Bedford Regional Water Authority (BRWA)

IVY CREEK INTERCEPTOR DIVISIONS 5 AND 6 PER

WILEY|WILSON COMMISSION NO. 218244.00

February 10, 2020

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1.0 EXECUTIVE SUMMARY

The Bedford Regional Water Authority (BRWA) provides wastewater service to the Forest and New London service areas on the eastern side of Bedford County adjacent to the City of Lynchburg. BRWA owns capacity in the City of Lynchburg's interceptor system and the Regional Wastewater Treatment Plant (WWTP) where wastewater is conveyed and treated.

At this time, BRWA collects nearly all of the wastewater from these service areas at the Lake Vista Pump Station, which is located next to Ivy Creek, and pumps it to the City's Tomahawk Creek Interceptor. Due to difficult pumping conditions and odor control requirements, BRWA incurs significant maintenance and operational expenses at the Lake Vista Pump Station in additional to routine pumping costs.

This report evaluates a project that would allow BRWA to abandon the Lake Vista Pump Station, and the attendant operational and pumping costs, and convey wastewater by gravity to the City's Ivy Creek Interceptor. BRWA has been planning for this project for several years, and has purchased capacity in the Ivy Creek Interceptor in anticipation of completing it. The project is referred to as the Ivy Creek Division 5 and Division 6 interceptor projects. Division 5 is the portion of the project in the City, and Division 6 is the portion of the project located in the County.

This report examined the capacity, alignment, and permitting requirements for completing the project. Based on that examination, and in collaboration with BRWA staff, it makes the following conclusions and recommendations:

- In order to provide wastewater service to the existing Forest and New London service areas, and the future service areas identified in BRWA's Water and Sewer Master Plan, the Ivy Creek Division 5 and 6 interceptors should be 24-inch diameter interceptors.

- BRWA is projected to exceed the current capacity in the City of Lynchburg's regional interceptor system and WWTP between 2035 and 2060, depending on growth rates. At that time BRWA would need to purchase additional capacity in the interceptor system and WWTP.

- Implement the Ivy Creek Division 5 and 6 interceptor projects consisting of constructing approximately 7,500 LF of 24-interceptor as part of Ivy Creek Division 5 in the City of Lynchburg and 11,000 LF of 24-interceptor as part of Ivy Creek Division 6 in Bedford County.

- Construct a flume station at the City-County boundary to measure flows from BRWA. The flume station should have features as described in this report.

- Based on discussions with BRWA and City of Lynchburg staff, BRWA will be responsible for design and construction of the interceptor projects. The City may request the opportunity to buy capacity in Ivy Creek Division 5 at a future time.

- Preliminary discussions with VDOT and environmental due diligence reports did not identify any significant issues of concern for obtaining permits for the project.

Based on the preliminary alignment presented in the report, Opinions of Probable Construction Cost were prepared for the Ivy Creek Division 5 and 6 interceptor projects. Additionally, two alternate routes were identified as potential cost savings.

Total project costs include purchasing additional interceptor capacity to support all of BRWA's current interceptor system entry point capacities. The report presents a detailed discussion of BRWA's current and potential future capacity needs.

The costs presented in this report are higher than previous opinions of cost being used in BRWA planning documents. The differences are the result of a more accurate alignment, several portions of the alignment where excavation is relatively deep and constricted, and our experience with recent project bids that indicate construction costs are rising faster than typical construction cost indices (ENR CCI). Additionally, the previous opinions were intended for wastewater allocation planning and did not include contingencies.

Opinions of Probable Cost - Summary	
Base Route	
Construction Cost(1)	$8,580,000
Total Project Cost(2)	$11,035,000
Alternate Routes	
Construction Cost(1)	$7,490,000
Total Project Cost(2)	$9,705,000

(1) Construction Costs include a 25% contingency.

(2) Total Project Costs includes 3 years of escalation at 2.5% per year and a 15% parametric factor for survey, design, easement acquisition, and construction administration. They also include costs associated with acquiring additional downstream interceptor capacity.

2.0 INTRODUCTION

The Bedford Regional Water Authority (BRWA) requested this report to evaluate extension of a gravity interceptor along Ivy Creek from the upstream end of the City of Lynchburg's Ivy Creek Division 4 interceptor to the Authority's Lake Vista pump station (LVPS). This project has been part of BRWA's long-term plan for over 15 years. Construction of this gravity interceptor will allow the Forest area to be served by gravity, and the LVPS to be shut down and taken off-line.

Wastewater in Forest is collected by a network of gravity sewers, the majority of which convey flow to the LVPS before it is pumped to the City of Lynchburg. The LVPS force main discharges to a BRWA gravity sewer just upstream of the City/County line. In addition, wastewater in New London is collected by gravity sewers and pumped to Forest, discharging into a gravity sewer next to the Forest Kroger. From there wastewater flows by gravity to the LVPS. Both Forest and New London are experiencing continued residential and commercial growth, and the current pump station capacity limits the amount of growth that can take place in these high-growth areas of Bedford County.

The PER provides an engineering evaluation to guide implementation of the Ivy Creek Interceptor Division 5 and Division 6 projects. It includes the following components:

2.1 Service Area and Flow Projections

The PER projected flow rates for the current BRWA service area in the Forest and New London areas, as well as a significantly expanded service area identified in BRWA's Water and Sewer Master Plan (2009). The projected flow rates were calculated based on BRWA billing data, operational records and open source GIS development data.

Based on the projected flow rates, the PER provides recommendations for interceptor sizing to provide service for current and future flow conditions.

2.2 Preliminary Alignment

The PER identifies a preliminary alignment for the Ivy Creek Interceptor Divisions 5 and 6 projects. Following initial development, the preliminary alignment was presented to BRWA staff during a workshop. Based on concurrence of staff, the preliminary alignment will be the basis for planning and design efforts. It should be recognized that while the preliminary alignment provides a basis for planning and design, factors such as property owner concerns, environmental studies and detailed field survey will likely result in fine-tuning the alignment during the design phase of the project.

Preliminary plan and profile drawings were prepared for the Division 5 and Division 6 projects. The drawings show important details such as road crossings, property owner information and potential routing alternatives. These drawings were used as the basis for developing Opinions of Probable Construction Cost.

The plan and profile drawings include topographic contours and features from open source GIS data. They do not include utility or feature survey. This level of detail will be added during project design.

2.3 Coordination with Local Utilities

During the PER development, the Wiley|Wilson team and BRWA staff met with the City of Lynchburg Department of Water Resources and the Virginia Department of Transportation (VDOT). Both meetings included a brief on the project background, presenting the preliminary alignment and discussing coordination. The following summarizes the results of each meeting:

City of Lynchburg Department of Water Resources

City staff concurred with the preliminary alignment and project approach. Based on initial discussions during this meeting, the City prefers BRWA to lead design and construction efforts for the project. The City may be interested in buying capacity in the Division5 project, but did not provide an estimate of required capacity.

City staff requested that BRWA review the connection point to Ivy Creek Division 4. The preliminary alignment identifies the connection point at the former Lynchpin Pump Station. The alignment parallels a 24-inch line that serves the industrial park. After reviewing the relative elevations, the existing 24-inch line was installed at an elevation approximately 15 feet higher than the Ivy Creek Division 4 interceptor, and it is not feasible to connect to that line.

City staff requested that BRWA consider installing a flume station at the City–County line to monitor flow from the Authority. The flume station is identified on the plans, and details will be added during the design phase of the project. City staff requested that the flume station be equipped with an insert type flume sized for current flows with the ability to be upsized for future flows. Features for consideration include a Palmer Bowlus type flume, electrical service to improve reliability and road access. It was noted that the City will be responsible for maintaining the flume station following construction, thus the City would like input in the design process.

Virginia Department of Transportation (VDOT)

The preliminary alignment was reviewed with the VDOT residency for Bedford County.

VDOT provided feedback that jack and bore crossings would be required for both road crossings, Hawkins Mill Road and Cottontown Road. VDOT also provided design plans for a bridge replacement on Cottontown Road in the immediate vicinity of the alignment. The alignment was updated to reflect those improvements.

2.4 Environmental Due Diligence

Wiley|Wilson partnered with ECS Mid Atlantic LLC to perform a Rare, Threatened and Endangered Species review, a Historic and Cultural Resources review and an Environmental Regulatory Database review. The findings from those reviews are attached to the PER as Appendix E. ECS provided the following recommendations:

Rare, Threatened and Endangered Species Review – Two species of concern were identified. ECS recommended coordination with Virginia Department of Game and Inland Fisheries (VDGIF) and US Fish and Wildlife Service (USFWS) to identify time of year

restrictions and other measures that may need to be incorporated into construction activities.

Historic and Cultural Resources Review – One potential historic resource was identified, a bridge on Cottontown Road. This bridge is being replaced by VDOT, and so it will not impact this project.

Environmental Regulatory Database Review – The preliminary review indicated that there is a low risk of contamination that would impact the project. Any additional requirements for more in-depth review, i.e. Phase 1 ESA, would be dependent on project requirements.

2.5 Lake Vista Pump Station

One of BRWA's primary goals for this project is to allow the decommissioning of the LVPS. The preliminary alignment identifies connection points for both gravity sewer lines that discharge to the pump station and will allow it to be completely abandoned.

The LVPS is comprised of three pairs of pumps that work in series. Suction lift pumps pump out of the wetwell into the suction side of centrifugal pumps located in the pump station adjacent to the wetwell. Each pair of pumps is rated to pump approximately 840 gpm at 255 feet TDH. The pump station design peak of approximately 1,060 gpm at 283 feet TDH is achieved when two pairs of pump are running. There have been on-going maintenance issues with pumps frequently having to be repaired or replaced. Additionally, the pumps-in-series configuration creates operational challenges. However, due to the flow/head conditions experienced at this pump station, there are no viable single-pump alternatives to replace the current pumps-in-series configuration.

3.0 SERVICE AREA AND FLOW PROJECTIONS

3.1 BRWA Forest and New London Service Areas

The service areas for Forest and New London were based on the current service area defined in the Wastewater Collection, Conveyance and Treatment PER (2003) and the potential service area identified in the Water Sewer Master Plan (2009).

The existing Forest and New London service areas include approximately 6,856 acres in the Forest Service Area and approximately 1,376 acres in the New London Service area. The current service area is shown on a map in Appendix A. It is based on the service area identified in the 2003 PER with additional services areas identified by BRWA.

The 2009 Master Plan identified several sewer mains in North Forest and the Elk Creek Basin that would expand the Forest and New London Service areas to approximately 34,000 acres. The current zoning for the additional 25,800 acres is residential, thus it was assumed that future sewer flows would be residential. The 2009 Master Plan service area is shown on a map in Appendix A.

3.2 Regional Interceptor Capacity

The following discussion characterizes BRWA's current flow allocation in the City of Lynchburg's interceptor system and wastewater treatment plant. The Forest Equalization Basin Demolition (Wiley|Wilson, 2006) contains a similar summary, and it was updated for this report.

There are currently five (5) designated entry points for wastewater from BRWA into the City of Lynchburg's interceptor system. A drawing of the City of Lynchburg's interceptor system with entry points and allocated and purchased capacities indicated, is included in Appendix A as presented in the 2006 letter report. Two of these entry points, B-1 and B-2, convey wastewater into the City's Tomahawk Creek Interceptor drainage basin. Flow from these two entry points is conveyed through the Tomahawk Creek Interceptor to the City's Blackwater Creek Interceptor. The combined allocated and purchased capacity for these two entry points is a peak flow (PF) of 2.0 million gallons per day (MGD) with an average flow of 0.80-MGD. Per DEQ guidance, these entry points require use of a standard 2.5 peaking factor.

Entry point B-3 conveys wastewater directly into the City's Ivy Creek Interceptor drainage basin. Entry points B-4 and B-5 convey wastewater into the City's Cheese Creek Interceptor which flows into the Ivy Creek Interceptor and then downstream to the City's Blackwater Creek Interceptor. BRWA's combined allocated capacity for these three entry points is 2.27-MGD peak flow (0.91-MGD average). BRWA owns an allocated capacity of 0.15-MGD PF for entry point B-4 and 0.10-MGD PF for entry point B-5. The total allocated capacity of 2.27-MGD PF for entry point B-3 has not been purchased in the Division 5 segment since this upper segment of the Ivy Creek Interceptor has not been constructed. However, BRWA has purchased allocated capacity in all downstream segments of the Ivy Creek Interceptor. As discussed in this PER, BRWA will design and construct Division 5, and will therefore not need to purchase capacity in this segment from the City.

The downstream segments of the Blackwater Creek Interceptor and the James River Interceptor (JRI) convey the combined flow from all BRWA entry points to the City's Regional Wastewater Treatment Plant (WWTP). BRWA has purchased 1.24-MGD peak (1.0-MGD average) in the JRI. Therefore, BRWA currently has a capacity of 1.0-MGD average within the JRI and the WWTP. Due to flow attenuation, this capacity within the JRI equates to a combined capacity from all five entry points of 2.5-MGD peak (1.0-MGD average).

BRWA's allocated and purchased capacity in each interceptor segment is indicated in Appendix A. Allocated and purchased capacities generally decrease from segment to segment as the flow moves downstream. This reduction in capacity is due to flow attenuation within the interceptors based on flow monitoring that was performed by the City.

3.3 Flow Projections

This report generated flow projections for the Forest and New London service areas which were used to provide sizing recommendations for the Ivy Creek Division 5 and Division 6 interceptors. Flow projections were made based on ultimate build-out projections and also on projected growth rates.

Build-Out Flow Projections

Build-out flow projections were based on spatial analysis of open-source GIS land use data, BRWA billing records, and Lake Vista Pump Station (LVPS) operational records.

Both Residential and Commercial/Industrial flow projections were based on calculating a sewer flow rate per acre for existing built-out portions of the service area and applying it to the acreage of the non-built out residential and commercial/industrial zoned portions of the service area. This report assumed that future development patterns and sewer use will match current development patterns and sewer use in the service area.

Because sewer billings are based on water use, the flow projections do not take into account inflow and infiltration (I/I) to the collection system. LVPS operational records were used to assign an I/I factor to the flow projections.

BRWA billing records and reports from BRWA's Customer Service Department for calendar years 2017 and 2018 were used to establish the number of residential connections and corresponding average flow rate per connection. Bedford County GIS data was used to establish average acreage per residential parcel. This was used to calculate a sewer flow rate per acre (gpd/AC) for areas zoned for residential use. Residential projections also included a modifier to reflect residential parcels that are served by on-site disposal systems.

Reports from BRWA's Customer Service Department for calendar years 2017 and 2018 were used to establish the total flow rate from commercial/industrial customers. Bedford County GIS data was used to establish the total built-out acreage zoned for commercial/

industrial use in the BRWA service area. The flow rates and built-out acreage were used to calculate a sewer flow rate per acre (gpd/AC).

The methodology described above was used to project future sewer flows for the current service area, as described in the Wastewater Collection, Conveyance and Treatment PER (2003), and for a future expanded service area, as described Water Sewer Master Plan (2009). Projections assume 100% residential and commercial/industrial build-out. The following table summarizes the projected sewer flows. The methodology is described in more detail later in this section.

BRWA IVY CREEK SEWERSHED FLOW PROJECTIONS		
Service Area	**AADF @ Build-Out (MGD)**	**PF @ Build-Out (2.5 PF) (MGD)**
Existing Service Area (2003)	0.78	1.95
Future Service Area (2009)	3.24	8.10

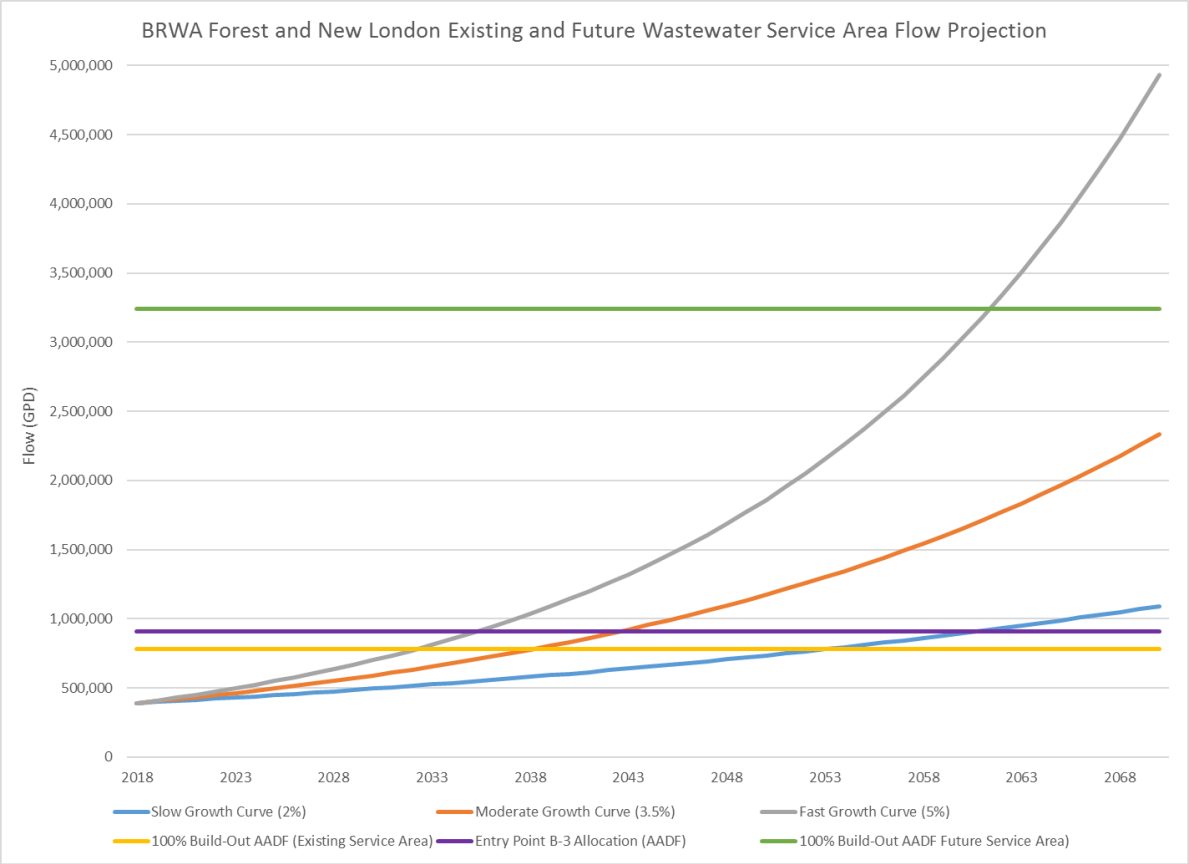
The table above incorporates the following assumptions:

- 60% of parcels in the existing service area will connect to central sewer at build-out. The current connection rate is estimated to be 45% of built-out parcels. This assumption represents extending service to 33% of residences not currently connected.
- 50% of parcels in the future service area will connect to central sewer at build-out.
- An I/I factor of 1.3 is incorporated into the AADF based on the ratio of billing records and average annual daily flow at the LVPS.
- An PF peaking factor of 2.5 is applied to the AADF based on DEQ policy for the regional interceptor system.

Growth Rate Flow Projections

The analysis above focuses on the build-out capacity of BRWA's service area. Another important planning factor is the rate of growth that BRWA should expect over the planning life of various assets. There are two classes of assets included in this project; the interceptor pipe and the flume station at the City-County boundary.

The growth rate for BRWA's service area was evaluated by comparing flow monitoring completed during a 2006 study to 2018 operational records for the LVPS. This indicated a growth rate of 3.8% during that time. This period represents the rapid expansion of the Forest area. Based on that upper level growth rate, the following figure provides growth rate projections over a 20 year planning window.



Based on the growth rate projections, BRWA is projected to exceed the current Entry Point B-3 average day capacity allocation of 0.91 MGD between 2035 and 2060. Additionally, at that time or shortly following, BRWA will exceed the current downstream interceptor and WWTP average day capacity allocations of 1.0 MGD. At that time BRWA would need to purchase additional capacity in the regional interceptor system and WWTP.

BRWA would experience build-out conditions of the current service area between 2030 and 2035 at the earliest, assuming continuous 5% growth. It is more likely that these conditions would occur between 2040 and 2050 based on current growth patterns. It is not likely that BRWA would experience build-out conditions of the future service within the 50-year life of the interceptor asset.

Interceptor assets are typically evaluated on a 50-year asset life. However, with relatively "new" plastic pipe technology, in terms of projected asset life, the life span on the interceptor may exceed 50 years. It can also be much less expensive to rehabilitate pipeline infrastructure using in-place rehabilitation methods compare to replacement. In order to have this option in the future, sewer lines must be sized around the build-out capacity rather than a time dependent capacity. Thus, this report recommends designing the interceptor based on the build-out capacity projection.

The flume station contains mechanical and electrical equipment that is typically evaluated on a 20-year asset life. Similar to the interceptor asset, it would be prudent to size the concrete flume channel based on the build-out capacity. An insert style flume could then be

installed in the channel based on 20-year flow projections. Based on the growth rate projections, this report recommends sizing the insert flume and measurement equipment based on the existing service area build-out flow projections, 0.78 MGD AADF and 1.95 MGD PF. A typical peak hour flow (PHF) factor for this size system is 3.0 (Recommended Standards for Wastewater Facilities, 2004 "10 States Standards"), resulting in a PHF of 2.34 MGD.

3.4 Interceptor Sizing Recommendations

The following interceptor sizing recommendations are based on the build-out flow projections provided above, and the preliminary interceptor alignment presented later in this report. The preliminary alignment has an overall slope of 0.2%, however the lower third of the alignment is closer to 0.15%. Therefore, this report recommends using 0.15% slope for planning purposes.

The following table compares the capacity of 18" and 24" pipes at different roughness factors for 0.15% slope. This report recommends plastic materials of construction; however, concrete is provided as a comparison for other materials of construction.

MANNINGS FACTOR	18-INCH	24-INCH
0.013 (Concrete – Typical)	2.64 MGD	5.68 MGD
0.009 (Plastic)	3.81 MGD	8.20 MGD

The following table lists the minimum flow required to reach scour velocities in 18" and 24" pipes at different roughness factors for 0.15% slope. It is important to be able to achieve scour under both current and future conditions.

MANNINGS FACTOR	18-INCH	24-INCH
0.013 (Concrete – Typical)	0.77 MGD	0.84 MGD
0.01 (Plastic)	0.40 MGD	0.44 MGD

The following table compares historic costs for 18-inch versus 24-inch pipe. It is based on costs associated with RCP pipe. The bare material differential is approximately $684,000. Following sections of this report include more detailed opinions of probably construction costs including installation and contractor overhead costs.

	18-INCH	24-INCH
Cost ($/LF)	$205/LF	$243/LF
Extended Cost for 18,000 LF	$3,690,000	$4,374,000

This report recommends installing a 24-inch pipe for Ivy Creek Interceptor Divisions 5 and 6. Based on the flow capabilities presented above, an 18-inch pipe would provide adequate capacity for the current service area. However, it would not support future service area

expansion in accordance with BRWA's master plan (2009). A 24-inch pipe would support the current service area build-out PF and the future service are build-out PF. Additionally, the interceptor coming into the LVPS is a 24-inch line, and therefore it would not be advisable to install a smaller downstream pipe.

3.5 Detailed Flow Calculations

The following discussion describes the calculations used to make the flow projections described above. A summary of the calculations is included in Appendix B. BRWA's Customer Service Department provided billing data for all of 2017 and January 1 through November 29, 2018. The customer billing data consisted of billing periods with associated meter readings.

The 2017 billing data included 1,170 unique Ref Meter IDs with metered sewer flows and 1,163 unique service addresses with metered sewer flows. The greater number of Ref Meter IDs was assumed to represent properties with multiple meters. Based on this analysis, the average flow rate for 2017 was based on 1,170 residential connections.

The 2018 billing data included 1,181 unique Ref Meter IDs with metered sewer flows and 1,174 unique service addresses with metered sewer flows. The greater number of Ref Meter IDs was assumed to represent properties with multiple meters. Based on this analysis, the average flow rate for 2018 was based on 1,181 residential connections.

BRWA's Customer Service Department reported that the residential sewer flow based on 2017 and 2018 (January 1 to November 29) billing records for Forest and New London Service Areas was 223,441 gpd and 199,302 gpd respectively. This results in daily flow of 191 gpd and 169 gpd per connection for 2017 and 2018, respectively, with an average flow of 180 gpd per connection.

This report evaluated the raw billing data to calculate the average daily flow for all reported billing periods. The average daily flow was 174 gpd and 173 gpd per connection for 2017 and 2018, respectively. This compares very well to the average flow based on data provided by the BRWA Customer Service Department. The billing data periods include dates outside of those examined in this report, thus the flows provided by BRWA's Customer Service Department were used as the baseline for flow projections.

Based on the data summarized above, this report used an average daily consumption of 180 gpd and 1,181 residential connections as the baseline for flow projections.

It should be noted that these average sewer flow per connection are intended for sewer shed wide planning purposes. As stated previously, this report assumes that current development patterns will continue, and flow rates were projected using that assumption. Accordingly, the flow per connection calculation reflects all sewer customers in areas zoned for Residential use including smaller customers (<25 gpd) and larger customers (>500 gpd). It should not be taken to represent sewer flows for purely residential developments.

3.6 Inflow/Infiltration Factors

Based on BRWA Customer Service Department reports for 2017 and 2018 for the Forest and New London Service Areas, the average AADF, including both residential and commercial/industrial flows, was 292,131 gpd. The AADF conveyed at the LVPS for January 2016 thru November 2018 was 389,962 gpd. Based on the AADF flows at the LVPS, a factor of 1.3 for AADF flows was applied to the billing data flow projections.

One note of caution is that the peak flow used for interceptor capacity included in this report should not be equated with the peak hour flow (PHF) at LVPS. The peak hour flow cannot be quantified based on the information provided because LVPS records were provided in 1 day increments. Peak flow as defined in this report is based on a 2.5 peaking factor for the Ivy Creek Interceptor as required by DEQ for the regional interceptor system.

3.7 Detailed Build-Out Projections

The current level of connected build-out was identified using Bedford County GIS layers for zoning and structures. Connected build-out was defined as parcels that have been developed and connected to central sewer. Connected build-out was evaluated using two methods.

The first method assumed that all parcels that have structures are "built-out". The acreage of these parcels were normalized for sewer connection (approximately 45% of parcels are connected) and compared to the total residential or commercial/industrial acreage.

The second method was only applied to areas zoned for residential use. Commercial/industrial parcels typically have multiple buildings on each parcel, thus it would not be applicable. The total number of buildings in the residentially zoned areas was used to determine built-out acreage based on an average residential parcel size. Similar to the first method, this acreage was normalized for sewer connection and compared to the total residential acreage.

The following table summarizes the build-out projections.

CLASSIFICATION	TOTAL ACREAGE	ACREAGE W/ BUILDING ON PARCEL	% BUILD OUT	NO. OF BUILDINGS	% BUILD OUT
Forest Commercial and Industrial Development	2,255	1,216	54%	N/A	N/A
Forest Residential Development	4,601	3,085	31%	3,038	37%

CLASSIFICATION	TOTAL ACREAGE	ACREAGE W/ BUILDING ON PARCEL	% BUILD OUT	NO. OF BUILDINGS	% BUILD OUT
New London Commercial and Industrial Development	1,053	433	41%	N/A	N/A
New London Residential Development	323	143	20.2%	44	18.6%

Residential Zoning Build-Out Projections

Build-out projections were based on correlating the Bedford County GIS parcel layers and building layers. Parcels that have buildings within their boundaries were assumed to be "built out". This report identified 4,601 acres zoned for residential use in the Forest Service Area and 323 acres zoned for residential use in the New London Service Area based on the service area boundary identified in the 2003 report and additional parcels identified by BRWA.

Based on 1181 connections and 2,572 "built-out" parcels, 45.7% of "built out" parcels in the Forest Service Area and New London Service Area are connected to BRWA sewer.

In the Forest Service Area residential zoning areas, 2,528 parcels and 3,085 acres are zoned for residential use or described as residential use and currently have buildings. These parcels have an average legal acreage of 1.22 AC. The percent buildout based on acreage with buildings compared to total acreage was 31%. The percent buildout based on number of buildings and average lot size of 1.22 acres was 37%. Both scenarios assumed 45.7% of buildings or parcels are connected to BRWA sewer.

In the New London Service Area residential zoning areas, 55 parcels and 164 acres are zoned for Residential use or described as residential use and currently have buildings. These parcels have an average legal acreage of 2.98 AC. The percent buildout based on acreage with buildings compared to total acreage was 20%. The percent buildout based on number of buildings and average lot size of 2.98 acres was 18.6%. Both scenarios assumed 45.7% of buildings or parcels are connected to BRWA sewer.

Comparing the percent build out based on acreage versus number of buildings and average lot size is a check on the accuracy of the assumption that parcels with buildings are considered built-out. Large lots with one building would tend to skew the first metric, but would be accounted for by the second.

The build-out sewer flow projections for residential zoning areas are based on 180 gpd per connection and a combined average lot size of 1.26 AC per parcel for both the New London and Forest Service Areas. This equates to 143 gpd/AC.

To extend this spatial flow projection to a build-out scenario, a factor was applied for the percentage of acreage that will ultimately connect to BRWA sewer. Many areas that are currently served by septic fields would not connect, and some undeveloped areas would also not connect. This report assumes a factor of 60% residential connection at build-out in the existing service area and a factor of 50% residential connection at build-out in the future service area. This is higher than the current connection percentage, 45.7%.

Commercial/Industrial Zoning Build-Out Projections

Similar to residential projections, build-out projections were based on correlating the Bedford County GIS parcel layers and building layers. Parcels that have buildings within their boundaries were assumed to be "built out". This report identified 2,255 acres zoned for Commercial/Industrial use in the Forest Service Area and 1,053 acres zoned for commercial/industrial use in the New London Service Area based on the service area boundary identified in the 2003 report.

In the Forest Service Area commercial/industrial zoning areas, the percent buildout based on acreage with buildings compared to total acreage was 54%. In the New London Service Area (2003) commercial/industrial zoning areas, the percent buildout based on acreage with buildings compared to total acreage was 41%.

The build-out projections for commercial/industrial zoning areas are based on a uniform flow per acre. Based on billing reports, the flow per acre was 49 gpd/ac and was assumed to be the same for the New London and Forest service areas. Unlike residential, it was assumed that all commercial/industrial zoning areas would be connected to central sewer.

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4.0 INTERCEPTOR IMPROVEMENTS

4.1 Preliminary Alignment

A preliminary alignment was prepared for the Ivy Creek Division 5 and Division 6 projects. It is included as Appendix F. The alignment follows Ivy Creek and does not significantly diverge from previous master planning efforts. The intent of the preliminary alignment was to identify a high level route for each project division to support planning efforts and utility coordination.

4.2 Alignment Alternatives Analysis

The study evaluated two route alternatives that may reduce overall project cost. Both alternatives included cutting off large bends in Ivy Creek to significantly shorten the alignment. It was assumed that these would be installed with tunneling techniques. A high level cost comparison evaluates the initial alignment compared to tunneling required to shorten the alignment.

Alternative 1 is in the vicinity of the connection to Ivy Creek Division 4. Because of the existing 24-inch line serving the industrial park, this alternative would not impact the interceptors service area.

Alternative 2 is upstream of Hawkins Mill Road. This alternative would reduce the service area of the interceptor. However, BRWA staff noted that a developer would be responsible for extending an 8-inch line down Ivy Creek to serve any new developments, so the cost impact of the service area would be negated.

The table presented in Section 4.5 identifies cost savings of $1,090,000 for Alternatives 1 and 2 .

4.3 Flume Station

This project will also include installing a measurement flume at the City-County boundary. Per the terms of the regional interceptor system agreements, the City will maintain this station.

The specific location of the flume station will be dependent on land-owner concerns and further discussion between BRWA and the City. The City-County boundary is in the immediate vicinity of Hawkins Mill Road which provides easy access potential. Alternatively, there are several power line easements adjacent to the City-County boundary that provide opportunities for shared access easements.

Based on discussions with BRWA and City staff, the flume design should incorporate the following features:

- The flume channel will be sized for future service area build-out PFH of 9.72 MGD incorporating a 3.0 PHF factor.

- An insert will be installed in the flume channel sized for the current service area build-out flow of 2.34 MGD incorporating a 3.0 PHF factor. This will allow more accurate measurement at current flow rates. The 2016-2018 LVPS AADF was 0.39 MGD.

- A Palmer Bowlus flume with different level measurement technologies will be considered during design in collaboration with the City.

- It is preferred that power be extended to the flume site rather than using solar power and batteries. Power is available adjacent to the flume site on Mill Acres Drive.

- The flume site will require a gravel or paved access road to allow frequent maintenance.

4.4 Pipe Material Evaluation

The new interceptor sewer will be 24-inches in diameter. This size allows the potential for several pipe materials to be used. Pipe material is an important factor in design development. The pipe, along with care of installation, determines the ultimate life cycle of the utility. Several materials were considered, each with strengths and weaknesses. It is recommended that BRWA allow general contractors to base their bids on several plastic pipe options, including open profile polyvinyl chloride (PVC), closed profile PVC, solid wall PVC or triple wall polypropylene (PP). The Authority could also consider allowing ductile iron pipe (DIP) as an alternative.

Plastic pipe materials (PVC and PP) are recommended based on resiliency and ease of installation. Both materials provide excellent resistance to sulfuric acid corrosion. The pipe is resilient to joint damage and relatively easy to handle, which results in a consistent high-quality end product. Additionally, due to the relatively light weight, the equipment requirements are less than ductile or concrete pipe.

Ductile iron pipe (DIP) is an acceptable alternative based on strength and ease of installation. Ductile iron pipe requires a specialty lining (either Protecto 401 or Tnemec equivalent) for sulfuric acid resistance. Ductile iron pipe also requires larger equipment to install than equivalent plastic pipe products. Because of its strength, it is difficult to damage joints resulting in a high quality product

Reinforced concrete pipe (RCP) is not included as a recommended pipe material. RCP is a high quality pipe material and at larger diameters (greater than 60-inches) is the preferred pipe material. However, it is difficult to handle and requires larger equipment than plastic pipe. To compensate for weight, it is supplied in shorter sections than comparable plastic pipe or DIP. In our experience it often results in damaged joints during construction which increases the inspection and quality control requirements on the Owner. Therefore, it is not included in the pipe material recommendation.

The following table illustrates the strengths of each type of pipe. Cut sheets for each type of pipe are included in Appendix D.

Table 4.1: Interceptor Material Alternatives

Description	ASTM Reference	Product Name	Available sizes	Pipe Stiffness Rating	Strengths	Weaknesses
Open Profile PVC	F794/D1784, F949	Diamond Plastic Cor-21	12" - 42"	PS50	Joint integrity	Flexible pipe design, more stone required, puncture potential
Closed Profile PVC	F1803	Vylon Vylon 75 Diamond Plastics Pro-21	21" - 54" 30" - 60"	PS46 PS75 PS46	Joint integrity	Flexible pipe design, more stone required, puncture potential
Solid Wall PVC	D-3034, F679	Diamond Plastic Sani-21	4" - 60"	SDR26/PS115 or SDR35/PS46	Joint integrity	Flexible pipe design, more stone required, puncture potential
Triple Wall PP	F2764	ADS Sanitite	12" - 60"	PS46	Joint integrity, double gasket	Flexible pipe design, more stone required
RCP		Permatile Concrete Pipe & Precast	12" - 144"		Rigid pipe design, less stone required	Joint integrity Corrosion by H2S
DIP	AWWA C151	US Pipe American Pipe	4" - 64"		Joint integrity Rigid pipe design	Price

4.5 Estimated Interceptor Improvement Construction Costs

To further evaluate the alternatives an opinion of probable construction cost was developed for each alternative route for Divisions 5 and 6. Cost estimates were developed using the Construction Cost Index (CCI) and historical pricing data from similar projects that have been adjusted for project specific characteristics. The costs have been presented in April 2019 dollars. The estimates for pipe installation include allowances for utility related stream stabilization, road bores, site restoration, and a twenty-five percent (25%) contingency for construction.

In addition to the project costs for Ivy Creek Divisions 5 and 6, BRWA should consider potential costs associated with purchasing capacity in the downstream interceptors and the Regional WWTF. Exhibit 4.1 shows the existing average day capacity that BRWA owns in the interceptor system and Regional WWTF.

As discussed previously, BRWA currently owns capacity at five entry points to the interceptor system. BRWA owns a total average day capacity of 1.81 MGD at the entry points and downward to the James River Interceptor. However, BRWA only owns 1.0 MGD average day capacity in the James River Interceptor. Moving flow from the Tomahawk Creek entry point to the Ivy Creek entry point will not change the BRWA flow in the James River Interceptor. Therefore, additional capacity in the James River Interceptor may not be immediately needed if the actual flows at all entry points does not exceed BRWA's purchased capacity in the James River Interceptor. However, additional James River Interceptor capacity will be needed as BRWA flows increase over time.

Table 4.2 summarizes costs to purchase additional interceptor capacity and Regional WWTF capacity (1) to convey the projected build-out flows (0.78 MGD AADF and 1.95 MGD PF) for the existing service area, (2) to convey the current capacity at entry point B-3 (0.908 MGD AADF and 2.27 MGD PF) and (3) to convey the projected year 2045 flow based on either a medium growth rate (1.0 MGD AADF and 2.5 PF) or a high growth rate (1.50 MGD AADF and 3.75 PF). The year 2045 costs are intended to provide an estimate of maximum costs if the Authority continues to incrementally expand beyond the current buildout projections within the life of a 20 year loan.

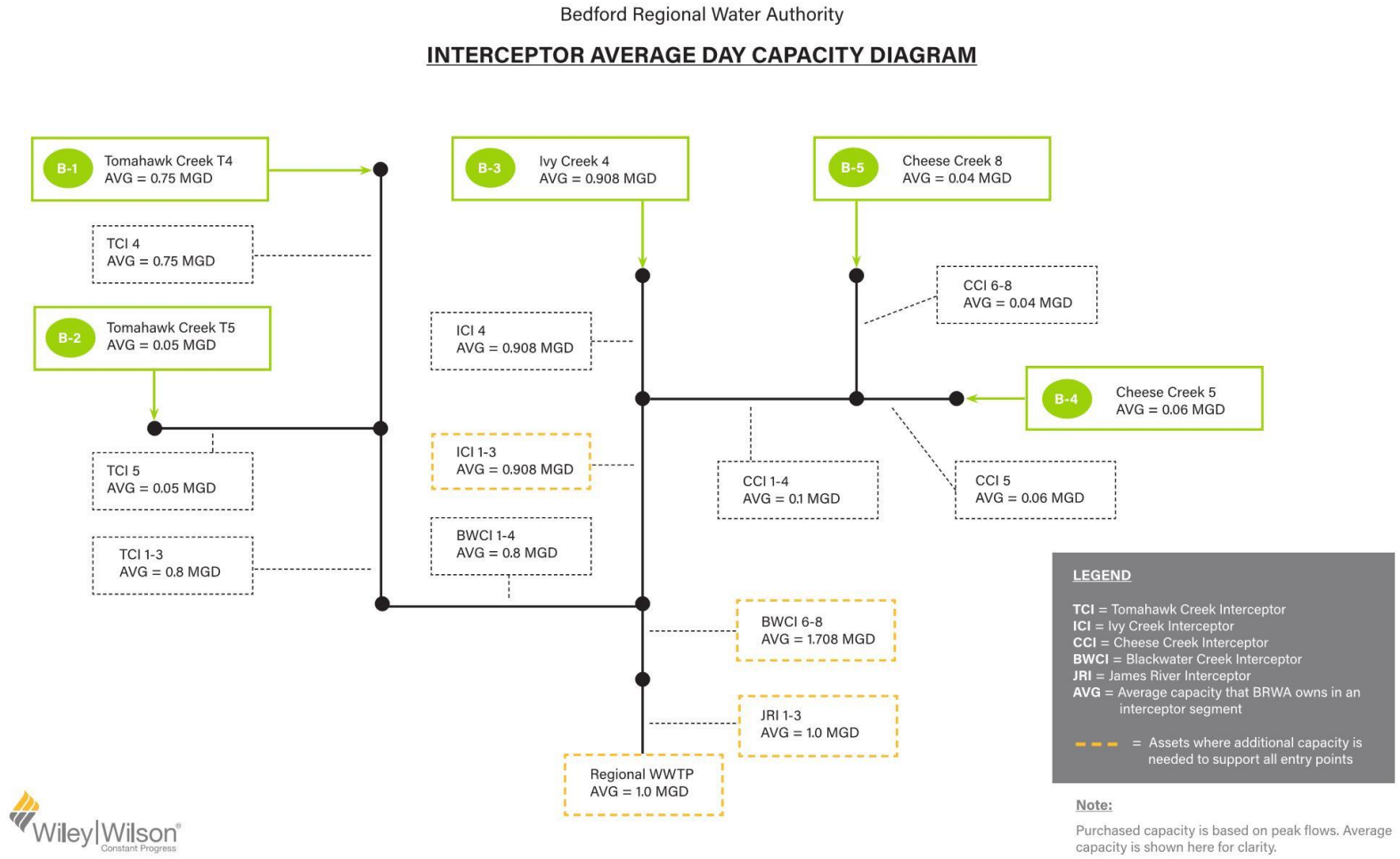

Exhibit 4.1: Interceptor System Capacity Block Diagram

TABLE 4.2: COST PROJECTIONS FOR ADDITIONAL REGIONAL WWTF AND INTERCEPTOR CAPACITY				
	Ivy Creek 0.78 MGD Average (1.95 MGD Peak) (Build Out Exist Service Area)	**Ivy Creek 0.908 MGD Average** (2.27 MGD Peak) (Existing B3 Entry Point Capacity)	**Ivy Creek 1.00 MGD Average** (2.50 MGD Peak) (Year 2045 Medium Growth)	**Ivy Creek 1.50 MGD Average** (3.75 MGD Peak) (Year 2045 High Growth)
Current WWTP Capacity	1.0 MGD	1.0 MGD	1.0 MGD	1.0 MGD
New Total WWTP Capacity (Current Capacity + New Capacity)	1.680 MGD	1.808 MGD	1.9 MGD	2.4 MGD
New WWTP Capacity Cost	$1,357,381	$1,612,888	$1,796,534	$2,794,609
New Interceptor Capacity Cost(1)	$318,011	$505,208	$721,682	$1,898,169
Total **New** Capacity Cost	$1,675,392	$2,118,096	$2,518,216	$4,692,778

(1) Refer to Exhibit 4.1 for existing interceptor capacities. The New Interceptor Capacity Cost is the total cost is to reconcile all entry point capacities with downstream interceptor capacities.

As noted in Table 4.2, if BRWA desires to purchase additional capacity in the James River Interceptor to allow full utilization of all entry point capacities, including 2.27 MGD at the B-3 Ivy Creek entry point, the current cost of that capacity would be approximately $505,000 (per September 2019 costs). We have included that cost in the total project costs presented in this report.

The tables below provide cost summaries for the preliminary alignment including an opinion for the base route and an opinion for the two route alternatives discussed previously. Detailed opinions of probable construction costs are provided in Appendix C. The opinions include cost escalation assuming the project will be bid within 3 years. The cost escalation factor, 2.5%, is based on the ENR CCI between 2015 and 2018. They also include parametric opinions of non-construction costs including survey, design, easement acquisition and construction administration.

Opinion of Probable Project Cost - Base Route	
Line Item	**Total Cost**
Division 5	$3,590,000
Division 6	$4,990,000
Subtotal - Construction Cost	*$8,580,000*
Escalation (3 years @ 2.5%)	$660,000
Interceptor Capacity Cost	$505,000
Survey, Design, Easement Acquisition, Construction Administration (15%)	$1,290,000
Total Project Cost	**$11,035,000**

Opinion of Probable Project Cost - Alternate Routes	
Line Item	**Total Cost**
Division 5	$3,290,000
Division 6	$4,200,000
Subtotal - Construction Cost	*$7,490,000*
Escalation (3 years @ 2.5%)	$580,000
Interceptor Capacity Cost	$505,000
Survey, Design, Easement Acquisition, Construction Administration (15%)	$1,130,000
Total Project Cost	**$9,705,000**

It should be noted that the opinion of probable construction cost, $1.65M, currently being used in BRWA planning documents for Division 5 was based on 3% escalation of a 2012 opinion ($1.32M). The 2012 opinion reflected local construction costs during the recession. In fact, the 2012 opinion was lower than the previous opinion provided in 2008 ($1.35M). Construction costs rebounded in the years following 2012 to ultimately reflect approximately 3% annual growth between 2008 and 2018 per the ENR CCI. Additionally, these opinions were based on preliminary mapping that showed a 5,500 LF alignment compared to the 7,500 LF alignment presented in this report.

To provide context for the costs presented in this report compared to previous costs, the 2008 opinion was compared to the costs presented in this report. This excludes the effects of the 2012 recession based pricing. Based on the ENR CCI, we would expect to see a cost escalation of 38% between June 2008 and August 2019. Including the linear footage adjustment and ENR escalation, the construction cost would escalate to approximately $2.54M. The non-contingency construction costs presented in this report are between $2.63M and $2.87M depending on route alternatives. The differences between the escalated cost and the costs presented in this report are due primarily to our experience with recent project bids that indicate construction costs are rising faster than typical construction cost indices (ENR CCI) as well as several portions of the alignment where excavation is relatively deep and constricted.

It should be noted that the costs presented in the preceding paragraph exclude the 25% construction contingency so that they can be compared with previous opinions. Previous opinions were provided to support wastewater allocation planning and did not include construction contingencies.

4.6 Easements

The alignment will require the acquisition of permanent and temporary easements along the alignment of the sewer. It is anticipated that 23 permanent and temporary easements will be required for the construction of the interceptor. The permanent easements should be a minimum 30 feet wide to provide a maintenance corridor and the temporary easements should be 10 feet additional width on each side to allow for installation. This results in a 50-foot construction corridor.

The table below summarizes the land-owners and easement area for each easement.

Ivy Creek Division 5 Property Owners			
Tax Map No.	Parcel No.	Owner	Total Easement Length
N/A	22203012	ECONOMIC DEVELOPMENT AUTHORITY	263
N/A	22501007	ECONOMIC DEVELOPMENT AUTHORITY	565
N/A	22501006	SIMPSON, RANDALL F & RHONDA	296
N/A	22501010	ECONOMIC DEVELOPMENT AUTHORITY	489
N/A	22203011	HARSHMAN, REGINA A	582
N/A	22204001	ECONOMIC DEVELOPMENT AUTHORITY	894
N/A	22205001	ECONOMIC DEVELOPMENT AUTHORITY	2,748
N/A	22301002	BOLING, MARK E & ROBIN M	917
N/A	22301003	NUCKLES, MICHAEL W	749

Ivy Creek Division 6 Property Owners			
Tax Map No.	Parcel No.	Owner	Total Easement Length
83 2 5	8302900	NUCKLES, MICHAEL W	105
83 2 6	8303000	SHIPP ROBERT W & SHIPP PENNY J	442
83 2 7	8303100	LEWIS SANDRA HACH	365
83 3 4	8303400	BRUNSON JAMES D & MAE G	1,078
82 9 11	8212600	WILKERSON THOMAS SCOTT	515
82 9 20	8213500	WINTER CHRISTOPHER W & KEY CYNTHIA G	528
82 9 21	8213600	JUDY C RICHARDS & LOUIS	850
82 8 8	8211500	WARNER WRAY WILLIAM IV & WARNER SARA	548
82 A 43	8206000	GREEN DELBERT I & DIANE M	1,760
100 A 26	10003100	FOF LLC	3,161
100 A 28	10003500	JOHNSTON WHITAKER R & ABBEY G	940
100 A 30B	10003787	JOHNSTON WHITAKER R & JOHNSTON ABBEY	415

12-inch Tie-In @ LVPS Property Owners			
Tax Map No.	Parcel No.	Owner	Total Easement Length
100 A 30B	10003787	JOHNSTON WHITAKER R & JOHNSTON ABBEY	65
100 A 30C	10003786	LAKE VISTA PROP OWNERS ASSOC INC	133

4.7 Permitting Requirements

The installation of the new interceptor will require coordination with multiple review authorities including the Virginia Department of Environmental Quality (DEQ), Virginia Department of Transportation, (VDOT), City of Lynchburg, Bedford County, and United States Army Corps of Engineers (USACE).

DEQ will require a certificate to construct prior to construction identifying project parameters and any design variations from the Virginia Sewage Collection and Treatment Regulation. VADEQ will also require a certificate to operate after construction to validate that the project was installed appropriately prior to operation.

The alignment will impact Ivy Creek and minor tributaries. This will require a Joint Permit Application (JPA) submission and multi-agency review. It is anticipated that the limited disturbed area will allow the project to fall under Nationwide Permit #12 in lieu of requiring an individual permit. The JPA process allows the project to be reviewed by USACE, Virginia Marine Resources Commission (VMRC), DEQ, and Local Wetlands Boards for jurisdictional determination and to stipulate construction requirements related to the project. As discussed previously, coordination with VDGIF and USFWS is anticipated. Additionally, the alignment of the proposed interceptor will need to be staked and walked with the local USACE representative for the final wetland delineation and impact approval. Disturbance to the streams will also require approval by USACE.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Ivy Creek Division 5 and 6 interceptor projects will connect BRWA's existing gravity sewer to the regional interceptor network and allow BRWA to abandon the Lake Vista Pump Station. This report examined the capacity, alignment, and permitting requirements for completing the project.

The recommendations and conclusions presented in this report are based on collaborative review with BRWA staff. They are summarized as follows:

- In order to provide wastewater service to the existing Forest and New London service areas, and the future service areas identified in BRWA's Water and Sewer Master Plan, the Ivy Creek Division 5 and 6 interceptors should be 24-inch diameter interceptors.
- BRWA is projected to exceed the current capacity in the City of Lynchburg's interceptor system and Regional WWTP between 2035 and 2060, depending on growth rates. At that time BRWA would need to purchase additional capacity in the interceptor system and WWTP.
- Implement the Ivy Creek Division 5 and 6 interceptor projects. Projects include constructing approximately 7,500 LF of 24-interceptor as part of Ivy Creek Division 5 in the City of Lynchburg and 11,000 LF of 24-interceptor as part of Ivy Creek Division 6 in Bedford County.
- Construct a flume station at the City-County boundary to measure flows from BRWA. The flume station should have features as described in this report.
- Based on discussions with BRWA and City of Lynchburg staff, BRWA will be responsible for designing and construction the interceptor projects. The City may request the opportunity to buy capacity in Ivy Creek Division 5 at a future time.
- Preliminary discussions with VDOT and environmental due diligence reports did not identify any significant issues of concern for obtaining permits for the project.

Based on the preferred methodologies, the following table provides a summary of Opinion of Probable Construction and Project Costs for the Ivy Creek Division 5 and 6 interceptor projects including alternate routes. Detailed opinions are provided in Appendix C.

The costs presented in this report are higher than previous opinions of cost. The differences are the result of a more accurate alignment, several portions of the alignment where excavation is relatively deep and constricted, and our experience with recent project bids that indicate construction costs are rising faster than typical construction cost indices (ENR CCI). Additionally, those opinions were intended for wastewater allocation planning and did not include contingencies.

Opinions of Probable Cost - Summary	
Base Route	
Construction Cost[1]	$8,580,000
Total Project Cost[2]	$11,035,000
Alternate Routes	
Construction Cost[1]	$7,490,000
Total Project Cost[2]	$9,705,000

(1) Construction Costs include a 25% contingency.

(2) Total Project Costs includes 3 years of escalation at 2.5% per year and a 15% parametric factor for survey, design, easement acquisition, and construction administration. They also include costs associated with acquiring additional downstream interceptor capacity.

APPENDIX A: INTERCEPTOR NETWORK DRAWING

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FIGURE 1
CITY OF LYNCHBURG
INTERCEPTOR IMPROVEMENTS

CCUSA NOTES ON CAPACITIES

CCUSA DESIGN TOTAL = 3.61 MGD PEAK
(C-1) + (C-2) + (C-3) + (C-4) + (C-5)

PRESENT TOTAL AVAILABLE CAPACITY FROM ALL ENTRY POINTS COMBINED = 1.07 MGD PEAK (427,500 GPD AVG) BASED ON JAMES RIVER INTERCEPTOR BEING THE RESTRICTIVE SEGMENT. IN 1983, PURCHASED 530,000 GPD PEAK IN JAMES RIVER INTERCEPTOR.

CURRENT CAPACITY IN WWTP = 1.0 MGD

PURCHASED ADDITIONAL CAPACITY IN BWC 1-8 FOR DESIGN ALLOCATION AT C-1, 2, 3, 4.

IN 2000, PURCHASED 0.84 MGD PEAK CAPACITY IN ALL SEGMENTS OF FISHING CREEK INTERCEPTOR WITH ENTRY POINT AT CANDLERS MOUNTAIN ROAD (C-5).

IN 2004, PURCHASED AN ADDITIONAL 140,000 GPD PEAK CAPACITY IN BURTON CREEK INTERCEPTOR FOR A TOTAL OF 180,000 GPD PEAK CAPACITY IN ALL SEGMENTS OF BURTON/ ROCKCASTLE CREEK INTERCEPTOR.

BCPSA NOTES ON CAPACITIES

BCPSA DESIGN TOTAL = 4.27 MGD PEAK
(B-1) + (B-2) = 2.0 MGD
B-3 + B-4 + B-5 = 2.27 MGD

PRESENT TOTAL AVAILABLE CAPACITY FROM ALL FIVE ENTRY POINTS COMBINED = 2.50 MGD PEAK (1,000,000 GPD AVG) BASED ON JAMES RIVER INTERCEPTOR BEING THE RESTRICTIVE SEGMENT. PURCHASED IN 2004 ADDITIONAL 660,000 GPD PEAK IN JRI FOR TOTAL 1.24 MGD PEAK (1.0 MGD AVG) IN JRI.

CURRENT CAPACITY IN WWTP = 1.0 MGD

PURCHASED CAPACITY IN BLACKWATER CREEK 1, 2, 3, 4, 6, 7, 8 FOR DESIGN ALLOCATIONS AT ALL FIVE ENTRY POINTS.

CHEESE CREEK INTERCEPTOR
BEDFORD CAPACITIES 2001
1, 2, 3, &4: PURCHASED - 250,000 GPD PEAK
5: PURCHASED - 150,000 GPD PEAK
6, 7, & 8: PURCHASED - 100,000 GPD PEAK

NO ADDITIONAL CAPACITIES PURCHASED IN IVY, BLACKWATER, OR JAMES RIVER FOR CHEESE CREEK CAPACITIES.

IVY CREEK INTERCEPTOR

IVY 1 & 2: BEDFORD ALLOCATED - 1.29 MGD TABLE 15
PURCHASED - 1.29 MGD (1999)

IVY 3: BEDFORD ALLOCATED - 1.53 MGD TABLE 15
PURCHASED - 1.53 MGD (2000)

IVY 4: BEDFORD ALLOCATED - 1.89 MGD TABLE 15
PURCHASED - 1.89 MGD (2001)

IVY 5: BEDFORD ALLOCATED - 2.27 MGD TABLE 15
WILL BE PURCHASED WHEN BUILT

IVY 6: FUTURE EXTENSION LOCATED IN COUNTY

BLACKWATER CREEK INTERCEPTOR

BWC 1 & 2: BEDFORD ALLOCATED - 1.03 MGD TABLE 15A
PURCHASED - 1.03 MCD PRIOR TO 1998
CAMPBELL ALLOCATED - 1.43 MGD TABLE 15A
PURCHASED - 1.43 MGD PRIOR TO 1998

BWC 3: BEDFORD ALLOCATED - 1.22 MGD TABLE 15A
PURCHASED - 1.22 MGD PRIOR TO 1998
CAMPBELL ALLOCATED - 1.68 MGD TABLE 15A
PURCHASED - 1.68 MGD PRIOR TO 1998

BWC 4: BEDFORD ALLOCATED - 1.42 MGD TABLE 15A
PURCHASED - 1.42 MGD PRIOR TO 1998
CAMPBELL ALLOCATED - 1.96 MGD TABLE 15A
PURCHASED - 1.96 MGD PRIOR TO 1998

BWC 5: CAMPBELL ALLOCATED - 0.67 MGD TABLE 15
PURCHASED - 0.67 MGD PRIOR TO 1998

BWC 6: BEDFORD ALLOCATED - 2.32 MGD TABLE 15
PURCHASED - 2.32 MGD (2001)
CAMPBELL ALLOCATED - 1.43 MGD TABLE 15
PURCHASED - 1.43 MGD (2001)

BWC 7: BEDFORD ALLOCATED - 2.22 MGD TABLE 15
PURCHASED - 2.22 MGD (2000)
CAMPBELL ALLOCATED - 1.37 MGD TABLE 15
PURCHASED - 1.37 MGD (2000)

BWC 8: BEDFORD ALLOCATED - 2.22 MGD TABLE 15
PURCHASED - 2.22 MGD (1999)
CAMPBELL ALLOCATED - 1.37 MGD TABLE 15
PURCHASED - 1.37 MGD (1999)

JAMES RIVER INTERCEPTOR

JRI 1: BEDFORD - 1.24 MGD (2004)
CAMPBELL - 0.95 MGD (2000)

JRI 2: BEDFORD - 1.24 MGD (2004)
CAMPBELL - 0.53 MGD (1983)

JRI 3: BEDFORD - 1.24 MGD (2004)
CAMPBELL - 0.53 MGD (1983)

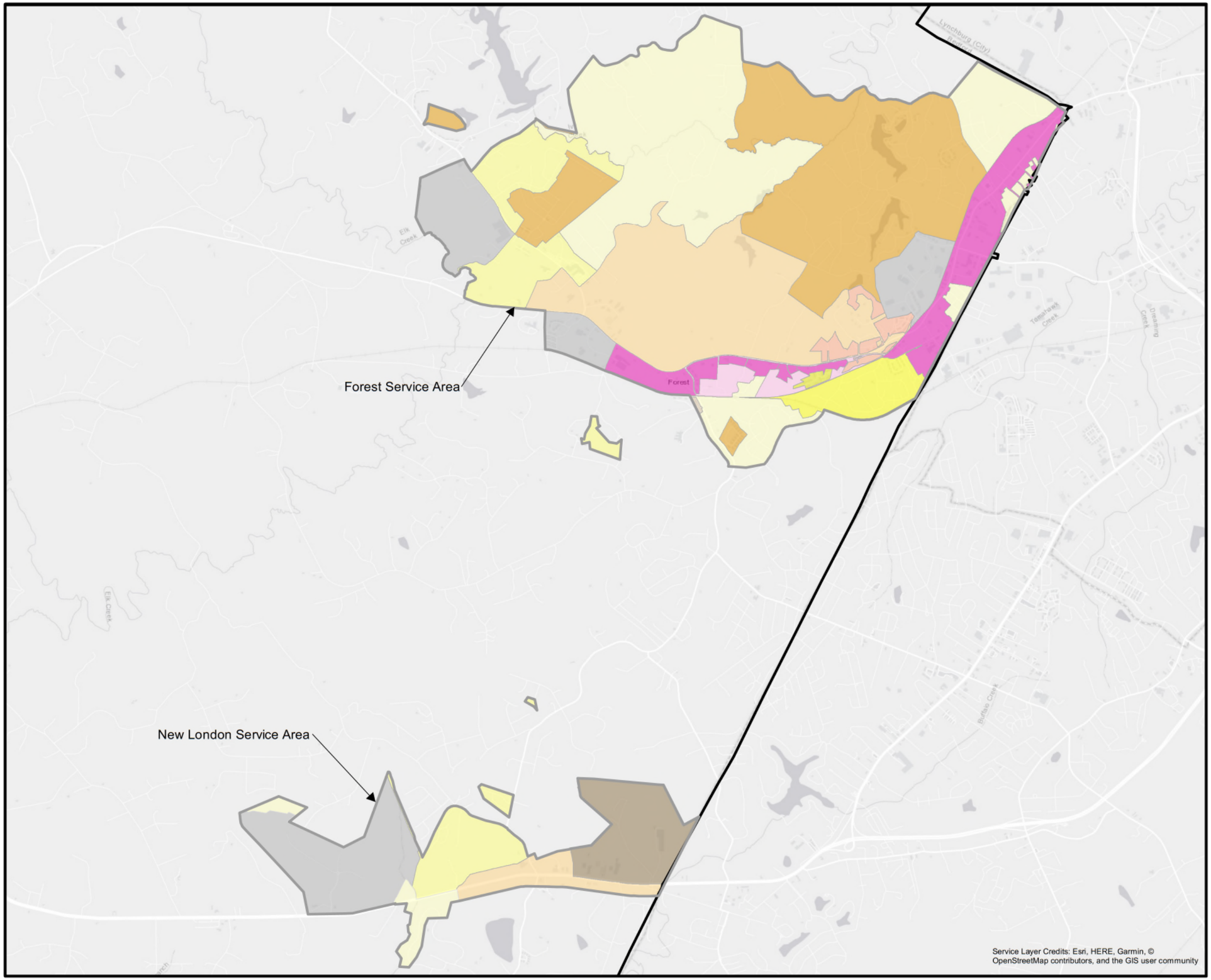
LAKE VISTA PUMP STATION
COMBINED (B-1) + (B-2) DESIGN PEAK FLOW : 2.00 MGD AVERAGE : 0.80 MGD
B-1
B-2
DESIGN PEAK FLOW: 1.07 MGD AVERAGE : 0.43 MGD
C-1
LAKE VISTA GRAVITY
LAKE VISTA FORCE MAIN
IVY 6
DESIGN PEAK FLOW: 2.27 MGD AVERAGE : 0.91 MGD
B-3
DESIGN PEAK FLOW: 0.15 MGD AVERAGE : 0.06 MGD
B-4
DESIGN PEAK FLOW: 0.10 MGD AVERAGE : 0.04 MGD
B-5
CK 7
CK 8
CK 5
CK 6
CK 4
IVY 5
TOMAHAWK CREEK INTERCEPTOR
DESIGN PEAK FLOW: 0.75 MGD AVERAGE : 0.30 MGD
C-2
DESIGN PEAK FLOW: 0.77 MGD AVERAGE : 0.31 MGD
C-3
CK 3
RT. 501
CHEESE CREEK INTERCEPTOR
RT. 221
IVY 4
NW EXPWY
CK 2
CK 1
IVY 3
IVY CREEK INTERCEPTOR
CITY BOUNDARY
TIMBERLAKE
RT. 460
DREAMING CREEK INTERCEPTOR
BWC 5
LAKESIDE
RT. 29
BURTON CREEK INTERCEPTOR
BWC 4
BWC 2
IVY 2
IVY 1
BOONSBORO
CITY BOUNDARY
DESIGN PEAK FLOW: 0.18 MGD AVERAGE : 0.07 MGD
C-4
RT. 29
CCUSA ROUTE 29 FORCE MAIN
BWC 3
BWC 6
WARDS
FORT
LANGHORNE
ROCKCASTLE CREEK INTERCEPTOR
BWC 1
JRI 6
JUDITH CREEK INTERCEPTOR
JAMES RIVER
BLACKWATER CREEK INTERCEPTOR
BWC 7
C-5
DESIGN PEAK FLOW: 0.84 MGD AVERAGE : 0.34 MGD
EXPWY
BWC 8
G.E. TRUNKLINE
RT. 460
FISHING CREEK INTERCEPTOR
JRI 5
MAIN
JAMES RIVER
JRI 4
JRI 3B
RT. 29
JRI 3A
RSTP
JAMES RIVER INTERCEPTOR
JRI 2
JRI 1

LEGEND

- REPLACED INTERCEPTORS
- INTERCEPTORS UNDER CONSTRUCTION
- FUTURE INTERCEPTORS
- ADDITIONAL INTERCEPTORS
- COUNTY CONNECTOR SEWER LINES

REVISED JUNE, 2012
REVISED JANUARY & JULY, 2004
REVISED DECEMBER, 2001
REVISED JULY 29, 1998
MAY, 1996

Wiley|Wilson
Constant Progress
127 Nationwide Drive
Lynchburg, Virginia 24502-4272



Legend

County Boundary

Service Boundary

Zoning

- AP: Agricultural Rural Preserve
- AR: Agricultural Residential
- AV: Agricultural Village Center
- C-1: Office
- C-2: General Commercial
- I-1: Low-Intensity Industrial
- I-2: Higher-Intensity Industrial
- NC: Neighborhood Commercial
- PCD: Planned Commercial Development
- PD-1: Planned Development
- PID: Planned Industrial Development
- PRD: Planned Residential Development
- R-1: Low Density Residential
- R-2: Medium Density Residential
- R-3: Medium Density Multi-Family Residential

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Feet

BRWA Ivy Creek PER

Current Service Areas

CSK-01

Page 1 of 2

Bedford County, VA

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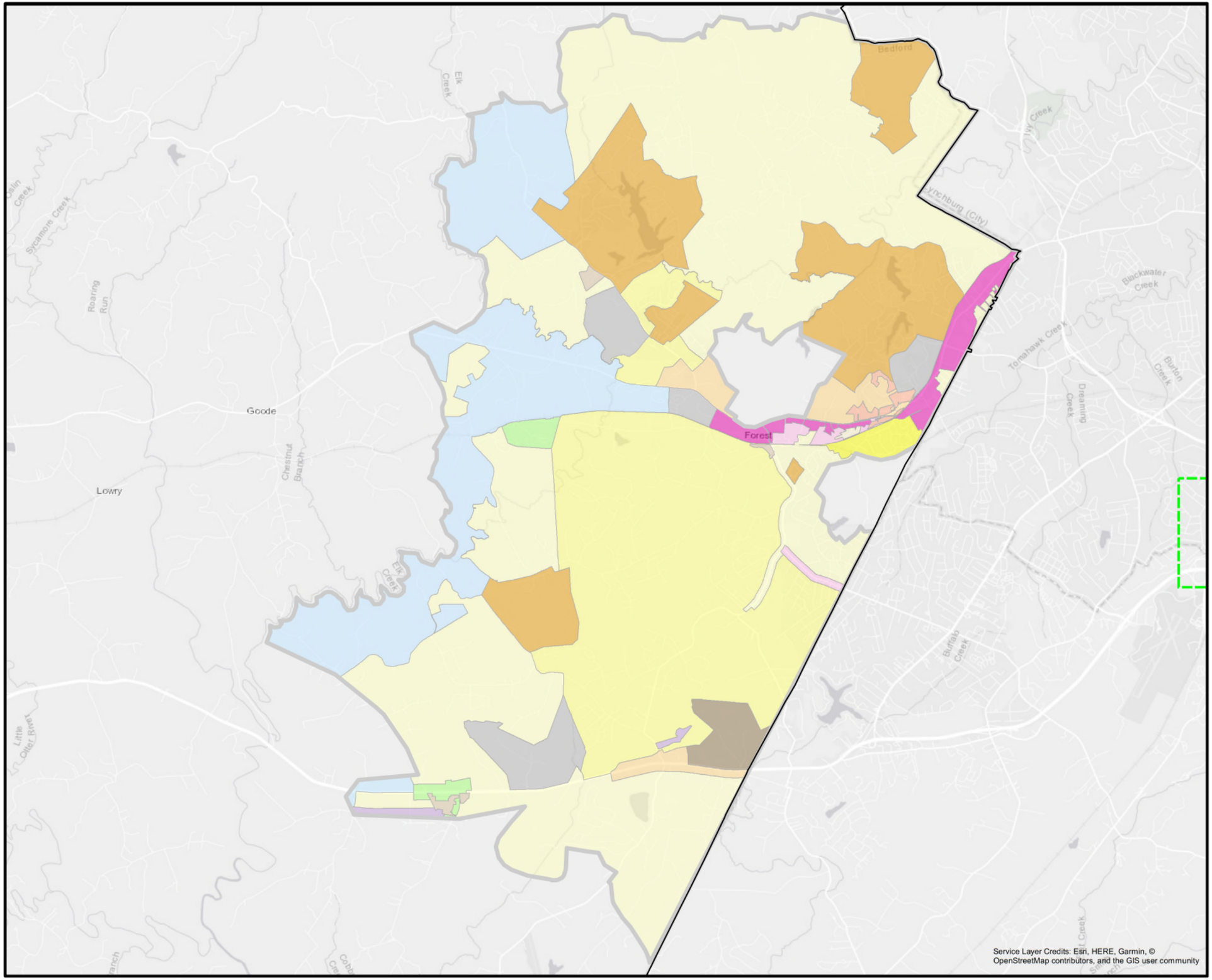
127 Nationwide Drive
Lynchburg, Virginia 24502-4272



Legend

County Boundary

Service Area

Zoning

- AP: Agricultural Rural Preserve
- AR: Agricultural Residential
- AV: Agricultural Village Center
- C-1: Office
- C-2: General Commercial
- I-1: Low-Intensity Industrial
- I-2: Higher-Intensity Industrial
- NC: Neighborhood Commercial
- PCD: Planned Commercial Development
- PD-1: Planned Development
- PID: Planned Industrial Development
- PRD: Planned Residential Development
- R-1: Low Density Residential
- R-2: Medium Density Residential
- R-3: Medium Density Multi-Family Residential

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BRWA Ivy Creek PER

2009 Master Plan Service Area and Zoning

CSK-02

Page 2 of 2

Bedford County, VA

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Constant Progress

127 Nationwide Drive
Lynchburg, Virginia 24502-4272

APPENDIX B: FLOW PROJECTION CALCULATIONS

Build Out Growth Projections for Existing Service Area

I/C Flow	49gpd/ac
Residential	143gpd/ac

New London Service Area (Existing)

Zoning	Acreage ac	Ultimate Flow gpd	Current % Build Out	Current Flow
Subtotal I/C	1053	51,597	40%	20,639
Subtotal Residential	323	27,686	20%	9,229
Total	1376	**79,283**		**29,867**

C-2 and R-2 only include area undeveloped as of 2003.

Forest Service Area (Existing)	Acreage ac	Ultimate Flow gpd	Current % Build Out	Current % Build Out
Subtotal I/C	2,255	110,495	55%	60,772
Subtotal Residential	4,601	394,371	30%	197,186
Total	6,856	**504,866**		**257,958**

Ivy Creek Service Area	Ultimate	Current % Buildout
Residential	422,057	206,414
Industrial/Commercial	162,092	81,411
Total	**584,149**	**287,825**

% Build Out Residential Connection 60.0%
(Current % Build Out accounts for 45% currently connected in residential zones)

Future Service Area Flow Projections

Current Service Area - 60% Connection	
AADF Flows @ LVPS (gpd)	389,962
AADF I/I Factor:	1.3
AADF @ Buildout (gpd)	779,773

Future Service Area - 50% Connection	
Additional Residential Acreage	25,800
Billing Flows @ Build Out (gpd)	1,842,857
AADF @ Buildout (gpd)	2,460,005
Total AADF (gpd)	3,239,778

APPENDIX C: ENGINEERS OPINION OF PROBABLE CONSTRUCTION COSTS

BRWA Ivy Creek Interceptor **DATE:** **4/25/2019**

W|W PROJECT NO.: 218244
CALCULATIONS BY: WRM **CHECKED BY:** WRM **TOTAL LENGTH:** 7,500
TOTAL COST $3,588,375.00 **COST/FT:** $478.45

Opinion of Probable Cost

DIVISION 5

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	24" Sanitary Sewer (PVC)	LF	6,600	$250.00	$1,650,000.00
2	24" Sanitary Sewer (DIP)	LF	900	$350.00	$315,000.00
3	Sanitary Sewer Manhole	VF	585	$1,000.00	$585,000.00
3a	Sanitary Sewer Manhole Frame & Cover	EA	33	$1,000.00	$33,000.00
4	Bored and Jacked Casing Pipe (48")	LF		$1,000.00	
5	Bypass Pumping	MO	1	$20,000.00	$20,000.00
6	Creek Crossings	LS	3	$25,000.00	$75,000.00
7	Abandon pump station	LS		$50,000.00	
8	Erosion and Sediment Control	LS	1	$40,000.00	$40,000.00
9	Construction Stakeout	LS	1	$16,000.00	$16,000.00
10	Mobilization (5%)	LS	1	$136,700.00	$136,700.00
	-----SUB-TOTAL-----	-----	----------	----------	$2,870,700.00
	Construction Contingency	-----	---------	25%	$717,675.00
	*****TOTAL*****	-----	---------	----------	$3,588,375.00

TOTAL LENGTH: 11,015
TOTAL COST $4,988,484.38 **COST/FT:** $452.88

DIVISION 6

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	24" Sanitary Sewer (PVC)	LF	10,115	$250.00	$2,528,750.00
2	24" Sanitary Sewer (DIP)	LF	900	$350.00	$315,000.00
3	Sanitary Sewer Manhole	VF	610	$1,000.00	$610,000.00
3a	Sanitary Sewer Manhole Frame & Cover	EA	43	$1,000.00	$43,000.00
4	Bored and Jacked Casing Pipe (48")	LF	100	$1,000.00	$100,000.00
5	Bypass Pumping	MO	1	$20,000.00	$20,000.00
6	Creek Crossings	LS	2	$25,000.00	$50,000.00
7	Abandon pump station	LS	1	$50,000.00	$50,000.00
8	Erosion and Sediment Control	LS	1	$60,000.00	$60,000.00
9	Construction Stakeout	LS	1	$24,000.00	$24,000.00
10	Mobilization (5%)	LS	1	$190,037.50	$190,037.50
	-----SUB-TOTAL-----	-----	----------	----------	$3,990,787.50
	Construction Contingency	-----	---------	25%	$997,696.88
	*****TOTAL*****	-----	---------	----------	$4,988,484.38

Route Alternatives EOPC

BRWA Ivy Creek Interceptor **DATE:** **4/25/2019**

W|W PROJECT NO.: 218244
CALCULATIONS BY: WRM **CHECKED BY:** WRM **TOTAL LENGTH:** 6,075
TOTAL COST $3,291,421.88 **COST/FT:** $541.80

Opinion of Probable Cost

DIVISION 5

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	24" Sanitary Sewer (PVC)	LF	5,175	$250.00	$1,293,750.00
2	24" Sanitary Sewer (DIP)	LF	900	$350.00	$315,000.00
3	Sanitary Sewer Manhole	VF	423	$1,000.00	$423,000.00
3a	Sanitary Sewer Manhole Frame & Cover	EA	25	$1,000.00	$25,000.00
4	Bored and Jacked Casing Pipe (48")	LF	300	$1,000.00	$300,000.00
5	Bypass Pumping	MO	1	$20,000.00	$20,000.00
6	Creek Crossings	LS	3	$25,000.00	$75,000.00
7	Abandon pump station	LS		$50,000.00	
8	Erosion and Sediment Control	LS	1	$40,000.00	$40,000.00
9	Construction Stakeout	LS	1	$16,000.00	$16,000.00
10	Mobilization (5%)	LS	1	$125,387.50	$125,387.50
	-----SUB-TOTAL-----	-----	----------	----------	$2,633,137.50
	Construction Contingency	-----	---------	25%	$658,284.38
	*****TOTAL*****	-----	---------	----------	$3,291,421.88

TOTAL LENGTH: 8,015
TOTAL COST $4,200,984.38 **COST/FT:** $524.14

DIVISION 6

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	24" Sanitary Sewer (PVC)	LF	7,115	$250.00	$1,778,750.00
2	24" Sanitary Sewer (DIP)	LF	900	$350.00	$315,000.00
3	Sanitary Sewer Manhole	VF	402	$1,000.00	$402,000.00
3a	Sanitary Sewer Manhole Frame & Cover	EA	31	$1,000.00	$31,000.00
4	Bored and Jacked Casing Pipe (48")	LF	470	$1,000.00	$470,000.00
5	Bypass Pumping	MO	1	$20,000.00	$20,000.00
6	Creek Crossings	LS	2	$25,000.00	$50,000.00
7	Abandon pump station	LS	1	$50,000.00	$50,000.00
8	Erosion and Sediment Control	LS	1	$60,000.00	$60,000.00
9	Construction Stakeout	LS	1	$24,000.00	$24,000.00
10	Mobilization (5%)	LS	1	$160,037.50	$160,037.50
	-----SUB-TOTAL-----	-----	----------	----------	$3,360,787.50
	Construction Contingency	-----	---------	25%	$840,196.88
	*****TOTAL*****	-----	---------	----------	$4,200,984.38

APPENDIX D: PIPE MATERIAL INFORMATION

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SaniTite® HP
HIGH PERFORMANCE

SaniTite® HP Sanitary Sewer Pipe 12”–60”

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

ADS® SANITARY

SANITITE® HP PIPE 12”–60” FOR SANITARY SEWER

Meets ASTM F2764*
SaniTite HP (High Performance) couples advanced polypropylene resin technology with a proven dual wall (12”-30”) and exclusive triple wall (30”-60”) profile design for superior performance and durability. SaniTite HP meets and exceeds typical standards for pipe stiffness and joint integrity. When specifying pipe per ASTM F2764* on a gravity flow sanitary sewer project, you are specifying the most stringent performance requirements in the industry.

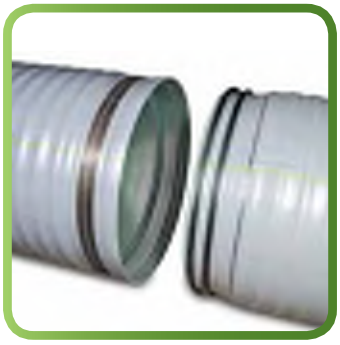
Advanced Construction

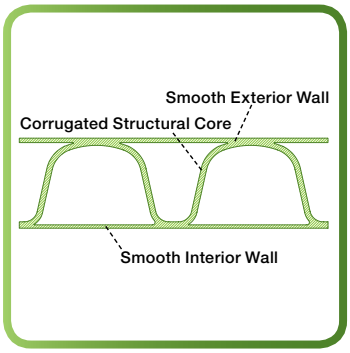
- Standard 12”-60” (300 mm-1500mm) diameters
- Varied lengths available 13’ (4.0 m), 16.3’ (4.9m) and 20’ (6.1m)
- Redundant double gasketed joints
- Inert material
- 1,000 hour 10.8 psi (74.5 kPa) joint test for 30”-60” (750 mm - 1500 mm) pipe per ASTM F2764
- Industry standards for manhole connections, testing and installation

Superior Polypropylene Material
Made from an engineered impact modified co-polymer compound, the superior strength and material properties of polypropylene (PP) offer robust pipe stiffness, excellent handling characteristics, and long service life when compared to traditional sanitary sewer products. It is chemically resistant to hydrogen sulfide gas and sulfuric acid concentrations typical of sanitary sewers to provide superior durability and performance. The unique light grey resin color provides superior UV resistance as well as improving the pipe’s interior visibility during post-installation inspection.

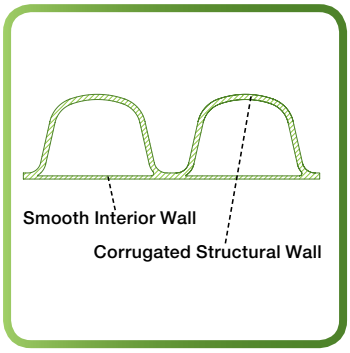
* ASTM F2736 has been incorporated into the latest version of ADS F2764.

Triple Wall Design





Dual Wall Design



ADS SANITARY

INDUSTRY STANDARDS IN SANITARY SEWERS

Superior Joint Performance
SaniTite HP pipe has a patented extended, reinforced bell with polymer composite bands and dual gaskets that add an additional factor of safety within each joint. The SaniTite HP joint performance exceeds the 10.8 psi (74.5 kPa) laboratory performance standards per ASTM D3212. SaniTite HP is tested to 15 psi (103.4 kPa) to provide additional redundancy and factor of safety for critical sanitary sewer installations. Third party certification of joint performance is available upon request.

In the field, each section of SaniTite HP may be tested by a low pressure air test, according to ASTM F1417. ASTM F1417 is a commonly used standard for diameters 12”-36” (300 mm-900 mm) and specifies that 3.5 psi (24.1 kPa) air pressure be held for a specified length of time based upon pipe diameter and length of run. For diameters greater than 30” (900 mm) SaniTite HP joint integrity may be validated by a joint isolation test.

Where an infiltration/exfiltration test is preferred, ASTM F2487 specifies a simplistic method of verifying proper joint performance.

Standard Tap Connections
A standard tapping product, such as INSERTA TEE®, is compatible with SaniTite HP.

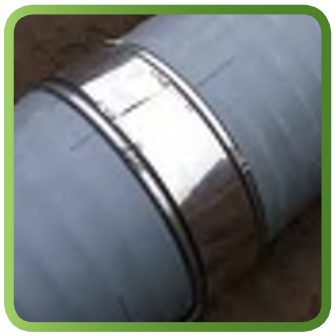
Standard Repair Couplers
Testable repair couplers are available at ADS locations. PVC sleeve couplers are available for 12”-30” (300 mm-900 mm) dual wall pipe. Rubber repair couplers with stainless steel shear bands are available for 12”-60” (300 mm-1500 mm) diameters.

Diameter Range
SaniTite HP meeting ASTM F2764* is currently manufactured in 20’ (6 m) or 13’ (4 m) lengths for diameters 12”-48” (300-1200 mm), while the 60” (1500 mm) diameter is manufactured in 20’ (6 m) and 16.3’ (5 m) lengths. The 20’ (6 m) lengths aid in speed of installation and reduce the total number of joints. However, the 13’ (4 m) lengths are complimentary for deeper projects where trench box conditions require a shorter pipe.

* ASTM F2736 has been incorporated into the latest version of ASTM F2764.

Joint Isolation Test

INSERTA TEE Tap



Repair Coupler

PVC Sleeve Coupler

ADS SANITARY

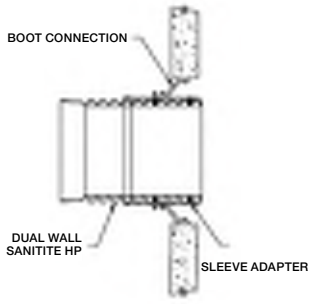
INDUSTRY STANDARDS IN SANITARY SEWERS

Standard Structure Connections

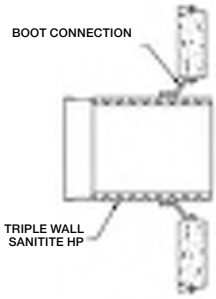
Sanitary sewer projects require superior watertight performance combined with a flexible connection solution that can withstand the rigor of installation. To meet varying regional requirements, ADS offers a wide selection of connectors to be used with independent standard resilient connectors meeting ASTM C923, such as A-Lok® and Press Seal®.

When connecting SaniTite HP pipe to a manhole, a smooth exterior surface on the pipe is required. ADS offers three ways to adapt dual wall pipe to these manhole connectors: a corrugated pipe adapter, a PVC Manhole Adapter or a polypropylene manhole sleeve adapter. For triple wall pipe, commonly used manhole connectors can connect directly to the pipe with no additional fittings or adapters.

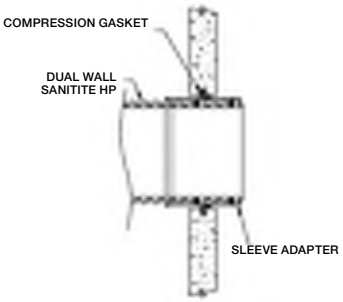
Boot Connection to Dual Wall Pipe



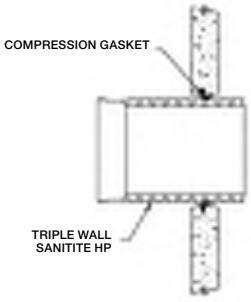
Boot Connection to Triple Wall Pipe



Compression Gasket Connection to Dual Wall Pipe



Compression Gasket Connection to Triple Wall Pipe



ADS SANITARY

ADS SANITITE® HP 12”–60” SANITARY PIPE SPECIFICATION

SCOPE

This specification describes 12- through 60-inch (300 to 1500 mm) ADS SaniTite HP pipe for use in gravity-flow sanitary sewer applications.

PIPE REQUIREMENTS

ADS 12” – 30” (300 to 750mm) SaniTite HP dual pipe shall have a smooth interior and annular exterior corrugations; 30”-60” SaniTite HP triplewall pipe shall have smooth interior and exterior surfaces with annular inner corrugations.

- 12- through 60-inch (300 to 1500 mm) pipe shall meet ASTM F2764*
- 12- through 60-inch (300 to 1500 mm) pipe shall have a minimum pipe stiffness of 46 pii when tested in accordance with ASTM D2412
- Manning’s “n” value for use in design shall be 0.012.

JOINT PERFORMANCE

Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2764*.

12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212, with the addition of a 15 psi pressure requirement. Spigot shall have two gaskets meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gaskets are free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

12– through 60-inch (300 to 1500 mm) diameters shall have a reinforced bell with a polymer composite band installed by the manufacturer.

FITTINGS

Fittings and connections shall provide a watertight connection according to the requirements of ASTM D3212. Gaskets, when present, shall meet ASTM F477.

FIELD PIPE AND JOINT PERFORMANCE

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material.

MATERIAL PROPERTIES

Polypropylene compound for pipe and fitting production shall be an impact modified copolymer meeting the material requirements of ASTM F2764*.

INSTALLATION

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500mm) diameters the minimum cover shall be 2-ft (0.6m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.05.

PIPE DIMENSIONS

Nominal Diameter in. (mm)	12 (300)	15 (375)	18 (450)	21 (535)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in. (mm)	12.1 (307)	14.9 (378)	18.0 (457)	21.1 (536)	24.1 (612)	30.1 (765)	35.7 (907)	41.8 (1062)	47.3 (1201)	59.3 (1506)
Average Pipe O.D. in. (mm)	14.5 (368)	17.6 (447)	21.2 (538)	24.8 (629)	28.0 (711)	35.4 (899)	41.1 (1044)	47.2 (1199)	53.8 (1367)	66.5 (1689)

* ASTM F2736 has been incorporated into the latest version of ASTM F2764.

Advanced Drainage Systems, Inc.
4640 Trueman Blvd. Hilliard, OH 43026

1-800-821-6710

www.ads-pipe.com

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

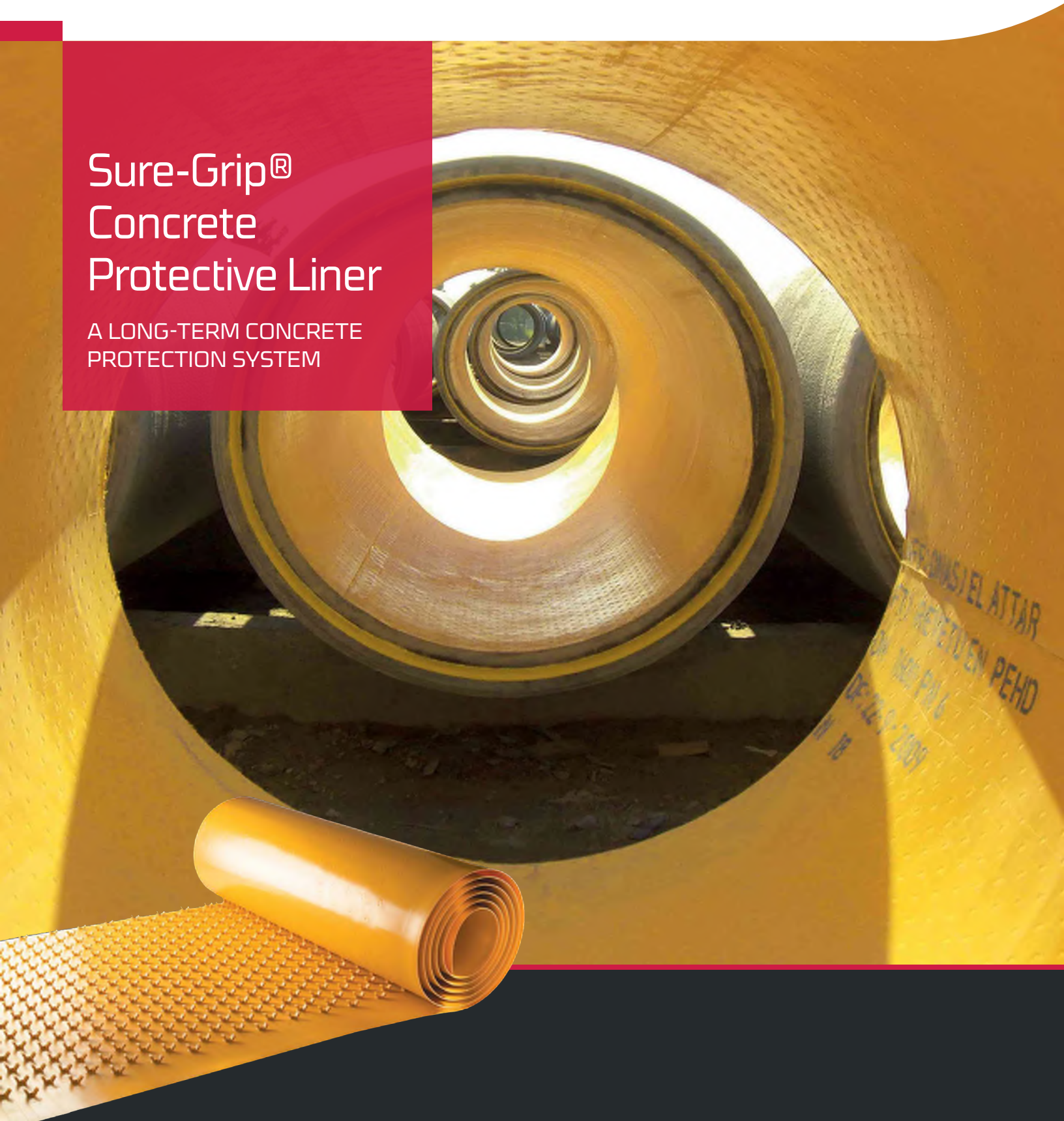
ADS® SANITARY

agru

The Plastics Experts.

Sure-Grip® Concrete Protective Liner

A LONG-TERM CONCRETE PROTECTION SYSTEM



The Plastics Experts.

Our concrete protection product group offers a complete, top-quality range of concrete protective liners that have a special focus on protecting concrete structures from aggressive and abrasive media. These liners are used wherever there are increased requirements towards a concrete structure and are particularly popular when corrosive fluids or gases need to be transported or stored.

The AGRU success story has been unfolding for seven decades. Founded in 1948 by Alois Gruber, who set the company on the course for plastic manufacturing, AGRU has become one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners, and lining systems made from engineered plastics. We use only top-grade thermoplastic polymers as our raw materials. When it comes to application-technical consulting, we are your best partner in the field.

Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential parts. The AGRU quality assurance system is compliant with ISO 9001:2015 and its environmental management system fulfills ISO 14001:2015. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies standards.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specific cations, providing safe operation within gas, water and wastewater infrastructures.

AGRU Sure-Grip® System

System Overview and Benefits

Sure-Grip® concrete protective liners made of HDPE, HDPE-el, PP, PVDF and ECTFE are produced with state-of-the-art manufacturing technology. This system has been successfully applied worldwide for more than 25 years and serves as a long-term alternative to spray-applied concrete protection products.

Sure-Grip prevents concrete corrosion and degradation and can substantially extend the lifetime of a structure. In addition, by preventing exfiltration and infiltration, concrete protective liners provide direct protection for the environment and increased operating efficiencies. Furthermore, the unique anchoring system also enables construction in areas of significant backpressure. Unlike spray-applied liners, which have to be reapplied regularly due to cracking or delamination, Sure-Grip concrete protective liners are long-lasting. Sure-Grip is designed to avoid the residuals cost often associated with concrete spray-on liners, which requires tank emptying and cleaning every few years for reapplication.

Concrete protective liners combine the advantages of thermoplastics (flexible, ductile, corrosion resistant) with those of concrete (high strength, high stiffness). Thus, the concrete is protected effectively and the durability and life expectancy is increased.

Innovative Design for Leak-Proof Constructions

The unique V-shaped anchor studs, which are integrally formed onto the liner during the extrusion process, allow a secure mechanical anchoring of the concrete protective liner to the concrete, guaranteeing optimum anchoring to the concrete. Depending on the specific project requirements, a variety of anchor designs, resins, and liner thicknesses and colors are available.

Concrete protective liners are joined by welding, which provides permanent and reliable joints. Different welding technologies, depending on the project requirements, are available for a secure and leak-proof joint:

- Butt welding
- Extrusion welding
- Hot wedge welding
- Hot gas welding

DIAMOND PLASTICS®
CORPORATION

PRODUCT CATALOG

WATER

SEWER

IRRIGATION

Proudly Serving
The Construction
And Engineering
Trades For Over

30
YEARS

DIAMOND PLASTICS:

QUALITY PRODUCTS, PEOPLE & LOCATIONS

Diamond Plastics Corporation is one of today's leading PVC pipe producers in North America and one of the largest producers in the world. The Corporation was established in 1982 as a small agricultural irrigation specialist with facilities in Texas and Nebraska. Diamond Plastics has grown to include a nationwide network of professional manufacturing facilities providing pipe solutions for water, sewer and irrigation applications.

We offer the industry's broadest range of PVC pipe sizes, with diameters from 2 inches to 60 inches. No other company makes a higher quality, longer lasting PVC pipe than Diamond Plastics. Our PVC pipe offers an unparalleled combination of toughness,resiliency, corrosion resistance, joint integrity, versatility and ease of handling & installation. It's ideal for the vast majority of underground water and sewer applications.

WHY DO BUSINESS WITH DIAMOND PLASTICS CORPORATION, (DPC)?

There are many reasons, ranging from the flexibility and durability of our PVC pipe to the skill and dedication of the people who make it. Our business philosophy is to produce products of the highest quality and value for the customer, using the latest technology and procedures to maximize efficiency. You can count on Diamond Plastics for long lasting pipe solutions. Our PVC pipe offers an unparalleled combination of toughness, resiliency, corrosion resistance, versatility and ease of handling. And it is available in sizes and wall thicknesses designed for your application.

EXCEPTIONAL SERVICE

The entire Diamond Plastics' team is committed to providing exceptional customer service today, tomorrow and well into the future. We combine our professional sales representative force in agricultural products with a nationwide network of professional manufacturers representatives serving the municipal, engineering and distribution industry. Working together, we deliver the industry's highest level of job site and customer inventory service.

We welcome you to our website, www.dpcpipe.com, and invite you to contact your local Diamond Plastics' sales representative to see our quality difference for yourself. Any access to information contained in this Brochure is deemed to be an acknowledgement, and shall constitute an agreement by the User to be bound by each of the terms and conditions set forth in the Legal Notice and Disclaimer. Please be certain to review each of those terms and conditions.


DIAMOND PLASTICS

C900
PVC PRESSURE PIPE

4"-12" SPECIFICATION DATA

Diamond (C900) PVC Pipe (4" through 12") is made of 12454 compound per ASTM D1784, in accordance with the dimensional chemical, and physical requirements of AWWA C900.

Diamond (C900) PVC Pipe bears the mark of NSF, International (NSF), the listing of Underwriters Laboratory, Inc. (UL), and (DR14 & DR18) bears the listing of Factory Mutual(FM). Some factory locations produce C900 bearing the mark of the Canadian Standards Association (CSA) and NSF14.

Diamond (C900) PVC Pipe utilizes a gasket, per ASTM F477, to seal the integral bell socket to the spigot of the next joint (which conforms to the requirements of ASTM D3139.) Each male end is beveled to facilitate joint assembly, and the spigot is referenced marked to ensure proper insertion depth. Diamond furnished lubricant is to be used in the joining process. Specialty gaskets may be available upon request.

PHYSICAL PROPERTIES OF PVC 12454:

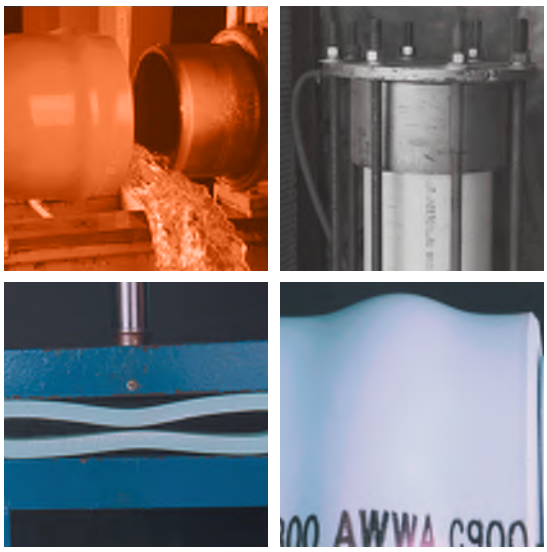
Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength	D256	.65ft., lb./in.

SHORT FORM Specification for Diamond C900 PVC Water Pipe
Diamond C900 PVC Water Pipe shall be made of compounds conforming to ASTM D1784 with a cell classification of 12454. Diamond C900 shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C900 and will be supplied in 20 and 22 foot laying lengths. Joints shall meet the requirements of ASTM D3139 and shall be formed using Rieber Technology. Gaskets shall meet the requirements of ASTM F477.

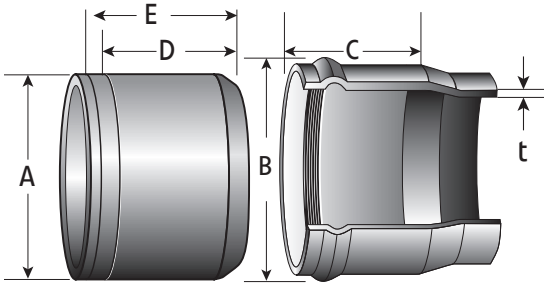
Potable water pipe shall be manufactured from National Sanitation Foundation (NSF) approved compounds.

EXTREME TESTING CONDITIONS

C900 PVC pressure pipe, available in pressure ratings for a wide range of water transfer applications (Available in sizes from 4" through 12")



RIEBER JOINT ILLUSTRATION



C900™

AWWA C900 SPECIFICATION DATA. SUPPLIED IN 20 AND 22 FOOT LAYING LENGTHS.

Nominal Pipe Size in. (mm)	A Outside Dia. Inches	B Bell Dia. Inches	C Approximate Bell Depth Inches	D Assembly Mark 1 Inches *	E Assembly Mark 2 Inches *	t C900 DR-14 305 psi Min Wall Inches	t C900 DR-18 235 psi Min Wall Inches	t C900 DR-25 165 psi Min Wall Inches
4" (100)	4.800	6-1/2"	6	4-1/4"	5-1/4"	0.343	0.267	0.192
6" (150)	6.900	9-1/4"	6.5	4-5/8"	5-5/8"	0.493	0.383	0.276
8" (200)	9.050	11-3/4"	7	5-1/8"	6-1/8"	0.646	0.503	0.362
10" (250)	11.100	14-1/4"	7.5	5-3/4"	6-3/4"	0.793	0.617	0.444
12" (300)	13.200	16-3/4"	8	6-1/8"	7-1/8"	0.943	0.733	0.528

Prices are subject to a firm policy of "Price in effect at time of shipment on regular purchases"
"Possession of this page does not constitute an offer of sale"
*Tolerance of +/- 1/4" allowed

Underwriters Laboratories Inc.©

C900™

AWWA C900 LOADING CHART

Nominal Pipe Size in. (mm)	Outside Diameter Inches	Joints Per Bundle	Feet Per Bundle	*Feet Per Truckload
DR-25 PRESSURE CLASS 165				
4" (100)	4.800	50	1,000	14,000
6" (150)	6.900	28	560	7,280
8" (200)	9.050	15\18\20\24	300-480	4,400
10" (250)	11.100	8\12	160\240	2,560
12" (300)	13.200	6\8	120\160	1,960
DR-18 PRESSURE CLASS 235				
4" (100)	4.800	50	1,000	14,000
6" (150)	6.900	28	560	7,280
8" (200)	9.050	15\18\20\24	300-480	4,400
10" (250)	11.100	8\12	160\240	2,560
12" (300)	13.200	6\8	120\160	1,960
DR-14 PRESSURE CLASS 305				
4" (100)	4.800	50	1,000	14,000
6" (150)	6.900	28	560	6,720
8" (200)	9.050	10\15	200\300	3,800
10" (250)	11.100	8\12	160\240	2,560
12" (300)	13.200	6\8\9\12	120\160\180\240	1,820

Prices are subject to a firm policy of "Price in effect at time of shipment on regular purchases"
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TRANS-21™
C900 14"-60" SPECIFICATION DATA

AWWA C900 SPECIFICATION DATA

Diamond Trans-21 C900 14"-60" PVC Pipe is made of PVC compound with a cell classification 12454 as defined in ASTM D1784 and is suitable for potable water transmission. Diamond C900 meets the requirements of American Water Works Association (AWWA) Product Standard C900.

Diamond Trans-21 C900 is manufactured in 14", 16", 18", 20", 24", 30", 36", 42", 48", 54" and 60" sizes with an integral gasket bell and spigot "push-on"joint conforming to the requirements of ASTM D3139. Rieber Sealing System Technology is utilized in forming the gasket bell sockets of Diamond C900 PVC Pipe around the steel reinforced elastomeric seal meeting the requirements of ASTM F477.

Diamond Trans-21 C900 is tested in accordance with the physical, dimensional and performance requirements of AWWA C900, and is listed by Underwriters Laboratories. Each piece is hydrostatically proof tested before being shipped.

TRANS-21™
PHYSICAL PROPERTIES OF PVC 12454

Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength	D256	.65ft., lb./in.

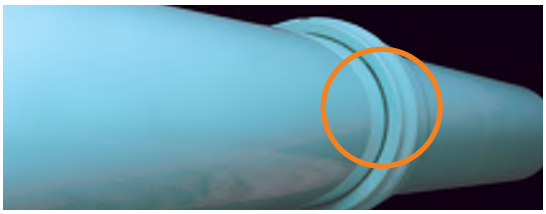
SHORT FORM Specification for Diamond C900 PVC Water Pipe
Diamond C900 PVC Water Pipe shall be made of compounds conforming to ASTM D1784 with a cell classification of 12454. Diamond C900 shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C900 and will be supplied in 20 and 22 foot foot laying lengths. Joints shall meet the requirements of ASTM D3139 and shall be formed using Rieber Technology. Gaskets shall meet the requirements of ASTM F477.

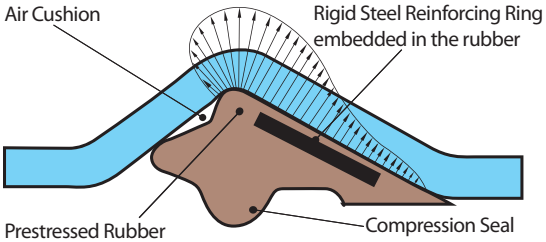
Potable water pipe shall be manufactured from National Sanitation Foundation (NSF) approved compounds.

GASKET DIAGRAM

HOW IT WORKS?

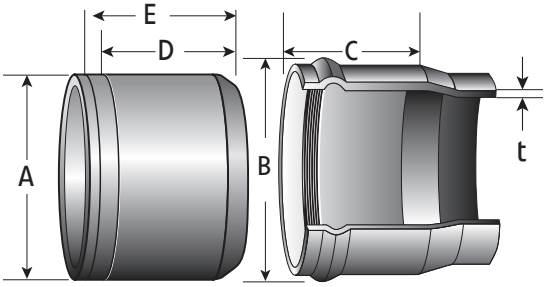
How it works? "Rieber Sealing System Technology" is utilized in forming the gasket bell sockets of Diamond C900 PVC Pipe around the steel reinforced elastomeric seal meeting the requirements of ASTM F477.





(Sealing effect established during the belling process.)

RIEBER JOINT ILLUSTRATION



TRANS-21™
AWWA C900 SPECIFICATION DATA. DIAMOND C900 IS SUPPLIED IN 20 AND 22 FOOT LAYING LENGTHS.

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Diameter Inches	C Approximate Bell Depth Inches	D Assembly Mark 1 Inches *	E Assembly Mark 2 Inches *	t Minimum Wall Thickness Inches
DR-81 PRESSURE CLASS 50 PSI						
36" (900)	38.300	42-3/4"	17"	12-7/8"	13-7/8"	0.473
42" (1050)	44.500	50-1/4"	20"	15-3/4"	16-3/4"	0.550
48" (1200)	50.800	56-3/4"	20"	15-7/8"	16-7/8"	0.628
54" (1350)	57.560	64-1/4"	22"	16"	17"	0.711
60" (1500)	61.610	68-1/2"	23"	17-1/2"	18-1/2	0.761

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Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Diameter Inches	C Approximate Bell Depth: Inches	D Assembly Mark 1: Inches *	E Assembly Mark 2: Inches *	t Minimum Wall Thickness: Inches
DR-51 PRESSURE CLASS 80 PSI						
24" (600)	25.800	30"	15"	9-3/4"	10-3/4"	0.506
30" (750)	32.000	37"	17"	12-5/8"	13-5/8"	0.627
36" (900)	38.300	43-1/2"	17"	12-7/8"	13-7/8"	0.751
42" (1050)	44.500	51"	20"	15-3/4"	16-3/4"	0.872
48" (1200)	50.800	57-1/2"	20"	15-7/8"	16-7/8"	0.996
54" (1350)	57.560	65"	22"	16"	17"	1.129
60" (1500)	61.610	69-1/4"	23"	17-1/2"	18-1/2"	1.208
DR-41 PRESSURE CLASS 100 PSI						
20" (500)	21.600	25-3/4"	13"	9"	10"	0.527
24" (600)	25.800	30-1/2"	15"	9-3/4"	10-3/4"	0.629
30" (750)	32.000	37-1/4"	17"	12-5/8"	13-5/8"	0.780
36" (900)	38.300	44"	17"	12-7/8"	13-7/8"	0.934
42" (1050)	44.500	51-1/2"	20"	15-3/4"	16-3/4"	1.085
48" (1200)	50.800	58"	20"	15-7/8"	16-7/8"	1.239
54" (1350)	57.560	65-3/4"	22"	16"	17"	1.404
60" (1500)	61.610	70"	23"	17-1/2"	18-1/2"	1.503
DR-32.5 PRESSURE CLASS 125 PSI						
16" (400)	17.400	21"	11"	7-3/4"	8-3/4"	0.535
18" (450)	19.500	23-1/2"	12"	8-1/4"	9-1/4"	0.600
20" (500)	21.600	26"	13"	9"	10"	0.665
24" (600)	25.800	30-3/4"	15"	9-3/4"	10-3/4"	0.794
30" (750)	32.000	37-3/4"	17"	12-5/8"	13-5/8"	0.985
36" (900)	38.300	44-3/4"	17"	12-7/8"	13-7/8"	1.178
42" (1050)	44.500	52"	20"	15-3/4"	16-3/4"	1.369
48" (1200)	50.800	58-1/2"	20"	15-7/8"	16-7/8"	1.563
54" (1350)	57.560	66-1/2"	22"	16"	17"	1.771
60" (1500)	61.610	70-3/4"	23"	17-1/2"	18-1/2"	1.896
DR-25 PRESSURE CLASS 165 PSI						
14" (350)	15.300	18-3/4"	11"	6-7/8"	7-7/8"	0.612
16" (400)	17.400	21-1/4"	11"	7-3/4"	8-3/4"	0.696
18" (450)	19.500	23-1/4"	12"	8-1/4"	9-1/4"	0.780
20" (500)	21.600	26-1/4"	13"	9"	10"	0.864
24" (600)	25.800	31-1/4"	15"	9-3/4"	10-3/4"	1.032
30" (750)	32.000	38-1/4"	17"	12-5/8"	13-5/8"	1.280
36" (900)	38.300	45"	17"	12-7/8"	13-7/8"	1.532
42" (1050)	44.500	52-1/4"	20"	15-3/4"	16-3/4"	1.780
48" (1200)	50.800	59-1/2"	20"	15-7/8"	16-7/8"	2.032
54" (1350)	57.560	66-3/4"	22"	16"	17"	2.303
60" (1500)	61.610	72"	23"	17-1/2"	18-1/2"	2.465
DR-21 PRESSURE CLASS 200 PSI						
14" (350)	15.300	19"	11"	6-7/8"	7-7/8"	0.729
16" (400)	17.400	21-1/2"	11"	7-3/4"	8-3/4"	0.829
18" (450)	19.500	24"	12"	8-1/4"	9-1/4"	0.929
20" (500)	21.600	26-1/2"	13"	9"	10"	1.029
24" (600)	25.800	31-1/2"	15"	9-3/4"	10-3/4"	1.229
30" (750)	32.000	38-1/2"	17"	12-5/8"	13-5/8"	1.524
36" (900)	38.300	46-1/2"	17"	12-7/8"	13-7/8"	1.823
42" (1050)	44.500	53"	20"	15-3/4"	16-3/4"	2.119

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TRANS-21™
C900 14"-60" SPECIFICATION & LOADING DATA

TRANS-21™
AWWA C900 SPECIFICATION DATA)

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Diameter Inches	C Approximate Bell Depth: Inches	D Assembly Mark 1 Inches *	E Assembly Mark 2 Inches *	t Minimum Wall Thickness Inches
DR-18 PRESSURE CLASS 235 PSI						
14" (350)	15.300	19-1/4"	11"	6-7/8"	7-7/8"	0.850
16" (400)	17.400	21-3/4"	11"	7-3/4"	8-3/4"	0.967
18" (450)	19.500	24-1/4"	12"	8-1/4"	9-1/4"	1.083
20" (500)	21.600	26-3/4"	13"	9"	10"	1.200
24" (600)	25.800	31-3/4"	15"	9-3/4"	10-3/4"	1.433
30" (750)	32.000	39"	17"	12-5/8"	13-5/8"	1.778
36" (900)	38.300	46-1/2"	17"	12-7/8"	13-7/8"	2.128
42" (1050)	44.500	53-3/4"	20"	15-3/4"	16-3/4"	2.472
DR-14 PRESSURE CLASS 305 PSI						
14" (350)	15.300	19-1/2"	11"	6-7/8"	7-7/8"	1.0929
16" (400)	17.400	22"	11"	7-3/4"	8-3/4"	1.243
18" (450)	19.500	24-1/2"	12"	8-1/4"	9-1/4"	1.393
20" (500)	21.600	27"	13"	9"	10"	1.543
24" (600)	25.800	32"	15"	9-3/4"	10-3/4"	1.843
30"(750)	32.000	40"	17"	12-5/8"	13-5/8"	2.286

TRANS-21™
AWWA C900 LOADING CHART

Nominal Pipe Size in. (mm)	Outside Diameter	Minimum Wall Thickness	Joints Per Bundle	Feet Per Bundle	*Feet Per Truckload
DR-81 PRESSURE CLASS 50 PSI					
36" (900)	38.300	0.473	2	40/44	160/176
42" (1050)	44.500	0.550	2	40/44	160/176
48" (1200)	50.800	0.628	1	20/22	80/88
54" (1350)	57.560	0.711	1	22	44
60" (1500)	61.610	0.760	1	22	44
DR-51 PRESSURE CLASS 80 PSI					
24" (600)	25.800	0.506	3	60	360
30" (750)	32.000	0.627	3	60/66	360/396W/264E
36" (900)	38.300	0.751	2	40/44	160/176
42" (1050)	44.500	0.872	2	40/22	160/176
48" (1200)	50.800	0.996	1	20/22	80/88
54" (1350)	57.560	1.129	1	22	44
60" (1500)	61.610	1.208	1	22	44
DR-41 PRESSURE CLASS 100 PSI					
20" (500)	21.600	0.527	4	80	640
24" (600)	25.800	0.629	3	60	360
30" (750)	32.000	0.78	3	60/66	360/396W/264E
36" (900)	38.300	0.934	2	40/44	160/176
42" (1050)	44.500	1.085	2	40/44	160/176
48" (1200)	50.800	1.239	1	20/22	80/88
54" (1350)	57.560	1.404	1	22	44
60" (1500)	61.610	1.503	1	22	44

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TRANS-21™

AWWA C900 LOADING CHART

Nominal Pipe Size in. (mm)	Outside Diameter	Minimum Wall Thickness	Joints Per Bundle	Feet Per Bundle	*Feet Per Truckload
DR-32.5 PRESSURE CLASS 125 PSI					
16" (400)	17.400	0.535	2\3\4\6	40-120	1,000
20" (500)	21.600	0.665	4	80	640
24" (600)	25.800	0.794	3	60	360
30" (750)	32.000	0.985	3	60/66	360/396W/264E
36" (900)	38.300	1.178	2	40/44	160/176
42" (1050)	44.500	1.369	2	40/44	160/176
48" (1200)	50.800	1.563	1	20/22	80/88
54" (1350)	57.560	1.771	1	22	44
60" (1500)	61.610	1.896	1	22	44
DR-25 PRESSURE CLASS 165 PSI					
14" (350)	15.300	0.612	6	120	1,440
16" (400)	17.400	0.696	2\3\4\6	40-120	1,000
18" (450)	19.500	0.78	4\6	80\120	800
20" (500)	21.600	0.864	4	80	640
24" (600)	25.800	1.032	3	60	360
30" (750)	32.000	1.28	3	60/66	360/396W/264E
36" (900)	38.300	1.523	2	40/44	160/176
42" (1050)	44.500	1.780	2	40/44	160/176
48" (1200)	50.800	2.032	1	20/22	80/88
54" (1350)	57.560	2.303	1	22	44
60" (1500)	61.610	2.465	1	22	44
DR-21 PRESSURE CLASS 200 PSI					
14" (350)	15.300	0.729	6	120	1,440
16" (400)	17.400	0.829	2\3\4\6	40-120	1,000
18" (450)	19.500	0.929	4\6	80\120	800
20" (500)	21.600	1.029	4	80	640
24" (600)	25.800	1.229	3	60	360
30" (750)	32.000	1.524	3	60/66	360/396W/264E
36" (900)	38.300	1.824	2	40/44	160/176
42" (1050)	44.500	2.119	2	40/44	160/176
DR-18 PRESSURE CLASS 235 PSI					
14" (350)	15.300	0.85	6	120	1,440
16" (400)	17.400	0.967	2\3\4\6	40-120	1,000
18" (450)	19.500	1.083	4\6	80\120	800
20" (500)	21.600	1.2	4	80	640
24" (600)	25.800	1.433	3	60	360
30" (750)	32.000	1.778	3	60/66	360/396W/264E
36" (900)	38.300	2.128	2	40/44	160/176
42" (1050)	44.500	2.472	2	40/44	160/176
DR-14 PRESSURE CLASS 305 PSI					
14" (350)	15.300	1.0929	6	120	1,440
16" (400)	17.400	1.243	2\3\4\6	40-120	1,000
18" (450)	19.500	1.393	4\6	80\120	800
20" (500)	21.600	1.543	4	80	640
24" (600)	25.800	1.843	3	60	360
30"	32.000	2.286	3	60/66	360/396W/264E

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LOK-21™
FEATURES & BENEFITS

INTRODUCTION

Diamond Lok-21 restrained joint PVC pressure pipe is manufactured in accordance with AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings in sizes from 4" thru 24" CIOD (100mm to 600mm). Most sizes are available in DR14 (PC 305) , DR18 (PC 235) , DR21 (PC 200) ,and DR25 (PC 165). Please check with your local Diamond Sales Representative for availability. Cast Iron Outside Diameter (CIOD) sizing insures the availability of fittings, valves and other appurtenances.

Diamond Lok-21 pipe is manufactured from compounds meeting the requirements of ASTM D1784 for a cell classification of 12454 and having a hydrostatic design basis (HDB) of 4000 psi. The pipe compound and gaskets also meet the requirements of NSF Standard 61 for potable drinking water.

Diamond Lok-21®'s restraint system provides uniform circumferential contact thereby eliminating any concerns over point loading. Because it is a simple push together system, it dramatically reduces installation time while reducing complexity which exists for fused or bolted systems.

Diamond Lok-21® restrained joint PVC pipe is well suited for directional drilling operations, for installation through bore casings and most applications which require joint restraint. Because it is PVC, you know you are getting superior long-term performance.

PIPE INTEGRITY

Each piece of Diamond Lok-21 is proof tested to twice its pressure rating. It has a short term safety factor greater than 3 against burst pressure and a long-term safety factory of 2 on its pressure rating. All Diamond Lok-21® products utilize the Rieber sealing system technology which provides tremendous joint integrity under severe construction conditions.

PUSH TOGETHER RESTRAINT

Diamond Lok-21® pushes together like standard gasketed PVC pipe. The restraint mechanism is located in the bell. It does not require couplings or splines; nuts, bolts and torque wrenches; butt fusion equipment; concrete thrust blocking or solvent cement.

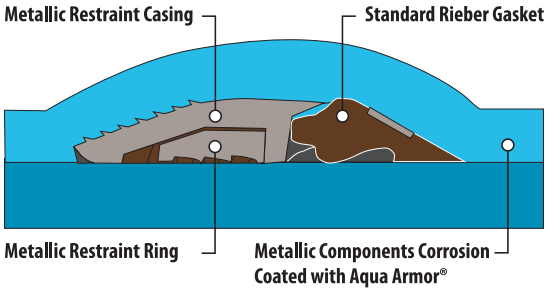
FAST, SIMPLE AND RELIABLE

Installation costs are dramatically reduced with Diamond Lok-21®. It is nearly as fast as standard PVC pipe installation. It is as simple as clean, lubricate, align and insert and as reliable as PVC pipe. No special tools, no special machines, no special parts.

PVC

Diamond Lok-21® is made of PVC, a non-conductor of electricity, therefore immune to electrochemical reactions which cause corrosion. PVC is resistant to a wide range of chemicals which cause corrosion in non-PVC products. The restraint casing and lock ring are coated to resist corrosion and located on the non flow side of the gasket. No nuts and bolts to worry about. Because PVC does not corrode, "Red Water" is not possible in a Diamond Lok-21® system.

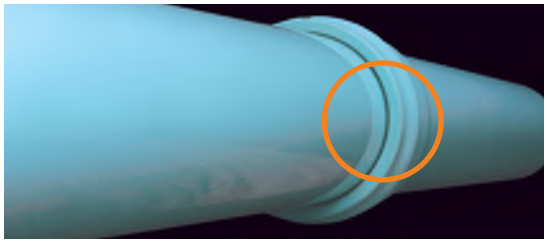
GASKET ILLUSTRATION

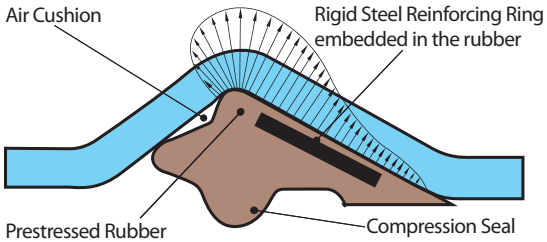


GASKET DIAGRAM

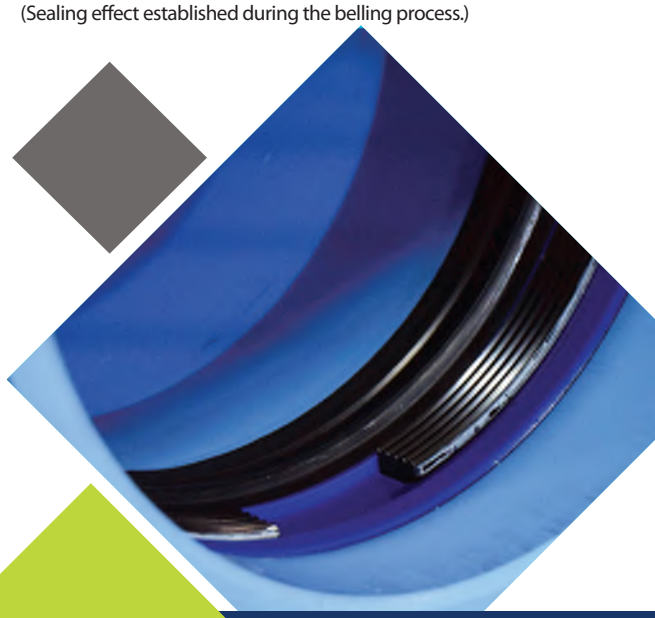
HOW IT WORKS?

How it works? "Rieber Sealing System Technology" is utilized in forming the gasket bell sockets of Diamond C900 PVC Pipe around the steel reinforced elastomeric seal meeting the requirements of ASTM F477.





(Sealing effect established during the belling process.)



RIEBER GASKETED SEALING SYSTEM

Diamond Lok-21® has deep insertion push together gasketed joints utilizing Rieber sealing system technology. This has virtually eliminated the leaks from rolled or fish-mouthed gaskets.

SMOOTH INTERIOR/GREATER RELATIVE FLOW CAPACITY

Diamond Lok-21® has a very smooth interior which provides a Hazen-Williams C Factor of 150. This ensures superior hydraulics over the long term reducing pumping costs and requiring much less cleaning. The smooth interior reduces unwanted by-product buildup and therefore does a much better job of maintaining initial water quality. Because PVC has much higher tensile HDB strength than HDPE, it has a larger I.D. for similarly pressure rated products and hence greater flow capacity.

SHORT FORM SPECIFICATION FOR WATER TRANSMISSION & SEWER FORCE MAIN PIPE

Self Restrained potable water transmission and sewer force main pipe shall be Diamond Lok-21 PVC pipe. It shall be manufactured with compounds meeting a 12454 designation according to ASTM D1784 and shall have Rieber style joints meeting the requirements of ASTM D3139 with gaskets meeting the requirements of ASTM F477. Pipe for use in potable water systems shall also bear the NSF 61 mark or equivalent.

LOK-21®

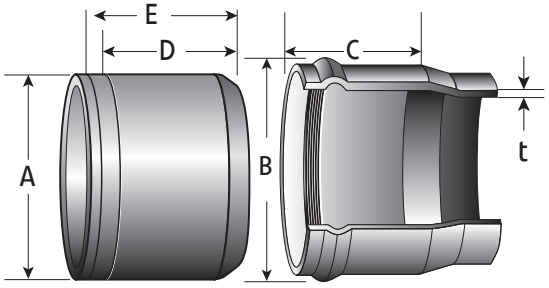
AWWA SPECIFICATION DATA

Diamond Lok-21 self- restrained joint C900 PVC pipe 4" thru 24" (100mm thru 600mm) is made of 12454 compound per ASTM D1784, in accordance with the dimensional, chemical, and physical requirements of the current AWWA C900 Poly Vinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings standard.

Diamond Lok-21® restraint joint C900 products bear the mark of NSF, International.

Diamond Lok-21® restraint joint C900 products utilize the Bulldog Restraint System® with a Rieber gasket per ASTM F477 to seal the integral bell socket to the spigot of the next joint (which conforms to the requirements of ASTM D3139). Each male end is beveled to facilitate joint assembly and the spigot is reference marked to ensure proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

RIEBER JOINT ILLUSTRATION



Nominal Pipe Size Inches(mm)	A Outside Dia. Inches	B Bell Dia. Inches	C Approximate Bell Depth Inches	D Assembly Mark 1 Inches *	E Assembly Mark 2 Inches *	t DR-14 Min. Wall Inches	t DR-18 Min. Wall Inches	t DR-21 Min. Wall Inches	t DR-25 Min. Wall Inches	Max. Pull-In Force, Straight Pull (No Bending) lbs.
DR-14 PRESSURE CLASS 305 PSI, DR-18 PRESSURE CLASS 235 PSI , DR-21 PRESSURE CLASS 200 PSI OR DR-25 PRESSURE CLASS 165 PSI										
4" (100)	4.800	6-1/2"	8"	5-3/4"	6-3/4"	0.343	0.267			15,000
6" (150)	6.900	9-1/4"	8-1/2"	6-1/4"	7-1/4"	0.493	0.383			20,000
8" (200)	9.050	11-3/4"	9"	7-1/8"	8-1/8"	0.646	0.503			30,000
10" (250)	11.100	14-1/4"	9-1/2"	8"	9"	0.793	0.617			40,000
12" (300)	13.200	16-3/4"	10"	8-5/8"	9-5/8"	0.943	0.733			45,000
14" (350)	15.300	19-1/4"	13"	9-1/2"	10-1/2"	1.093	0.850	0.729	0.612	52,000
16" (400)	17.400	21-3/4"	13"	10-3/4"	11-3/4"	1.243	0.967	0.829	0.696	60,000
18" (450)	19.500	24-1/4"	15-1/2"	10-3/4"	11-3/4"	1.393	1.083	0.929	0.780	70,000
20" (500)	21.600	26-3/4"	16"	12"	13"	1.543	1.200	1.029	0.864	80,000
24" (600)	25.800	31-3/4"	17"	13-5/8"	14-5/8"	1.843	1.433	1.229	1.032	100,000

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LOK-21®
SPECIFICATION DATA

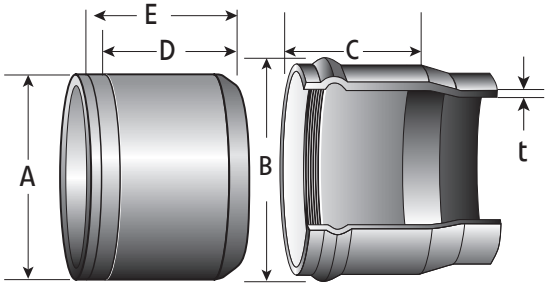
Diamond LOK-21® restraint joint IPS (ASTM D2241) SDR 21 and 26, PVC pipe (3", 4", 6" and 8") is made of 12454 compound per ASTM D1784, in accordance with the dimensional, chemical, and physical requirements of ASTM D2241 for IPS sizes.

Diamond LOK-21® restraint joint IPS pipe bears the mark of NSF-14.

Diamond LOK-21® restraint joint IPS utilizes the Bulldog Restraint System with a Rieber gasket per ASTM F477 to seal the integral bell socket to the spigot of the next joint (which conforms to the requirements of ASTM D3139). Each male end is beveled to facilitate joint assembly, and the spigot is reference marked to ensure proper insertion depth.

Diamond furnished lubricant is to be used in the joining process.

RIEBER JOINT ILLUSTRATION



Nominal Pipe Size Inches(mm)	A Outside Dia. Inches	B Bell Dia. Inches	C Approximate Bell Depth Inches	D Assembly Mark 1 Inches *	E Assembly Mark 2 Inches *	t Minimum Wall(t) Inches
SDR-21 PRESSURE RATED 200 PSI						
3" (.75)	3.500	4-7/16"	6-1/8"	5"	6"	0.167
4" (100)	4.500	5-1/2"	7"	5-5/8"	6-5/8"	0.214
6" (150)	6.625	8-1/4"	8"	6-3/4"	7-3/4"	0.316
8" (200)	8.625	10-1/4"	8"	6-7/8"	7-7/8"	0.410
SDR26 PRESSURE RATED 160 PSI						
6" (150)	6.625	8-1/4"	8"	6-3/4"	7-3/4"	0.255
8" (200)	8.625	10-1/4"	8"	6-7/8"	7-7/8"	0.332

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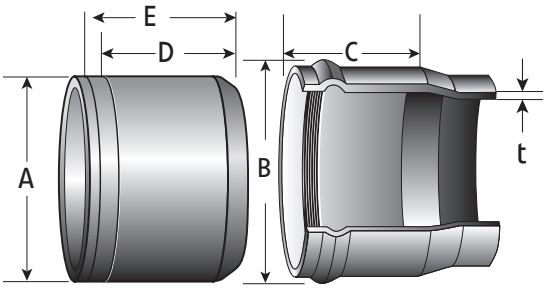
ASTM D2241 IPS SPECIFICATION DATA

Diamond IPS pressure-rated PVC pipe is made of compounds conforming to material requirements of ASTM D2241 in accordance with ASTM D1784. Pipe sizes (1 ½" through 12") are made with an integral bell to utilize the Rieber gasket system for sealing, and meeting specifications defined in ASTM F477 which conforms to the requirements of ASTM D3139.

Diamond IPS pressure-rated PVC pipe meets all the dimensional, chemical, and physical requirements as outlined in ASTM D2241. Potable water pipe carries the mark of NSF, International in accordance with Standard 61. Some factory locations produce IPS pressure pipe bearing the mark of NSF-14.

Each male end shall be beveled to facilitate joining and reference marked to insure proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

RIEBER JOINT ILLUSTRATION



D2241

PHYSICAL PROPERTIES OF PVC 12454:

Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength	D256	.65ft., lb./in.

SHORT FORM Specification for Diamond PVC Water Pipe
Diamond PVC Water Pipe shall be made of compounds conforming to ASTM D1784 with a cell classification of 12454. Diamond PVC Water Pipe must meet all the dimensional, chemical, and physical requirements as outlined in ASTM D2241 and will be supplied in 20 and 22 foot laying lengths. Joints shall be formed using Rieber Technology. Potable water pipe shall be manufactured from NSF listed ingredients.

ASTM D2241

SPECIFICATION DATA. DIAMOND IPS PRESSURE-RATED PIPE IS SUPPLIED IN 20 AND 22 FOOT LAYING LENGTHS.

Nominal Pipe Size in. (mm)	B Bell Socket Diameter Inches	C Approximate Bell Depth Inches	D Insert Mark 1 Inches *	E Insert Mark 2 Inches *
2" (50)	3-1/8"	4"	2-3/4"	3-3/4"
2.5" (62.5)	4-3/8"	5"	2"	3"
3" (75)	4-7/16"	4-1/2"	3-5/8"	4-5/8"
4" (100)	5-1/2"	4-3/4"	4-1/4"	5-1/4"
6" (150)	8-1/4"	5-1/2"	4-3/4"	5-3/4"
8" (200)	10-1/4"	6"	4-7/8"	5-7/8"
10" (250)	12-7/8"	6-1/2"	5-1/2"	6-1/2"
12" (300)	15-1/8"	7"	5-7/8"	6-7/8"

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ASTM D2241
SPECIFICATION DATA

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	t SDR 13.5 315 psi Inches	t SDR 17 250 psi Inches	t SDR 21 200 psi Inches	t SDR 26 160 psi Inches	t SDR 32.5 125 psi Inches	t SDR 41 100 psi Inches
MINIMUM WALL THICKNESS = (t)							
1.5" (37.5)	1.900	0.141	0.112	0.090			
2" (50)	2.375	0.176	0.140	0.113	0.091		
2.5" (62.5)	2.875	0.213	0.169	0.137	0.110		
3" (75)	3.500	0.259	0.206	0.167	0.135		
4" (100)	4.500	0.333	0.265	0.214	0.173	0.138	0.110
6" (150)	6.625	0.491	0.390	0.316	0.255	0.204	0.162
8" (200)	8.625		0.508	0.410	0.332	0.265	0.210
10" (250)	10.750		0.632	0.511	0.413	0.331	0.262
12" (300)	12.750		0.750	0.606	0.490	0.392	0.311

ASTM D2241
ASTM D2241 LOADING CHART

Nominal Pipe Size in. (mm)	Outside Diameter	Joints Per Bundle	Feet Per Bundle 20' laying lengths	*Feet Per Truckload 20' laying lengths	Feet Per Bundle 22' laying lengths	*Feet Per Truckload 22' laying lengths
SDR-41 PRESSURE RATING 100 PSI						
4" (100)	4.500	63	1,260	20,160	1,386	22,176
6" (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240
8" (200)	8.625	20\24	300/360/400/480	4,840	440\528	5,324
10" (250)	10.750	12\15	240/300	3,240	264\330	3,564
12" (300)	12.750	9\12	120/160/180/240	1,960	198\264	2,156
SDR-32.5 PRESSURE RATING 125 PSI						
4" (100)	4.500	63	1,260	20,160	1,386	22,176
6" (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240
8" (200)	8.625	20\24	300/360/400/480	4,840	440\528	5,324
10" (250)	10.750	12\15	240/300	3,240	264\330	3,564
12" (300)	12.750	9\12	120/160/180/240	1,960	198\264	2,156
SDR-26 PRESSURE RATING 160 PSI						
2" (50)	2.375	215			4,730	75,680
2.5" (62.5)	2.875	131			2,882	46,112
3" (75)	3.500	88\95			1,936\2,090	32,208
4" (100)	4.500	63	1,260	20,160	1,386	22,176
6" (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240
8" (200)	8.625	20\24	300/360/400/480	4,840	440\528	5,324
10" (250)	10.750	12\15	240/300	3,240	264\330	3,564
12" (300)	12.750	9\12	120/160/180/240	1,960	198\264	2,156

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ASTM D2241

LOADING CHART

Nominal Pipe Size in. (mm)	Outside Diameter	Joints Per Bundle	Feet Per Bundle 20′ laying lengths	*Feet Per Truckload 20′ laying lengths	Feet Per Bundle 22′ laying lengths	*Feet Per Truckload 22′ laying lengths
SDR-21 PRESSURE RATING 200 PSI						
1-1/2″ (37.5)	1.900	215			4,730	75,680
2″ (50)	2.375	215			4,730	75,680
2-1/2″ (62.5)	2.875	131			2,882	46,112
3″ (75)	3.500	88\95			1,936/2,090	32,208
4″ (100)	4.500	63	1,260	20,160	1,386	22,176
6″ (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240
8″ (200)	8.625	20\24	300/360/400/480	4,840	440\528	5,324
10″ (250)	10.750	12\15	240/300	3,240	264\330	3,564
12″ (300)	12.750	9\12	120/160/180/240	1,960	198\264	2,156
SDR-17 PRESSURE RATING 250 PSI						
2″ (50)	2.375	215			4,730	75,680
2-1/2″ (62.5)	2.875	131			2,882	46,112
3″ (75)	3.500	88\95			1,936\2,090	32,208
4″ (100)	4.500	63	1,260	20,160	1,386	22,176
6″ (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240
8″ (200)	8.625	20\24	300/360/400/480	4,840	440\528	5,324
10″ (250)	10.750	12\15	240/300	3,240	264\330	3,564
12″ (300)	12.750	9\12	120/160/180/240	1,960	198\264	2,156
SDR-13.5 PRESSURE RATING 315 PSI						
2″ (50)	2.375	215			4,730	75,680
2-1/2″ (62.5)	2.875	131			2,882	46,112
3″ (75)	3.500	88\95			1,936\2,090	32,208
4″ (100)	4.500	63	1,260	20,160	1,386	22,176
6″ (150)	6.625	35\40	560/640/700/800	8,400	770\880	9,240

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D3034 & F679 SEWER SPECIFICATION DATA

Diamond gravity sewer pipe 4 inches through 60 inches shall be made of compounds conforming to material requirements of ASTM D3034 and ASTM F679 in accordance with ASTM D1784. Diamond PVC Sewer Pipe meets all the dimensional, chemical, and physical requirements as outlined in ASTM D3034 and ASTM F679. A listing to CSA B182.2 is available for most of these sizes. A complete listing by manufacturing plant is available upon request.

The pipe sizes 4 inches through 60 inches are made with an integral bell "water-tight" joint that meets the requirements of ASTM D3212 and that utilizes a Rieber gasket system for sealing that meets the requirements of ASTM F477.

Each male end shall be beveled to facilitate joining and referencing marked for proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

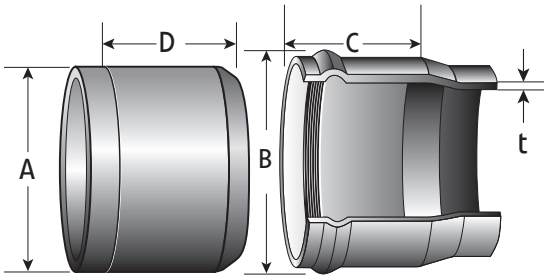
SANI-21™

PHYSICAL PROPERTIES OF ASTM D3034 & F679

Property	ASTM TEST	Minimum 12454/12364
PIPE MATERIALS: PIPE SHALL BE MADE OF PVC PLASTIC HAVING A MINIMUM CELL CLASSIFICATION OF 12454 OR 12364 AS DEFINED IN SPECIFICATION D1784.		
Specific Gravity	D792	1.40/1.40
Tensile Strength, psi	D638	7,000/6,000
Tensile Modulus, psi	D638	400,000/500,000
IZOD Impact Strength,	D256	.65ft., lb./in.

SHORT FORM Specification for Diamond PVC Solid-Wall Sewer Pipe SDR 26 or SDR 35 or PS 46 or PS 115
All PVC Solid-Wall Sewer PIpe shall be made of compounds conforming to ASTM D1784 manufactured in accordance with the material requirements of ASTM D3034 or ASTM F679. All PVC Sewer Pipe must meet dimensional, chemical, and physical requirements as outlined in ASTM D3034 orASTM F679. Joints shall meet the requirements of ASTM D3212 and shall be formed using Rieber Technology. PVC Sewer Pipe shall be installed according to the requirements of ASTM D2321, Uni-Bell's Uni-Pub 6 and the manufacturer's recommendations.

RIEBER JOINT ILLUSTRATION



SANI-21™

D3034 & F679 SEWER SPECIFICATION DATA

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Socket Diameter Inches	C Socket Depth Inches	D Insert Mark Inches *	t Min. Wall Thickness SDR26/PS115 Inches	t Min. Wall Thickness SDR35/PS46 Inches
D-3034 PIPE DIMENSIONS						
4" (100)	4.215	5-1/4	4-5/8"	4"	0.162	0.120
6" (150)	6.275	7-1/2	4-3/4"	4-1/8"	0.241	0.180
8" (200)	8.400	9-7/8	6-1/8"	4-7/8"	0.323	0.240
10" (250)	10.500	12-3/8	6-3/4"	5-1/4"	0.404	0.300
12" (300)	12.500	14-5/8	7-1/4"	5-1/2"	0.481	0.360
15" (375)	15.300	18	7-1/4"	4-5/8"	0.588	0.437
F-679 PIPE DIMENSIONS						
18" (450)	18.701	21-3/4"	9-1/2"	7-3/4"	0.671	0.499
21" (525)	22.047	25-1/2"	10"	8-1/2"	0.791	0.588
24" (600)	24.803	28-3/4"	11"	10"	0.889	0.661
27" (675)	27.953	32-1/2"	13-1/4"	11-1/8"	1.002	0.745
30" ciod (750)	32.000	37-1/4"	14"	13-5/8"	1.148	0.853
36" ciod (900)	38.300	43-1/4"	15"	13-7/8"	1.373	1.021
42" ciod (1050)	44.500	53"	18"	16-3/4"	1.596	1.187
48" ciod (1200)	50.800	60"	18"	16-7/8"	1.822	1.355
54" ciod (1350)	57.560	67"	22"	14"	2.064	1.535
60" ciod (1500)	61.610	72"	23"	18"	2.210	1.643

SANI-21™

LOADING ASTM D3034 & F679 LOADING CHART (SDR35 / PS46)

Nominal Pipe Size in. (mm)	Outside Diameter Inches	Bundle Quantity	*Feet Per Truckload	
			14'	20'
SDR35/PS46				
4" (100)	4.215	69	23,184	24,288
6" (150)	6.275	24/32	10,080	11,264
8" (200)	8.400	18/24	5544/6048	5808/6336
10" (250)	10.500	12/15	3402	3564
12" (300)	12.500	16	2688	2816
15" (375)	15.300	6	1512	1584
18" (450)	18.701	2/3/4/6	1050	1100
21" (525)	22.047	4	672	704
24" (600)	24.803	4	504/672	704
27" (675)	27.953	3	378	
30" (750)	32.000	3	378/252	
36" (900)	38.300	2	168	
42" (1050)	44.500	2	168	
48" (1200)	50.800	1	84	
54" (1350)	57.560	1	42	
60" (1500)	61.610	1	42	

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LOADING ASTM D3034 & F679 LOADING CHART (SDR26 / PS115)

Nominal Pipe Size in. (mm)	Outside Diameter Inches	Min. Wall Inches	Bundle Quantity	*Feet Per Truckload	
				14′	22′
SDR26/PS115					
4″ (100)	4.215	.162	69	23,184	24,288
6″ (150)	6.275	.241	24/32	10,080	11,264
8″ (200)	8.400	.323	18/24	5544/6048	5808/6336
10″ (250)	10.500	.404	12/15	3402	3564
12″ (300)	12.500	.481	16	2688	2816
15″ (375)	15.300	.588	6	1512	1584
18″ (450)	18.701	.671	2/3/4/6	1050	
21″ (525)	22.047	.791	4	672	
24″ (600)	24.803	.889	4	672	
27″ (675)	27.953	1.002	3	378	
30″ (750)	32.000	1.148	3	378/252	
36″ (900)	38.300	1.373	2	168	
42″ (1050)	44.500	1.596	2	168	
48″ (1200)	50.800	1.954	1	84	
54″ (1350)	57.560	2.064	1	42	
60″ (1500)	61.610	2.210	1	42	

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CORR-21 PVC PIPE

Corrugated low pressure irrigation, storm water and sanitary sewer applications. (Available in sizes from 12" through 42")

Diamond gravity sewer pipe 12 inches through 42 inches shall be made of compounds conforming to material requirements of ASTM F949 and ASTM F794 in accordance with ASTM D1784. Diamond PVC Corrugated Sewer Pipe has a minimum pipe stiffness of 50 psi and meets all the dimensional, chemical and physical requirements as outlined in ASTM F949 and ASTM F794 and AASHTO M304.

The pipe sizes 12 inches through 42 inches are manufactured with an integral bell "water-tight" joint that meets the requirements of ASTM D3212 and that utilizes an elastomeric seal that meets the requirements of ASTM F477.

Each male end shall be formed to facilitate joining and shall be reference marked for proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

CORR-21™

PHYSICAL PROPERTIES OF ASTM F949, ASTM F794, AASHTO M304-03:

Property	ASTM TEST	Minimum
Specific Gravity	D792	1.42
Tensile Strength, psi	D638	7,000
IZOD Impact Strength	D256	.65ft., lb./in. of notch

Pipe Materials: Pipe shall be made of compounds to the material requirements of ASTM F949 and ASTM F794 in accordance with Specification D1784.

CORR-21™
SPECIFICATION DATA & LOADING CHART

CORR-21™
ASTM F794 & F949 SPECIFICATION DATA CORR-21 IS SUPPLIED IN 14 FOOT LAYING LENGTHS.

Nominal Pipe Size in. (mm)	Average Outside Diameter	Approximate Bell Socket Diameter	Socket Depth	Insert Reference Mark	Minimum Pipe Stiffness
CORR-21™ PIPE DIMESIONS					
12" (300)	12.795	16-1/2"	7-1/2"	6"	50
15" (375)	15.658	18-1/2"	8"	7-1/2"	50
18" (450)	19.152	22-1/2"	8-1/2"	7"	50
21" (525)	22.630	26-1/2"	10-1/2"	9"	50
24" (600)	25.580	29-1/2"	11-1/2"	10"	50
27" (675)	28.860	33-1/2"	11-1/2"	9"	50
30" (750)	32.150	37"	11-1/2"	9"	50
36" (900)	38.740	44-1/2"	11-1/2"	11"	50
42" (1050)	45.800	52-1/2"	10-1/2"	10"	50

SHORT FORM Specification for PVC Sewer Pipe
Corr-21 PVC Gravity Sewer and Drain Pipe Sizes 12" - 42"
All sewer pipe shall be Diamond Corr-21 PVC corrugated sewer pipe with a seamless profile wall made of compounds classified as 12364 or 12454 as defined in ASTM D1784 and manufactured in accordance with ASTM F949 and ASTM F794. It shall have a minimum pipe stiffness of 50 psi. Plpe shall have a smooth interior with a corrugated cross-sectional rib exterior. Exterior corrugations shall be perpendicular to the axis of the pipe to allow placement of the sealing gasket without additional cutting or machining. It shall have a symmetrical dual three point gasketed joint sealing system with an allowable infiltration of 25 gallons per inch of internal diameter per mile per day or less, and meet the requirements of ASTM D3212. All sewer pipe shall be installed in accordance with ASTM D2321 and the manufacturer's recommendations.

CORR-21™
ASTM F794 & F949 LOADING DATA

Nominal Pipe Size in. (mm)	Average Outside Diameter Inches	Pieces Per Bundle	Pieces Per Truckload 14'jts.	*Feet Per Truckload 14'jts.
PIPE DIMENSIONS				
12" (300)	12.795	9, 12, 16	147	2,058
15" (375)	15.658	9	108	1,512
18" (450)	19.152	4, 6	60	840
21" (525)	22.630	4	48	672
24" (600)	25.580	3	27	378
27" (675)	28.860	3	27	378
30" (750)	32.150	3	27	378
36" (900)	38.740	2	12	168
42" (1050)	45.800	2	12	168

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PRO-21™ PVC PIPE

Diamond "PRO-21" closed profile pipe is produced by extruding an "I-beam" type profile that is in turn wrapped onto a circular mandrel providing a continuous tube with a helical heat welded seam. The result is a pipe of solid wall appearance from the inside and outside which has the structural advantages of the "honeycomb or I-beam"construction internal to the pipe wall itself. This results in a product which meets the performance requirements of a solid wall while providing the advantage of lighter weight. Diamond "PRO-21" meets all requirements of ASTM F1803.

Diamond's Closed Profile Pipe is made with PVC compounds that meet the requirements for cell class 12364 as described in ASTM D1784. Integral bell sockets meet the requirements of ASTM D3212. Pipe gaskets meet the requirements of ASTM F477.

PRO-21™

SPECIFICATION DATA FOR PS46 PRO-21 IS SUPPLIED IN 14 FOOT LAYING LENGTHS

Nominal Pipe Size in. (mm)	Average Outside Diameter Inches	Bell Outside Diameter Inches	Mininum Inside Diameter Inches
PIPE DIMENSIONS PRO -21 ASSEMBLY MARKS ARE AT 7" MINIMUM (ASSEMBLY MARK 1) AND 9" MAXIMUM (ASSEMBLY MARK 2)			
30" (750)	31.606	35"	29.410
33" (825)	35.036	38-1/2"	32.405
36" (900)	38.036	41-3/4"	35.395
42" (1050)	44.200	48-1/2"	41.375
48" (1200)	50.570	55"	47.360
54" (1350)	57.100	61-1/2"	53.350
60" (1500)	63.932	69-1/2"	59.340

SHORT FORM Specification for PVC Sewer Pipe. Pro-21 PVC Gravity Sewer and Drain Pipe Sizes 30" - 60"

All sanitary sewer and storm drain pipe shall be Diamond Plastics Pro-21 PVC profile wall sewer pipe made of compounds meeting the minimum cell classification of 12364 as defined in ASTM D1784 and manufactured in accordance with ASTM F 1803. It shall have a smooth interior and exterior. It shall have a gasket with four sealing fins and a resilient wedge bevel. The joint shall meet all the requirements of ASTM D3212. The joint shall meet an allowable infiltration of 25 gallons per inch of internal diameter per mile per day or less. All PVC sewer pipe shall be installed in accordance with ASTM D2321, Uni-Bell's Uni-Pub 6 and the manufacturer's recommendations.

PRO-21™

F1803 LOADING CHART

Nominal Pipe Size in. (mm)	Average Outside Diameter	Pieces Per Bundle	14' Length Pieces Per Truckload	*Feet Per Truckload
30" (750)	31.606	3	27	378
33" (825)	35.036	2	12	168
36" (900)	38.036	2	12	168
42" (1050)	44.200	2	12	168
48" (1200)	50.570	1	12	168
54" (1350)	57.100	1	6	84
60" (1500)	63.932	1	3	42

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PIP™ LOW HEAD
SPECIFICATION DATA & LOADING CHART

PIP SPECIFICATION DATA

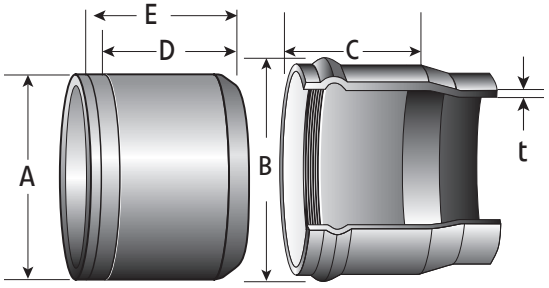
Diamond Low-Head PIP is made of compounds conforming to material requirements of SCS 430. The Pipe sizes (6" through 15") 50 psi are made with an integral bell to utilize a gasket for sealing, meeting requirements as defined in ASTM F477 and ASTM D3139. 100 ft. head is made with an integral bell for solvent cement joint assembly.

Diamond Low-Head PIP PVC pipe meets all the requirements as outlined in SCS 430.

Each male end shall be beveled, swagged or deburred to facilitate joining and gasketed joints shall be marked to reference proper insertion depth. Only Diamond furnished lubricant is to be used in the joining process.

It is recommended that Low-Head PIP PVC piping systems be designed and installed in accordance with SCS 430.

RIEBER JOINT ILLUSTRATION



PIP™ LOW HEAD

ASTM D2241 ANNEX SPECIFICATION DATA. STANDARD LENGTH IS EITHER 22 FOOT OR 44 FOOT, DEPENDING UPON DIAMETER.

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Socket Diameter Inches	C Bell Depth Inches	D Insert Mark Inches	E Insert Mark Inches	t SDR 81 50 PSI Inches
6" x 44' (150)	6.140	7-1/2"	5-1/2"	3-1/2"	4-1/2"	0.076
8" x 44' (200)	8.160	10"	5-1/2"	3-1/2"	4-1/2"	0.101
10" x 44' (250)	10.200	12"	6-1/2"	4-1/2"	5-1/2"	0.126
12" x 44' (300)	12.240	14"	6-1/2"	4-1/2"	5-1/2"	0.151
15" x 22' (375)	15.300	17-1/2"	7"	5"	6"	0.212

PIP™ LOW HEAD

ASTM D2241 ANNEX LOW HEAD 50 PSI CHART

Nominal Pipe Size in. (mm)	Average Outside Diameter	Approx. Inside Diameter	Minimum Wall Thickness	Pieces Per Bundle	Feet Per Bundle	*Feet Per Truckload
SDR-81 50 PSI						
6" (150)	6.140	5.988	.076	28/32	1,232/1,408	10,560
8" (200)	8.160	7.958	.101	18	792	6,336
10" (250)	10.200	9.948	.126	8/10	352/440	3,960
12" (300)	12.240	11.938	.151	8	352	2,465
15" (375)	15.300	14.922	.189	6	132	1,584

This product is manufactured in Lubbock, TX. Shipping distance may impact availability.
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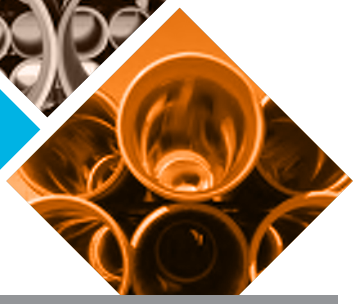
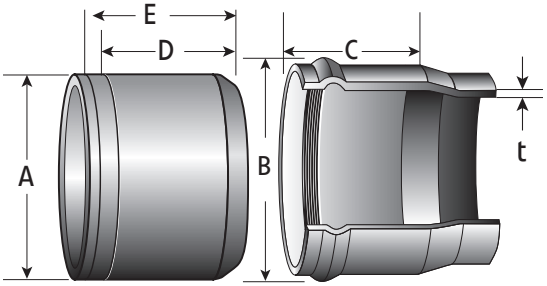


RIEBER JOINT ILLUSTRATION



PRESSURE RATED PIP PIPE

Diamond PIP pressure-rated pipe (6" through 27") is made of compounds conforming to material requirements of SCS 430. The pipe sizes (6" through 27") are made with an integral bell to utilize a gasket for sealing, meeting requirements as defined in ASTM F477 and ASTM 3139.

Diamond PIP pressure-rated PVC pipe meets all the dimensional, chemical and physical requirements as outlined in SCS 430. Diamond PIP pressure-rated pipe (15" through 27") meets all the dimensional, chemical and physical requirements as defined in ASTM DD2241 ANNEX.

Each male end shall be beveled, swagged or deburred to facilitate joining and shall be marked to reference proper insertion depth. Only Diamond furnished lubricant is to be used in the joining process.

It is recommended that PIP Pressure-Rated PVC Piping systems be designed and installed in accordance with SCS 430.

PRESSURE RATED PIP

ASTM D2241 ANNEX SPECIFICATION DATA. DIAMOND PIP PRESSURE-RATED PVC PIPE IS SUPPLIED IN 22-FOOT LAYING LENGTHS.

Nominal Pipe Size in. (mm)	A Outside Diameter Inches	B Bell Socket Diameter Inches	C Bell Depth Inches	D Insert Mark Inches	E Insert Mark Inches	SDR-51 80 PSI	SDR-41 100 PSI	SDR-32.5 125 PSI	SDR-26 160 PSI	SDR-21 200 PSI
						(t) Minimum Wall Inches				
6" (150)	6.140	7-1/2"	5-1/2"	3-1/2"	4-1/2"	0.120	0.150	0.189		
8" (200)	8.160	10"	5-1/2"	3-3/8"	4-3/8"	0.160	0.199	0.251		
10" (250)	10.200	12"	6-1/2"	4-3/8"	5-3/8"	0.200	0.249	0.314		
12" (300)	12.240	14"	6-1/2"	4-1/4"	5-1/4"	0.240	0.299	0.377		
15" (375)	15.300	17-1/2"	7"	4-3/4"	5-3/4"	0.300	0.373	0.471	0.588	0.728
18" (450)	18.701	21-1/2"	8"	7"	8"	0.367	0.456	0.575	0.719	
21" (525)	22.047	25-1/4"	8"	7-1/4"	8-1/4"	0.432	0.538	0.678		
24" (600)	24.803	28"	9"	8-1/2"	9-1/2"	0.486	0.605	0.763		
27" (675)	27.953	32-1/2"	12"	8-3/4"	9-3/4"	0.548	0.682	0.860		

Socket & Minimum Wall Dimensions, all dimensions are in inches.
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PRESSURE RATED PIP
LOADING CHART

PVC PRESSURE PIPE
PRESSURE RATED PIP ASTM D2241 ANNEX SPECIFICATIONS

Nominal Pipe Size in. (mm)	Outside Diameter A Inches	Pieces Per Bundle	Feet Per Bundle	*Feet Per Truckload
SDR-51, 80 PSI				
6" (150)	6.140	28/32	616/704	11,264
8" (200)	8.160	15/18	330/396	6,336
10" (250)	10.200	8/10	176/220	3,960
12" (300)	12.240	6/8	132/176	2,816
15" (375)	15.300	6	132	1,584
18" (450)	18.701	2/3/4/6	44///132	1,100
21" (525)	22.047	4	88	704
24" (600)	24.803	4	88	704
27" (675)	27.953	3	66	396
SDR-41, 100 PSI				
6" (150)	6.140	28/32	616/704	11,264
8" (200)	8.160	15/18	330/396	6,336
10" (250)	10.200	8/10	176/220	3,960
12" (300)	12.240	6/8	132/176	2,816
15" (375)	15.300	6	132	1,584
18" (450)	18.701	2/3/4/6	44///132	1,100
21" (525)	22.047	4	88	704
24" (600)	24.803	4	88	704
27" (675)	27.953	3	66	396
SDR-32.5, 125 PSI				
6" (150)	6.140	28/32	616/704	11,264
8" (200)	8.160	15/18	330/396	6,336
10" (250)	10.200	8/10	176/220	3,960
12" (300)	12.240	6/8	132/176	2,816
15" (375)	15.300	6	132	1,584
18" (450)	18.701	2/3/4/6	44///132	1,100
21" (525)	22.047	4	88	704
24" (600)	24.803	4	88	704
27" (675)	27.953	3	66	396
SDR-26, 160 PSI				
15" (375)	15.300	6	132	1,584
18" (450)	18.701	2/3/4/6	44///132	1,100
21" (525)	22.047	4	88	704

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PVC-GATED™

Operating Pressure:
Diamond gated pipe (with gates installed) is pressure-rated at 22 psi.

Gate Hole Size:
Standard rectangle 1.25 x 2.625
Large "Hi-capacity" 1.25 x 3.325

Benefits of Diamond Plastic's PVC pipe include:
- Pipes won't rust or corrode
- Less friction loss
- Resiliency and dent resistance
- Non-conductor (no electrolysis)
- Built with a Sunlight (UV) resistant compounding

WaterGate™ meets or exceeds SCS 430HH

PVC-GATED™
AREA OF GATE OPENING SPECIFICATION DATA

Setting	Standard	Large "High Capacity"
1/4	0.57 Sq. In.	0.85 Sq. In.
1/2	1.25 Sq. In.	1.57 Sq. In.
3/4	1.90 Sq. In.	2.38 Sq. In.
Full Open	2.39 Sq. In.	3.21 Sq. In.
Hole w/o Gate	3.28 Sq. In.	4.15 Sq. In.
Hole Size	1.25 x 2.625	1.25 x 3.325

PVC-GATED™
STANDARD HOLE & LARGE (HIGH CAPACITY) HOLE (GALLONS PER MINUTE).
PVC-GATED™ IS SUPPLIED IN 30-FOOT LAYING LENGTHS.

ALL DATA IN GALLONS PER MINUTE								
Head Pressure Inches water	FULL OPEN		3/4 OPEN		1/2 OPEN		1/4 OPEN	
	Standard	Large	Standard	Large	Standard	Large	Standard	Large
3"	38.4	48.0	28.6	34.3	19.0	22.8	8.6	11.3
6"	45.1	56.6	33.0	39.6	21.7	26.0	9.7	12.8
9"	50.3	62.8	37.0	44.4	24.7	29.6	11.0	14.5
12"	55.8	69.7	43.3	51.9	26.9	32.2	12.2	16.1
18"	64.6	80.7	48.2	57.8	31.7	38.0	14.0	18.4
24"	73.0	91.2	53.6	64.3	35.6	42.7	15.8	20.8
30"	76.4	95.5	57.6	69.0	38.3	45.9	17.2	22.7
36"	82.6	103.2	62.5	75.0	41.4	49.6	18.6	24.5
48"	95.0	118.7	75.6	90.7	47.4	56.8	21.0	27.7
60"	101.9	127.3	82.2	96.6	50.0	60.0	23.4	30.8

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PVC-GATED™ SURFACE
LOADING CHART

WATERGATE™
LOADING CHART

Outside Diameter in. (mm)	Joint Laying Length	Minimum Wall Thickness	Pieces Per Bundle	Feet Per Bundle	Bundles Per Load	Pieces Per Load	*Feet Per Truckload
WATERGATE PLAIN PIPE = FLOW LINE							
6" (150)	30'	.120	32	960	8	256	7,680
8" (200)	30'	.120	18	540	8	144	4,320
10" (250)	30'	.120	8/10	240/300	10	90	2,700
12" (300)	30'	.120	8	240	8	64	1,920

DIAMOND-LITE™
GATED LOADING CHART

Outside Diameter in. (mm)	Joint Laying Length	Minimum Wall Thickness	Pieces Per Bundle	Feet Per Bundle	Bundles Per Load	Pieces Per Load	*Feet Per Truckload
DIAMOND-LITE PLAIN PIPE = FLOW LINE							
6" (150)	20'	.090	32	640	16	512	10,240
6" (150)	30'	.090	32	960	8	256	7,680
8" (200)	20'	.100	18	360	16	288	8,640
8" (200)	30'	.100	18	540	8	144	4,320
10" (250)	30'	.110	10	300	10	100	3,000

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LIMITED WARRANTY AND LIABILITY

Diamond Plastics Corporation, 1212 Johnstown Road, P. O. Box 1608, Grand Island, NE 68802, does hereby warrant, subject to the limitations hereinafter stated, its PVC Pipe to be free from defects in material and workmanship under normal use and service for a period of twelve (12) months from the date of invoice. This limited warranty extends only to the original purchaser for use, and will be void if the product is used under conditions other than those for which it was designed or if it is not used in compliance with all instructions contained in any operating manual or specification sheets provided for such product.

The sole obligation of Diamond Plastics Corporation, under this limited warranty, and the exclusive remedy of the purchaser under this limited warranty is the repair or replacement, without charge, F.O.B. shipping point, of such products or parts of products only, specifically excluding any labor or installation thereof, which Diamond Plastics Corporation, after inspection, determines to be defective. Purchaser must notify Diamond Plastics Corporation, in writing at its address shown above within ten (10) days from the date of discovery of any claimed defect specifically stating the details of such defect, and, if requested by Diamond Plastics Corporation, return the defective product, freight prepaid, to Diamond Plastics Corporation, F.O.B. shipping point as shown on Diamond Plastics Corporation's order acknowledgment.

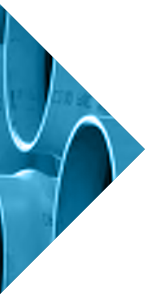
Diamond Plastics Corporation shall not be liable for any other damages, whether direct or consequential. Specifically, but without limitation, Diamond Plastics Corporation shall not be liable for any crop damage or any other incidental or consequential damages resulting from any breach of warranty, express or implied, or from any defects in its products.

No statement, remark, agreement, representation, promise or understanding, oral or written, made by Diamond Plastics Corporation, or any agent, representative or employee thereof, which is not contained herein, will be recognized by, or be enforceable or binding upon Diamond Plastics Corporation.

There are no understandings or undertakings of any kind with respect to the products or any part thereof which are not expressly set forth and contained herein, and all sales are made without any representation or warranty by Diamond Plastics Corporation that the goods are suitable for any particular purpose. In the event any provision of this LIMITED WARRANTY AND LIMITATION OF LIABILITY is held to be illegal or unenforceable by any court of competent jurisdiction, the remaining provisions shall remain in full force and effect.

STATUTE OF LIMITATION: Any action for breach of this LIMITED WARRANTY AND LIMITATION OF LIABILITY must be commenced within one (1) year after the cause of action has accrued.

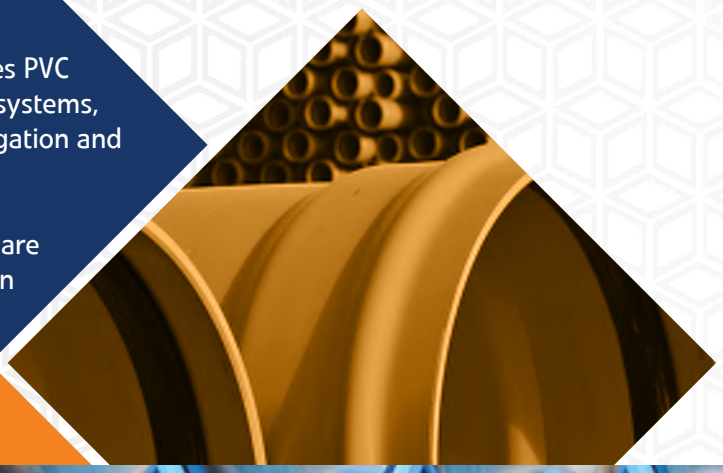
THERE ARE NO EXPRESS OR IMPLIED WARRANTIES BY Diamond Plastics CORPORATION, OTHER THAN THOSE SPECIFICALLY SET OUT ABOVE. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH ANY SALE EXCEPT AS SET FORTH ABOVE.



QUALITY
YOU CAN DEPEND ON

Diamond Plastics Corporation manufactures PVC pipe products for potable water distribution systems, for wastewater collection systems, and for irrigation and agricultural applications.

Our staff of sales and service personnel are ready to assist you in product selection and to answer your questions of delivery or order status.



DIAMOND PLASTICS® CORPORATION

Diamond Plastics Corporation

1212 Johnstown Road Grand Island, Nebraska 68803

TF: 1.800.782.7473 | EM: info@dcpipe.com

WEB: dpcpipe.com

PVCPIPE association

02/17

Vylon® Pipe

Closed Profile PVC Pipe for Gravity Flow Sanitary Sewers

Vylon® Pipe

The first installation of Vylon Pipe occurred in 1987 in a direct bury gravity flow sewer application. Since then, millions of feet have been installed in projects all across the country. With its innovative I-beam construction and closed profile design Vylon Pipe meets the required minimum pipe stiffness of 46 psi found in ASTM F-1803 along with all the other requirements in that standard.

Unique Design

Vylon Pipe is made in diameters of 21" through 54" making it a much more cost effective way to meet the large diameter project requirements compared to using solid wall pipe without any loss of performance. Vylon's unique four-finned gasket design assures leak free joints when properly installed, and proper installation is easy with Vylon's two assembly marks clearly shown and the exterior gasket "J-leg" remaining visible during assembly.

Continuous Innovation

Since the first introduction of Vylon Pipe we have continued our spirit of innovation. First developed was our Vylon Slipliner Pipe in 1992 which allows the rehabilitation of an existing sewer during live flow conditions, and then our Vylon 75 pipe was introduced, providing a pipe stiffness of 75 psi to meet the growing demand for higher stiffness, more rugged sanitary sewer products.

Vylon pipe is a "profile" wall pipe using an I-beam construction.

Vylon® Pipe

Your best choice for today's Sanitary Sewers

Vylon® Pipe

PVC Large Diameter Closed Profile Gravity Sewer Pipe (ASTM F-1803, PS-46)

Scope

This specification designates the requirements for polyvinyl chloride (PVC) pipe and fittings made to a controlled inside diameter in sizes 21" to 54" with an integral bell and elastomeric seal joints which meets the requirements of ASTM F-1803.

Materials

Pipe and fittings shall be made from polyvinyl chloride compounds which comply with the requirements for a minimum cell classification of 12364 as defined by ASTM D-1784.

Dimensions

Pipe sizes, inside diameters and typical dimensions shall conform to those listed in Table 1.

Joints

All pipe joints shall be of the bell and spigot type with elastomeric seals and conform to the requirements of ASTM D-3212. Gaskets shall be factory installed and chemically bonded to the bell end of the pipe. Gasket material shall conform to the requirements of ASTM F-477. Factory tapered spigot ends shall be made of PVC and shall be formed during the manufacturing process by heating the inner and / or outer wall and remolding. Spigot ends formed by using filler material such as rubber, neoprene or other filler materials that are attached or glued to the inner wall are not acceptable.

Physical Requirements

Pipe stiffness – minimum pipe stiffness shall be 46 psi when tested in accordance with ASTM D-2412.

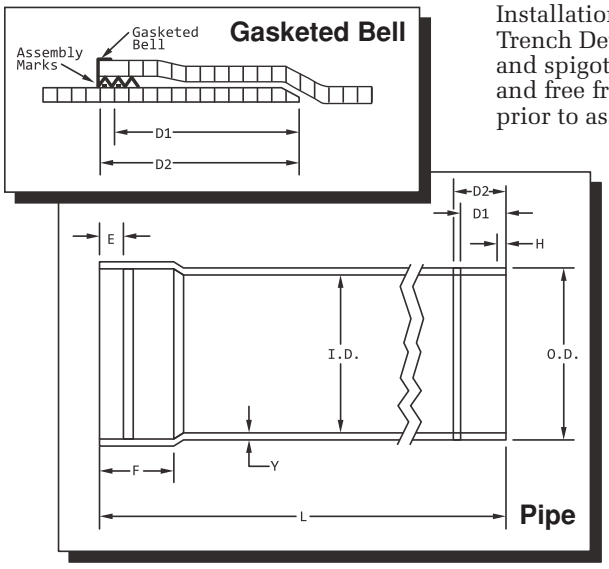
Impact resistance – no visual cracking or splitting of the waterway wall shall be evidenced when tested in accordance with ASTM D-2444 with a 20 lb. weight, tup B, flat plate holder B to a level of 220 ft. lbs.

Ductility – there shall be no evidence of cracking or splitting when pipe is flattened in a circumferential orientation between two flat plates by sixty percent (60%) of the original inside diameter or as required by ASTM F-1803.

Air tightness – each length of pipe shall pass a factory 3.5 psi air test as described in ASTM F-1803.

Marking

Each pipe shall be identified with the name of manufacturer, nominal size, cell classification, ASTM designation F-1803, the pipe stiffness designation "PS-46" and manufacturer's date code.



Installation

Bedding, backfill and general installation requirements should comply with ASTM D-2321. Further details can be obtained from the Vylon PVC Gravity Sewer Pipe's Installation Guide and Vylon Trench Detail. Gaskets, bells and spigots shall be cleaned and free from soil or stones prior to assembly. Lubricant supplied by the pipe manufacturer shall be applied to the gasket. Spigots should be aligned with the bell and be pushed into place so that the second home mark is just visible adjacent to the bell entry point.

Table 1. Vylon Pipe Diameter Dimensions

NOMINAL SIZE	NOMINAL O.D.	BELL O.D	I.D	MIN. INNER WALL THK.	Y MINIMUM PROFILE HEIGHT
21"	22.110	24.68	20.75	0.080	0.680
24"	25.115	27.81	23.50	0.100	0.770
27"	28.232	31.21	26.50	0.115	0.866
30"	31.415	34.62	29.50	0.125	0.965
36"	37.800	41.39	35.50	0.150	1.150
42"	44.200	48.22	41.50	0.180	1.350
48"	50.570	54.98	47.50	0.210	1.535
54"	56.960	61.80	53.50	0.225	1.730

Table 2. Vylon Pipe Joint Dimensions

SIZE	SPIGOT HOMING MARKS		F SOCKET DEPTH	H BEVEL LENGTH MIN	L LENGTH
	D1	D2			
21"	7.75	8.75	8.00	1.25	14'-8.00"
24"	7.50	8.50	7.75	1.25	14'-7.75"
27"	8.50	9.50	8.75	1.25	14'-8.75"
30"	9.25	10.25	9.50	1.50	14'-9.50"
36"	9.00	10.00	9.25	2.50	14'-9.25"
42"	8.75	9.75	9.00	2.50	14'-9.00"
48"	10.50	11.50	10.75	2.50	14'-10.75"
54"	10.50	11.50	10.75	3.00	14'-11.00"

Vylon 75

Setting a New Standard for Large Diameter Sanitary Sewer Pipe

Vylon® Pipe

Vylon® Pipe

For more than 25 years Vylon® has been the leading manufacturer of closed profile PVC pipe for large diameter sanitary sewer systems. However, in recognition of customer demand for a more rugged, higher stiffness product Vylon 75 was developed, meeting this demand unlike any other sanitary sewer pipe product.

The Design

Beginning in 1985, Vylon Pipe began to use and further develop the technology to manufacture a high capacity, closed profile PVC pipe for sanitary sewer systems. The pipe's smooth inner and outer walls, with an I-beam profile construction, allows for a more cost effective use of material in pipe available in diameters of 21" through 54" while still assuring superior performance. Manufactured with a pipe stiffness of 46 psi (PS 46), the first pipe was installed in 1987, with millions of feet installed since then.

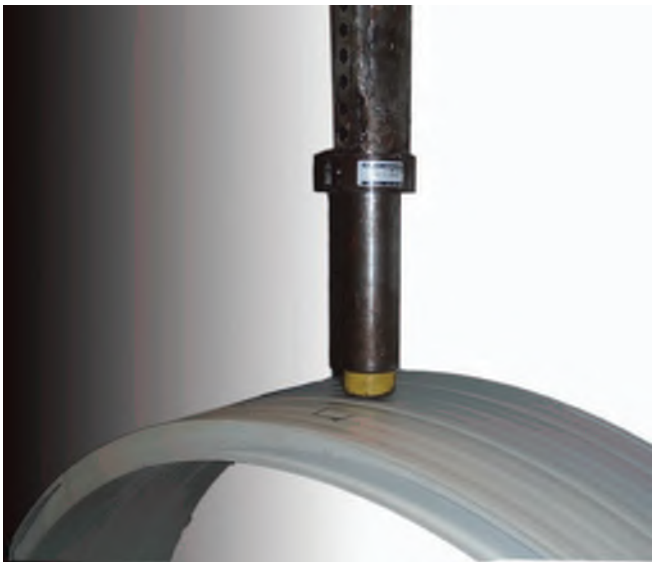
Vylon 75

But now specifiers have a better choice with Vylon 75, a product with a pipe stiffness of 75 psi, or 63% higher than a PS 46 product. Through innovative product changes in the profile and state-of-the-art manufacturing processes, Vylon Pipe is able to bring you the most advanced sanitary sewer product available today: ***Vylon 75!***

Vylon 75 Features

Higher Impact Resistance

Vylon 75 far exceeds the requirements of ASTM F1803 (Standard Specification for Poly Vinyl Chloride Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter). In addition to the higher pipe stiffness of 75 psi (ASTM F1803 requires 46 psi), Vylon 75 is a more rugged, robust product, with a much higher impact resistance than is required by ASTM F 1803 and other ASTM standards for sanitary sewer pipe.

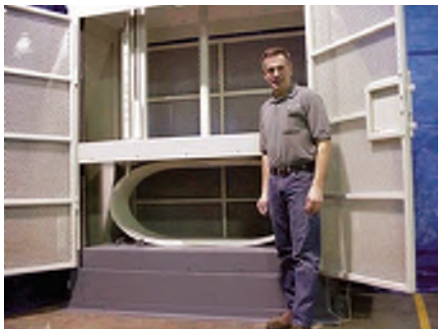


Ease of Installation

Vylon 75 should be installed in accordance with ASTM D 2321 (Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications) and the Vylon Pipe Installation guide. Like any flexible pipe product, Vylon 75 deflects slightly under load to develop support from the surrounding backfill. Properly installed, deflection of Vylon 75 will be well under acceptable levels at typical interceptor sewer depths.

Uncompromising Quality

With Vylon 75 you can expect the same high level of quality that you have always obtained with Vylon Pipe. For example, even with the higher stiffness Vylon can meet the rigorous requirements of a pipe flattening test, requiring that a pipe must be able to carry load up to 30% deflection without buckling, providing a safety factor of at least 4 based on expected long term deflection levels.

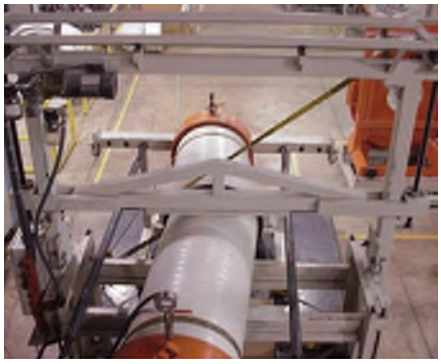


Leak Free Gasket

Vylon 75 uses the same high performance joint design that has shown outstanding performance for more than 25 years. With Vylon's unique four-finned gasket permanently fixed to the bell you can be assured of leak free joints for a properly installed joint, and proper installation is easy with Vylon's two assembly marks clearly shown and the exterior gasket "J-leg" remaining clearly visible during assembly.

Superior Joint Design

Vylon 75 is manufactured to exceed the requirements of ASTM D 3212 (Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals), which requires that the pipe pass a 10.8 psi hydrostatic test with zero leakage, even under conditions of a 5% point load deflection within one foot of the joint and with the pipe aligned at an angle to allow for curvature. Vylon 75 is tested under the same conditions but at 22 psi, assuring you of watertight performance even at deeper interceptor sewer depths.



High Flow Capacity and Corrosion Resistance

Vylon 75 has a Manning's "n" value of 0.009 assuring high capacity flow, and the possibility of using a smaller diameter pipe to meet your capacity requirements compared to other pipe materials. Made out of PVC, you can also be assured that Vylon 75 will not deteriorate when exposed to a typical sanitary sewer environment while providing the same high quality of flow for years to come.

Simply put, Vylon 75 is the best choice for today's sanitary sewers, given its superior performance, long life and cost effective design.

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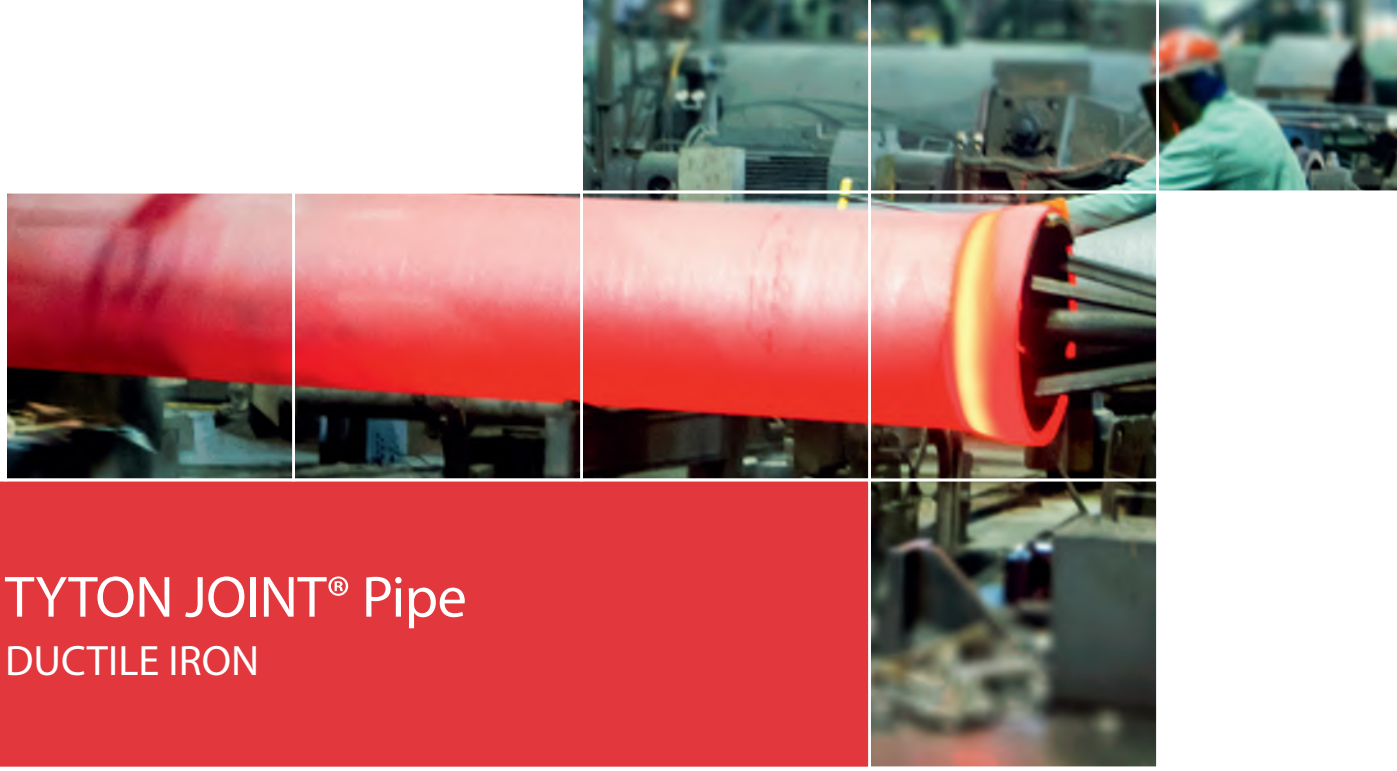


TYTON JOINT® Pipe

DUCTILE IRON

Since the initial production in the 1960's, Tyton Joint Pipe has become the standard by which all other pipe is measured. Designed to be used in a wide variety of water and wastewater projects, with sizes ranging from 3" to 64" it can be utilized in buried applications, bridge crossings, or above ground installations.

Requiring only a Tyton gasket to install the pipe, Tyton Joint Pipe can be configured as a non-restrained or restrained joint. Utilizing the Field-LOK 350 gasket allows for 4"-24" to be restrained with only a gasket change. For pipe 30" to 64", HP-LOK pipe and fittings may be used for up to 350psi.

Availability of thickness classes from 50 to 56, ensures that Tyton Joint Pipe can meet the most rigorous needs for a strong, reliable, and long lasting pipe. Available with a variety of coatings and linings such as Zinc, Protecto-401, and glass lining,

Tyton Joint Pipe can be coated to suit your specific distribution needs to maintain a durable pipe infrastructure. Combined with various flanges, fittings, and custom ends from U.S. Pipe Fabrication, the Tyton Joint pipe is a versatile produce for a wide variety of uses.

Call your local U.S. Pipe Sales Manager to learn about the various uses and options available with the Tyton Joint pipe.

FEATURES & BENEFITS

- Convincing proof of its worldwide acceptance is shown by the fact that more than 95% of the pipe now sold by U.S. Pipe is Tyton Joint Pipe.
- Tyton Joint Pipe is available in sizes 3" through 64". Sizes 3" through 42" are available in nominal 18-foot laying lengths. 4" through 30" sizes, along with sizes 48" through 64", are available in nominal 20-foot laying lengths.
- Tyton Joint Pipe in sizes 4" through 36" are UL Listed, and sizes 4" through 16" are FM Approved.

GENERAL SPECIFICATIONS

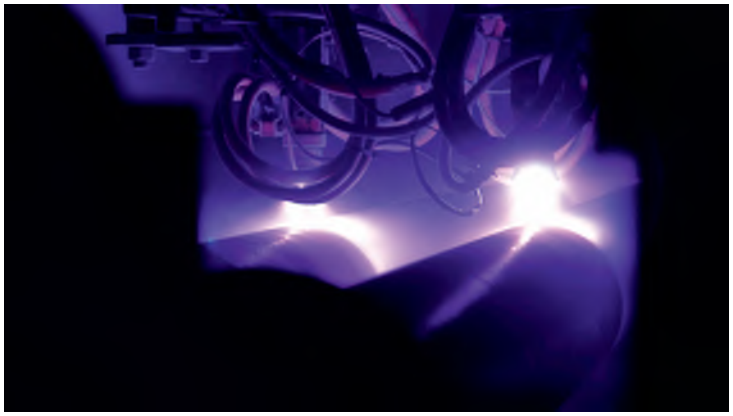
Diameter Range	3"–64"
Pressure Class	150/200/250/300/350 psi
Thickness Class	50–56
Lengths	18' & 20'
Maximum Joint Deflection	5°

STANDARDS

- ANSI/AWWA C151/A21.5 Ductile Iron Pipe, Centrifugally Cast for Water.
- ANSI/AWWA C104/A21.4 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- ANSI/AWWA C111/A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- ANSI/AWWA C105/A21.5 Polyethylene Encasement for Ductile Iron Pipe Systems.
- ASTM A746-03 Standard specification for Ductile Iron Gravity Sewer Pipe.
- ASTM A716-08 Standard Specification for Ductile Iron Culvert Pipe.
- ASTM A536 Standard Specification for Ductile Iron Castings.

COATINGS AND LININGS

- Metallic Zinc Coating
- Protecto-401™
- V-Bio® Enhanced Polyethylene Encasement
- Glass Lining
- And more, ask your U.S. Pipe Sales Manager for details



Headquarters

U.S. Pipe
Two Chase Corporate Dr.,
Suite 200
Birmingham, AL 35244

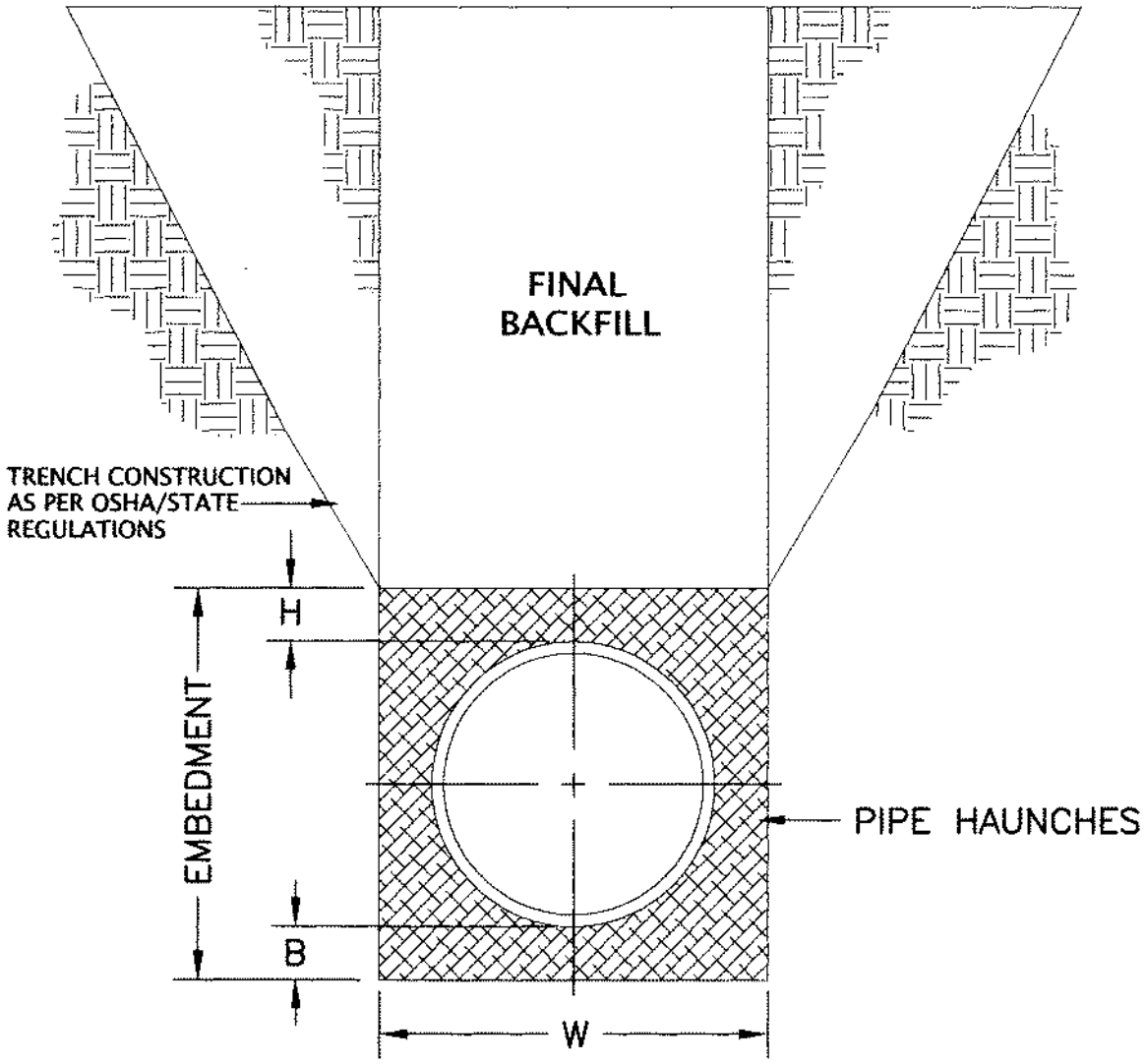
866-347-7473

info@uspipe.com
www.uspipe.com

A Forterra Company

A Forterra Company

BEDDING RECOMMENDATIONS
VYLON PIPE



NOTES:

1. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321
2. CLASS I, II, OR III MATERIALS ARE ACCEPTABLE, ALTHOUGH CLASS I MATERIALS PROVIDE SUFFICIENT SUPPORT FOR MOST INSTALLATIONS IF THE MATERAIL IS SHOVEL SLICED UNDER THE HAUNCHES. CLASS II OR CLASS III MATERIALS REQUIRE COMPACTING IN LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY.
3. "H" AND "B" SHALL BE 6" MINIMUM, "W" IS A MINIMUM OF THE PIPE OD + 18"
4. IF THE MIGRATION OF FINES FROM ADJACENT MATERIALS IS EXPECTED CONSIDERATION SHOULD BE GIVEN TO USE OF A GEOTEXTILE OR SOME OTHER MEANS TO PREVENT LOSS OF PIPE SUPPORT.
5. WEAK NATIVE SOILS, SUCH AS THOSE WITH BLOW COUNTS OF 5 OR LESS, MAY REQUIRE ADDITIONAL MEASURES TO PROVIDE A SUFFICIENT FOUNDATION UNDER THE PIPE AND/OR PROVIDE SUFFICIENT LATERAL SUPPORT. SEE ASTM D 2321 FOR FURTHER INFORMATION.

APPENDIX E: ENVIRONMENTAL DUE DILIGENCE REPORT

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February 4, 2019

Mr. Aaron Tice, PE
WileyWilson
127 Nationwide Drive
Lynchburg, Virginia 24502

ECS Project No. 47:7506

Reference: Environmental Due Diligence Review, BRWA Wastewater Interceptor Project, Bedford, Virginia

Dear Mr. Tice:

ECS Mid-Atlantic, LLC (ECS) is pleased to provide WileyWilson with the results of the environmental due diligence reviews for the above-referenced project site. Our services were provided in general accordance with ECS Proposal No. 47:9933-EP, dated December 6, 2018.

PROPERTY DESCRIPTION

The study area is comprised of a proposed route for a wastewater interceptor pipeline, which generally follows a portion of Ivy Creek between Lynchburg and Forest, Virginia. ECS conducted database reviews of available environmental information and visited a portion of the site on January 30, 2019. Due to site access restrictions and road safety concerns, it should be noted that a visual assessment of the study area was limited to two publically-accessible bridges located over Ivy Creek on Hawkins Mill Road (Route 660) and Cottontown Road (Route 621).

SUMMARY OF FINDINGS

Rare, Threatened, & Endangered Species

ECS conducted desktop reviews of the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Service (VAFWIS) database, the U.S. Fish and Wildlife Service's Information, Planning, and Consulting (IPaC) system, and the Virginia Department of Conservation and Recreation's Natural Heritage Database Explorer (NHDE) online database. A brief summary of findings is discussed below.

- VAFWIS: this database includes information on documented occurrences of Federally and/or state listed species within a two-mile radius of the project area. According to VAFWIS, one species is listed as having the potential to occur within this search radius: green floater (*Lasmigona subviridis*). Portions of Ivy Creek within the study area are mapped by VAFWIS as potential habitat for this species. According to online resources, preferred habitat for the green floater includes small creeks to large rivers with sandy and gravel substrates and clean water. It is intolerant of flooding or intermittent dry channels and prefers hydrologically stable conditions. Although very limited in our observation locations, ECS observed Ivy Creek to have a silt and gravel substrate with perennial flow. Portions of the stream bank showed evidence of heavy erosion, likely indicating flash flooding and unstable flow conditions during storm events. Since potential habitat may still be present, ECS believes coordination with VADGIF and/or other agencies may be needed to determine mitigation

measures to minimize and avoid adverse impacts to habitats during construction of stream crossings for the utility installation. Potential measures imposed could include in-stream time of year restrictions (TOYRs) on construction and certain erosion and sediment controls such as the use of non-erodible cofferdams during construction for in-stream work and working in the dry. The potential for TOYRs to be imposed can be mitigated by conducting a site specific habitat or species survey in the locations of any stream crossings, should such crossing be required for the project. For planning purposes, TOYR for this species include April 15th through June 15th and August 15th through September 30th. If these periods cannot be avoided for in-water work, and a wetland or stream impact permit will be required, it may be prudent to conduct additional habitat or species surveys. Search results can be found in Appendix 1a.

- USFWS: this database evaluates the documented occurrences or potential habitat for Federally listed species within the project boundaries. According to USFWS, one species is listed as having potential to occur within the project area: northern long-eared bat (*Myotis septentrionalis*). Potential habitat for this bat includes caves and abandoned mines during the winter months and trees greater than 3" dbh with shaggy bark during summer months for roosting purposes. Roosting trees are preferred along riparian stream corridors. It should be noted that no known hibernacula or roosting trees are mapped within or near the study area, therefore surveys or other mitigation measures likely will not be necessary, however time-of-year restrictions for tree clearing may be recommended to minimize impacts to potential roosting habitat if the proposed project includes extensive tree clearing (i.e. >10 acres). Visual site observations and reviews of available online information indicate much of the study area is located within forested riparian corridors along Ivy Creek. As such, a project specific review is recommended to be submitted to the USFWS for their review and concurrence in order to definitely determine if TOYRs or other mitigation measures will be required. Search results can be found in Appendix 1b.

- NHDE: this database evaluates the potential for rare, threatened, or endangered species habitat and other natural heritage areas. According to DCR, there are no natural heritage resources within the study area. Portions of the study area are adjacent to a Virginia Outdoors Foundation conservation easement, but it appears the proposed utility route will not encroach within these easement area. Search results can be found in Appendix 1c.

Historical & Cultural Resources

A review of the Virginia Department of Historic Resources (DHR) Cultural Resource Information System (VCRIS) for architectural or archaeological resources within the study area yielded one architectural resource within the study area. This resource is identified by DHR Site Number 009-5410 and labeled as Bridge #6031, Cottontown Road, Ivy Creek and is located over Ivy Creek at the southern end of the study area. Upon review of DHR's inventory, this feature has previously been evaluated by professionals and is determined to not be eligible for listing in the National Register of Historic Places. ECS observed this bridge during a site visit and photographs are included in Appendix 4. Given the previous not eligible determination, it is likely DHR would not require additional studies of this feature in the context of the proposed project. Mapped features can be found in Appendix 2.

Environmental Regulatory Database

Public records were reviewed to identify evidence of past or present activities on or near the project area which may have resulted in soil, surface water, and/or ground water contamination or the generation, use, storage, or disposal of hazardous waste, chemical, or petroleum products/materials. This regulatory

database information was obtained from Environmental Data Resources Inc. (EDR). The EDR report, dated January 22, 2019 is attached. The report is based on an ASTM standard radius search centered on the geographic coordinates of the project area.

These databases track properties 1.) that generate, treat, store or dispose of hazardous waste or petroleum products; 2.) where spills of hazardous waste or petroleum products are known to have occurred or where clean-up has been mandated; and 3.) are in violation of environmental laws or regulations. Based on our knowledge of the subject property and the surrounding area, ECS attempts to verify and interpret this data. Some properties identified in the databases are not plotted due to inadequate address and geocoding information; these are referred to as "Non-Geocoded" facilities. ECS reviewed the list of "Non Geocoded" sites in an attempt to verify their location and possible impact to the subject property. While this attempt at verification is made with due diligence, ECS makes no warranty regarding the accuracy of the database report information.

The following is a description of the identified sites in proximity to the subject property, identified by the EDR Report:

- SPILLS Database - This database documents spills and releases to the environment reported to local authorities.
    - Bedford Regional Water Authority (Incident Report #: 2018-W-1800) – This facility is located at 2474 Cottontown Road, reportedly located within the project area. The EDR report indicates that this incident relates to an overflow that occurred at a sewage pump station in February 2018 where an estimated 50,000 gallons of sewage was released to a nearby tributary. The incident report is denoted as closed. Considering the nature of this release, being that of sewage overflow and not a petroleum or chemical release; this listing is not considered to be an environmental concern for the proposed project.
- RCRA Generators Database - RCRIS identifies facilities that generate hazardous wastes as defined by the RCRA. Conditionally exempt small quantity generators (CESQGs) generate less than 100 kilograms (kg) of hazardous waste, or less than 1 kg of acutely hazardous waste, per month. Small quantity generators (SQGs) generate between 100 and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate more than 1,000 kg of hazardous waste or more than 1 kg of acutely hazardous waste per month.
    - Ericsson Inc. (EPA ID: VAR000010819) – This facility is located at 314 Jefferson Ridge Parkway, an adjoining property to the west. Furthermore, the facility appears to be at least 200 feet to the closest point of the study corridor. This facility is listed as a CESQG, indicating that they generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste, per month. No violations are noted with this facility. Considering the lack of violations associated with this facility, and the distance relative to the project area, this listing is not considered to be an environmental concern for the subject property.
- Above Ground Storage Tank (AST) Database - The AST Database is a list of facilities that have registered ASTs with the state regulator.
    - Boxly Block, LLC (Facility ID: 7040090) – This facility is located at 110 Lynchpin Lane, reportedly located over 1,000 feet southeast relative to the study corridor. This facility is listed as containing two active ASTs. No pollution complaints or violations are noted with this

facility. Considering the distance of this facility, over 1,000 feet, releases from this facility would be unlikely to impact the subject property.

- Leaking Underground Storage Tank (LUST) Database - The LUST list is a record of reported leaking underground storage tank incidents. The LUST list may also identify properties that have had soil and/or groundwater contamination associated with documented releases from aboveground storage tanks, surface spills, and other sources.
    - Janice Fears Residence (PC#: 20142310) – This property is located at 825 Wiggington Road, reportedly over 2,000 feet north-northeast relative to the study area. The pollution complaint is listed as closed. Considering the distance of this facility, over 2,000 feet, releases from this property would be unlikely to impact the study corridor.
- Unmapped (Orphan) Facilities and Sites - These facilities are considered as unmappable because the facility information in the database is insufficient and does not report accurate facility location.
    - Several sites are listed on the Orphans database; ECS did not identify these facilities within close proximity to the subject property. However, we note that there are several SPILLs listings that appear to be related to the Bedford Regional Water Authority (the property owner). It appears that these listings are located offsite and/or on the Authority's wastewater treatment plant property, and are likely to be related to sanitary sewer and water releases. ECS believes the risk for these releases to the proposed project is low.

In summary, various facilities are listed in the EDR database in proximity to the study area. However, based on the information reviewed in the EDR report, ECS believes the risk posed by these listings to the proposed project is low and additional investigation does not appear warranted at this time unless a greater degree of certainty is required by the client.

We strongly note that this regulatory review only serves as a preliminary review and does not meet the qualifications for All Appropriate Inquiry (AAI) for property due diligence.

This completes our scope of service for this project. It should be noted that these recommendations are based off our review of the aforementioned and does not included species presence/absence determinations nor impact assessments. If you have any questions or comments concerning the contents of the enclosed documents or other related topics, please feel free to contact us.

Respectfully submitted,

ECS MID-ATLANTIC, LLC

Jessica A. Antos
Environmental Project Manager
JAntos@ecslimited.com

Adam M. Meurer, CHMM, PWS
Environmental Principal
AMeurer@ecslimited.com

APPENDIX 1a

Virginia Fish and Wildlife Information Service (VAFWIS)
Search Results

Site Location

37,24,32.2 -79,14,40.0
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Display at center | **Search Point** is not at map center

Base Map Choices
Color Aerial Photography

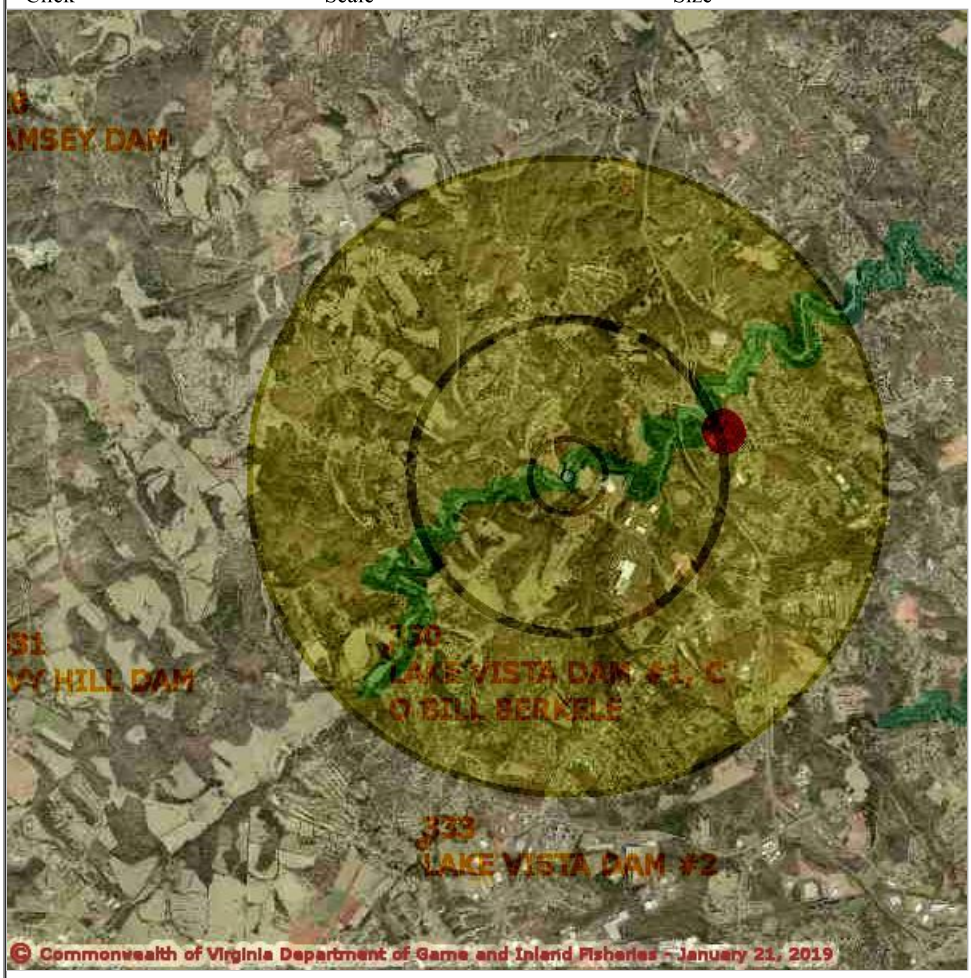
Map Overlay Choices
Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

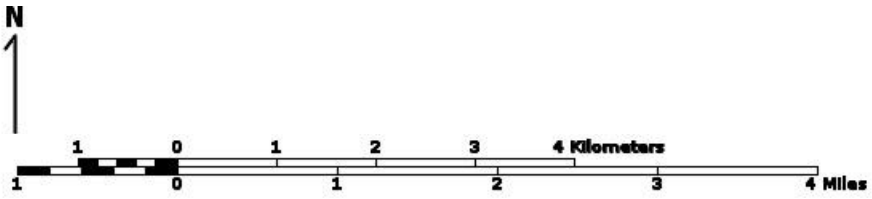
Map Overlay Legend

Virginia Fish and Wildlife Information Service

back | Refresh Browser Page

Map Click: Pan | Id | M
Map Scale: In | Zoom | Out
Screen Size: Small | Size | Big
Help





Point of Search 37,24,32.2 -79,14,40.0
Map Location 37,24,28.0 -79,15,12.6

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: Color Aerial Photography 2002 - Virginia Base Mapping Program, Virginia Geographic Information Network

Map projection is UTM Zone 17 NAD 1983 with left 649768 and top 4146343. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

T & E Waters

Federal

State

Predicted Habitat WAP Tier I & II

Aquatic

Terrestrial

Trout Waters

Class I - IV

Class V - VI

Anadromous Fish Reach

Confirmed

Potential

23 Impediment

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2019-01-21 16:22:26 (qa/qc March 21, 2016 12:20 - tn=955537.0 dist=3218 I)
$poi=37.4089558 -79.2444474

VaFWIS Search Report Compiled on 1/22/2019, 8:29:32 AM

Help

Known or likely to occur within a **2 mile radius around point 37.4089558 -79.2444467**
in **019 Bedford County, 680 Lynchburg City, VA**

View Map of Site Location

549 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 31) (31 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010214	FESE	IIa	Logperch, Roanoke	Percina rex		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060029	FT	IIa	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA,HU6
040379	ST	Ia	Sparrow, Henslow's	Ammodramus henslowii		BOVA
060173	FPST	Ia	Pigtoe, Atlantic	Fusconaia masoni		BOVA
060081	ST	IIa	Floater, green	Lasmigona subviridis	Potential	Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA,HU6
010174		Ia	Bass, Roanoke	Ambloplites cavifrons		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA,HU6
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA,HU6
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA,HU6
080216		Ib	Willowfly, cryptic	Taeniopteryx nelsoni		BOVA
020039		Ic	Salamander, Peaks of Otter	Plethodon hubrichti		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor	Potential	BOVA,BBA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
070138		IIc	Amphipod, Bland County	Crangonyx sp. 3		BOVA
080336		IIc	Beetle, Gammon's stenelmis riffle	Stenelmis gammoni		BOVA
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius		BOVA,HU6
100256		IIc	Crescent, tawny	Phyciodes batesii batesii		BOVA

To view **All 549 species** View 549

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (1 records)

View Map of All Fish Impediments

ID	Name	River	View Map
330	LAKE VISTA DAM #1, C/O BILL BERKELE	TR-IVY CREEK	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (1 records)

View Map of All Query Results Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
LY0701	1	Jan 1 2007	HISTORIC	Yes

Displayed 1 Bald Eagle Nests

Species Observations (42 records - displaying first 20)

View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
361732	SppObs	Jan 1 1900		2		III	Yes
617324	SppObs	Apr 28 2012	Laura ; Berrier| Victor; Fleet| Cindy ; Lane | Bea; Stryker| Gene; Sattler| Bill; Plyler| Nancy; COwden| Laura; Rogers	29		IV	Yes
605677	SppObs	Mar 31 2008	Susan; Wingfield	1		IV	Yes
307147	SppObs	Apr 29 2004	GENE SATTLER (PRINCIPLE PERMITEE), TRACY COOK (COLLECTOR)	1		IV	Yes
303730	SppObs	Jul 26 2003	Gene Sattler	1		IV	Yes
6756	SppObs	May 25 1994	Paul Sattler	8		IV	Yes
617327	SppObs	Jun 25 2012	Kathie; Driscoll	4			Yes

617326	SppObs	Jun 16 2012	Kathie; Driscoll	1			Yes
617325	SppObs	May 19 2012	Kathie; Driscoll	1			Yes
617323	SppObs	Apr 10 2012	Laura ; Berrier	1			Yes
616984	SppObs	Apr 2 2012	Jenifer; Walke| Matthew; Becker	1			Yes
425019	SppObs	May 13 2011	VCU - INSTAR	10			Yes
614208	SppObs	Jan 8 2011	Bruce; Peterjohn	1			Yes
610572	SppObs	Jun 1 2010	Kathie ; Driscoll| Laura; Rogers	1			Yes
605765	SppObs	Oct 4 2009	Paul; Sattler	2			Yes
600625	SppObs	Jul 15 2009	Paul; Sattler	1			Yes
601892	SppObs	Jun 1 2009	Charles; Detwiler	1			Yes
600008	SppObs	May 15 2009	Gene; Sattler	1			Yes
602750	SppObs	Oct 19 2008	Susan ; Wingfield	1			Yes
607069	SppObs	Sep 21 2008	Susan ; Wingfield	1			Yes

Displayed 20 Species Observations

Selected 42 Observations View all 42 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (1 Reach)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Ivy Creek (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Ivy Creek (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (3 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
36086	Boonsboro, SE	72		II	Yes
37083	Lynchburg, CW	2		III	Yes
37085	Lynchburg, SW	1			Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
019	Bedford	466	FESE	I
680	Lynchburg City	347	FTSE	I

USGS 7.5' Quadrangles:
Boonsboro
Lynchburg

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JM09	Ivy Creek-Cheese Creek	57	ST	I
JM10	Blackwater Creek	58	FTST	I

Compiled on 1/22/2019, 8:29:32 AM I955571.0 report=all searchType= R dist= 3218 poi= 37.4089558 -79.2444467

PixelSize=64; Anadromous=0.022802; BBA=0.044593; BECAR=0.022182; Bats=0.02034; Buffer=0.097645; County=0.079673; HU6=0.073482; Impediments=0.030993; Init=0.153828; PublicLands=0.030198; Quad=0.04636; SppObs=0.194664; TEWaters=0.025812; TierReaches=0.060421; TierTerrestrial=0.051999; Total=1.142757; Tracking_BOVA=0.213222; Trout=0.025834; huva=0.035441

Tier Reaches Group Ivy Creek (20802031)

37,24,32.2 -79,14,40.0
is **the Search Point**

Display	**Item Location** is
at center	not at map center

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Color Aerial Photography

Map Overlay Choices
Current List: Position, Search, Observation

Map Overlay Legend

Position Rings 1 mile and 1/4 mile at the Search Point

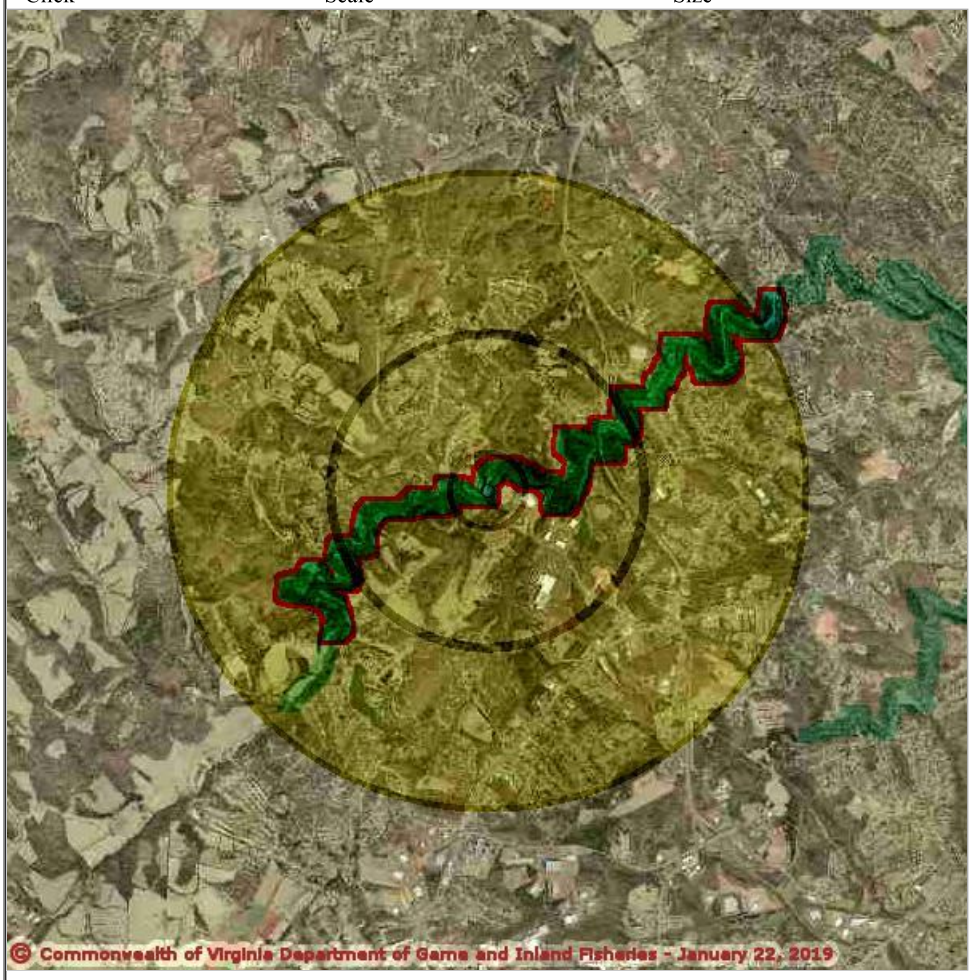
2 mile radius Search Area

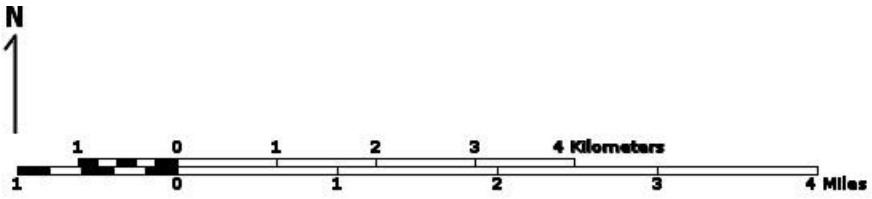
Data Observation Site

Virginia Fish and Wildlife Information Service

back | Refresh Browser Page

Map Click: Pan Id M | Map Scale: In Zoom Out | Screen Size: Small Size Big | Help





Point of Search 37,24,32.2 -79,14,40.0
Map Location 37,24,32.2 -79,14,40.0

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: Color Aerial Photography 2002 - Virginia Base Mapping Program, Virginia Geographic Information Network

Map projection is UTM Zone 17 NAD 1983 with left 650568 and top 4146487. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2019-01-22 08:31:45 (qa/qc March 21, 2016 12:20 - tn=955571.1 dist=3218 I)
$poi=37.4089558 -79.2444467$query=select Convert(varchar(10),floor((minx+maxx)/2)) + ' ' + Convert(varchar(10),floor((miny+maxy)/2)) from vafwis_tables.dbo.cvTierReaches where SEG_ID in ('208020314543 ','208020314640 ','208020314651 ','208020314654 ','208020314687 ','208020314763 ')

Tier Reaches Group Ivy Creek (20802031)

37,24,32.2 -79,14,40.0
is **the Search Point**

Display	**Item Location** is
at center	not at map center

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Color Aerial Photography

Map Overlay Choices
Current List: Position, Search, Observation

Map Overlay Legend

Position Rings 1 mile and 1/4 mile at the Search Point

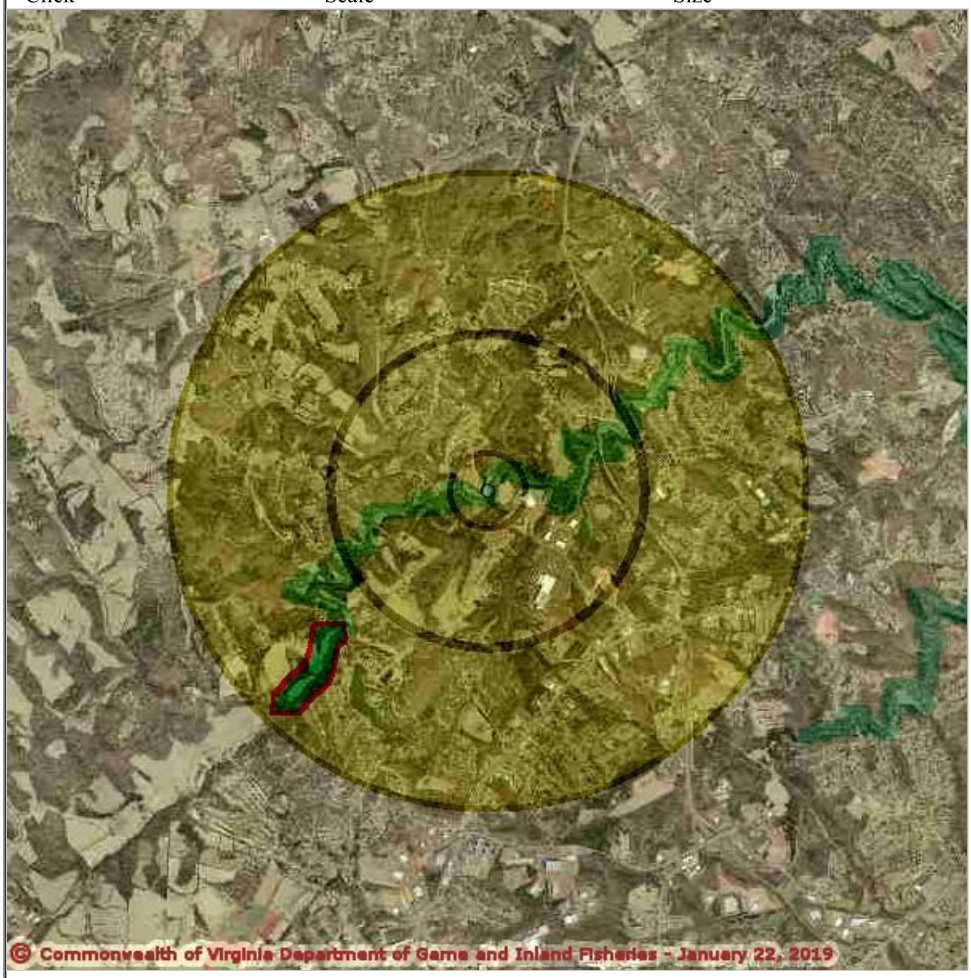
2 mile radius Search Area

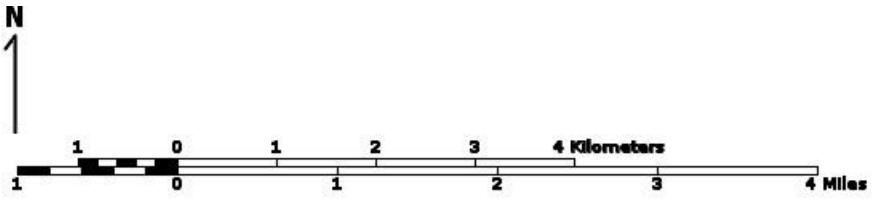
Data Observation Site

Virginia Fish and Wildlife Information Service

back | Refresh Browser Page

Map Click: Pan | Id | M
Map Scale: In Zoom Out
Screen Size: Small Size Big
Help





Point of Search 37,24,32.2 -79,14,40.0
Map Location 37,24,32.2 -79,14,40.0

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: Color Aerial Photography 2002 - Virginia Base Mapping Program, Virginia Geographic Information Network

Map projection is UTM Zone 17 NAD 1983 with left 650568 and top 4146487. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2019-01-22 08:30:57 (qa/qc March 21, 2016 12:20 - tn=955571.1 dist=3218 I)
$poi=37.4089558 -79.2444467$query=select Convert(varchar(10),floor((minx+maxx)/2)) + ' ' + Convert(varchar(10),floor((miny+maxy)/2)) from vafwis_tables.dbo.cvTierReaches where SEG_ID in ('208020314829 ')

APPENDIX 1b

U.S. Fish & Wildlife Service (USFWS)
Search Results

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To:
Consultation Code: 05E2VA00-2019-SLI-1550
Event Code: 05E2VA00-2019-E-03527
Project Name: Bedford Utility Line

January 30, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2019-SLI-1550

Event Code: 05E2VA00-2019-E-03527

Project Name: Bedford Utility Line

Project Type: WASTEWATER PIPELINE

Project Description: Feasibility study for utility line.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.40313445707539N79.26139743757498W

Counties: Bedford, VA | Lynchburg, VA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

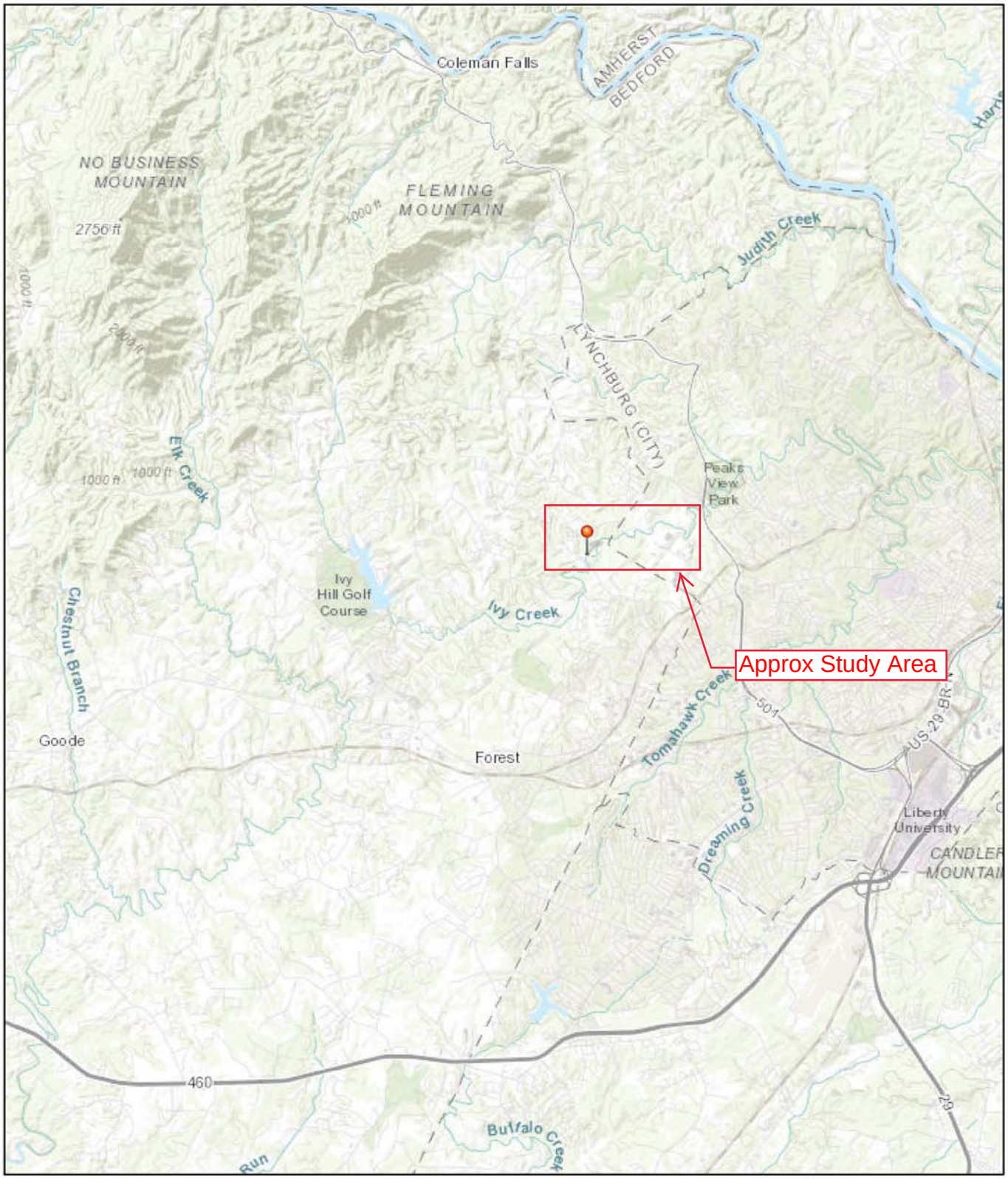
THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

NLEB Locations and Roost Trees



1/30/2019, 9:26:17 AM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

VA Dept. Game & Inland Fisheries
VITA, West Virginia GIS, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

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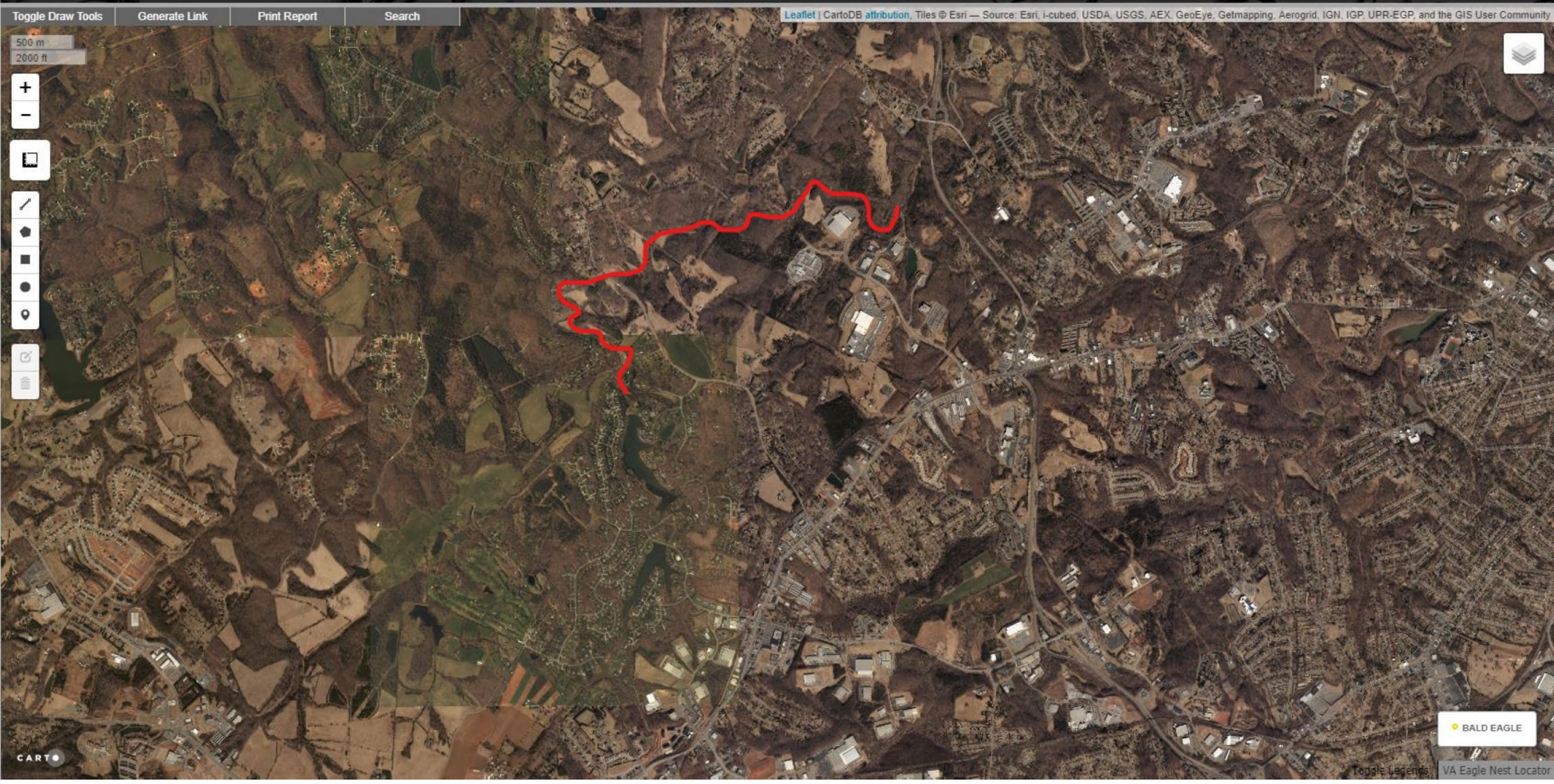
The CENTER for CONSERVATION BIOLOGY

About Us | What We Do | Resources | News Room | Give to CCB

CCB MAPPING PORTAL

Help / FAQ



APPENDIX 1c

Virginia Department of Conservation & Recreation (DCR)
Search Results

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BRWA

January 21, 2019

1:29,190

0 0.25 0.5 1 mi

0 0.4 0.8 1.6 km

NH Screening Layer

- Conservation Site
- GLNHR
- SCU

Managed Conservation Lands

- Federal
- Local
- Private
- State
- VOF Easement

World Imagery

Citations

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Management Name	Management Type	Management Agency	Owner	Management Level	Public Access	Total Acres	GIS Acres	Web Link
LYN-VOF-1890	Conservation Easement	VA Outdoors Foundation	Private	VOF	closed	213.86	205.64	Link

APPENDIX 2

Historical & Cultural Resources
Search Results

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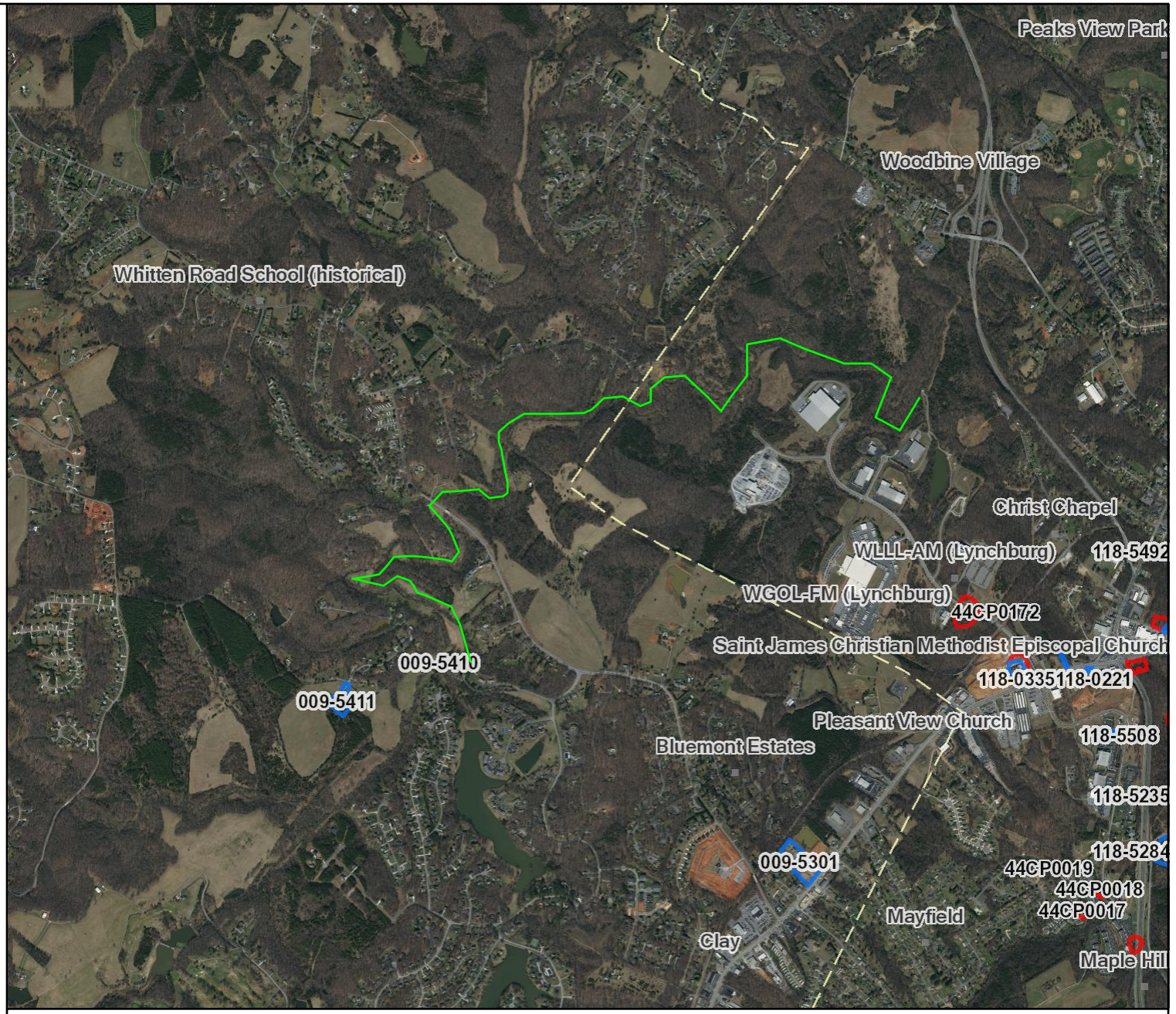
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 600 1200 1800 2400

1:36,112 / 1"=3,009 Feet

Title: BRWA

Date: 1/21/2019

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Function/Location	Bridge #6031, Cottontown Road (Route 621), Ivy Creek

Property Evaluation Status

DHR Staff: Not Eligible

Property Addresses

Current - Cottontown Road Route 621

County/Independent City(s): Bedford (County)
Incorporated Town(s): Forest
Zip Code(s): 24551
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BOONSBORO

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

May 2015: This bridge is surrounded by farmland to the southwest and recent housing developments in other directions. A power transmission line crosses southwest/northeast.

Surveyor Assessment:

May 2015: In the opinion of the surveyor this bridge should not be considered individually eligible for the NRHP under Criteria A, B, C, or D. There is no known association with important people or events and the resource is typical of this time period. The resource type is common and the workmanship and materials are not unique. The Historic Structures Task Group recommended the structure not eligible for the NRHP in January 2001.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
State Govt	Virginia Department of Transportation

Primary Resource Information

Resource Category: Transportation
Resource Type: Bridge
Date of Construction: 1932Ca
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Transportation/Communication
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: *No Data*
Condition: Fair
Interior Plan: *No Data*
Threats to Resource: Demolition
Architectural Description:

May 2015: Bridge #6031 carries Route 621 (Cottontown Rd) over Ivy Creek. It is steel beam timber deck, one-span, and has wood railing and curbing. The abutments are from a former bridge and are large cut limestone blocks. The bridge is 45 feet long and 20 feet wide.

Bridge Information

Structure Number: 2707
VDOT Bridge ID: 6031
Entity Crossed Name: Ivy Creek

Entity Crossed Type:	Water
Bridge Type:	Beam - Steel
Current Use:	Road
Number of Spans:	1
Number of Lanes:	1

Secondary Resource Information

Secondary Resource #1

Resource Category:	*No Data*
Resource Type:	*No Data*
Architectural Style:	*No Data*
Form:	*No Data*
Date of Construction:	*No Data*
Condition:	*No Data*
Threats to Resource:	*No Data*

Architectural Description:

No Data

Historic District Information

Historic District Name:	*No Data*
Local Historic District Name:	*No Data*
Historic District Significance:	*No Data*

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID:	009-5410
Staff Name:	Marc Holma
Event Date:	6/1/2015

Staff Comment

DHR File No. 2015-0540

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number:	2015-0540
Investigator:	Jana Bean
Organization/Company:	Virginia Department of Transportation
Sponsoring Organization:	*No Data*
Survey Date:	5/12/2015
Dhr Library Report Number:	*No Data*

Project Staff/Notes:

No Data

Bibliographic Information

Bibliography:

No Data

Property Notes:

VDOT project to replace bridge and slightly realign road.

Project Bibliographic Information:

VDOT Project 97711 to replace Bridge #6031

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 1/21/2019

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

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APPENDIX 3

Regulatory Database Search Results

Bedford Site
Bedford Site
Bedford, VA 24503

Inquiry Number: 5540698.5s
January 22, 2019

EDR Area / Corridor Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

SUBJECT PROPERTY INFORMATION

ADDRESS

BEDFORD SITE
BEDFORD, VA 24503

TARGET PROPERTY SEARCH RESULTS

The Target Property was identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

ADDITIONAL ENVIRONMENTAL RECORDS

Records of Emergency Release Reports

SPILLS: Prep/Spills Database Listing

A review of the SPILLS list, as provided by EDR, has revealed that there is 1 SPILLS site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
BEDFORD REGIONAL WAT	2474 COTTONTOWN RD	1 / 5	22
Database: SPILLS, Date of Government Version: 08/03/2018			
Facility Status: Closed			
IR Number: 2018-W-1800			

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generator

A review of the RCRA-CESQG list, as provided by EDR, and dated 03/01/2018 has revealed that there is 1 RCRA-CESQG site within approximately 0.25 miles of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
ERICSSON INC EPA ID:: VAR000010819	***314 JEFFERSON RIDGE***	***W 1/8 - 1/4 (0.146 mi.)***	***2 / 5***	***23***

State and tribal leaking storage tank lists

LTANKS: Leaking Petroleum Storage Tanks

A review of the LTANKS list, as provided by EDR, and dated 07/05/2018 has revealed that there is 1 LTANKS site within approximately 0.5 miles of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
JANICE FEARS RESIDEN Facility Status: Closed CEDS Facility Id: 200000874038 Pollution Complaint #: 20142310	825 WIGGINGTON RD	NNE 1/4 - 1/2 (0.446 mi.)	4 / 3	30

State and tribal registered storage tank lists

AST: Registered Petroleum Storage Tanks

A review of the AST list, as provided by EDR, and dated 08/03/2018 has revealed that there is 1 AST site within approximately 0.25 miles of the requested target property.

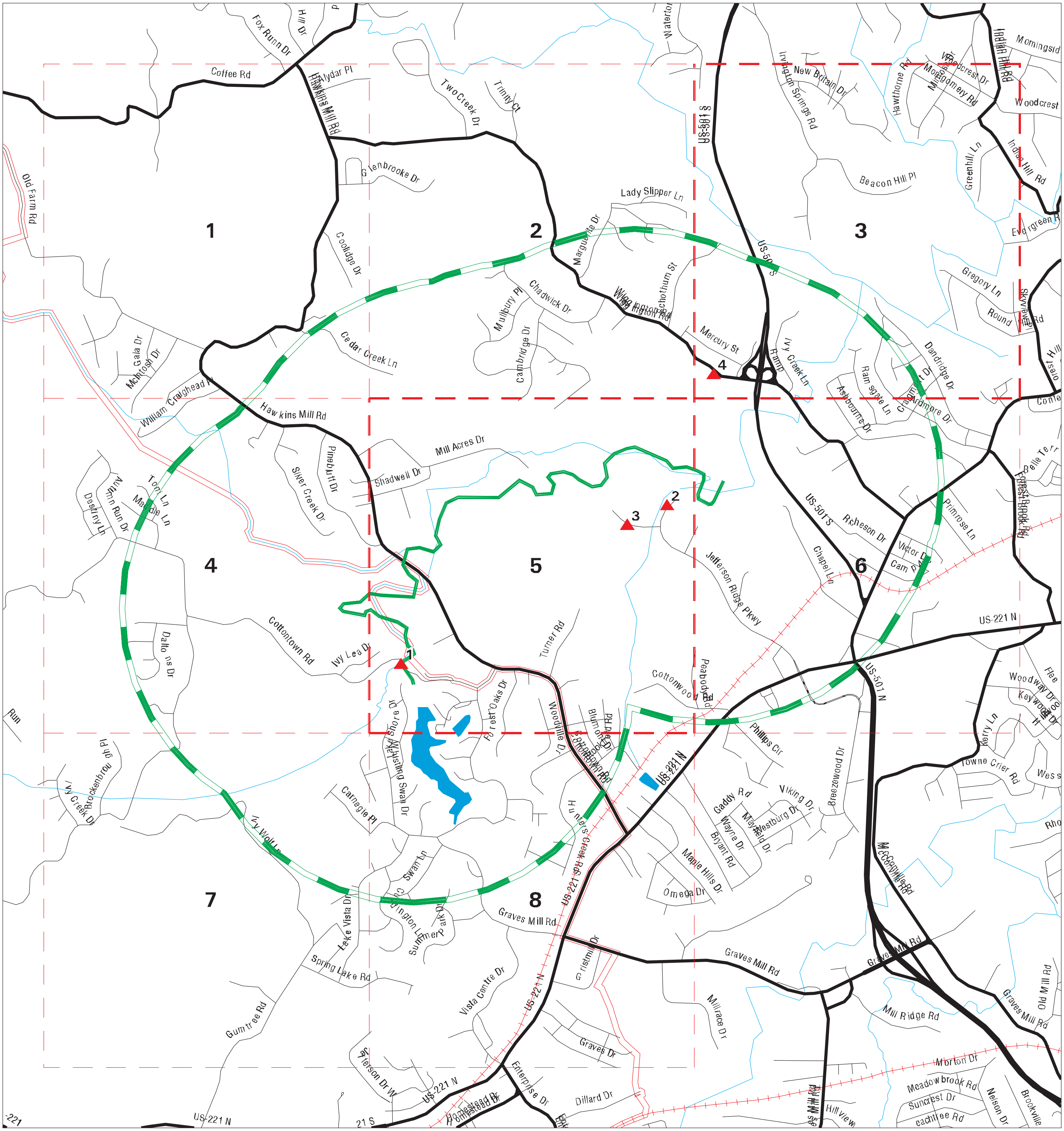
Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
BOXLEY BLOCK LLC LYN Facility ID: 7040090 CEDS Facility ID: 200000218541	110 LYNCHPIN LANE	SE 1/8 - 1/4 (0.216 mi.)	3 / 5	26

MAPPED SITES SUMMARY

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
1 / 5	BEDFORD REGIONAL WAT	2474 COTTONTOWN RD	SPILLS	TP
2 / 5	ERICSSON INC	314 JEFFERSON RIDGE	RCRA-CESQG, FINDS, ECHO	771 0.146 West
3 / 5	BOXLEY BLOCK LLC LYN	110 LYNCHPIN LANE	AST	1138 0.216 SE
4 / 3	JANICE FEARS RESIDEN	825 WIGGINGTON RD	LTANKS	2357 0.446 NNE

Key Map - 5540698.5s



▲ Sites

Target Property

Search Buffer

Focus Map - No Sites

Focus Map - Sites

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

0 1/2 1 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19 4:53 PM

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	1	NR	NR	NR	1
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
LTANKS	0.500		0	0	1	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	1	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP	1	NR	NR	NR	NR	NR	1
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		1	0	2	1	0	0	4

NOTES:

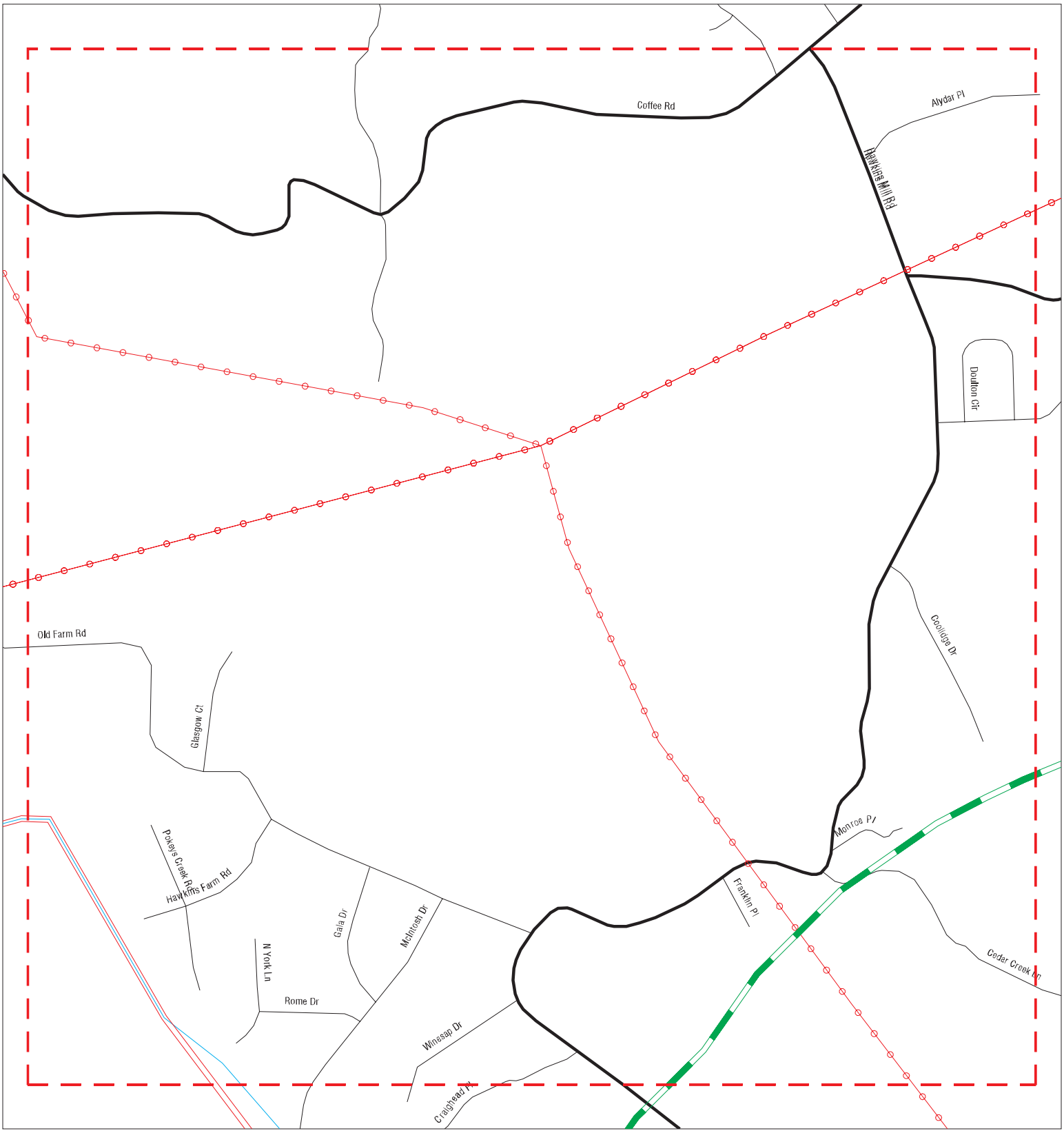
TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

Focus Map - 1 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

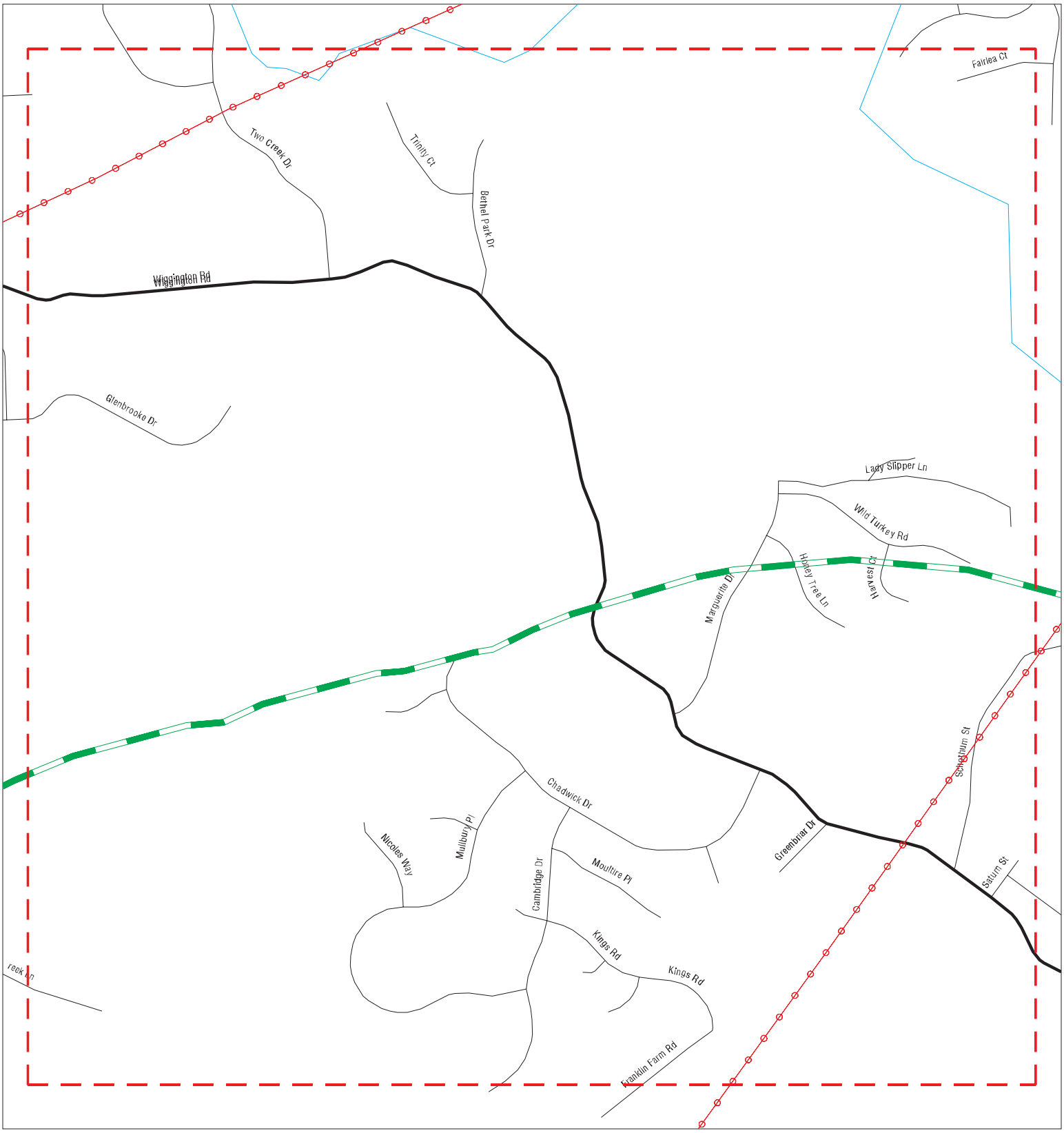
MAPPED SITES SUMMARY - FOCUS MAP 1

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 2 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

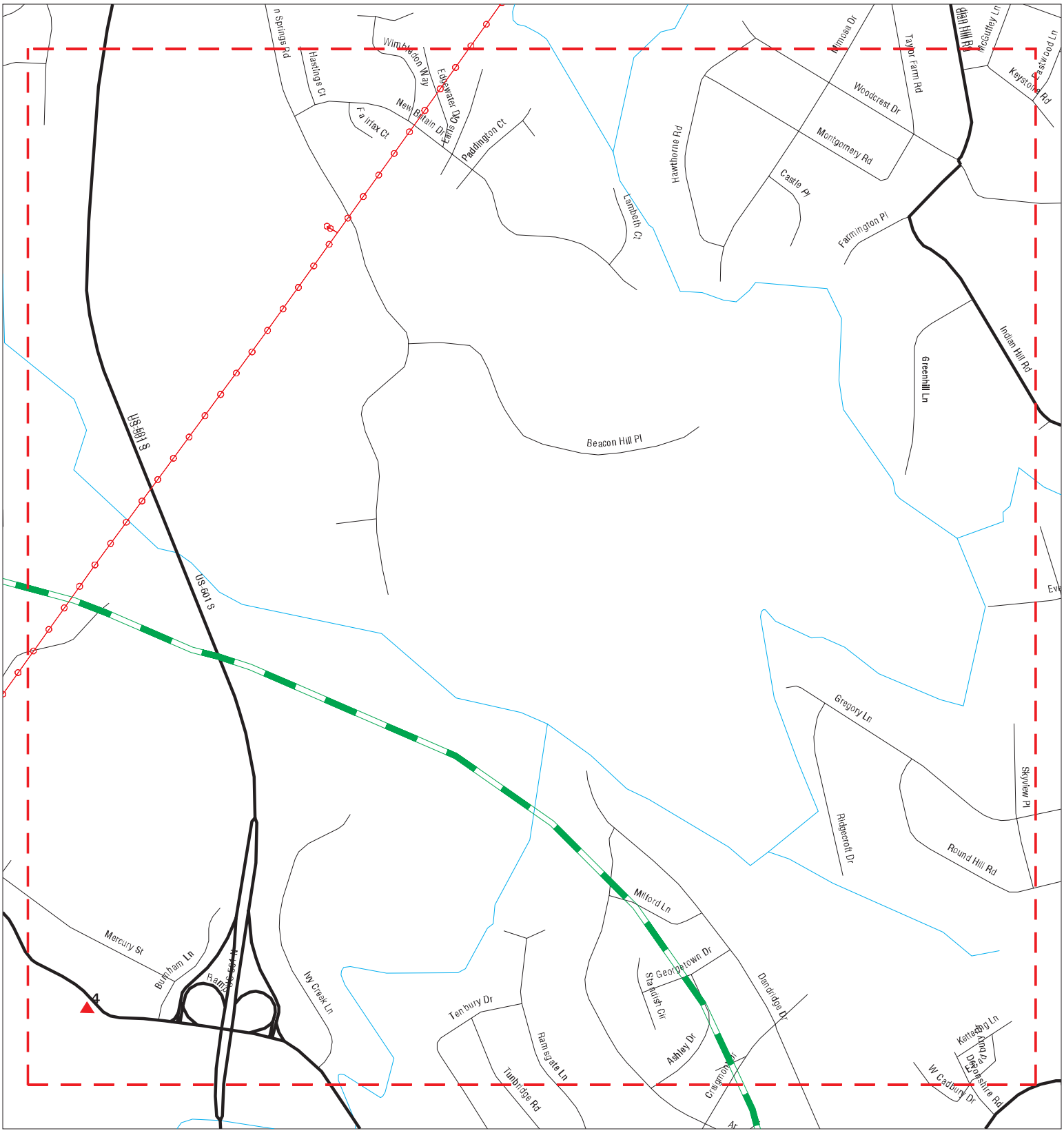
MAPPED SITES SUMMARY - FOCUS MAP 2

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 3 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

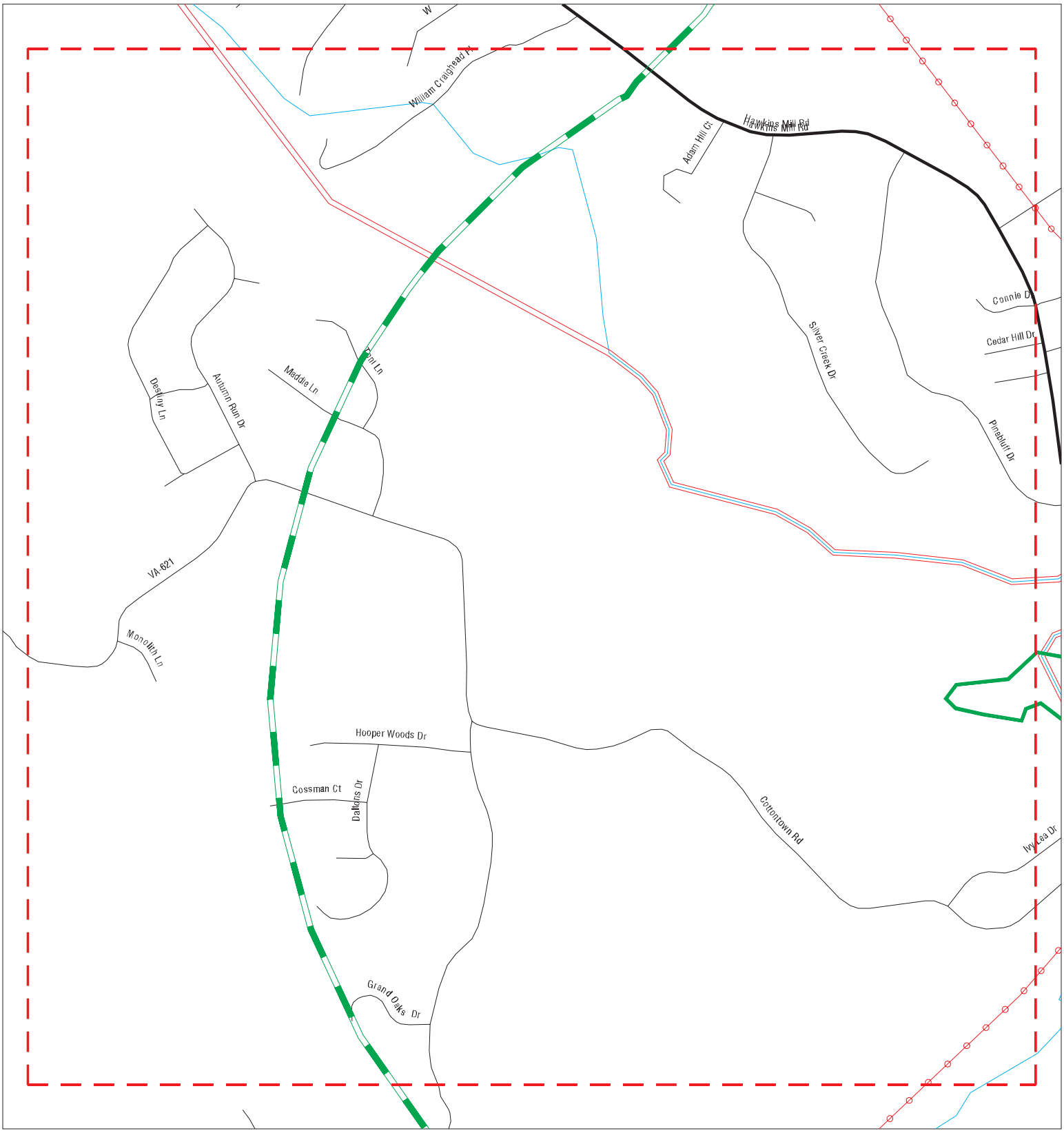
SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

MAPPED SITES SUMMARY - FOCUS MAP 3

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
4 / 3	JANICE FEARS RESIDEN	825 WIGGINGTON RD	LTANKS	2357 0.446 NNE

Focus Map - 4 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

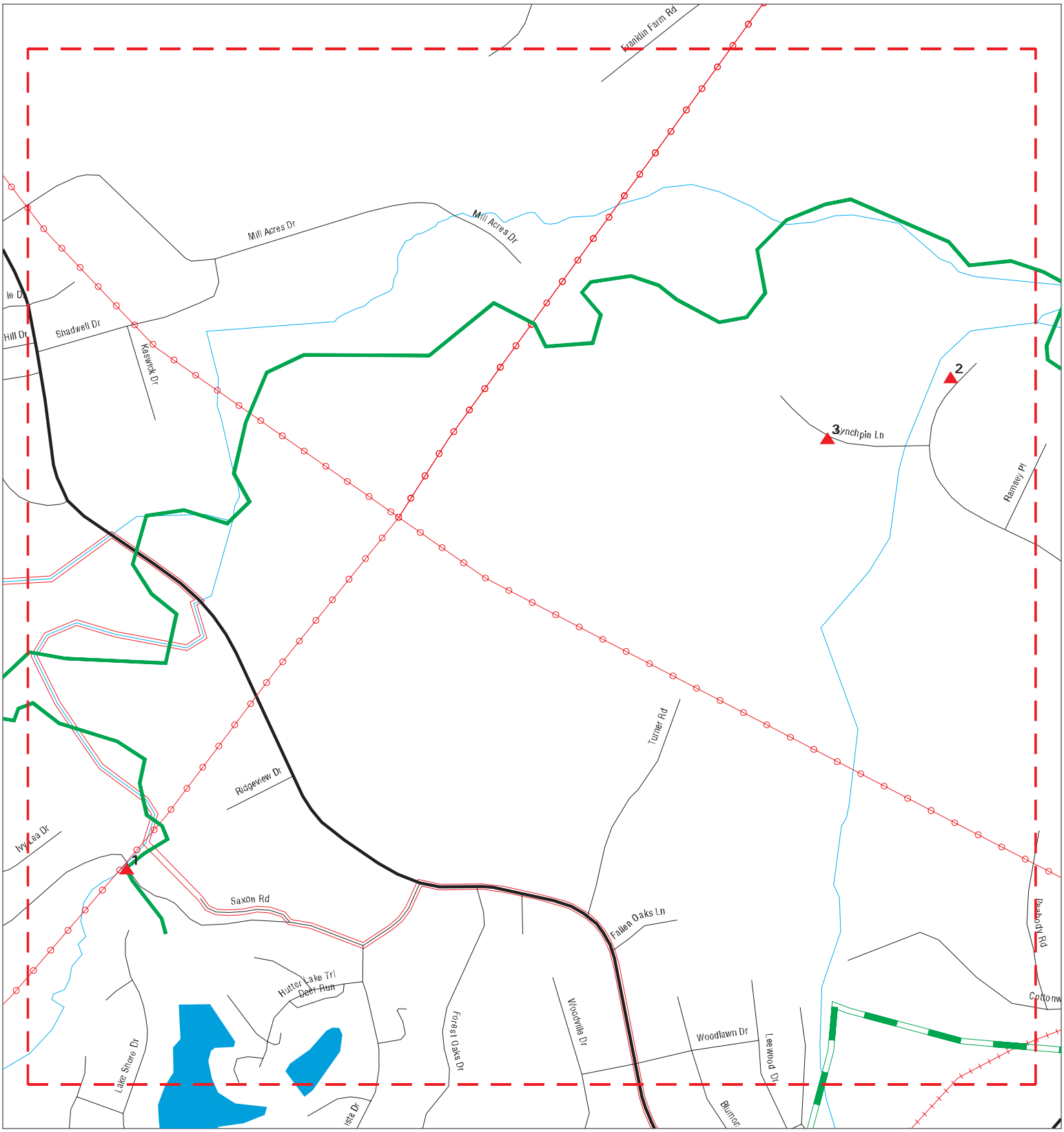
MAPPED SITES SUMMARY - FOCUS MAP 4

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 5 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

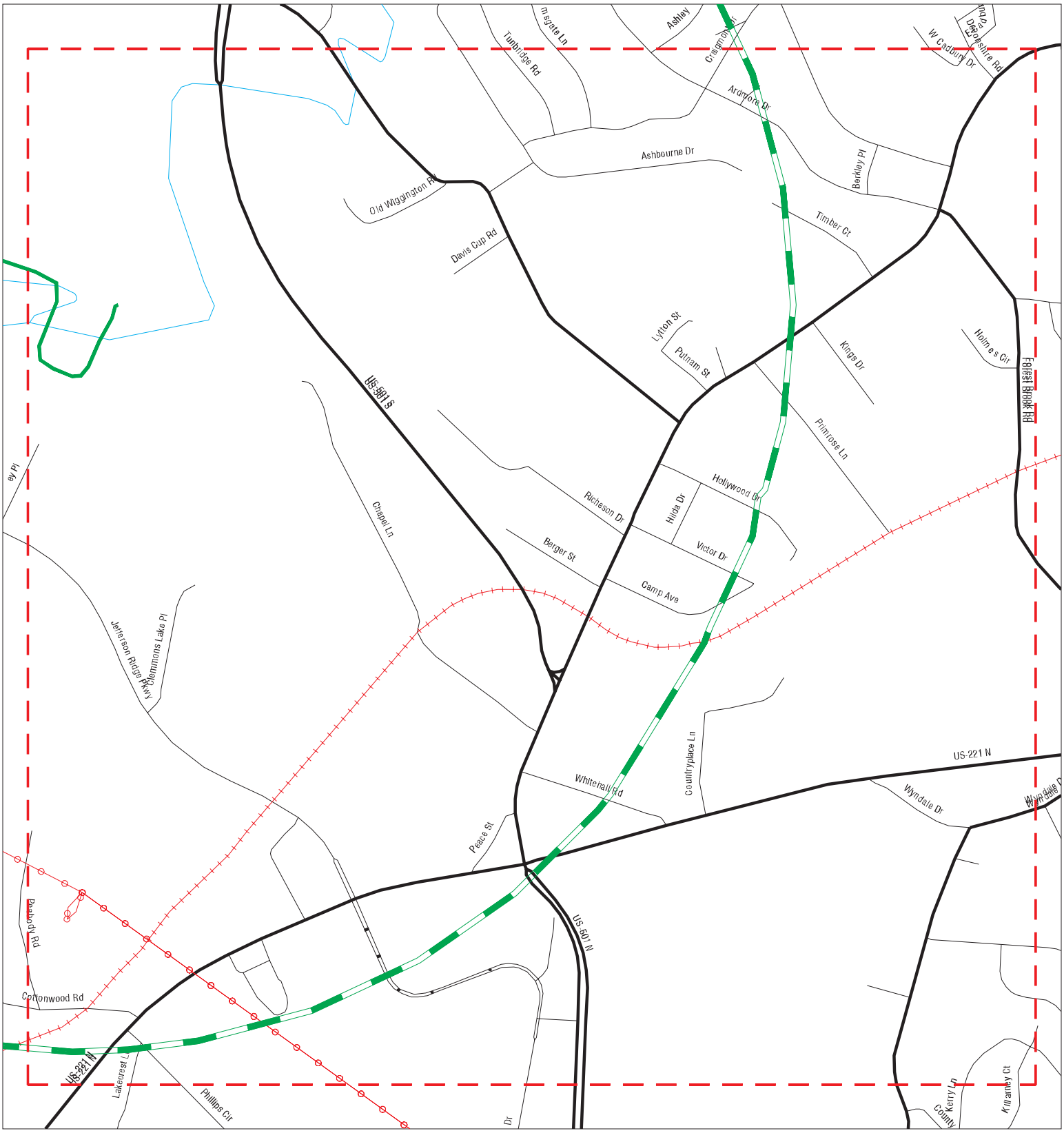
SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

MAPPED SITES SUMMARY - FOCUS MAP 5

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
1 / 5	BEDFORD REGIONAL WAT	2474 COTTONTOWN RD	SPILLS	TP
2 / 5	ERICSSON INC	314 JEFFERSON RIDGE	RCRA-CESQG, FINDS, ECHO	771 0.146 West
3 / 5	BOXLEY BLOCK LLC LYN	110 LYNCHPIN LANE	AST	1138 0.216 SE

Focus Map - 6 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

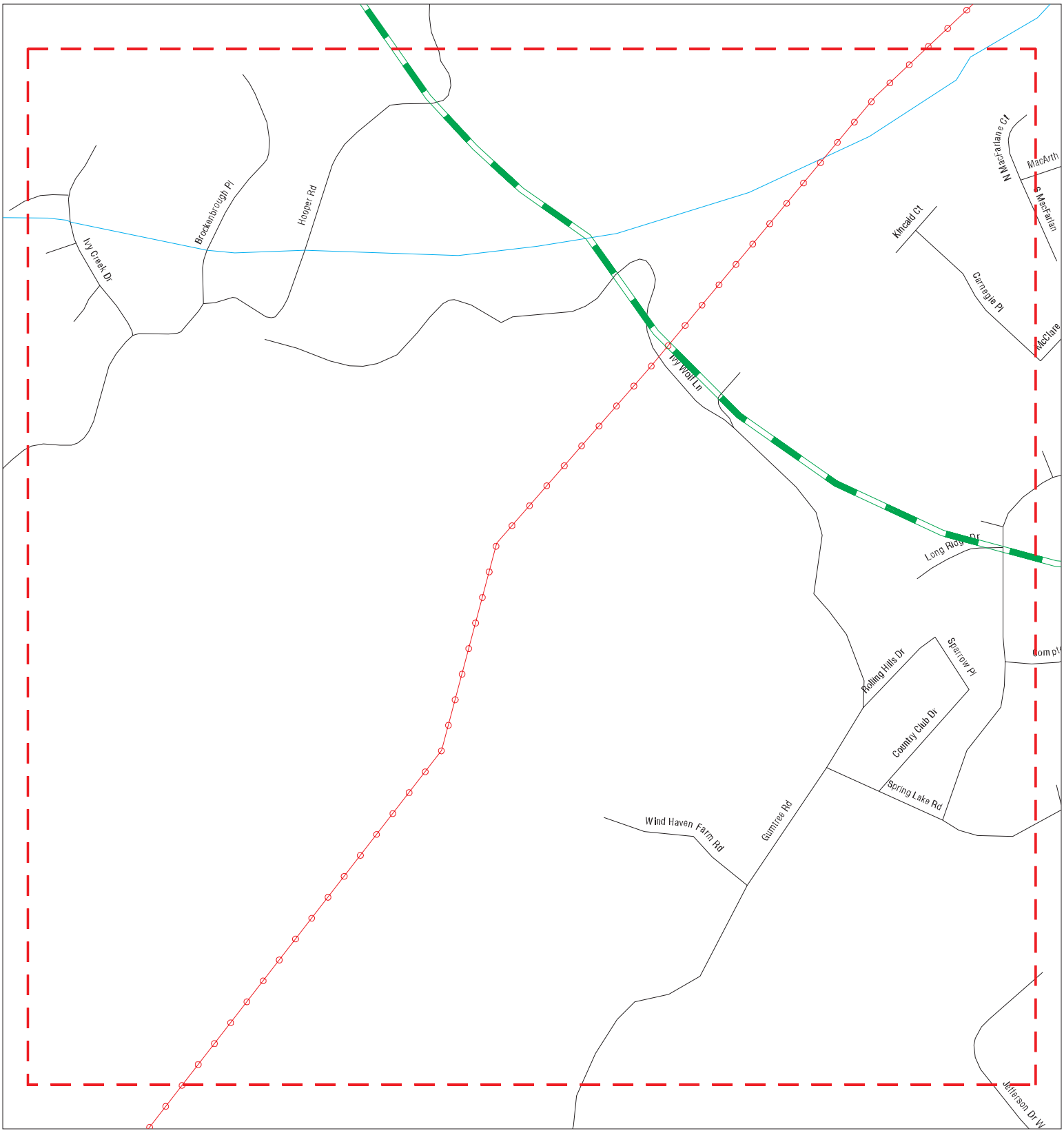
MAPPED SITES SUMMARY - FOCUS MAP 6

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 7 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

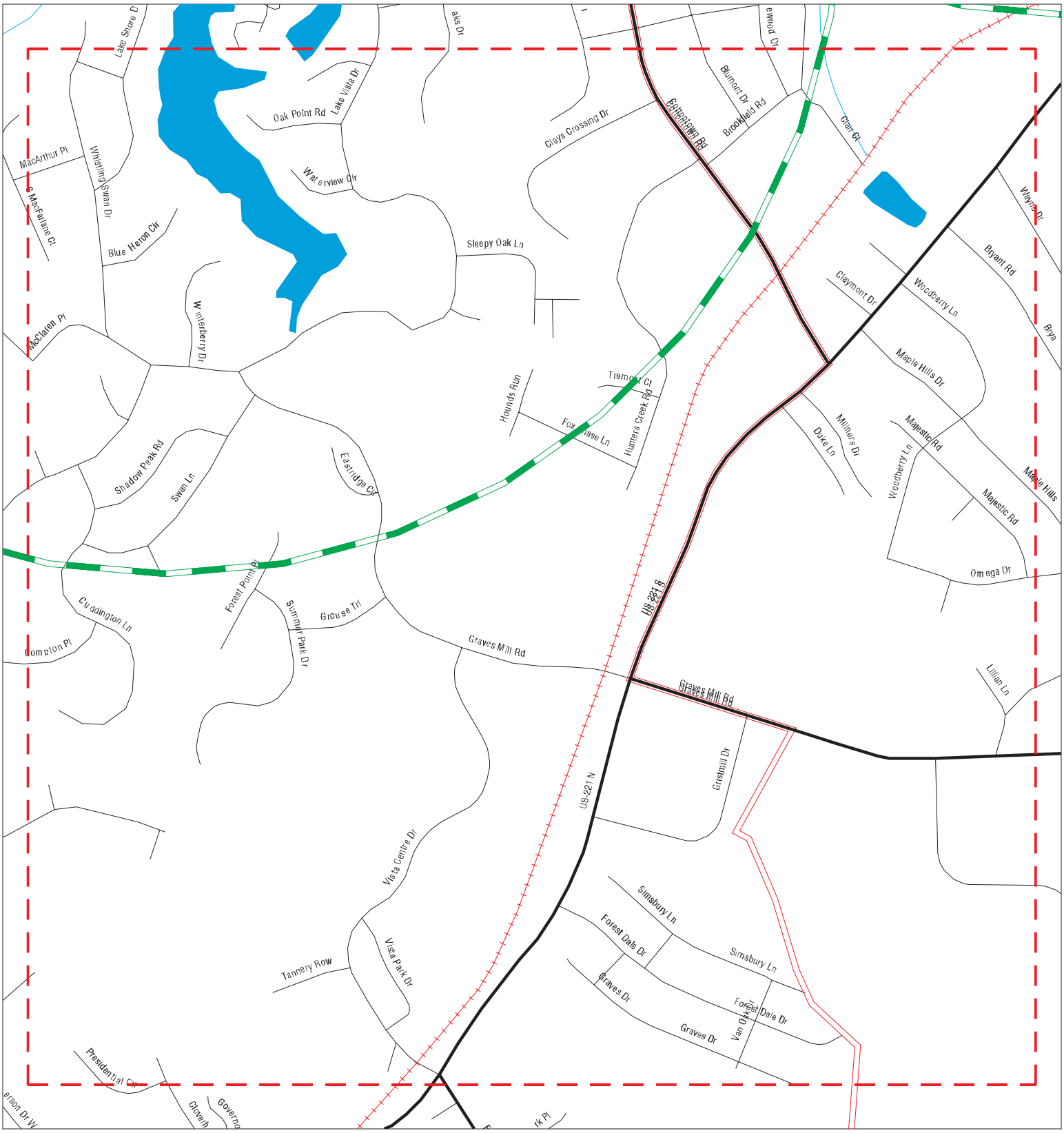
MAPPED SITES SUMMARY - FOCUS MAP 7

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 8 - 5540698.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Bedford Site	CLIENT: ECS Mid Atlantic, LLC
ADDRESS: Bedford Site	CONTACT: STEVEN S. HAY
CITY/STATE: Bedford VA	INQUIRY #: 5540698.5s
ZIP: 24503	DATE: 01/22/19

MAPPED SITES SUMMARY - FOCUS MAP 8

Target Property:
BEDFORD SITE
BEDFORD, VA 24503

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

1 **BEDFORD REGIONAL WATER AUTHORITY** **SPILLS** **S122311738**
Target **2474 COTTONTOWN RD** **N/A**
Property **FOREST, VA 24551**

Actual:
679 ft.

Focus Map:
5

SPILLS:

Fips City/County:	Bedford County
Status:	Closed
Reference Id:	123157
IR Number:	2018-W-1800
Associated IR:	Not reported
Incident Date:	02/11/2018
Call Received Date:	02/12/2018
Closure Comments:	SSO
Threat To:	Human Health
Terrorism (Y/N):	N
Characterize Incident:	Accidental
Incident Type:	Water
Incident Subtype:	SSO * Water
Materials:	SEWAGE (0-50000 Gallons)
Effect To Receptor:	Impacted
Water Body:	Not reported
Low Quantity To Water:	Not reported
High Quantity To Water:	50000
Quantity Units:	Gallons
Other Receptors:	TRIBUTARY TO LAKE VISTA
RP Company:	Bedford Regional Water Authority
RP Name:	Not reported
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	3
Impacts:	SSO Reached Receiving Waters
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Heavy rain.
Corrective Action Taken:	Area cleaned and limed.
Weather Status:	Wet
Precipitation (Wet):	0
Discharge Type:	Untreated
Discharge Volume:	36000
Unknown Discharge (Y/N):	N
Site Name:	HMVA-29211 - SSO
Closure Date:	02/20/2018
Orig. Call Incident Description:	SSO
Original Call Material Description:	Sewage
Original Call Location Description:	2474 COTTONTOWN RDFOREST, VA 24551
Incident Ongoing at time of Call:	N
Agencies Notified (Y/N):	Y
Other Agencies:	VDH
Permitted (Y/N):	Y
Call Reported By Company Name:	BEDFORD REGIONAL WATER AUTHORITY
Call Property Owner Company Name:	Not reported
Call Property Owner Name:	Not reported
Site Summary:	RCVD CALL FROM MICHAEL RAMSEY WITH BEDFORD REGIONAL WATER AUTHORITY (540 874 4674) REFERENCE AN OVERFLOW AT A SEWAGE PUMP STATION LOCATED AT 2474 COTTONTOWN RD, FOREST, VA 24551. AN ESTIMATED 50000 GALLONS OF SEWAGE HAVE BEEN RELEASED DUE TO THE HEAVY RAIN, AFFECTING A NEARBY

BEDFORD REGIONAL WATER AUTHORITY (Continued) **S122311738**

TRIBUTARY TO LAKE VISTA. THE OVERFLOW HAS CEASED. NO VDEM RESOURCES REQUESTED.

2
West
1/8-1/4
0.146 mi.
771 ft.

ERICSSON INC
314 JEFFERSON RIDGE PKWY
LYNCHBURG, VA 24501

RCRA-CESQG **1001226058**
FINDS **VAR000010819**
ECHO

Actual:
688 ft.

Focus Map:
5

RCRA-CESQG:

Date form received by agency:	08/06/1998
Facility name:	ERICSSON INC
Facility address:	314 JEFFERSON RIDGE PKWY LYNCHPIN IND PARK LYNCHBURG, VA 24501
EPA ID:	VAR000010819
Mailing address:	314 JEFFERSON RIDGE PKY. LYNCHBURG, VA 24502
Contact:	LEAH MORRELL
Contact address:	1 MOUNTAIN VIEW RD LYNCHBURG, VA 24502
Contact country:	US
Contact telephone:	804-592-3712
Contact email:	Not reported
EPA Region:	03
Land type:	Municipal
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	ERICSSON AGENT STATUTORY TRUST
Owner/operator address:	740 EAST CAMPBELL TRUST RICHARDSON, TX 75081
Owner/operator country:	Not reported
Owner/operator telephone:	972-583-1415
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Municipal
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

ERICSSON INC (Continued) **1001226058**

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D008
. Waste name: LEAD

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLOROETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE, AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND

ERICSSON INC (Continued) **1001226058**

SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

. Waste code: U002
. Waste name: ACETONE (I)

. Waste code: U080
. Waste name: METHANE, DICHLORO-

. Waste code: U121
. Waste name: METHANE, TRICHLOROFLUORO-

. Waste code: U159
. Waste name: 2-BUTANONE (I,T)

. Waste code: U161
. Waste name: METHYL ISOBUTYL KETONE (I)

. Waste code: U220
. Waste name: BENZENE, METHYL-

. Waste code: U226
. Waste name: ETHANE, 1,1,1-TRICHLORO-

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 07/21/2000

ERICSSON INC (Continued) **1001226058**

Evaluation: NON-FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/03/1999
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110005288474

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1001226058
Registry ID: 110005288474
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110005288474

---

3 **BOXLEY BLOCK LLC LYNCHPIN PLANT** **AST** **A100298356**
SE **110 LYNCHPIN LANE** **N/A**
1/8-1/4 **LYNCHBURG, VA 24502**
0.216 mi.
1138 ft.

Actual:
740 ft.

Focus Map:
5

AST:
Facility ID: 7040090
Facility Type: INDUSTRIAL
CEDS Facility ID: 200000218541

Tank Info:

Owner:
Owner Id: 39545
Owner Name: Boxley Materials Company
Owner Address: PO Box 13527
Owner Address2: Not reported
Owner City/State/Zip: Roanoke, VA 24035
Owner Type: PRIVATE
Number of Active AST: 2
Number of Active UST: 0
Number of Inactive AST: 0
Number of Inactive UST: 0

Fed Regulated: No
Tank Number: DieselAST1

BOXLEY BLOCK LLC LYNCHPIN PLANT (Continued) **A100298356**

Tank Type:	AST
Tank Capacity:	10000
Tank Contents:	DIESEL
Tank Status:	CURR IN USE

Tank Containment:

Install Date:	4/1/2006
Containment: Curbing	No
Containment: Weirs	No
Containment: Sorbent	No
Containment: Culvert	No
Containment: Diversion	No
Containment: Retention	No
Containment: Dike	No
Containment: Unknown	No
Containment: Other	No
Containment: Other Note	Not reported

Release Detection:

Release Detection: Ground Water	No
Release Detection: Visual	No
Release Detection: Vapor	No
Release Detection: Interstitial	No
Release Detection: None	No
Release Detection: Other	No
Release Detection: Other Note	Not reported
Release Prevention: Double Bottom	No
Release Prevention: Double Walled	No
Release Prevention: Lined Interior	Not reported
Release Prevention: Poly Jacket	No
Release Prevention: Exc Liner	No
Release Prevention: None	No
Release Prevention: Unknown	No
Release Prevention: Other	No
Release Prevention: Other Note	Not reported

Tank Foundation: Steel	No
Tank Foundation: Earthen	No
Tank Foundation: Concrete Imp	Yes
Tank Foundation: Unknown	No
Tank Foundation: Other	No
Tank Foundation: Other Note	Not reported
Tank Roof: Float	No
Tank Roof: Cone	No
Tank Roof: Breather	Not reported
Tank Roof: Dbldeck	Not reported
Tank Roof: Pontoon	Not reported
Tank Roof: Balloon	Not reported
Tank Roof: Lifter	Not reported
Tank Roof: Pan	Not reported
Tank Roof: Other	Yes
Tank Roof: Other Note	Horizontal

Tank Material:

Tank Materials: Bare Steel	Yes
Tank Materials: Concrete	No
Tank Materials: Insulated Tank Jacket	No

BOXLEY BLOCK LLC LYNCHPIN PLANT (Continued) **A100298356**

Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported
Tank Type Cathodic/CP:	N
Tank Type Single Wall:	N
Tank Type Double Wall:	N
Tank Type Lined Interior:	N
Tank Type Double Bottom:	N
Tank Type Potable/Skid:	N
Tank Type Shop Fabricated/Built:	N
Tank Type Vaulted Below Grade:	N
Tank Type Vertical:	N
Tank Type Horizontal:	N
Tank Type Unknown:	N
Tank Type Other:	N
Tank Type Other Specify:	N

Owner:

Owner Id:	39545
Owner Name:	Boxley Materials Company
Owner Address:	PO Box 13527
Owner Address2:	Not reported
Owner City/State/Zip:	Roanoke, VA 24035
Owner Type:	PRIVATE
Number of Active AST:	2
Number of Active UST:	0
Number of Inactive AST:	0
Number of Inactive UST:	0

Fed Regulated:	No
Tank Number:	DieselAST2
Tank Type:	AST
Tank Capacity:	1000
Tank Contents:	DIESEL
Tank Status:	CURR IN USE

Tank Containment:

Install Date:	4/1/2006
Containment: Curbing	No
Containment: Weirs	No
Containment: Sorbent	No
Containment: Culvert	No
Containment: Diversion	No
Containment: Retention	No
Containment: Dike	No
Containment: Unknown	No
Containment: Other	No
Containment: Other Note	Not reported

Release Detection:

Release Detection: Ground Water	No
Release Detection: Visual	No
Release Detection: Vapor	No
Release Detection: Interstitial	No
Release Detection: None	No
Release Detection: Other	No

BOXLEY BLOCK LLC LYNCHPIN PLANT (Continued) **A100298356**

Release Detection: Other Note	Not reported
Release Prevention: Double Bottom	No
Release Prevention: Double Walled	No
Release Prevention: Lined Interior	Not reported
Release Prevention: Poly Jacket	No
Release Prevention: Exc Liner	No
Release Prevention: None	No
Release Prevention: Unknown	No
Release Prevention: Other	No
Release Prevention: Other Note	Not reported
Tank Foundation: Steel	No
Tank Foundation: Earthen	No
Tank Foundation: Concrete Imp	Yes
Tank Foundation: Unknown	No
Tank Foundation: Other	No
Tank Foundation: Other Note	Not reported
Tank Roof: Float	No
Tank Roof: Cone	No
Tank Roof: Breather	Not reported
Tank Roof: Dbldeck	Not reported
Tank Roof: Pontoon	Not reported
Tank Roof: Balloon	Not reported
Tank Roof: Lifter	Not reported
Tank Roof: Pan	Not reported
Tank Roof: Other	Yes
Tank Roof: Other Note	Horizontal

Tank Material:

Tank Materials: Bare Steel	Yes
Tank Materials: Concrete	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported
Tank Type Cathodic/CP:	N
Tank Type Single Wall:	N
Tank Type Double Wall:	N
Tank Type Lined Interior:	N
Tank Type Double Bottom:	N
Tank Type Potable/Skid:	N
Tank Type Shop Fabricated/Built:	N
Tank Type Vaulted Below Grade:	N
Tank Type Vertical:	N
Tank Type Horizontal:	N
Tank Type Unknown:	N
Tank Type Other:	N
Tank Type Other Specify:	N

4
NNE
1/4-1/2
0.446 mi.
2357 ft.

JANICE FEARS RESIDENCE
825 WIGGINGTON RD
LYNCHBURG, VA 24502

LTANKS **S116624850**
N/A

Actual:
740 ft.

Focus Map:
3

LTANKS:

Region:	BRRO-R
CEDS Facility Id:	200000874038
Case Status:	**Closed**
Pollution Complaint #:	20142310
Reported:	02/18/2014
Case Closed Date:	07/23/2014
Program:	RP Lead
Federally Regulated UST (Y/N):	N
Regulated Petroleum UST (1):	N
Excluded UST (1):	N
Deferred UST (1):	N
Partially Deferred UST (1):	N
Exempt 1 UST (2):	N
Exempt 2 Heating Oil UST (2):	Y
Small Heating Oil AST (2):	N
Regulated AST (3):	N
Unregulated AST (3):	N
Other Y/N:	N
Unknown Y/N:	N
Other Description:	Not reported
Heating Oil Category:	Category 2

Count: 30 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BEDFORD	9031778		BEDFORD CITY AND COUNTY		ERNS
BEDFORD	S105588419	PTC TANKER ACCIDENT	ROUTE 460 E. OF BEDFORD		LUST, SPILLS
BEDFORD	S118640486	BEDFORD REGIONAL WATER AUTHORITY	BEDFORD WWTP		SPILLS
BEDFORD	S113244141		RT 122, 3 MI. SOUTH OF BEDFORD		SPILLS
BEDFORD	S107998758	RT.460	BEDFORD CITY		SPILLS
BEDFORD	S118973217	BEDFORD REGIONAL WATER AUTHORITY	BEDFORD STP - EQ BASIN		SPILLS
BEDFORD	S109527060		BEDFORD WEST N228 - 246.2		SPILLS
BEDFORD	S118173668		ROUTE 122, SOUTH OF BEDFORD		SPILLS
BEDFORD	S120837024	BEDFORD REGIONAL WATER AUTHORITY	BEDFORD WWTP EQ BASIN, ORANGE STREET		SPILLS
BEDFORD	S122854992	BRWA	BEDFORD WWTP, 852 ORANGE STREET		SPILLS
BEDFORD	S113242175		BESIDE 1086 PHELPS RD, BEDFORD		SPILLS
BEDFORD	S118867359	BRWA	BEDFORD STP, 852 ORANGE ST		SPILLS
BEDFORD	S118867289		BEDFORD CONVERTER & CORE, 625 RAILROAD AVE		SPILLS
BEDFORD	S118457731	BEDFORD WWTP	BEDFORD WWTP, 852 ORANGE ST		SPILLS
BEDFORD	S121485485	BEDFORD REGIONAL WATER AUTHORITY	BEDFORD WWTP, 852 ORANGE STREET		SPILLS
BEDFORD	S112155895		ROUTE 762-BEDFORD COUNTY		SPILLS
BEDFORD	S118172990		BEDFORD AUTO SALVAGE, 2237 CENTREVILLE RD., BEDFORD		SPILLS
BEDFORD	S120837107	BEDFORD REGIONAL WATER AUTHORITY	BEDFORD STP EQ BASIN		SPILLS
BEDFORD	1007992617		BEDFORD MUNICIPAL BLDG 215 E.MAIN ST		FINDS
BEDFORD COUNTY	89125831		OFF OF HIGHWAY 460 BETWEEN BEDFORD AND ROANOKE		ERNS
FOREST	S105028056	NEW LONDON ELEMENTARY SCHOOL	460 E, LYNCHBURG/SALEM TURNPIKE		LUST
FOREST	S109600231	LAKE VISTA	OFF COTTONTOWN ROAD		SPILLS
FOREST	S118369667	BEDFORD CITY - STP	MANHOLE, 2474 COTTONTOWN ROAD		SPILLS
FOREST	S120836955	COTTONTOWN MANOR	COTTONTOWN MANOR, COTTONTOWN ROAD		SPILLS
LYNCHBURG	S105118376	FIRST FEDERAL SAVINGS BANK	9515 TIMBERLAKE ROAD, LYNCHBURG VA 24052		LUST
LYNCHBURG	S105027817	LYNCHBURG MUNICIPAL AIRPORT	LYNCHBURG AIRPORT-HANGER #3		LUST
LYNCHBURG	S104898277	HERTZ RENT-A-CAR	LYNCHBURG AIRPORT	-0-	LUST
LYNCHBURG	S104898294	LYNCHBURG MUNICIPAL AIRPORT	LYNCHBURG MUNICIPAL AIRPORT		LUST
LYNCHBURG	U003698461	BEDFORD AVENUE AUTO REPAIR	2302 - 2306 BEDFORD AVE	24503	UST
LYNCHBURG	S109601790	50 MILES OF TRACK, FROM CAMPBELL THRU BE	50 MILES OF TRACK, FROM CAMPBELL THRU BEDFORD CO.		SPILLS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 01/04/2019
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/29/2019
Data Release Frequency: Quarterly

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/29/2019
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 10/25/2018
Date Made Active in Reports: 12/07/2018
Number of Days to Update: 43

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/28/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/28/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 01/08/2019
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

VA SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of Environmental Quality
Telephone: 804-698-4236
Last EDR Contact: 12/14/2018
Next Scheduled EDR Contact: 04/01/2019
Data Release Frequency: N/A

State and tribal landfill and/or solid waste disposal site lists

VA SWF/LF: Solid Waste Management Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/31/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 35

Source: Department of Environmental Quality
Telephone: 804-698-4238
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

VA LUST REG SC: Leaking Underground Storage Tanks

Leaking underground storage tank site locations. Includes: counties of Amherst, Appomattox, Buckingham, Campbell, Charlotte, Cumberland, Halifax, Lunenburg, Mecklenburg, Nottoway, Pittsylvania, Prince Deward; cities of Danville, Lynchburg.

Date of Government Version: 09/06/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 09/17/2013
Number of Days to Update: 11

Source: Department of Environmental Quality, South Central Region
Telephone: 434-582-5120
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Semi-Annually

VA LUST REG TD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locations. Includes: counties of Accomack, Isle of Wight, James City, Northampton, Southampton, York; cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 73

Source: Department of Environmental Quality Tidewater Regional Office
Telephone: trofoia@deq.vir
Last EDR Contact: 09/26/2016
Next Scheduled EDR Contact: 01/09/2017
Data Release Frequency: Quarterly

VA LUST REG SW: Leaking Underground Storage Tank Database

Leaking underground storage tank site locations. Includes: counties of Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe; cities of Bristol, Galax, Norton.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 60

Source: Department of Environmental Quality Southwest Regional Office
Telephone: 276-676-4800
Last EDR Contact: 10/11/2016
Next Scheduled EDR Contact: 01/23/2017
Data Release Frequency: No Update Planned

VA LUST REG NO: Leaking Underground Storage Tank Tracking Database

Leaking underground storage tank site locations. Includes: counties of Arlington, Caroline, Culpeper, Fairfax, Fauquier, King George, Loudoun, Louisa, Madison, Orange, Prince William, Rappahannock, Spotsylvania, Stafford; cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, Manassas Park.

Date of Government Version: 05/18/2004
Date Data Arrived at EDR: 05/22/2004
Date Made Active in Reports: 07/09/2004
Number of Days to Update: 48

Source: Department of Environmental Quality Northern Regional Office
Telephone: 703-583-3800
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

VA LUST REG WC: Leaking Underground Storage Tank List

Leaking underground storage tank site locations. Includes: counties of Alleghany, Bedford, Botetourt, Craig, Floyd, Franklin, Giles, Henry, Montgomery, Patrick, Pulaski, Roanoke; cities of Bedford, Clifton Forge, Covington, Martinsville, Radford, Roanoke, Salem.

Date of Government Version: 06/04/2015
Date Data Arrived at EDR: 06/05/2015
Date Made Active in Reports: 07/07/2015
Number of Days to Update: 32

Source: Department of Environmental Quality West Central Regional Office
Telephone: 540-562-6700
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

VA LUST REG PD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locaitons. Includes: counties of Amelia, Brunswick, Charles City, Chesterfield, Dinwiddie, Essex, Gloucester, Goochland, Greensville, Hanover, Henrico, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northumberland, Powhatan, Prince George, Richmond, Surry, Sussex, Westmoreland; cities of Colonial Heights, Emporia, Hopewell, Petersburg.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/04/2014
Date Made Active in Reports: 01/16/2015
Number of Days to Update: 43
Source: Department of Environmental Quality Piedmont Regional Office
Telephone: 804-527-5020
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Quarterly

VA LUST REG VA: Leaking Underground Storage Tank List
Leaking underground storage tank site locations. Includes: counties of Albemarle, Augusta, Bath, Clarke, Fluvanna, Frederick, Greene, Highland, Nelson, Page, Rockbridge, Rockingham, Shenandoah, Warren; cities of Buena Vista, Charlottesville, Harrisonburg, Lexington, Staunton, Waynesboro, Winchester.

Date of Government Version: 12/06/2011
Date Data Arrived at EDR: 12/08/2011
Date Made Active in Reports: 01/16/2012
Number of Days to Update: 39
Source: Department of Environmental Quality Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

VA LTANKS: Leaking Petroleum Storage Tanks
Includes releases of petroleum from underground storage tanks and aboveground storage tanks.

Date of Government Version: 07/05/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 40
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 11/29/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Quarterly

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/08/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Varies

State and tribal registered storage tank lists

VA UST: Registered Petroleum Storage Tanks
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/03/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 40
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 11/29/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Quarterly

VA AST: Registered Petroleum Storage Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 08/03/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 40
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 11/29/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

Date of Government Version: 04/06/2016
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36

Source: N/A
Telephone: N/A
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

VA ENG CONTROLS: Engineering Controls Sites Listing

A listing of sites with Engineering Controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/31/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/28/2018
Number of Days to Update: 52

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Quarterly

VA INST CONTROL: Voluntary Remediation Program Database

Sites included in the Voluntary Remediation Program database that have deed restrictions.

Date of Government Version: 10/31/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/28/2018
Number of Days to Update: 52

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VA VRP: Voluntary Remediation Program

The Voluntary Cleanup Program encourages owners of elected contaminated sites to take the initiative and conduct voluntary cleanups that meet state environmental standards.

Date of Government Version: 10/31/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/28/2018
Number of Days to Update: 52

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

VA BROWNFIELDS: Brownfields Site Specific Assessments

To qualify for Brownfields Assessment, the site must meet the Federal definition of a Brownfields and should have contaminant issues that need to be addressed and a redevelopment plan supported by the local government and community. Virginia's Department of Environmental Quality performs brownfields assessments under a cooperative agreement with the U.S. Environmental Protection Agency at no cost to communities, property owners or, prospective purchasers. The assessment is an evaluation of environmental impacts caused by previous site uses similar to a Phase II Environmental Assessment.

Date of Government Version: 10/18/2018
Date Data Arrived at EDR: 10/24/2018
Date Made Active in Reports: 11/08/2018
Number of Days to Update: 15

Source: Department of Environmental Quality
Telephone: 804-698-4207
Last EDR Contact: 10/24/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/18/2018
Next Scheduled EDR Contact: 04/01/2019
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/17/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/02/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/26/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/26/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Semi-Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 01/08/2019
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Records of Emergency Release Reports

VA SPILLS PC: Pollution Complaint Database

Pollution Complaints Database. The pollution reports contained in the PC database include the initial release reporting of Leaking Underground Storage Tanks and all other releases of petroleum to the environment as well as releases to state waters. The database is current through 12/1/93. Since that time, all spill and pollution reporting information has been collected and tracked through the DEQ regional offices.

Date of Government Version: 06/01/1996
Date Data Arrived at EDR: 10/22/1996
Date Made Active in Reports: 11/21/1996
Number of Days to Update: 30

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: No Update Planned

VA SPILLS: Prep/Spills Database Listing

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment. PREP staff often work to assist local emergency responders, other state agencies, federal agencies, and responsible parties, as may be needed, to manage pollution incidents. Oil spills, fish kills, and hazardous materials spills are examples of incidents that may involve the DEQ's PREP Program.

Date of Government Version: 08/03/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 11/29/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Quarterly

VA SPILLS BRL: Prep/Spills Database Listing

A listing of spills locations located in the Blue Ridge Regional area, Lynchburg.

Date of Government Version: 09/18/2009
Date Data Arrived at EDR: 09/18/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 18

Source: DEQ, Blue Ridge Regional Office
Telephone: 434-582-6218
Last EDR Contact: 11/28/2011
Next Scheduled EDR Contact: 03/12/2012
Data Release Frequency: Varies

VA SPILLS NO: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, Northern Region
Telephone: 703-583-3864
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

VA SPILLS WC: Prep Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/21/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, West Central Region
Telephone: 540-562-6700
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

VA SPILLS TD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/17/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 13

Source: Department of Environmental Quality, Tidewater Region
Telephone: trofoia@deq.vir
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: Quarterly

VA SPILLS SW: Reportable Spills

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 01/21/2010
Date Data Arrived at EDR: 01/22/2010
Date Made Active in Reports: 02/16/2010
Number of Days to Update: 25

Source: Department of Environmental Quality, Southwest Region
Telephone: 276-676-4839
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: No Update Planned

VA SPILLS PD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 10/20/2009
Date Data Arrived at EDR: 10/29/2009
Date Made Active in Reports: 12/03/2009
Number of Days to Update: 35

Source: Department of Environmental Quality, Piedmont Region
Telephone: 804-527-5020
Last EDR Contact: 02/06/2012
Next Scheduled EDR Contact: 05/21/2012
Data Release Frequency: Quarterly

VA SPILLS VA: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 08/08/2012
Date Data Arrived at EDR: 08/09/2012
Date Made Active in Reports: 10/05/2012
Number of Days to Update: 57

Source: Department of Environmental Quality, Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

VA SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 09/01/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 43

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/11/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/11/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 08/31/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/21/2018
Next Scheduled EDR Contact: 04/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/09/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/21/2018
Next Scheduled EDR Contact: 04/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/24/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 10/26/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/14/2018
Date Data Arrived at EDR: 10/11/2018
Date Made Active in Reports: 12/07/2018
Number of Days to Update: 57

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/11/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/05/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/03/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/03/2019
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/01/2018
Date Data Arrived at EDR: 10/30/2018
Date Made Active in Reports: 01/18/2019
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 12/07/2018
Number of Days to Update: 56

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218
Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/21/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3
Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23
Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 12/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 12/12/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 14
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/28/2018
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Varies

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem

Date of Government Version: 10/27/2009
Date Data Arrived at EDR: 11/10/2009
Date Made Active in Reports: 12/08/2009
Number of Days to Update: 28
Source: N/A
Telephone: N/A
Last EDR Contact: 11/12/1996
Next Scheduled EDR Contact: N/A
Data Release Frequency: Annually

US AIRS MINOR: Aerometric Information Retrieval System Facility Subsystem

Date of Government Version: 10/27/2009
Date Data Arrived at EDR: 11/10/2009
Date Made Active in Reports: 12/08/2009
Number of Days to Update: 28

Source: N/A
Telephone: N/A
Last EDR Contact: 11/12/1996
Next Scheduled EDR Contact: N/A
Data Release Frequency: Annually

US MINES: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/30/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

US MINES 2: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/30/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/30/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/19/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/15/2018
Date Data Arrived at EDR: 12/05/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 37

Source: EPA
Telephone: (215) 814-5000
Last EDR Contact: 01/08/2019
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/30/2018
Next Scheduled EDR Contact: 03/11/2019
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 87

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/14/2019
Next Scheduled EDR Contact: 04/29/2019
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Quarterly

Other Ascertainable Records

VA AIRS: Permitted Airs Facility List
A listing of permitted Airs facilities.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 11/01/2018
Date Made Active in Reports: 12/26/2018
Number of Days to Update: 55

Source: Department of Environmental Quality
Telephone: 804-698-4000
Last EDR Contact: 01/14/2019
Next Scheduled EDR Contact: 04/01/2019
Data Release Frequency: Annually

VA CEDS: Comprehensive Environmental Data System
Virginia Water Protection Permits, Virginia Pollution Discharge System (point discharge) permits and Virginia Pollution Abatement (no point discharge) permits.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/19/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 20

Source: Department of Environmental Quality
Telephone: 804-698-4077
Last EDR Contact: 12/14/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Quarterly

VA COAL ASH: Coal Ash Disposal Sites
A listing of facilities with coal ash impoundments.

Date of Government Version: 07/29/2009
Date Data Arrived at EDR: 07/31/2009
Date Made Active in Reports: 08/21/2009
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: 804-698-4285
Last EDR Contact: 12/03/2018
Next Scheduled EDR Contact: 03/18/2019
Data Release Frequency: Varies

VA DRYCLEANERS: Drycleaner List
A listing of registered drycleaners.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/01/2018
Date Made Active in Reports: 12/26/2018
Number of Days to Update: 55

Source: Department of Environmental Quality
Telephone: 804-698-4407
Last EDR Contact: 01/07/2019
Next Scheduled EDR Contact: 04/22/2019
Data Release Frequency: Varies

VA ENFORCEMENT: Enforcement Actions Data
A listing of enforcement actions.

Date of Government Version: 06/01/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/05/2018
Number of Days to Update: 29

Source: Department of Environmental Quality
Telephone: 804-698-4031
Last EDR Contact: 01/02/2019
Next Scheduled EDR Contact: 04/15/2019
Data Release Frequency: Quarterly

VA Financial Assurance 1: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/03/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/26/2018
Number of Days to Update: 50

Source: Department of Environmental Quality
Telephone: 804-698-4205
Last EDR Contact: 10/29/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

VA Financial Assurance 2: Financial Assurance Information listing
Solid waste financial assurance information.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/27/2018
Number of Days to Update: 51

Source: Department of Environmental Quality
Telephone: 804-698-4123
Last EDR Contact: 10/29/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

VA TIER 2: Tier 2 Information Listing
A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 01/20/2017
Date Made Active in Reports: 02/14/2017
Number of Days to Update: 25

Source: Department of Environmental Quality
Telephone: 804-698-4159
Last EDR Contact: 12/14/2018
Next Scheduled EDR Contact: 04/01/2019
Data Release Frequency: Annually

VA UIC: Underground Injection Control Wells
A listing of underground injection controls wells.

Date of Government Version: 10/30/2018
Date Data Arrived at EDR: 10/31/2018
Date Made Active in Reports: 12/27/2018
Number of Days to Update: 57

Source: Department of Mines, Minerals and Energy
Telephone: 276-415-9700
Last EDR Contact: 10/31/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

VA RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/20/2014
Number of Days to Update: 203

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

VA RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina and at the Regional VA Levels.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 198

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools

Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 804-692-1900

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

APPENDIX 4

Photographic Log

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Photograph 1: View of Ivy Creek facing north, taken from the bridge on Cottontown Road.

Photograph 2: View toward DHR Bridge ID 009-5410 and easement southwest along proposed utility route.

Photograph 3: View toward DHR Bridge ID 009-5410 and Ivy Creek taken from the southeast powerline easement.

Photograph 4: View of Ivy Creek depicting general water quality and condition of the channel.

Photograph 5: View of Ivy Creek facing north, taken from the bridge on Hawkins Mill Road.

Photograph 6: View of Ivy Creek facing south, taken from the bridge on Hawkins Mill Road.

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APPENDIX F: PRELIMINARY ALIGNMENT DRAWINGS

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BEDFORD REGIONAL WATER AUTHORITY

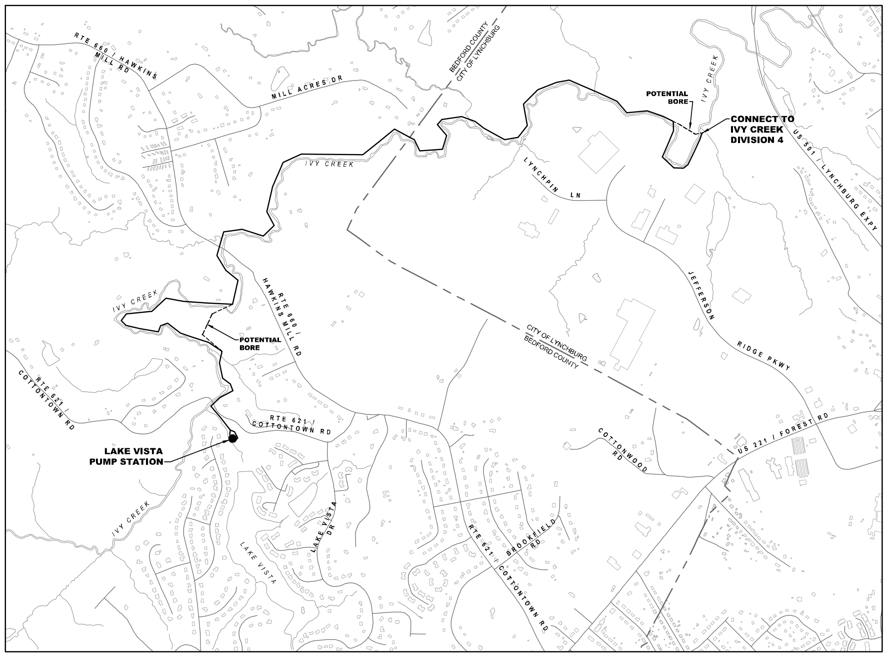
IVY CREEK INTERCEPTOR PER

BRWA JOB NO. ####-###

BEDFORD, VIRGINIA

DRAFT ALIGNMENT

APRIL 26, 2019



VICINITY MAP
NOT TO SCALE

LIST OF DRAWINGS

SHEET	TITLE
G-001	COVER SHEET
C-001	OVERALL PLAN
C-101	PLAN AND PROFILE STA. 10+00 TO 23+00
C-102	PLAN AND PROFILE STA. 23+00 TO 37+00
C-103	PLAN AND PROFILE STA. 37+00 TO 51+00
C-104	PLAN AND PROFILE STA. 51+00 TO 65+00
C-105	PLAN AND PROFILE STA. 65+00 TO 79+00
C-106	PLAN AND PROFILE STA. 79+00 TO 93+00
C-107	PLAN AND PROFILE STA. 93+00 TO 107+00
C-108	PLAN AND PROFILE STA. 107+00 TO 121+00
C-109	PLAN AND PROFILE STA. 121+00 TO 135+00
C-110	PLAN AND PROFILE STA. 135+00 TO 149+00
C-111	PLAN AND PROFILE STA. 149+00 TO 163+00
C-112	PLAN AND PROFILE STA. 163+00 TO 177+00
C-113	PLAN AND PROFILE STA. 177+00 TO 191+00
C-114	PLAN AND PROFILE STA. 191+00 TO 195+12

BEDFORD REGIONAL WATER AUTHORITY
1723 FALLING CREEK ROAD
BEDFORD, VA 24523
PHONE: (540) 586-7679
FAX: (540) 586-5805
PROJECT MANAGER: RHONDA B ENGLISH, PE
EMAIL: R.ENGLISH@BRWA.COM
BRWA JOB NUMBER: 2016-079

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MRK	DATE	REVISION DESCRIPTION

COMM NO: 218244.00
DATE: 4/26/2019
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CHECK: WRM
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COVER SHEET
SHT. NO. G-001
REV. NO. 0

12/26/2013 6:33 AM
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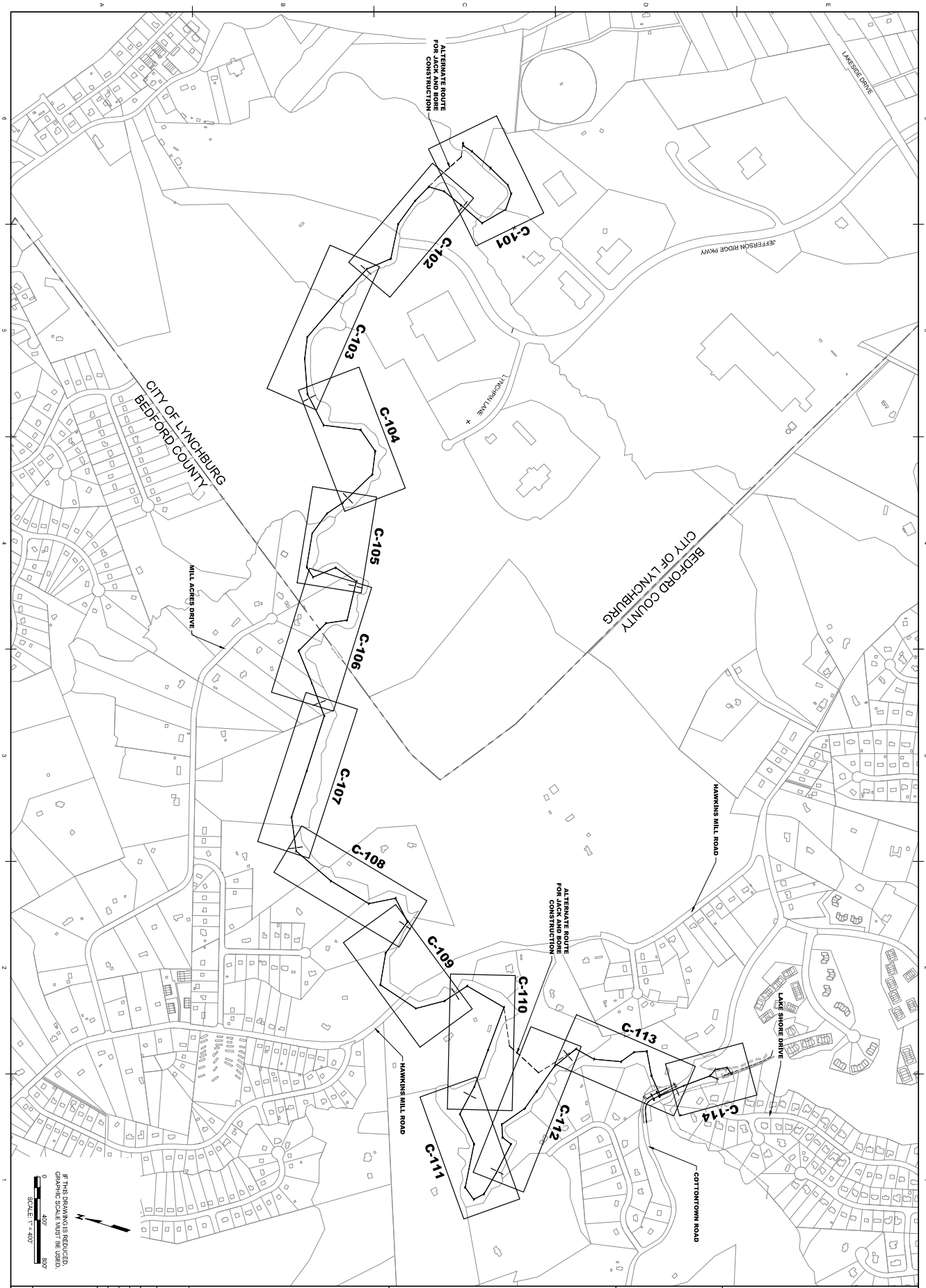

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DRAWN: MDM	
DESIGN: WRM	
DATE:	4/26/2019
COMM NO.	218244.00

MRK	DATE	REVISION DESCRIPTION

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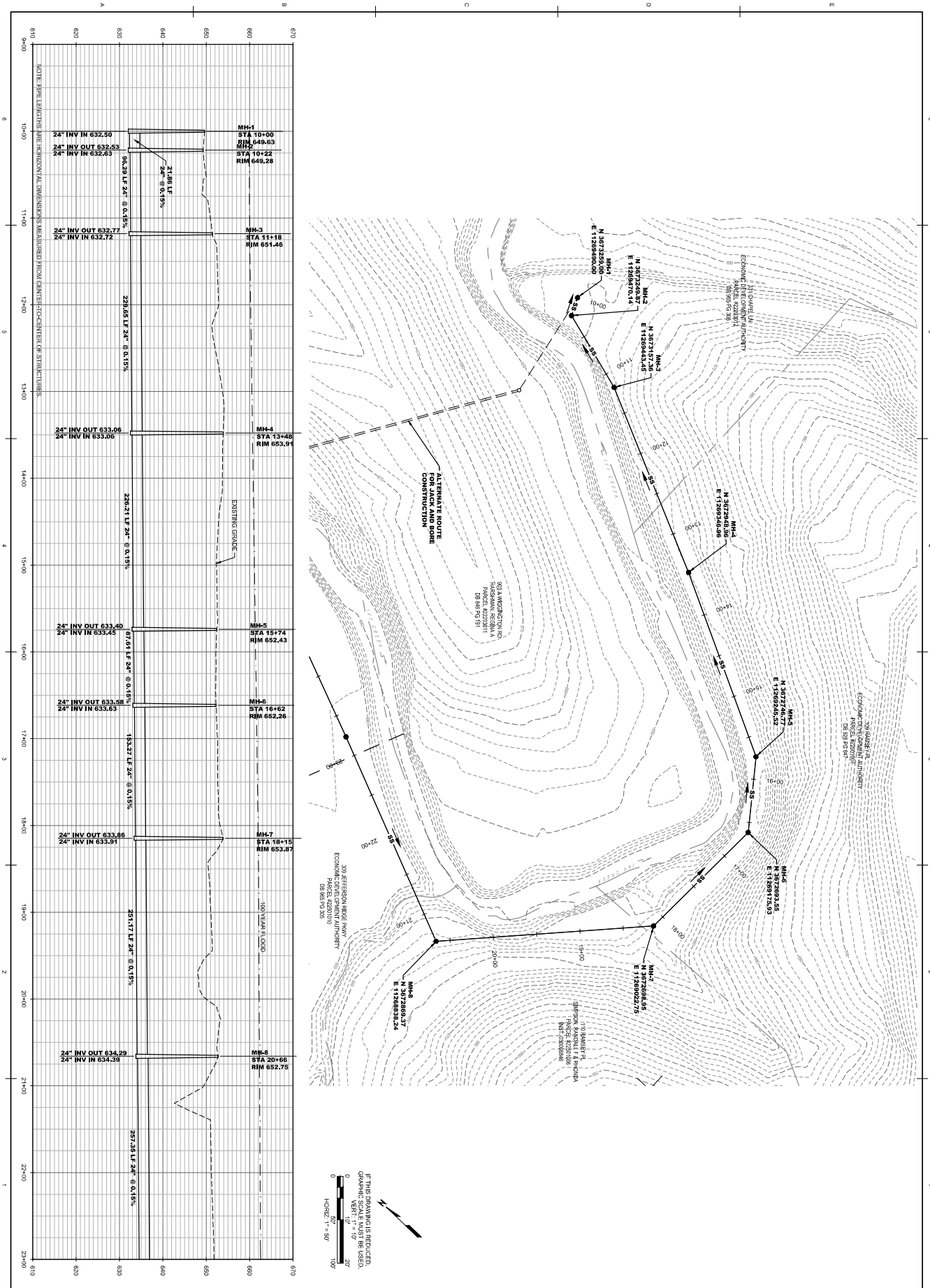

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SHEET TITLE

CHECK: WRM

DRAWN: MDM

DESIGN: WRM

DATE: 4/26/2019

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

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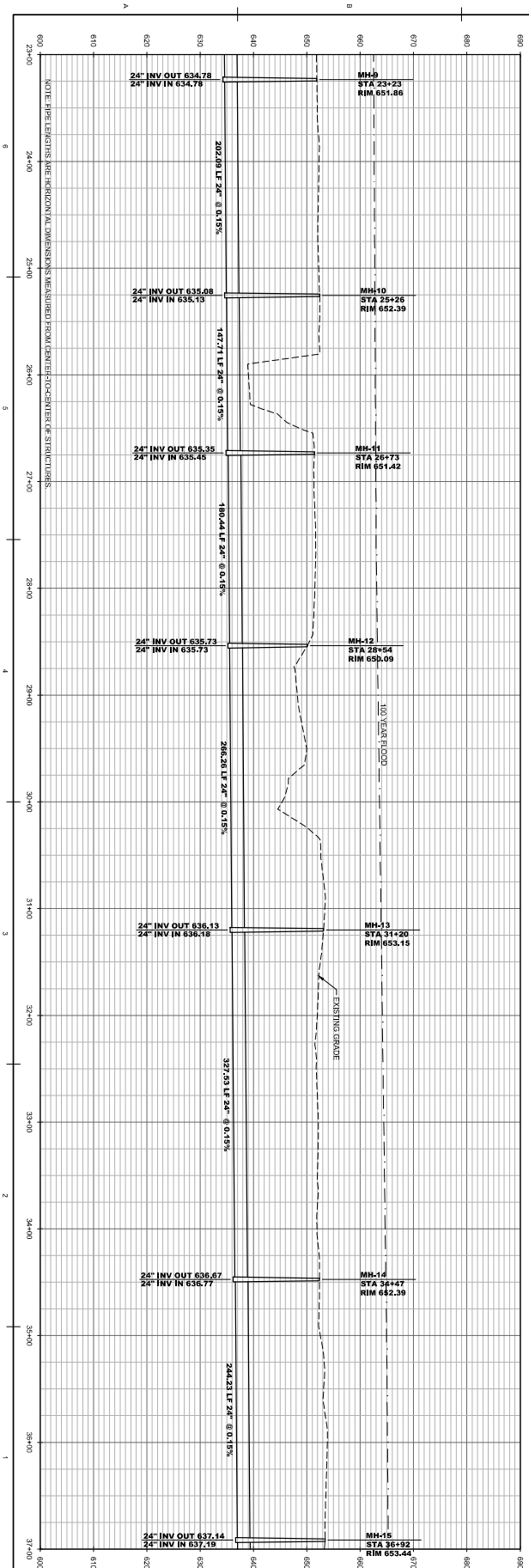

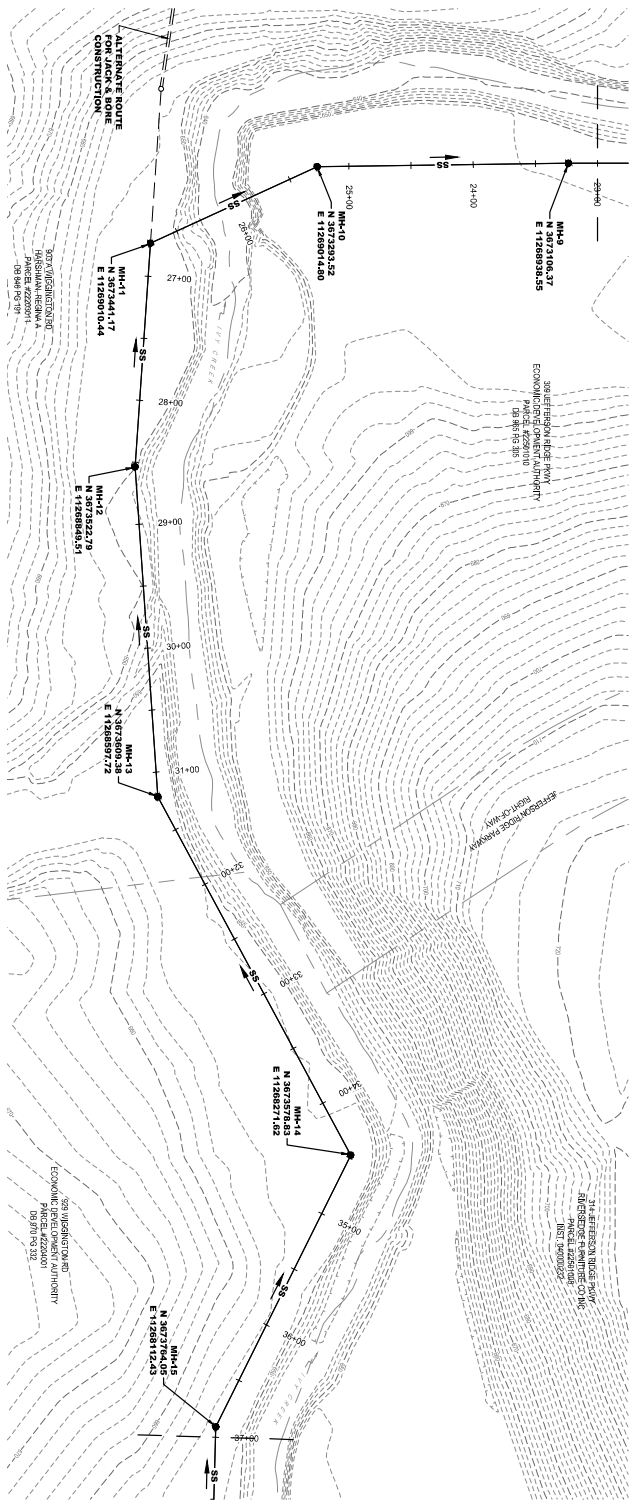

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DRAWN: MDM

DESIGN: WRM

DATE: 4/26/2019

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

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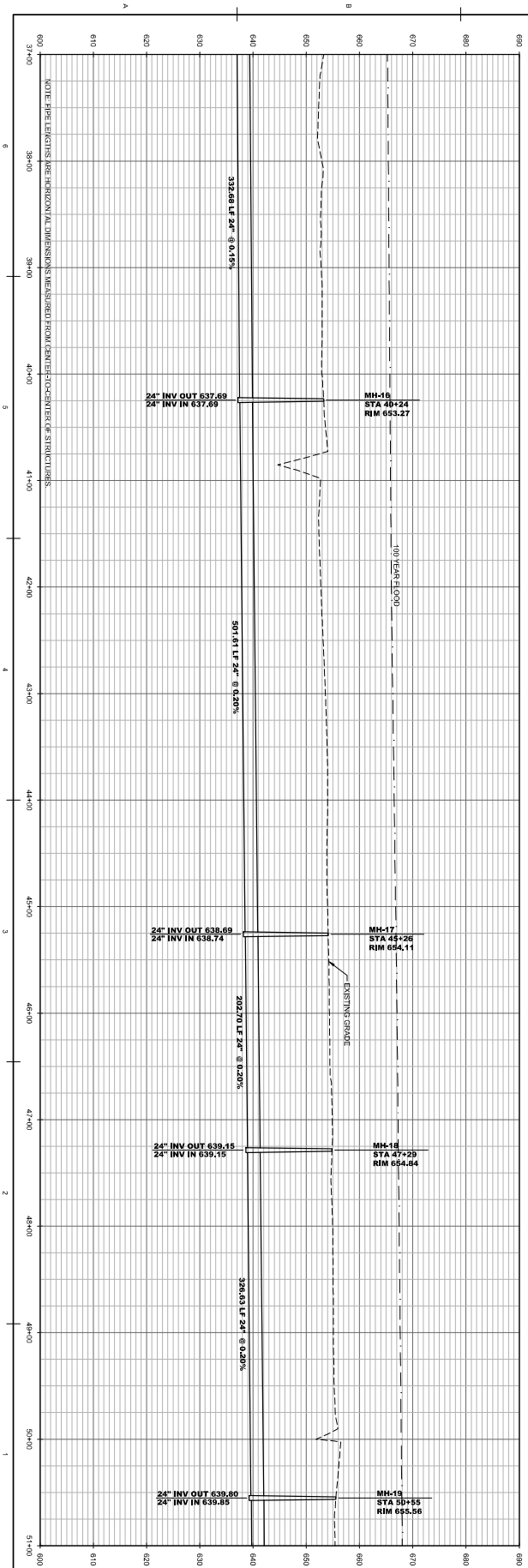

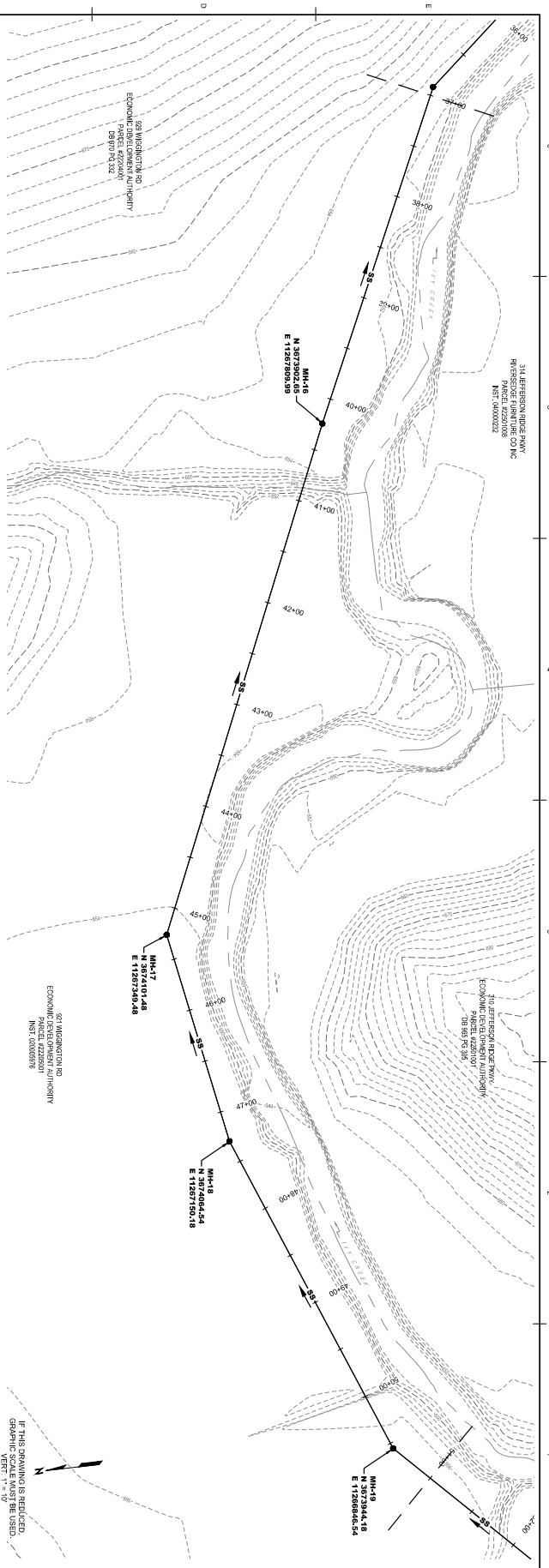

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DATE: 4/26/2019

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MRK	DATE	REVISION DESCRIPTION

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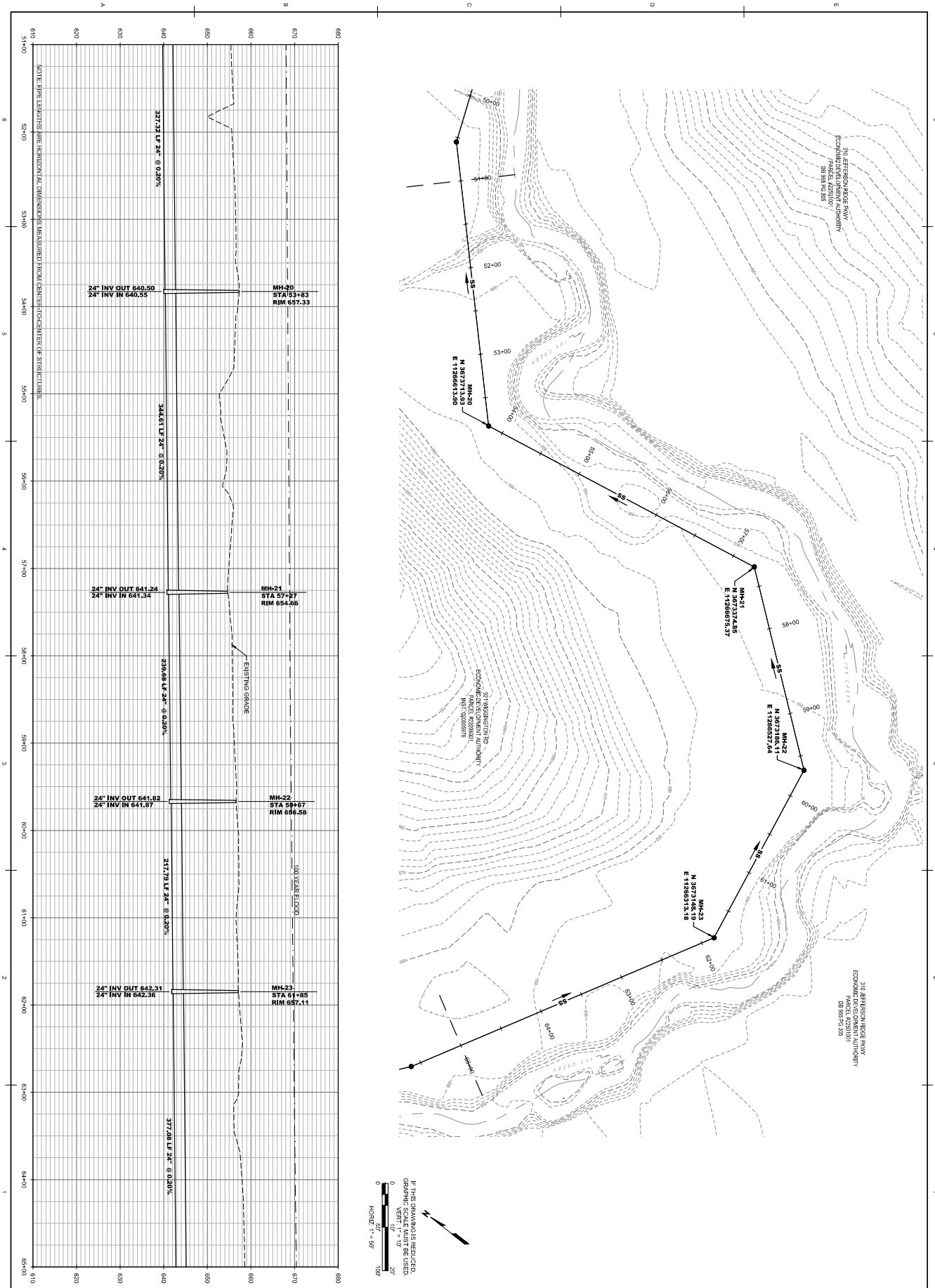

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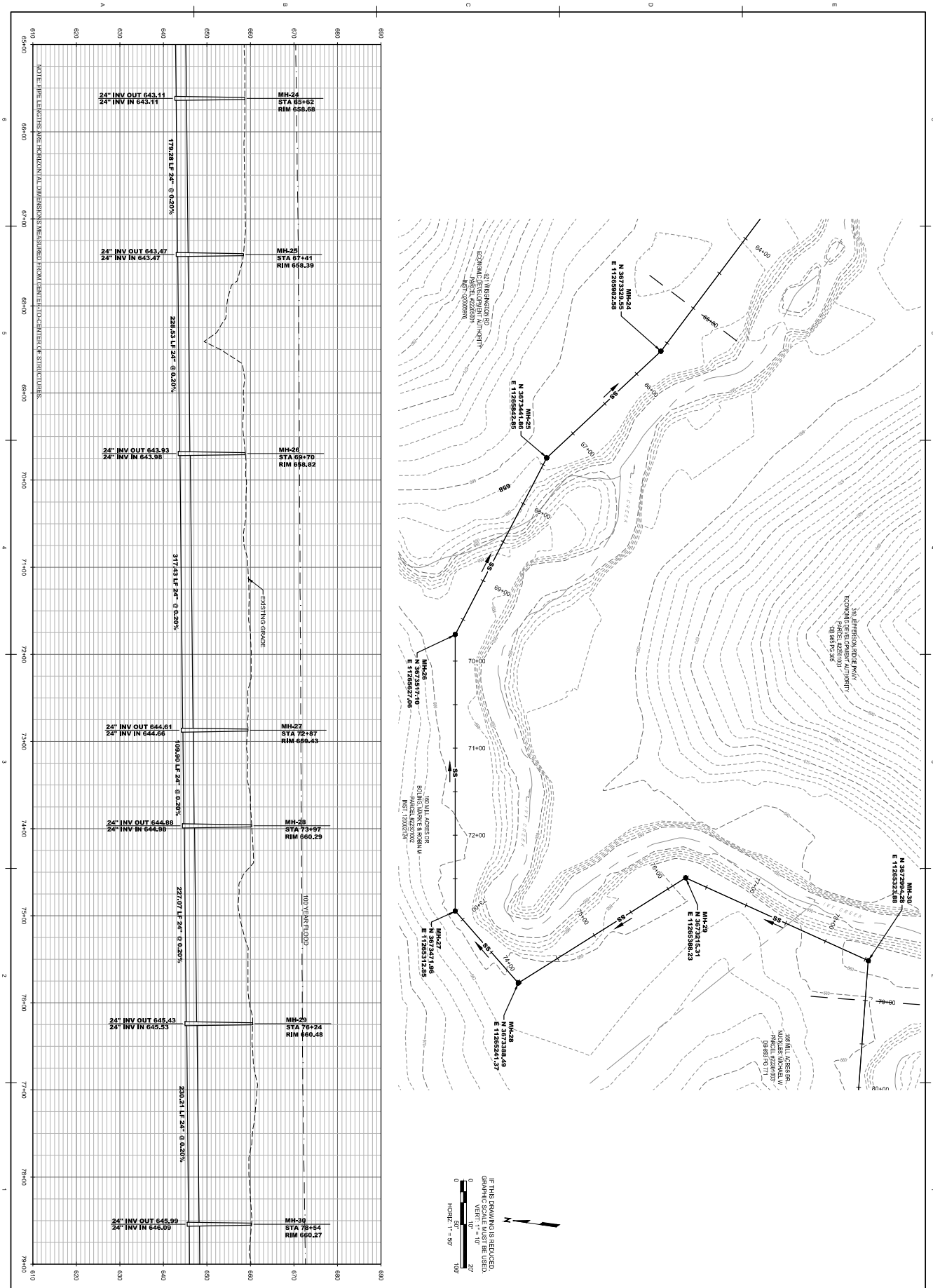

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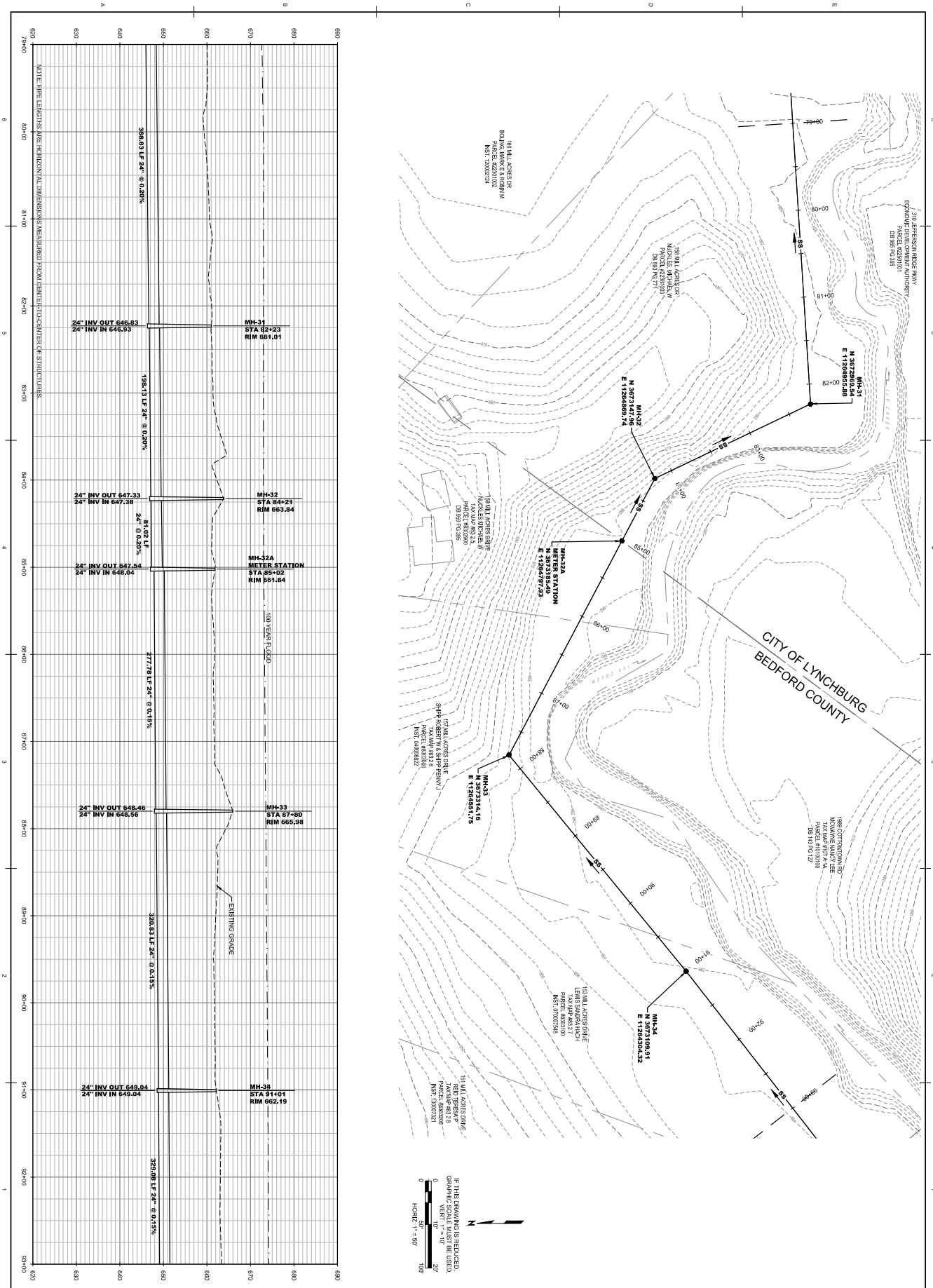

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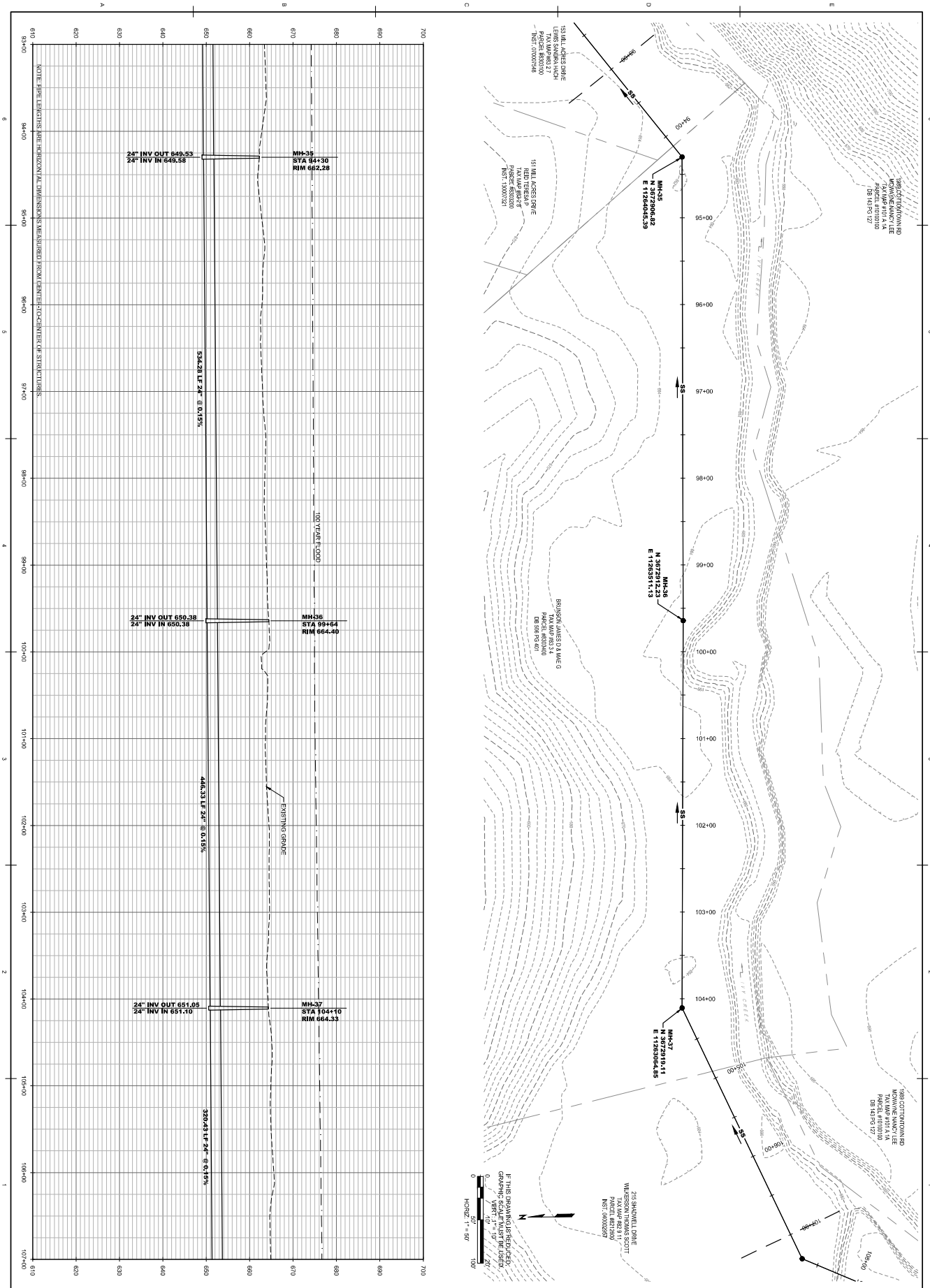

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SHEET TITLE

MRK	DATE	REVISION DESCRIPTION

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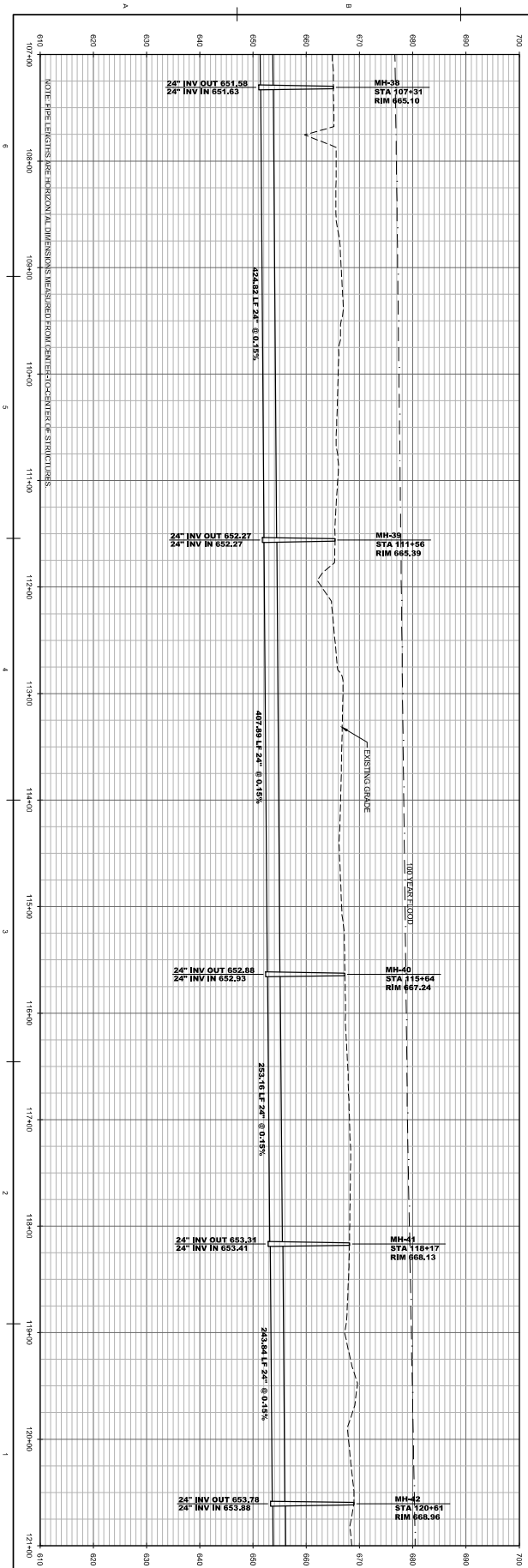
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24" INV OUT 651.58
24" INV IN 651.63
MH-38
STA 107+31
RIM 665.10
424.82 LF 24" @ 0.15%
24" INV OUT 652.27
24" INV IN 652.27
MH-39
STA 111+56
RIM 665.39
407.89 LF 24" @ 0.15%
EXISTING GRADE
100 YEAR FLOOD
24" INV OUT 652.86
24" INV IN 652.93
MH-40
STA 115+64
RIM 667.24
253.16 LF 24" @ 0.15%
24" INV OUT 653.31
24" INV IN 653.41
MH-41
STA 118+17
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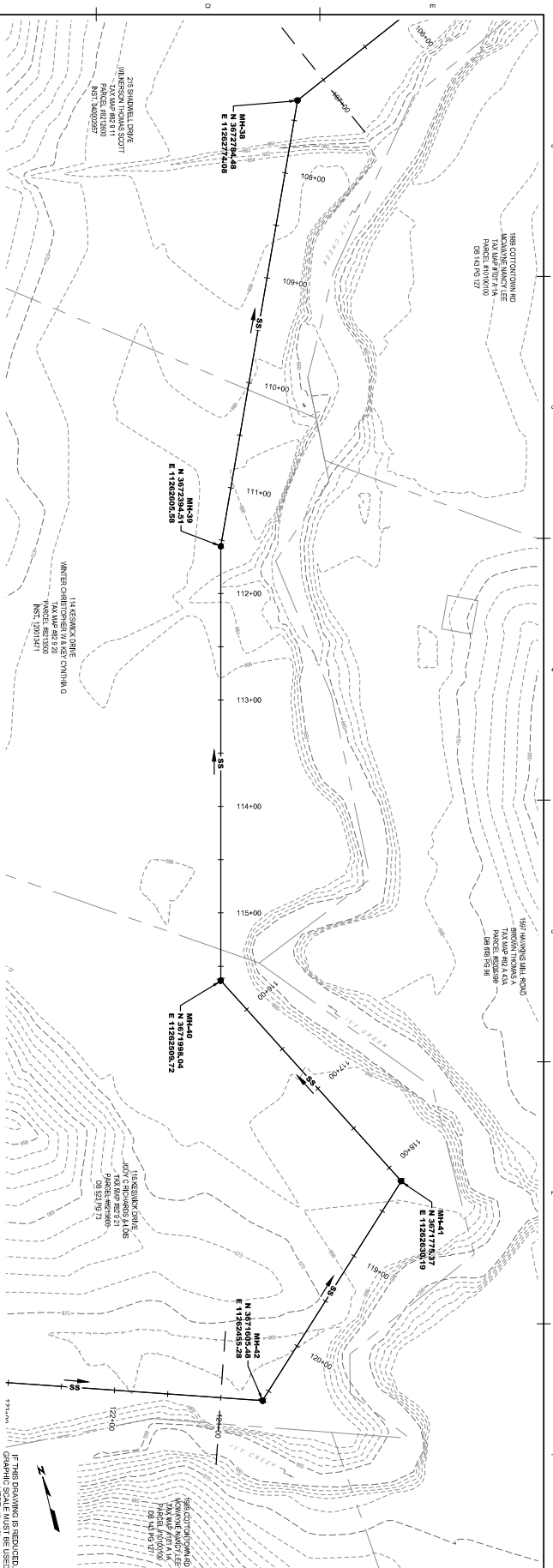
RIM 668.96



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DRAWN: MDM DESIGN: WRM		
CHECK: WRM DATE: 4/26/2019		
COMM NO.: 218244.00		

MRK	DATE	REVISION DESCRIPTION

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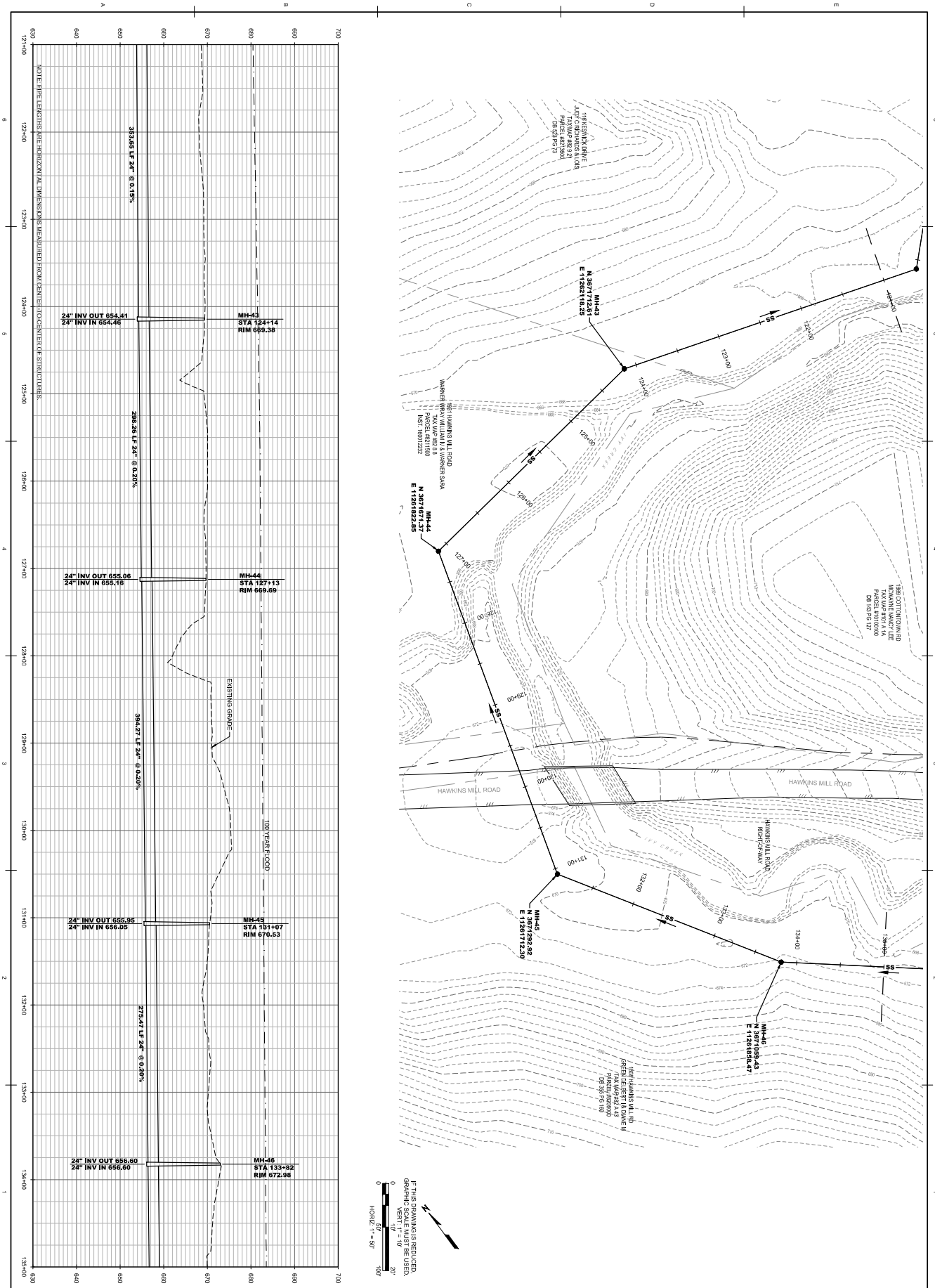

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REV. NO.	0

PLAN AND PROFILE STA. 121+00 TO 135+00

SHEET TITLE

DESIGN: WRM

DRAWN: MDM

CHECK: WRM

DATE: 4/26/2019

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

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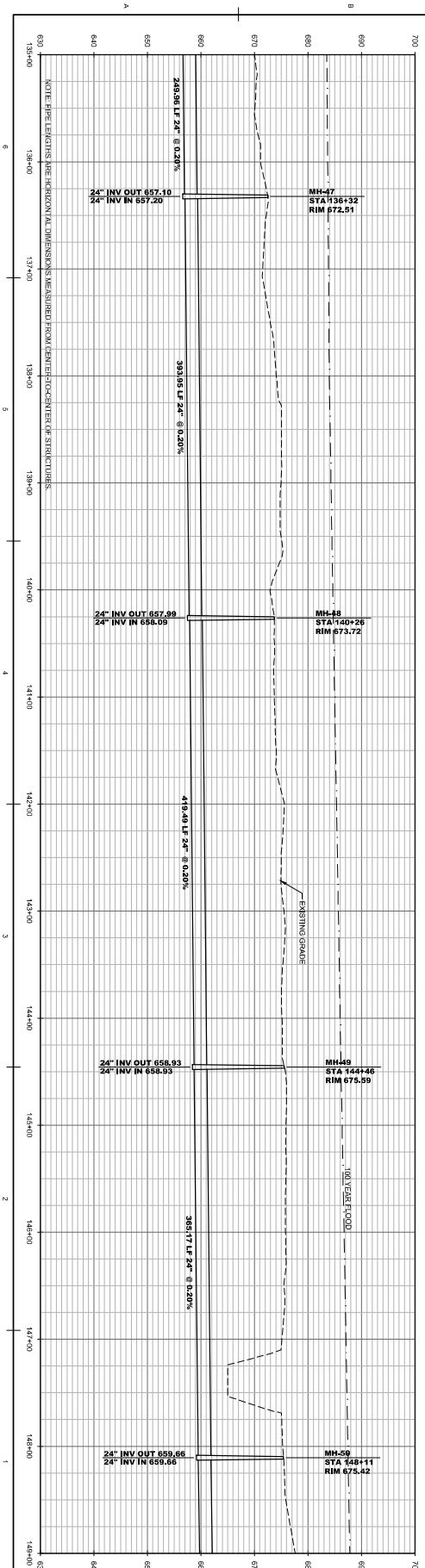

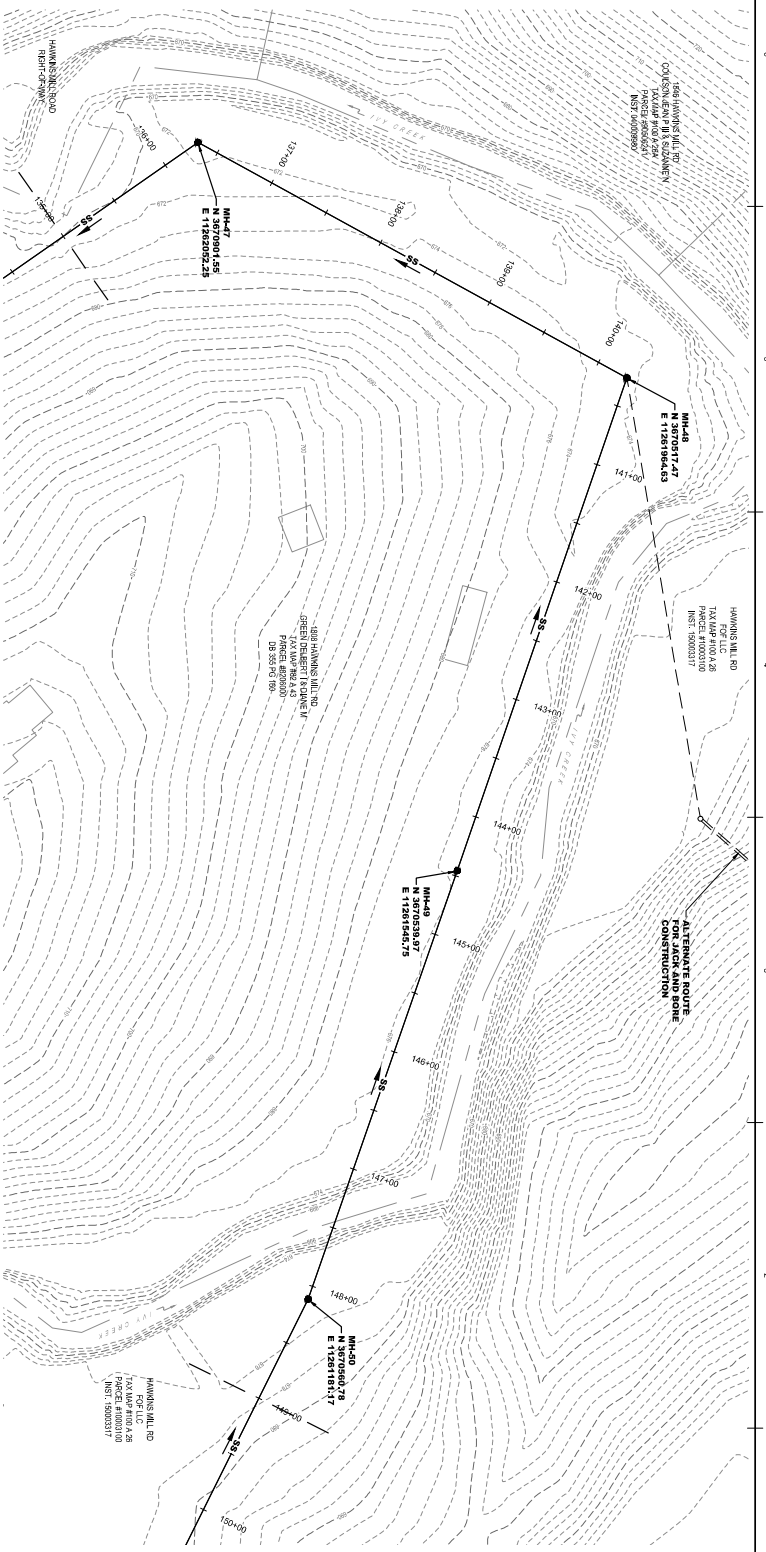

SHT. NO.	REV. NO.
C-110	0

PLAN AND PROFILE STA. 135+00 TO 149+00

SHEET TITLE

DESIGN: WRM

DRAWN: MDM

CHECK: WRM

DATE: 4/26/2019

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

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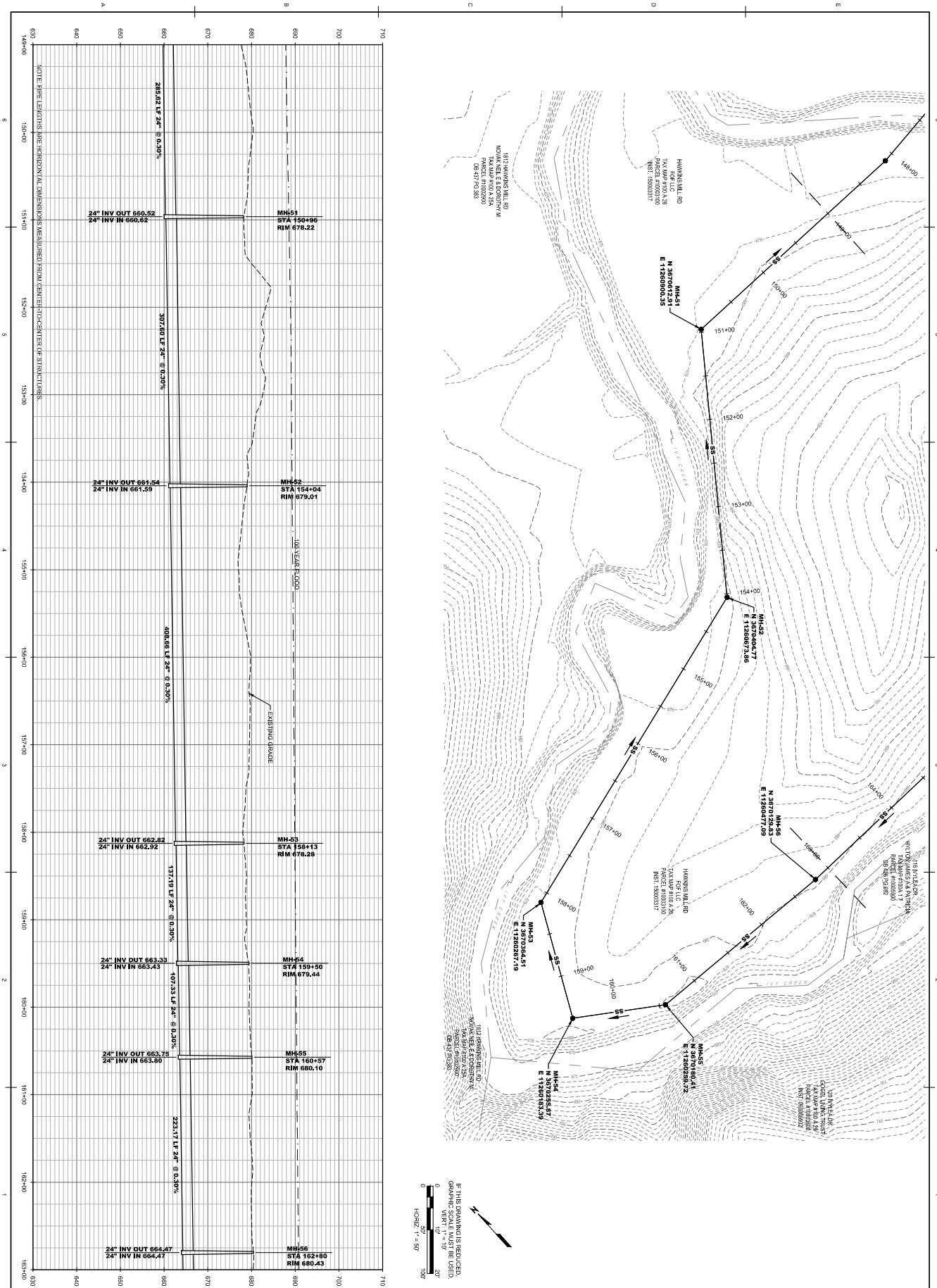

SHT. NO.	REV. NO.
C-111	0

PLAN AND PROFILE STA. 149+00 TO 163+00

SHEET TITLE

DRAWN: MDM
CHECK: WRM
DESIGN: WRM
DATE: 4/26/2013

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

BEDFORD REGIONAL WATER AUTHORITY

IVY CREEK INTERCEPTOR PER

BEDFORD, VA

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12/26/2013 6:33 AM

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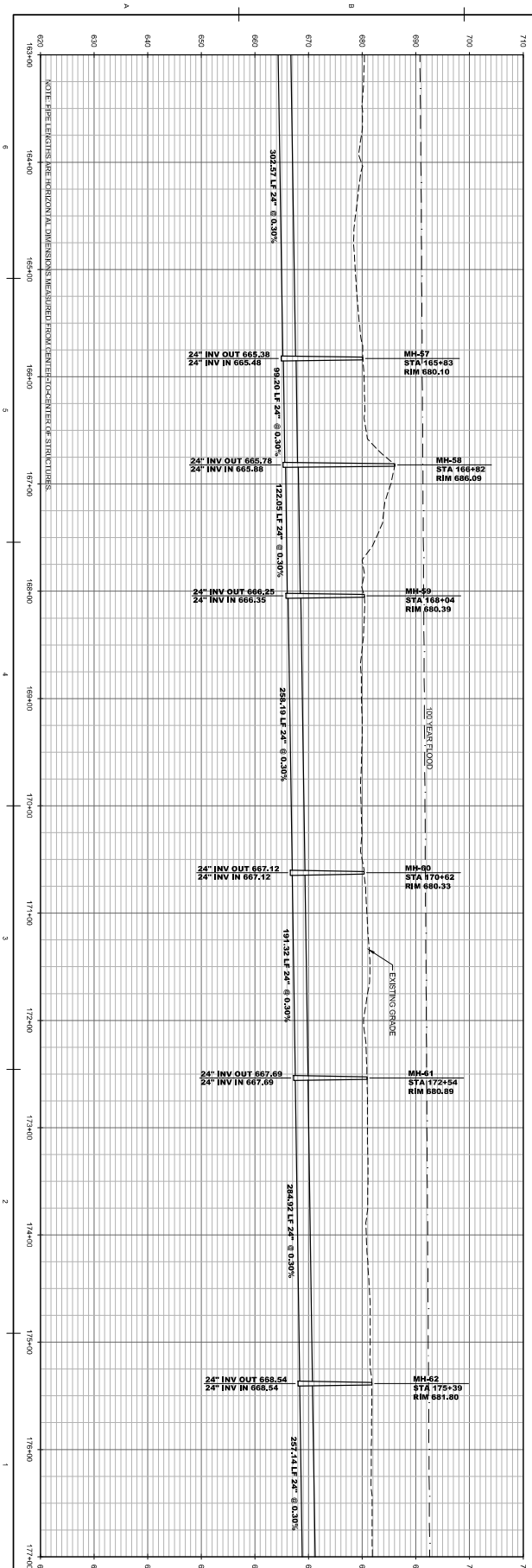

SHT. NO.	REV. NO.
C-112	0

PLAN AND PROFILE STA. 163+00 TO 177+00

COMM NO.	218244.00
DATE	4/26/2019
DRAWN: MDM	DESIGN: WRM
CHECK: WRM	

SHEET TITLE

MRK	DATE	REVISION DESCRIPTION

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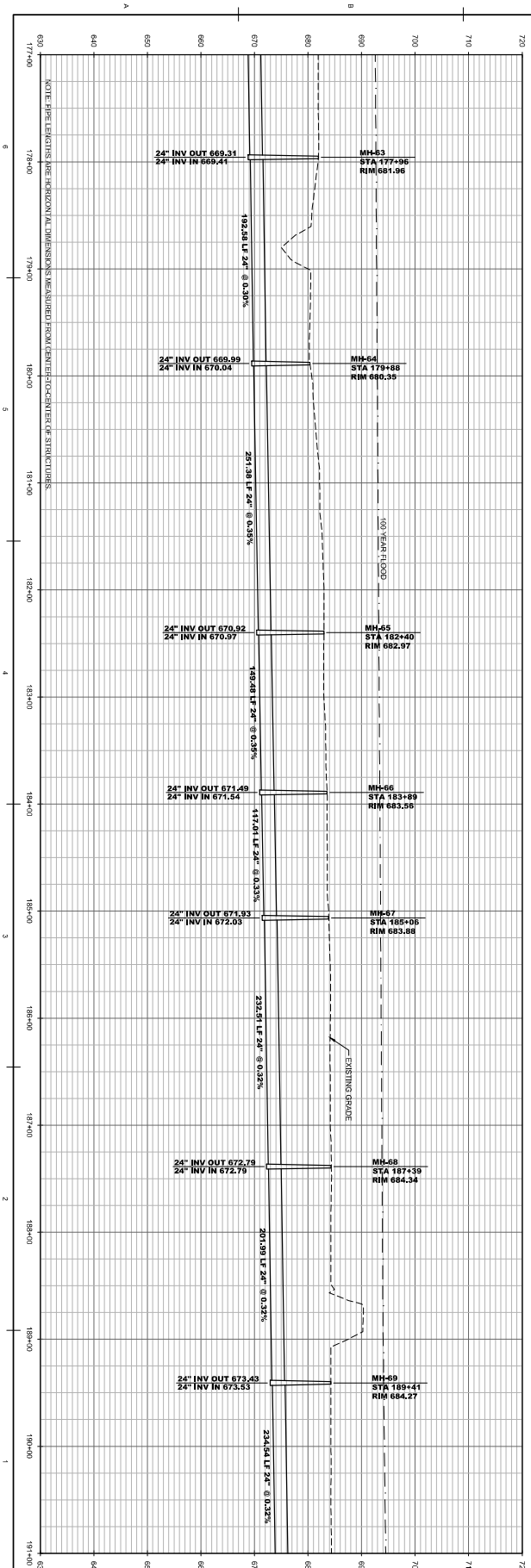

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PLAN AND PROFILE STA. 177+00 TO 191+00

SHEET TITLE

DESIGN: WRM

DRAWN: MDM

CHECK: WRM

DATE: 4/26/2019

COMM NO.: 218244.00

MRK	DATE	REVISION DESCRIPTION

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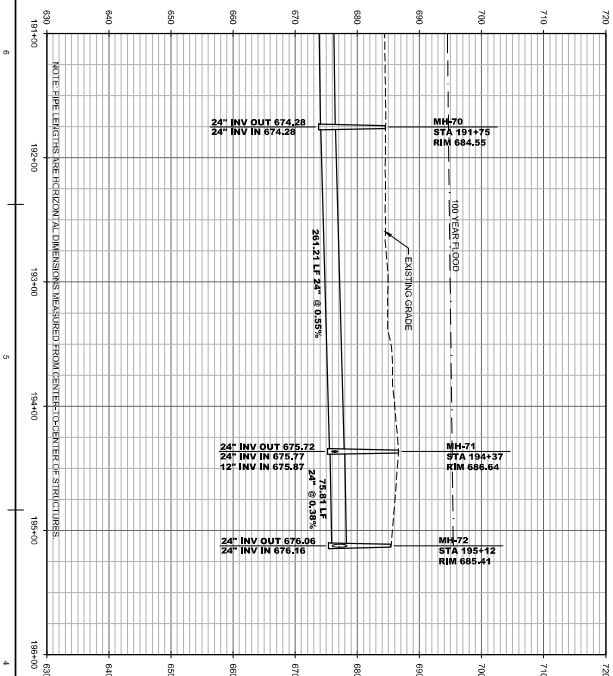

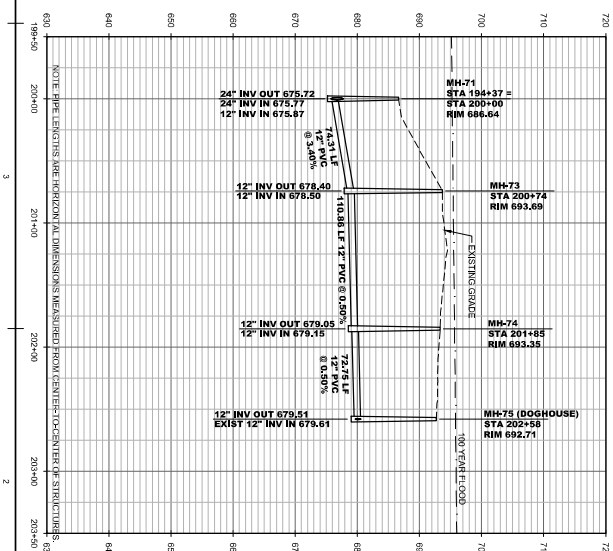

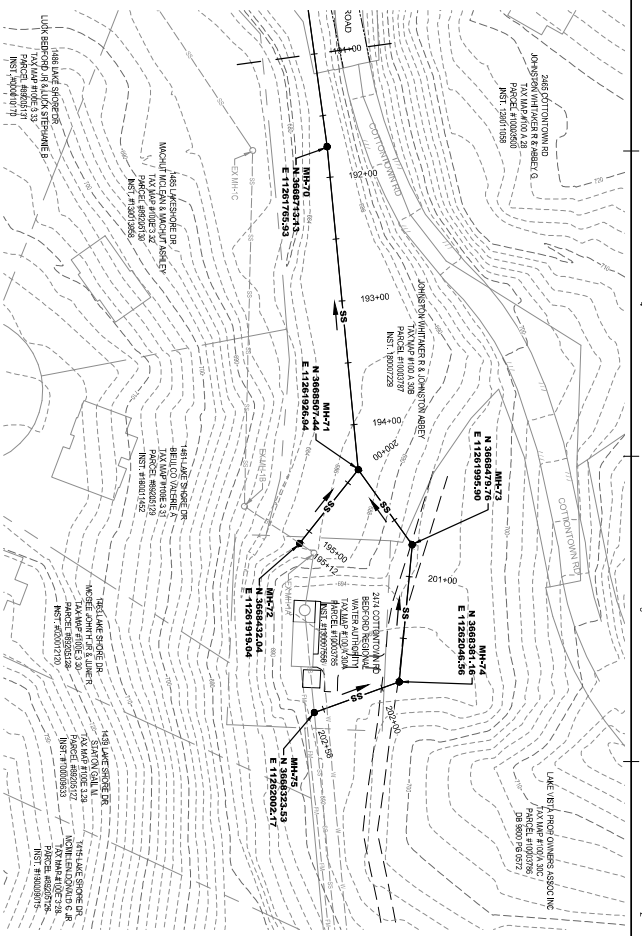

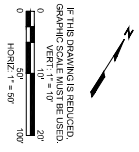

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REV. NO.	0	
SHEET TITLE	PLAN AND PROFILE STA. 191+00 TO 195+12	
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CHECK: WRM		
DATE:	4/26/2019	
COMM NO.	218244.00	

MRK	DATE	REVISION DESCRIPTION

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