction

[1]Base Flow is typically defined as the portion of the streamflow that is sustained between precipitation events, fed to streams by delayed pathways.

which is parallel with the regional geologic strike and the second most common fracture were the WSW "cross fractures".

A map showing the current fracture trace analysis, fault locations, and rose diagram is included as Exhibit 3, Appendix A. The fractures were parsed into "major" and "minor" based on the topographic prominence of the lineament and whether it crosscut major geologic structures and contacts.

Analysis of Onsite Well Data – There are currently 25 wells located within the SPMF, which serve both the motorsports area and the training facility. Data on the wells was provided by John Wells, Director of Maintenance for the SPMF. Approximate well locations were sent as image files, and then mapped using GIS. The data provided by Mr. Wells included the well location, depth (feet), yield (gpm), status (in use/not in use), and comments on potability, decontamination method (e.g., UV, chlorination, etc.) and odor (if noted). These data are summarized in Table 1, Appendix B.

USGS Well Testing – The USGS undertook testing of wells across Jefferson County over a 6-month period starting in the Spring of 2004 (McCoy, et al, 2005). This testing included 5 of the wells located at the SPMF site. The USGS conducted short-term aquifer tests (30 minutes) at relatively low flow (2 to 15 gpm) at each site to determine specific capacity and transmissivity. At most sites, recovery data was recorded for 100 minutes following the pumping period. Data from the test wells were analyzed by the Theis (1935) curve matching method.

Our study attempted to correlate the USGS test wells with the locations of the existing onsite wells by comparing the USGS map locations with the location provided by Mr. Wells. Well depths (i.e., depth to bottom) were also used to correlate the tested wells, but in two cases, they did not compare well, with the USGS depths being significantly shallower than the data provided by Mr. Wells. It should be noted that Mr. Wells did inform us that much of the well data he provided us with was anecdotal and might not be accurate, especially for the older onsite wells. A comparison of the wells tested by the USGS and the correlative onsite wells is shown on Table 1, Appendix B. Locations of the onsite wells and the wells which were tested by USGS are shown on Exhibit 4, Appendix A.

5.0 Proposed Wells

Proposed well areas were identified for this study based on the following factors:

- Location within the SPMF boundaries,
- Presence of significant fractures and faults,
- Presence of the intersection of cross-strike fractures and strike parallel fractures,
- Transmissivity and Specific Capacity Date derived from the USGS study,

- Correlations of Jefferson County well data compiled by the USGS, including well depths, distance to nearest fracture, fold types, distance to thrust faults, and geological map units in which the wells were drilled.

The USGS study data suggested that the highest yielding wells in Jefferson County were all up to 300 feet in depth, with wells >300 feet having the lowest transmissivity values. The distance to the nearest fracture, thrust faults and geological units present within the study area was equivocal, with no significant difference noted. Interestingly, the structural geology of the well sites did seem to show a trend correlative with higher transmissivity, with the highest values in overturned anticlines, overturned synclines, and synclines. The lowest transmissivity was observed in wells located on or near anticlines.

Based on this data, two existing onsite wells (SPMF wells numbers 6 and 17) were measured by the USGS with extraordinarily high transmissivity values of 30,000 ft^2/day, and specific capacity values of 41 and 242 gpm/foot for wells 6 and 17, respectively. Wells 6 and 17 were identified as wells number 27 and 23 in the USGS study. These wells did not seem to correlate with any apparent structural geology features identified in our study (e.g., fractures, folds, or faults), but interestingly a line drawn from SPMF well 6 (USGS well 27) to SPMF well 17 (USGS well 23) was exactly parallel with the fracture trend WSW fractures identified in the fracture trace study. Several other SPMF wells (2,3,4, and 5) along this inferred cross-strike fracture had reported yield values ranging from 20 gpm to 40 gpm. This inferred well fracture can be found in Exhibit 4.

It is of note that two wells (SPMF well numbers 22 and 24) had reported yields of 50 gpm each. Both of these wells are located on or very near an overturned syncline mapped by the USGS, but they were not tested by the USGS for aquifer parameters. There also seemed to be no correlation between high yields of wells located along the thrust fault running from NNE to SSW near the center of the facility, which reflected the USGS observation that wells located on or near thrust faults did not have high yields.

6.0 Recommendations

In conformance with the project scope and to address various concerns of the client, Terracon would like to make the following recommendations.

Well Testing – The USGS data suggest that two of the existing site wells (SPMF 6 and 17) potentially have high transmissivity and are currently being underused. It would be extremely helpful to subject these wells to a formal aquifer parameter test involving a step-drawdown and long-term (24 to 48 hours) constant rate pumping test. Well Number 6 is currently in use as a source of potable water, but well 17 is classified as non-potable, so the latter may be the best well for testing. In addition, pump testing on the wells located on or near the overturned syncline (SPMF wells 22 and 24) would also be good candidates for analysis, as they were not tested by the USGS, and may have

high transmissivity values as well. These tests would be used to determine if any of the existing onsite wells can be used to obtain the desired 100 gpm combined capacity, without negatively impacting the other SPMF wells which are currently in use. It is important to understand that these tests would necessitate temporarily removing the existing submersible pumps in the wells designated for testing, and installing a high-capacity submersible pump, with a discharge pipe equipped with a gate valve to increase or decrease the flow rate, particularly for performing the step-drawdown test, which consists of pumping at three different, successively increasing rates to determine a safe rate for the 24 to 48 hours constant rate testing. Water levels in nearby wells can be used to determine if the increased pumping rate of the selected wells would impact nearby wells.

New Well Locations – Alternately, if the pump testing described above is not acceptable, or may be limited to only one or two wells, then we recommend a study using geophysics to identify possible locations for the drilling of new test wells. The geophysics method we recommend would be electrical resistivity tomography ERT, which is a method involving the measurement of the apparent electrical resistivity of subsurface materials. During an ERT survey, the electrical current is injected into the earth through a pair of current electrodes, and the potential difference is measured between a pair of potential electrodes. The current and potential electrodes are generally arranged in straight line arrays. Since the electrical resistivity of subsurface materials varies with their compositions (e.g., soil types, hard and soft bedrock, etc.) and water contents, the resistivity contour maps can be used to get a general background of the subsurface condition. ERT is also used to identify significant water-bearing fractures that have been identified in well studies using this method.

If the ERT survey identifies significant water-bearing fractures or zones, then test wells should be advanced in the identified locations. These test wells should be drilled using an air rotary drill rig. The boreholes should be equipped with a temporary casing to prevent caving, and a 6-inch borehole is recommended to allow satisfactory aquifer measurements. These aquifer measurements should include step drawdown and constant rate pumping tests to determine the well's specific capacity and transmissivity as described above. If any of the test wells are determined to be high yield, then they can be bored out to a 10-inch production well.

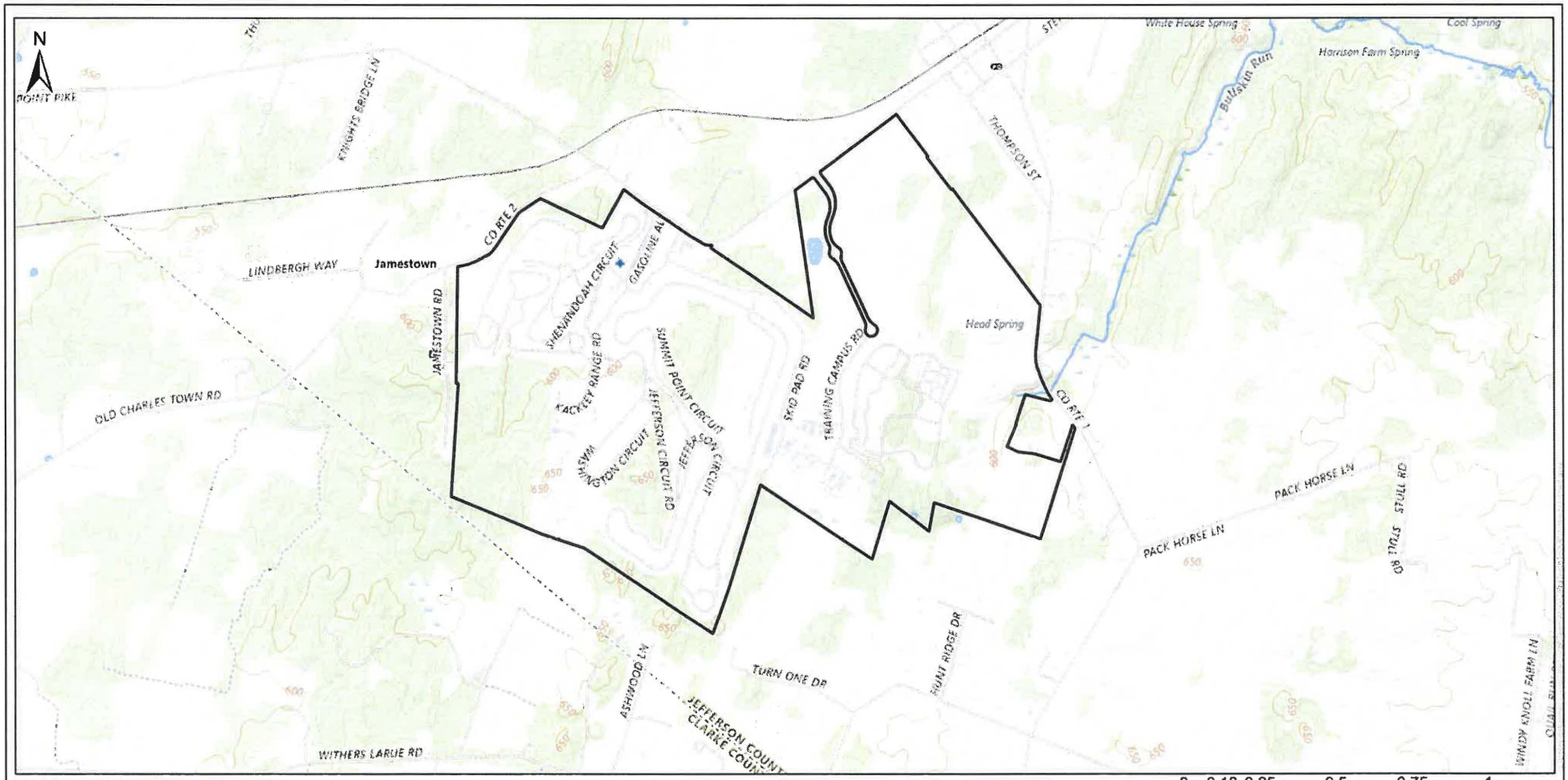
7.0 Limitations and Closure

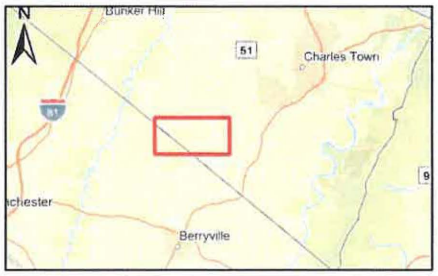
The information presented herein has been based on the review of both proprietary and publicly available geologic information. Accordingly, Terracon should be engaged during the site characterization, pump testing of existing wells, and potential test well drilling phases of this project in order to confirm subsurface conditions are as indicated herein, and to verify the intent of the recommendations in this report are implemented.

Terracon has conducted these services in accordance with generally accepted geologic practices. No warranties, either expressed or implied, are made as to the professional services and recommendations presented herein.

Appendix A

Maps





Legend

Study Area

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

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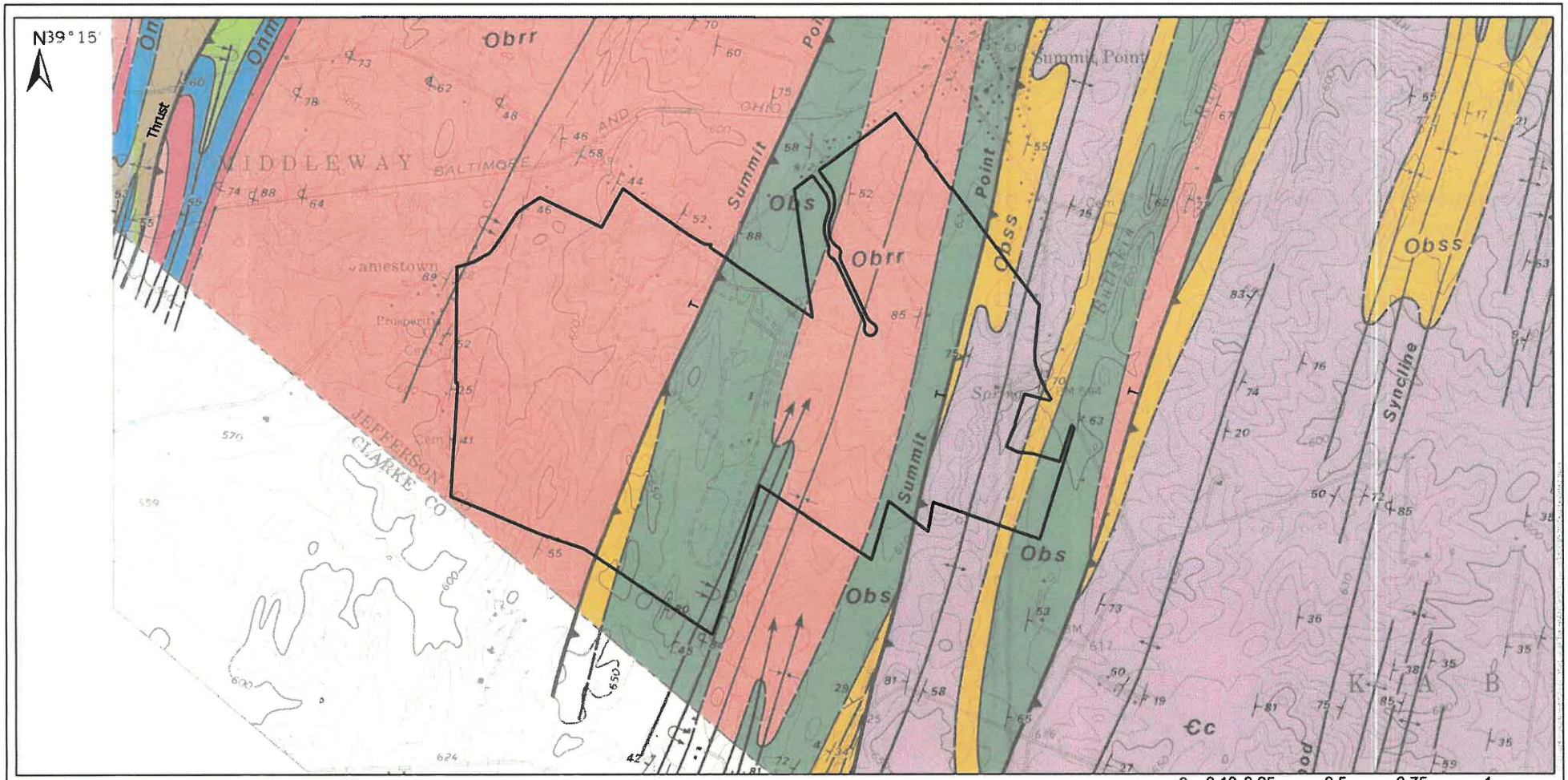
PH. (703) 726-8030
terracon.com

Site Location and Topography Map	Exhibit
Summit Point Motorsports Complex Water System Summit Point, Jefferson County, WV	1



Legend

- Study Area
- Chambersburg Limestone (Oc)
- Conococheague Formation (Cc)
- Elbrook Formation (Co)
- Martinsburg Formation (Om)
- New Market Limestone (Onm)
- Pinesburg Station Dolomite (Obps)
- Rockdale Run Formation (Obrr)
- Stongehenge Limestone (Obs)
- Stoufferstown Member (Obss)

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
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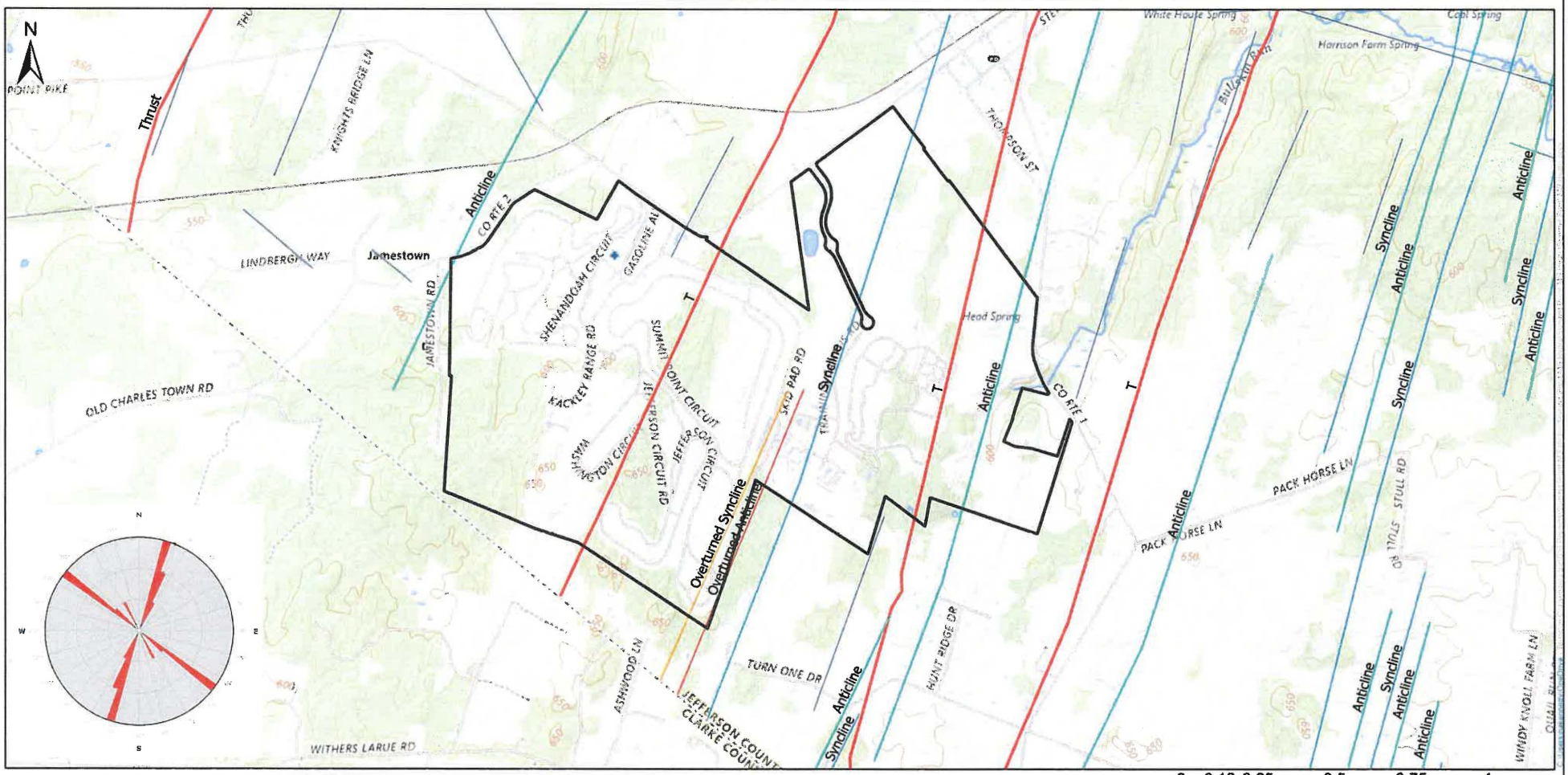
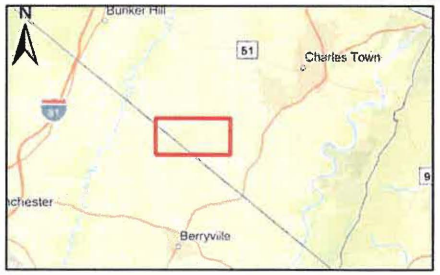
Geology Map

Summit Point Motorsports Complex Water System
Summit Point,
Jefferson County, WV

Exhibit

2





Legend

- Study Area
- Fracture Lineaments
- Anticline
- Overturned Anticline
- Overturned Syncline
- Syncline
- Faults

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.13 0.25 0.5 0.75 1 Miles

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

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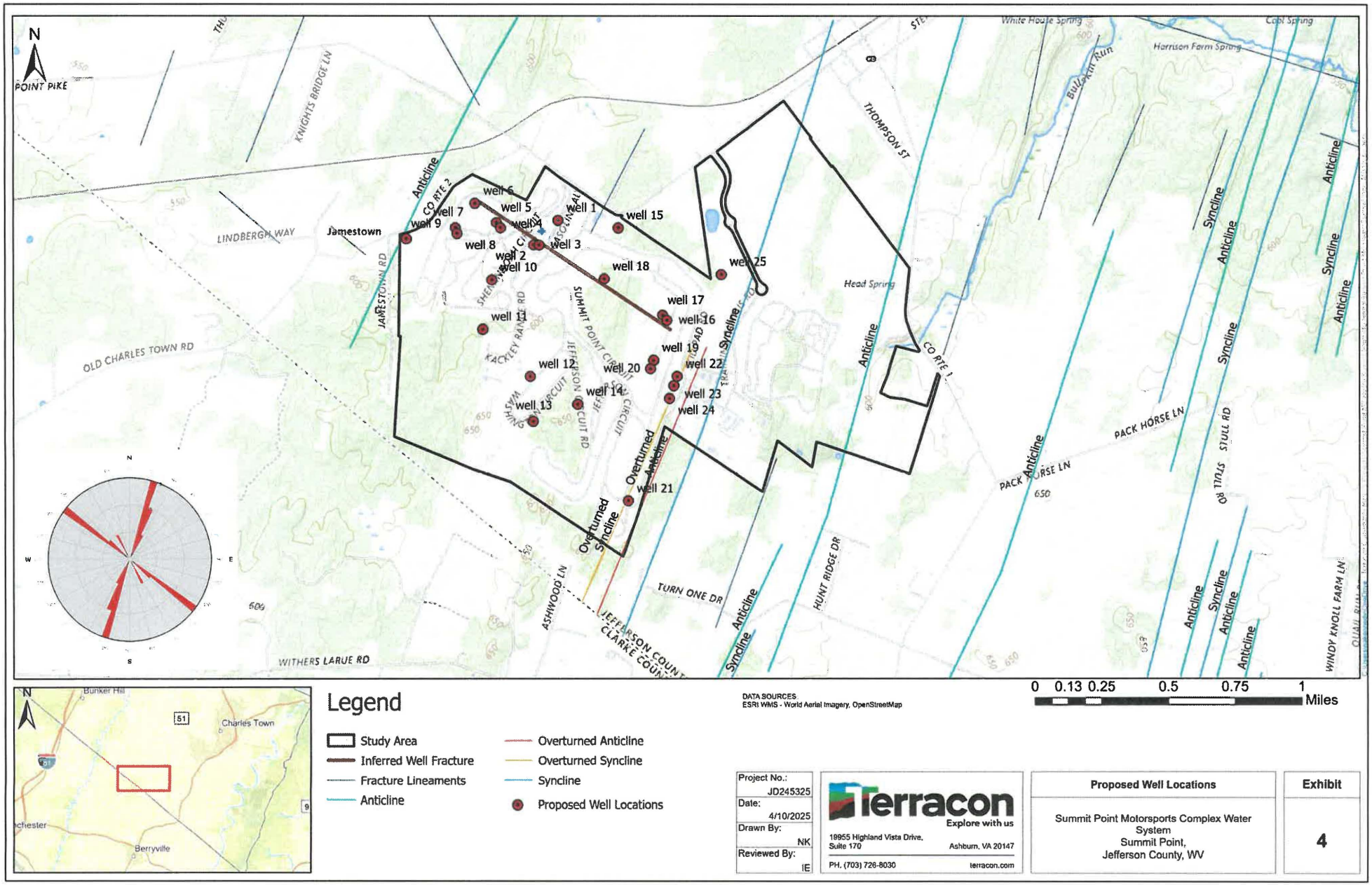
Fracture Trace Map

Summit Point Motorsports Complex Water System
Summit Point,
Jefferson County, WV

Exhibit

3



Legend

- Study Area
- Inferred Well Fracture
- Fracture Lineaments
- Anticline
- Overturned Anticline
- Overturned Syncline
- Syncline
- Proposed Well Locations

DATA SOURCES
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
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Proposed Well Locations	Exhibit
Summit Point Motorsports Complex Water System Summit Point, Jefferson County, WV	4

Appendix B

Well Data Table

Table 1. Well Data Summary

Well ID	Location	Depth*	Yield*	Status	Comments	USGS Well	DTB	SpCap	Trans	Duration	SWL	Discharge	Drawdown
		(ft)	(gpm)				(ft)	(gpm/ft)	(ft²/day)	(min)	(ft)	(gpm)	(ft)
1	security office	260	20	in use	UV sanitized								
2	Shenandoah circuit paddock	290	20	in use	chlorinated, light odor								
3	main office	150	24	in use	chlorinated								
4	Shenandoah circuit pump house	400	26	in use	non-potable								
5	Shenandoah circuit pump house	140	40	not in use									
6	Shenandoah circuit paddock	290	20	in use	chlorinated, light odor	27	150	41	30000	31	11.5	12	0
7	Shenandoah suites/classrooms	1400	6	in use	non-potable, light odor								
8	Shenandoah suites/classrooms	300	20	in use	non-potable								
9	Hardesty Road well	ND	ND	ND	no power to location								
10	range K	256	50	in use	odor	25	240	5.8	1000	26	8.8	4	1
11	stone house	ND	ND	not in use	none								
12	Washington circuit paddock	396	15	in use	UV sanitized, strong smell								
13	Jefferson circuit skid pad	800	8	in use	non-potable, skid pad use only								
14	Jefferson circuit paddock	499	20	in use	UV sanitized, good water quality	20	325	2.58	400	30	22.59	11	4
15	SCCA registration building	305	15	in use	UV sanitized, good water quality	26	305	0.35	10	30	14.16	8	23
16	summit point circuit paddock	ND	ND	not in use	well went dry								
17	summit point circuit paddock	385	6	in use	non-potable	23	385	242	30000	30	8.07	12	0
18	summit point circuit infield	ND	ND	not in use	old hand pump well								
19	summit point circuit	396	16	in use	chlorinated								
20	summit point circuit race control	100	30	in use	non-potable								
21	summit point circuit skid pad	800	50	in use	non-potable								
22	orchard building	300	50	in use	chlorinated								
23	orchard building	ND	ND	in use	chlorinated								
24	storage shed	100	50	not in use	groundwater under the influence								
25	Potomac skid pad	400	26	in use	non-potable								

Notes: *Depth and Yield data as reported by SPMF; correlative well data as measured and reported by the USGS: DTB=depth to bottom, SpCap=specific capacity, Trans=transmissivity, SWL=static water level

Appendix C

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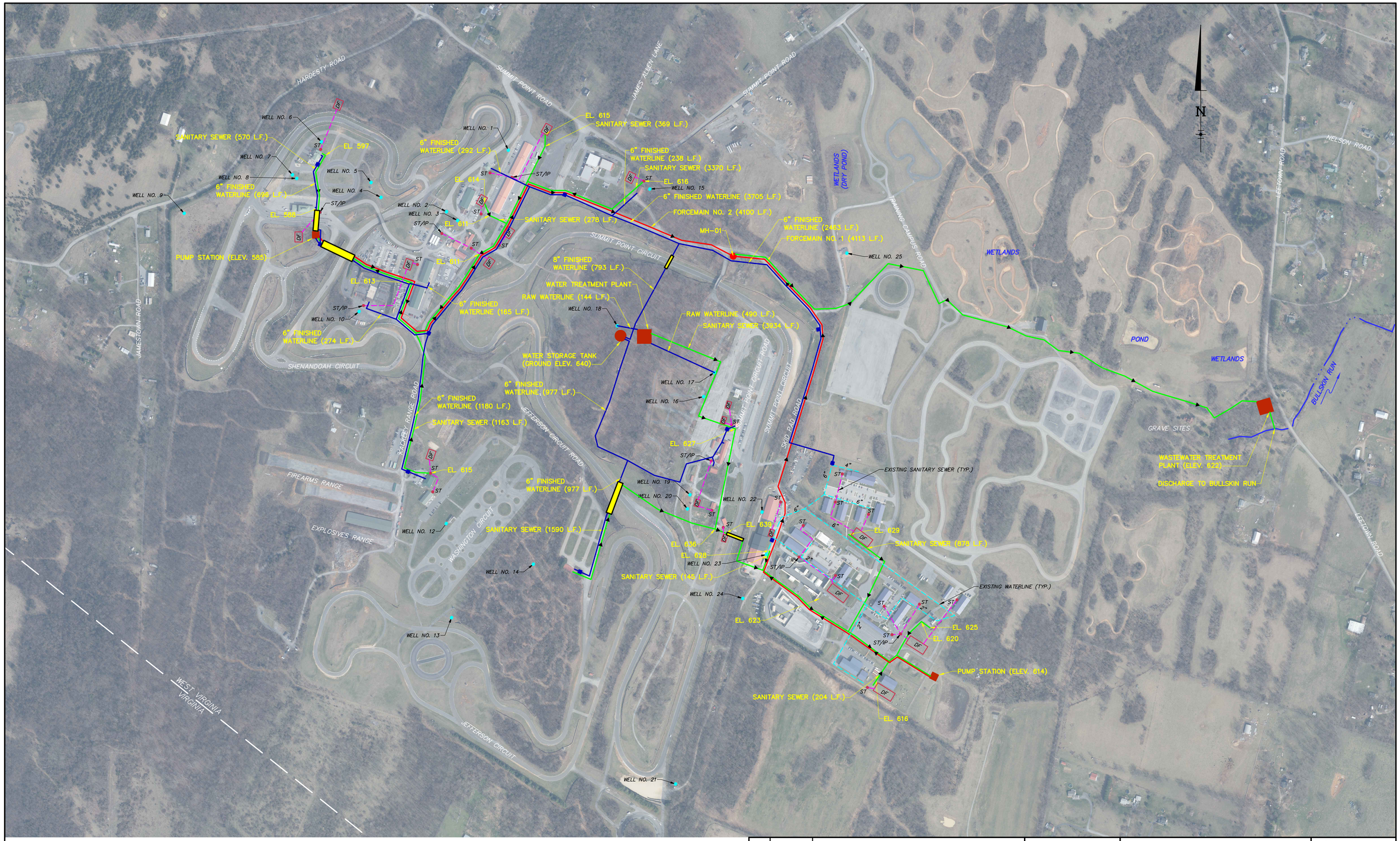
APPENDIX E

CONCEPTUAL SITE LAYOUT FOR PLANNING PURPOSES



LEGEND (EXISTING)

- STREAM
- SANITARY SEWER LINE
- WATERLINE
- ST — SEPTIC TANK
- IP — INFLUENT PUMP
- DF — DRAIN FIELD
- WELL

LEGEND (PROPOSED)

- SANITARY SEWER LINE
- FORCEMAIN
- WATERLINE
- HORIZONTAL BORING
- MANHOLE
- STRUCTURE/BUILDING
- FLOW DIRECTION
- FIRE HYDRANT

GRAPHIC SCALE

300 0 150 300 600 1200

1 inch = 300 ft.

NO.	DATE	DESCRIPTION
		REVISIONS

SEAL

FEASIBILITY STUDY

CHARLES TOWN UTILITY BOARD

SUMMIT POINT RACEWAY SANITARY SEWER AND WATERLINE FEASIBILITY STUDY

CHARLES TOWN
JEFFERSON COUNTY, WEST VIRGINIA

DATE:	JOB: 24080	SCALE: AS SHOWN
FILE:24080 – AERIAL	DRAWN BY: AJL	CHECKED BY:

GD&F
GWIN DOBSON & FOREMAN ENGINEERS
3121 Fairway Drive
Altoona, PA 16602
814.943.5214
gdfengineers.com

SHEET NO: 1

PLOT CREATED: 6/5/2025 8:30 AM

G:\24080\24080 – AERIAL

3121 Fairway Drive, Altoona, PA 16602
gdfengineers.com