APPENDIX E

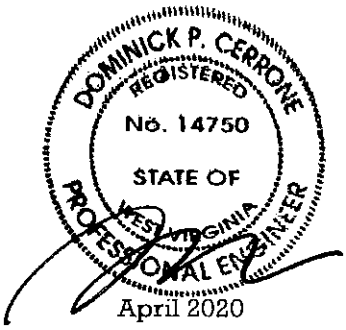
Preliminary Engineering Report

CENTRAL HAMPSHIRE PSD

PRELIMINARY ENGINEERING REPORT

SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION (PURGITSVILLE AREA WATER EXTENSION)

West Virginia Infrastructure and Jobs Development Council
Project # 2020W-1874



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Cerrone Associates, Inc.
Consulting Engineering
97-14th Street
Wheeling, WV 26003
www.cerrone1.com

CENTRAL HAMPSHIRE PSD

DIRECTORS:

Richard C. Wood, Chairman

Joe Pancione

Brian Judy

William Horn, Jr.

John Smith, Jr.

LEGAL COUNSEL:

John D. Athey
Attorney at Law

ACCOUNTANT:

J.C. Kunkle & Associates

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I. Introduction

In early 2019, the District was approached by residents and property owners in the Purgitsville area of southwestern Hampshire County for public water. This area is located in a remote section of the county along US Route 220 that can be defined by the valley of Mill Creek from the Hardy County line to the south, the Mineral County line to the west (with the inclusion of a small handful of customers inside Mineral County straddling the county line), Mill Creek Mountain to the east, up to the community of Rada along Route 220 to the north. Preliminary windshield surveys of the area at that time yielded over 200 potential customers, all of which reside in the Mill Creek magisterial district of Hampshire County with the exception of ten that reside in Mineral County.

Recent tests for iron, methane, lead and arsenic in private well water conducted in early 2019 show at least one location with lead and a concerning level of arsenic present, and another area with excessive iron. Another location contained explosive levels of methane. These tests quantified concerns residents in the area had had for years with the quality and safety of their private water sources. Additionally, area residents indicate that there is a high presence of cancer in the project area that has, in combination with these test results, generated a strong demand and urgency for public water in the area.

However, given the remoteness of the area and dependency on a separate water source, providing public water would incur heavy costs for the District, and it was determined at that time that projected revenues from the project area would be needed exclusively to offset operational costs.

Therefore, the District would need to secure as much grant contribution as possible to secure public water for this area.

In April of 2019, the District met with representatives from the project area, the Hardy County PSD, the Hampshire County Commission, the Region 8 Planning and Development Council, Cerrone Associates, Inc., and various representatives of local congressmen to explore the best source for water and funding for the project. At that same meeting, the District determined that in order to confirm that there would be enough committed customers to provide adequate revenue to offset operational costs, it should begin the process of customer sign ups, as well as an income survey to meet the requirements for eligibility to apply for a Small Cities Block Grant.

By late summer of 2019, Region 8 and the District completed an income survey of the project area, which confirmed that the project area is eligible to apply for a Small Cities Block Grant. By that same time, residents of the project area secured enough customer sign ups – over 120 -- to make an all grant funded project financially feasible for the District, based on estimated operational costs.

Accordingly, in the fall of 2019, the District agreed to advance on pursuing a project to provide public water in this area and procured Cerrone Associates, Inc. of Wheeling, West Virginia, to perform a preliminary study and designs for the project, with the intent of having Cerrone and Region 8 complete a preliminary study and preliminary application to the West Virginia Jobs and Development Council in time to be able to apply for a Small Cities Block Grant for its 2020 deadline.

This report details the existing conditions, needs, evaluation and selection of alternative solutions, and costs for a project to provide public water to the Purgitsville area in sourthwestern Hampshire County.

II. Project Planning

The project includes a public water extension in the Mill Creek magisterial district of southwestern Hampshire County, with a small number of customers located in the adjecent Welton magisterial district of Mineral County.

A. Location

Refer to Appendix A for diagrammatic drawing showing the location of the entire project area.

B. Environmental Resources Present

1. Natural Resource Impacts

The United States Department of the Interior Fish and Wildlife Service and the Department of Natural Resources have both been contacted to determine the location of potential impacts to wetlands or endangered species existing in the planning area. Refer to Appendix B for correspondence to date. A copy of remaining comments will be forwarded to the funding agency.

2. Archaeological and Historical Impacts

The WV Historical Preservation Office has been presented with information regarding the location and type of improvements proposed to determine potential impacts to archaeological and historical sites. Refer to Appendix B for copy of correspondence.

3. Flood Plain Impacts

Construction of the water system will occur partially within the Flood Zone AE, or the 100 year flood plain, as designated by the Flood Insurance Rate Maps. However, this

proposed work does not impact the flood plain in any permanent way since the areas of proposed work falling within the flood plain contain underground infrastructure only that does not alter topography or impose permanent massing below the flood plain. Refer to Appendix C for these flood maps.

4. Farmland Impacts

The U.S. Department of Agriculture's Soil Conservation Service has been provided information regarding the potential impact of the project on farmland conversions. A copy of the correspondence is enclosed in Appendix B. A copy of comments will be forwarded to the funding agencies in the future.

C. Population Trends

The population growth of Hampshire County has appeared to peak in the last ten years. After rapid growth in the years up to 2010, largely from retirement housing, a peak has evolved in the last ten years.

Below are population statistics from the US Census.

	2000	2010	2015	2018 (est.)
Hampshire County Population	20,203	23,969	23,314	23,347

The District's customer base corresponds to this largely flat trend. In 2011, there were 1,644 customers. In 2019, there were 1,651 customers, with no line extensions to new customers occurring in that time frame. Of those 1,651 customers, there were 1,466 residential customers and 185 commercial customers. According to the 2015 American Fact Finder Census data, there

were 10,194 occupied housing units in the county, resulting in 2.31 people per residence in the county. Applying this to the Central Hampshire PSD, it can be estimated that the District is currently providing water to a population of 3,386 people (1,466 x 2.31).

For the twenty year project planning period, it can therefore be assumed that the direct population the District served by the year 2040 would remain at approximately 3,600 to 3,700 people for its existing infrastructure, including this proposed project with over 120 new customers. If the District provides additional water service extensions in this time frame, this number would certainly increase.

D. Community Engagement

The community in the proposed project area, as the primary catalyst for the project, has been extremely engaged in this project. In addition to representatives first approaching the Distirct for public water in 2019, they have also been soley responsible for securing laboratory testing of the private water sources, reaching out to local and federal representatives, assisting Region 8 with the Small Cities Block Grant income survey and securing the over 120 user agreements prepared by the District.

This Preliminary Engineering Report will serve as a basis for additional information that the District will share in the future with these customers at any required future public meeting.

III. Existing Facilities

At present, the Central Hampshire PSD water distribution system consists of:

1) Water Mains

1-1/4" Copper	200 LF
2" PVC	71,188 LF
3" PVC	25,155 LF
4" PVC	57,853 LF
4" DIP	22,815 LF
6" PVC	143,695 LF
6" DIP	20,960 LF
6" Asbestos	48,250 LF
8" PVC	51,363 LF
8" Asbestos	13,120 LF

2) Water Meters 1,649

3) Fire Hydrants 139

4) Water Storage Tanks

Green Spring - Steel
157,000 gallons
(26' dia. X 42' H - O.F. 920)

Green Spring - Donaldson - Steel
100,000 gallons
(25' dia. x 24' H - O.F. 920)

Springfield 1 - Steel
50,000 gallons

(25' dia. x 15' H - O.F. 920)

Springfield 2 - Steel
45,000 gallons
(25' dia. x 15' H - O.F. 920)

Springfield Middle Ridge - Steel
7,500 gallons
(10' dia. x 12' H - O.F. 1247)

Robbie- Steel
125,000 gallons
(17' dia. x 34' H - O.F. 1164)

Sunrise Summit (Shanks)
100,000 gallons
(30' dia. x 35' H - O.F. 1565)

Augusta (old) - Steel
100,000 gallons
(30' dia. x 35' H - O.F. 1550)

Augusta (new) - Glass Lined Steel
139,000 gallons
(25' dia. x 38' H - O.F. 1550)

Jersey Mountain - Glass Lined Steel
132,000 gallons
(15' dia. x 39' H - O.F. 1612)

5) Booster Stations

Main St. Booster Station	300 GPM (270 GPM operable)
Grassy Lick Booster Station	300 GPM
Route 28 Booster Station	29 GPM

Refer to Appendix D for a map of the existing system.

A. History

The Central Hampshire PSD developed much of its core Route 50 East distribution system, otherwise referred to as the Central Hampshire system, in the 1970's to the 2000's, serving customers along US Route 50 from Romney to Route 29, and customer north along WV Route 28 from Romney to Poland Hollow Road. In 2010, the District took over the Green Spring PSD between Green Spring and south of Springfield, adding over 400 customers at the time.

To the south of Romney, there has been no efforts to establish public water infrastructure. US Route 220 between Romney and the Hardy County border serves as the spine of this part of the county, and areas due south of Romney toward Junction along this spine are sparsely populated, making potential extensions outside of Romney not viable. Conversely, the area of Purgitsville and Rada, further to the south, are so remote from any Hampshire County water source that public infrastructure was never pursued in the past.

Like all of Hampshire County, after various British owners, the land eventually belonged to Lord Thomas Fairfax, a tory during the Revolutionay War whose land was subsequently taken by the Commonwealth of Virginia after the war. As part of the movement to abolish aristocratic estates transferred through primogeniture, the Commonwealth sold the land to other people, and as early as 1788, parcels in Romney were being sold to new residents of the Virginia county. Prime land was quickly taken, with sirnames like Means, Malone, Hawk, High, Boyce, Bishop, Fleming, McKinley and Purgitt staking ownership in the Mill Creek Valley as some of the first white settlers in Hampshire County. By 1785, Henry Purgitt possessed over 400 acres of land in the

area. German settlers known as the Dunkards populated the area shortly after that. For a short time after the Civil War, the current project area that is part of the Mill Creek magisterial district was part of the new Mineral County formed out of Hampshire County, but was shortly returned to the mother county in 1871.

During the 19th and 20th century, the area remained sparsely populated, and low population density resulted in little demand for public water as the rest of the county was developing infrastructure throughout the latter half of the 20th century. More recently, water quality issues and health concerns have increased dramatically, resulting in the demand for public water by area residents.

B. Condition of Existing Conditions

The District's has made great efforts through two recent projects and extensive leak detection efforts to upgrade its aging infrastructure (WVIJDC 2017-1710 and WVIJDC 2019W-1792), the earliest of which dates from the mid 1970's. This was in part due to major areas of water loss in the last 10 years, as thin walled aging pipe broke continuously. For instance, the District logged a 33% water loss rate in 2018. Upon completion of the second project, it is expected that all components of the Central Hampshire's systems will be in good condition.

The following is a detailed break out of various components:

1) Distribution:

Central Hampshire System

ITEM	PRESENT CONDITION	SUITABLE FOR CONTINUED USE	COMPLIANT
8 inch line	good	yes	yes
6 inch line	good	yes	yes
4 inch line	good	yes	yes
2 inch line	good	yes	yes
1 1/4 inch line	good	yes	yes
Service lines	good	yes	yes

Route 28 North System

ITEM	PRESENT CONDITION	SUITABLE FOR CONTINUED USE	COMPLIANT
8 inch line	good	yes	yes
6 inch line	good	yes	yes
4 inch line	good	yes	yes
2 inch line	good	yes	yes
1 1/4 inch line	good	yes	yes
Service lines	good	yes	yes

Green Spring and Springfield System

ITEM	PRESENT CONDITION	SUITABLE FOR CONTINUED USE	COMPLIANT
8 inch line	good	yes	yes
6 inch line	good	yes	yes
4 inch line	good	yes	yes
2 inch line	good	yes	yes
3 inch line	good	yes	yes
1 1/4 inch line	good	yes	yes
Service lines	good	yes	yes

2) Booster Facilities

ITEM	PRESENT	SUITABLE FOR	COMPLIANT

	CONDITION	CONTINUED USE	
Route 50	good	yes	yes
Grassy Lick	good	yes	yes
Route 28	good	yes	yes

3) Water Storage

ITEM	PRESENT CONDITION	SUITABLE FOR CONTINUED USE	COMPLIANT
Green Spring 1	Steel, good	yes	yes
Green Spring- Donaldson	Steel, good	yes	yes
Springfield 1	Steel, good	yes	yes
Springfield 2	Steel, good	yes	yes
Springfield-Middle Ridge	Steel, good	yes	yes
Robbie	Steel, good	yes	yes
Sunrise Summit (Shanks)	Steel, good	yes	yes
Augusta, old	Steel, good	yes	yes
Augusta, new	Glass lined, good	yes	yes
Jersey Mountain	Glass lined, good	yes	yes

4) Accoutrements

ITEM	PRESENT CONDITION	SUITABLE FOR CONTINUED USE	COMPLIANT
Flow Control Valve	good	yes	yes
Altitude Valve	good	yes	yes

Based on the 2019 PSC report, the District consumed 718,791 kwh of power for pumping facilities that cost $63,871.

C. Financial Status of any Existing Facilities

Refer to Appendix E for the 2019 PSC Report with an annual Operations and Maintenance cost summary, status of existing debts and required reserve accounts, the rate tariff, and a tabulation of users by monthly usage categories for the most recent fiscal year.

D. Water, Energy and/or Waste Audits

There are no water, energy and/or waste audits that have been conducted for the District.

IV. Need for Project

A. Health, Sanitation and Security

There is an urgent need for public water in the proposed project area based on water quality and health concerns. Most residents currently obtain water from private wells that tap into what some in the area believe is a suspect water table with contaminants from past industry. In 2019, area residents performed tests at various private water source locations of the project area for lead, iron, arsenic, methane and radium. Refer to Appendix F for laboratory report summaries for these.

Above recommended secondary guideline levels of iron (0.30 mg/L) exist at two of four locations sampled. A concerning level of arsenic, which the EPA identifies as a carcinogen, exists at one location close to the allowable limit (0.01 mg/l) for drinking water. An explosive level of methane (28 mg/L and higher) exists at one location, with a level advisable for monitoring (10 to 28 mg/L) found at another location. Area residents have documented via video flaming water at at least one location water faucet. Although none of the four tests for radium 226 and 228 exceed the combined allowable maximum limit of 5 pCi/L, all four do contain levels some levels of both, also identified by the EPA as carcinogens.

More concerning, area residents indicate that there are high levels of cancer in the project area. In December of 2019, the Biological and Environmental Technology Coordinator from Eastern West Virginia Commuinity and Technical College also provided concern in regarding these test results and the high incidence of cancer in the areas. While there health risks of these

contaminants at these levels is not clearly defined by the EPA and medical community, the EPA in its 2018 Drinking Water Standards and Health Advisories Table contain non-enforceable maximum contaminant level goals for both of these carcinogens at zero and a 1/10,000 risk of cancer level at 0.002 mg/L. The presence of these and the concerns of the residents is enough to justify the immediate delivery of public water to the project area. Refer to Appendix F for correspondence from the community college dated December 12, 2019.

Additionally, higher than recommended levels of iron, a harmless but aesthetically unpleasing presence in water, results in poor water quality. Public water that contains levels below the secondary level guidelines will solve this problem.

B. Aging Infrastructure

There is no public infrastructure in this area.

C. Reasonable Growth

Although Hampshire County has experienced no recent population growth, public infrastructure such as safe and reliable public water can spur growth and retain existing population. This project at a minimum will have a sustaining effect given the health concerns of existing conditions.

V. Alternates Considered

Any consideration of providing public water should address alternatives for a water source as well as alternatives for a distribution system.

Regarding the latter, the only effective way to establish a distribution system is through underground pipes that transmit water from the source to the identified customers in the project area, along with a water storage tank to provide an independent hydraulic grade for the area independent of its water source. There are currently 127 signed customers – of which 125 are serviceable -- in the project area that are located along US Route 220 from the Hardy County line to Rada, Old Mountain Road, Stringtown Road, Mud Run Road, Hoffman Road, Phillip Vincent Road, Hickory Hills Road, Sugar Camp Acres, Rila Smith Road, Rada Road, Chickadee Road and Russeldale Road. Six inch and smaller diameter distribution pipes will be designed to extend water service to most all of these signed customers, with the exception of a small handful that fall outside the feasibility of running public lines to their locations. Additionally, a water storage tank with an overflow elevation of 1431.00, located at the base of Mill Creek Mountain on the east side of US Route 220 up from the intersection of Stringtown and Old Mountain Road, will be called for to provide and assure regular and consistent hydraulic grade. There is no alternative to this layout possible for consideration, and therefore, there will be no further discussion on alternatives. Refer to Appendix G for a schematic layout of the water distribution system for this area based on a preliminary field lay out, as well as a list of all signed customers and a map of signed customers.

Based on the current 2019 PSC report average residential consumption of 2,830 GPM and an allowance of a ten percent loss rate for a new water distribution system, the project area demand will be: 125 x 2,830 GPM x 1.1 loss factor / 30 days = 12,971 GPD.

Regarding the former, the water source, there are three distinct alternatives for this that will be analyzed. As previously discussed, this remote section of Hampshire County is located some distance from existing water infrastructure in Hampshire County. The closest existing water system is that of the City of Romney's, which the Central Hamsphire PSD taps from both the east end and north end to provide water to its Central Hampshire Route 50 system and Route 28 North system respectively. This will be the first water source alternative explored. The project area is contiguous to Hardy County, and the Hardy County PSD maintains a public water distribution system with fire protection up to the county line, immediately south of the project area. It is capable of providing water to meet the demand for drinking water and select fire protection to this project area and will be the second water source alternative explored. Lastly, given the project area size and number of customers, an independent water source will be the the final and third water source alternative explored.

A. Water from the City of Romney

1. Description

a. General

This alternative involves tying into the City of Romney water system immediately outside of its water treatment plant located on the extreme south end of the city along US Route 50 at the junction with South Branch River Road, and running a transmission line along US Route 50 through Romney Spring, Mechanicsburg and Junction, then south along US Route 220 to Rada. This includes 10.1 miles of line, which passes 77 residences that are not signed customers, as well as a 50 GPM booster station at Junction. Refer to Appendix H for a schematic layout of this water source alternative.

b. Source Description

The City of Romney Water Treatment plant is an approximate 1,000 GPM, 2MGD filtration plant that sources water with a 24 inch stainless steel intake from the South Branch of the Potomac River shortly downstream of the confluence with Mill Creek. Average daily production is approximately 500,000 GPD. It consists of presedimentation, a mixing tank with polymer coagulant feed, two 141 SF filters, and chlorine disinfection in a clearwell. There is also fluoride treatment. According to the City's 2019 PSC report, it operates 3,200 hours per year, or 8.8 hours per day on average. Maximum daily operations are in the 12 hour range. The additional demand request from the project, 12,500 GPD, would increase daily operating times an average of 12.5 minutes per day, a negligible amount of time.

c. System Hydraulics

The City operates under one hydraulic grade of approximately 910.00 feet above sea level. The hydraulic grade of the project area will be met with a storage tank at 1431.00 feet above sea level in order to provide adequate pressure to the highest of customers along Russeldale Road. Therefore, a 50 GPM booster station in Junction will be required at approximate elevation of 775 feet above sea level, with the use of 300 psi capable pipe on the discharge side of the station until shortly north of Rada.

d. Fire Protection

In addition to providing drinking water, this alternative is capable of providing fire protection along the main line along US Route 50 and US Route 220 in the lower elevations of the creek valley.

e. Revenue and Operation and Maintenance Considerations

The District currently operates under a bulk water purchase contract with the City at a bulk rate of $4.95/1000 gallons of water. It will be assumed that this bulk rate will be used when assessing the viability of this alternative. Additionally, in evaluation of this alternative, two alternatives will be analyzed regarding additional customers along the transmission line since the level of interest and need for public water in this section is unknown: one with no additional signed customers, and one with 50 percent of the unsigned residents along this trasmission line, or 39 customers, becoming signed customers prior to the closing of funding on the proposed project.

2. Design Criteria

All designs should be based on the West Virginia Bureau for Public Health and West Virginia Public Service Commission requirements for minimum and residual fire flow pressures.

3. Map

Refer to Appendix H for a schematic layout of this alternative.

4. Environmental Impacts

Wetlands. Based on the National Wetlands Inventory maps from the US Fish and Wildlife Service, there is a single 2.81 acre freshwater forested/shrub wetland along the project path of the transmission line due north of Rada. All other areas of proposed transmission line are not impacting wetlands. This is classified as type PFO1A, and based on its location, it appears to impede on the east side of US Route 220, up to the road. At this location, the transmission line will need to be located on the west, hill side of the road to avoid the wetlands impact. Refer to Appendix H for wetlands maps showing this.

Soils. Based on USDA NRCS soil maps, this alternative traverses soil that generally consists of an abundance of well drained, sandy and silty loam that have low clay content. Although these three areas afford reasonable excavation that is not prone to slippage, care should be taken both during accessing the site and performing the work in this area. It will be up to the Contractor to familiarize himself with any subsurface rock that might exist. Additionally, any directional drilling activity can successfully be performed in these soils when employing appropriate measures, including pre-reaming a large enough hole to avoid undue pressures when drilling in the pipe,

avoiding too tight of a ream to pull in the pipe, and preparing the right amount of fluids and mixing agents based on the soil type to have the correct gel strength. Active monitoring during the drill along with proper preparation in case of a frac-out can help mitigate and minimize inadvertent returns.

Endangered species. Any construction activity that threatens endangered species will be mitigated in accordance with requirements of the Division of Natural Resources. This might include avoiding types of construction during certain times of the year, avoiding certain locations and surveying any areas for the census of endangered species.

Archeological and historical sites. Careful avoidance of archeological and historical sites, including viewshed impacts on historic architectural resources, will be implemented in careful coordination with the West Virginia State Historic Preservation Office. In general, design of this alternative will attempt to locate proposed work within previously disturbed areas to avoid cultural impacts.

Farmland conversions and development of open spaces. Little impact is expected to these resources since no permanent change is called for in land use with the exclusion of one small parcel of land at approxiamtely 0.02 acre in size for a booster station. However, the appropriate agencies will be solicited for comments on impacts for these resources.

Additionally, temporary noise and air pollution will result from the construction. Noise pollution can be mitigated, but not eliminated, by requiring the contractor to adequately maintain noise suppressing devices on the construction equipment. Air pollution can be similarly mitigated by requiring the contractor to comply with the Clean Air Act requirements.

Erosion and stream sedimentation will also result from the proposed construction activities. These problems can be mitigated by requiring the contractor to install and maintain erosion control devices during construction, as required as part of the NPDES storm water permit obtained for this project. This will include, as a minimum, silt fences, prompt seeding and mulching, and prompt cleanup and site stabilization.

5. Land Requirements

This alternative will require the acquisition of land rights of way and the acquisition of a small 0.02 acre parcel of land for a booster station.

6. Potential Construction Problems

Although this alternative affords reasonable areas of excavation, care should be taken both during accessing the site and performing the work in this area. It will be up to the Contractor to familiarize himself with any subsurface rock, areas of slippage and previously unidentified areas of wetlands or unstable soils that might exist.

7. Sustainability Considerations

Sustainability practices for all alternates include adherence to the NPDES permit for storm water and erosion control.

8. Opinion of Probable Cost

Refer to Appendix H for an opinion of probable project and operations and maintenance costs as well as an opinion of probable project revenue for two scenarios, one with no additional customers signed up apart from the project area, and one with 50 percent of the 79 residents located along the transmission line signed up that are outside the project area.

B. Water from the Hardy County PSD

1. Description

a. General

This alternative involves tying into the Hardy County PSD distribution system due south of the project area immediately south of the county line and purchasing water at a bulk rate from the Hardy County PSD. The proposed tie in location requested by the Hardy County PSD would be along Route 220/8, called Church Road, immediately at the county line, approximately 300 feet south of where it tees into Route 220 in the project area. This alternative includes a 50 GPM booster station at the tie in location and 300 feet of main line to reach US Route 220. Refer to Appendix H for a schematic layout of this water source alternative.

b. Source Description

The Hardy County PSD maintains a large water distribution system of 115 miles throughout much of western Hardy County centered along US Route 220 from the Hamsphire County border to the north to the Grant County line to the south. It has abundant infrastructure on the north side of its system toward the project area adequately sized for substantially additional demand. It purchases water at a bulk rate from the City of Moorefield, which is in the process of completing an expansion of its water production capabilities, and additional water purchase from the City by the Hardy County PSD for this project demand is not an issue. Refer to Appendix H for a schematic system map of the Hardy County PSD system taken from the WVIJDC GIS database.

The City of Moorefield currently maintains two water treatment plants with a combined capacity of 5.0 MGD which draw surface water from separate intakes in the South Fork of the South

Branch of the Potomac. These will be replaced shortly by a new single, larger water treatment plant that will afford the Hardy County PSD with expanded demand allowance. It will be an 8 MGD membrane filtration water plant that will operate 10 to 12 hours a day. Currently, the Hardy County PSD is able and willing to enter into an agreement with the Central Hampshire PSD for at least 1,000,000 gallons per month, well in excess of the less than 400,000 gallons per month projected to be needed for the project area. Refer to Appendix H for correspondence from the Hardy County PSD regarding this.

The Central Hampshire PSD and the Hardy County PSD are currently reviewing drafts of a purchase agreement for this, which is also included in Appendix H.

c. System Hydraulics

The Hardy County PSD maintains a hydraulic grade at the north end of its system that will feed the project area of 1431.00 feet above seal level through its Rolling Acres tank's overflow elevation. It has an operating band of five feet. This tank is fed by two booster stations, one that operates at 150gpm from six to seven hours a day, and one that operates at 65gpm for also six to seven hours a day. There is continuous six inch pipe from the tank to the county line. To allow that district with operating flexibility in the event of tank drainage issues, the proposed user agreement between the two districts establishes that the Hardy County PSD maintain a hydraulic grade of 1405.00 feet.

While this will provide adequate pressure to the highest customers along Russeldale Road in the project area, a 50 GPM booster station will be called for at the tie in that will act mostly as a pass

through station that will pump to the new tank along Old Mountain Road. to assure that the project area is hydraulically independent. This will also assure adequate fire flow in areas that can benefit from fire protection. The proposed new tank overflow elevation will be 1431.00 feet above sea level to match the Rolling Acres tank. Lower elevation areas along US Route 220 will have the highest pressures in the project area up to 175 psi, which can easily be accomodated with C900 pipe classes and pressure reducing tandem meter setters at various signed customers with house pressures greater than 110 psi.

d. Fire Protection

In addition to providing drinking water, this alternative is capable of providing fire protection along the main line along US Route 220 in the lower elevations of the creek valley. Refer to Appendix H for a hydraulic analysis of this system.

e. Revenue and Operations and Maintenance Considerations

The Hardy County PSD has offered a bulk rate price of $4.95 gallons of water based on a class cost of service study performed by it in 2019. This assumed a larger water consumption scenario of 30,000gpd and the Hardy County PSD paying for its own upfront costs to secure the tie-in. It is anticipated that this rate may change with less water consumption being needed. However, since the Central Hampshire County PSD is now incurring the costs of the master metering and tie in for the Hardy County PSD, it is hoped that this will offset the impact that lower consumption will have on the rates. The Hardy County PSD has indicated recently that it will be unable to perform an updated class cost of service study due to costs.

2. Design Criteria

All designs should be based on the West Virginia Bureau for Public Health and West Virginia Public Service Commission requirements for minimum and residual fire flow pressures.

3. Map

Refer to Appendix H for a schematic layout of this alternative.

4. Environmental Impacts

Wetlands. Based on the National Wetlands Inventory maps from the US Fish and Wildlife Service, there are no identified wetlands along the projected path of this alternative, as well as the proposed line locations within the project area. Refer to Appendix H for wetlands maps showing this and Appendix B for previously referenced correspondence to the US Fish and Wildlife.

Soils. Based on USDA NRCS soil maps, this alternative as well as the project area proposed line locations traverse soil that generally consists of an abundance of well drained, sandy and silty loam that have low clay content. Although these three areas afford reasonable excavation that is not prone to slippage, care should be taken both during accessing the site and performing the work in this area. It will be up to the Contractor to familiarize himself with any subsurface rock that might exist.

Additionally, two areas of proposed directional drilling activity are both located in the Weikert channery silt loam, a sloped and welld drained composition severly eroded from weathered

shale. Directional drilling in this fairly non reactive soil can successfully be performed when employing appropriate measures, including pre-reaming, providing the appropriate liner sealant and preparing the right amount of fluids and mixing agents based on this soil type to have the correct gel strength. Active monitoring during the drill along with proper preparation in case of a frac-out can help mitigate and minimize inadvertent returns. Refer to Appendix H for these soil maps and Appendix B for previously referenced correspondence to the Natural Resources Conservations Service.

Endangered species. Any construction activity that threatens endangered species will be mitigated in accordance with requirements of the Division of Natural Resources. This might include avoiding types of construction during certain times of the year, avoiding certain locations and surveying any areas for the census of endangered species. Refer to Appendix B for correspondence to the Division of Natural Resources.

Archeological and historical sites. Careful avoidance of archeological and historical sites, including viewshed impacts on historic architectural resources, will be implemented in careful coordination with the West Virginia State Historic Preservation Office. In general, design of this alternative will attempt to locate proposed work within previously disturbed areas to avoid cultural impacts. Refer to Appendix B for correspondence to the West Virginia State Historic Preservation Office.

Farmland conversions and development of open spaces. Little impact is expected to these resources since no permanent change is called for in land use with the exclusion of one small parcel of land at approxiamtely 0.02 acre in size for a booster station. However, the US Soils

Conservation Service will be solicited for comments on impacts for these resources. Refer to Appedix B for correspondence.

Additionally, temporary noise and air pollution will result from the construction. Noise pollution can be mitigated, but not eliminated, by requiring the contractor to adequately maintain noise suppressing devices on the construction equipment. Air pollution can be similarly mitigated by requiring the contractor to comply with the Clean Air Act requirements.

Erosion and stream sedimentation will also result from the proposed construction activities. These problems can be mitigated by requiring the contractor to install and maintain erosion control devices during construction, as required as part of the NPDES storm water permit obtained for this project. This will include, as a minimum, silt fences, prompt seeding and mulching, and prompt cleanup and site stabilization.

5. Land Requirements

This alternative will require the acquisition of land rights of way and the acquisition of a small parcel of land for a booster station and master meter vault.

6. Potential Construction Problems

Although this alternative affords reasonable areas of excavation, care should be taken both during accessing the site and performing the work in this area. It will be up to the Contractor to familiarize himself with any subsurface rock, areas of slippage and previously unidentified areas of wetlands or unstable soils that might exist.

7. Sustainability Considerations

Sustainability practices for all alternates include adherence to the NPDES permit for storm water and erosion control.

8. Opinion of Probable Cost

Refer to Appendix H for an opinion of probable project and operations and maintenance costs as well as an opinion of probable project revenue for this alternative.

B. **Water from Independent Source**

1. Description

a. General

This alternative involves providing for a water treatment plant along Mill Creek inside the project area and distributing water from it. Given the presence of iron in recent groundwater tests in the area, it will be assumed that the facility will involve filtration. Accordingly, sourcing surface water from Mill Creek through an intake device would be the more economical option rather than developing wells. The same recent laboratory tests of groundwater in the project area also suggest that groundwater development may not address area residents' concerns.

It is logical to locate a water source as far down stream as possible to optimize the size of flow of the creek from which to draw. It is therefore proposed to locate the plant in a wide bottom at the intersection of US Route 220 and Route 220/7 in the Rada area. Given that much of the bottom area is a flood plain, it will be located due south of this intersection along the eastern side of the road that offers land plateued above the flood plain. Refer to Appendix H for a schematic site map of the area as well as the flood plain map in Appendix C for this area.

It can be assumed that water quality issues at Mill Creek do not require treatment beyond filtration and chlorination since the City of Romney draws from the same basin with no treatment beyond filtration and chlorination. A preliminary review of flow at Mill Creek using the older standard of 10 percent of the lowest 7 day flow over a ten year period (7Q10) shows that a water treatment plant at this location can meet the projected project area demand of

12,970gpd. This is based on a regional 7Q10 since there is no nearby benchmark at the proposed plant location, with a tributary drainage area of 16.464 square miles.

Annual 7Q10 = 0.393 CFS x 7.48 G/CFx 86,400 seconds/D = 253,984gpd

10% of 7Q10 = 25,398gpd

A plant at this location will therefore have double the capacity of the project area demands. A more detailed anylsis will be performed on site in the event that this alternative is selected.

b. Source Description

As discussed above, the plant will consist of filtration and chlorination. The primary components of the plant would be an intake device, a presedimentation/raw water tank storage basin, filtration, a clearwell and chlorination. Further water quality sampling will determine if coagulation would be required at the presedimentation basin with a polymer coagulant, but for this analysis, it will be assumed that it is not needed due to Mill Creek being a smaller stream in a lower silt area with less bottom land than the South Branch of the Potomac. The clearwell will be sized to provide for adequate log reduction for virus inactivation.

Given the small size of the plant, a package filtration system will be designed. Raw water pumping from the intake to the presedimentation basin, filter pumping from the presedimentation basin to the filters, and high service pumping from the clearwell to the distribution system water storage tank will also be part of the plant. Refer to Appendix H for a schematic of the water treatment plant.

c. System Hydraulics

The plant will be located at an approximate elevation of 860 feet above sea level. High service pumps at the plant will pump water from the clearwell to the one water storage tank located off of Old Mountain Road with an overflow elevation of 1431.00 feet above sea level. As with the other alternatives, high pressure rated C900 pipe and pressure regulating tandem setters will be called for in the lower areas of the project area along the creek valley to accommodate the high pressures.

d. Fire Protection

In addition to providind drinking water, this alternative is capable of providing fire protection along the main line along US Route 220 in the lower elevations of the creek valley.

e. Revenue and Operations and Maintenance Considerations

Detailed operations and maintenance costs have been prepared for this alternative based on assessing incremental and non incremental costs to operate the Green Spring Water Treatment Plant in the Central Hampshire PSD system, which produces 100,000 GPD on average. This plant consists of a membrane filtration system with a clearwell, chlorine chlorination, and raw water and high service pumping. Adjustments to these costs have been made to account for the configuration at the proposed plant here.

2. Design Criteria

All designs should be based on the West Virginia Bureau for Public Health and West Virginia Public Service Commission requirements for minimum and residual fire flow pressures.

3. Map

Refer to Appendix H for a schematic layout of this alternative.

4. Environmental Impacts

Wetlands. Based on the National Wetlands Inventory maps from the US Fish and Wildlife Service, there are no identified wetlands in the proposed area of the plant. Refer to Appendix H for wetlands maps showing this.

Soils. Based on USDA NRCS soil maps, this alternative sits in a zone of Ernest silt loam, a very fairly well drained soil typical in the eastern Allegheny mountains with adequate slope generally suitable for excavation and construction. It will be up to the Contractor to familiarize himself with any subsurface rock that might exist. Refer to Appendix H for soils maps showing this location.

Endangered species. Any construction activity that threatens endangered species will be mitigated in accordance with requirements of the Division of Natural Resources. This might include avoiding types of construction during certain times of the year, avoiding certain locations and surveying any areas for the census of endangered species.

Archeological and historical sites. Careful avoidance of archeological and historical sites, including viewshed impacts on historic architectural resources, will be implemented in careful coordination with the West Virginia State Historic Preservation Office. In general, this

alternative proposed location falls within previously disturbed, cultivated area adjacent to the state road right of way. This hopefully mitigates any interference with archeological resources.

Farmland conversions and development of open spaces. This alternative will require the conversion of approximately 1 acre of farmland to use as a water treatment plant. This little amount of modification should not present adverse issues and will undergo environmental review as needed.

Additionally, temporary noise and air pollution will result from the construction. Noise pollution can be mitigated, but not eliminated, by requiring the contractor to adequately maintain noise suppressing devices on the construction equipment. Air pollution can be similarly mitigated by requiring the contractor to comply with the Clean Air Act requirements.

Erosion and stream sedimentation will also result from the proposed construction activities. These problems can be mitigated by requiring the contractor to install and maintain erosion control devices during construction, as required as part of the NPDES storm water permit obtained for this project. This will include, as a minimum, silt fences, prompt seeding and mulching, and prompt cleanup and site stabilization. In particular, temporary construction activity in Mill Creek to install intake devices will need to be performed carefully in accordance with the Department of Environmental Protection agency requirements, including avoiding spawning season activity from April to June and installing adequate flow diversion and silt prevention methods.

5. Land Requirements

This alternative will require the acquisition of an approximate 1.0 acre parcel of land for the water treatment plant. Additionally, a right of way for the transmission line between the plant site along US Route 220 and the Mill Creek of approximately 350 feet will be needed.

6. Potential Construction Problems

Although this alternative affords reasonable areas of excavation, care should be taken both during accessing the site and performing the work in this area. It will be up to the Contractor to familiarize himself with any subsurface rock. State road right of way will also need to be coordinated with the site, which will be contiguous to it.

7. Sustainability Considerations

Sustainability practices for all alternates include adherence to the NPDES permit for storm water and erosion control.

8. Opinion of Probable Cost

Refer to Appendix H for an opinion of probable project and operations and maintenance costs as well as an opinion of probable project revenue for this alternative.

VI. Selection of Alternatives

All three alternatives for water source have been analyzed with a life cycle cost analysis for each based on total capital costs and operations and maintenance costs identified from opinions of probable costs in Appendix I and a "real" discount rate of 0.5% for a 20 year life, taken from Appendix C of OMB circular A-94, revised 2017. Short lived asset costs are included where pertinent. Additionally, a decision matrix has been established for each alternative to consider non monetary factors in arriving at the alternative that is best suited for the District. Refer to Appendix I.

Based on this, the selected alternative is water purchase from the Hardy County PSD.

VII. Opinion of Probable Project Costs, Related Operations and Maintenance Costs, and Short Lived Assets

The total project scope includes both the water distribution system as well as the selective alternative to source water from the Hardy County PSD. Refer to Appendix J for opinions of total probable project and operations and maintenance costs.

VIII. Funding

It is the intent of the District to not raise existing customer rates to subsidize new water customers. The District's water rates for 3,400gpm already rank in the top ten percentile of rates in the state at $56.24. This represents a staggering 2.41% of the 2015 county MHI of $27,995. Badly needed system improvements in the process of being performed in the last two years will result in yet another rate increase. Introducing new separate rates to new customers that are higher than existing rates through a separate rate tariff is an option, but can sometimes be of concern before the West Virginia Public Service Commission, given that the residents are still in the same county, and the bulk water source is effectively at the same unit price as the existing one for much of the District's system. Rates higher than the existing ones also become financially untenable to potential customers.

As previously discussed, projected revenue from new customers in this project area offsets operational needs, which include the addition of one part time water employee, but affords little to no remaining revenue for debt obligation. Therefore, the project is eligible for and will need to be funded by all grant contributions.

The project currently qualifies for a $1,000,000 West Virginia Infrastructure and Development Council (WVIJDC) District 2 grant and a $1,500,000 Small Cities Block Grant (SCBG), totalling $2,500,000. These are the only immediate grant sources available to the project at the time of submission of application to the WVIJDC.

There are additional sources for grant funding that will be needed to fund the entire project, but it cannot be assumed that this project is eligible for these and that they are available at this time. These might include a $975,000 contribution from the US Army Corps of Engineers Section 571 program, the West Virginia Bureau for Public Health Drinking Water Treatment Revolving Fund debt forgiveness program, and possibly other federal funding sources not part of the WVIJDC that federal represnetatives might be able to request based on the public health concerns which this project addresses.

Accordingly, the project shall be phased based on the availability of known funding which the project qualifies for at this time. The first phase must provide the critical infrastructure of the booster station and the water storage tank, and will logically begin at the county line where the booster station is located and head north to the tank site from there, serving as many customer as it can with the amount of funding available.

Phase I will be for a $2,500,000 project serving 53 customers with a funding request of a $1,000,000 WVIJDC District 2 grant and a $1,500,000 SCBG contribution. It includes customers along US Route 220 from the Hardy County line north to and including Old Mountain Road and its spurs to the water storage tank, and Huffman Road to and including Phillip Vincent Road.

Phase II will be for an additional $975,000 (or total $3,475,000 for both phases) project serving an additional 19 customers (or a total of 72 customers for both phases), funded with a US Army Corps of Engineers Section 571 grant for central West Virginia, if and when the Corps

determines that this project warrants its contribution. If pursued separately, it will be an autonomous phase, in accordance with Corps requirements, that would not depend on any other uncommitted funding source for fruition. It includes Stringtown Road and Davy Road north of the tank.

The final Phase III will be for an additional $1,525,000 project (or a total of $5,000,000 for all three phases) serving an additional 53 customers (or a total of 125 customers for all three phases), with grant funding from unidentified sources. Representatives from the project area have regularly reached out to various federal representatives to address sources which might be available to fund this phase. This includes service area further up US Route 220 to Rada, further out Huffman Road, Rila Road, Sugar Camp Acres, Hickory Hills Road, Chikadee and Russeldale Roads and Mud Run Road.

Refer to Appendix K for a map showing maps for Phase I, Phases I &II combined and Phases I, II and III combined.

Refer to Appendix K for an opinion of probable project and operations and maintenance costs for Phase I, Phase I and II combined, and Phase I, II and III combined. It is recommended that the District submit a preliminary application for funding of the first scenario, Phase I only, at this time since it can be funded by the only available funding sources currently available.

Since no phase requires a rate increase or the incurring of debt, the District confirmed with the West Virginia Public Service Commission that a cash flow statement suffices to show that the project is financially feasible. Refer to Appendix K for a cash flow statement for Phase I.

IX. Proposed Project

The proposed project which is being requested from the WVIJDC for a preliminary funding recommendation is the Phase I portion of the project. It will serve a total of 53 signed customers along US Route 220 from the Hardy County line north to and including Old Mountain Road, and Huffman Road to and including Phillip Vincent Road, a 50 MG water storage tank and a 50gpm booster station. Water will be purchased from the Hardy County PSD. Refer to Appendix L for the Opinion of Probable Project and Operations and Maintenance Costs for this.

Should additional funding be secured for the additional Phase II and Phase III of this project, the District will request from the WVIJDC a supplemental preliminary funding recommendation for these additional phases.

X. Project Schedule and Implementation

A proposed project schedule is included in Appendix M. It is the intent of the District to work in an expedited manner so as to address the residence's health concerns as soon as possible.

The project will require the following permits and approvals:

A) WV Bureau for Public Health permit

B) General NPDES Permit for storm water control

C) WV Division of Highways occupation permits

D) WV Public Service Commission Certificate of Convenience and Necessity

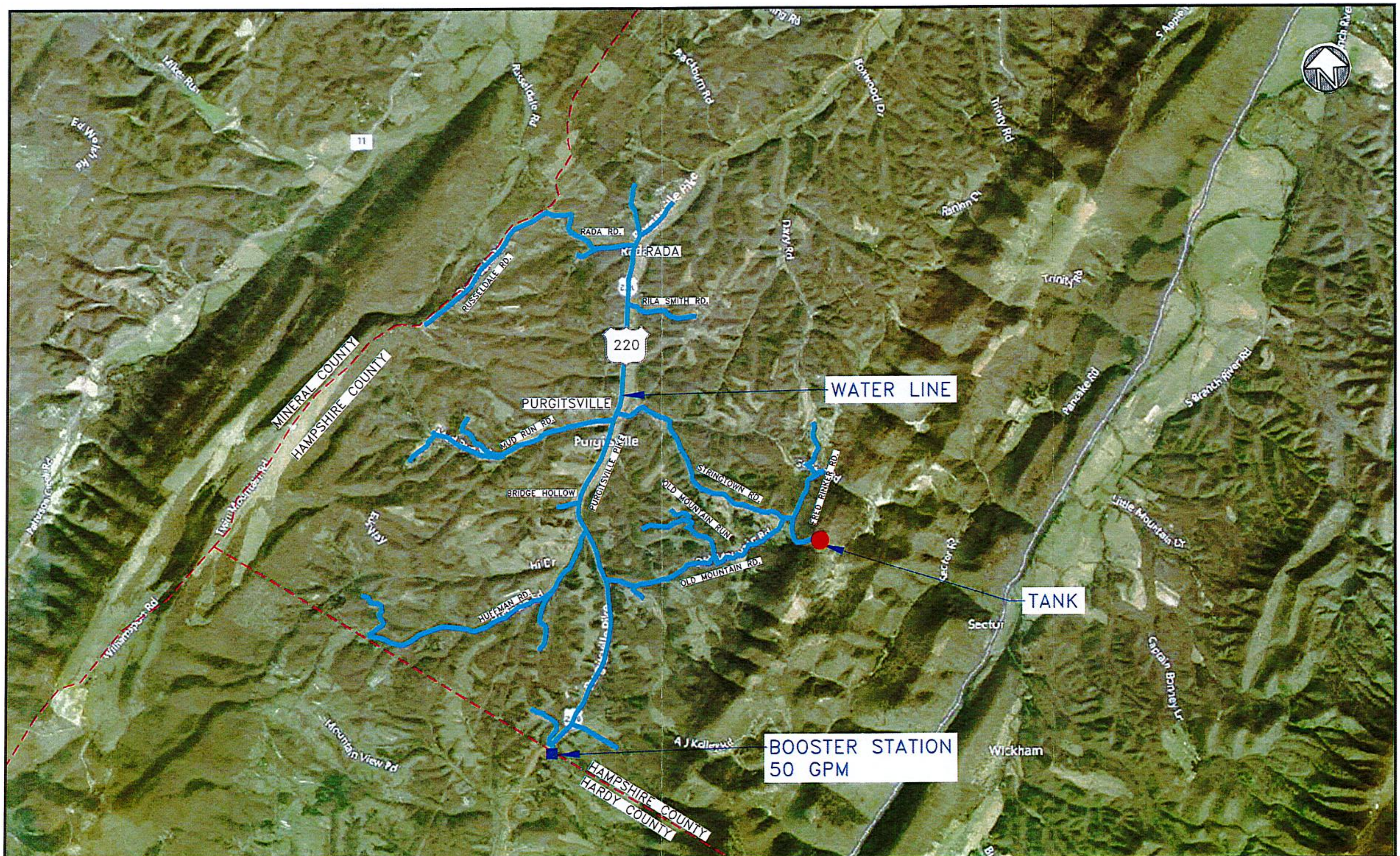
XI. Conclusions and Recommendations

This proposed project will comprise of the Phase I portion of the project, with a total project cost of $2,500,000, serving 53 customers. It is proposed that this project be funded by a WVIDC District 2 grant of $1,000,000 and a SCBG of $1,500,000. The project includes a water distribution with a tie in to the proposed water source of the Hardy County PSD water system, along with a 50 GPM booster station and 50MG water storage tank, and limited fire protection along US Route 220.

It is recommended that the District take the necessary efforts to submit this report along with funding applications to secure the necessary commitments. This will allow it to proceed to the design phase of this project in accordance with the Project Schedule.

APPENDIX

A



No.	DATE	DESCRIPTION	BY
1	3/2020	ISSUED	RB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT –
DRAWN BY RRB
CONST CHECKED BY –
RECORD CHECKED BY –
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14750 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX A
PROJECT AREA MAP

NONE
PROJECT NO. CE10-10W
DRAWING NO. **APPX-A**

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APPENDIX
B

CERRONE
Associates • Consulting Engineers

97-14th Street

Wheeling, WV 26003

304.232.5550 (T)

304.233.2512 (F)

mail@cerrone1.com

March 25, 2020

U.S. Army Corps of Engineers
Pittsburgh District, Planning Division
William S. Moorhead Federal Bldg.
1000 Liberty Ave.
Pittsburgh PA 15222-4186

RE: Central Hampshire PSD
Southwestern Hampshire County Water Extensions

Gentlemen:

We are in the preliminary design stage for the above referenced project. In accordance with the requirements of the National Environmental Policy Act, we are notifying you of the location of the proposed improvements.

Please advise us if the proposed project falls under your agency's jurisdiction relating to Section 404 of the Clean Water Act, and any further actions required by the District in pursuing this project. We would appreciate a response from your agency regarding this matter within 30 days. If additional information is required, please contact us at the address at left.

If you have any questions regarding this project, please contact us at any time.

Thank you for your assistance.

Respectfully,

CERRONE ASSOCIATES, INC.

Dominick P. Cerrone, PE
Director of Engineering

DPC/cd

Encls.

[redacted]

CERRONE
Associates • Consulting Engineers

97-14th Street

Wheeling, WV 26003

304.232.5550 (T)

304.233.2512 (F)

mail@cerrone1.com

March 25, 2020

Susan M Pierce
Deputy State Historic Preservation Officer
WV Division of Culture & History
The Cultural Center
1900 Kanawha Boulevard, East
Charleston WV 25305-0300

RE: Central Hampshire PSD
Southwestern Hampshire County Water Extensions

Dear Ms. Pierce:

We are in the preliminary design stage for the above referenced project in Hampshire County. In accordance with the requirements of the National Environmental Policy Act, we are notifying you of the location of the proposed improvements in order to obtain archeological and historical comments on the construction activities.

We are enclosing mapping and photographs to show the scope of the water improvements project, which includes both a tank site and a booster station.

If you have any questions regarding this project, please contact us at any time.

Thank you for your assistance.

Respectfully,

CERRONE ASSOCIATES, INC.

Dominick P. Cerrone, PE
Director of Engineering

DPC/cd

Encls.

[redacted]

CERRONE
Associates • Consulting Engineers

97-14th Street

Wheeling, WV 26003

304.232.5550 (T)

304.233.2512 (F)

mail@cerrone1.com

March 25, 2020

United States Department of Agriculture
Natural Resources Conservation Service
1550 Earl Core Road, Suite 200
Morgantown, WV 26505

RE: Central Hampshire Public Service District
Southwestern Hampshire County Water Extensions

Dear Sir or Madam:

The Central Hampshire Public Service District is in the process of performing an environmental review pursuant to the National Environmental Policy Act in order that they may assess the environmental impacts of the proposed project. We are enclosing a map to show the scope of project. Please provide us with information regarding the potential impact of the project on the prime farmland in the area.

Thank you for your assistance. If you have any questions regarding this project, please contact us at any time.

Respectfully,

CERRONE ASSOCIATES, INC.

Dominick P. Cerrone, PE
Director of Engineering

DPC/cd

Encls.

[redacted]

CERRONE
Associates • Consulting Engineers

97-14th Street
Wheeling, WV 26003
304.232.5550 (T)
304.233.2512 (F)
mail@cerrone1.com

March 25, 2020

Barbara Douglas
U.S. Fish & Wildlife Service
PO Box 1278
Elkins, WV 26241

RE: Central Hampshire PSD
Southwestern Hampshire County Water Extensions

Dear Ms. Douglas:

The Central Hampshire PSD is in the process of performing an environmental review pursuant to the National Environmental Policy Act in order that they may assess the environmental impacts of its proposed above referenced project. We are enclosing a map to show the scope of this project. We are submitting this request for comments regarding the existence of any rare, threatened or endangered wildlife or wetlands within the project area.

If you have any questions regarding this project, please contact us at any time.

We appreciate your assistance.

Respectfully,

CERRONE ASSOCIATES, INC.

Dominick P. Cerrone, PE
Director of Engineering

DPC/cd

Encls.

[redacted]

CERRONE
Associates • Consulting Engineers

97-14th Street

Wheeling, WV 26003

304.232.5550 (T)

304.233.2512 (F)

mail@cerrone1.com

March 25, 2020

WV Department of Natural Resources
Wildlife/Heritage Data Base
PO Box 67
Elkins WV 26241

RE: Central Hampshire PSD
Southwestern Hampshire County Water Extensions

Dear Sir or Madam:

The Central Hampshire PSD is in the process of performing an environmental review pursuant to the National Environmental Policy Act in order that they may assess the environmental impacts of the above referenced proposed project. We are enclosing a map to show the scope of this project. Please provide us with information and comments regarding potential rare, threatened or endangered wildlife and wetlands which may exist in the project area.

Thank you for your assistance. If you have any questions regarding this project, please contact us at any time.

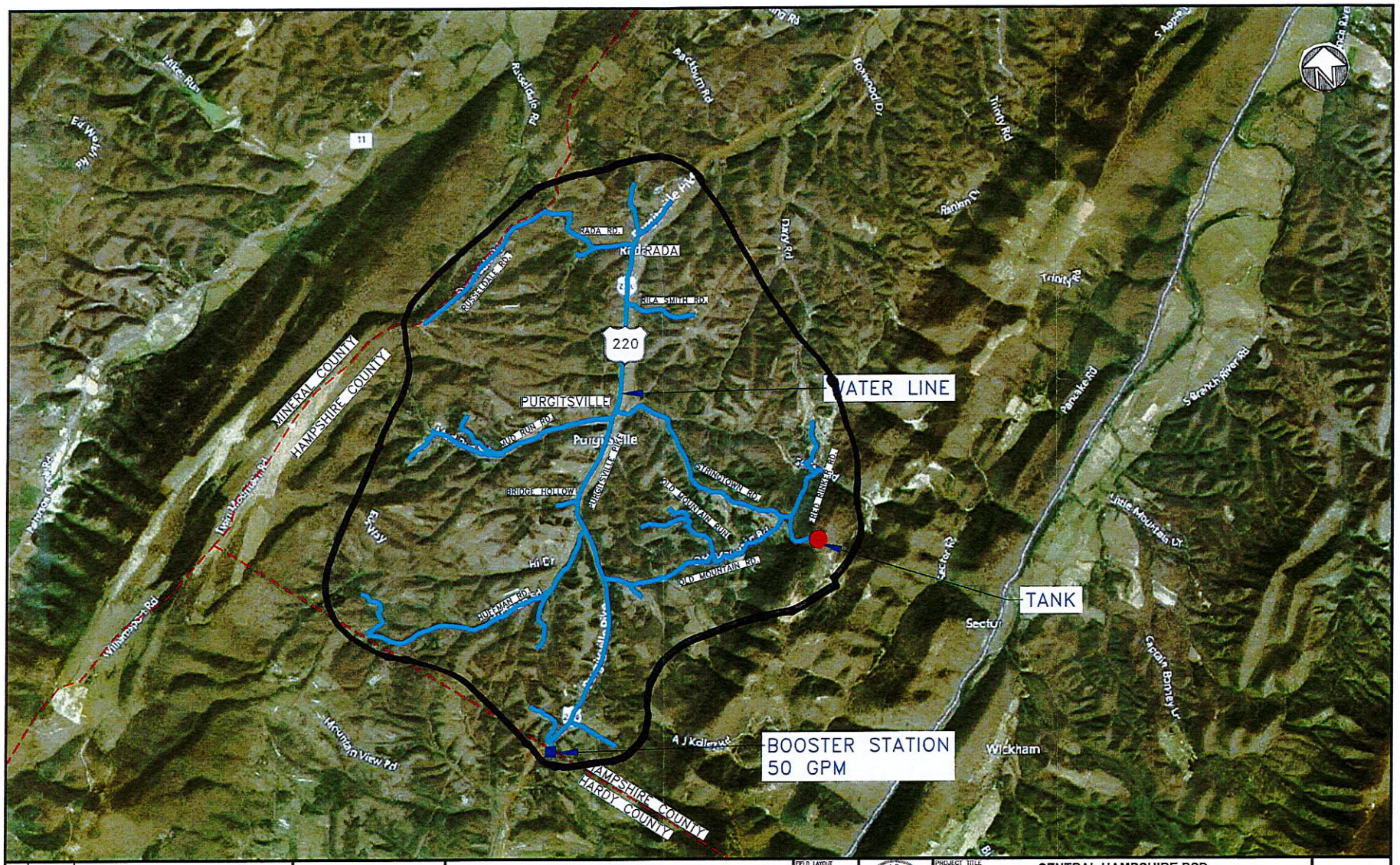
Respectfully,

CERRONE ASSOCIATES, INC.

Dominick P. Cerrone, PE
Director of Engineering

DPC/cd

Encls.



No.	DATE	DESCRIPTION	BY
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97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT	-
DRAWN BY	RRB
CONST CHECKED BY	-
RECORD CHECKED BY	-
ISSUE DATE	3/2020

DOMINICK P. CERRONE REGISTERED 14756 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX A
PROJECT AREA MAP

NONE	
PROJECT NO.	CE10-10W
DRAWING NO.	APPX-A

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APPENDIX
C

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was West Virginia State Plane north zone (FIPSZONE 4701). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection, UTM zones or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

Elevation Reference Mark (ERM) elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at WWW.NGS.NOAA.GOV. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Base map information shown on this FIRM was derived from: U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1989 or later. These files were supplemented with imagery produced at a scale of 1:4,800 dated 1998.

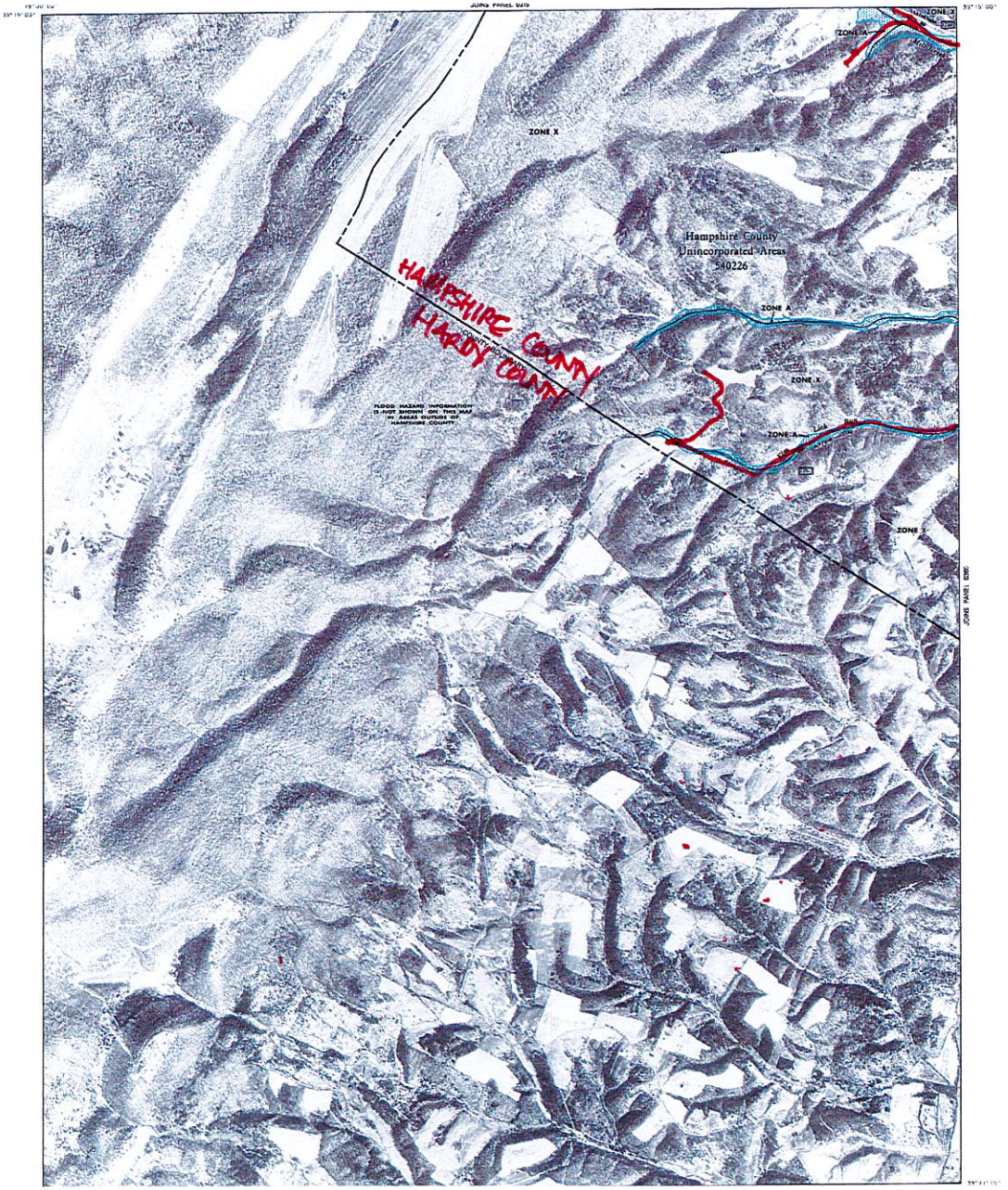
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov

SOUTHWEST



ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A Cross section line

23 — 23 Transect line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4278000m 1000-meter Universal Transverse Mercator grid values, zone 17

600000 FT 5000-foot grid ticks: West Virginia State Plane coordinate system, north zone (FIPSZONE 4701), (Lambert conformal conic)

$BM7_{X}$ Elevation Reference Mark

M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
NOVEMBER 7, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

150 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0355 C

FIRM
FLOOD INSURANCE RATE MAP
HAMPSHIRE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 355 OF 530
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAMPSHIRE COUNTY	540226	0355	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
54027C0355C

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was West Virginia State Plane north zone (FIPSZONE 4701). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection, UTM zones or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

Elevation Reference Mark (ERM) elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at WWW.NGS.NOAA.GOV. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1988 or later. These files were supplemented with imagery produced at a scale of 1:4,800 dated 1998.

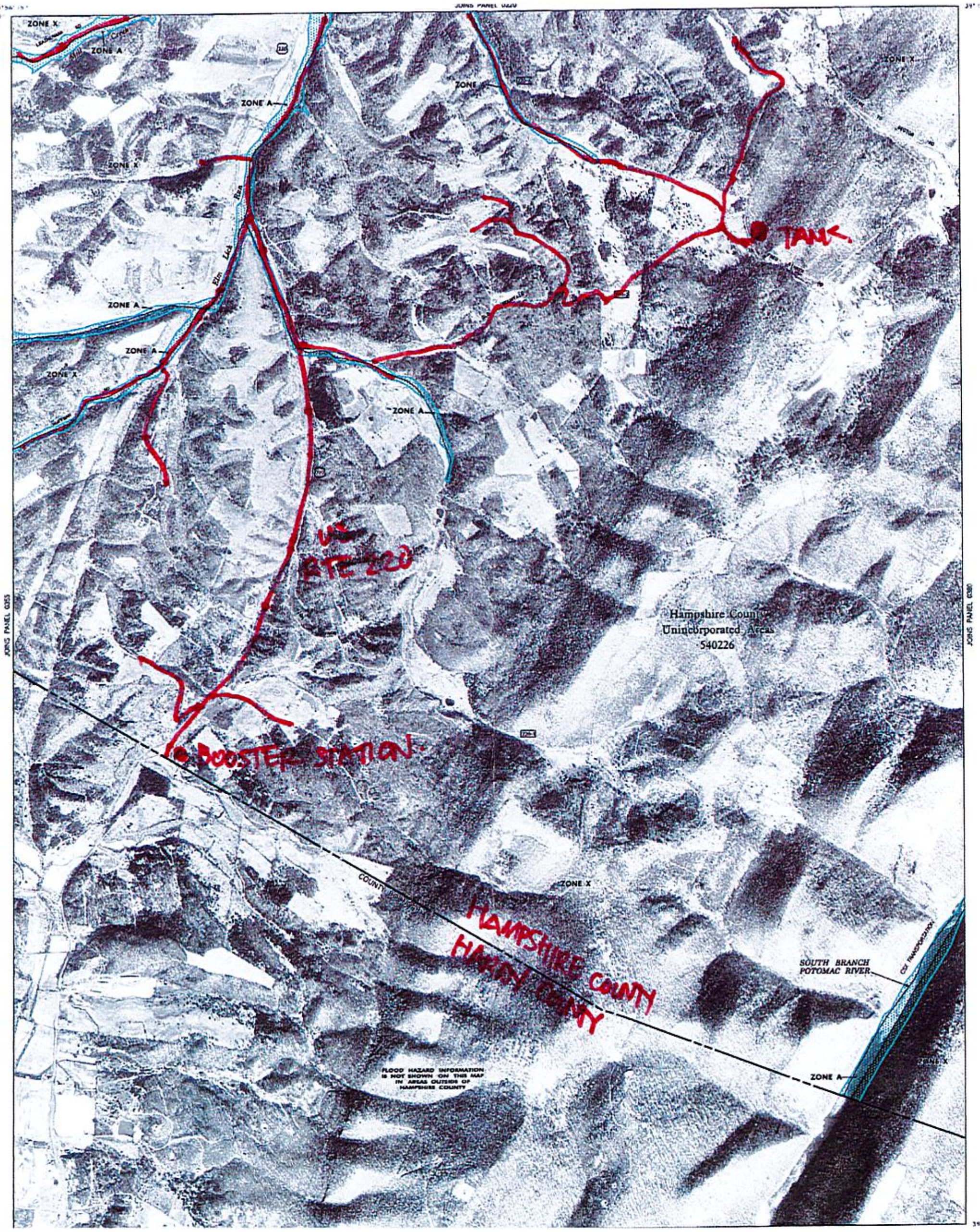
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at www.fema.gov/msc.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

SOUTHEAST



Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

(A)—(A)	Cross section line
(23)- - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276	1000-meter Universal Transverse Mercator grid values, zone 17
600000 FT	5000-foot grid ticks: West Virginia State Plane coordinate system, north zone (FIPSZONE 4701), (Lambert conformal conic)
BM7 X	Elevation Reference Mark
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
NOVEMBER 7, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0360 C

FIRM
FLOOD INSURANCE RATE MAP
HAMPSHIRE COUNTY, WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 360 OF 530

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAMPSHIRE COUNTY	540226	0360	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
54027C0360C

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was West Virginia State Plane north zone (FIPSZONE 4701). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection, UTM zones or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1989 or later. These files were supplemented with imagery produced at a scale of 1:4,800 dated 1998.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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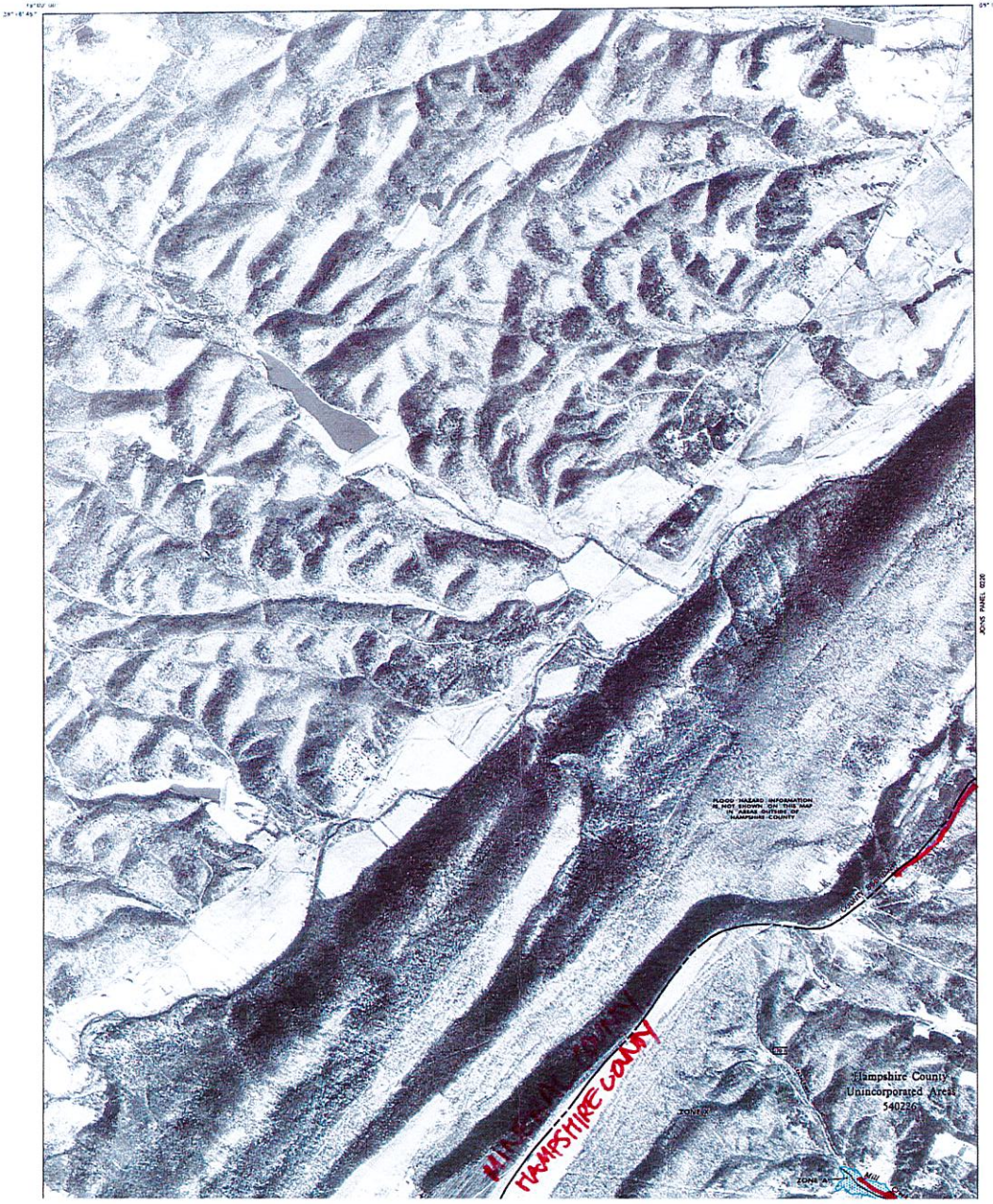
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

NORTHWEST.



Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AR/A, AR/AE, AR/AH, AR/AO, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.

ZONE AE — Base Flood Elevations determined.

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4276000m — 1000-meter Universal Transverse Mercator grid values, zone 17

600000 FT — 5000-foot grid ticks: West Virginia State Plane coordinate system, north zone (FIPSZONE 4701, Lambert conformal conic)

BM7 — Elevation Reference Mark

M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
NOVEMBER 7, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

1000 0 1000 2000 FEET

300 0 300 600 METERS

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0215 C

FIRM
FLOOD INSURANCE RATE MAP
HAMPSHIRE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 215 OF 530

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
HAMPSHIRE COUNTY	540236	0215	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5402760215C

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was West Virginia State Plane north zone (FIPSZONE 4701). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection, UTM zones or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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National Geodetic Survey, NOAA
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(301) 713-3191

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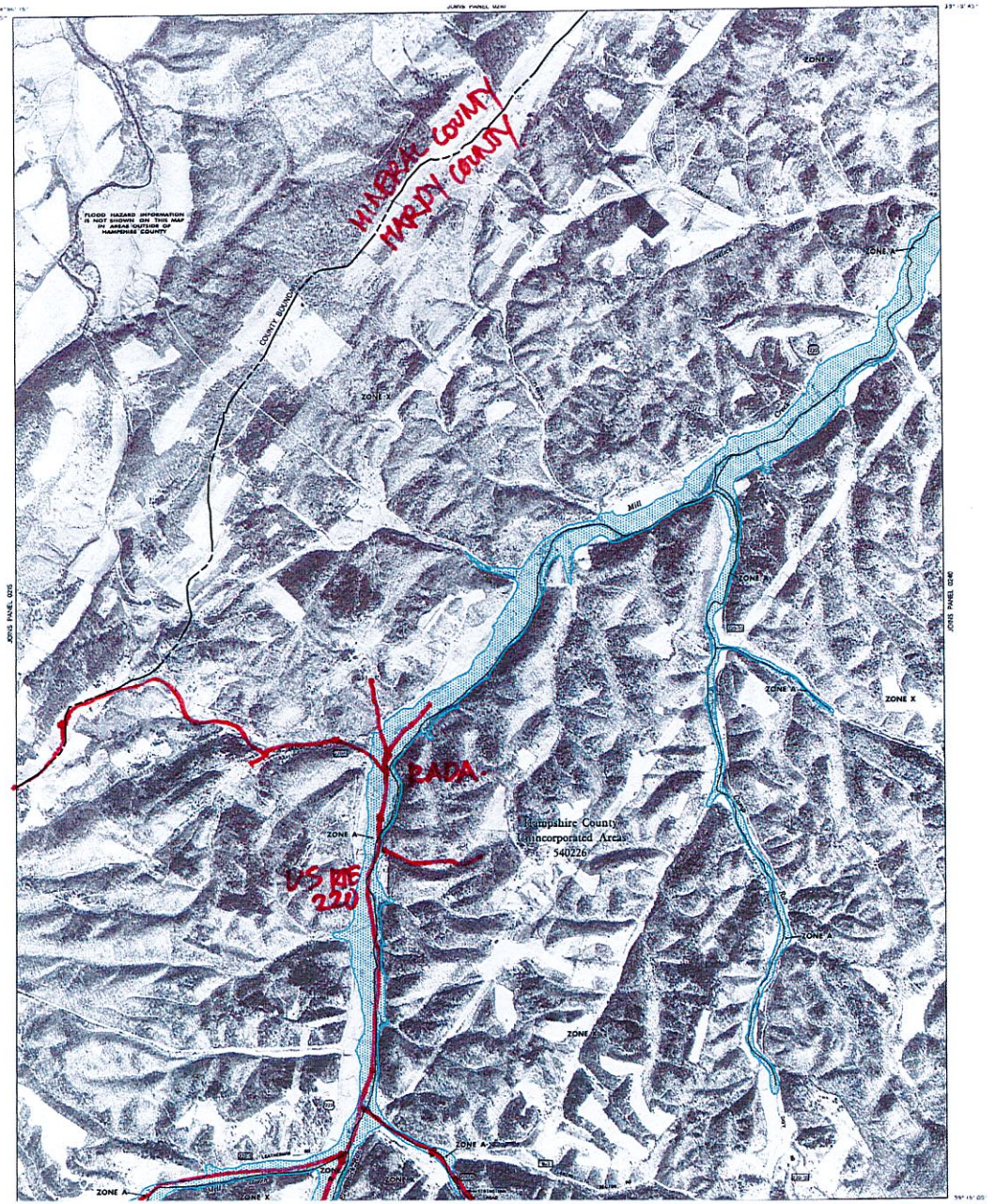
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

NORTHEAST



ZONE A — No Base Flood Elevations determined.

ZONE AE — Base Flood Elevations determined.

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4275000m — 5000-meter Universal Transverse Mercator grid values, zone 17

600000 FT — 5000-foot grid ticks: West Virginia State Plane coordinate system, north zone (FIPSZONE 4701), Lambert conformal conic

BM/X — Elevation Reference Mark

M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
NOVEMBER 7, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
1000 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0220 C

FIRM
FLOOD INSURANCE RATE MAP
HAMPSHIRE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 220 OF 530
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

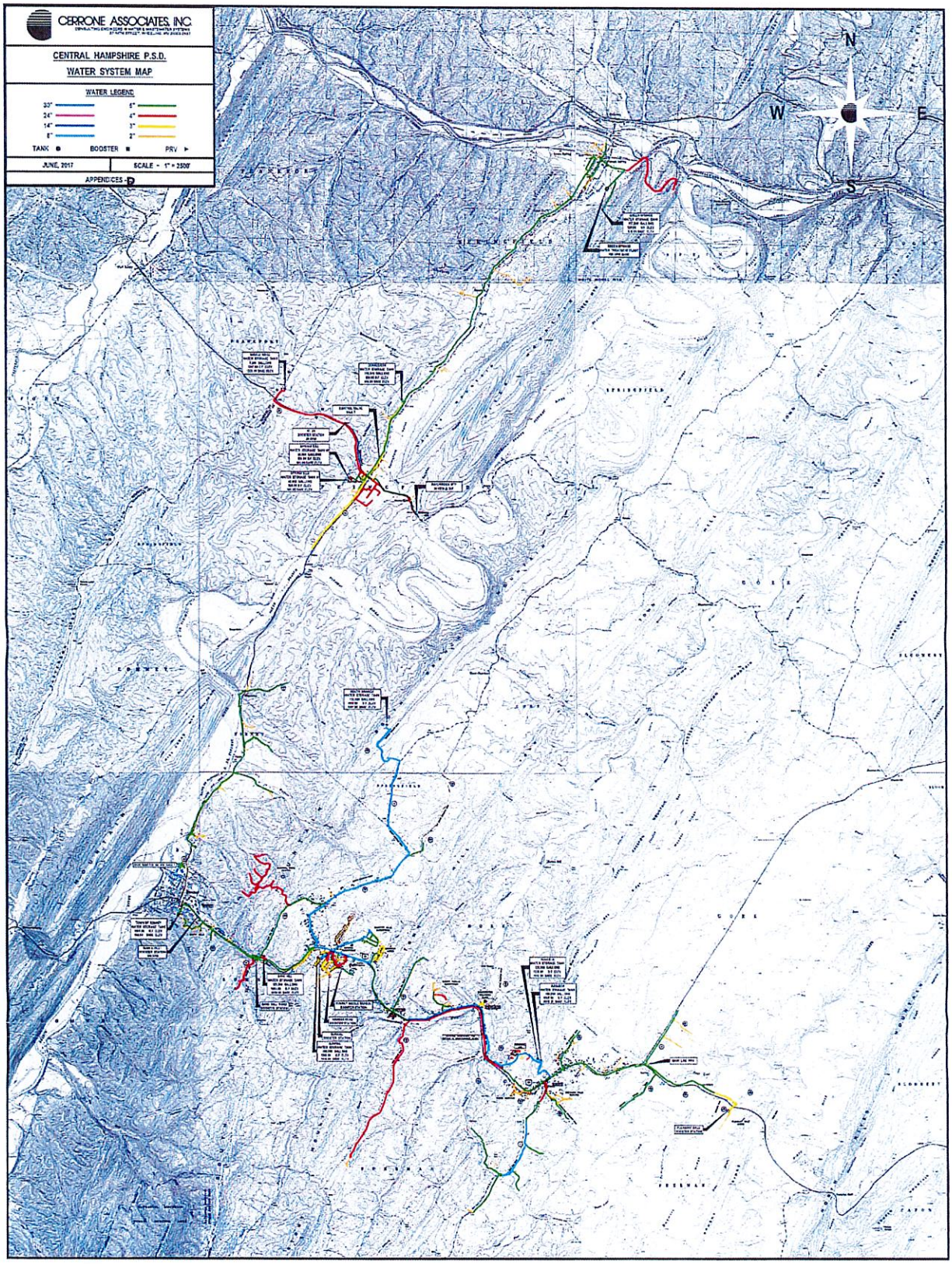
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAMPSHIRE COUNTY	540226	0220	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
54027C0220C

APPENDIX
D


CERRONE ASSOCIATES, INC.
CENTRAL HAMPSHIRE P.S.D.
WATER SYSTEM MAP
WATER LEGEND
30"
24"
14"
8"
6"
4"
3"
2"
TANK
BOOSTER
PRV
JUNE, 2017
SCALE - 1" = 2500'
APPENDICES - D
N
W
E
S

APPENDIX

E

OPERATING REVENUES (Account 400)

1. Report below the amount of operating revenue for the year for each prescribed account and the amount from the preceding year

2. List the gallons sold for the current year and preceding year.

3. Number of customers should be reported on the basis of number of meters, plus number of flat rate accounts, except that where separate meter readings are added for billing purposes,one customer shall be counted for each group of meters so added. The average number of customers means the average of the figures at the close of each month or each billing period.

4. Unmetered sales should be included below. The details of such sales should be given in a footnote Schedule 801A-801B.

Line No.	Amount (a)	Operating Revenues		Gallons Sold (000 omitted)		Average Number of Customers	
		Amount for Year (b)	Amount from Last Year (c)	for this Year (d)	from Last Year (e)	Number for Year (f)	Number from Last Year (g)
1	SALES OF WATER						
2	460. Unmetered Water Revenue	1,383	9,122	158	674	1	2
3	461. Metered Water Revenue						
4	461.1 Metered Sales to Residential Customers	889,008	870,515	49,797	48,869	1,466	1,457
5	461.2 Metered Sales to Commercial Customers	423,456	425,260	27,353	27,454	185	185
6	461.3 Metered Sales to Industrial Customers						
7	461.4 Metered Sales to Public Authorities						
8	461.5 Metered Sales to Multiple Family Dwellings						
9	461.6 Metered Sales - Other						
10	Total Metered Revenue	1,312,464	1,295,775	77,150	76,323	1,651	1,642
11	462. Fire Protection Revenue						
12	462.1 Public Fire Protection						
13	462.2 Private Fire Protection						
14	Total Fire Protection	-	-	-	-	-	-
15	464. Other Sales to Public Authorities						
16	465. Sales to Irrigation Customers						
17	466. Sales for Resale	-	-	-	-		
18	467. Interdepartmental Sales						
19							
20	Total Sales of Water	1,313,847	1,304,897	77,308	76,997	1,652	1,644
21	OTHER OPERATING REVENUES						
22	469. Guaranteed Revenues	-	-				
23	470. Forfeited Discounts	29,580	27,328				
24	471. Miscellaneous Service Revenues	13,450	16,948				
25	472. Rents from Water Property	-	-				
26	473. Interdepartmental Rents	-	-				
27	474. Other Water Revenues	-	-				
28							
29	Total Other Operating Revenues	43,030	44,276				
30							
31	Total Water Operating Revenues	1,356,877	1,349,173				

Central Hampshire Public Service District 01/00/1900 06/30/2019

SALES OF WATER TO GENERAL CUSTOMERS - BY MONTHS (Accounts 460- 461)

Line No.	Month or Other Billing Period (a)	460- Unmetered Revenue (b)	460- Unmetered Gallons Sold (000 Omitted) (c)	460- Unmetered Avg.# Cust. (d)	461- Metered Revenue (e)	461- Metered Gal.Sold (f)	461- Metered Avg.# Cust. (g)
1	Total Amount from Previous Year						
2	July 2018	486	73	2	114,479	6,802	1,656
3	August 2018	54	16	3	108,606	6,358	1,666
4	September 2018	65	3	2	113,745	6,810	1,664
5	October 2018	76	5	1	102,147	5,898	1,653
6	November 2018	87	8	1	107,466	6,309	1,664
7	December 2018	76	8	1	110,852	6,577	1,650
8	January 2019	116	5	1	101,199	5,895	1,632
9	February 2019	85	7	1	110,783	6,403	1,626
10	March 2019	86	5	1	100,170	5,735	1,631
11	April 2019	88	5	1	109,397	6,447	1,651
12	May 2019	78	6	1	111,102	6,542	1,655
13	June 2019	87	17	2	122,517	7,374	1,662
14	Adj. for the Year						
15	Total Current	1,384	158	1	1,312,463	77,150	1,651

BILLING ACCURACY

1	Average number of customers during the reporting period.	1,652.00
2	Billing Cycle (monthly, quarterly, semiannually) during the reporting period. E.g. Monthly: enter 12, Quarterly enter 4, Semiannual: enter 2	12.00
3	Total Number of Bills Generated during the reporting period.	19,827.00
4	Number of errors - driven billing adjustments during reporting period (# of bills adjusted)	6.00

Notes on Billing System:

COMMUNITIES SERVED

	Names of Cities, Towns, and Unincorporated Communities (a)	No. of Customers End of Year (b)	Population Served (c)	Gallons Sold (000 Omitted) (d)	Total Sales of Water (e)
1	Romney, Shanks, Augusta, Route 28, Springfield, Greenspring	1652	4130	77308	1333847
2					
3					
4					
5					
6					
7					

WATER OPERATION AND MAINTENANCE EXPENSES

Line No.	Account (a)	Schedule Page Number (b)	Amount for Year (c)	Amount from Preceding Year (d)
1	**SOURCE OF SUPPLY AND PUMPING EXPENSES**			
2	**Operation**			
3	601.1 Salaries and Wages - Employees	606A	8,515	13,025
4	603.1 Salaries and Wages - Officers, Directors, etc.	606C	-	-
5	604.1 Employee Pensions and Benefits	607	-	-
6	610.1 Purchased Water	604A	499,304	475,383
7	615.1 Purchased Power	607B	63,871	66,908
8	616.1 Fuel for Power Production	607B	-	-
9	618.1 Chemicals	607B	-	-
10	620.1 Materials and Supplies	607B	12,472	9,150
11	631.1-636.1 Contractual Services	608A - 608F	-	-
17	641.1 Rental of Building/Real Property	607	-	-
18	642.1 Rental of Equipment	607	-	-
19	650.1 Transportation Expenses	607	-	-
20	656.1 -659.1 Insurance	607A	-	-
21	667.1 Regulatory commission Expense - Other	605	-	-
22	668.1 Water Resource Conservation Expense	607B	-	-
23	675.1 Miscellaneous Expenses	605	-	-
24	**Total Operation**		584,162	564,466
25	**Maintenance**			
26	601.2 Salaries and Wages - Employees	606A	8,515	11,122
27	603.2 Salaries and Wages - Officers, Directors, etc.	606C	-	-
28	604.2 Employee Pensions and Benefits	607	-	-
29	618.2 Chemicals	607B	-	-
30	620.2 Materials and Supplies	607B	4,782	4,445
31	631.2-636.2 Contractual Services	608A-608F	-	-
37	641.2 Rental of Building/Real Property	607	-	-
38	642.2 Rental of Equipment	607	-	-
39	650.2 Transportation Expenses	607	-	-
40	656.2 -659.2 Insurance	607A	-	-
44	667.2 Regulatory commission Expense - Other	605	-	-
45	675.2 Miscellaneous Expense	605	-	-
46	**Total Maintenance**		13,297	15,567
47				
48	**Total Source of Supply And Pumping Expenses**		597,459	580,033

WATER OPERATION AND MAINTENANCE EXPENSES (Continued)

Line No.	Account (a)	Schedule Page Number (b)	Amount for Year (c)	Amount from Preceding Year (d)
1	**WATER TREATMENT EXPENSES**			
2	**Operation**			
3	601.3 Salaries and Wages - Employees	606A	-	-
4	603.3 Salaries and Wages - Officers, Directors, etc.	606C	-	-
5	604.3 Employee Pensions and Benefits	607	-	-
6	615.3 Purchased Power	607B	-	-
7	616.3 Fuel for Power Production	607B	-	-
8	618.3 Chemicals	607B	1,235	2,753
9	620.3 Materials and Supplies	607B	1,963	616
10	631.3-636.3 Contractual Services	608A-608F	-	-
11	641.3 Rental of Building/Real Property	607	-	-
12	642.3 Rental of Equipment	607	-	-
13	650.3 Transportation Expenses	607	-	-
14	656.3 -659.3 Insurance	607A	-	-
15	667.3 Regulatory commission Expense - Other	605	-	-
16	675.3 Miscellaneous Expenses	605	-	-
17	**Total Operation**		3,198	3,369
18	**Maintenance**			
19	601.4 Salaries and Wages - Employees	606A	-	-
20	603.4 Salaries and Wages - Officers, Directors, etc.	606C	-	-
21	604.4 Employee Pensions and Benefits	607	-	-
22	618.4 Chemicals	607B	-	-
23	620.4 Materials and Supplies	607B	147	5,650
24	631.4-636.4 Contractual Services	608A-608F	-	-
25	641.4 Rental of Building/Real Property	607	-	-
26	642.4 Rental of Equipment	607	-	-
27	650.4 Transportation Expenses	607	-	-
28	656.4 -659.4 Insurance	607A	-	-
29	667.4 Regulatory Commission Expense - Other	605	-	-
30	675.4 Miscellaneous Expenses	605	-	-
31	**Total Maintenance**		147	5,650
32				
33	**Total Water Treatment Expenses**		3,345	9,019

WATER OPERATION AND MAINTENANCE EXPENSES (Continued)

Line No.	Account (a)	Schedule Page Number (b)	Amount for Year (c)	Amount from Preceding Year (d)
1	**TRANSMISSION AND DISTRIBUTION EXPENSES**			
2	**Operation**			
3	601.5 Salaries and Wages - Employees	606A	59,730	77,371
4	603.5 Salaries and Wages - Officers, Directors, etc.	606C	-	-
5	604.5 Employee Pensions and Benefits	607	-	-
6	615.5 Purchased Power	607B	-	-
7	616.5 Fuel for Power Production	607B	-	-
8	618.5 Chemicals	607B	-	-
9	620.5 Materials and Supplies	607B	10,516	11,904
10	631.5-636.5 Contractual Services	608A-608F	-	-
11	641.5 Rental of Building/Real Property	607	-	-
12	642.5 Rental of Equipment	607	-	-
13	650.5 Transportation Expenses	607	-	-
14	656.5 -659.5 Insurance	607A	-	-
15	667.5 Regulatory Commission Expense - Other	605	-	-
16	675.5 Miscellaneous Expenses	605	-	-
17	**Total Operation**		70,246	89,275
18	**Maintenance**			
19	601.6 Salaries and Wages - Employees	606A	-	-
20	603.6 Salaries and Wages - Officers, Directors, etc.	606C	-	-
21	604.6 Employee Pensions and Benefits	607	-	-
22	618.6 Chemicals	607B	-	-
23	620.6 Materials and Supplies	607B	147,761	164,586
24	631.6-636.6 Contractual Services	608A-608F	-	-
25	641.6 Rental of building/Real property	607	-	-
26	642.6 Rental of Equipment-Other	607	-	-
27	650.6 Transportation Expenses	607	-	-
28	656.6 -659.6 Insurance	607A	-	-
29	667.6 Regulatory Commission Expense - Other	605	-	-
30	675.6 Miscellaneous Expenses	605	-	-
31	**Total Maintenance**		147,761	164,586
32				
33	**Total Transmission and Distribution Expenses**		218,007	253,861

WATER OPERATION AND MAINTENANCE EXPENSES (Continued)

Line No.	Account (a)	Schedule Page Number (b)	Amount for Year (c)	Amount from Preceding Year (d)
1	**CUSTOMER ACCOUNTS EXPENSES**			
2	601.7 Salaries and Wages - Employees	606A	50,854	42,521
3	603.7 Salaries and Wages - Officers, Directors, etc.	606C	-	-
4	604.7 Employee Pensions and Benefits	607	-	-
5	615.7 Purchased Power	607B	-	-
6	616.7 Fuel for Power Production	607B	-	-
7	620.7 Materials and Supplies	607B	29,772	15,830
8	631.7-636.7 Contractual Services	608A-608F	-	-
9	641.7 Rental of Building/Real Property	607	-	-
10	642.7 Rental of Equipment	607	-	-
11	650.7 Transportation Expenses	607	-	-
12	656.7 -659.7 Insurance	607A	-	-
13	667.7 Regulatory Commission Expense - Other	605	-	-
14	670.7 Bad Debt Expense	607	9,300	9,721
15	675.7 Miscellaneous Expense	605	-	-
16	**Total Customer Accounts Expenses**		**89,926**	**68,072**
17	**ADMINISTRATIVE AND GENERAL EXPENSES**			
18	601.8 Salaries and Wages - Employees	606A	45,008	32,579
19	603.8 Salaries and Wages - Officers, Directors, etc.	606C	5,534	1,325
20	604.8 Employee Pensions and Benefits	607	63,823	72,900
21	615.8 Purchased Power	607B	-	-
22	616.8 Fuel for Power Production	607B	-	-
23	620.8 Materials and Supplies	607B	27,107	16,649
24	631.8-636.8 Contractual Services	608A-608F	14,122	20,295
25	641.8 Rental of Building/Real Property	607	-	-
26	642.8 Rental of Equipment	607	-	-
27	650.8 Transportation Expenses	607	-	-
28	656.8 -659.8 Insurance	607A	19,894	18,499
29	660.8 Advertising Expense	607	1,786	-
30	666.8 Reg. Commission Exp. - Amort. of Rate Case Exp.	605	-	-
31	667.8 Regulatory Commission Expense - Other	605	-	-
32	675.8 Miscellaneous Expenses	605	5,782	17,233
33	**Total Administrative and General Expenses**		**183,056**	**179,480**
34				
35	**Total Operation and Maintenance Expenses**		**1,091,793**	**1,090,465**

PURCHASED WATER (Account 610)

1. Report below the information concerning water purchased during the year.
2. The quantities reported should be those shown by the bills rendered by the vendor.
3. The purchases should be reported by months or other billing period for each vendor.
4. Attach continuation sheets as necessary.
5. **Report the amount (Cost) for the previous year.**

Line No.	Name of Vendor (a)	Billing Period (b)	Gallons Purchased (000 Omitted) (c)	Amount (d)
1	Total Amount and Gallons Purchased from Previous Year		98,217	475,383
2	**List current year's activities by Months:**			
3	City of Romney	7/1/2018	8,603	41,641
4		8/1/2018	7,848	37,984
5		9/1/2018	8,401	40,663
6		10/1/2018	7,465	36,133
7		11/1/2019	7,326	35,456
8		12/1/2019	7,652	37,035
9		1/1/2019	8,175	35,021
10		2/1/2019	9,422	46,734
11		3/1/2019	9,452	46,880
12		4/1/2019	8,944	44,364
13		5/1/2019	9,901	49,107
14		6/1/2019	9,001	48,286
15				
16				
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41				
42	**Total this Page**		102,190	499,304

LONG-TERM DEBT (Account 221)

Bonds

1. Report below the particulars indicated of the long-term debt at end of year represented by unmatured obligations issued or assumed by the respondent, exclusive of advances from associated companies.
2. Group amounts according to accounts and show the total for each account.
3. If the respondent has pledged any of its long-term debt securities give particulars in a footnote (on schedule 801A-801B), including name of the pledgee and purpose of the pledge.

Notes:
Acct 427- See Schedule 306.
Administrative Fees should be included in Account 675.8 Schedule 605
Accts 239-240 See Schedule 216.
Example:" Debt Holder: "WDA", Class:"WDA 1999", Series: "A"

Line No.	Debt Holder, Class, Series (a)	Nominal Date of Issue (b)	Date of Maturity (c)	Outstanding per Balance Sheet (d)	Rate (%) (e)	Interest for Year- Acct. 427.3 ($) (f)	Matured P.& I. Acct-239 & 240 ($) (g)	Principal for Year ($) (h)	Reserve Requirements ($) (i)	Total Funding Required (F + H + I) (j)
1	**Bonds (Account 221)**									
2	Rural Development (358,000)	1992	3/1/2030	176,340	5.00%	9,129		11,952		21,081
3	Rural Development (1,745,000)	2006	2046	1,489,317	4.38%	65,836		28,597		94,433
4	USDA RUS 91-04 (260,000)	1986	2028	114,816	5.00%	5,986		9,328		15,314
5	USDA RUS 91-01 (591,000)	2006	2046	504,081	4.38%	22,284		9,706		31,990
6	Bank of Romney	2010	2022	65,636	3.50%	2,588		17,268		19,856
7	FNB Bank	2016	2021	35,332	5.50%	1,980		31,304		33,284
8	Hampshire County Dev. Auth.	2017		134,926	3.94%	5,316				5,316
9										-
10										-
11										-
12										-
13										-
14										-
15										-
16										-
17										-
18										-
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20										-
21										-
22										-
23										-
24										-
25										-
26										-
27										-
28										-
29										-
30										-
31	Total for Account 221			2,520,448		113,119	-	108,155	-	221,274

CENTRAL HAMPSHIRE PUBLIC SERVICE DISTRICT
CASE NO. 19-0087-PWD-CN-42A

APPROVED NON-PROJECT STEP 1 RATES
(Effective upon closing of project debt until April 29, 2020)

APPLICABILITY

Applicable within the entire territory served.

AVAILABILITY

Available for general domestic, commercial, industrial and sale for resale water service.

RATE

First	2,000 gallons used per month	$ 17.02 per 1,000 gallons
Next	3,000 gallons used per month	$ 15.86 per 1,000 gallons
Next	15,000 gallons used per month	$ 14.90 per 1,000 gallons
All Over	20,000 gallons used per month	$ 13.51 per 1,000 gallons

MINIMUM CHARGE

No bill will be rendered for less than the following based on meter size:

5/8 x 3/4 inch meter	$ 34.04 per month
3/4 inch meter	$ 51.06 per month
1 inch meter	$ 85.10 per month
1 1/2 inch meter	$ 170.20 per month
2 inch meter	$ 272.32 per month
3 inch meter	$ 544.64 per month
4 inch meter	$ 851.00 per month
6 inch meter	$1,702.00 per month

DELAYED PAYMENT PENALTY

The above schedule is net. On all accounts not paid in full when due, ten percent will be added to the net current amount unpaid. This delayed payment penalty is not interest and is to be collected only once for each bill where it is appropriate.

RECONNECTION

$25.00 - To be charged whenever the supply of water is turned off for violation of rules, non-payment of bills or fraudulent use of water.

TAP FEE

The following charge is to be made whenever the utility installs a new tap to serve an applicant.

A tap fee of $350.00 will be charged to all customers who apply for service outside of a certificate proceeding before the Commission for each new tap to the system.

PRIVATE FIRE PROTECTION SERVICE

Where connections, hydrants, sprinklers, etc. on private property are maintained by the customer:

2 inch Service Line with hydrants, sprinklers, and/or hose connections	$ 5.09	per month
4 inch Service Line with hydrants, sprinklers, and/or hose connections	$20.38	per month
6 inch Service Line with hydrants, sprinklers, and/or hose connections	$50.94	per month
8 inch Service Line with hydrants, sprinklers, and/or hose connections	$76.40	per month

LEAK ADJUSTMENT INCREMENT

$6.97 per 1,000 gallons is to be used when the bill reflects unusual water consumption which can be attributed to eligible leakage on the customer's side of the meter. This rate shall be applied to all such consumption above the customer's historical average usage.

RETURNED CHECK CHARGE

A service charge equal to the actual bank fee assessed to the District, or a maximum of $25.00 will be imposed upon any customer whose check for payment of charges is returned by the bank due to insufficient funds

SECURITY DEPOSIT

Not to exceed two-twelfth's (2/12) of the average annual usage of the applicant's specific customer class or fifty dollars, whichever is greater. This fee may be changed by applicable statutory provisions.

APPENDIX

F

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☐ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

Ruitan Club

SHEET NO. 1 OF 4

*CLIENT NAME Mill Creek Ruitan - Ruitan Club

*ADDRESS 408 W. Ridge Loop Rd. Romney WV. 26757

CUSTOMER # COOLBrightsville *TEL.# 304-822-7842 FAX # _____

*SAMPLER (S) DJ E-MAIL WVIceman1@frontier.net

LABORATORY #	*DATE	*TIME	COMP	GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Radium 226	Radium 228	*PROJECT/REMARKS
30248	3/20/19	9:10			DW	5.2°	1						X			Kitchen Sink

SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE _____ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Don Judy	DATE: 3-20-19	PRINT: T Miller
SIGN:	TIME: 0910 1320	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS:

PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IN NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER. NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

*TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☐ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

Faggioli
2 of 4

*CLIENT NAME Mill Creek Ruitan - Faggioli
*ADDRESS 408 W. Ridge Loop Rd. Romney W.V. 26757
CUSTOMER # C00100 Purgitsville *TEL.# 304 822-7842 FAX #
*SAMPLER (S) DJudy E-MAIL

SHEET NO. # OF 2

LABORATORY #	*DATE	*TIME	*COMP	*GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Radium 2261228							*PROJECT/REMARKS
302491	3/20/19	930			DW	5.2°	1						X	✓							Main Line

SAMPLES DO ✓ DO NOT ______ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT ______ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT ______ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE ______ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

REMARKS:

PWS# ______

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Don Judy SIGN: [signature]	DATE: 3-20-19 TIME: ~~0930~~ 1320	PRINT: Miller SIGN: [signature]
*RELINQUISHED BY: PRINT: SIGN:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:
*RELINQUISHED BY: PRINT: SIGN:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:
*COURIER: TRACKING #:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:

WEATHER/TEMPERATURE:
☐ **RUSH STATUS** (INITIAL ACCEPTANCE ______)
*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY
SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IN NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

* TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☐ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

High

*CLIENT NAME Mill Creek Raritan - High

*ADDRESS 408 W. Ridge Loop Rd. Romney WV. 26757

CUSTOMER # #00101 Purgitsville *TEL.# 304 822-7842 FAX # _____

*SAMPLER (S) DJ E-MAIL _____

SHEET NO. 3 OF 4

LABORATORY #	*DATE	*TIME	*COMP	*GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Parlsum	224+225	*PROJECT/REMARKS
302492	3/20/19	9:50		-	DW	5.2°	1						X	✓	✓	Bypass Faucet
	✓															

SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE _____ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Don Sudy	DATE: 3-20-19	PRINT: T Miller
SIGN:	TIME: 0950 1320	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS:

PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

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*** TO BE COMPLETED BY CLIENT ***

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WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

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25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

Vesch

*CLIENT NAME Mill Creek Ruiton - Vesch

*ADDRESS 408 W. Ridge Loop Rd. Romney WV. 26757

CUSTOMER # #00100 Purgitsville *TEL.# _____ FAX # _____

*SAMPLER (S) DL E-MAIL _____

SHEET NO. 4 OF 4

LABORATORY #	*DATE	*TIME	*COMP	*GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Radium 226, 228							*PROJECT/REMARKS
302493	3/20/19	10:10		✓	DW	5.5	1						1	✓	✓						Bypass Softener Bathroom

SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE _____ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Don Judy	DATE: 3-20-19	PRINT:
SIGN:	TIME: 1310 1320	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS:

PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

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ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 08, 2019

Ms. Tenley Miller
Reliance Laboratories, Inc.
2044 Meadowbrook Road
P.O. Box 4657
Bridgeport, WV 26330

RE: Project: 302487/302493
Pace Project No.: 30285346

Dear Ms. Miller:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Laura Pirilla

Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 302487/302493
Pace Project No.: 30285346

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 302487/302493
Pace Project No.: 30285346

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30285346001	302487-2019-DW	Drinking Water	03/20/19 09:10	03/21/19 09:40
30285346002	302491-2019-DW	Drinking Water	03/20/19 09:30	03/21/19 09:40
30285346003	302492-2019-DW	Drinking Water	03/20/19 09:50	03/21/19 09:40
30285346004	302493-2019-DW	Drinking Water	03/20/19 10:10	03/21/19 09:40

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 302487/302493
Pace Project No.: 30285346

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30285346001	302487-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346002	302491-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346003	302492-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346004	302493-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 302487/302493
Pace Project No.: 30285346

Method: EPA 903.1
Description: 903.1 Radium 226
Client: Reliance Laboratories, Inc.
Date: April 08, 2019

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 302487/302493
Pace Project No.: 30285346

Method: EPA 904.0
Description: 904.0 Radium 228
Client: Reliance Laboratories, Inc.
Date: April 08, 2019

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 302487/302493
Pace Project No.: 30285346

Sample: 302487-2019-DW **Lab ID: 30285346001** Collected: 03/20/19 09:10 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.
• Sampler's signature not present on the subconracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.793 ± 0.549 (0.711) C:NA T:95%**	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	**0.588 ± 0.282 (0.508) C:79% T:91%**	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302491-2019-DW **Lab ID: 30285346002** Collected: 03/20/19 09:30 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.
• Sampler's signature not present on the subconracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.207 ± 0.302 (0.508) C:NA T:91%**	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	**0.506 ± 0.300 (0.576) C:77% T:88%**	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302492-2019-DW **Lab ID: 30285346003** Collected: 03/20/19 09:50 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.
• Sampler's signature not present on the subconracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.388 ± 0.400 (0.600) C:NA T:91%**	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	**0.336 ± 0.336 (0.706) C:79% T:85%**	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302493-2019-DW **Lab ID: 30285346004** Collected: 03/20/19 10:10 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.
• Sampler's signature not present on the subconracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0671 ± 0.132 (0.182) C:NA T:97%**	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	**0.341 ± 0.350 (0.738) C:78% T:86%**	pCi/L	04/05/19 12:28	15262-20-1	

EPA - combined 226 + 228 limit of 5 pCi/L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 302487/302493
Pace Project No.: 30285346

QC Batch: 334940 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

METHOD BLANK: 1629907 Matrix: Water
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.922 ± 0.385 (0.611) C:78% T:88%	pCi/L	04/05/19 12:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 302487/302493
Pace Project No.: 30285346

QC Batch: 335112 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

METHOD BLANK: 1630779 Matrix: Water
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.383 (0.829) C:NA T:95%	pCi/L	04/02/19 21:22	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 302487/302493
Pace Project No.: 30285346

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

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☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Reliance Laboratories

*ADDRESS

CUSTOMER # *TEL. # FAX #

*SAMPLER (S) D Judy E-MAIL

SHEET NO. OF

LABORATORY #	*DATE	*TIME	COMP	GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Radium 226	Radium 228	*PROJECT/REMARKS
	3/20	9:00		X	DW		1	1						Y	X	30487-2019-DW 001
	"	9:30	"	"	"		"	"						"	"	30491-2019-DW 002
	"	9:50	"	"	"		"	"						"	"	30492-2019-DW 003
	↓	10:10	↓	↓	↓		↓	↓						↓	↓	30493-2019-DW 004

WO# : 30285346

30285346

SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE ____ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Jessica DiMaggio	DATE: 3-20-19	PRINT:
SIGN: JDiMaggio	TIME: 1700	SIGN: FedEx
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE: 3-21-19	PRINT: Emily Tyson
SIGN: FedEx	TIME: 0940	SIGN: Emily
2 *RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
3 *COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS:

PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

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* TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net *MARTINSBURG, WV*

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 156, 181
MD Department of Environment #: 336, 337| US Environmental Protection Agency #: WV00042, WV00801

Wednesday, March 20, 2019

Pace Analytical Services
1638 Roscytown Road
Suites 2,3,4
Greensburg, PA 15601

30285346

Please analyze the following sample for: **Radium 226-228**

Please identify as:

302487-2019-DW	Date/Time Sampled: 3/20/2019 9:10
302491-2019-DW	Date/Time Sampled: 3/20/2019 9:30
302492-2019-DW	Date/Time Sampled: 3/20/2019 9:50
302493-2019-DW	Date/Time Sampled: 3/20/2019 10:10

Sampled by: D.Judy

PLEASE SEND RESULTS & INVOICE TO:

RELIANCE LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsl.net

Thank You

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Reliance Labs Project # 30285346

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 774754429197

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 2.0 °C Correction Factor: 0.0 °C Final Temp: 2.0 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D3581 / Date and initials of person examining contents: ET 3-21-19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: DW		✓		5. no time or date on samples
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2 / Initial when completed ET / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:	✓			18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET Date: 3-21-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

For uranium mill tailing sites with radium contamination, EPA has established a radium level of 5 picoCuries per gram (pCi/g) above background as a protective health-based level for cleanup of soil in the top 15 centimeters. These regulations under 40 Code of Federal Regulations (CFR) Part 192.12 are often Applicable or Relevant and Appropriate Requirements (ARARs) at Superfund sites. The EPA document "Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA Sites" provides guidance to EPA staff regarding when the use of 5 picoCuries per gram (pCi/g) is an ARAR or otherwise recommended cleanup level for any 15 centimeters of subsurface radium-contaminated soil other than the first 15 centimeters. This document is available online at: http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/umtrcagu.pdf.

If regulations under 40 CFR Part 192.12 are an ARAR for radium in soil at a Superfund site, then Nuclear Regulatory Commission regulations for uranium mill tailing sites under 10 CFR Part 40 Appendix A, I, Criterion 6(6), may be an ARAR at the same site. Criterion 6(6) requires that the level of radiation, called a "benchmark dose," that an individual would receive be estimated after that site was cleaned up to the radium soil regulations under 40 CFR Part 192.12. This benchmark dose then becomes the maximum level of radiation that an individual may be exposed to from all radionuclides, except radon, in both the soil and buildings at the site. The EPA document "Remediation Goals for Radioactively Contaminated CERCLA Sites Using the Benchmark Dose Cleanup Criterion 10 CFR Part 40 Appendix A, I, Criterion 6(6)" provides guidance to EPA staff regarding how Criterion 6(6) should be implemented as an ARAR at Superfund sites, including using a radium soil cleanup level of 5 pCi/g in both the surface and subsurface in estimating a benchmark dose. This document is available online at: http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/part40.pdf.

EPA has established a Maximum Contaminant Level (MCL) of 5 picoCuries per liter (pCi/L) for any combination of radium-226 and radium-228 in drinking water. EPA has also established a MCL of 15 pCi/L for alpha particle activity, excluding radon and uranium, in drinking water. Radium-226 is covered under this MCL.

For more information about how EPA addresses radium at Superfund sites

Contact Stuart Walker of EPA:
(703) 603-8748 or walker.stuart@epa.gov
or visit EPA's Superfund Radiation Webpage:
http://www.epa.gov/superfund/resources/radiation/

Reliance Laboratories, Inc.
2044 Meadowbrook Road | P.O. Box 4657
Bridgeport, WV 26330
Phone: 304.842.5285 | Fax: 304.842.5351

Martinsburg Laboratory
Ridgefield Business Center | 25 Crimson Circle
Martinsburg, WV 25403
Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

LABORATORY REPORT SUMMARY

Client: C0010D

Thursday, November 15, 2018

Mill Creek Ruritan Club
408 West Ridge Loop Rd.
Romney WV 26757

Total Number of Pages: 9
(Not Including C.O.C.)
Page 1 of 9

Lab ID	Sample ID	Sample ID 2	Sample Date
296157-2018-DW	Mill Creek #1 - 2 mile south of Huffman Rd on US 220	Mill Creek Ruritan Club	10/29/2018
296158-2018-DW	Faggili #2 - 0.7 mile west of 220 on Huffman	Mill Creek Ruritan Club	10/29/2018
296159-2018-DW	High #3 - old Mantown Rd (1/4 mile south of Huffman Rd turn off on Rt 220 - at 1/2 mile on Old Mtn Rd. (near mantown)	Mill Creek Ruritan Club	10/29/2018
296160-2018-DW	White Pine #4 - In between Huffman & Old Mtn Rd on 220 (2.5 mile south of test #1)	Mill Creek Ruritan Club	10/29/2018

The enclosed results have been analyzed according to the referenced method and SOP. Any deviations to the method have been noted on the report. Unless otherwise noted, all results have been verified to meet quality control requirements of the method. All analysis performed by Reliance Laboratories, Bridgeport, WV or Reliance Laboratories, Martinsburg, WV, as noted on laboratory report. This report may not be reproduced, except in full, without written approval of Reliance Laboratories, Inc.

Report Reviewed By Tenley Miller Digitally signed by Tenley Miller Date: 2018.11.16 10:06:58 -05'00'

RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net *MARTINSBURG, WV*

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337| US Environmental Protection Agency #: WV00042, WV00901

PURGEABLE ORGANICS – CHAIN OF CUSTODY & SAMPLE COLLECTION PROCEDURE

1. Samples should be grab samples and should be taken from a cold water tap where drinking water or water for human consumption is normally obtained.
2. Sample bottles should be handled aseptically to prevent contamination of samples. Do not touch the inside of the bottles or caps. Do not allow either to touch the faucet. Do not remove any preservatives present.
3. Open the cold water tap and allow water to run evenly for three to five minutes in order to equilibrate system. Generally, the water temperature will stabilize indicating complete equilibration.
4. Collect grab samples in 40 ml glass vials. Slowly fill each container to overflowing, place the Teflon lined cap on the vial and seal. Invert the sample to check for air bubbles, if bubbles are present remove cap and continue filling vial. Fill all empty vials.
5. Return trip blank unaltered to the laboratory with sample vials.
6. Carefully pack all sample containers in ice to maintain 4 degrees Celsius.
7. Complete all information below and return with sample and trip blank to the laboratory.

Please provide all necessary information.

SAMPLING INFORMATION – COMPLETE THIS DOCUMENT IN INDELIBLE INK

Firm: _____ Contact: Donald Judy

Address: 408 West Ridge Loop Road Romney WV 26757

Telephone: 304-822-7842 Fax: _____

Public Water System (PWS) I.D.: _____

Describe Sample Location: 4651 Parkersville Pike Parkersville WV 26852

Sample Date: 10-29-18 Sample Time: 9:15 AM Collected By: Donald Judy

Sample Witnessed By: Tom Hugh Date Received at Laboratory: _____

Preserved at Lab (Y/N): _____ Proper Preservatives: _____ Proper Containers Used: _____

Holding Times Observed: _____ Disinfectant Residual: _____

Sample Temperature Upon Receipt: _____ Received By: _____

Shipper/Tracking #: _____

Results Authorized By: _____ Date: _____

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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296157-2018-DW **Sample ID:** Mill Creek #1
Mill Creek Ruritan Club

Parameter		Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Inorganics									
Total Lead	J	0.00080	mg/l	EPA 200.8 R5.4	11/1/2018	12:58	TH	0.0005	0.001
Total Iron	✓	0.027	mg/l	EPA 200.8 R5.4	11/1/2018	12:58	TH	0.004	0.01
Total Arsenic		0.0094	mg/l	EPA 200.8 R5.4	11/1/2018	12:58	TH	0.001	0.005

Iron - Secondary recommended limit = 0.30 mg/L

Arsenic limit. ~~0.001~~ 0.01 mg/L.

Lead – 15µg/L limit

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected:	10/29/2018	9:10
Sample Submitted By:	D. JUDY	
Date Sample Received:	10/29/2018	13:53
Sample temp. upon receipt:	4.2 Deg C	

ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit
MRL - Minimum Reporting Limit
MCL - Maximum Contaminant Level, USEPA Regulated
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)

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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296157-2018-DW **Sample ID:** Mill Creek #1
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons								
TPH - GRO	ND	mg/l	SW8015B/5030B	11/5/2018	15:59	TM	0.04	0.5
4-Bromochlorobenzene (Surrogate	99.1	%	SW8015B	11/5/2018	15:59	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018	9:27	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018	9:27	TM	0.54	1
o-Terphenyl (Surrogate)	83.1	%	SW8015B	11/6/2018	9:27	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected:	10/29/2018	9:10
Sample Submitted By:	D. JUDY	
Date Sample Received:	10/29/2018	13:53
Sample temp. upon receipt:	4.2 Deg C	

ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit
MRL - Minimum Reporting Limit
MCL - Maximum Contaminant Level, USEPA Regulated
J = Reported value is an estimate because concentration is less than the MRL

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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296158-2018-DW **Sample ID:** Faggili #2
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Inorganics								
Total Lead	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:03	TH	0.0005	0.001
Total Iron	0.530	mg/l	EPA 200.8 R5.4	11/1/2018	13:03	TH	0.004	0.01
Total Arsenic	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:03	TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10.50
Sample Submitted By: D. JUDY
Date Sample Received: 10/29/2018 13 53
Sample temp. upon receipt: 4.2 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated
ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

"Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018
Page 5 of 9

Lab Number: 296158-2018-DW **Sample ID:** Faggili #2
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons								
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018	9:22	TH	0.04	0.5
4-Bromochlorobenzene (Surrogate	91.2	%	SW8015B	11/6/2018	9:22	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018	10:08	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018	10:08	TM	0.54	1
o-Terphenyl (Surrogate)	110	%	SW8015B	11/6/2018	10:08	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
Sample Submitted By: O. JUDY
Date Sample Received: 10/29/2018 13:53
Sample temp. upon receipt: 4.2 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296159-2018-DW **Sample ID:** High #3
Mill Creek Ruritan Club

Parameter		Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Inorganics									
Total Lead		ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:08	TH	0.0005	0.001
Total Iron	X	1.28	mg/l	EPA 200.8 R5.4	11/1/2018	13:08	TH	0.004	0.01
Total Arsenic		ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:08	TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:30
Sample Submitted By: D. JUDY
Date Sample Received: 10/29/2018 13:53
Sample temp. upon receipt: 4.2 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**

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2044 Meadowbrook Road | P.O. Box 4657
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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296159-2018-DW **Sample ID:** High #3
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons								
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018	9:53	TM	0.04	0.5
4-Bromochlorobenzene (Surrogate	102	%	SW8015B	11/6/2018	9:53	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018	10:49	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018	10:49	TM	0.54	1
o-Terphenyl (Surrogate)	113	%	SW8015B	11/6/2018	10:49	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:30
Sample Submitted By: D. JUDY
Date Sample Received: 10/29/2018 13:53
Sample temp. upon receipt: 4.2 Deg C
MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated
ND = Not Detected at the MDL or MRL
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Mill Creek Ruritan Club
408 West Ridge Loop Rd.

Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296160-2018-DW **Sample ID:** White Pine #4
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Lead	ND	mg/l	EPA 200.8 R5.4	11/1/2018 13:12	TH	0.0005	0.001
Total Iron	0.219	mg/l	EPA 200.8 R5.4	11/1/2018 13:12	TH	0.004	0.01
Total Arsenic	ND	mg/l	EPA 200.8 R5.4	11/1/2018 13:12	TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
Sample Submitted By: D. JUDY
Date Sample Received: 10/29/2018 13:53
Sample temp. upon receipt: 4.2 Deg C

MDL - Minimum Detectable Limit
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***Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**

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Romney, WV 26757

Thursday, November 15, 2018

Lab Number: 296160-2018-DW **Sample ID:** White Pine #4
Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018 10:52	TM	0.04	0.5
4-Bromochlorobenzene (Surrogate	76.7	%	SW8015B	11/6/2018 10:52	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018 11:30	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018 11:30	TM	0.54	1
o-Terphenyl (Surrogate)	84.3	%	SW8015B	11/6/2018 11:30	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
Sample Submitted By: D. JUDY
Date Sample Received: 10/29/2018 13:53
Sample temp. upon receipt: 4.2 Deg C
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J = Reported value is an estimate because concentration is less than the MRL

"Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Donald Judy Mill Creek Runtan Club

*ADDRESS 408 West Ridge Loop Rd Romney WV 26757

CUSTOMER # CC010D *TEL.# 304-822-7842 FAX # _____

*SAMPLER (S) Donald Judy E-MAIL _____

SHEET NO. 1 OF 1

LABORATORY #	*DATE	*TIME	GRAB	COMP	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Methane	TPH-DRO/GRO	PCB's, FP					*PROJECT/REMARKS
29L6157	10/23/18	9:10			DW	4.2°	6	1p		3v			1g,1p	X	X	X					Mill Creek Runtan CC
29L6158	↓	10:50			↓																Mill Creek Runtan #1
29L6159	↓	10:30			↓		6	1p		3v			1g,1p	X	X	X					Faggili #2
29L6160	↓	10:50			↓																High #3
							6	1p		3v			1g,1p	X	X	X					White Pine #4
							6	1p		3v			1g,1p	X	X	X					

SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT _____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO _____ DO NOT ✓ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE _____ ARE NOT ✓ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Donald Judy	DATE: 10-29-18	PRINT:
SIGN: [signature]	TIME: 13:53	SIGN: Crystal D. Parker
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS: *please return samples w/in 5 days of collection PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IN NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

*TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net *MARTINSBURG, WV*

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337| US Environmental Protection Agency #: WV00042, WV00901

WATER SUPPLY SAMPLING – CHAIN OF CUSTODY & SAMPLE COLLECTION PROCEDURE

1. Samples should be grab samples and should be taken from a cold water tap where drinking water or water for human consumption is normally obtained.
2. Sample bottles should be handled aseptically to prevent contamination of samples. Do not touch the inside of the bottles or caps. Do not allow either to touch the faucet.
3. Open the cold water tap and allow water to run evenly for three to five minutes in order to equilibrate system. Generally, the water temperature will stabilize indicating complete equilibration.
4. Fill all containers completely allowing no air space to remain.

MICROBIOLOGICAL/BACTERIOLOGICAL SAMPLES ONLY

Collect at least 100 ml of sample (fill to the mark on the sample container). Allow one (1) inch of airspace in the sample container. Water taps selected for sampling must be free of aerators, strainers, hose attachments, mixing devices and purification devices. **THE SAMPLE CONTAINER IS STERILE. The pill included in the container removes chlorine residual.** Samples should be analyzed within 30 hours of collection (HPC 8 hours). Samples should remain < or = 10 degrees C during shipment.

5. Close bottles tightly. Write name, date, time of sampling, and area where sample was taken on the bottle and on the Chain-of-Custody form.
6. Carefully pack all sample containers when shipping to the laboratory.
7. Ship/deliver to the address above.

CAUTION: Some sample bottles contain stabilizing reagents which are corrosive and should be handled carefully. If reagents come in contact with skin, flush with water.

SAMPLING INFORMATION – COMPLETE THIS DOCUMENT IN INDELIBLE INK

Firm: _____ Contact: Donald Judy

Address: 408 West Ridge Loop Road Romney WV 26757

Telephone: 304-822-7842 Fax: _____ Public Water System (PWS) I.D.: _____

Describe Sample Location: 4651 Burgettsville Pike Burgettsville WV 26852

Sample Date: 10-29-18 Sample Time: 9:15Am Collected By: Donald Judy

Sample Witnessed By: Tom Hogh Date Received at Laboratory: _____

Preserved at Lab (Y/N): _____ Proper Preservatives: _____ Proper Containers Used: _____

Holding Times Observed: _____ Disinfectant Residual: _____ Received By: _____

Sample Temperature Upon Receipt: _____ Shipper/Tracking #: _____

Results Authorized By: _____ Date: _____

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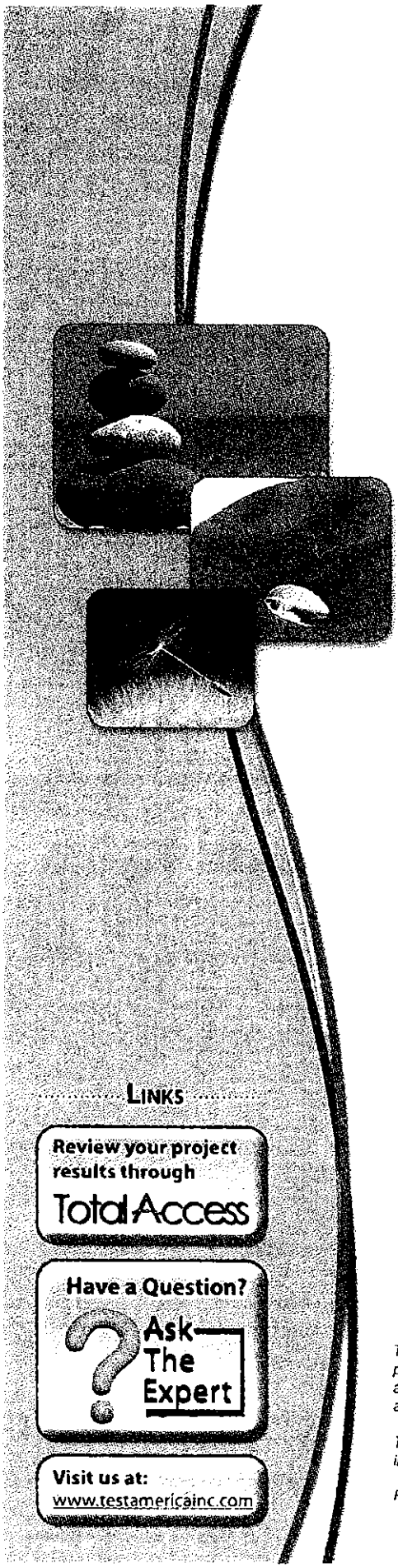
RIDGEFIELD BUSINESS CENTER | 25 CRIMSON CIRCLE | MARTINSBURG, WV 25403 | VOICE: 304-596-2084 | FAX: 304-596-2086
EMAIL: RELIANCELABS@WVDSL.NET | WEB: WWW.RELIANCELABS.NET



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204
Tel: (615)726-0177

TestAmerica Job ID: 490-162266-1
Client Project/Site: RSK / 296157, 296158, 296159, 296160

For:
Reliance Laboratories Inc
PO BOX 4657
Bridgeport, West Virginia 26330

Attn: Tenley Miller

Jennifer Gambill

Authorized for release by:
11/8/2018 5:30:24 PM

Jennifer Gambill, Project Manager I
(615)301-5044
jennifer.gambill@testamericainc.com

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Table of Contents

Sample Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-162266-1	296157-2018-DW	Water	10/29/18 09:10	10/31/18 10:00
490-162266-2	296158-2018-DW	Water	10/29/18 10:50	10/31/18 10:00
490-162266-3	296159-2018-DW	Water	10/29/18 10:30	10/31/18 10:00
490-162266-4	296160-2018-DW	Water	10/29/18 10:50	10/31/18 10:00

Case Narrative

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Job ID: 490-162266-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative
490-162266-1

Comments
No additional comments.

Receipt
The samples were received on 10/31/2018 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.5° C.

GC Semi VOA
Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 490-555810.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296157-2018-DW
Date Collected: 10/29/18 09:10
Date Received: 10/31/18 10:00

Lab Sample ID: 490-162266-1
Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 11:53	1
Ethane	22.2		5.00	2.70	ug/L			11/08/18 11:53	1
Methane	37800	37.8 mg/L	400	136	ug/L			11/08/18 13:15	80
Propane	ND		5.00	3.30	ug/L			11/08/18 11:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Acetylene (Surr)	83		70 - 130		11/08/18 11:53	1

> 20 mg/L yields explosive conditions
10-20 mg/L - monitoring advisable
< 10 mg/L - safe.

Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296158-2018-DW
Date Collected: 10/29/18 10:50
Date Received: 10/31/18 10:00

Lab Sample ID: 490-162266-2
Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:00	1
Ethane	9.89		5.00	2.70	ug/L			11/08/18 12:00	1
Methane	13900	13.9 mg/L.	200	68.0	ug/L			11/08/18 12:52	40
Propane	ND		5.00	3.30	ug/L			11/08/18 12:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene (Surr)	*87*		*70 - 130*		*11/08/18 12:00*	*1*

Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296159-2018-DW
Date Collected: 10/29/18 10:30
Date Received: 10/31/18 10:00

Lab Sample ID: 490-162266-3
Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:04	1
Ethane	ND		5.00	2.70	ug/L			11/08/18 12:04	1
Methane	7.90	0.0079 mg/L	5.00	1.70	ug/L			11/08/18 12:04	1
Propane	ND		5.00	3.30	ug/L			11/08/18 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene (Surr)	*86*		*70 - 130*		*11/08/18 12:04*	*1*

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Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296160-2018-DW
Date Collected: 10/29/18 10:50
Date Received: 10/31/18 10:00

Lab Sample ID: 490-162266-4
Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:33	1
Ethane	13.3		5.00	2.70	ug/L			11/08/18 12:33	1
Methane	6510	6.51 mg/L	100	34.0	ug/L			11/08/18 12:58	20
Propane	ND		5.00	3.30	ug/L			11/08/18 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene (Surr)	*85*		*70 - 130*		*11/08/18 12:33*	*1*

QC Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Method: RSK-175 - Dissolved Gases in Water

Lab Sample ID: MB 490-555810/6
Matrix: Water
Analysis Batch: 555810

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 11:19	1
Ethane	ND		5.00	2.70	ug/L			11/08/18 11:19	1
Methane	ND		5.00	1.70	ug/L			11/08/18 11:19	1
Propane	ND		5.00	3.30	ug/L			11/08/18 11:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Acetylene (Surr)	96		70 - 130		11/08/18 11:19	1

Lab Sample ID: LCS 490-555810/7
Matrix: Water
Analysis Batch: 555810

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Butane	1020	907.9		ug/L		89	85 - 115
Ethane	527	494.1		ug/L		94	85 - 115
Methane	287	267.5		ug/L		93	85 - 115
Propane	771	707.3		ug/L		92	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Acetylene (Surr)	96		70 - 130

Lab Sample ID: LCSD 490-555810/8
Matrix: Water
Analysis Batch: 555810

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Butane	1020	895.6		ug/L		88	85 - 115	1	30
Ethane	527	489.1		ug/L		93	85 - 115	1	30
Methane	287	259.6		ug/L		91	85 - 115	3	30
Propane	771	691.2		ug/L		90	85 - 115	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Acetylene (Surr)	92		70 - 130

QC Association Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

GC VOA

Analysis Batch: 555810

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-162266-1	296157-2018-DW	Total/NA	Water	RSK-175	
490-162266-1	296157-2018-DW	Total/NA	Water	RSK-175	
490-162266-2	296158-2018-DW	Total/NA	Water	RSK-175	
490-162266-2	296158-2018-DW	Total/NA	Water	RSK-175	
490-162266-3	296159-2018-DW	Total/NA	Water	RSK-175	
490-162266-4	296160-2018-DW	Total/NA	Water	RSK-175	
490-162266-4	296160-2018-DW	Total/NA	Water	RSK-175	
MB 490-555810/6	Method Blank	Total/NA	Water	RSK-175	
LCS 490-555810/7	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 490-555810/8	Lab Control Sample Dup	Total/NA	Water	RSK-175	

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Lab Chronicle

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296157-2018-DW — **Lab Sample ID: 490-162266-1**
Date Collected: 10/29/18 09:10 — **Matrix: Water**
Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 11:53	AAB	TAL NSH
Total/NA	Analysis	RSK-175		80	21 mL	21 mL	555810	11/08/18 13:15	AAB	TAL NSH

Client Sample ID: 296158-2018-DW — **Lab Sample ID: 490-162266-2**
Date Collected: 10/29/18 10:50 — **Matrix: Water**
Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:00	AAB	TAL NSH
Total/NA	Analysis	RSK-175		40	21 mL	21 mL	555810	11/08/18 12:52	AAB	TAL NSH

Client Sample ID: 296159-2018-DW — **Lab Sample ID: 490-162266-3**
Date Collected: 10/29/18 10:30 — **Matrix: Water**
Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:04	AAB	TAL NSH

Client Sample ID: 296160-2018-DW — **Lab Sample ID: 490-162266-4**
Date Collected: 10/29/18 10:50 — **Matrix: Water**
Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:33	AAB	TAL NSH
Total/NA	Analysis	RSK-175		20	21 mL	21 mL	555810	11/08/18 12:58	AAB	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases in Water	RSK	TAL NSH

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Accreditation/Certification Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Laboratory: TestAmerica Nashville

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	219	02-28-19

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

490-162266 Chain of Custody

Cooler Received/Opened On 10-31-2018 @ 10:00

Time Samples Removed From Cooler 12:19 Time Samples Placed In Storage 12:23 (2 Hour Window)

1. Tracking # 1451 (last 4 digits, FedEx) Courier: _FedEx_

IR Gun ID 14740456 pH Strip Lot _____ Chlorine Strip Lot _____

2. Temperature of rep. sample or temp blank when opened: 2.5 Degrees Celsius

3. If item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: _____

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) _____

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # _____

I certify that I unloaded the cooler and answered questions 7-14 (initial) 2.7

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) 2.7

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) 2.7

I certify that I attached a label with the unique LIMS number to each container (initial) 2.7

21. Were there Non-Conformance issues at login? YES NO Was a NCM generated? YES NO ...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 8/23/17

TestAmerica-Nash

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☒ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsi.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

Loc: 490
162266

*CLIENT NAME Reliance Laboratories

*ADDRESS

CUSTOMER # ___ *TEL. # ___ FAX # ___

*SAMPLER (S) D. Judy E-MAIL ___

SHEET NO. ___ OF ___

LABORATORY #	*DATE	*TIME	COMP.	GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes	No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Dissolved Methane/ Ethane/ Butane/ Propane	*PROJECT/REMARKS
	10/29	9:10		X	DW			1			1v				X	296157-2018-DW
	↓	10:50		↓	↓			↓			↓				↓	296158-2018-DW
	↓	10:30		↓	↓			↓			↓				↓	296159-2018-DW
	↓	10:50		↓	↓			↓			↓				↓	296160-2018-DW

SAMPLES DO ✓ DO NOT ___ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT ___ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT ___ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE ✓ ARE NOT ___ FOR REGULATORY COMPLIANCE PURPOSES

REMARKS: TA-NAS / 2.5

PWS# ___

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Jessica Dellagatta SIGN: J Dellagatta	DATE: 10-30-18 TIME: 1700	PRINT: SIGN: Fedex
*RELINQUISHED BY: PRINT: SIGN: Fedex	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:
*RELINQUISHED BY: PRINT: SIGN:	*DATE/TIME DATE: 10/31/18 TIME: 1000	*RECEIVED BY: PRINT: Jevens Jodan SIGN: Jevens Jodan
*COURIER: TRACKING #:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:

WEATHER/TEMPERATURE:

☐ **RUSH STATUS** (INITIAL ACCEPTANCE ___)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IS NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER. NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

* TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net *MARTINSBURG, WV*

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181 | MD Department of Environment #: 336, 337| US Environmental Protection Agency #: WV00042, WV00901

Tuesday, October 30, 2018

490-162266

TestAmerica - Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

Please analyze the following sample(s) for: **Dissolved Methane/Ethane/Butane/Propane**

Please identify as:

296157-2018-DW	DATE/TIME SAMPLED: 10/29/2018 9:10
296158-2018-DW	DATE/TIME SAMPLED: 10/29/2018 10:50
296159-2018-DW	DATE/TIME SAMPLED: 10/29/2018 10:30
296160-2018-DW	DATE/TIME SAMPLED: 10/29/2018 10:50

Sampled by: D.Judy

PLEASE SEND RESULTS & INVOICE TO:

RELIANCE LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsl.net

Thank You

EASTERN
West Virginia Community & Technical College

Amo Oliverio
Biological and Environmental Technology Coordinator\Faculty
Eastern WV Community and Technical College

December 12, 2019

To whom it may concern,

A few months ago, Mr. Judy visited my students at Eastern WV Community and Technical College with an almost unbelievable story. He showed us a video of him igniting flowing tap water on fire, reviewed water analysis reports, and described disease incidences involving the citizens of the Purgitsville area. Impassioned by the story, my students and I began scouring the scientific literature to better understand the health risks associated with some of the contaminants found in the drinking water the families of Purgitsville have unknowingly been drinking.

The flaming water is due to amounts of methane, ethane, and acetylene, which are all extremely flammable natural gases. Exposure to these gases can cause headaches, dizziness, nausea, vomiting, and loss of coordination, and possible suffocation. Many sources stated that these natural gases have not been tested for their ability to cause reproductive harm, which is a possibility and needs further study.

Some of the wells also tested positive for small amounts of arsenic. Arsenic is a heavy metal that can form compounds that may build up in tissues with high fat content until they become toxic. Arsenic increases the risk of cancer, especially in the lung, bladder, skin, kidney, and liver. A study in Chile discovered a higher mortality rate of liver cancer in a population whose drinking water contained small amounts of arsenic. The liver cancer rate was especially high in children.

On top of the list of the most concerning contaminants found were two known cancer-causing forms of the radioactive element, radium (radium 226 and radium 228). Radium is a radioactive element that occurs when uranium naturally decays deep in the Earth. Ingested radium is initially absorbed into the blood. What is not eliminated in the urine accumulates in the kidney, soft tissues, and especially in the bones of humans. As the radium bioaccumulates, or builds up in the body over time, the incidence and mortality risk of cancer greatly increases, especially breast, liver, stomach, and many types of bone cancer.

Just one of these contaminants in drinking water would be a major concern, let alone the combination all of these carcinogenic toxins in a family's drinking water. The medical community have yet to clearly define the health risks of these contaminants, especially when ingesting small amounts in various combinations over long periods of time and should be thoroughly explored in the future. In the meantime, the people of Purgitsville need to have access to clean and healthy drinking water for themselves and their future children.

Sincerely,

Amo Oliverio

316 Eastern Drive
Moorefield, WV 26836
www.EasternWV.edu

phone: (304) 434-8000
fax: (304) 434-7000
toll free: (877) 982-2322

Work Cited

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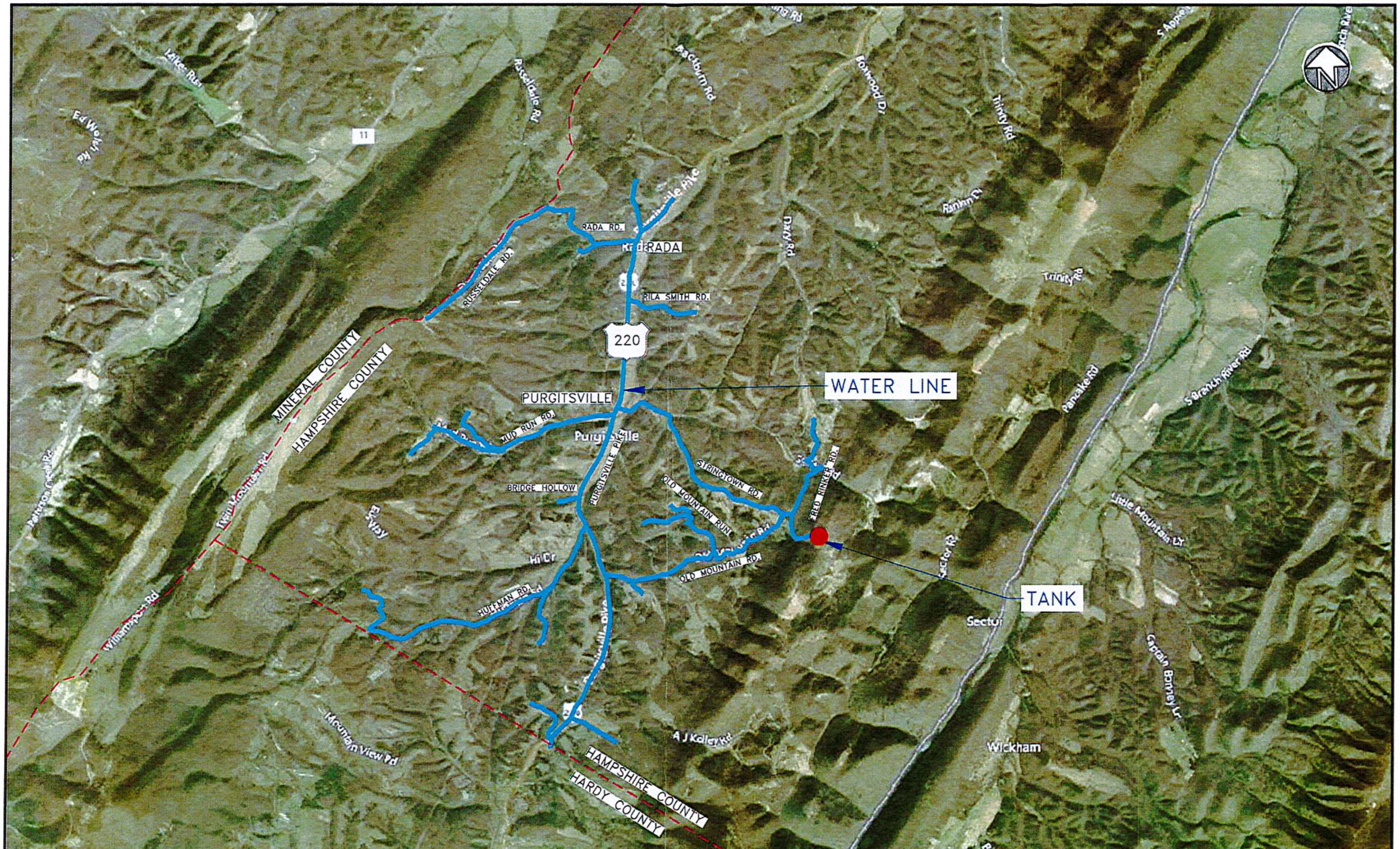
APPENDIX
G



No.	DATE	DESCRIPTION	BY
1	3/2020	OTHER	

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT -
DRAWN BY RKB
CONST CHECKED BY -
RECORD CHECKED BY -
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14780 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX G
PROJECT AREA WATER DISTRIBUTION SCHEMATIC

NONE
PROJECT NO. CE10-10W
DRAWING NO. **APPX-G**

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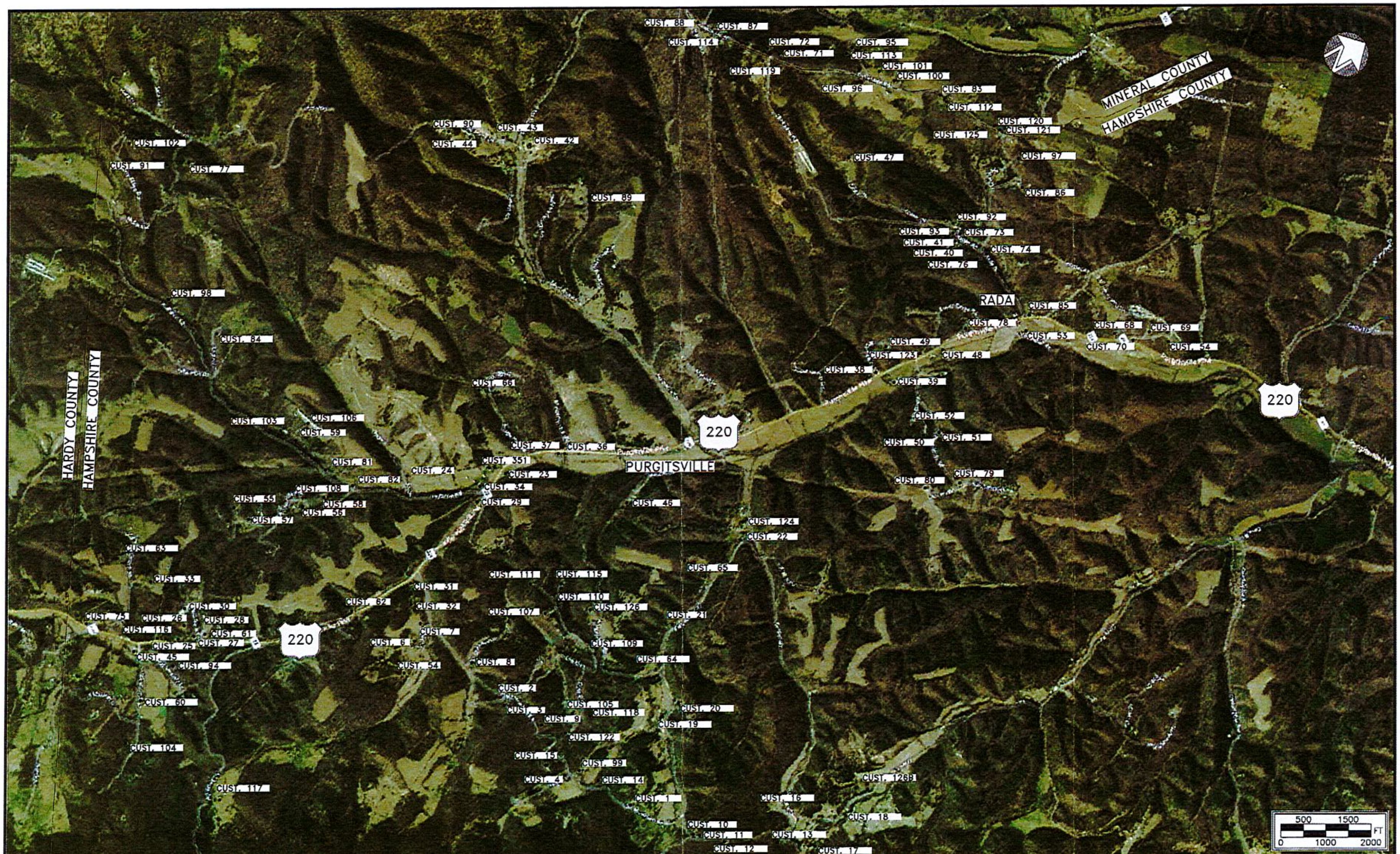

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97-14TH STREET, WHEELING, WV 26003-2497

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CONST CHECKED BY: -
RECORD CHECKED BY: -
ISSUE DATE: 3/2020

DOMINICK P. CERRONE REGISTERED 14790 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

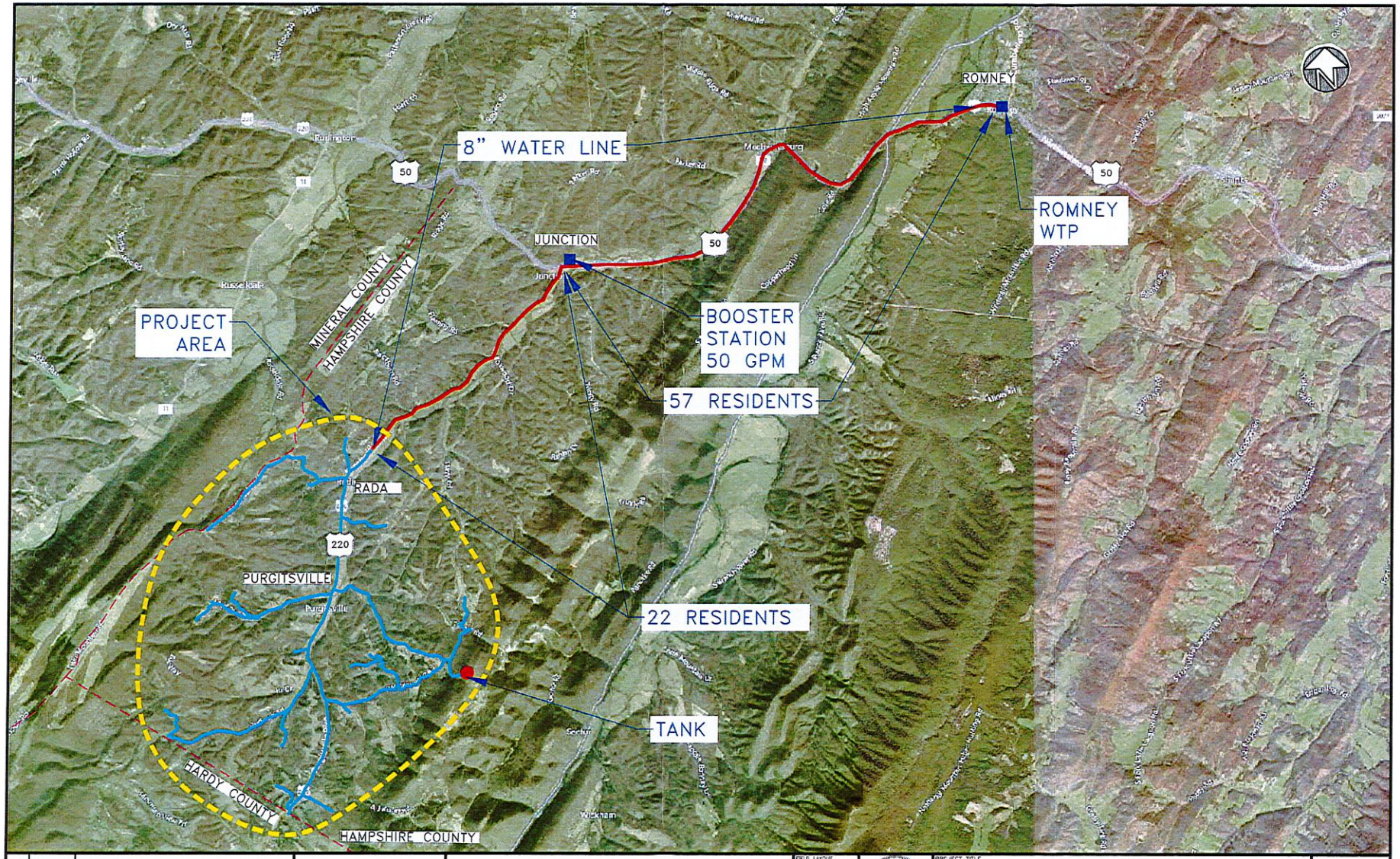
PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX G
MAP OF SIGNED CUSTOMERS

AS SHOWN
PROJECT NO. CE10-10W
DRAWING NO. APPX-G

APPENDIX

H



No.	DATE	DESCRIPTION	BY
	3/2020	ISSUED	RRB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT –
DRAWN BY RRB
CONST CHECKED BY –
RECORD CHECKED BY –
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14750 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX H
ALTERNATIVE 1 – WATER FROM THE CITY OF ROMNEY

NONE
PROJECT NO. CE10-10W
DRAWING NO. **ALT-1**

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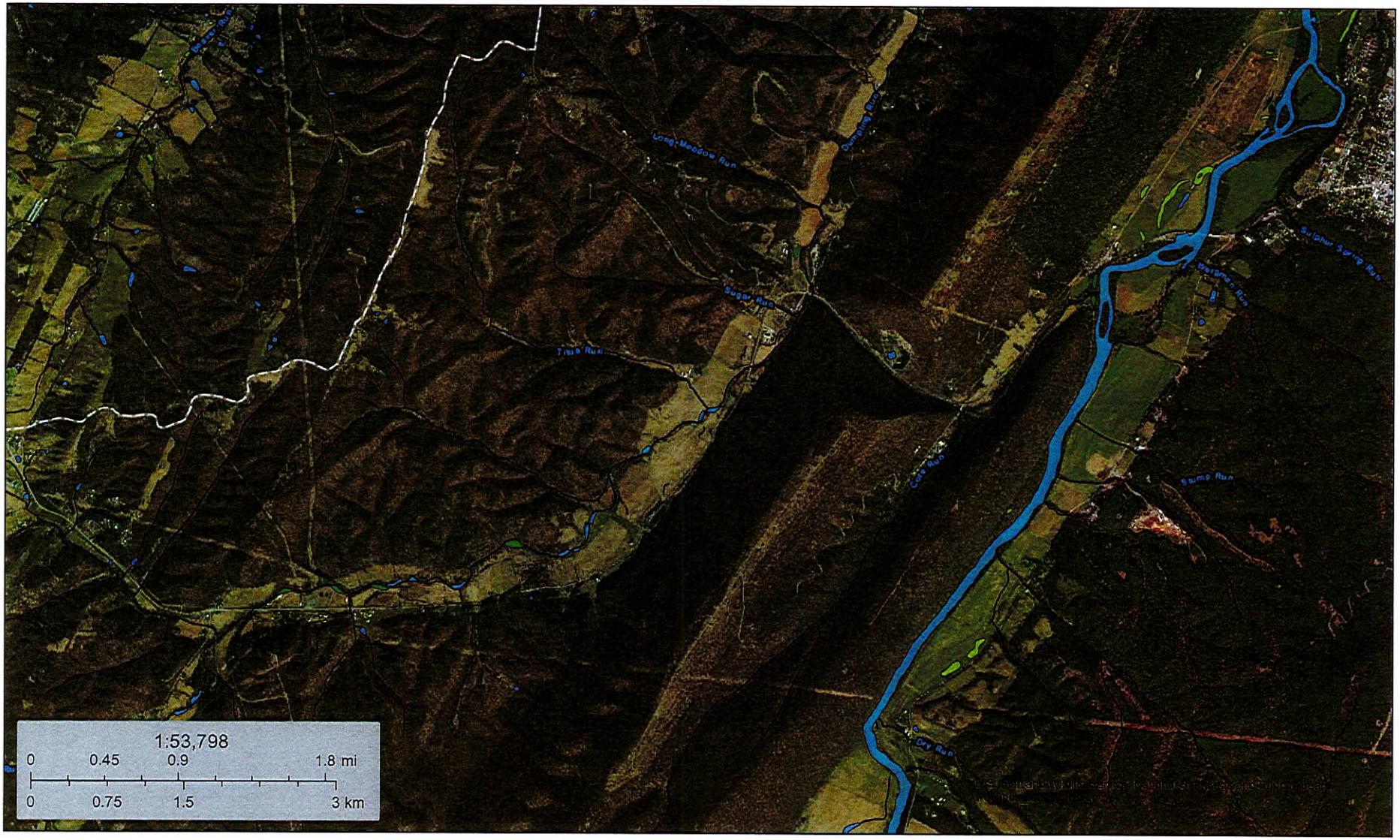
U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - North



March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - North -detail PFO1A

March 11, 2020

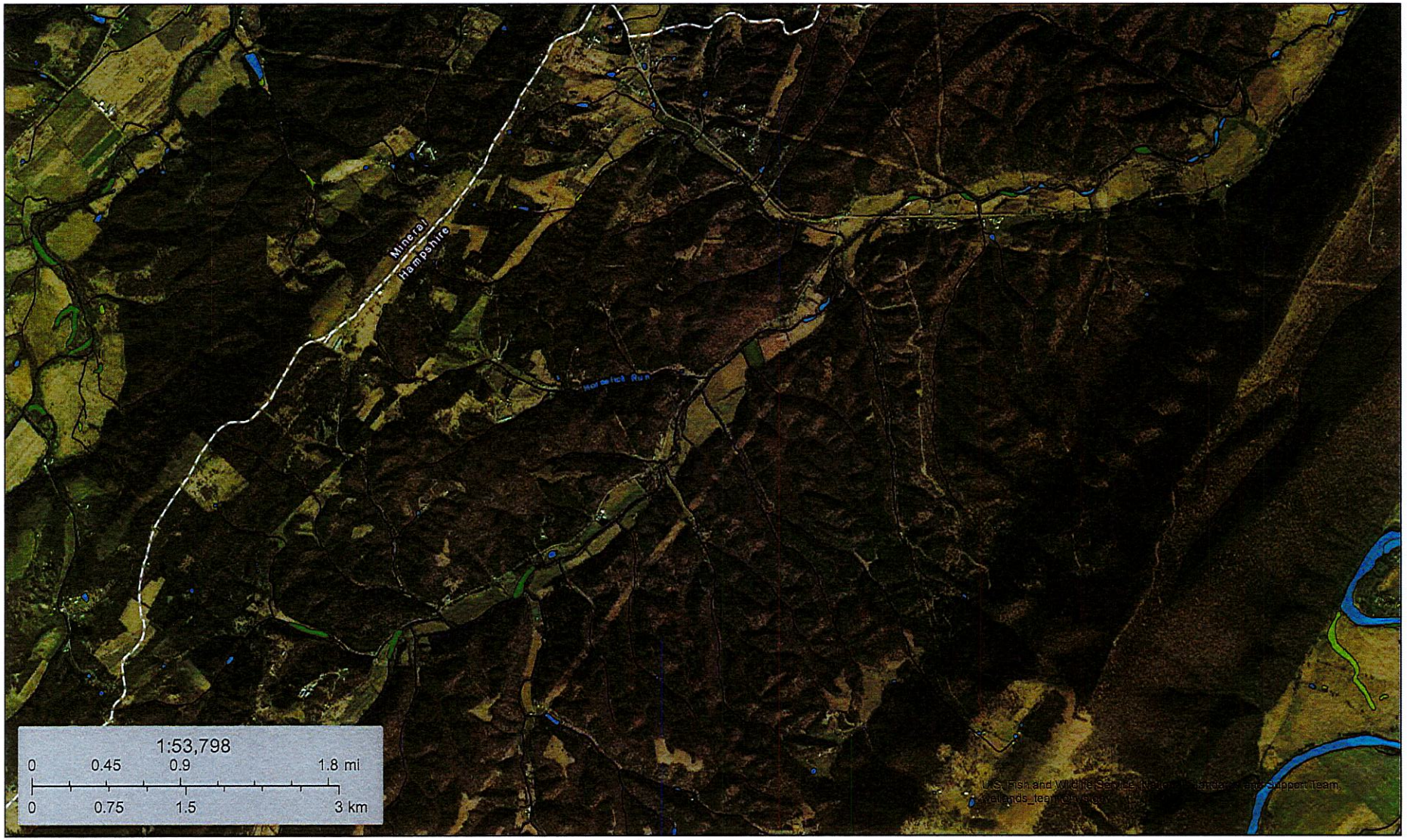
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - South



March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	600 LF	$55.00		$33,000.00
2	8" PVC CL200 (SDR 21/PVC)	32,000 LF	21.00		$672,000.00
3	8" PVC C900 DR 18	20,700 LF	25.00		$517,500.00
4	6" PVC CL 200 (SDR 21/PVC)	0 LF	19.00		$0.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" PVC CL200 (SDR 21/PVC)	0 LF	15.00		$0.00
7	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	2" PVC CL200 (SDR21/PVC)	0 LF	13.00	53300	$0.00
9	8" Gate Valve & Box	28 EA	1,800.00		$50,400.00
10	6" Gate Valve & Box	0 EA	1,000.00		$0.00
11	4" Gate Valve & Box	0 EA	800.00		$0.00
12	2" Gate Valve & Box	0 EA	650.00		$0.00
10	Valve Markers	28 EA	50.00		$1,400.00
11	Ductile Iron Fittings	6,000 LB	5.00		$30,000.00
12	Fire Hydrants	8 EA	4,300.00		$34,400.00
13	Fire Hydrant Extension	5 VF	400.00		$2,000.00
14	Flushout Assembly	2 EA	1,500.00		$3,000.00
16	Air Release Assembly	8 EA	2,500.00		$20,000.00
19	Leak Detector w/ Meter	4 EA	2,000.00		$8,000.00
20	Horizontal Directional Drilling	1 LS	60,000.00		$60,000.00
22	8" Highway Boring	150 LF	200.00		$30,000.00
28	8" Stream Crossing	200 LF	120.00		$24,000.00
22	8"' Railroad Boring	100 LF	250.00		$25,000.00
28	6" Stream Crossing	0 LF	100.00		$0.00
22	4" Highway Boring	0 LF	90.00		$0.00
28	4" Stream Crossing	0 LF	80.00		$0.00
22	2" Highway Boring	0 LF	85.00		$0.00
28	2" Stream Crossing	0 LF	65.00	450	$0.00
31	Service Line Stream Crossing	80 LF	50.00		$4,000.00
32	Asphalt Rep. (DOH)	400 LF	90.00		$36,000.00
33	Asphalt Rep. (Driveway & Berm)	280 LF	45.00		$12,600.00
34	Aggregate Replacement	1,860 LF	6.00		$11,160.00
35	Berm Replacement	6,000 LF	3.00	8,540	$18,000.00
36	Miscellaneous Concrete	80 CY	600.00		$48,000.00
37	Rip-Rap Restoration	1,500 TN	45.00		$67,500.00
38	Aggregate Overlay	1,000 LF	7.00	1,000	$7,000.00
39	Seeding	42,210 LF	1.00		$42,210.00
40	Water Main Testing & Disinfection	53,300 LF	0.75		$39,975.00
41	1" Service Tap & Corp. Stop	3 EA	300.00		$900.00
42	3/4" Service Tap & Corp. Stop	39 EA	300.00		$11,700.00
43	1" PE Service Pipe (Boring)	350 LF	30.00		$10,500.00
44	3/4" PE Service Pipe (Boring)	400 LF	20.00		$8,000.00
45	1" PE Service Pipe (Trench)	100 EA	22.00		$2,200.00
46	3/4" PE Service Pipe (Trench)	800 LF	16.00		$12,800.00
47	Outside Meter Setting (Single)	30 EA	700.00		$21,000.00
48	Outside Meter Setting (Tandem)	9 EA	800.00		$7,200.00
49	Water Meter	39 EA	150.00		$5,850.00
52	Booster Station	1 EA	175,000.00		$175,000.00
54	Tie In (Master Meter and any other upgrades)	1 EA	70,000.00		$70,000.00
55	Mobilization	1 LS	80,000.00		$80,000.00

SUBTOTAL CONSTRUCTION COST	$2,202,295
CONSTRUCTION CONTINGENCY	$220,230
TOTAL CONSTRUCTION COST	**$2,422,525**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	2,422,525
Legal - Title / Contracts	$	40,000		
Engineering				
Preliminary Study	$	20,000		
Preliminary & Final Design	$	145,000		
Bidding & Negotiation	$	15,000		
Eng. During Const	$	68,000		
Inspection	$	139,604		
Post Const	$	10,000		
Aerial Photo & Mappling	$	15,000		
Environmental	$	10,000		
Additional Services	$	30,000		
Administrator (Region 8)	$	50,000		
Accounting	$	-		
Other Admin Costs	$	2,000		
Permits, Archeology	$	30,000		
Lands and ROW's	$	35,000		
LMI Tap Fees	$	2,000		
Geotechnical Services, Concrete Testing	$	7,000		
Project Contingency	$	30,000		
Sub Total line 1 thru 10			$	648,604
Design Interest	$	35,000		
Bond Counsel & Registar	$	-		
Sub Total Cost of Financing			$	35,000
TOTAL PROJECT COST			**$**	**3,354,128**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

SCENARIO 1 - NO RESIDENCES SIGN UP ALONG TRANSMISSION LINE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASED WATER		
Yearly Demand	4669500 Gallons	
Cost per 1,000 gallons	4.95	
Total Annual		**$23,114**
2- PUMPING EXPENSES		
Junction BS		
Total GPD	12793	
Rate (GPM)	50	
Phase	3	
HP	20	
Total KWH/day	63.62	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$3,251**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	4669500 Gallons	
New Demand	0 Gallons	
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to ii
New Miles	10.10	
Adjustment		**$5,606**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**
TOTAL 0&M COST ADJUSTMENT		**$40,130**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

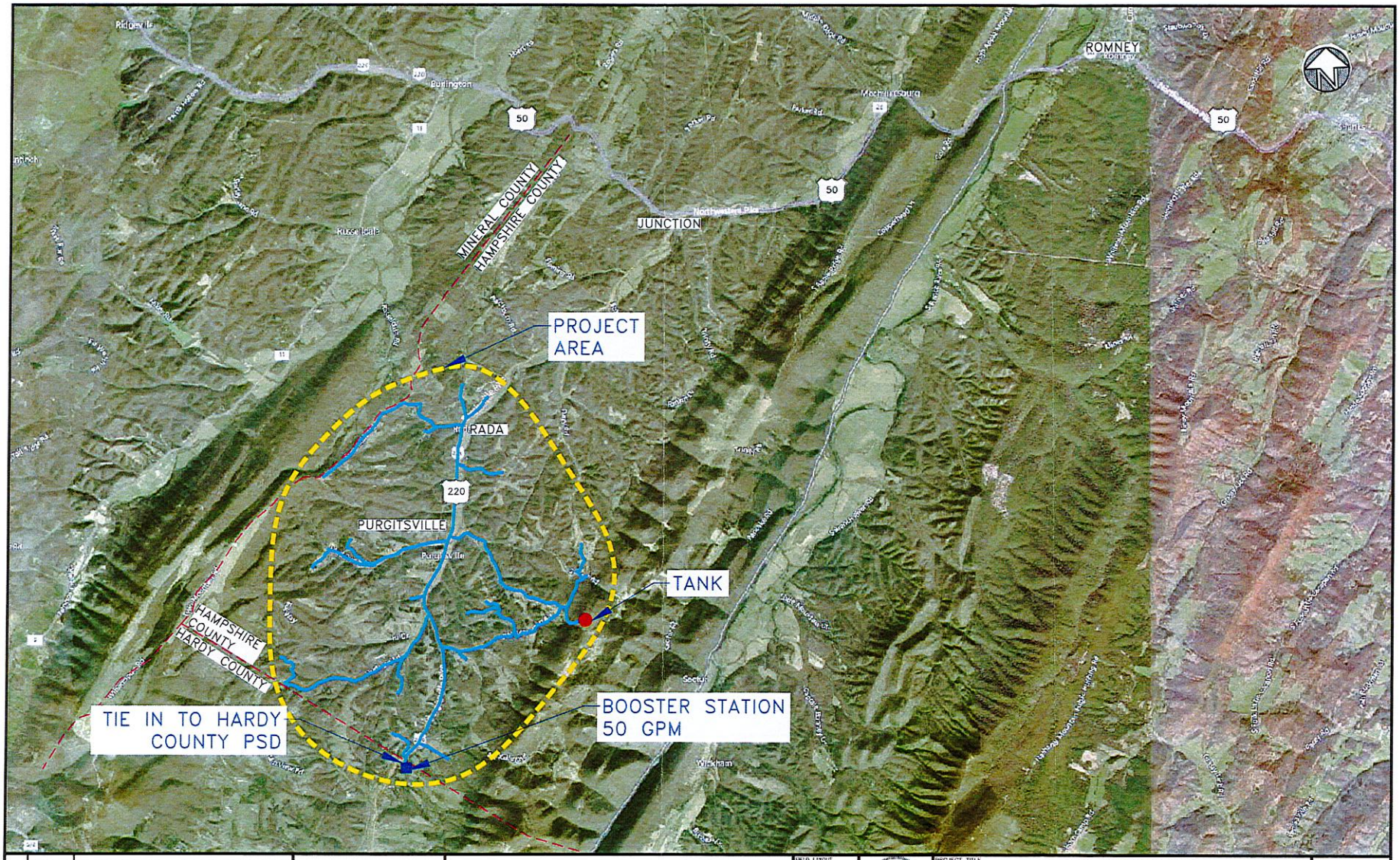
OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

SCENARIO 2 - 50% OF RESIDENCES SIGN UP ALONG TRANSMISSION LINE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS (125 customers + 39 customers)	164
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
PURCHASE WATER		
Yearly Demand	6126384	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$30,326**
1- PUMPING EXPENSES		
Junction BS		
Total GPD	16785	
Rate (GPM)	50	
Phase	3	
HP	20	
Total KWH/day	83.48	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$4,266**
2- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	6126384	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
3-TRANSMISSION AND DISTRIBUTION EXPENSES		
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to industry standard of $370/mile x 1.5
New Miles	10.10	
Adjustment		**$5,606**
4-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	164	
Adjustment		**$10,705**
TOTAL 0&M COST ADJUSTMENT		**$50,901**



No.	DATE	DESCRIPTION	BY
1	3/2020	DRAFT	RRB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT -
DRAWN BY RRB
CONST CHECKED BY -
RECORD CHECKED BY -
ISSUE DATE 3/2020

DONALD P. CERRONE REGISTERED 14729 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX H
ALTERNATIVE 2 – WATER FROM THE HARDY COUNTY PSD

NONE
PROJECT NO. CE10-10W
DRAWING NO. **ALT-2**

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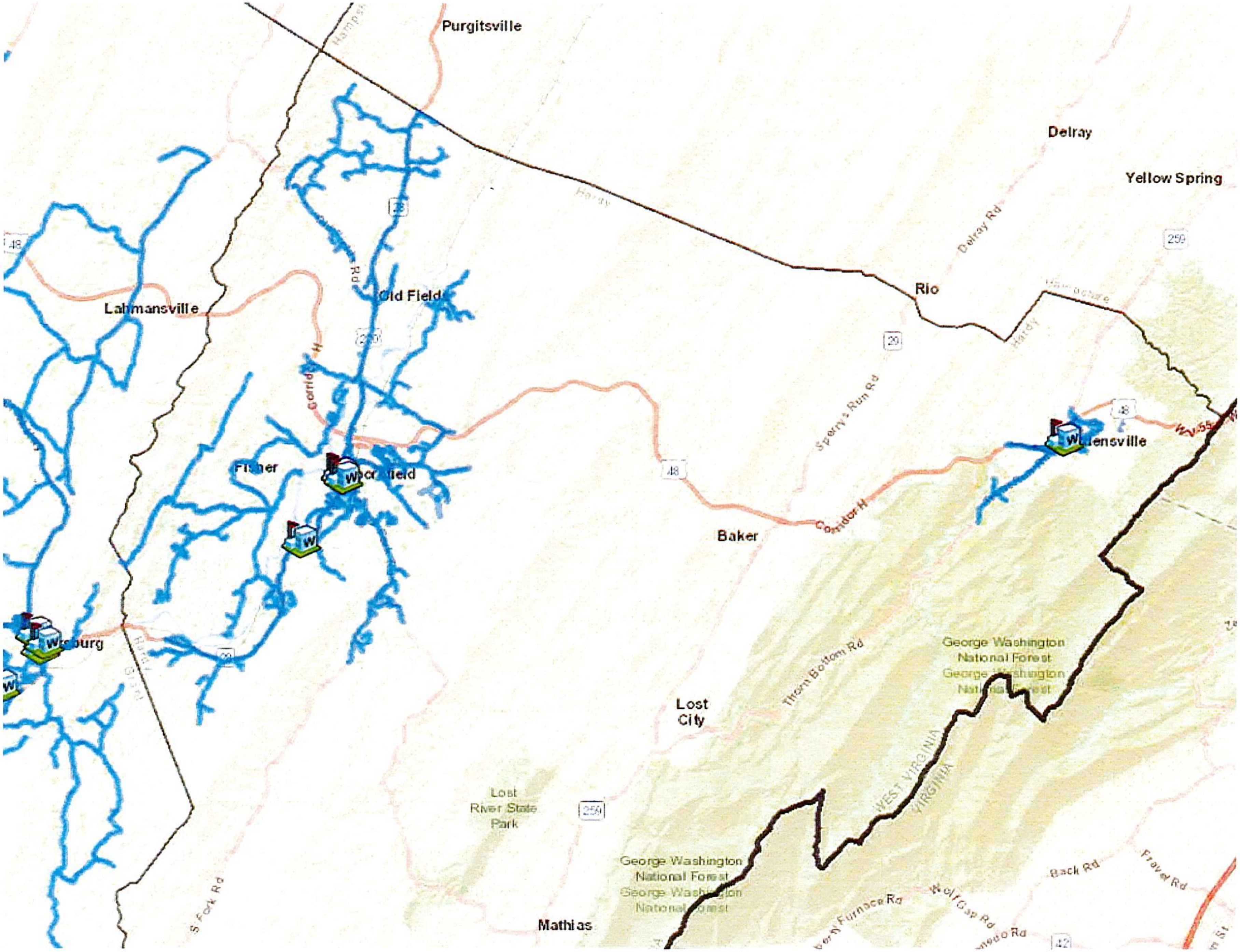

Purgitsville
Delray
Yellow Spring
Delray Rd
Rio
Hardy
Old Field
Lahmansville
Corridor H
Fisher
Sperrys Run Rd
Baker
Thorn Bottom Rd
George Washington
National Forest
Lost
City
WEST VIRGINIA
VIRGINIA
Lost
River State
Park
George Washington
National Forest
Back Rd
Fravel Rd
Wolf Gap Rd
Mathias
S Fork Rd

HARDY COUNTY PUBLIC SERVICE DISTRICT

P.O. BOX 900
MOOREFIELD, WV 26836
304-530-3048

January 10, 2019

Richard Wood, Chairman
Central Hampshire PSD
18540 Northwestern Pike
Augusta, WV 26704

Dear Mr. Wood,

Based on the demand information you have provided in your letter dated November 25, 2018, the Hardy County Public Service District (District) anticipates that we could provide Central Hampshire PSD water for resale at the county line on US Rt. 220. However, after reviewing the provided information and consulting with our project engineering firm, The Thrasher Group, we feel that we must be provided with additional design information in order to be able to complete a final analysis before the District could definitively state that we can provide water for resale for a potential Purgitsville area water system. The design information must include service elevations, storage plans, total potential customers and the number of executed user agreements. Additionally, the District will need to ensure the volume proposed by Hampshire County fits into the District's purchase agreement with the Town of Moorefield, who would be the producer of any water purchased from the District.

The District understands that a significant amount of preliminary work must be done by Central Hampshire PSD in order to be able to provide the specific design information that has been requested and we realize it may take some time before that information can be provided.

As was requested in the aforementioned letter dated November 25, 2018, Central Hampshire PSD asked that the District provide an estimated resale rate that would be charged to Central Hampshire PSD for purchased water. In that regard, the District hired the accounting firm, Griffith & Associates, to develop an estimated resale rate. It is the recommendation of Griffith & Associates to provide Central Hampshire PSD with an **estimated** resale rate of $4.95 per 1000 gallons of usage. Griffith & Associates completed a class cost of service model assuming the purchased water costs that will be in place following the construction of the Town of Moorefield's new water plant and using the information that Hampshire County has previously provided including anticipated daily demand and pressure requirements. This class cost of service model provided a resale rate of $4.95/1000 gallons. This rate of $4.95/1000 gallons assumes the following:

- An average daily demand of 30,000 gallons. If daily usage will be less than 30,000 gallons, the estimated rate would increase.
- A 4" master meter. If flow requirements of Hampshire County necessitate a larger master meter, the estimated rate will increase.
- That Hardy County PSD purchases and installs the master meter, vault and other components needed to establish a resale point. If Hampshire County covers the cost

to purchase and install these components, the estimated rate would likely decrease. (Regardless of purchaser, all components will be installed, owned and maintained by Hardy County PSD or its contracted representatives.)

The District looks forward to working with Hampshire County to determine the feasibility of providing water for a Purgitsville area water system. Please contact us once Hampshire County has completed the necessary preliminary work and can provide the required information detailed above.

Sincerely,

HARDY COUNTY PUBLIC SERVICE DISTRICT

Logan Moyers
General Manager

c: Lucas Gagnon, Town of Moorefield
Mr. Donald Judy

dpcerrone@cerrone1.com

From: Logan Moyers <lmoyers@hardynet.com>
Sent: Friday, May 17, 2019 3:02 PM
To: dpcerrone@cerrone1.com
Cc: central.water77@yahoo.com
Subject: Hardy/Hampshire resale agreement

Mr. Cerrone – I recently reviewed our water purchase history with the Town of Moorefield and after review of our purchase agreement and consult with representatives from the Town, I am confident we could presently enter into a purchase agreement with Central Hampshire PSD for a volume of 1 million or possibly 1.5 million gallons per month. When we met at Region VIII in March, I said that we would likely have to wait until Moorefield completed the construction of their new WTP before entering into an agreement with Central Hampshire but I now am confident we could go ahead and enter into an agreement at a volume of 1 million or possibly 1.5 million gallons per month. Based on the numbers provided at the Region VIII meeting (assuming 3,000 gallons as a monthly residential usage) that should allow Central Hampshire to complete any of the four project scenarios that were presented. I wanted to pass this along so that Central Hampshire PSD knows that when they have reached the point they need to have a purchase agreement in place, Hardy County PSD will be ready to enter into an purchase agreement with them. We want to be sure not to hold up Central Hampshire in any way in their efforts to get public water to the Purgitsville area.

Additionally, we are currently working to renegotiate our purchase agreement with Moorefield. The new agreement will include a significantly increased allowable purchase volume that will go into effect after Moorefield's new WTP is online. Once Moorefield's new plant is online (anticipated mid 2021) and the increased allowable purchase volume goes into effect, we would be able to negotiate an increased allowable purchase volume with Central Hampshire (well beyond the 1 or 1.5 million gallons per month we can presently handle) if they ever wish to expand their Purgitsville system in the future.

If you have any questions or would like to discuss this further please contact me.

Thanks,

Logan Moyers
General Manager
Hardy Co. PSD
304-530-3048

WATER PURCHASING CONTRACT

THIS CONTRACT for the sale and purchase of water is made and entered into on this _____ day of _____, 2020, by and between HARDY COUNTY PUBLIC SERVICE DISTRICT, a Public Corporation and Political Subdivision of the State of West Virginia, 2094 U.S. 220 South, Moorefield, West Virginia, 26836, hereinafter referred to as SELLER, and CENTRAL HAMPSHIRE PUBLIC SERVICE DISTRICT, a Public Corporation and Political Subdivision of the State of West Virginia, 18540 Northwestern Pike, Augusta, WV 26704, hereinafter referred to as the PURCHASER.

WHEREAS, the Purchaser is organized and established under the provisions of W. Va. Code § 16-13A-1, *et seq.* for the purpose of constructing and operating water distribution systems in Hampshire County, West Virginia and has plans on file in their office to construct a new water distribution system in the Purgitsville area of Hampshire County, West Virginia; and,

WHEREAS, the Seller owns and operates a water supply distribution system with a capacity currently capable of serving the present customers of the Seller's system and the estimated number of water users to be served by the said Purchaser as shown on the aforesaid plans for the Purgistville Water Distribution System.

NOW, THEREFORE, in consideration of the foregoing and the mutual agreement hereinafter set forth

A. The Seller Agrees:

1. **Quality and Quantity.** To furnish the Purchaser at the point of delivery hereinafter specified, during the term of this contract, potable treated water meeting applicable purity standards of the West Virginia Department of Health in such quantity as may be required by the Purchaser not to exceed 1,000,000 gallons per month.
2. **Point of Delivery.** The water shall be furnished at or near the Hardy/Hampshire County in Moorefield District, Hardy, County, West Virginia.
3. **Pressure.** The water will be furnished at a reasonably constant pressure calculated at a minimum hydraulic grade line elevation of 1405.00 at the point of delivery. If a greater pressure than that normally available at the point of delivery is required by the Purchaser, the cost of providing such greater pressure shall be borne by the Purchaser. Further, emergency failures of pressure or supply due to main supply line breaks, power failure, flood, fire, use of water to fight fire, earthquakes, or other catastrophe or emergencies shall excuse the Seller from this provision for such reasonable periods of time as may be necessary to restore service.
4. **Metering Equipment.** To furnish, install, operate, and maintain at its own expense at the point of delivery, the necessary metering equipment, including a meter house or pit, and required devices of standard type for properly measuring the quantity of water delivered to the Purchaser and to calibrate such metering equipment whenever requested by the Purchaser, but not more frequently than once every 12 months. A meter registering not more than 2% above or below the test results shall be deemed accurate. The previous readings of any meter disclosed by test to be inaccurate shall be corrected for the 3 months previous to such test in accordance with the percentage

of inaccuracy found by such tests. If any meter fails to register for any period, the amount of water furnished during the period shall be deemed to be the amount of water delivered in the corresponding period immediately prior to the failure, unless Seller and Purchaser shall agree upon a different amount. The metering equipment shall be read on the first week of each calendar month. An appropriate official of the Purchaser at all times shall have access to the meter for the purpose of verifying its readings.

5. **Billing Procedure.** To furnish the Purchaser at the above address not later than the 12th day of each month with an itemized statement of the amount of water furnished to the Purchaser during the preceding month.

B. The Purchaser agrees:

1. **Rates.** To pay to the Seller, not later than the 30th day of each month, for water delivered, the amount of $4.95 per 1,000 gallons minimum set by tariff number ____ authorized by the West Virginia Public Service Commission, including any changes thereto also as authorized by the West Virginia Public Service Commission.
2. **Connection Fee.** To pay unto the Seller, a connection fee and tap, which shall be Seller's cost of material and labor at the time of installation as evidenced by adequate invoice documentation.
3. **Liability.** To indemnify and hold the Seller free and harmless from any and all liability which may arise in any manner, as the result of the used of said water provided by Seller to Purchaser from the point of delivery thru the Purgitsville Water Distribution System.

C. It is further mutually agreed between the Seller and the Purchaser as follows:

1. **Term of Contract.** That this contract shall extend for a term of 40 years from the date of the initial delivery of any water as shown by the first bill submitted by the Seller to the Purchaser.
2. **Delivery of Water.** That 30 days prior to the estimated date of completion of construction of the Purchaser's water supply distribution system, the Purchaser will notify the Seller in writing the date for the initial delivery of water.
3. **Water for Testing.** When requested by the Purchaser, the Seller will make available to the contractor at the point of delivery, or other point reasonably close thereto, water sufficient for testing, flushing, and trench filling the system of the Purchaser during construction, irrespective of whether the metering equipment has been installed at that time, at the rate set by tariff, which will be paid by the contractor or, on his failure to pay, by the Purchaser.
4. **Failure to Deliver.** That the Seller will, at all times, operate and maintain its system in an efficient manner and will take such action as may be necessary to furnish the Purchaser with quantities of water required by the Purchaser, except to the extent that the Seller is prevented from furnishing said water for reasons beyond the control of the Seller. Temporary or partial failures to deliver water shall be remedied with all possible dispatch. In the event of any extended shortage of water, or the supply of water available to the Seller is otherwise diminished over an extended period of time, the supply of water to Purchaser's consumers shall be reduced or diminished in the same ration or proportion as the supply to Seller's consumers is reduced or diminished.

5. **Regulatory Agencies.** That this contract is subject to such rules, regulations, or laws as may be applicable to similar agreements in this State, and the Seller and Purchaser will collaborate in obtaining such permits, certificates, or the like, as may be required to comply therewith.
6. **Successor to Parties.** In the event of any occurrence rendering either party incapable of performing under this contract, any successor to said party, whether the result of legal process, assignment, or otherwise, shall succeed to the rights of said party. If either party should cease to exist as a legal entity without a successor, or if either party should become unable to operate their water distribution systems for reasons beyond their control, then their obligations under this agreement shall terminate.

IN WITNESS THEREOF, the parties hereto, acting under the authority of their respective governing bodies, have caused this contract to be duly executed.

_____
Date

Hardy County Public Service District

By: _____

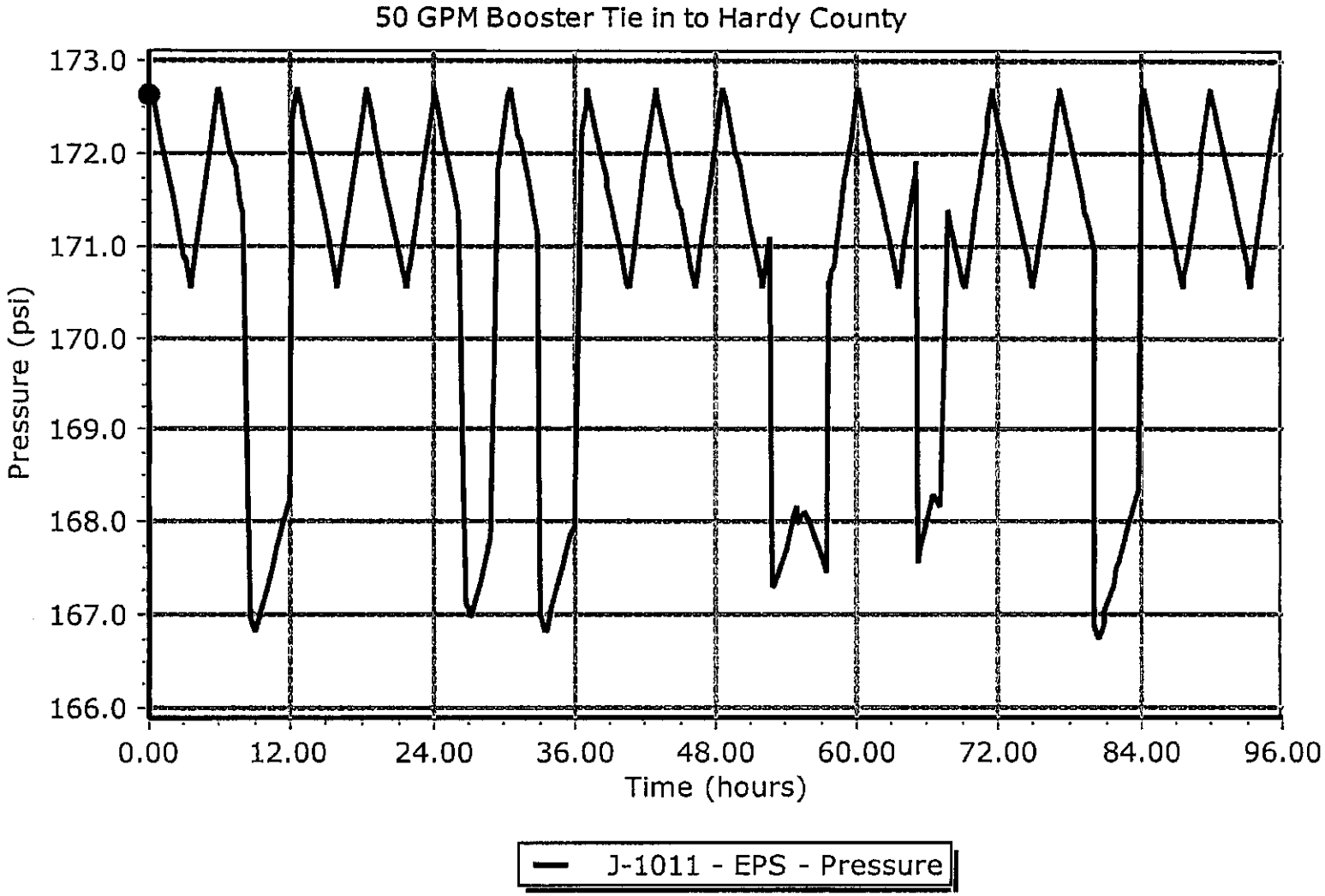
Its: _____

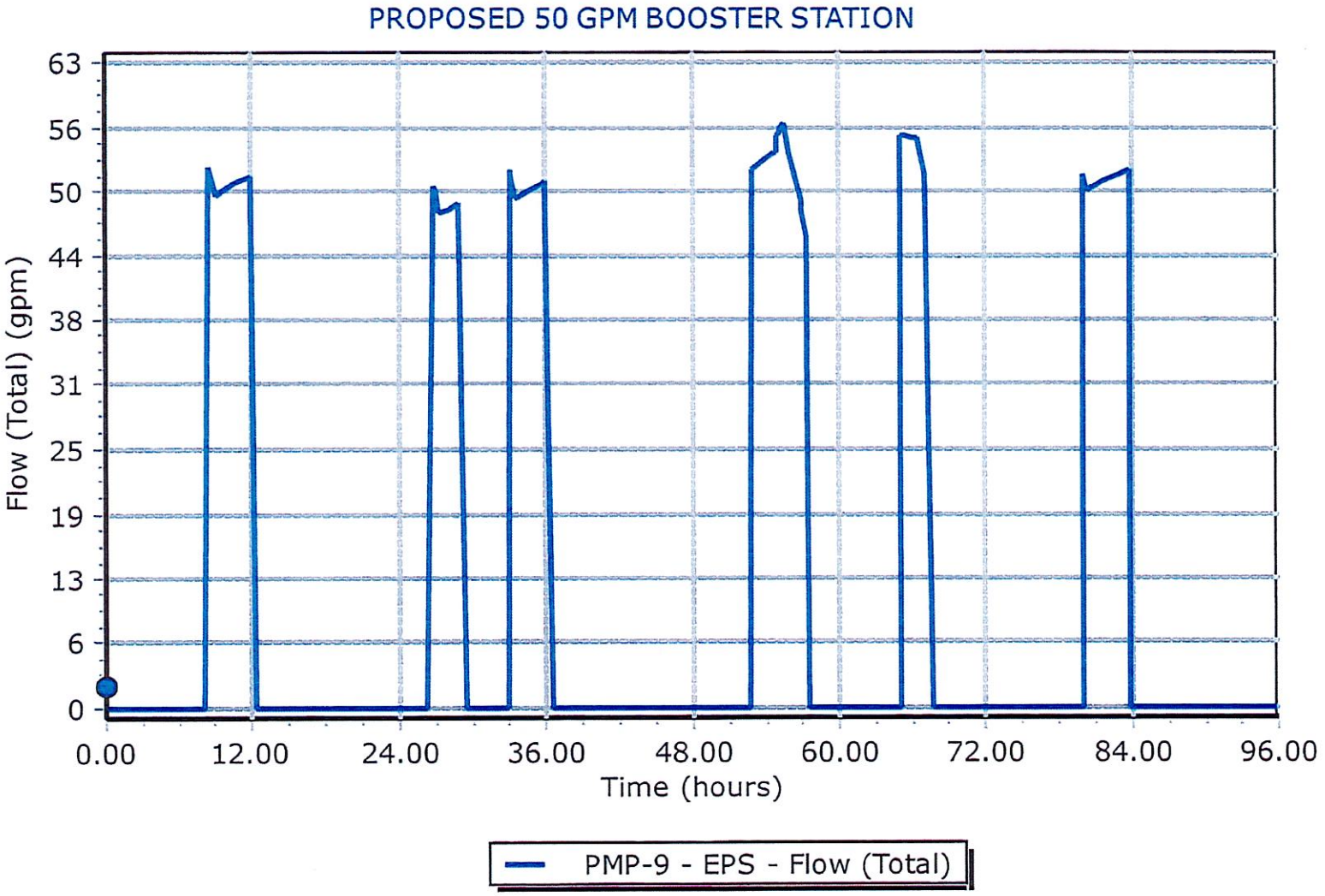
_____
Date

Hampshire County Public Service District

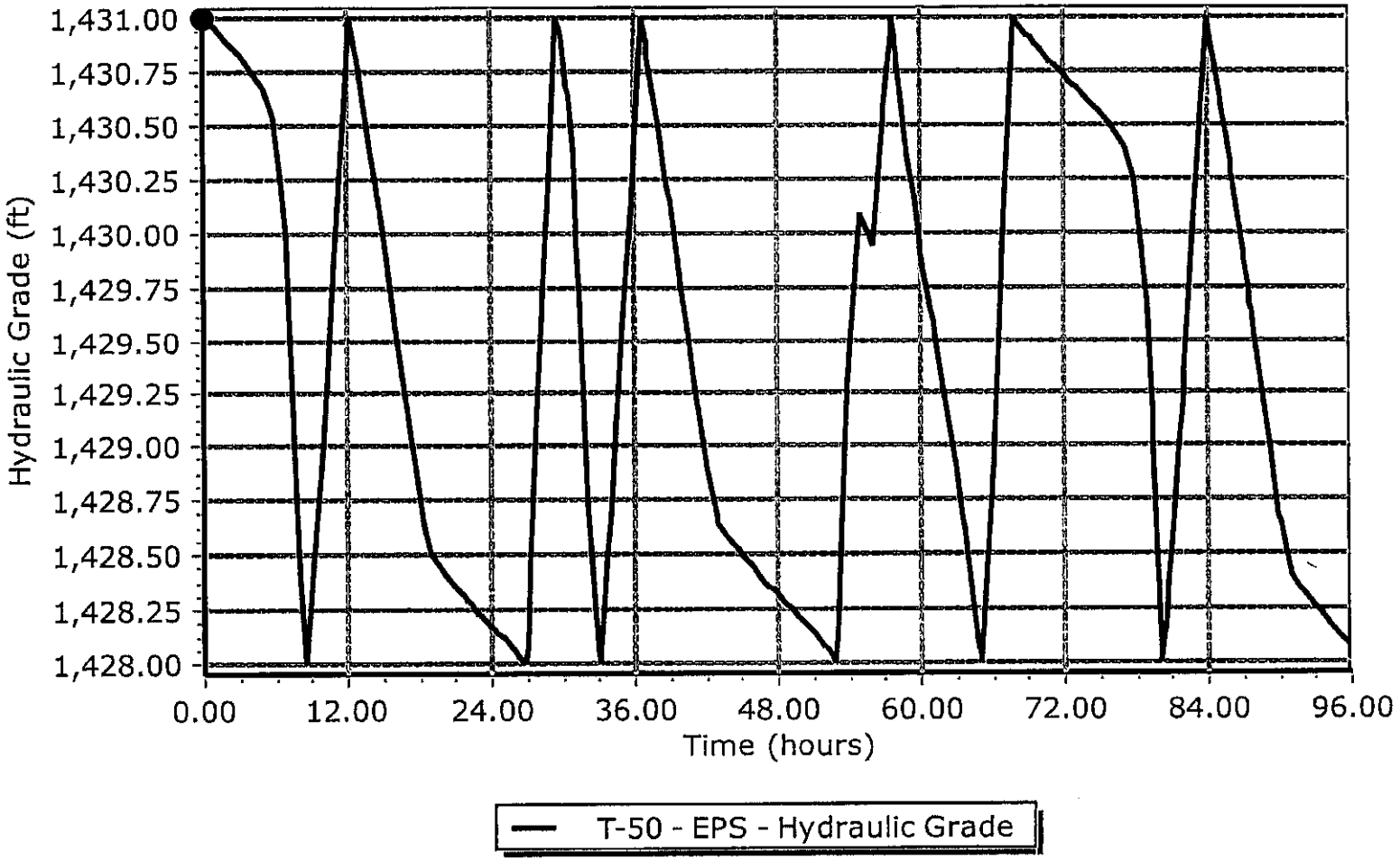
By: _____

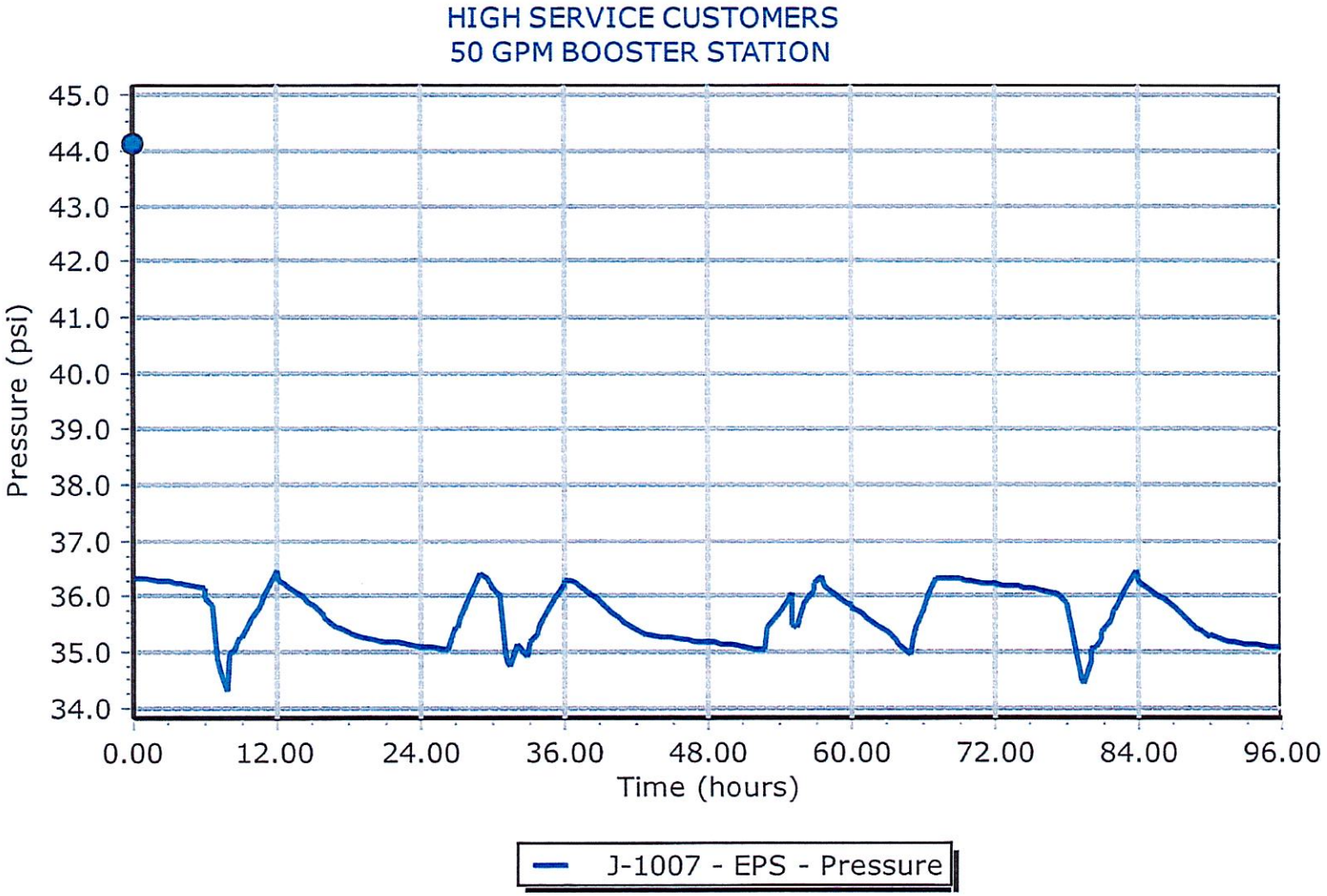
Its: _____


50 GPM Booster Tie in to Hardy County
173.0
172.0
171.0
170.0
169.0
168.0
167.0
166.0
Pressure (psi)
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
J-1011 - EPS - Pressure


PROPOSED 50 GPM BOOSTER STATION
63
56
50
44
38
31
25
19
13
6
0
Flow (Total) (gpm)
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
PMP-9 - EPS - Flow (Total)

PROPOSED 50,000 GAL WATER TANK
50 GPM BOOSTER STATION




HIGH SERVICE CUSTOMERS
50 GPM BOOSTER STATION
Pressure (psi)
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
34.0
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
J-1007 - EPS - Pressure

50 GPM Booster Station

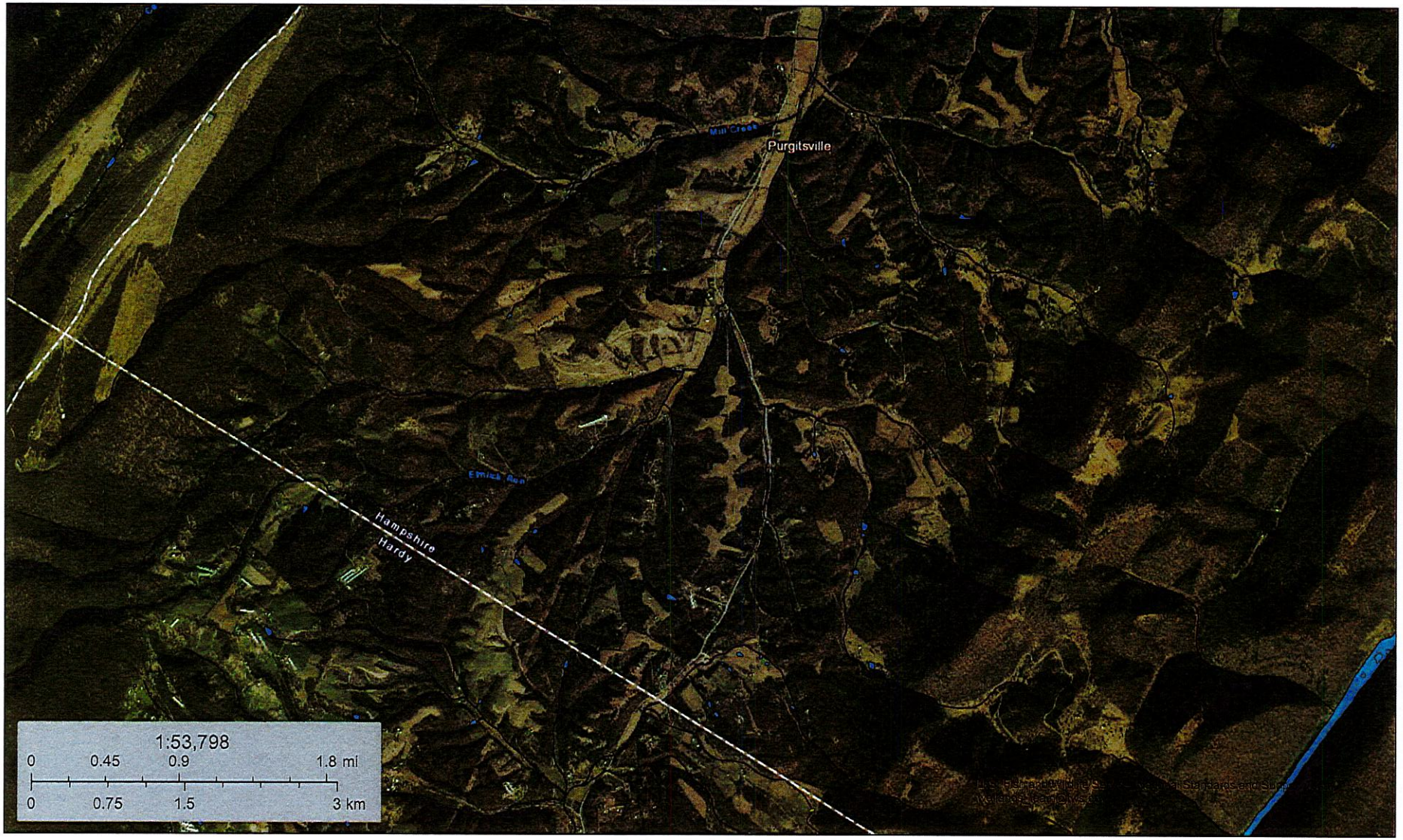
Fire Flow Node FlexTable: Fire Flow Report

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
H-64	Zone-1	True	250	520	20.0	J-948	J-419	True
H-65	Zone-1	True	250	565	20.0	J-948	J-419	True
H-66	Zone-1	True	250	616	20.0	J-948	J-419	True
H-67	Zone-1	True	250	677	20.0	J-948	J-419	True
H-68	Zone-1	True	250	677	20.0	J-948	J-419	True
H-69	Zone-1	True	250	677	20.0	J-948	J-419	True
H-70	Zone-1	True	250	677	20.0	J-948	J-419	True
H-71	Zone-1	True	250	677	20.0	J-948	J-419	True
H-72	Zone-1	True	250	677	20.0	J-948	J-419	True
H-73	Zone-1	True	250	677	20.0	J-948	J-419	True
H-74	Zone-1	True	250	862	20.0	J-948	J-419	True
H-82	Zone-1	True	250	329	20.0	J-669	J-419	True
H-83	Zone-1	True	250	328	20.0	H-82	J-419	True
H-84	Zone-1	True	250	328	20.0	H-82	J-419	True
H-79	Zone-1	True	250	372	20.0	J-669	J-419	True
H-80	Zone-1	True	250	704	20.0	H-82	J-419	True
H-81	Zone-1	True	250	409	20.0	H-82	J-419	True
H-1082	Zone-1	True	250	432	20.0	J-1007	J-419	True
H-1083	Zone-1	True	250	392	20.0	J-1007	J-419	True
H-1084	Zone-1	True	250	330	20.0	J-1007	J-419	True
H-1085	Zone-1	True	250	488	20.0	J-1007	J-419	True

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands- South



March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

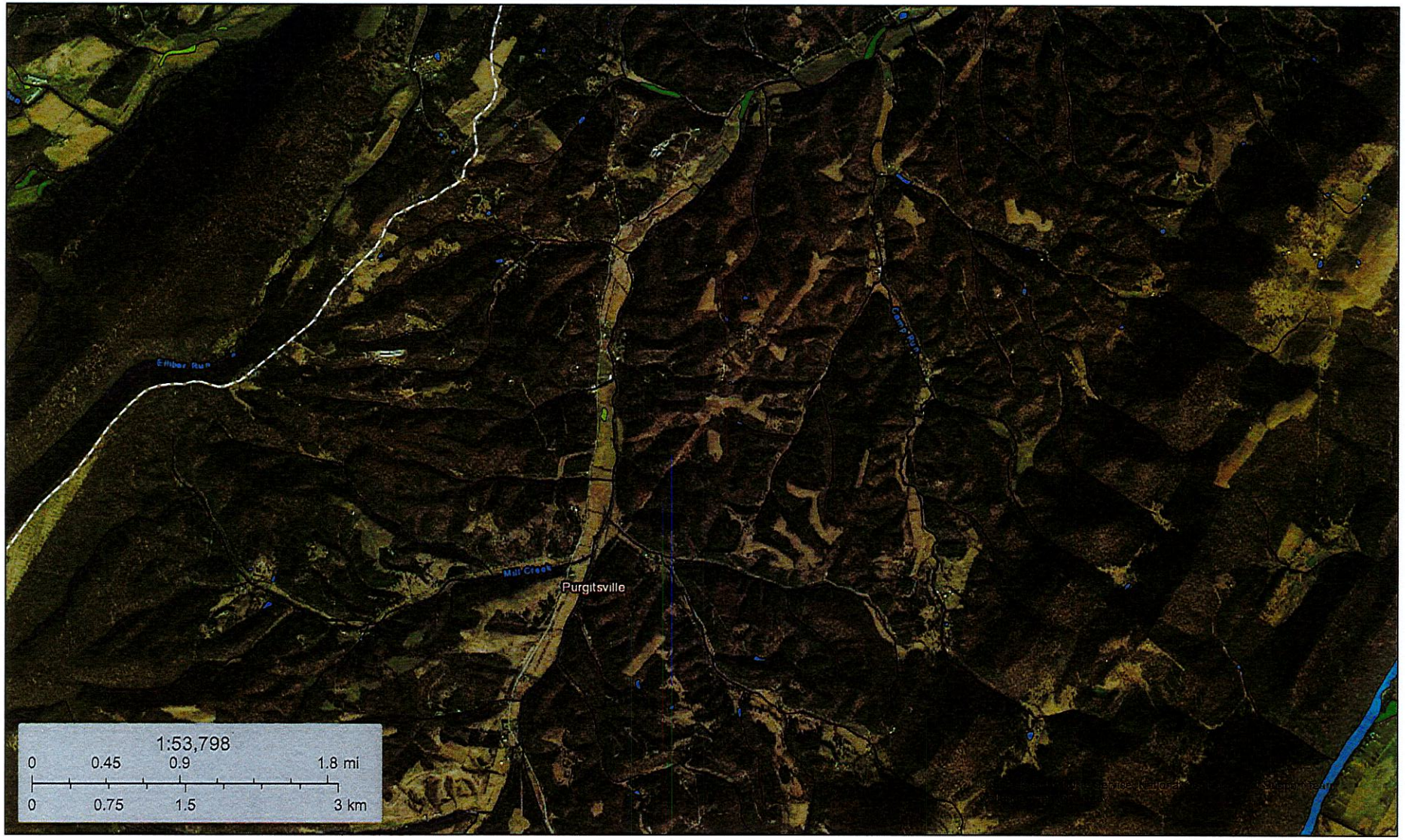
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands- North



March 11, 2020

Wetlands

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National Wetlands Inventory (NWI)
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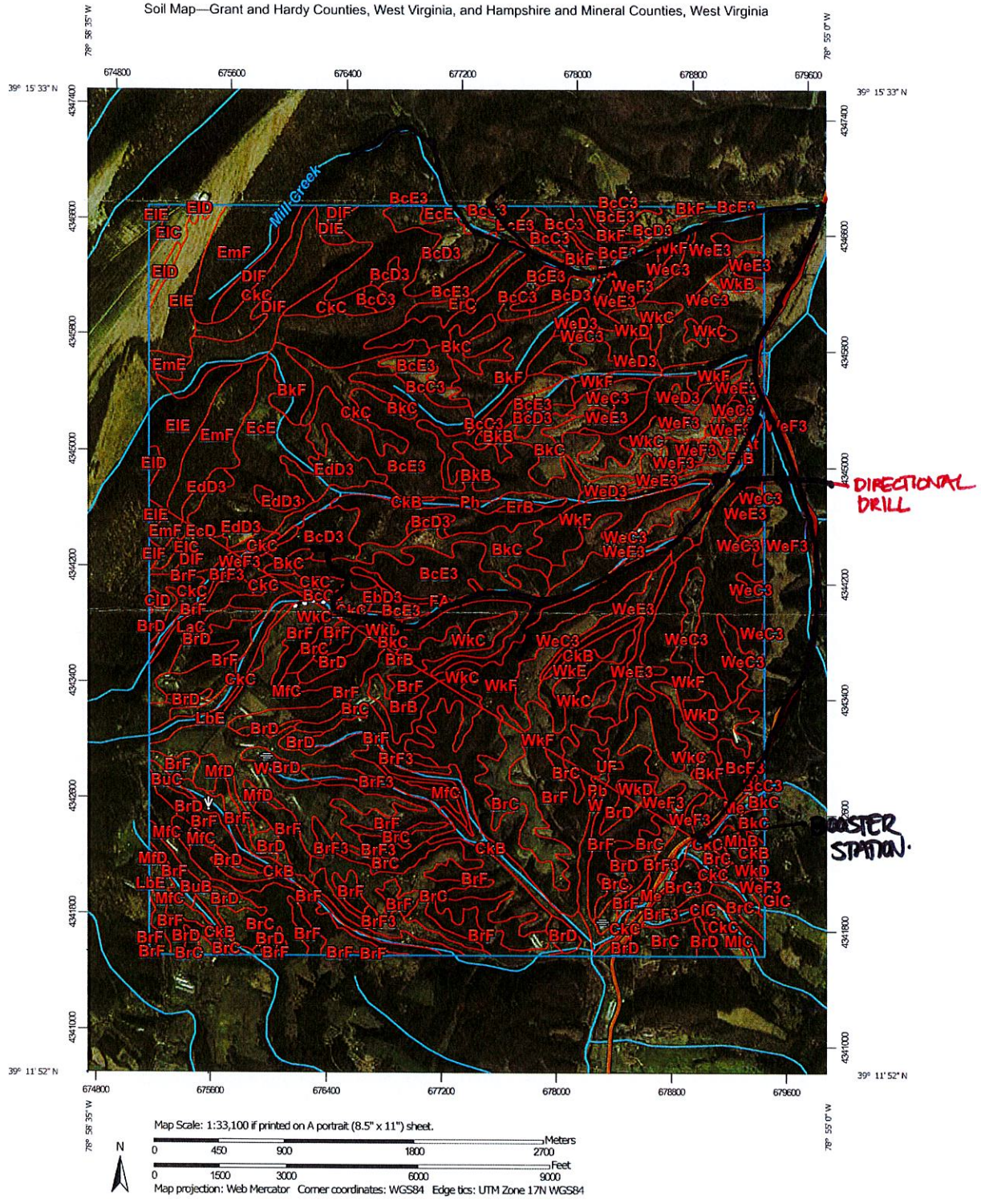
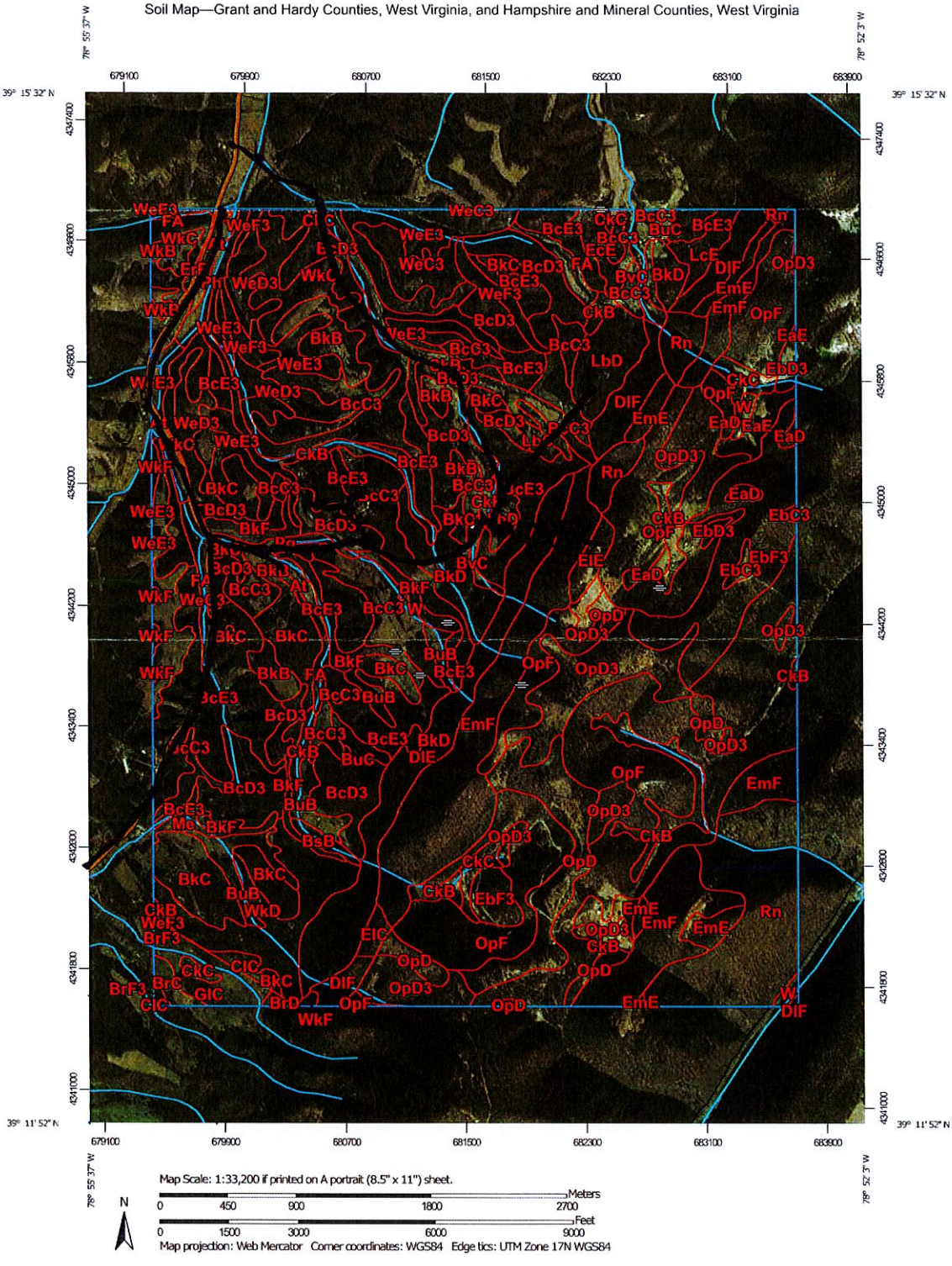
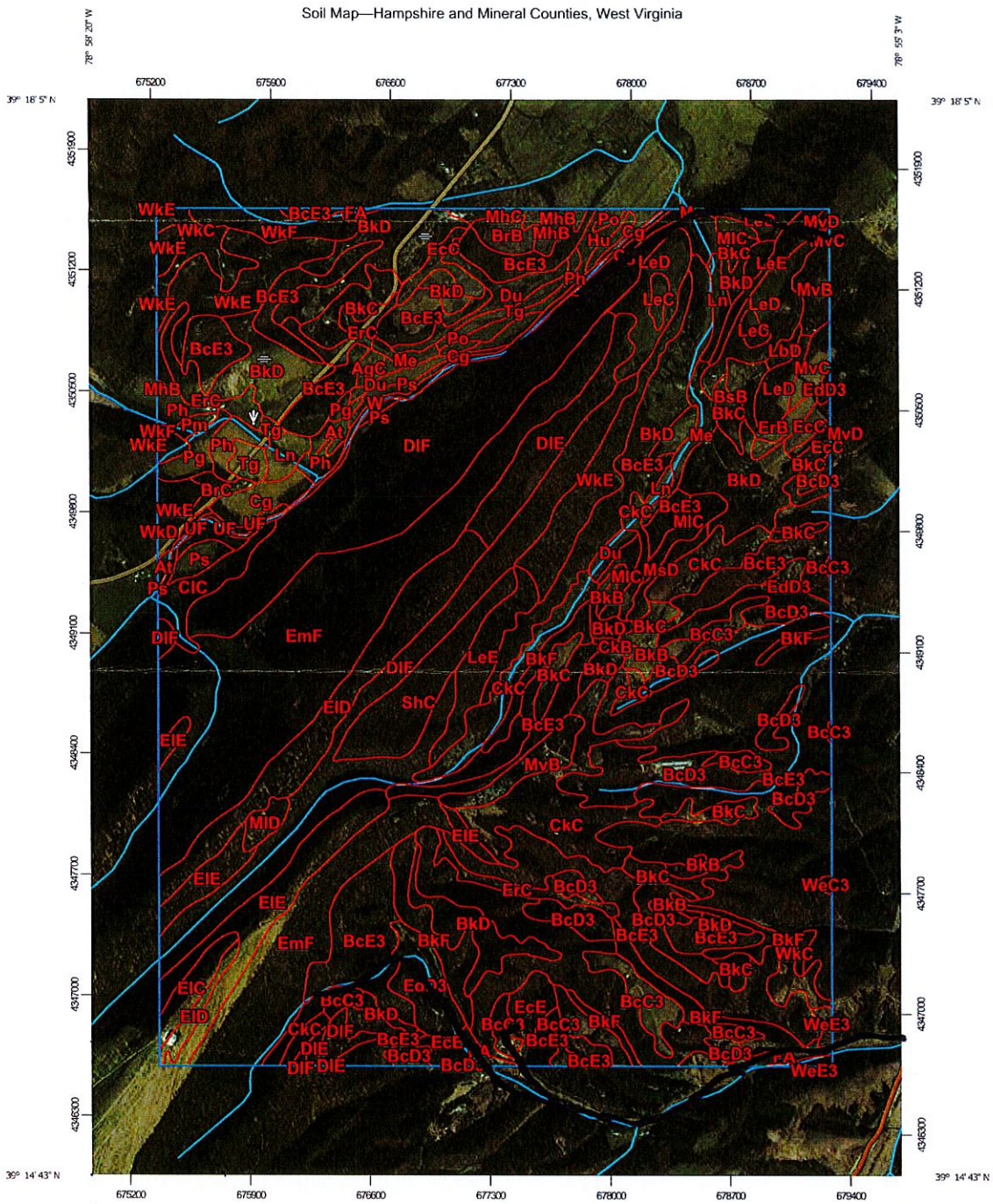

78° 58' 35" W
78° 55' 0" W
674800
675600
676400
677200
678000
678800
679600
39° 15' 33" N
39° 11' 52" N
4347400
4346800
4346200
4345600
4345000
4344200
4343400
4342600
4341800
4341000
Mill Creek
DIRECTIONAL DRILL
BOOSTER STATION
Map Scale: 1:33,100 if printed on A portrait (8.5" x 11") sheet.
N
0 450 900 1800 2700 Meters
0 1500 3000 6000 9000 Feet
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Soil Map—Grant and Hardy Counties, West Virginia, and Hampshire and Mineral Counties, West Virginia



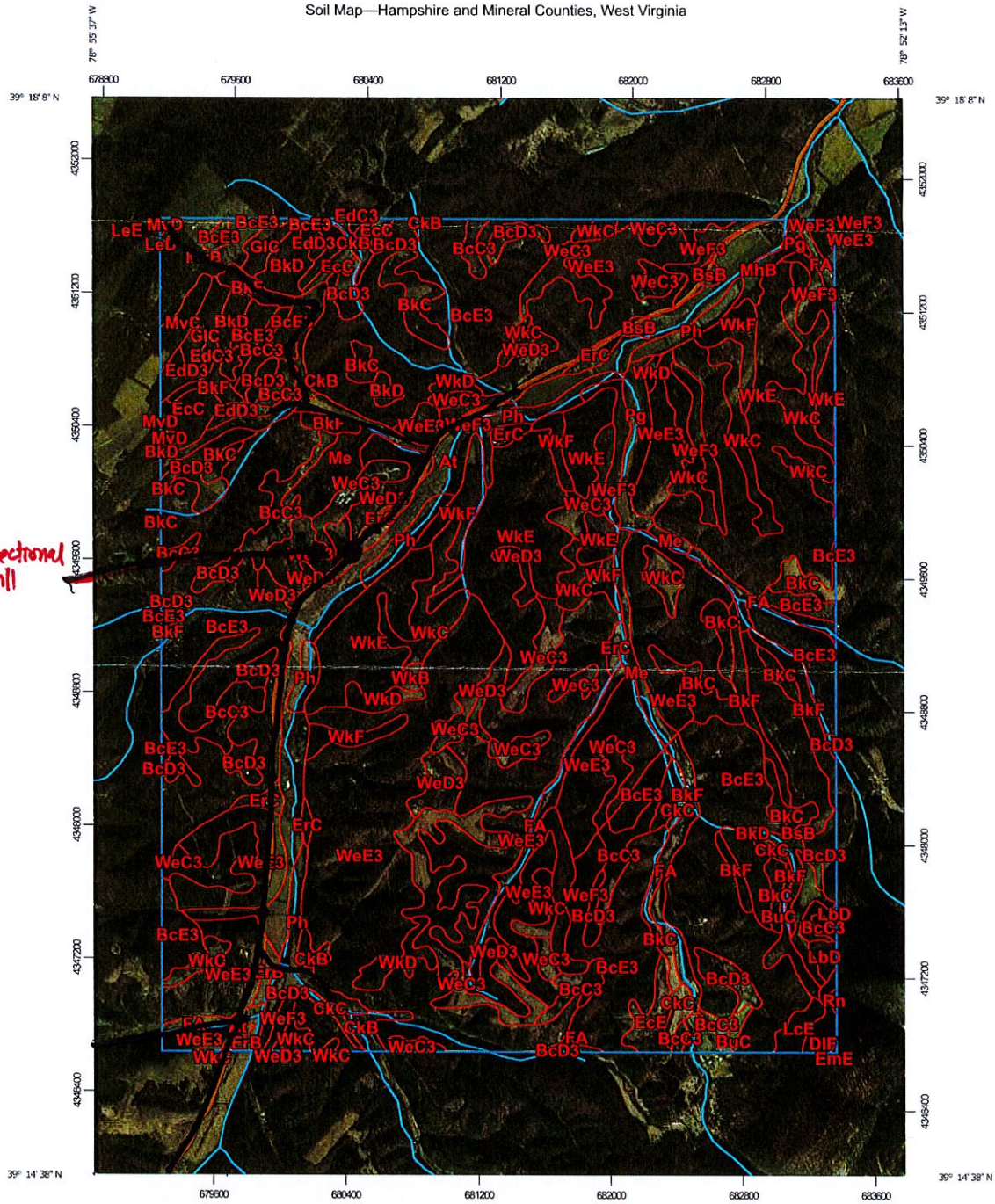
southeast.

Soil Map—Hampshire and Mineral Counties, West Virginia

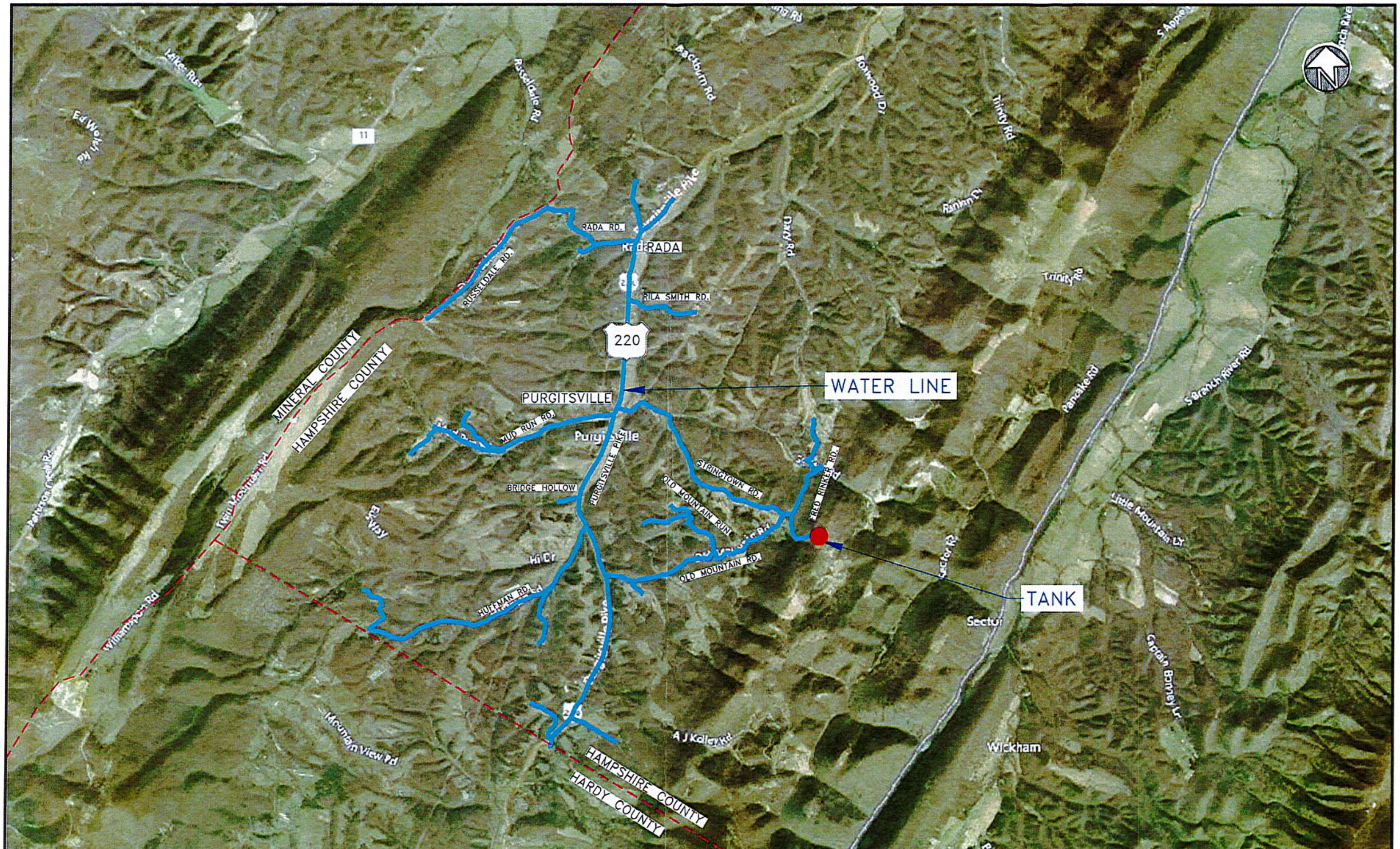


northwest

Soil Map—Hampshire and Mineral Counties, West Virginia



APPENDIX
G



No.	DATE	DESCRIPTION	BY
1	7/2020	OTHER	RD

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

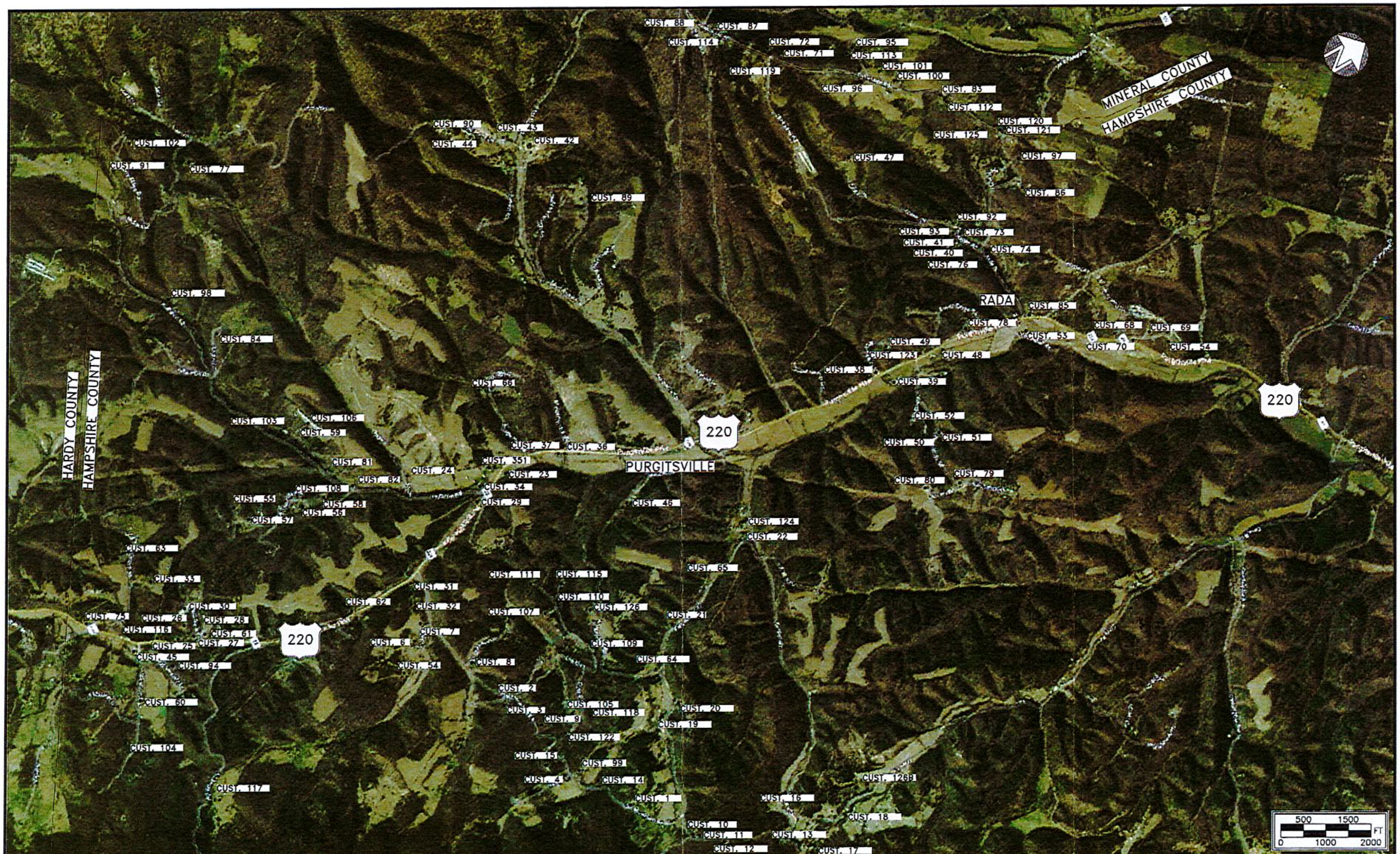
FIELD LAYOUT -
DRAWN BY RKB
CONST CHECKED BY -
RECORD CHECKED BY -
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14780 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX G
PROJECT AREA WATER DISTRIBUTION SCHEMATIC

NONE
PROJECT NO. CE10-10W
DRAWING NO. **APPX-G**



No.	DATE	DESCRIPTION	BY

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CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT –
DRAWN BY KRB
CONST CHECKED BY –
RECORD CHECKED BY –
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14790 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX G
MAP OF SIGNED CUSTOMERS

AS SHOWN
PROJECT NO. CE10-10W
DRAWING NO. APPX-G

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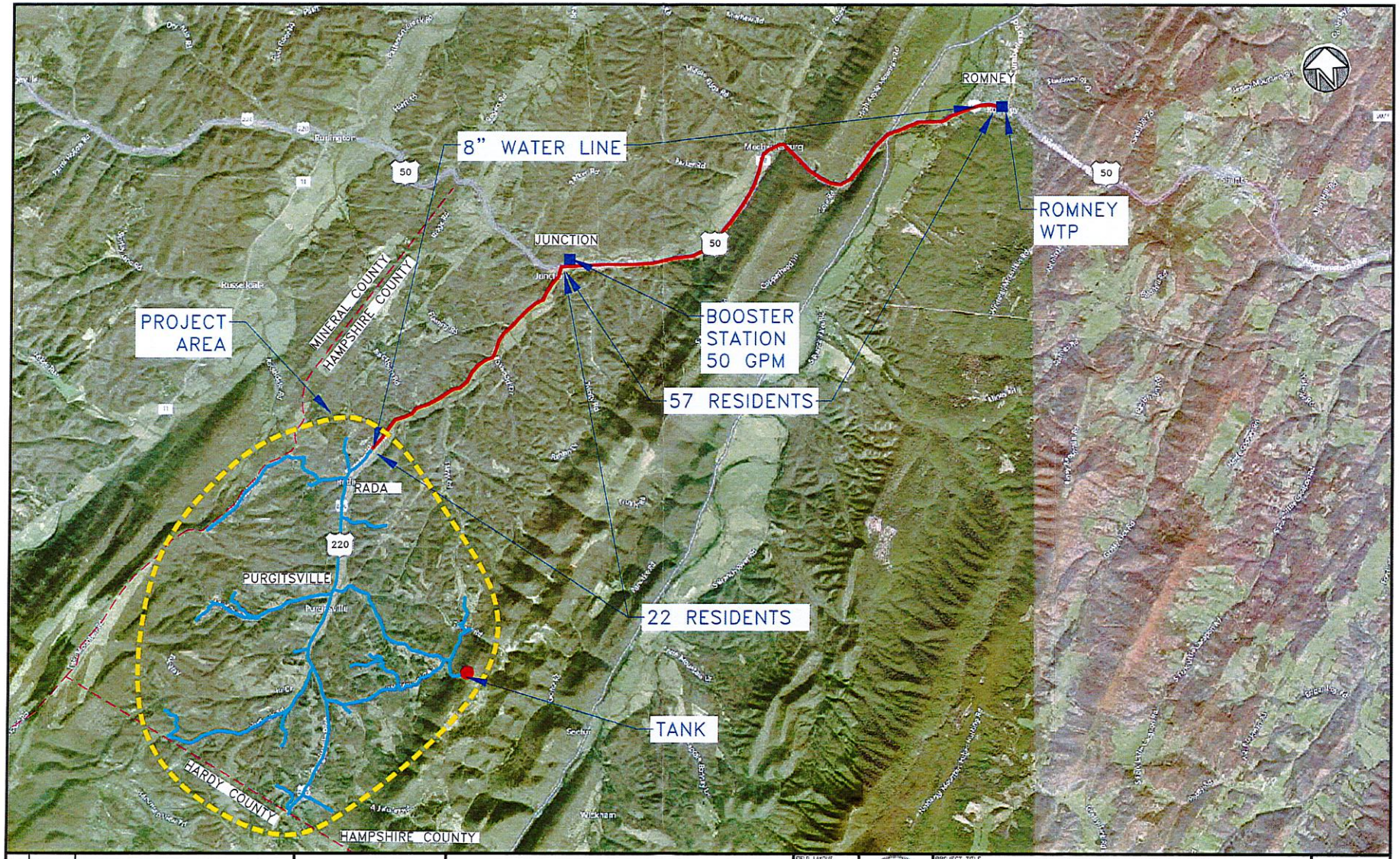
APPENDIX

H



No.	DATE	DESCRIPTION	BY
	3/2020	ISSUED	RRB

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CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT –
DRAWN BY RRB
CONST CHECKED BY –
RECORD CHECKED BY –
ISSUE DATE 3/2020

DOMINICK P. CERRONE REGISTERED 14750 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX H
ALTERNATIVE 1 – WATER FROM THE CITY OF ROMNEY

NONE
PROJECT NO. CE10-10W
DRAWING NO. **ALT-1**

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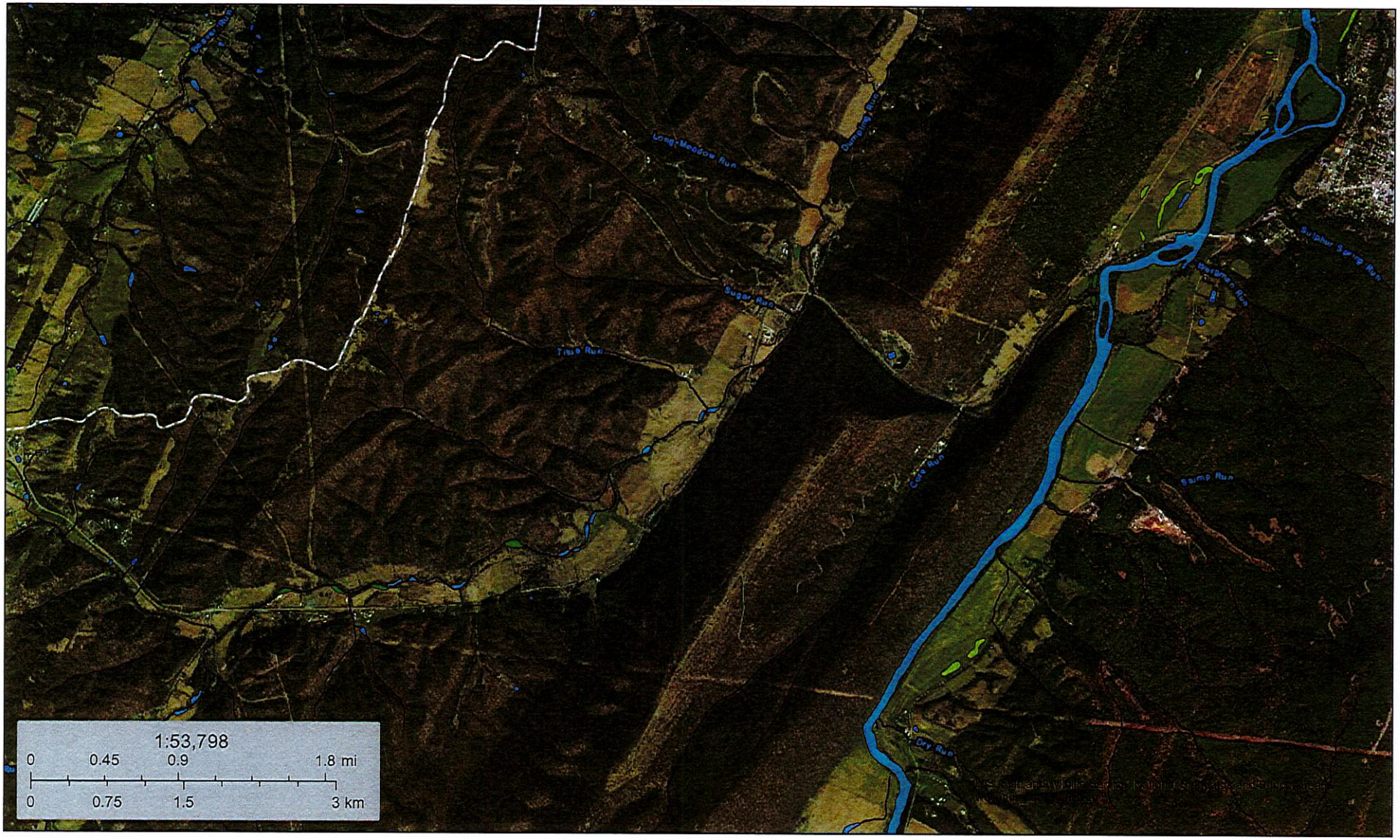
U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - North



March 11, 2020

Wetlands

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National Wetlands Inventory (NWI)
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U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - North -detail PFO1A

March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
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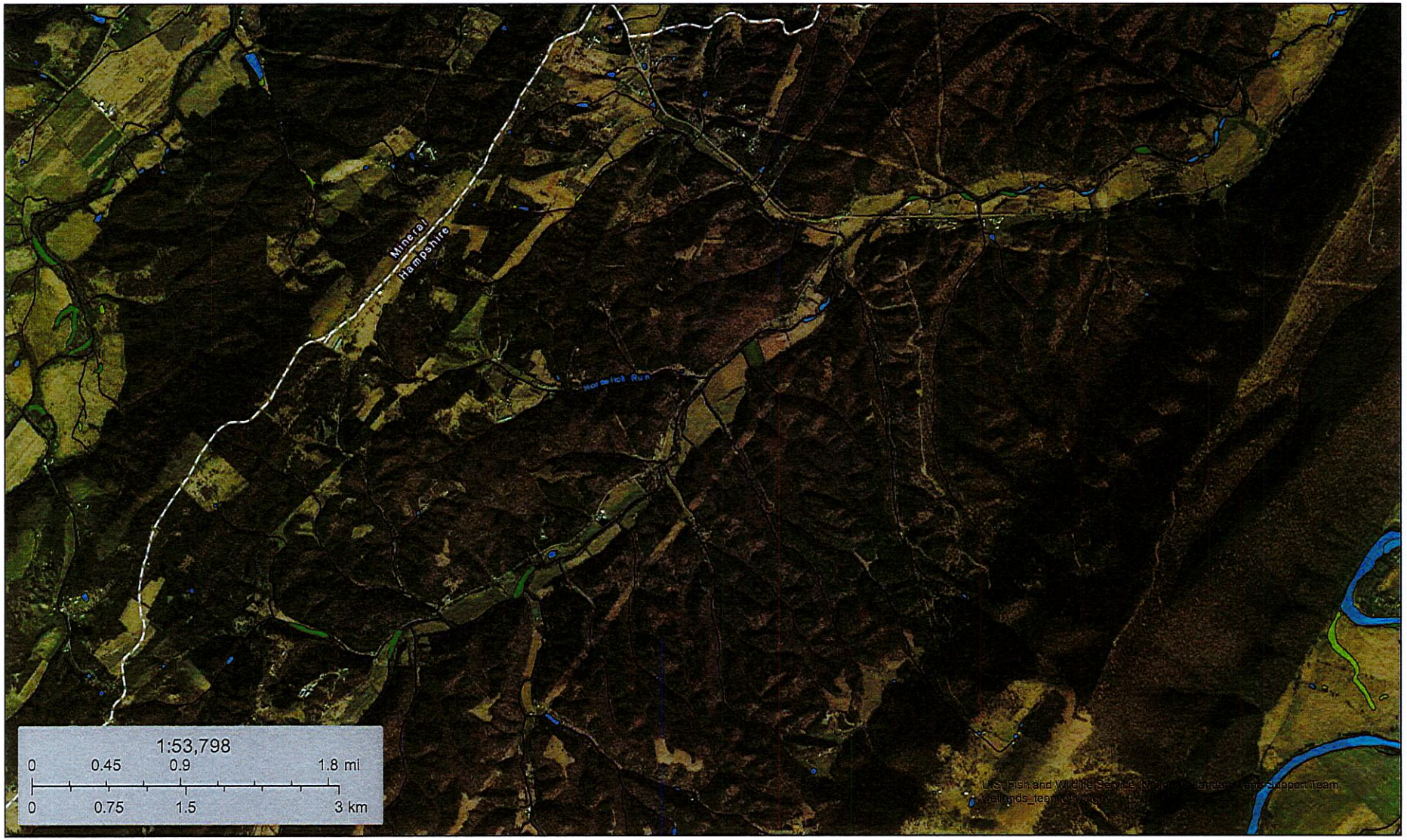
- Other
- Riverine

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Romney - South



March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	600 LF	$55.00		$33,000.00
2	8" PVC CL200 (SDR 21/PVC)	32,000 LF	21.00		$672,000.00
3	8" PVC C900 DR 18	20,700 LF	25.00		$517,500.00
4	6" PVC CL 200 (SDR 21/PVC)	0 LF	19.00		$0.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" PVC CL200 (SDR 21/PVC)	0 LF	15.00		$0.00
7	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	2" PVC CL200 (SDR21/PVC)	0 LF	13.00	53300	$0.00
9	8" Gate Valve & Box	28 EA	1,800.00		$50,400.00
10	6" Gate Valve & Box	0 EA	1,000.00		$0.00
11	4" Gate Valve & Box	0 EA	800.00		$0.00
12	2" Gate Valve & Box	0 EA	650.00		$0.00
10	Valve Markers	28 EA	50.00		$1,400.00
11	Ductile Iron Fittings	6,000 LB	5.00		$30,000.00
12	Fire Hydrants	8 EA	4,300.00		$34,400.00
13	Fire Hydrant Extension	5 VF	400.00		$2,000.00
14	Flushout Assembly	2 EA	1,500.00		$3,000.00
16	Air Release Assembly	8 EA	2,500.00		$20,000.00
19	Leak Detector w/ Meter	4 EA	2,000.00		$8,000.00
20	Horizontal Directional Drilling	1 LS	60,000.00		$60,000.00
22	8" Highway Boring	150 LF	200.00		$30,000.00
28	8" Stream Crossing	200 LF	120.00		$24,000.00
22	8"' Railroad Boring	100 LF	250.00		$25,000.00
28	6" Stream Crossing	0 LF	100.00		$0.00
22	4" Highway Boring	0 LF	90.00		$0.00
28	4" Stream Crossing	0 LF	80.00		$0.00
22	2" Highway Boring	0 LF	85.00		$0.00
28	2" Stream Crossing	0 LF	65.00	450	$0.00
31	Service Line Stream Crossing	80 LF	50.00		$4,000.00
32	Asphalt Rep. (DOH)	400 LF	90.00		$36,000.00
33	Asphalt Rep. (Driveway & Berm)	280 LF	45.00		$12,600.00
34	Aggregate Replacement	1,860 LF	6.00		$11,160.00
35	Berm Replacement	6,000 LF	3.00	8,540	$18,000.00
36	Miscellaneous Concrete	80 CY	600.00		$48,000.00
37	Rip-Rap Restoration	1,500 TN	45.00		$67,500.00
38	Aggregate Overlay	1,000 LF	7.00	1,000	$7,000.00
39	Seeding	42,210 LF	1.00		$42,210.00
40	Water Main Testing & Disinfection	53,300 LF	0.75		$39,975.00
41	1" Service Tap & Corp. Stop	3 EA	300.00		$900.00
42	3/4" Service Tap & Corp. Stop	39 EA	300.00		$11,700.00
43	1" PE Service Pipe (Boring)	350 LF	30.00		$10,500.00
44	3/4" PE Service Pipe (Boring)	400 LF	20.00		$8,000.00
45	1" PE Service Pipe (Trench)	100 EA	22.00		$2,200.00
46	3/4" PE Service Pipe (Trench)	800 LF	16.00		$12,800.00
47	Outside Meter Setting (Single)	30 EA	700.00		$21,000.00
48	Outside Meter Setting (Tandem)	9 EA	800.00		$7,200.00
49	Water Meter	39 EA	150.00		$5,850.00
52	Booster Station	1 EA	175,000.00		$175,000.00
54	Tie In (Master Meter and any other upgrades)	1 EA	70,000.00		$70,000.00
55	Mobilization	1 LS	80,000.00		$80,000.00

SUBTOTAL CONSTRUCTION COST	$2,202,295
CONSTRUCTION CONTINGENCY	$220,230
TOTAL CONSTRUCTION COST	**$2,422,525**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	2,422,525
Legal - Title / Contracts	$	40,000		
Engineering				
Preliminary Study	$	20,000		
Preliminary & Final Design	$	145,000		
Bidding & Negotiation	$	15,000		
Eng. During Const	$	68,000		
Inspection	$	139,604		
Post Const	$	10,000		
Aerial Photo & Mappling	$	15,000		
Environmental	$	10,000		
Additional Services	$	30,000		
Administrator (Region 8)	$	50,000		
Accounting	$	-		
Other Admin Costs	$	2,000		
Permits, Archeology	$	30,000		
Lands and ROW's	$	35,000		
LMI Tap Fees	$	2,000		
Geotechnical Services, Concrete Testing	$	7,000		
Project Contingency	$	30,000		
Sub Total line 1 thru 10			$	648,604
Design Interest	$	35,000		
Bond Counsel & Registar	$	-		
Sub Total Cost of Financing			$	35,000
TOTAL PROJECT COST			**$**	**3,354,128**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

SCENARIO 1 - NO RESIDENCES SIGN UP ALONG TRANSMISSION LINE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASED WATER		
Yearly Demand	4669500 Gallons	
Cost per 1,000 gallons	4.95	
Total Annual		**$23,114**
2- PUMPING EXPENSES		
Junction BS		
Total GPD	12793	
Rate (GPM)	50	
Phase	3	
HP	20	
Total KWH/day	63.62	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$3,251**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	4669500 Gallons	
New Demand	0 Gallons	
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to ii
New Miles	10.10	
Adjustment		**$5,606**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**
TOTAL 0&M COST ADJUSTMENT		**$40,130**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

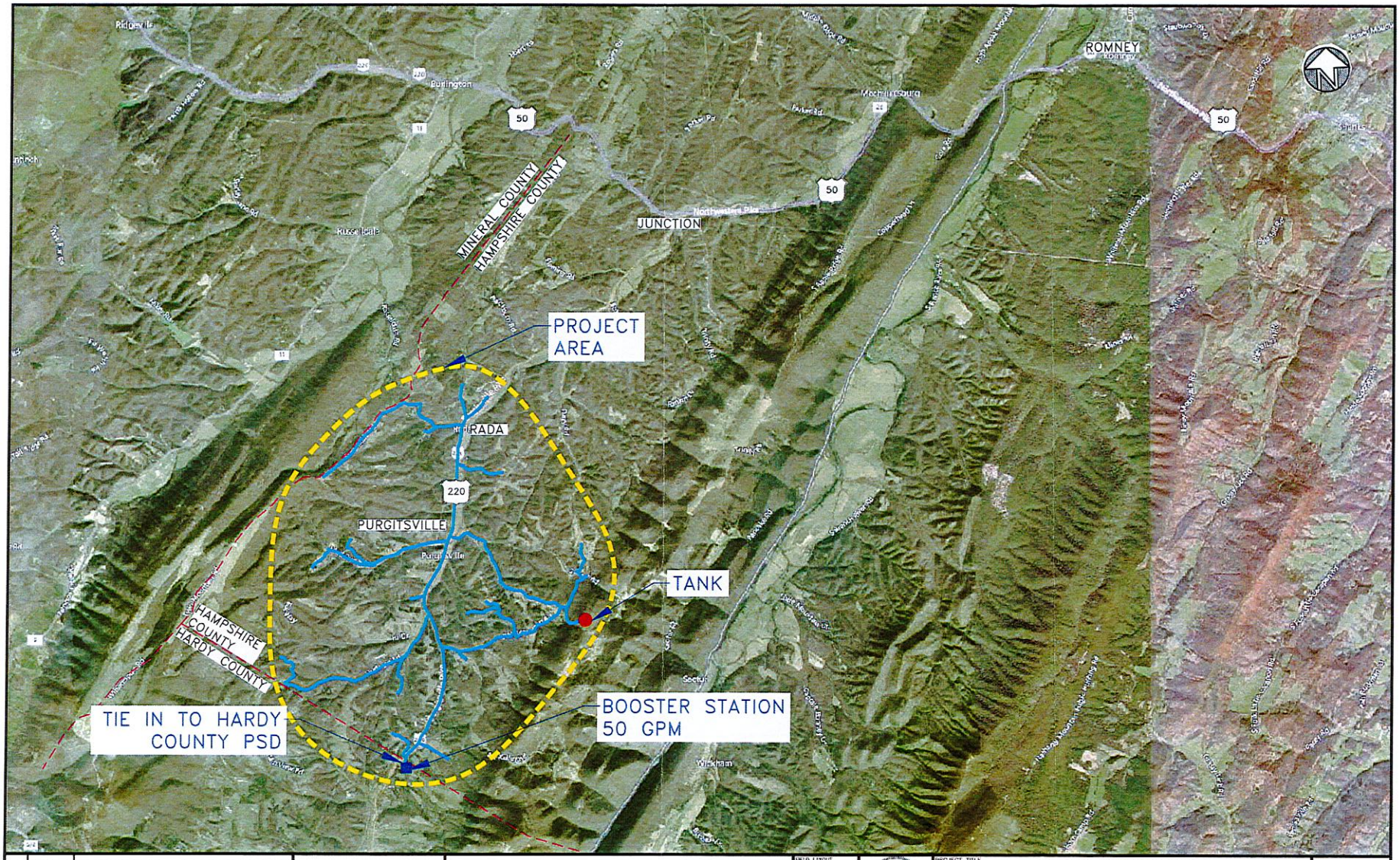
OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 1 - WATER SUPPLY FROM ROMNEY

SCENARIO 2 - 50% OF RESIDENCES SIGN UP ALONG TRANSMISSION LINE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS (125 customers + 39 customers)	164
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
PURCHASE WATER		
Yearly Demand	6126384	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$30,326**
1- PUMPING EXPENSES		
Junction BS		
Total GPD	16785	
Rate (GPM)	50	
Phase	3	
HP	20	
Total KWH/day	83.48	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$4,266**
2- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	6126384	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
3-TRANSMISSION AND DISTRIBUTION EXPENSES		
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to industry standard of $370/mile x 1.5
New Miles	10.10	
Adjustment		**$5,606**
4-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	164	
Adjustment		**$10,705**
TOTAL 0&M COST ADJUSTMENT		**$50,901**



No.	DATE	DESCRIPTION	BY
1	3/2020	DRAFT	RRB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT -
DRAWN BY RRB
CONST CHECKED BY -
RECORD CHECKED BY -
ISSUE DATE 3/2020

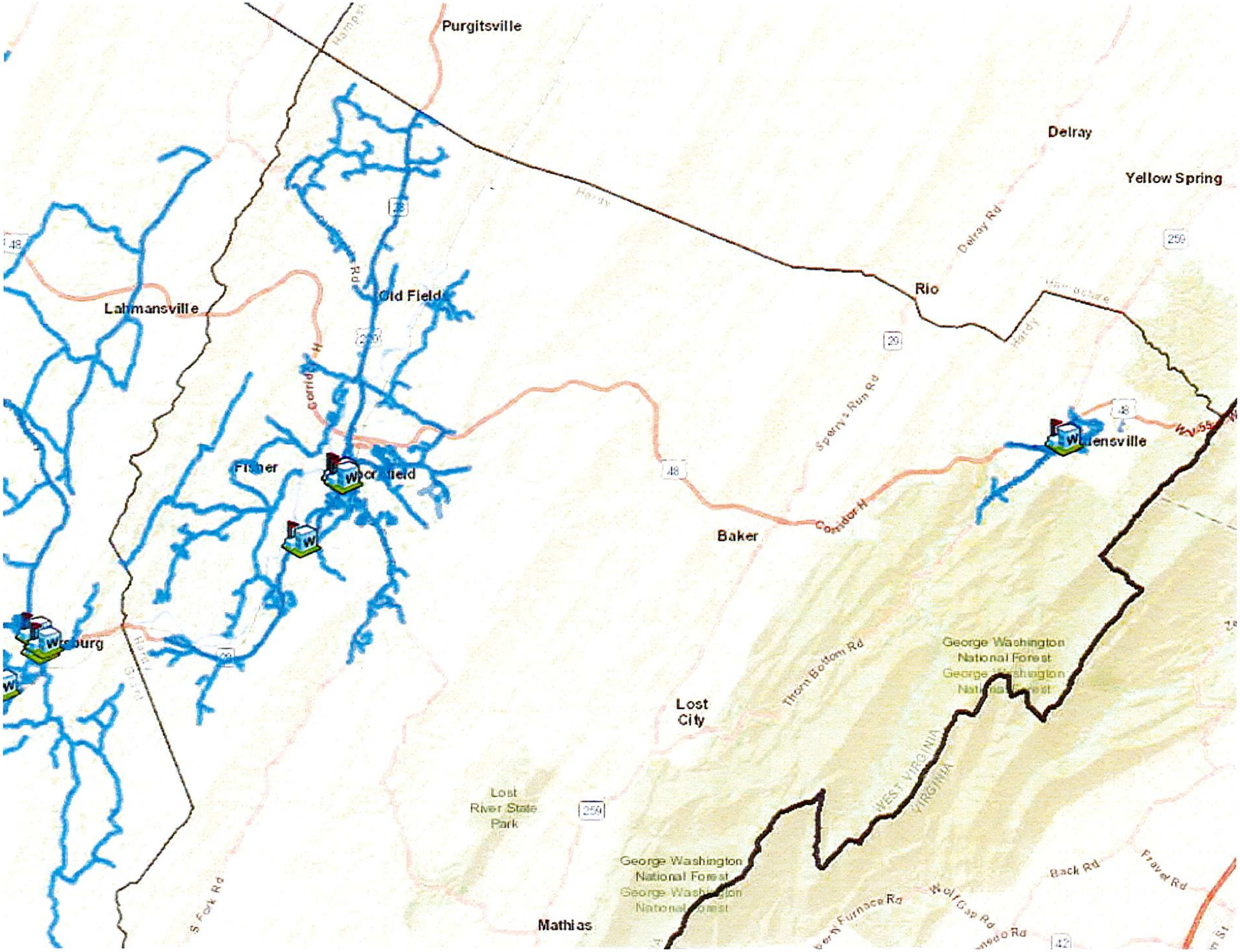
DONALD P. CERRONE REGISTERED 14729 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX H
ALTERNATIVE 2 – WATER FROM THE HARDY COUNTY PSD

NONE
PROJECT NO. CE10-10W
DRAWING NO. **ALT-2**

X:\Project Data\Cerrone Hampshire - CE10-10W Purgitsville Water Extension\Drawings\Preliminary\LOCATION.dwg, 3/24/2020 1:43:33 PM, DWG To PDF.pc3


Purgitsville
Delray
Yellow Spring
Delray Rd
Rio
Hardy
Old Field
Lahmansville
Fisher
Sperry's Run Rd
Corridor H
Baker
Thorn Bottom Rd
Lost City
George Washington National Forest
WEST VIRGINIA
VIRGINIA
Lost River State Park
Mathias
S Fork Rd
Back Rd
Fravel Rd
Wolf Gap Rd
48
259
29
28
55
42

HARDY COUNTY PUBLIC SERVICE DISTRICT

P.O. BOX 900
MOOREFIELD, WV 26836
304-530-3048

January 10, 2019

Richard Wood, Chairman
Central Hampshire PSD
18540 Northwestern Pike
Augusta, WV 26704

Dear Mr. Wood,

Based on the demand information you have provided in your letter dated November 25, 2018, the Hardy County Public Service District (District) anticipates that we could provide Central Hampshire PSD water for resale at the county line on US Rt. 220. However, after reviewing the provided information and consulting with our project engineering firm, The Thrasher Group, we feel that we must be provided with additional design information in order to be able to complete a final analysis before the District could definitively state that we can provide water for resale for a potential Purgitsville area water system. The design information must include service elevations, storage plans, total potential customers and the number of executed user agreements. Additionally, the District will need to ensure the volume proposed by Hampshire County fits into the District's purchase agreement with the Town of Moorefield, who would be the producer of any water purchased from the District.

The District understands that a significant amount of preliminary work must be done by Central Hampshire PSD in order to be able to provide the specific design information that has been requested and we realize it may take some time before that information can be provided.

As was requested in the aforementioned letter dated November 25, 2018, Central Hampshire PSD asked that the District provide an estimated resale rate that would be charged to Central Hampshire PSD for purchased water. In that regard, the District hired the accounting firm, Griffith & Associates, to develop an estimated resale rate. It is the recommendation of Griffith & Associates to provide Central Hampshire PSD with an **estimated** resale rate of $4.95 per 1000 gallons of usage. Griffith & Associates completed a class cost of service model assuming the purchased water costs that will be in place following the construction of the Town of Moorefield's new water plant and using the information that Hampshire County has previously provided including anticipated daily demand and pressure requirements. This class cost of service model provided a resale rate of $4.95/1000 gallons. This rate of $4.95/1000 gallons assumes the following:

- An average daily demand of 30,000 gallons. If daily usage will be less than 30,000 gallons, the estimated rate would increase.
- A 4" master meter. If flow requirements of Hampshire County necessitate a larger master meter, the estimated rate will increase.
- That Hardy County PSD purchases and installs the master meter, vault and other components needed to establish a resale point. If Hampshire County covers the cost

to purchase and install these components, the estimated rate would likely decrease. (Regardless of purchaser, all components will be installed, owned and maintained by Hardy County PSD or its contracted representatives.)

The District looks forward to working with Hampshire County to determine the feasibility of providing water for a Purgitsville area water system. Please contact us once Hampshire County has completed the necessary preliminary work and can provide the required information detailed above.

Sincerely,

HARDY COUNTY PUBLIC SERVICE DISTRICT

Logan Moyers
General Manager

c: Lucas Gagnon, Town of Moorefield
Mr. Donald Judy

dpcerrone@cerrone1.com

From: Logan Moyers <lmoyers@hardynet.com>
Sent: Friday, May 17, 2019 3:02 PM
To: dpcerrone@cerrone1.com
Cc: central.water77@yahoo.com
Subject: Hardy/Hampshire resale agreement

Mr. Cerrone – I recently reviewed our water purchase history with the Town of Moorefield and after review of our purchase agreement and consult with representatives from the Town, I am confident we could presently enter into a purchase agreement with Central Hampshire PSD for a volume of 1 million or possibly 1.5 million gallons per month. When we met at Region VIII in March, I said that we would likely have to wait until Moorefield completed the construction of their new WTP before entering into an agreement with Central Hampshire but I now am confident we could go ahead and enter into an agreement at a volume of 1 million or possibly 1.5 million gallons per month. Based on the numbers provided at the Region VIII meeting (assuming 3,000 gallons as a monthly residential usage) that should allow Central Hampshire to complete any of the four project scenarios that were presented. I wanted to pass this along so that Central Hampshire PSD knows that when they have reached the point they need to have a purchase agreement in place, Hardy County PSD will be ready to enter into an purchase agreement with them. We want to be sure not to hold up Central Hampshire in any way in their efforts to get public water to the Purgitsville area.

Additionally, we are currently working to renegotiate our purchase agreement with Moorefield. The new agreement will include a significantly increased allowable purchase volume that will go into effect after Moorefield's new WTP is online. Once Moorefield's new plant is online (anticipated mid 2021) and the increased allowable purchase volume goes into effect, we would be able to negotiate an increased allowable purchase volume with Central Hampshire (well beyond the 1 or 1.5 million gallons per month we can presently handle) if they ever wish to expand their Purgitsville system in the future.

If you have any questions or would like to discuss this further please contact me.

Thanks,

Logan Moyers
General Manager
Hardy Co. PSD
304-530-3048

WATER PURCHASING CONTRACT

THIS CONTRACT for the sale and purchase of water is made and entered into on this _____ day of _____, 2020, by and between HARDY COUNTY PUBLIC SERVICE DISTRICT, a Public Corporation and Political Subdivision of the State of West Virginia, 2094 U.S. 220 South, Moorefield, West Virginia, 26836, hereinafter referred to as SELLER, and CENTRAL HAMPSHIRE PUBLIC SERVICE DISTRICT, a Public Corporation and Political Subdivision of the State of West Virginia, 18540 Northwestern Pike, Augusta, WV 26704, hereinafter referred to as the PURCHASER.

WHEREAS, the Purchaser is organized and established under the provisions of W. Va. Code § 16-13A-1, *et seq.* for the purpose of constructing and operating water distribution systems in Hampshire County, West Virginia and has plans on file in their office to construct a new water distribution system in the Purgitsville area of Hampshire County, West Virginia; and,

WHEREAS, the Seller owns and operates a water supply distribution system with a capacity currently capable of serving the present customers of the Seller's system and the estimated number of water users to be served by the said Purchaser as shown on the aforesaid plans for the Purgistville Water Distribution System.

NOW, THEREFORE, in consideration of the foregoing and the mutual agreement hereinafter set forth

A. The Seller Agrees:

1. **Quality and Quantity.** To furnish the Purchaser at the point of delivery hereinafter specified, during the term of this contract, potable treated water meeting applicable purity standards of the West Virginia Department of Health in such quantity as may be required by the Purchaser not to exceed 1,000,000 gallons per month.
2. **Point of Delivery.** The water shall be furnished at or near the Hardy/Hampshire County in Moorefield District, Hardy, County, West Virginia.
3. **Pressure.** The water will be furnished at a reasonably constant pressure calculated at a minimum hydraulic grade line elevation of 1405.00 at the point of delivery. If a greater pressure than that normally available at the point of delivery is required by the Purchaser, the cost of providing such greater pressure shall be borne by the Purchaser. Further, emergency failures of pressure or supply due to main supply line breaks, power failure, flood, fire, use of water to fight fire, earthquakes, or other catastrophe or emergencies shall excuse the Seller from this provision for such reasonable periods of time as may be necessary to restore service.
4. **Metering Equipment.** To furnish, install, operate, and maintain at its own expense at the point of delivery, the necessary metering equipment, including a meter house or pit, and required devices of standard type for properly measuring the quantity of water delivered to the Purchaser and to calibrate such metering equipment whenever requested by the Purchaser, but not more frequently than once every 12 months. A meter registering not more than 2% above or below the test results shall be deemed accurate. The previous readings of any meter disclosed by test to be inaccurate shall be corrected for the 3 months previous to such test in accordance with the percentage

of inaccuracy found by such tests. If any meter fails to register for any period, the amount of water furnished during the period shall be deemed to be the amount of water delivered in the corresponding period immediately prior to the failure, unless Seller and Purchaser shall agree upon a different amount. The metering equipment shall be read on the first week of each calendar month. An appropriate official of the Purchaser at all times shall have access to the meter for the purpose of verifying its readings.

5. **Billing Procedure.** To furnish the Purchaser at the above address not later than the 12th day of each month with an itemized statement of the amount of water furnished to the Purchaser during the preceding month.

B. The Purchaser agrees:

1. **Rates.** To pay to the Seller, not later than the 30th day of each month, for water delivered, the amount of $4.95 per 1,000 gallons minimum set by tariff number ____ authorized by the West Virginia Public Service Commission, including any changes thereto also as authorized by the West Virginia Public Service Commission.
2. **Connection Fee.** To pay unto the Seller, a connection fee and tap, which shall be Seller's cost of material and labor at the time of installation as evidenced by adequate invoice documentation.
3. **Liability.** To indemnify and hold the Seller free and harmless from any and all liability which may arise in any manner, as the result of the used of said water provided by Seller to Purchaser from the point of delivery thru the Purgitsville Water Distribution System.

C. It is further mutually agreed between the Seller and the Purchaser as follows:

1. **Term of Contract.** That this contract shall extend for a term of 40 years from the date of the initial delivery of any water as shown by the first bill submitted by the Seller to the Purchaser.
2. **Delivery of Water.** That 30 days prior to the estimated date of completion of construction of the Purchaser's water supply distribution system, the Purchaser will notify the Seller in writing the date for the initial delivery of water.
3. **Water for Testing.** When requested by the Purchaser, the Seller will make available to the contractor at the point of delivery, or other point reasonably close thereto, water sufficient for testing, flushing, and trench filling the system of the Purchaser during construction, irrespective of whether the metering equipment has been installed at that time, at the rate set by tariff, which will be paid by the contractor or, on his failure to pay, by the Purchaser.
4. **Failure to Deliver.** That the Seller will, at all times, operate and maintain its system in an efficient manner and will take such action as may be necessary to furnish the Purchaser with quantities of water required by the Purchaser, except to the extent that the Seller is prevented from furnishing said water for reasons beyond the control of the Seller. Temporary or partial failures to deliver water shall be remedied with all possible dispatch. In the event of any extended shortage of water, or the supply of water available to the Seller is otherwise diminished over an extended period of time, the supply of water to Purchaser's consumers shall be reduced or diminished in the same ration or proportion as the supply to Seller's consumers is reduced or diminished.

5. **Regulatory Agencies.** That this contract is subject to such rules, regulations, or laws as may be applicable to similar agreements in this State, and the Seller and Purchaser will collaborate in obtaining such permits, certificates, or the like, as may be required to comply therewith.
6. **Successor to Parties.** In the event of any occurrence rendering either party incapable of performing under this contract, any successor to said party, whether the result of legal process, assignment, or otherwise, shall succeed to the rights of said party. If either party should cease to exist as a legal entity without a successor, or if either party should become unable to operate their water distribution systems for reasons beyond their control, then their obligations under this agreement shall terminate.

IN WITNESS THEREOF, the parties hereto, acting under the authority of their respective governing bodies, have caused this contract to be duly executed.

_____
Date

Hardy County Public Service District

By: _____

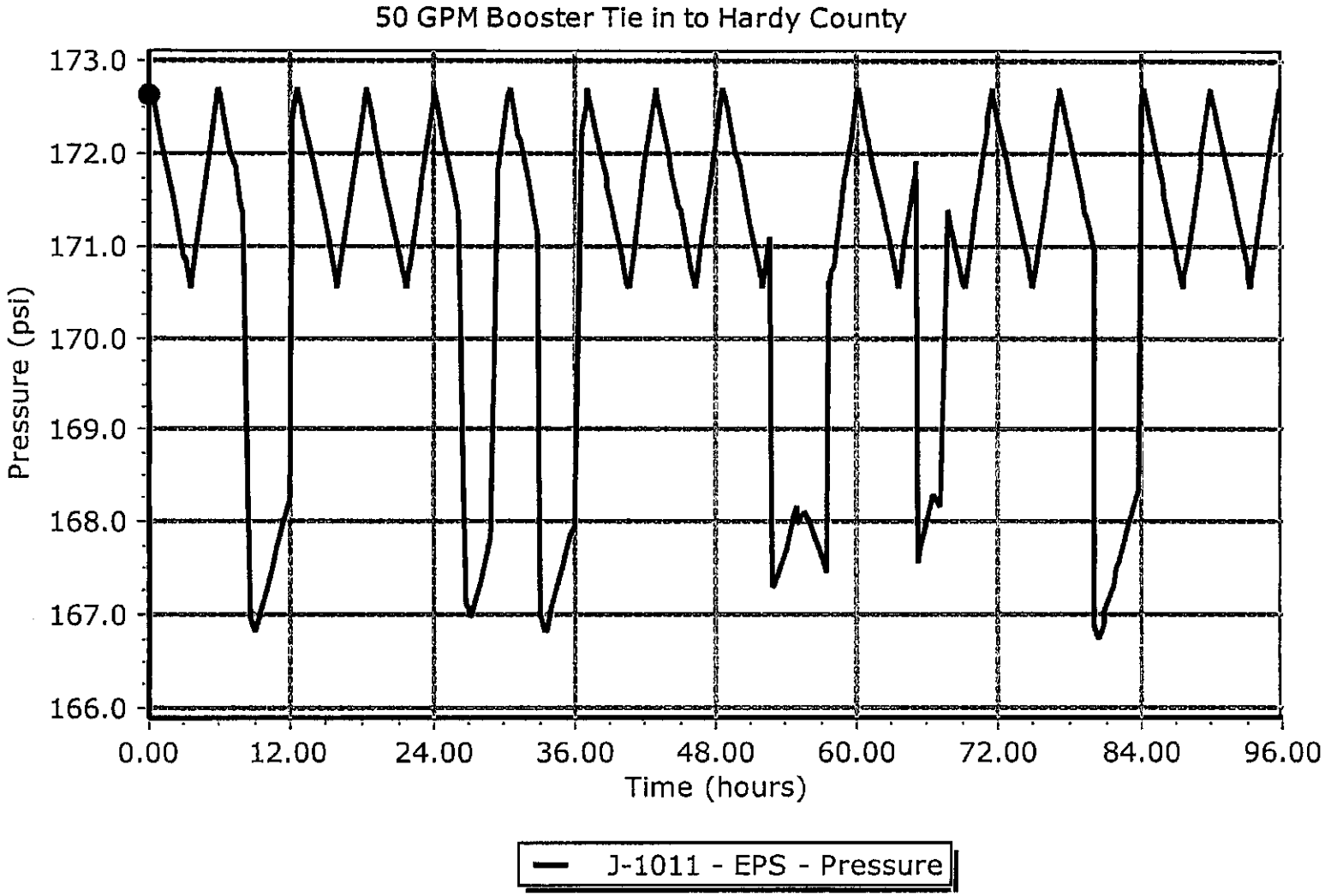
Its: _____

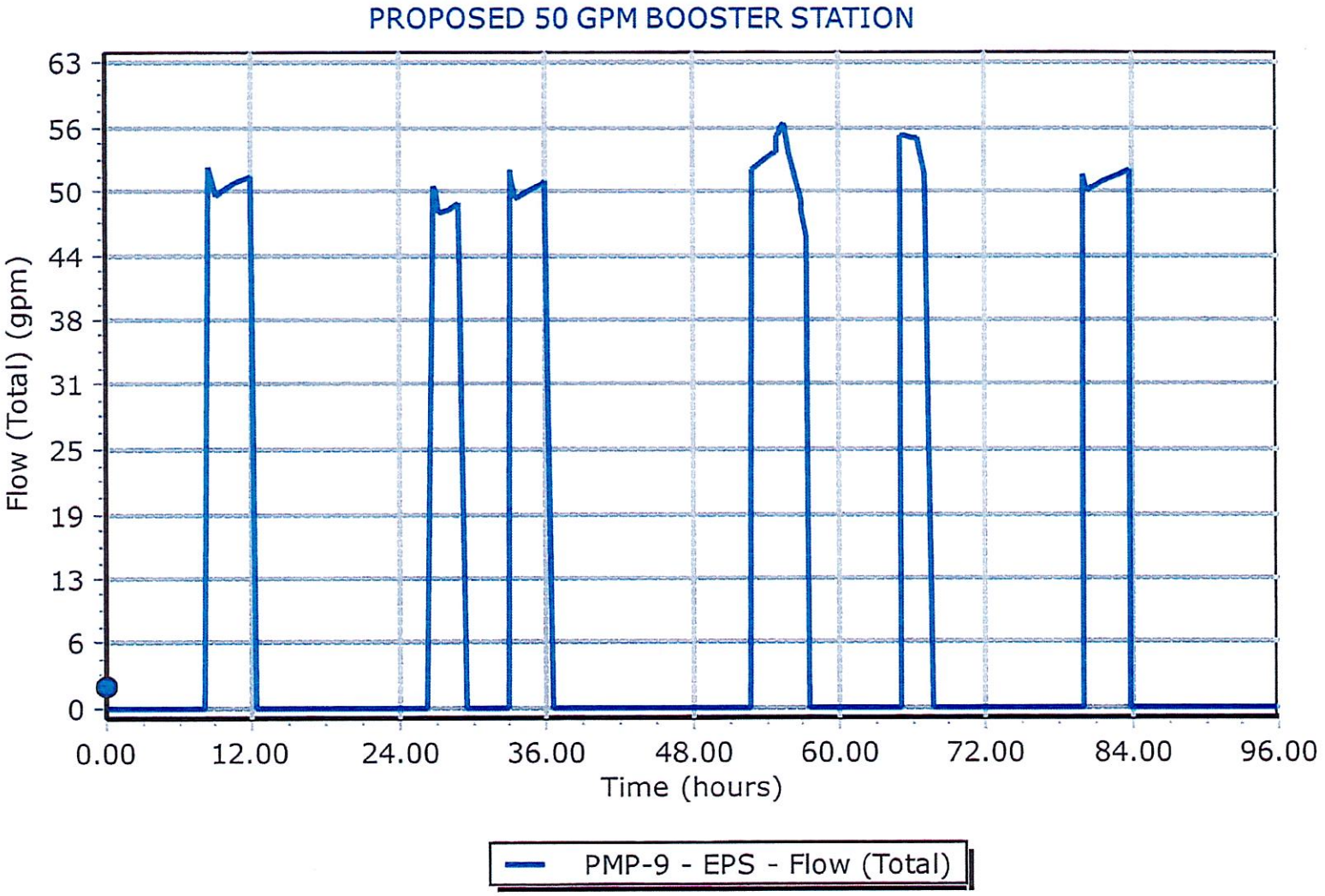
_____
Date

Hampshire County Public Service District

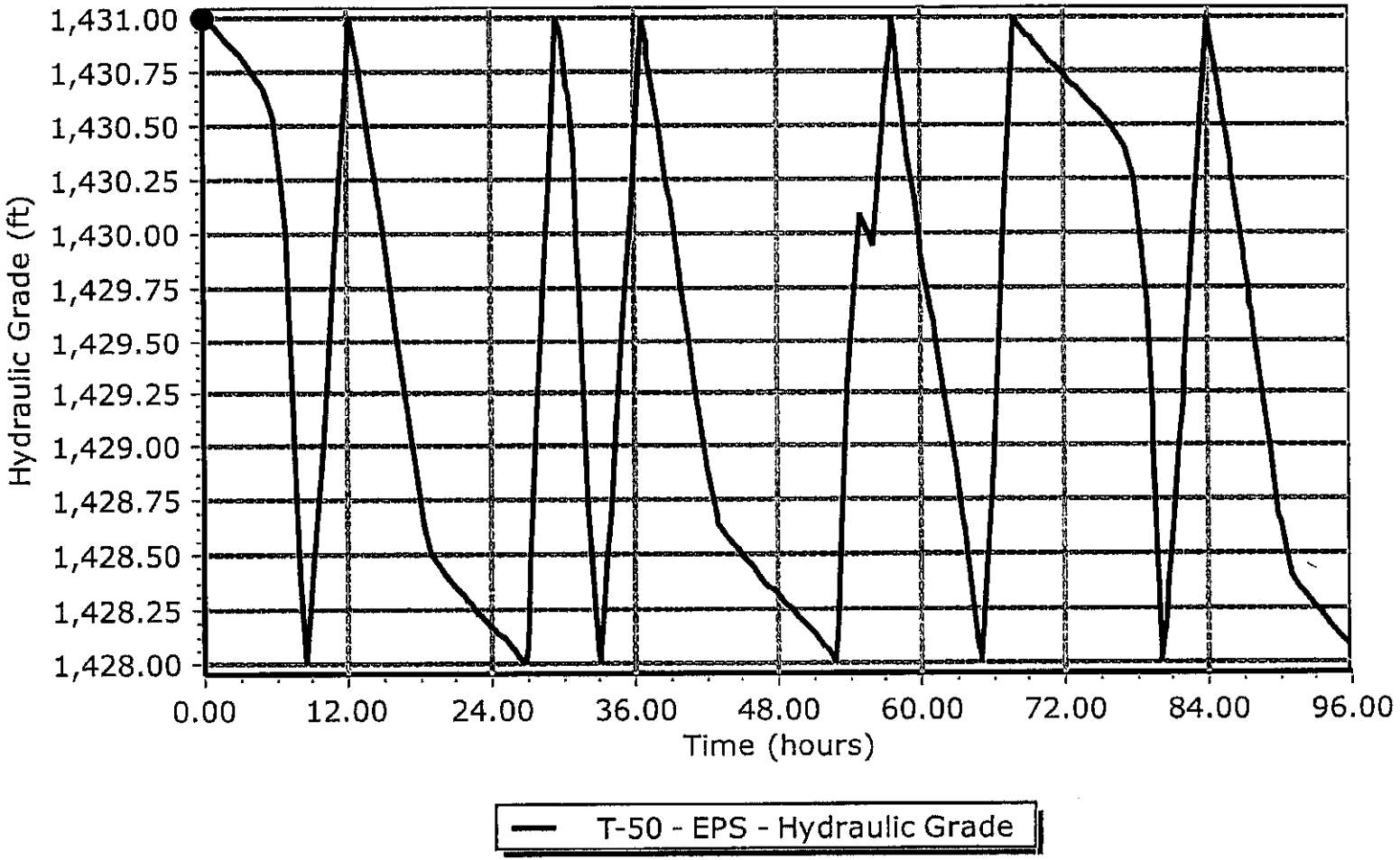
By: _____

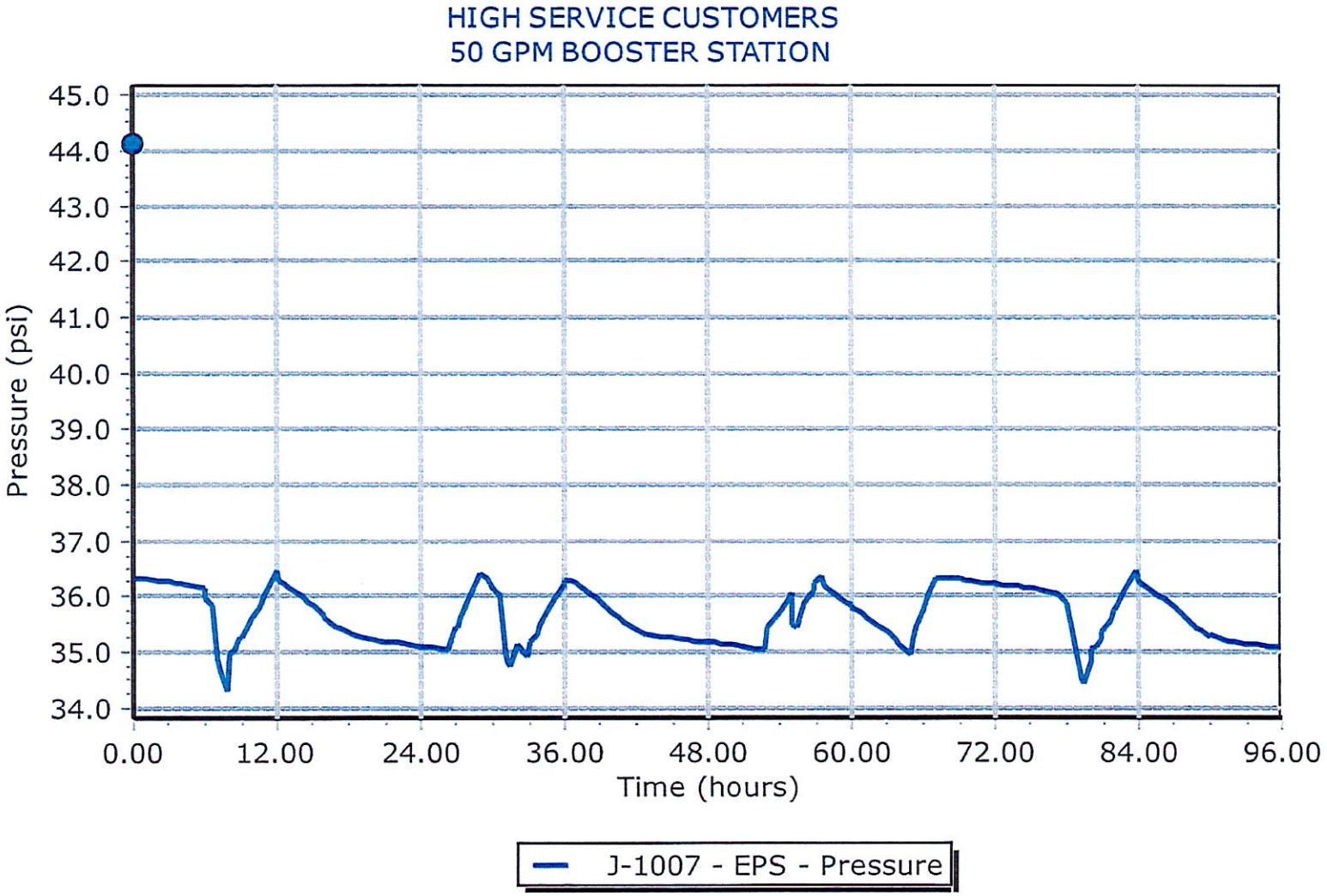
Its: _____


50 GPM Booster Tie in to Hardy County
173.0
172.0
171.0
170.0
169.0
168.0
167.0
166.0
Pressure (psi)
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
J-1011 - EPS - Pressure


PROPOSED 50 GPM BOOSTER STATION
63
56
50
44
38
31
25
19
13
6
0
Flow (Total) (gpm)
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
PMP-9 - EPS - Flow (Total)

PROPOSED 50,000 GAL WATER TANK
50 GPM BOOSTER STATION




HIGH SERVICE CUSTOMERS
50 GPM BOOSTER STATION
Pressure (psi)
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
34.0
0.00
12.00
24.00
36.00
48.00
60.00
72.00
84.00
96.00
Time (hours)
J-1007 - EPS - Pressure

50 GPM Booster Station

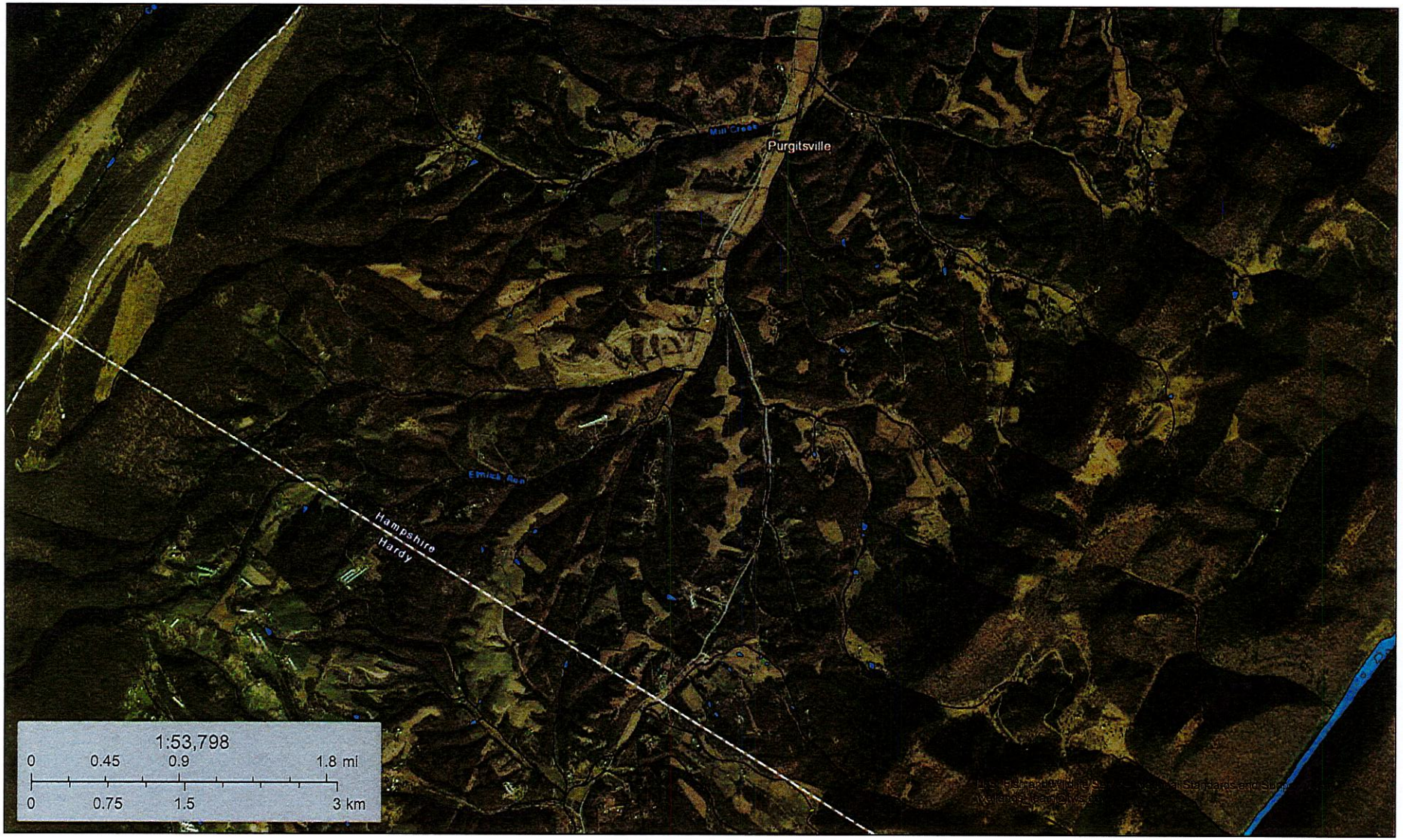
Fire Flow Node FlexTable: Fire Flow Report

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
H-64	Zone-1	True	250	520	20.0	J-948	J-419	True
H-65	Zone-1	True	250	565	20.0	J-948	J-419	True
H-66	Zone-1	True	250	616	20.0	J-948	J-419	True
H-67	Zone-1	True	250	677	20.0	J-948	J-419	True
H-68	Zone-1	True	250	677	20.0	J-948	J-419	True
H-69	Zone-1	True	250	677	20.0	J-948	J-419	True
H-70	Zone-1	True	250	677	20.0	J-948	J-419	True
H-71	Zone-1	True	250	677	20.0	J-948	J-419	True
H-72	Zone-1	True	250	677	20.0	J-948	J-419	True
H-73	Zone-1	True	250	677	20.0	J-948	J-419	True
H-74	Zone-1	True	250	862	20.0	J-948	J-419	True
H-82	Zone-1	True	250	329	20.0	J-669	J-419	True
H-83	Zone-1	True	250	328	20.0	H-82	J-419	True
H-84	Zone-1	True	250	328	20.0	H-82	J-419	True
H-79	Zone-1	True	250	372	20.0	J-669	J-419	True
H-80	Zone-1	True	250	704	20.0	H-82	J-419	True
H-81	Zone-1	True	250	409	20.0	H-82	J-419	True
H-1082	Zone-1	True	250	432	20.0	J-1007	J-419	True
H-1083	Zone-1	True	250	392	20.0	J-1007	J-419	True
H-1084	Zone-1	True	250	330	20.0	J-1007	J-419	True
H-1085	Zone-1	True	250	488	20.0	J-1007	J-419	True

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands- South



March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

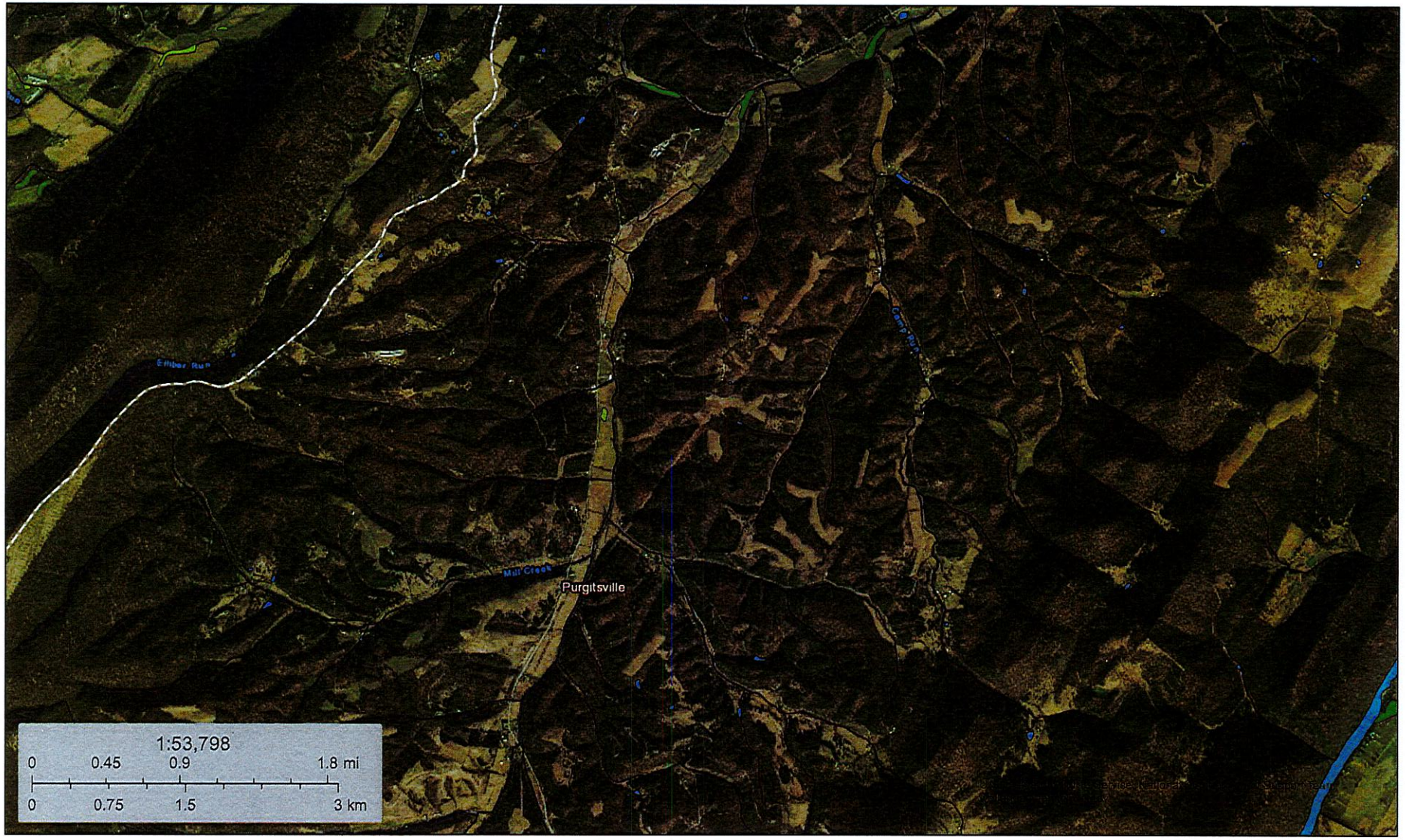
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands- North



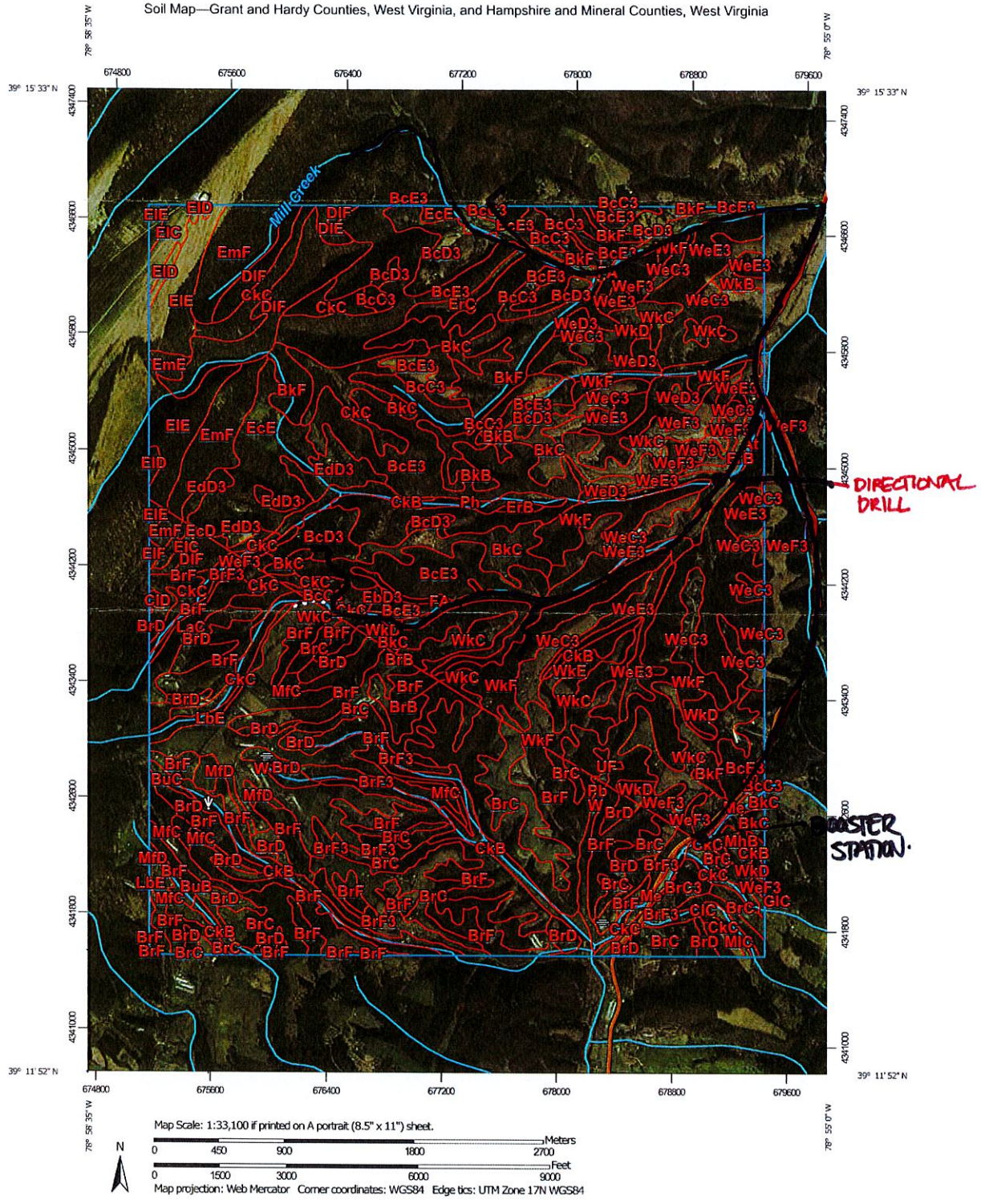
March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper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78° 55' 0" W
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676400
677200
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678800
679600
39° 15' 33" N
39° 11' 52" N
4347400
4346800
4346200
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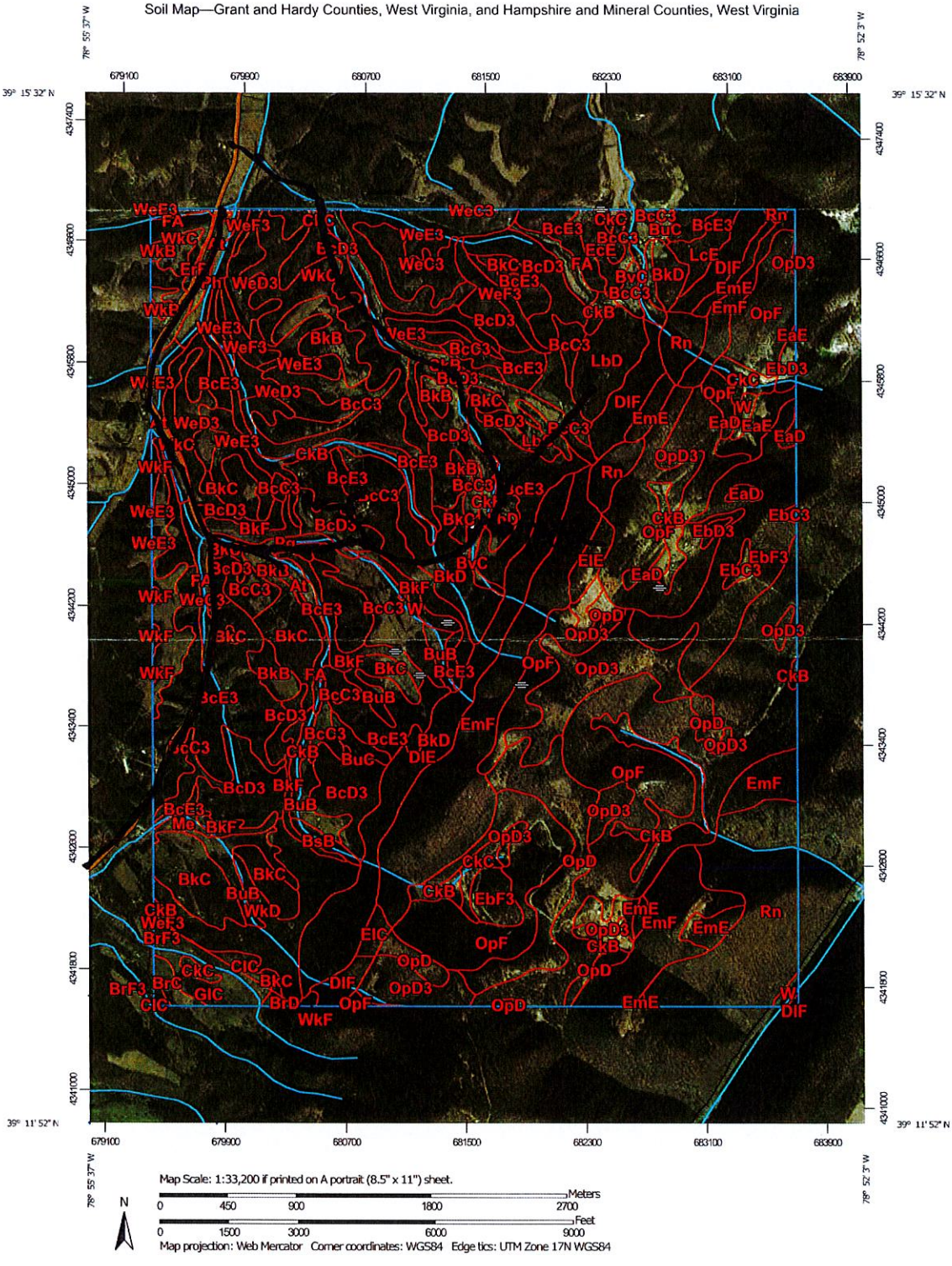
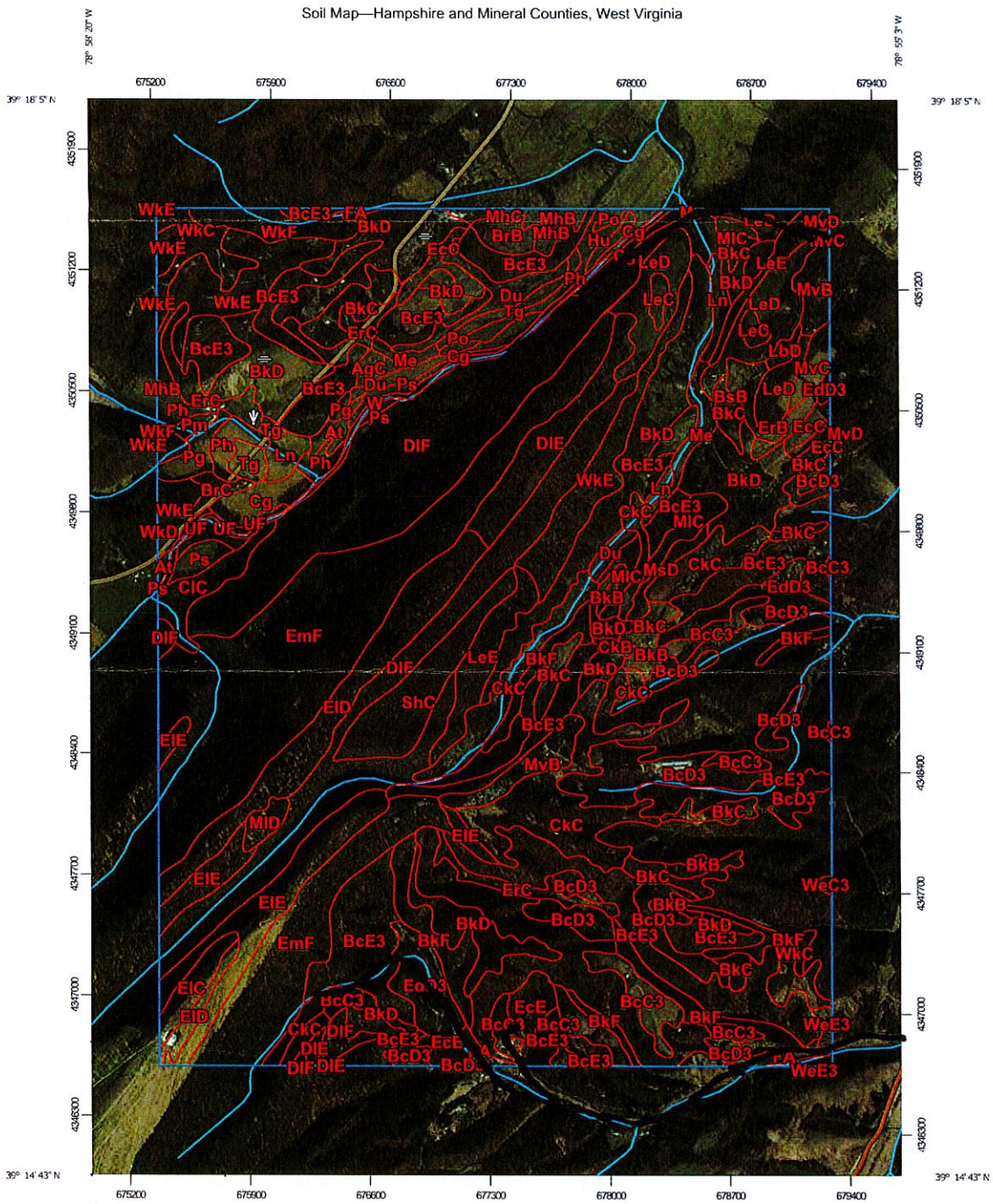
4345000
4344200
4343400
4342600
4341800
4341000
Mill Creek
DIRECTIONAL DRILL
BOOSTER STATION
Map Scale: 1:33,100 if printed on A portrait (8.5" x 11") sheet.
N
0 450 900 1800 2700 Meters
0 1500 3000 6000 9000 Feet
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Soil Map—Grant and Hardy Counties, West Virginia, and Hampshire and Mineral Counties, West Virginia



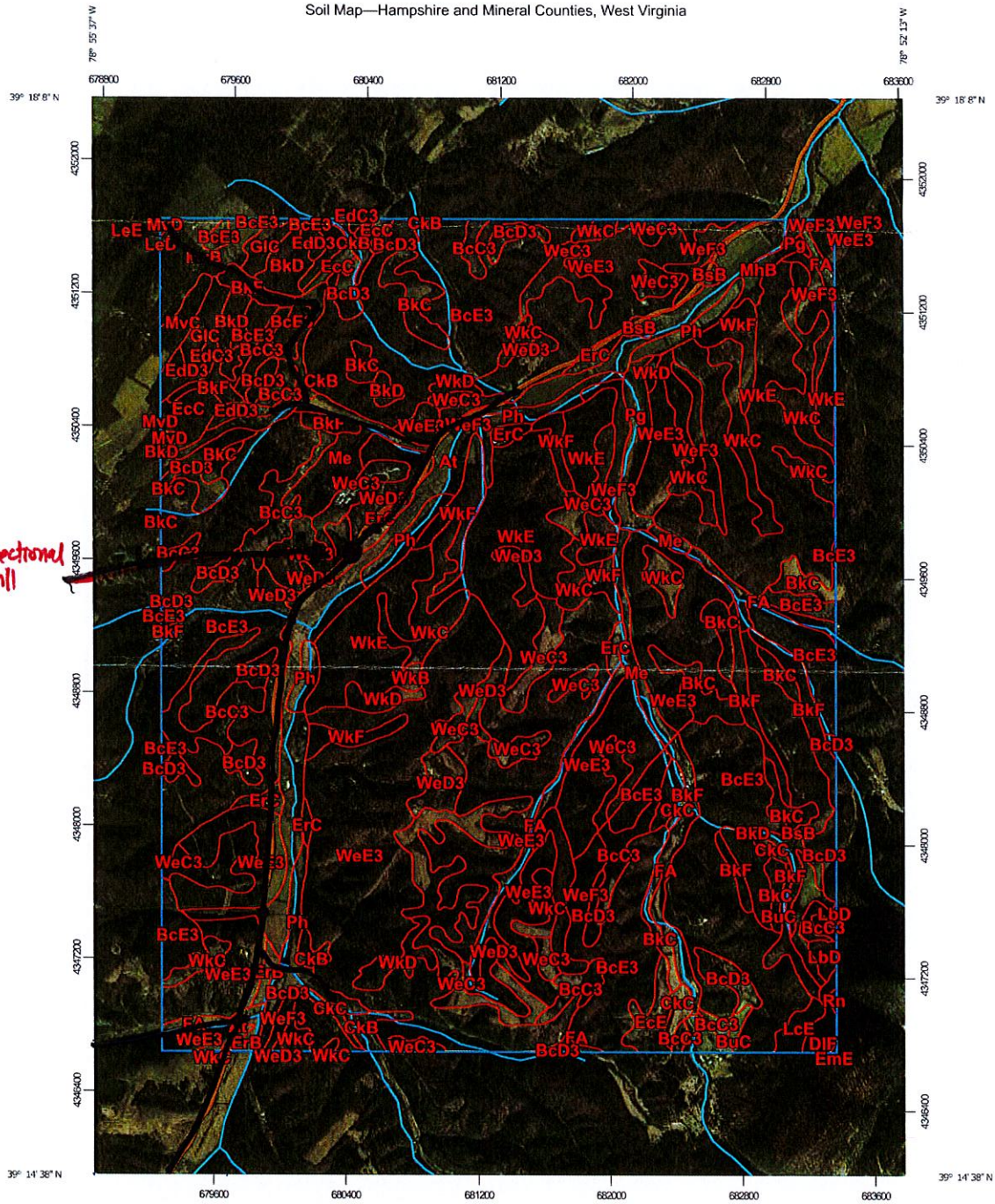
southeast.

Soil Map—Hampshire and Mineral Counties, West Virginia



northwest

Soil Map—Hampshire and Mineral Counties, West Virginia



CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS

ALTERNATIVE 2 - WATER SUPPLY FROM HARDY COUNTY PSD

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0 LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0 LF	21.00		$0.00
3	8" PVC C900 DR 18	0 LF	25.00		$0.00
4	6" PVC CL 200 (SDR 21/PVC)	300 LF	19.00		$5,700.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" PVC CL200 (SDR 21/PVC)	0 LF	15.00		$0.00
7	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	2" PVC CL200 (SDR21/PVC)	0 LF	14.00	300	$0.00
9	8" Gate Valve & Box	0 EA	1,800.00		$0.00
10	6" Gate Valve & Box	2 EA	1,000.00		$2,000.00
11	4" Gate Valve & Box	0 EA	800.00		$0.00
12	2" Gate Valve & Box	0 EA	650.00		$0.00
10	Valve Markers	2 EA	50.00		$100.00
11	Ductile Iron Fittings	200 LB	5.00		$1,000.00
12	Fire Hydrants	0 EA	4,300.00		$0.00
13	Fire Hydrant Extension	0 VF	400.00		$0.00
14	Flushout Assembly	1 EA	1,500.00		$1,500.00
16	Air Release Assembly	0 EA	2,500.00		$0.00
19	Leak Detector w/ Meter	0 EA	2,000.00		$0.00
20	Horizontal Directional Drilling	0 LS	0.00		$0.00
22	8" Highway Boring	0 LF	200.00		$0.00
28	8" Stream Crossing	0 LF	120.00		$0.00
22	6" Highway Boring	0 LF	125.00		$0.00
28	6" Stream Crossing	0 LF	100.00		$0.00
22	4" Highway Boring	0 LF	90.00		$0.00
28	4" Stream Crossing	0 LF	80.00		$0.00
22	2" Highway Boring	0 LF	85.00		$0.00
28	2" Stream Crossing	0 LF	65.00	0	$0.00
31	Service Line Stream Crossing	0 LF	50.00		$0.00
32	Asphalt Rep. (DOH)	0 LF	90.00		$0.00
36	Asphalt Rep. (Driveway & Berm)	0 LF	45.00		$0.00
34	Aggregate Replacement	0 LF	6.00		$0.00
35	Berm Replacement	300 LF	3.00	300	$900.00
36	Miscellaneous Concrete	5 CY	600.00		$3,000.00
37	Rip-Rap Restoration	20 TN	45.00		$900.00
38	Aggregate Overlay	0 LF	7.00	0	$0.00
39	Seeding	0 LF	1.00		$0.00
40	Water Main Testing & Disinfection	300 LF	0.75		$225.00
41	1" Service Tap & Corp. Stop	0 EA	300.00		$0.00
42	3/4" Service Tap & Corp. Stop	0 EA	300.00		$0.00
43	1" PE Service Pipe (Boring)	0 LF	30.00		$0.00
44	3/4" PE Service Pipe (Boring)	0 LF	20.00		$0.00
45	1" PE Service Pipe (Trench)	0 EA	22.00		$0.00
46	3/4" PE Service Pipe (Trench)	0 LF	16.00		$0.00
47	Outside Meter Setting (Single)	0 EA	700.00		$0.00
48	Outside Meter Setting (Tandem)	0 EA	800.00		$0.00
49	Water Meter	0 EA	150.00		$0.00
52	Booster Station	1 EA	175,000.00		$175,000.00
54	Tie In (Master Meter and other items)	1 EA	70,000.00		$70,000.00
55	Mobilization	1 LS	30,000.00		$30,000.00

SUBTOTAL CONSTRUCTION COST	$290,325
CONSTRUCTION CONTINGENCY	$29,033
TOTAL CONSTRUCTION COST	**$319,358**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
ALTERNATIVE 2 - WATER SUPPLY FROM HARDY COUNTY PSD

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	319,358
Legal - Title / Contracts	$	10,000		
Engineering				
Preliminary Study	$	6,000		
Preliminary & Final Design	$	22,000		
Bidding & Negotiation	$	4,000		
Eng. During Const	$	14,000		
Inspection	$	35,000		
Post Const	$	4,000		
Aerial Photo & Mappling	$	2,000		
Environmental	$	2,000		
Additional Services	$	5,000		
Administrator (Region 8)	$	15,000		
Accounting	$	-		
Other Admin Costs	$	2,000		
Permits, Archeology	$	10,000		
Lands and ROW's	$	15,000		
LMI Tap Fees	$	-		
Geotechnical Services, Concrete Testing	$	2,000		
Project Contingency	$	7,500		
Sub Total line 1 thru 10			$	155,500
Design Interest	$	6,000		
Bond Counsel & Registar	$	-		
Sub Total Cost of Financing			$	6,000
TOTAL PROJECT COST			**$**	**480,858**

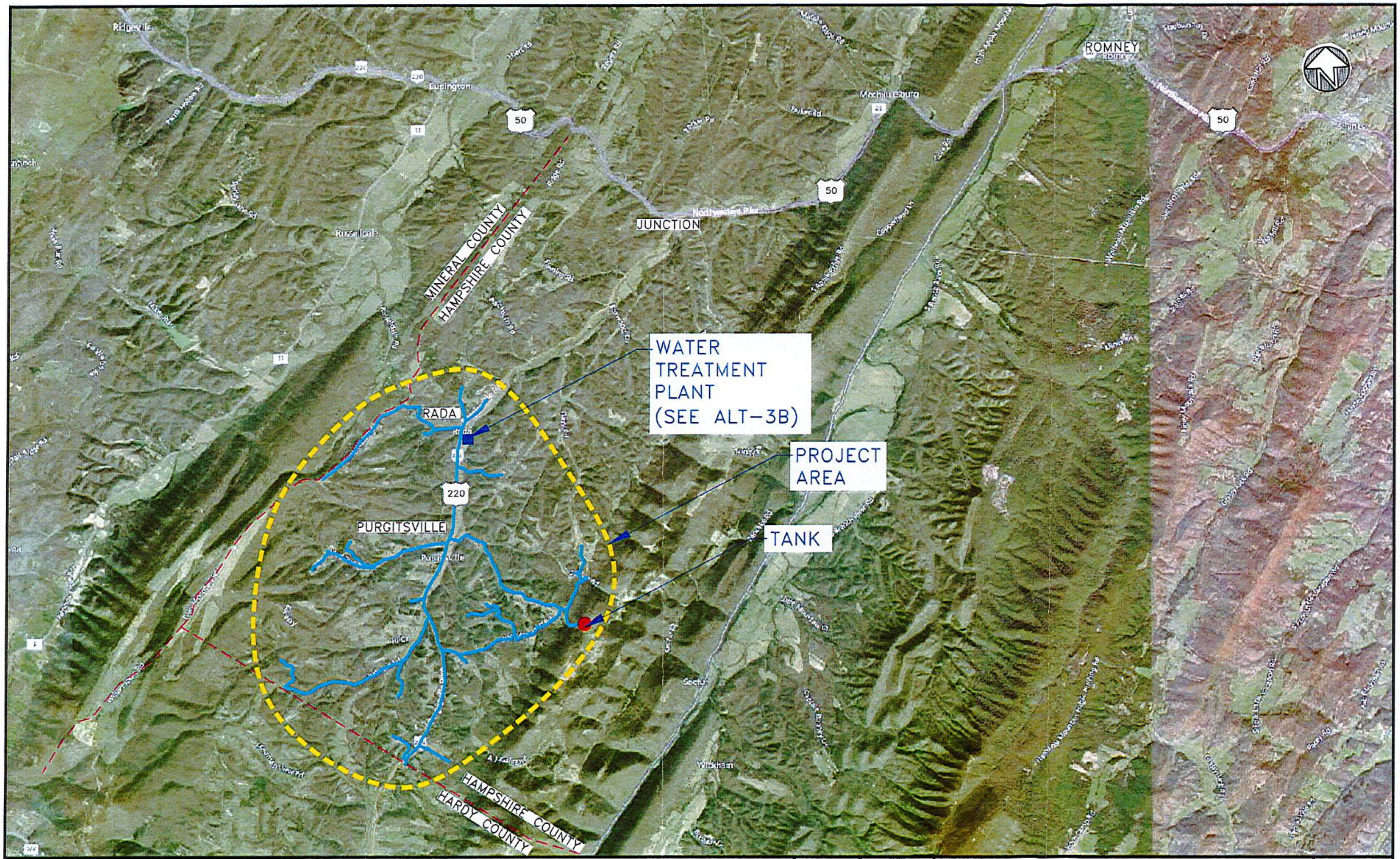
CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 2 - WATER SUPPLY FROM HARDY COUNTY PSD

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASE WATER		
Yearly Demand	4669500	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$23,114**
2- PUMPING EXPENSES		
Church Road BS		
Total GPD	12793	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	15.91	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$813**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	4669500	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to ii
New Miles	0.06	
Adjustment		**$32**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**
TOTAL 0&M COST ADJUSTMENT		**$32,117**



No.	DATE	DESCRIPTION	BY

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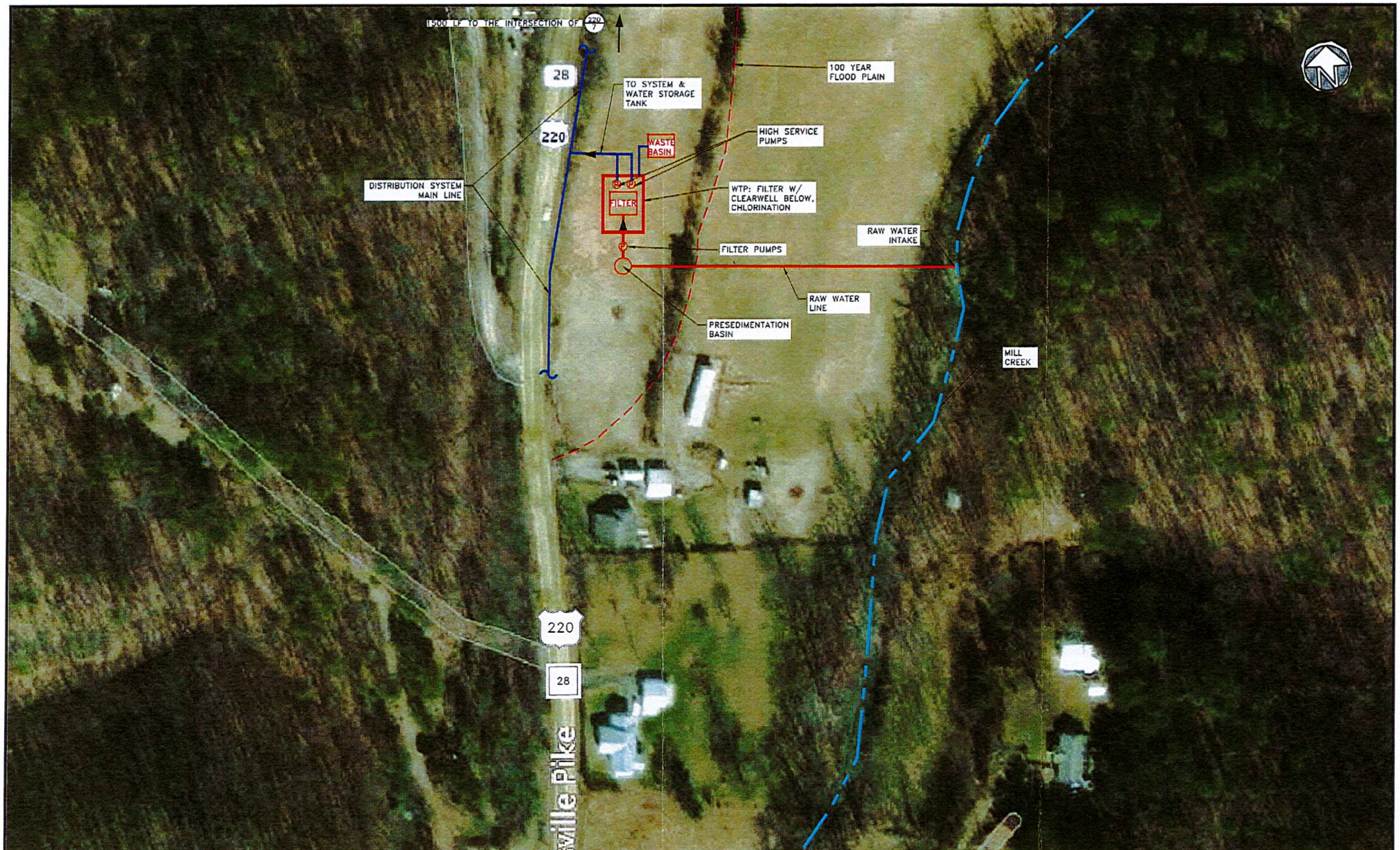
CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT: -
DRAWN BY: RRB
CONST CHECKED BY: -
RECORD CHECKED BY: -
ISSUE DATE: 3/2020

PROJECT TITLE: **CENTRAL HAMPSHIRE PSD**
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE: APPENDIX H
ALTERNATIVE 3 - WATER FROM INDEPENDENT SOURCE

NONE
PROJECT NO.: CE10-10W
DRAWING NO.: **ALT-3A**



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CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97–14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT -
DRAWN BY RRB
CONST CHECKED BY -
RECORD CHECKED BY -
ISSUE DATE 3/2020

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX H
ALTERNATIVE 3 – WATER FROM INDEPENDENT SOURCE

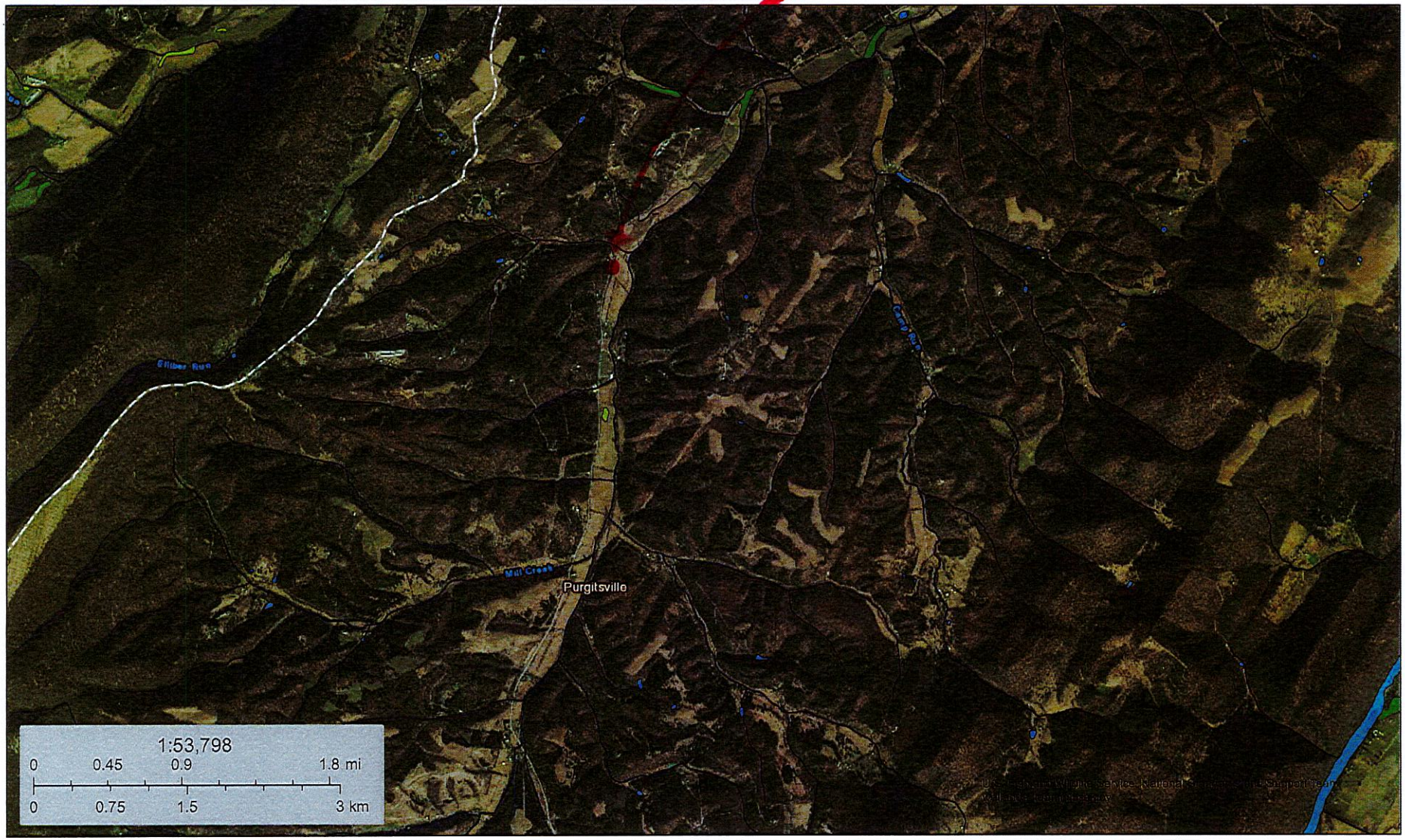
NONE
PROJECT NO. CE10-10W
DRAWING NO. **ALT-3B**

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands- North

WTP location

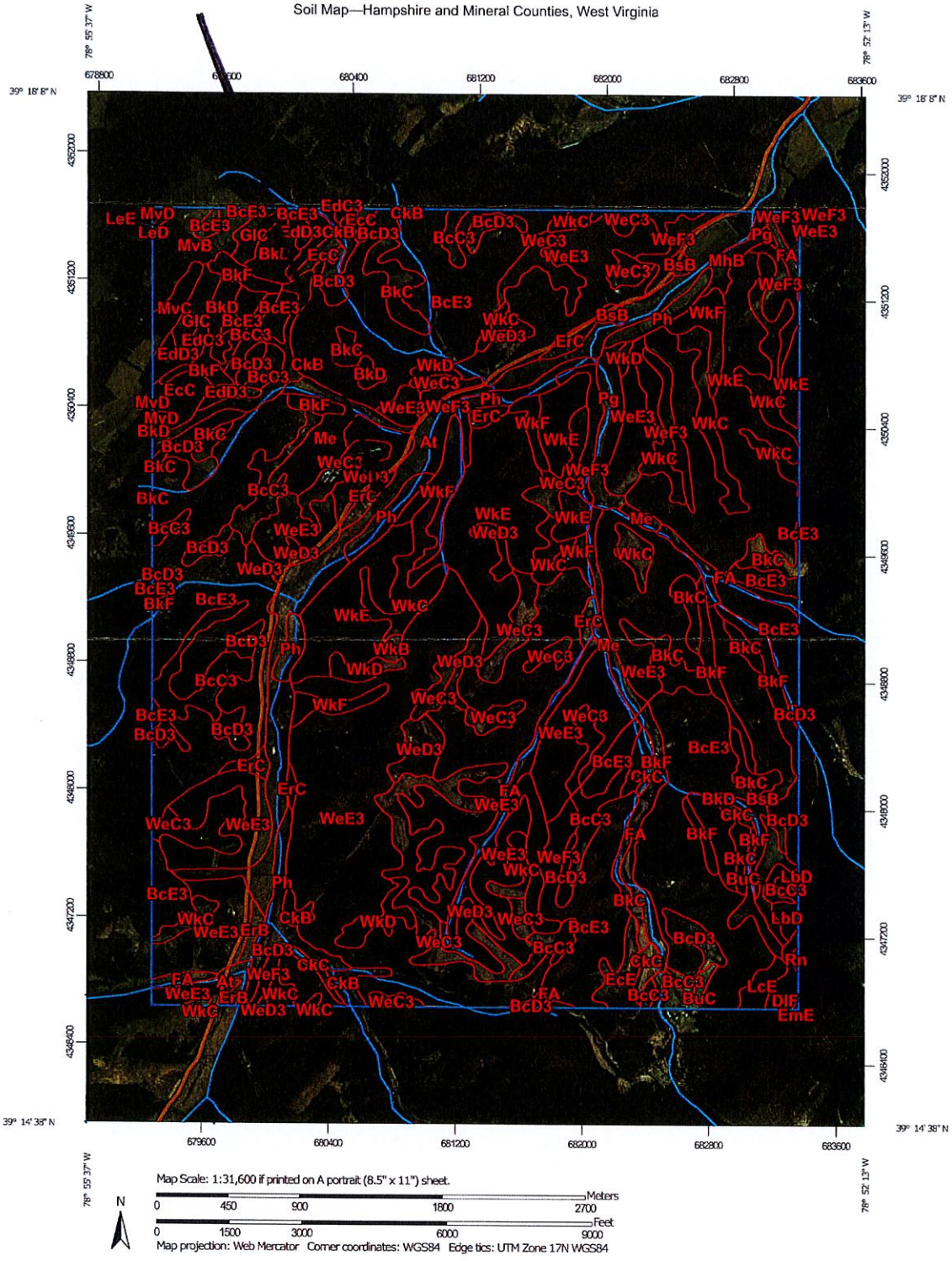


March 11, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

WTP Site


Soil Map—Hampshire and Mineral Counties, West Virginia
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78° 52' 13" W
39° 18' 8" N
39° 14' 38" N
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4348800
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4347200
4346400
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Meters
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Feet
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N
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CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS

ALTERNATIVE 3- WATER FROM INDEPENDENT SOURCE

	ITEM	QUANTITY	UNIT PRICE	COST
1	Clearing / grubbing / erosion control	10000 SF	$1.00	$10,000.00
2	Final grading / seeding / aggregate	10,000 LF	5.00	$50,000.00
3	Site piping, waste basin	1 LS	250,000.00	$250,000.00
5	Excavation / backfilling	200 CF	200.00	$40,000.00
6	Clearwell concrete	55 CF	2,500.00	$137,500.00
7	Footer drain	200 LF	25.00	$5,000.00
8	Baffle system	1 LS	30,000.00	$30,000.00
9	Precast conrete floor	600 SF	75.00	$45,000.00
10	Floor hatch	2 EA	10,000.00	$20,000.00
11	CMU wall construction	2,000 SF	50.00	$100,000.00
12	Windows, Doors	1 LS	30,000.00	$30,000.00
10	Roof, inc. trusses, ceiling, sheating, metal roof	600 SF	100.00	$60,000.00
11	Electric and HVAC	1 LS	250,000.00	$250,000.00
12	Painting / block sealing	1 LS	20,000.00	$20,000.00
13	Raw Water Intake	1 LS	100,000.00	$100,000.00
14	DIP interior piping and valves	1 LS	80,000.00	$80,000.00
16	Package Filter & System Control	1 LS	300,000.00	$300,000.00
19	Pumps	6 EA	25,000.00	$150,000.00
20	Chlorine analyzer	1 EA	15,000.00	$15,000.00
22	Metals	1 LS	20,000.00	$20,000.00
28	Metering pumps, Chemical Bay	1 LS	25,000.00	$25,000.00
22	Pump hoist system	1 LS	15,000.00	$15,000.00
28	Telemetry / SCADA	1 LS	50,000.00	$50,000.00
22	Restroom, Office Room	1 LS	50,000.00	$50,000.00
28	Presedimentation Basin	1 EA	100,000.00	$100,000.00
55	Mobilization	1 LS	40,000.00	$40,000.00
			SUBTOTAL CONSTRUCTION COST	$1,992,500
			CONSTRUCTION CONTINGENCY	$199,250
			TOTAL CONSTRUCTION COST	**$2,191,750**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
ALTERNATIVE 3- WATER FROM INDEPENDENT SOURCE

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	2,191,750
Legal - Title / Contracts	$	10,000		
Engineering				
Preliminary Study	$	25,000		
Preliminary & Final Design	$	120,000		
Bidding & Negotiation	$	20,000		
Eng. During Const	$	50,000		
Inspection	$	150,000		
Post Const	$	10,000		
Survey	$	10,000		
Environmental	$	7,500		
Additional Services	$	20,000		
Administrator (Region 8)	$	50,000		
Accounting	$	-		
Other Admin Costs	$	2,000		
Permits, Archeology	$	15,000		
Lands and ROW's	$	25,000		
LMI Tap Fees	$	-		
Geotechnical Services, Concrete Testing	$	15,000		
Project Contingency	$	27,000		
Sub Total line 1 thru 10			$	556,500
Design Interest	$	25,000		
Bond Counsel & Registar	$	-		
Sub Total Cost of Financing			$	25,000
TOTAL PROJECT COST			**$**	**2,773,250**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS

ALTERNATIVE 3- WATER FROM INDEPENDENT SOURCE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- SOURCE OR SUPPLY & PUMPING EXPENSES		
Salary & Employee Pensions and Benefits	$50,000	
Going Level Purchased Power & Materials	68653	
Total Existing Gallons (Green Spring Plant)	36500000	Gallons
Going Level cost per 1,000 gallon	$1.88	
New Gallons	4669500	
Total Annual		**$58,783**
2- WATER TREATMENT EXPENSES		
Going Level Chemicals, Materials	3345	
Total Existing Gallons (Green Spring Plant)	36500000	Gallons
Going Level cost per 1,000 gallon	$0.09	
New Gallons	4669500	
Total Annual		**$428**
3-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**
TOTAL 0&M COST ADJUSTMENT		**$67,370**

APPENDIX

I

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

LIFE CYCLE COST ANALYSIS

	ALTERNATIVE 1A WATER FROM ROMNEY - NO ADD. CUSTOMERS	ALTERNATIVE 1B WATER FROM ROMNEY - ADD. CUSTOMERS	ALTERNATIVE 2 WATER FROM HARDY COUNTY PSD	ALTERNATIVE 3 WATER FROM INDEPENDENT SOURCE
CONSTRUCTION COST	$ 2,423,000	$ 2,423,000	$ 320,000	$ 2,192,000
PROJECT COST	$ 3,355,000	$ 3,355,000	$ 481,000	$ 2,774,000
ANNUAL O&M COST (PROFORMA)	$ 40,130	$ 50,901	$ 32,117	$ 67,370
ADDITIONAL REVENUE	$ -	$ 22,091		
SHORT LIVED ASSETS (NET), PRESENT	$ 10,000	$ 10,000	$ 10,000	$ 60,000
LIFE CYCLE (YEARS)	20	20	20	20
SALVAGE VALUE (NET), PRESENT	$ 20,000	$ 20,000	$ 10,000	$ 150,000
DISCOUNT RATE	0.50%	0.50%	0.50%	0.50%
NET PRESENT VALUE	**$ 4,106,965**	**$ 3,892,028**	**$ 1,090,819**	**$ 2,684,000**

NON MONETARY ANALYSIS
(1 TO 5, 1 BEING OPTIMAL)

EMERGENCY VULNERABILITY	3	3	1	4
SUSTAINABILITY, USE OF EX RESOURCES	2	2	1	5
NET PRESENT VALUE (FROM ABOVE)	5	4	1	2
TOTAL	**10**	**9**	**3**	**11**

SELECTED ALTERNATE (LOWEST SCORE): ALTERNATIVE 2 - WATER FROM THE HARDY COUNTY PSD

APPENDIX
J

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS
WITH SELECTED ALTERNATIVE

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0 LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0 LF	21.00		$0.00
3	8" PVC C900 DR 18	0 LF	25.00		$0.00
4	6" C900 PVC	49,182 LF	19.00		$934,458.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" C900 PVC	21,134 LF	15.00		$317,010.00
7	3" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	3" PVC CL250 (SDR 17/PVC)	26,017 LF	14.00		$364,238.00
9	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
10	2" PVC CL250 (SDR17/PVC)	19,440 LF	13.00	115773	$252,720.00
11	8" Gate Valve & Box	0 EA	1,800.00		$0.00
12	6" Gate Valve & Box	28 EA	1,000.00		$28,000.00
10	4" Gate Valve & Box	12 EA	800.00		$9,600.00
11	2" & 3" Gate Valve & Box	25 EA	650.00		$16,250.00
12	Valve Markers	65 EA	50.00		$3,250.00
13	Ductile Iron Fittings	8,000 LB	5.00		$40,000.00
14	Fire Hydrants	4 EA	4,300.00		$17,200.00
16	Fire Hydrant Extension	0 VF	400.00		$0.00
19	Flushout Assembly	19 EA	1,500.00		$28,500.00
20	Air Release Assembly	15 EA	2,500.00		$37,500.00
22	Leak Detector w/ Meter	8 EA	2,000.00		$16,000.00
28	Horizontal Directional Drilling	360 LF	100.00		$36,000.00
22	8" Highway Boring	0 LF	200.00		$0.00
28	8" Stream Crossing	0 LF	120.00		$0.00
22	6" Highway Boring	180 LF	125.00		$22,500.00
28	6" Stream Crossing or Open Cut	460 LF	100.00		$46,000.00
22	4" Highway Boring	210 LF	90.00		$18,900.00
28	4" Stream Crossing or Open Cut	60 LF	80.00		$4,800.00
31	2" & 3" Highway Boring	180 LF	85.00		$15,300.00
32	2" & 3" Stream Crossing or Open Cut	240 LF	65.00	1,690	$15,600.00
33	Service Line Stream Crossing	150 LF	50.00		$7,500.00
34	Asphalt Rep. (DOH)	200 LF	90.00		$18,000.00
35	Asphalt Rep. (Driveway & Berm)	600 LF	45.00		$27,000.00
36	Aggregate Replacement	4,000 LF	6.00		$24,000.00
37	Berm Replacement	300 LF	3.00	5,100	$900.00
38	Miscellaneous Concrete	80 CY	600.00		$48,000.00
39	Rip-Rap Restoration	2,500 TN	45.00		$112,500.00
40	Aggregate Overlay	6,000 LF	7.00	6,000	$42,000.00
41	Seeding	102,983 LF	1.00		$102,983.00
42	Water Main Testing & Disinfection	115,773 LF	0.75		$86,829.75
43	1" Service Tap & Corp. Stop	6 EA	300.00		$1,800.00
44	3/4" Service Tap & Corp. Stop	113 EA	300.00		$33,900.00
45	1" PE Service Pipe (Boring)	90 LF	30.00		$2,700.00
46	3/4" PE Service Pipe (Boring)	850 LF	20.00		$17,000.00
47	1" PE Service Pipe (Trench)	90 EA	22.00		$1,980.00
48	3/4" PE Service Pipe (Trench)	1,875 LF	16.00		$30,000.00
49	Outside Meter Setting (Single)	115 EA	700.00		$80,500.00
52	Outside Meter Setting (Tandem)	10 EA	800.00		$8,000.00
54	Water Meter	125 EA	150.00		$18,750.00
55	Water Storage Tank- 50 MG	1 EA	115,000.00		$115,000.00
56	Booster Station	1 EA	175,000.00		$175,000.00
57	Tie In (Master Meter and other items)	1 EA	70,000.00		$70,000.00
58	AUDIO VIDEO COLOR TAPING	1 LS	35,000.00		$35,000.00
59	Mobilization	1 LS	220,000.00		$220,000.00

SUBTOTAL CONSTRUCTION COST	$3,503,169
CONSTRUCTION CONTINGENCY	$350,317
TOTAL CONSTRUCTION COST	**$3,853,486**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
WITH SELECTED ALTERNATIVE

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	3,853,486
Legal - Title / Contracts	$	100,000		
Engineering				
Preliminary Study	$	40,000		
Preliminary & Final Design	$	212,000		
Bidding & Negotiation	$	25,000		
Eng. During Const	$	50,000		
Inspection	$	212,488		
Post Const	$	20,000		
Aerial Photo & Mappling	$	30,000		
Environmental	$	10,000		
Additional Services	$	30,000		
Administrator (Region 8)	$	125,000		
Administrator (USACE)	$	75,000		
Accounting	$	5,000		
Other Admin Costs	$	10,000		
Permits, Archeology	$	20,000		
Lands and ROW's	$	75,000		
LMI Tap Fees	$	4,500		
Geotechnical Services, Concrete Testing	$	7,500		
Project Contingency	$	52,574		
Sub Total line 1 thru 10			$	1,104,062
Design Interest	$	42,000		
Sub Total Cost of Financing			$	42,000
TOTAL PROJECT COST			**$**	**4,999,548**
	SAY		**$**	**5,000,000**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS
WITH SELECTED ALTERNATIVE

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost

1- PURCHASE WATER

Yearly Demand	4669500	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$23,114**

2- PUMPING EXPENSES

Church Road BS		
Total GPD	12793	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	15.91	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$813**

3- WATER TREATMENT EXPENSES

Chemicals, Miscellaneous		
Current Demand	4669500	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**

4-TRANSMISSION AND DISTRIBUTION EXPENSES

Salaries and Wages (part time)	$ 25,000	
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to i
New Miles	21.80	
Adjustment		**$37,099**

5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES

Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**

TOTAL 0&M COST ADJUSTMENT **$69,185**

APPENDIX
K

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS
PHASE I

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0 LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0 LF	21.00		$0.00
3	8" PVC C900 DR 18	0 LF	25.00		$0.00
4	6" C900 PVC	23,051 LF	19.00		$437,969.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" C900 PVC	3,187 LF	15.00		$47,805.00
7	3" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	3" PVC CL250 (SDR 17/PVC)	6,961 LF	14.00		$97,454.00
9	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
10	2" PVC CL250 (SDR17/PVC)	12,081 LF	13.00	45280	$157,053.00
11	8" Gate Valve & Box	0 EA	1,800.00		$0.00
12	6" Gate Valve & Box	8 EA	1,000.00		$8,000.00
10	4" Gate Valve & Box	1 EA	800.00		$800.00
11	2" & 3" Gate Valve & Box	7 EA	650.00		$4,550.00
12	Valve Markers	16 EA	50.00		$800.00
13	Ductile Iron Fittings	3,000 LB	5.00		$15,000.00
14	Fire Hydrants	3 EA	4,300.00		$12,900.00
16	Fire Hydrant Extension	0 VF	400.00		$0.00
19	Flushout Assembly	9 EA	1,500.00		$13,500.00
20	Air Release Assembly	12 EA	2,500.00		$30,000.00
22	Leak Detector w/ Meter	2 EA	2,000.00		$4,000.00
28	Horizontal Directional Drilling	160 LF	100.00		$16,000.00
22	8" Highway Boring	0 LF	200.00		$0.00
28	8" Stream Crossing	0 LF	120.00		$0.00
22	6" Highway Boring	60 LF	125.00		$7,500.00
28	6" Stream Crossing or Open Cut	75 LF	100.00		$7,500.00
22	4" Highway Boring	30 LF	90.00		$2,700.00
28	4" Stream Crossing or Open Cut	0 LF	80.00		$0.00
31	2" & 3" Highway Boring	90 LF	85.00		$7,650.00
32	2" & 3" Stream Crossing or Open Cut	120 LF	65.00	535	$7,800.00
33	Service Line Stream Crossing	25 LF	50.00		$1,250.00
34	Asphalt Rep. (DOH)	35 LF	90.00		$3,150.00
35	Asphalt Rep. (Driveway & Berm)	100 LF	45.00		$4,500.00
36	Aggregate Replacement	720 LF	6.00		$4,320.00
37	Berm Replacement	5,459 LF	3.00	6,314	$16,377.00
38	Miscellaneous Concrete	15 CY	600.00		$9,000.00
39	Rip-Rap Restoration	500 TN	45.00		$22,500.00
40	Aggregate Overlay	16,144 LF	7.00	16,144	$113,008.00
41	Seeding	22,287 LF	1.00		$22,287.00
42	Water Main Testing & Disinfection	45,280 LF	0.75		$33,960.00
43	1" Service Tap & Corp. Stop	2 EA	300.00		$600.00
44	3/4" Service Tap & Corp. Stop	49 EA	300.00		$14,700.00
45	1" PE Service Pipe (Boring)	30 LF	30.00		$900.00
46	3/4" PE Service Pipe (Boring)	360 LF	20.00		$7,200.00
47	1" PE Service Pipe (Trench)	30 EA	22.00		$660.00
48	3/4" PE Service Pipe (Trench)	720 LF	16.00		$11,520.00
49	Outside Meter Setting (Single)	45 EA	700.00		$31,500.00
52	Outside Meter Setting (Tandem)	8 EA	800.00		$6,400.00
54	Water Meter	53 EA	150.00		$7,950.00
55	Water Storage Tank- 50 MG	1 EA	115,000.00		$115,000.00
56	Booster Station	1 EA	175,000.00		$175,000.00
57	Tie In (Master Meter and other items)	1 EA	70,000.00		$70,000.00
58	AUDIO VIDEO COLOR TAPING	1 LS	20,000.00		$20,000.00
59	Mobilization	1 LS	115,000.00		$115,000.00
		SUBTOTAL CONSTRUCTION COST			$1,685,763
		CONSTRUCTION CONTINGENCY			$168,576
		TOTAL CONSTRUCTION COST			**$1,854,339**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
PHASE I

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	1,854,339
Legal - Title / Contracts	$	50,000		
Engineering				
Preliminary Study	$	30,000		
Preliminary & Final Design	$	85,000		
Bidding & Negotiation	$	25,000		
Eng. During Const	$	30,000		
Inspection	$	145,238		
Post Const	$	13,000		
Aerial Photo & Mappling	$	20,000		
Environmental	$	5,000		
Additional Services	$	20,000		
Administrator (Region 8)	$	75,000		
Accounting	$	5,000		
Other Admin Costs	$	5,000		
Permits, Archeology	$	18,000		
Lands and ROW's	$	60,000		
LMI Tap Fees	$	2,000		
Geotechnical Services, Concrete Testing	$	7,500		
Project Contingency	$	29,787		
Sub Total line 1 thru 10			$	625,525
Design Interest	$	20,000		
Sub Total Cost of Financing			$	20,000
TOTAL PROJECT COST			**$**	**2,499,864**
	SAY		**$**	**2,500,000**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS
PHASE I

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	53
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASE WATER		
Yearly Demand	1979868	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$9,800**
2- PUMPING EXPENSES		
Church Road BS		
Total GPD	5424	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	6.74	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$345**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	1979868	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Salaries and Wages (part time)	$11,500	
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to i
New Miles	8.57	
Adjustment		**$16,256**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	53	
Adjustment		**$3,459**
TOTAL 0&M COST ADJUSTMENT		**$29,861**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS
PHASE I & PHASE II

	ITEM	QUANTITY		UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0	LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0	LF	21.00		$0.00
3	8" PVC C900 DR 18	0	LF	25.00		$0.00
4	6" C900 PVC	34,606	LF	19.00		$657,514.00
5	4" DI CL350 LOCK JOINT	0	LF	40.00		$0.00
6	4" C900 PVC	3,187	LF	15.00		$47,805.00
7	3" DI CL350 LOCK JOINT	0	LF	35.00		$0.00
8	3" PVC CL250 (SDR 17/PVC)	9,444	LF	14.00		$132,216.00
9	2" DI CL350 LOCK JOINT	0	LF	35.00		$0.00
10	2" PVC CL250 (SDR17/PVC)	13,459	LF	13.00	60696	$174,967.00
11	8" Gate Valve & Box	0	EA	1,800.00		$0.00
12	6" Gate Valve & Box	22	EA	1,000.00		$22,000.00
10	4" Gate Valve & Box	3	EA	800.00		$2,400.00
11	2" & 3" Gate Valve & Box	17	EA	650.00		$11,050.00
12	Valve Markers	42	EA	50.00		$2,100.00
13	Ductile Iron Fittings	6,000	LB	5.00		$30,000.00
14	Fire Hydrants	4	EA	4,300.00		$17,200.00
16	Fire Hydrant Extension	0	VF	400.00		$0.00
19	Flushout Assembly	13	EA	1,500.00		$19,500.00
20	Air Release Assembly	15	EA	2,500.00		$37,500.00
22	Leak Detector w/ Meter	5	EA	2,000.00		$10,000.00
28	Horizontal Directional Drilling	360	LF	100.00		$36,000.00
22	8" Highway Boring	0	LF	200.00		$0.00
28	8" Stream Crossing	0	LF	120.00		$0.00
22	6" Highway Boring	90	LF	125.00		$11,250.00
28	6" Stream Crossing or Open Cut	230	LF	100.00		$23,000.00
22	4" Highway Boring	105	LF	90.00		$9,450.00
28	4" Stream Crossing or Open Cut	30	LF	80.00		$2,400.00
31	2" & 3" Highway Boring	90	LF	85.00		$7,650.00
32	2" & 3" Stream Crossing or Open Cut	120	LF	65.00	1,025	$7,800.00
33	Service Line Stream Crossing	75	LF	50.00		$3,750.00
34	Asphalt Rep. (DOH)	100	LF	90.00		$9,000.00
35	Asphalt Rep. (Driveway & Berm)	300	LF	45.00		$13,500.00
36	Aggregate Replacement	2,000	LF	6.00		$12,000.00
37	Berm Replacement	7,856	LF	3.00	10,256	$23,568.00
38	Miscellaneous Concrete	40	CY	600.00		$24,000.00
39	Rip-Rap Restoration	1,250	TN	45.00		$56,250.00
40	Aggregate Overlay	36,628	LF	7.00	36,628	$256,396.00
41	Seeding	12,787	LF	1.00		$12,787.00
42	Water Main Testing & Disinfection	60,696	LF	0.75		$45,522.00
43	1" Service Tap & Corp. Stop	3	EA	300.00		$900.00
44	3/4" Service Tap & Corp. Stop	66	EA	300.00		$19,800.00
45	1" PE Service Pipe (Boring)	30	LF	30.00		$900.00
46	3/4" PE Service Pipe (Boring)	480	LF	20.00		$9,600.00
47	1" PE Service Pipe (Trench)	45	EA	22.00		$990.00
48	3/4" PE Service Pipe (Trench)	990	LF	16.00		$15,840.00
49	Outside Meter Setting (Single)	62	EA	700.00		$43,400.00
52	Outside Meter Setting (Tandem)	10	EA	800.00		$8,000.00
54	Water Meter	72	EA	150.00		$10,800.00
55	Water Storage Tank- 50 MG	1	EA	115,000.00		$115,000.00
56	Booster Station	1	EA	175,000.00		$175,000.00
57	Tie In (Master Meter and other items)	1	EA	70,000.00		$70,000.00
58	AUDIO VIDEO COLOR TAPING	1	LS	15,000.00		$15,000.00
59	Mobilization	1	LS	140,000.00		$140,000.00
				SUBTOTAL CONSTRUCTION COST		$2,343,805
				CONSTRUCTION CONTINGENCY		$234,381
				TOTAL CONSTRUCTION COST		**$2,578,186**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
PHASE I & PHASE II

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	2,578,186
Legal - Title / Contracts	$	65,000		
Engineering				
Preliminary Study	$	40,000		
Preliminary & Final Design	$	135,000		
Bidding & Negotiation	$	25,000		
Eng. During Const	$	40,000		
Inspection	$	185,401		
Post Const	$	10,000		
Aerial Photo & Mappling	$	25,000		
Environmental	$	5,000		
Additional Services	$	30,000		
Administrator (Region 8)	$	75,000		
Adminstrator (USACE)	$	75,000		
Accounting	$	5,000		
Other Admin Costs	$	5,000		
Permits, Archeology	$	23,000		
Lands and ROW's	$	75,000		
LMI Tap Fees	$	2,000		
Geotechnical Services, Concrete Testing	$	7,000		
Project Contingency	$	41,370		
Sub Total line 1 thru 10			$	868,771
Design Interest	$	28,000		
Sub Total Cost of Financing			$	28,000
TOTAL PROJECT COST			**$**	**3,474,956**
	SAY		**$**	**3,475,000**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS
PHASE I & PHASE II

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	72
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASE WATER		
Yearly Demand	2689632	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$13,314**
2- PUMPING EXPENSES		
Church Road BS		
Total GPD	7369	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	9.16	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$468**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	2689632	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Salaries and Wages (part time)	$15,000	
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to i
New Miles	11.50	
Adjustment		**$21,383**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	72	
Adjustment		**$4,700**
TOTAL 0&M COST ADJUSTMENT		**$39,864**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS
PHASE I & PHASE II & PHASE III

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0 LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0 LF	21.00		$0.00
3	8" PVC C900 DR 18	0 LF	25.00		$0.00
4	6" C900 PVC	49,182 LF	19.00		$934,458.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" C900 PVC	21,134 LF	15.00		$317,010.00
7	3" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	3" PVC CL250 (SDR 17/PVC)	26,017 LF	14.00		$364,238.00
9	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
10	2" PVC CL250 (SDR17/PVC)	19,440 LF	13.00	115773	$252,720.00
11	8" Gate Valve & Box	0 EA	1,800.00		$0.00
12	6" Gate Valve & Box	28 EA	1,000.00		$28,000.00
10	4" Gate Valve & Box	12 EA	800.00		$9,600.00
11	2" & 3" Gate Valve & Box	25 EA	650.00		$16,250.00
12	Valve Markers	65 EA	50.00		$3,250.00
13	Ductile Iron Fittings	8,000 LB	5.00		$40,000.00
14	Fire Hydrants	4 EA	4,300.00		$17,200.00
16	Fire Hydrant Extension	0 VF	400.00		$0.00
19	Flushout Assembly	19 EA	1,500.00		$28,500.00
20	Air Release Assembly	15 EA	2,500.00		$37,500.00
22	Leak Detector w/ Meter	8 EA	2,000.00		$16,000.00
28	Horizontal Directional Drilling	360 LF	100.00		$36,000.00
22	8" Highway Boring	0 LF	200.00		$0.00
28	8" Stream Crossing	0 LF	120.00		$0.00
22	6" Highway Boring	180 LF	125.00		$22,500.00
28	6" Stream Crossing or Open Cut	460 LF	100.00		$46,000.00
22	4" Highway Boring	210 LF	90.00		$18,900.00
28	4" Stream Crossing or Open Cut	60 LF	80.00		$4,800.00
31	2" & 3" Highway Boring	180 LF	85.00		$15,300.00
32	2" & 3" Stream Crossing or Open Cut	240 LF	65.00	1,690	$15,600.00
33	Service Line Stream Crossing	150 LF	50.00		$7,500.00
34	Asphalt Rep. (DOH)	200 LF	90.00		$18,000.00
35	Asphalt Rep. (Driveway & Berm)	600 LF	45.00		$27,000.00
36	Aggregate Replacement	4,000 LF	6.00		$24,000.00
37	Berm Replacement	300 LF	3.00	5,100	$900.00
38	Miscellaneous Concrete	80 CY	600.00		$48,000.00
39	Rip-Rap Restoration	2,500 TN	45.00		$112,500.00
40	Aggregate Overlay	6,000 LF	7.00	6,000	$42,000.00
41	Seeding	102,983 LF	1.00		$102,983.00
42	Water Main Testing & Disinfection	115,773 LF	0.75		$86,829.75
43	1" Service Tap & Corp. Stop	6 EA	300.00		$1,800.00
44	3/4" Service Tap & Corp. Stop	113 EA	300.00		$33,900.00
45	1" PE Service Pipe (Boring)	90 LF	30.00		$2,700.00
46	3/4" PE Service Pipe (Boring)	850 LF	20.00		$17,000.00
47	1" PE Service Pipe (Trench)	90 EA	22.00		$1,980.00
48	3/4" PE Service Pipe (Trench)	1,875 LF	16.00		$30,000.00
49	Outside Meter Setting (Single)	115 EA	700.00		$80,500.00
52	Outside Meter Setting (Tandem)	10 EA	800.00		$8,000.00
54	Water Meter	125 EA	150.00		$18,750.00
55	Water Storage Tank- 50 MG	1 EA	115,000.00		$115,000.00
56	Booster Station	1 EA	175,000.00		$175,000.00
57	Tie In (Master Meter and other items)	1 EA	70,000.00		$70,000.00
58	AUDIO VIDEO COLOR TAPING	1 LS	35,000.00		$35,000.00
59	Mobilization	1 LS	220,000.00		$220,000.00
		SUBTOTAL CONSTRUCTION COST			$3,503,169
		CONSTRUCTION CONTINGENCY			$350,317
		TOTAL CONSTRUCTION COST			**$3,853,486**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
PHASE I & PHASE II & PHASE III

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	3,853,486
Legal - Title / Contracts	$	100,000		
Engineering				
Preliminary Study	$	40,000		
Preliminary & Final Design	$	212,000		
Bidding & Negotiation	$	25,000		
Eng. During Const	$	50,000		
Inspection	$	212,488		
Post Const	$	20,000		
Aerial Photo & Mappling	$	30,000		
Environmental	$	10,000		
Additional Services	$	30,000		
Administrator (Region 8)	$	125,000		
Administrator (USACE)	$	75,000		
Accounting	$	5,000		
Other Admin Costs	$	10,000		
Permits, Archeology	$	20,000		
Lands and ROW's	$	75,000		
LMI Tap Fees	$	4,500		
Geotechnical Services, Concrete Testing	$	7,500		
Project Contingency	$	52,574		
Sub Total line 1 thru 10			$	1,104,062
Design Interest	$	42,000		
Sub Total Cost of Financing			$	42,000
TOTAL PROJECT COST			**$**	**4,999,548**
	SAY		**$**	**5,000,000**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS
PHASE I & PHASE II & PHASE III

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	125
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost

1- PURCHASE WATER

Yearly Demand	4669500	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$23,114**

2- PUMPING EXPENSES

Church Road BS		
Total GPD	12793	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	15.91	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$813**

3- WATER TREATMENT EXPENSES

Chemicals, Miscellaneous		
Current Demand	4669500	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**

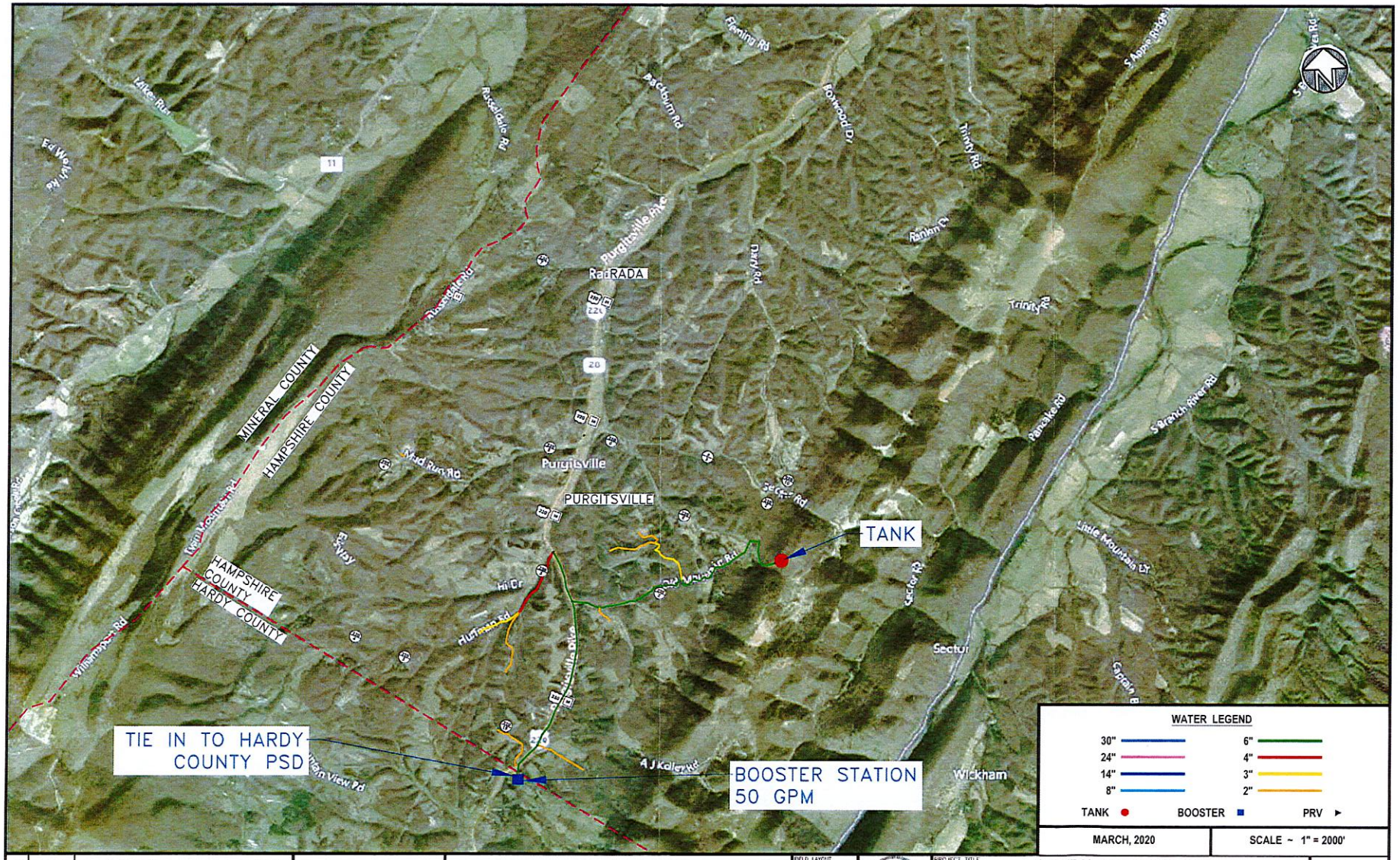
4-TRANSMISSION AND DISTRIBUTION EXPENSES

Salaries and Wages (part time)	$ 25,000	
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to ii
New Miles	21.80	
Adjustment		**$37,099**

5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES

Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	125	
Adjustment		**$8,159**

TOTAL 0&M COST ADJUSTMENT **$69,185**



MARCH, 2020 | SCALE ~ 1" = 2000'

No.	DATE	DESCRIPTION	BY
1	5/2020	DRAFT	RRB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT -
DRAWN BY RRB
CONST CHECKED BY -
RECOND CHECKED BY -
ISSUE DATE 3/2020

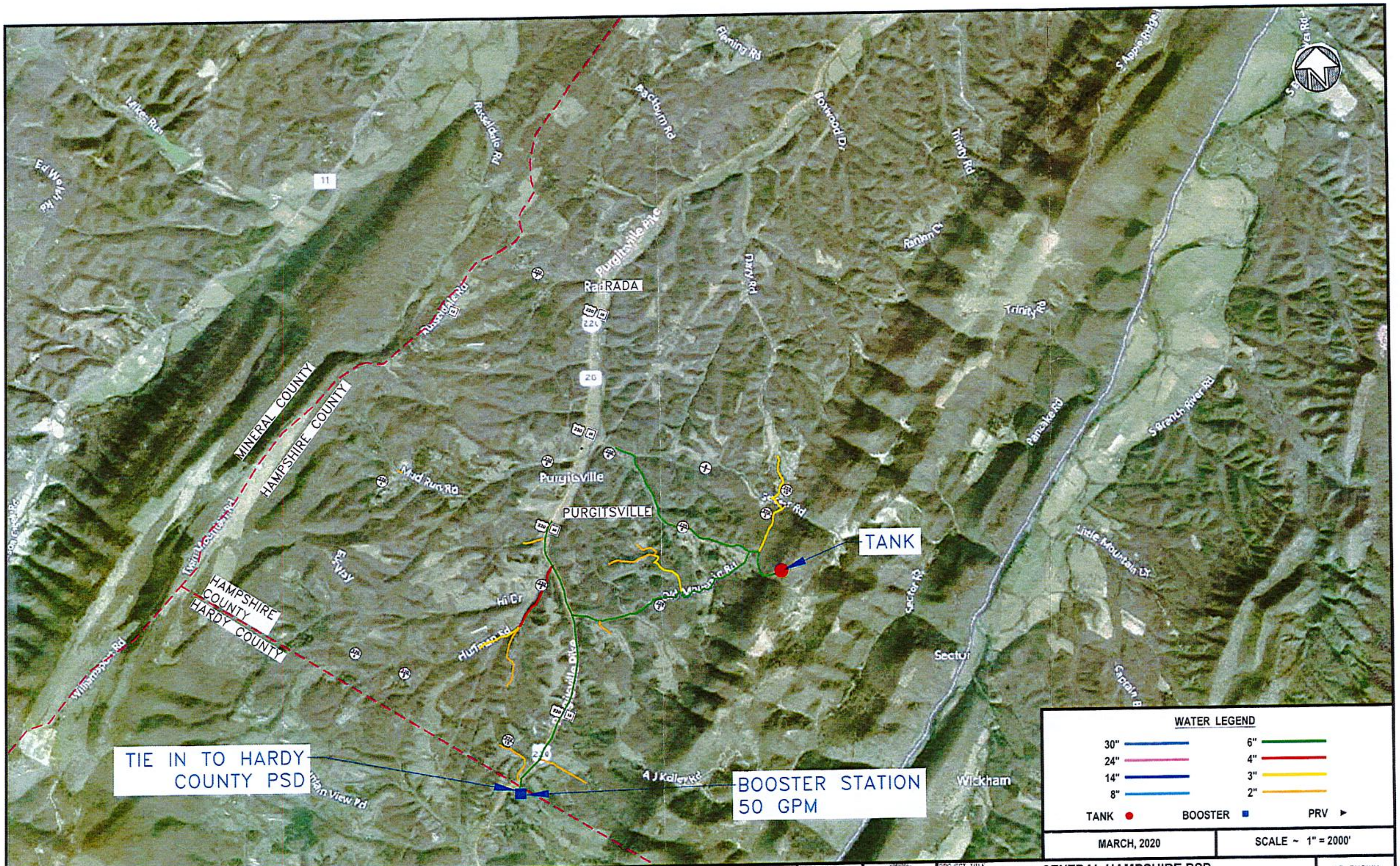
DOMINICK P. CERRONE REGISTERED 14750 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX K
PHASE I PROJECT AREA MAP

AS SHOWN
PROJECT NO. CE10-10W
DRAWING NO. APPX-K

X:\Project Data\Central Hampshire - CE10\10W Purgitsville Water Extension\Drawings\Preliminary\LOCATION.dwg 3/24/2020 2:19:33 PM, DWG To PDF.pc3



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No.	DATE	DESCRIPTION	BY

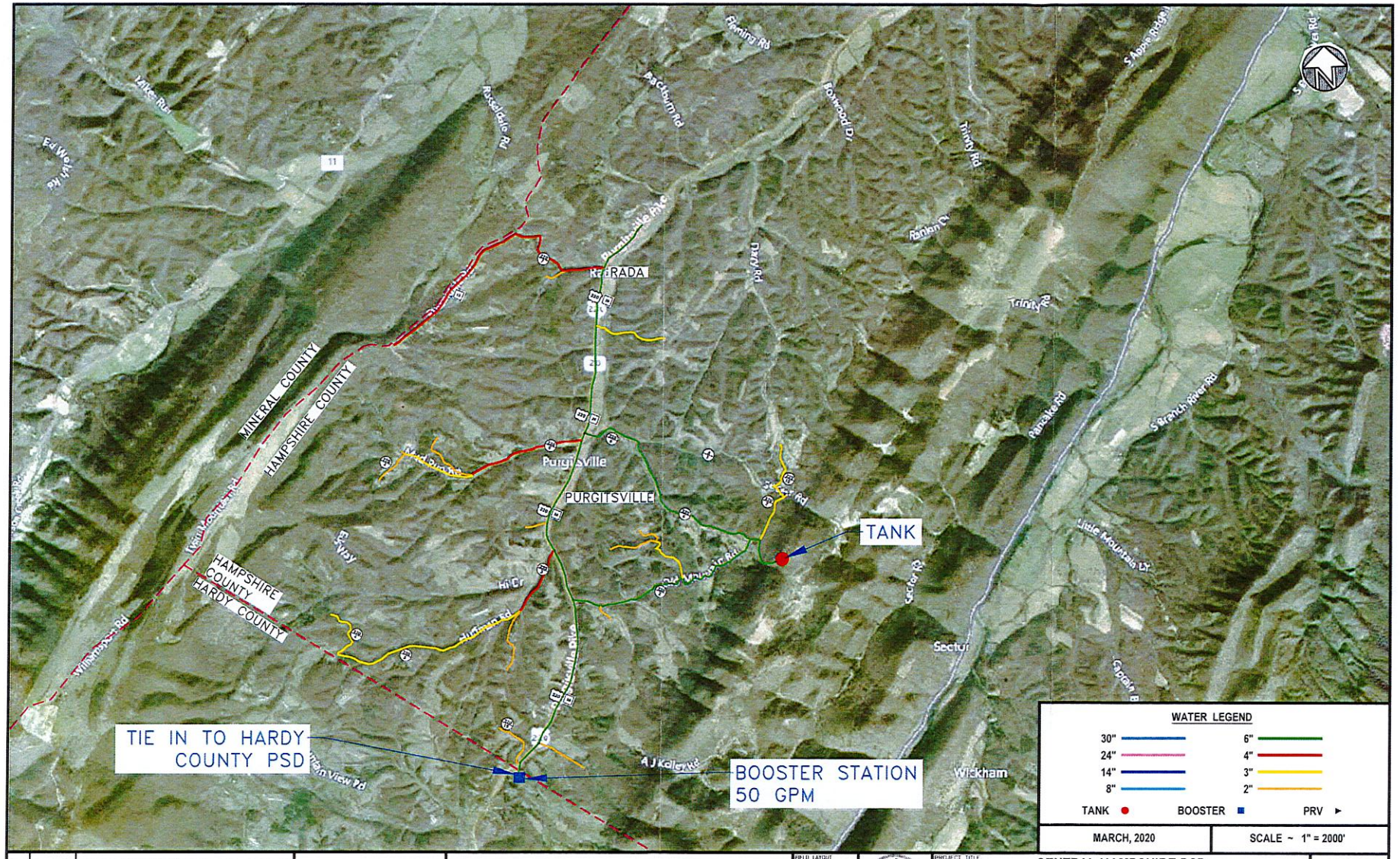
CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT
DRAWN BY RRB
CONST CHECKED BY
RECORD CHECKED BY
ISSUE DATE 3/2020

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX K
PHASE I AND II PROJECT AREA MAP

AS SHOWN
PROJECT NO. CE10-10W
DRAWING NO. **APPX-K**



MARCH, 2020 | SCALE ~ 1" = 2000'

No.	DATE	DESCRIPTION	BY
1	5/2020	DRAFT	RRB

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CERRONE ASSOCIATES, INC.
CONSULTING ENGINEERS • WATER & WASTEWATER SYSTEMS
97-14TH STREET, WHEELING, WV 26003-2497

FIELD LAYOUT –
DRAWN BY RRB
CONST CHECKED BY –
RECORD CHECKED BY –
ISSUE DATE 5/2020

JUSTICE P. CERRONE REGISTERED 14750 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

PROJECT TITLE
CENTRAL HAMPSHIRE PSD
HAMPSHIRE COUNTY, WEST VIRGINIA
SOUTHWESTERN HAMPSHIRE COUNTY WATER EXTENSION

DRAWING TITLE
APPENDIX K
PHASE I, II AND III PROJECT AREA MAP

AS SHOWN
PROJECT NO. CE10-10W
DRAWING NO. APPX-K

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Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
CASH FLOW ANALYSIS
For the year ended June 30, 2019

STATEMENT F

	Per Books Adjusted	Accounting Adjustments	Per Books Adjusted	Going Level Adjustments	Going Level	Phase II Proforma Adjustments	Phase II Proforma	Purgitsville Proforma Adjustments	Purgitsville Proforma
Available cash									
Operating revenues	$ 1,356,877	$ (3,534)	$ 1,353,343	$ 72,821	$ 1,426,164	$ 49,569	$ 1,475,733	$ 32,251	$ 1,507,984
Other income	3,632		3,632	-	3,632	-	3,632		3,632
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cash requirements									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Debt service requirements									
[illegible]	[illegible]	-	[illegible]		[illegible]		[illegible]		[illegible]
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
[illegible]	[illegible]	-	[illegible]		[illegible]		[illegible]		[illegible]
[illegible]				[illegible]	[illegible]		[illegible]		[illegible]
[illegible]				[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Reserve requirements									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				[illegible]	[illegible]	-	[illegible]		[illegible]
[illegible]				[illegible]	[illegible]	-	[illegible]		[illegible]
[illegible]	-		-		-	[illegible]	[illegible]	-	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Debt service requirements payable from surplus									
Bank of Romney Note	19,927	-	19,927	(19,927)	-	-	-	-	
First National Bank Note	33,338	-	33,338	(33,338)	-	-	-	-	-
Bank of Romney Vehicle Note	-	-	-	8,126	8,126	-	8,126	-	8,126
Bank of Romney Working Capital Note	-		-	36,937	36,937	-	36,937	-	36,937
Total debt service requirements payable from surplus	53,265	-	53,265	(8,202)	45,063	-	45,063	-	45,063
Interdepartmental advances (payments)affecting surplus									
Repayments from (advances to) sewer department	-	-	-	-	-	-	-	-	-
Cash surplus	$ (3,621)	$ (2,948)	$ (6,569)	$ 13,234	$ 6,575	$ 2,635	$ 9,210	$ (1,021)	$ 8,188
Percentage coverage	151.31%		149.45%		142.42%		138.66%		138.58%

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
DETAIL OF OPERATING REVENUES
For the year ended June 30, 2019

STATEMENT A
SCHEDULE 1

	Description	Per Books	Adj. No.	Accounting Adjustments	Per Books Adjusted	Adj. No.	Going Level Adjustments	Going Level	Adj. No.	Proforma Adjustments	Proforma	Adj. No.	Purgittsville Proforma Adjustments	Purgittsville Proforma
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(9)	(10)	(11)	(12)	(13)
	SALES OF WATER													
460	Water Revenue													
461.1	Metered Sales to Residential Customers	$ 899,008		$ -	$ 899,008	(3)	$ 47,652	$ 946,660	(11)	$ 32,783	$ 969,443	(18)	$ 31,541	$ 1,000,984
461.2	Metered Sales to Commercial Customers	423,456		-	423,456	(4)	22,452	445,908	(12)	15,607	461,515	(19)	-	461,515
461.5	Metered Sales to Others	1,383		-	1,383	(5)	1,113	2,496	(13)	87	2,583	(20)	-	2,583
	Total Water Revenue	1,313,847		-	1,313,847		71,218	1,385,065		48,477	1,433,542		31,541	1,465,082
	OTHER OPERATING REVENUES													
470	Forfeited Discounts	29,580		-	29,580	(6)	1,909	31,489	(14)	1,092	32,581	(21)	710	33,291
471	Miscellaneous Service Revenues	13,450	(1)	(3,534)	9,916		-	9,916		-	9,916		-	9,916
	Total Other Operating Revenues	43,030		(3,534)	39,496		1,909	41,405		1,092	42,497		710	43,207
	Total Water Operating Revenues	$ 1,356,877		$ (3,534)	$ 1,353,343		$ 73,127	$ 1,426,470		$ 49,569	$ 1,476,039		$ 32,251	$ 1,508,289

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
DETAIL OF OPERATION AND MAINTENANCE EXPENSES
For the year ended June 30, 2019

STATEMENT A
SCHEDULE 2

Acct	Description	Per Books (1)	Adj No. (2)	Accounting Adjustments (3)	Per Books Adjusted (4)	Adj No. (5)	Going Level Adjustments (6)	Going Level (7)	Adj No. (8)	Proforma Adjustments (9)	Proforma (10)	Adj No. (11)	Purgittsville Proforma Adjustments (12)	Purgittsville Proforma (13)
	SOURCE OF SUPPLY AND PUMPING EXPENSES													
	Operation													
601.1	Salaries and Wages - Employees	$ 8,515		$	$ 8,515		$ -	$ 8,515		$	$ 8,515		$	$ 8,515
[illegible]	Purchased Water	459,30[illegible]		-	459,304		-	459,304	(15)	([illegible])	456,987	(22)	9,800	[illegible]
[illegible]	Purchased Power	[illegible]		-	63,871		-	63,871		-	63,871	(23)	[illegible]	[illegible]
[illegible]	Materials and Supplies	[illegible]			[illegible]	[illegible]	2,400	[illegible]			[illegible]			[illegible]
	Total Operation	[illegible]			[illegible]		2,400	[illegible]		(2,317)	[illegible]		[illegible]	[illegible]
	Maintenance													
[illegible]	Salaries and Wages - Employees	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]
[illegible]	Materials and Supplies	[illegible]			1,792			[illegible]			[illegible]			[illegible]
	Total Maintenance	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]
	Total Source of Supply and Pumping Expenses	567,450			[illegible]		2,400	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]													
	Operation													
[illegible]	Chemicals	[illegible]			[illegible]			[illegible]			[illegible]			
[illegible]	Materials and Supplies	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]
	Total Operation	[illegible]			[illegible]		[illegible]	[illegible]			[illegible]			[illegible]
	Maintenance													
[illegible]	Materials and Supplies	[illegible]		[illegible]	[illegible]			[illegible]			[illegible]			[illegible]
	Total Maintenance	[illegible]		[illegible]	[illegible]			[illegible]			[illegible]			[illegible]
	Total Water Treatment Expenses	[illegible]			[illegible]			[illegible]			[illegible]			[illegible]
	TRANSMISSION AND DISTRIBUTION EXPENSES													
	Operation													
601.5	Salaries and Wages - Employees	[illegible]		-	[illegible]		-	[illegible]		-	[illegible]	(24)	[illegible]	[illegible]
620.5	Materials and Supplies	[illegible]		-	[illegible]			[illegible]		-	[illegible]			[illegible]
	Total Operation	[illegible]		-	[illegible]		-	[illegible]			[illegible]		[illegible]	[illegible]
	Maintenance													
620.6	Materials and Supplies	147,761		-	147,761		-	147,761		-	147,761	(25)	4,756	152,517
	Total Maintenance	147,761		-	147,761		-	147,761			147,761		4,756	152,517
	Total Transmission and Distribution Expenses	218,007		-	218,007		-	218,007		-	218,007		16,256	234,263
	CUSTOMER ACCOUNTS EXPENSES													
601.7	Salaries and Wages - Employees	50,854		-	50,854		-	50,854			50,854			50,854
620.7	Materials and Supplies	29,772		-	29,772		-	29,772		-	29,772	(26)	3,460	33,232
670.7	Bad Debt Expense	9,300			9,300		-	9,300			9,300			9,300
	Total Customer Accounts Expenses	89,926		-	89,926		-	89,926		-	89,926		3,460	93,386
	ADMINISTRATIVE AND GENERAL EXPENSES													
601.8	Salaries and Wages - Employees	45,008		-	45,008		-	45,008		-	45,008		-	45,008
603.8	Salaries and Wages - Officers, Directors, etc	5,534		-	5,534		-	5,534		-	5,534		-	5,534
604.8	Employee Pensions and Benefits	63,823	(2)	(498)	63,325		-	63,325			63,325	(27)	1,725	65,050
620.8	Materials and Supplies	27,107		-	27,107		-	27,107		-	27,107		-	27,107
631.8	Contractual Services	14,122		-	14,122		-	14,122		-	14,122		-	14,122
656.8	Insurance	19,894		-	19,894		-	19,894		-	19,894		-	19,894
675.8	Miscellaneous Expenses	7,568		-	7,568	(8)	1,893	9,461	(16)	1,547	11,008		-	11,008
	Total Administrative and General Expenses	183,056		(498)	182,558		1,893	184,451		1,547	185,998		1,725	187,723
	Total Operation and Maintenance Expenses	$ 1,091,793		$ (498)	$1,091,295		$ 4,293	$ 1,095,588		$ (770)	$ 1,094,818		$ 31,586	$ 1,126,404

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
TAXES OTHER THAN INCOME TAXES
For the year ended June 30, 2019

STATEMENT A
SCHEDULE 4

	Description	Per Books (1)	Adj. No. (2)	Accounting Adjustments (3)	Per Books Adjusted (4)	Adj. No. (5)	Going Level Adjustments (6)	Going Level (7)	Adj. No. (8)	Proforma Adjustments (9)	Proforma (10)	Adj. No. (11)	Purgittsville Proforma Adjustments (12)	Purgittsville Proforma (13)
408.10	Regulatory Assessment Fees	$ 3,386		$ -	$ 3,386		$ -	$ 3,386		$ -	$ 3,386		$	$ 3,386
408.12	Payroll Taxes	18,912		-	18,912		-	18,912		-	18,912	(28)	880	19,792
	Total Taxes Other Than Income Taxes	$ 22,298		$ -	$ 22,298		$ -	$ 22,298		$ -	$ 22,298		$ 880	$ 23,178

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
BILL ANALYSIS - ALL CUSTOMER CLASSES - PROFORMA - [illegible]
For the year ended June 30, 2018

STATEMENT D
SHEET 1-2

Residential Customers

July 1, 2017 through June 30, 2018 (12 months)

	Customers	Gallons (000)	Minimum - 5/8" Meters Customers	Minimum - 5/8" Meters Gallons (000)	Minimum - 3/4" Meters Customers	Minimum - 3/4" Meters Gallons (000)	Minimum - 1" Meters Customers	Minimum - 1" Meters Gallons (000)	Minimum - 1 1/2" Meters Customers	Minimum - 1 1/2" Meters Gallons (000)	Minimum - 2" Meters Customers	Minimum - 2" Meters Gallons (000)	Minimum - 3" Meters Customers	Minimum - 3" Meters Gallons (000)	Minimum - 4" Meters Customers	Minimum - 4" Meters Gallons (000)	First [illegible]	Next [illegible]	Next [illegible]	Over [illegible]	Total
Minimum - 5/8" Meters	7,457	7,915.4	[illegible]	7,915.4																	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]													[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Commercial Customers

July 1, 2017 through June 30, 2018 (12 months)

	Customers	Gallons (000)	Minimum - 5/8" Meters Customers	Minimum - 5/8" Meters Gallons (000)	Minimum - 3/4" Meters Customers	Minimum - 3/4" Meters Gallons (000)	Minimum - 1" Meters Customers	Minimum - 1" Meters Gallons (000)	Minimum - 1 1/2" Meters Customers	Minimum - 1 1/2" Meters Gallons (000)	Minimum - 2" Meters Customers	Minimum - 2" Meters Gallons (000)	Minimum - 3" Meters Customers	Minimum - 3" Meters Gallons (000)	Minimum - 4" Meters Customers	Minimum - 4" Meters Gallons (000)	First	Next	Next	Over	Total
[illegible]	[illegible]	[illegible]																			
[illegible]	320	1,036.7															[illegible]	[illegible]			[illegible]
[illegible]	345	3,373.6															[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	272	22,[illegible]															[illegible]	539.6	[illegible]	[illegible]	[illegible]
Total	3,242	28,269.1	3,152	859.3	8	15.0	[illegible]	165.2	37	21.7	19	126.5	7	204.0			1,774.0	2,117.[illegible]	4,895.6	16,034.1	28,2[illegible]
Rates			$ 35.60	$ -	$ 53.41	$ -	$ 88.0[illegible]	$ -	$ 178.02	$ -	$ 284.83	$ -	$ 588.46	$ -	$ 890.10	$ -	$ 17.84	$ 16.57	$ 15.50	$ 14.13	
Calculated annual revenues at current rates			$ 41,216	$ -	$ 427	$ -	$ 10,016	$ -	$ 6,587	$ -	$ 6,412	$ -	$ 5,107	$ -	$ -	$ -	$ 31,551	$ 35,091	$ 73,317	$ 254,791	$ 467,255
Conversion factor																					(5,739)
Actual revenues																					$ 461,516

[illegible]%

See accountant's report and summary of significant assumptions.

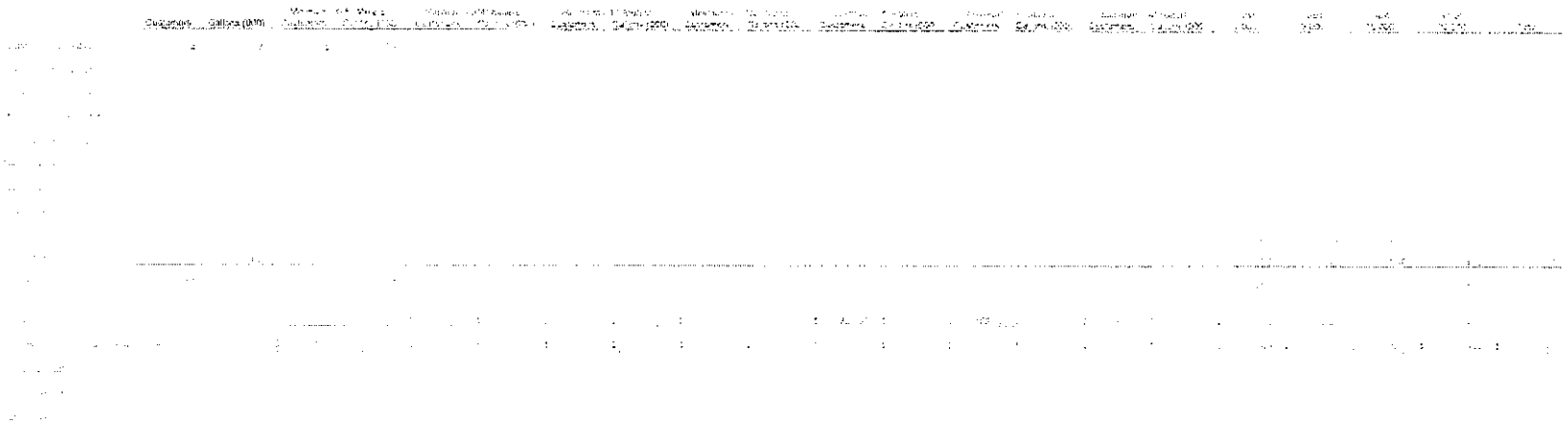
Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
BILL ANALYSIS - ALL CUSTOMER CLASSES - PROFORMA - Purchased
For the year ending June 30, 2019

STATEMENT D
SHEET 2-2 (Continued)

Gentry Hampshire Territory (continued)

Bulk Customers

July 1, 2018 through June 30, 2019 (12 months)



Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
DETAIL OF ADJUSTMENTS
For the year ended June 30, 2019

STATEMENT G

PROFORMA ADJUSTMENTS - PURGITTSVILLE

			Increase (Decrease)
STATEMENT A, SCHEDULE 1 - DETAIL OF OPERATING REVENUE			
(18)	Account # 461 1 - Residential Sales		$ 31,541
	Proforma Phase II	$ 969,443	
	Adjustment	31,541	
	Proforma Purgittsville	$ 1,000,984	
	To reflect Proforma revenues based on Statement D		
(19)	Account # 461 2 - Commercial Sales		-
	Proforma Phase II	$ 461,516	
	Adjustment	-	
	Proforma Purgittsville	$ 461,516	
	To reflect Proforma revenues based on Statement D.		
(20)	Account # 461 6 - Metered Sales - Other		-
	Proforma Phase II	$ 2,583	
	Adjustment	-	
	Proforma Purgittsville	$ 2,583	
	To reflect Proforma revenues based on Statement D		
(21)	Account # 470 - Forfeited Discounts		710
	Proforma Phase II	$ 32,275	
	Adjustment	710	
	Proforma Purgittsville	$ 32,985	
	To record Forfeited Discounts and Penalties on Proforma Purgittsville revenues		
	Proforma revenue increase	$ 31,541	
	Per books adjusted % of revenues	2.2516%	
	Pro forma	$ 710	

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
DETAIL OF ADJUSTMENTS
For the year ended June 30, 2019

STATEMENT G

PROFORMA ADJUSTMENTS - PURGITTSVILLE - CONTINUED

	STATEMENT A, SCHEDULE 2 - DETAIL OF OPERATIONS AND MAINTENANCE EXPENSES		Increase (Decrease)
(22)	Account #610.1 - Purchased Water		$ 9,800
	Proforma Phase II	$ 496,987	
	Adjustment	9,800	
	Proforma Purgittsville	$ 506,787	
	To record projected project purchased water cost per engineering report.		
(23)	Account #615.1 - Purchased Power		345
	Proforma Phase II	$ 63,871	
	Adjustment	345	
	Proforma Purgittsville	$ 64,216	
	To record projected project pumping power cost per engineering report		
(24)	Account #601.5 - Salaries and Wages - Employyees		11,500
	Proforma Phase II	$ 59,730	
	Adjustment	11,500	
	Proforma Purgittsville	$ 71,230	
	To record projected project labor cost per engineering report		
(25)	Account #620.6 - Maintenance Materials and Supplies		4,756
	Proforma Phase II	$ 147,761	
	Adjustment	4,756	
	Proforma Purgittsville	$ 152,517	
	To record projected project maintenance and repair cost per engineering report.		
(26)	Account #620.7 - Materials and Supplies		3,460
	Proforma Phase II	$ 29,772	
	Adjustment	3,460	
	Proforma Purgittsville	$ 33,232	
	To record projected project accounting materials and supply cost per engineering report.		
(27)	Account #604.8 - Employee Pensions and Benefits		1,725
	Proforma Phase II	$ 63,325	
	Adjustment	1,725	
	Proforma Purgittsville	$ 65,050	
	To record projected employee benefits on pro forma salaries and wages at 15%		

See accountant's report and summary of significant assumptions

Central Hampshire Public Service District
Water Department
Public Service Commission of West Virginia
DETAIL OF ADJUSTMENTS
For the year ended June 30, 2019

STATEMENT G

PROFORMA ADJUSTMENTS - PURGITTSVILLE - **CONTINUED**

			Increase (Decrease)
STATEMENT A, SCHEDULE 4 - TAXES OTHER THAN INCOME TAXES			
(28)	Account # 408.12 - Payroll Taxes		$ 880
	Proforma Phase II	$ 18,912	
	Adjustment	880	
	Proforma Purgittsville	$ 19,792	

To record projected pro forma payroll taxes on proforma salaries and wages at 7.65%

See accountant's report and summary of significant assumptions

APPENDIX
L

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE CONSTRUCTION COSTS
PHASE I

	ITEM	QUANTITY	UNIT PRICE		COST
1	8" DI CL350 LOCK JOINT	0 LF	$55.00		$0.00
2	8" PVC CL200 (SDR 21/PVC)	0 LF	21.00		$0.00
3	8" PVC C900 DR 18	0 LF	25.00		$0.00
4	6" C900 PVC	23,051 LF	19.00		$437,969.00
5	4" DI CL350 LOCK JOINT	0 LF	40.00		$0.00
6	4" C900 PVC	3,187 LF	15.00		$47,805.00
7	3" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
8	3" PVC CL250 (SDR 17/PVC)	6,961 LF	14.00		$97,454.00
9	2" DI CL350 LOCK JOINT	0 LF	35.00		$0.00
10	2" PVC CL250 (SDR17/PVC)	12,081 LF	13.00	45280	$157,053.00
11	8" Gate Valve & Box	0 EA	1,800.00		$0.00
12	6" Gate Valve & Box	8 EA	1,000.00		$8,000.00
10	4" Gate Valve & Box	1 EA	800.00		$800.00
11	2" & 3" Gate Valve & Box	7 EA	650.00		$4,550.00
12	Valve Markers	16 EA	50.00		$800.00
13	Ductile Iron Fittings	3,000 LB	5.00		$15,000.00
14	Fire Hydrants	3 EA	4,300.00		$12,900.00
16	Fire Hydrant Extension	0 VF	400.00		$0.00
19	Flushout Assembly	9 EA	1,500.00		$13,500.00
20	Air Release Assembly	12 EA	2,500.00		$30,000.00
22	Leak Detector w/ Meter	2 EA	2,000.00		$4,000.00
28	Horizontal Directional Drilling	160 LF	100.00		$16,000.00
22	8" Highway Boring	0 LF	200.00		$0.00
28	8" Stream Crossing	0 LF	120.00		$0.00
22	6" Highway Boring	60 LF	125.00		$7,500.00
28	6" Stream Crossing or Open Cut	75 LF	100.00		$7,500.00
22	4" Highway Boring	30 LF	90.00		$2,700.00
28	4" Stream Crossing or Open Cut	0 LF	80.00		$0.00
31	2" & 3" Highway Boring	90 LF	85.00		$7,650.00
32	2" & 3" Stream Crossing or Open Cut	120 LF	65.00	535	$7,800.00
33	Service Line Stream Crossing	25 LF	50.00		$1,250.00
34	Asphalt Rep. (DOH)	35 LF	90.00		$3,150.00
35	Asphalt Rep. (Driveway & Berm)	100 LF	45.00		$4,500.00
36	Aggregate Replacement	720 LF	6.00		$4,320.00
37	Berm Replacement	5,459 LF	3.00	6,314	$16,377.00
38	Miscellaneous Concrete	15 CY	600.00		$9,000.00
39	Rip-Rap Restoration	500 TN	45.00		$22,500.00
40	Aggregate Overlay	16,144 LF	7.00	16,144	$113,008.00
41	Seeding	22,287 LF	1.00		$22,287.00
42	Water Main Testing & Disinfection	45,280 LF	0.75		$33,960.00
43	1" Service Tap & Corp. Stop	2 EA	300.00		$600.00
44	3/4" Service Tap & Corp. Stop	49 EA	300.00		$14,700.00
45	1" PE Service Pipe (Boring)	30 LF	30.00		$900.00
46	3/4" PE Service Pipe (Boring)	360 LF	20.00		$7,200.00
47	1" PE Service Pipe (Trench)	30 EA	22.00		$660.00
48	3/4" PE Service Pipe (Trench)	720 LF	16.00		$11,520.00
49	Outside Meter Setting (Single)	45 EA	700.00		$31,500.00
52	Outside Meter Setting (Tandem)	8 EA	800.00		$6,400.00
54	Water Meter	53 EA	150.00		$7,950.00
55	Water Storage Tank- 50 MG	1 EA	115,000.00		$115,000.00
56	Booster Station	1 EA	175,000.00		$175,000.00
57	Tie In (Master Meter and other items)	1 EA	70,000.00		$70,000.00
58	AUDIO VIDEO COLOR TAPING	1 LS	20,000.00		$20,000.00
59	Mobilization	1 LS	115,000.00		$115,000.00

SUBTOTAL CONSTRUCTION COST	$1,685,763
CONSTRUCTION CONTINGENCY	$168,576
TOTAL CONSTRUCTION COST	**$1,854,339**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE PROJECT COSTS
PHASE I

TOTAL CONSTRUCTION COST (WITH 10% CONT.)			$	1,854,339
Legal - Title / Contracts	$	50,000		
Engineering				
Preliminary Study	$	30,000		
Preliminary & Final Design	$	85,000		
Bidding & Negotiation	$	25,000		
Eng. During Const	$	30,000		
Inspection	$	145,238		
Post Const	$	13,000		
Aerial Photo & Mappling	$	20,000		
Environmental	$	5,000		
Additional Services	$	20,000		
Administrator (Region 8)	$	75,000		
Accounting	$	5,000		
Other Admin Costs	$	5,000		
Permits, Archeology	$	18,000		
Lands and ROW's	$	60,000		
LMI Tap Fees	$	2,000		
Geotechnical Services, Concrete Testing	$	7,500		
Project Contingency	$	29,787		
Sub Total line 1 thru 10			$	625,525
Design Interest	$	20,000		
Sub Total Cost of Financing			$	20,000
TOTAL PROJECT COST			**$**	**2,499,864**
	SAY		**$**	**2,500,000**

CENTRAL HAMPSHIRE PSD
SOUTHWESTERN WATER EXTENSIONS

OPINION OF PROBABLE O&M COSTS
PHASE I

AVERAGE RESIDENTIAL USAGE (2019 PSC REPORT)	2830 GPM
SIGNED CUSTOMERS	53
ASSUMED LEAKAGE FACTOR	1.1

ITEM	Annual Cost	
1- PURCHASE WATER		
Yearly Demand	1979868	Gallons
Cost per 1,000 gallons	4.95	
Total Annual		**$9,800**
2- PUMPING EXPENSES		
Church Road BS		
Total GPD	5424	
Rate (GPM)	50	
Phase	3	
HP	5	
Total KWH/day	6.74	
Maximum Energy Charge (cents per KWH)	$0.14	
Total Annual		**$345**
3- WATER TREATMENT EXPENSES		
Chemicals, Miscellaneous		
Current Demand	1979868	Gallons
New Demand	0	Gallons
Going Level	$0	
Total Annual		**$0**
4-TRANSMISSION AND DISTRIBUTION EXPENSES		
Salaries and Wages (part time)	$11,500	
Going Level (excluding labor, + going level adj)	$158,277	
Total Miles of Line	49	
Going Level Cost per Mile	$555.00	new system- reduced to i
New Miles	8.57	
Adjustment		**$16,256**
5-CUSTOMER ACCOUNTS & ADMIN & GENERAL EXPENSES		
Going Level (excluding Salaries, Pensions and Benefits)	$107,763	
Total Customers	1,651	
Going Level Cost per Customer	$65.27	
New Customers	53	
Adjustment		**$3,459**
TOTAL 0&M COST ADJUSTMENT		**$29,861**

APPENDIX

M

CENTRAL HAMPSHIRE PSD PURGITSVILLE WATER EXTENSION

Project Schedule

APPENDIX M

Action	Responsible Party	Completion
Complete PER	Engineer	Apr-20
Prepare IJDC Funding Application	Region 8/ Engineer/Accountant	Apr-20
Receive WVIJDC Funding Recommendation	PSD	Jun-20
SCBG Application	Region 8	Jun-20
Final Design (Plans & Specs)	Engineer	Apr-21
Submit Plans/Specs to WVBPH	Engineer	Apr-21
Obtain WVBPH Approval, Permits	PSD/Engineer	May-21
Obtain 80% ROW and Easements	PSD/Attorney	Apr-22
Obtain SCBG & other funding	PSD	Apr-22
Cash Flow Statement	Accountant	Apr-22
File Certificate with WVPSC	Attorney	May-22
File Binding Commitment with IJDC	Region 8	May-22
Obtain IJDC Binding Commitment	PSD	Jun-22
Authority To Advertise	IJDC	Jul-22
Advertise For Bids	PSD/Engineer	Jul-22
Bid Opening	PSD/Engineer	Aug-22
Approve PSC Certificate	PSC	Oct-22
Loan Closing	Attorney/Bond Counsel	Nov-22
Construction Complete	Contractor	Aug-23