



TURNER FARM
Turner Farm Treatment Report

10609 Georgetown Pike
Great Falls, Virginia 22066



Draft Report
July 8, 2016
WJE No. 2015.3162.2

Logo (if used)

Prepared for:
Fairfax County Park Authority
12055 Government Center Parkway, Suite 927
Fairfax, Virginia 22035

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
2751 Prosperity Avenue, Suite 450
Fairfax, Virginia 22031
703.641.4601 tel | 703.641.8822 fax



TURNER FARM
Turner Farm Treatment Report

10609 Georgetown Pike
Great Falls, Virginia 22066

Rebecca Wong, PMP
Associate II

Sonja Hinish, PE
Senior Associate

Christine Reynolds, PE
Associate Principal

Draft Report
July 8, 2016
WJE No. 2015.3162.2

Logo (if used)

Prepared for:
Fairfax County Park Authority
12055 Government Center Parkway, Suite 927
Fairfax, Virginia 22035

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
2751 Prosperity Avenue, Suite 450
Fairfax, Virginia 22031
703.641.4601 tel | 703.641.8822 fax

TABLE OF CONTENTS

Executive Summary	1
Project Background.....	1
Project Description.....	4
Treatment Plan	5
Ultimate Treatment and Use.....	8
Guidelines for Treatment.....	8
Prioritization of Treatment	11
Individual Structure Summaries.....	12
Site Recommendations	12
Farmhouse	14
Structure Description	14
Farmhouse Conditions	15
Farmhouse Recommendations.....	35
Garage	51
Structure Description.....	51
Garage Conditions	51
Garage Recommendations.....	58
Equipment Shed	63
Structure Description.....	63
Equipment Shed Conditions	63
Equipment Shed Recommendations	67
Crib Barn.....	68
Structure Description.....	68
Crib Barn Conditions.....	69
Crib Barn Recommendations.....	78
Milk House.....	81
Milk House Description.....	81
Milk House Conditions.....	81
Garage Recommendations.....	85
Dairy Barn.....	89
Structure Description.....	89
Dairy Barn Conditions.....	89
Dairy Barn Recommendations.....	98
Silo	104
Structure Description.....	104
Silo Conditions	104
Silo Recommendations.....	104

TURNER FARM

Turner Farm Treatment Report

10609 Georgetown Pike
Great Falls, Virginia 22066

EXECUTIVE SUMMARY

Turner Farm is located in Great Falls, Virginia and is a site that previously accommodated dairy farming. Owned by the Turner family from 1869 until 2010, the property has been expanded upon and parceled down since the original purchase.¹ The 1-1/2 acre property now owned by the Fairfax County Park Authority accommodates the 1905 farmhouse, a garage, equipment shed, crib barn, milk house, dairy barn, and silo. All of these structures are of varying age. Major alterations have been made to the farmhouse, garage, crib barn, and dairy barn since their construction that have impacted their integrity. The farmhouse has been expanded three times and raised four feet in elevation around 2002. The garage appears to have been expanded, lean-to structures added to the crib barn, and the connection between the dairy barn and silo removed. New siding was installed at a) the farmhouse within the last 5 years, b) crib barn within the last 16 years, and c) dairy barn within the last 8 years. This document serves as a treatment plan for the farmhouse and six outbuildings located at the Turner Farm property. The treatment plan and associated recommendations are in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Recommendations in this document were developed based upon review of the Historic Structure Report (HSR) of the farmhouse by Shaffer, Wilson, Sarver & Gray, PC (SWG) dated June 23, 2011 and onsite observations performed in April 2016 by Wiss, Janney, Elstner Associates, Inc. (WJE). Treatment recommendations cover work required to repair or correct architectural, structural, mechanical, electrical, and plumbing features of all structures. The recommendations are separated by buildings and then by features in an attempt to serve as a checklist for Fairfax County Park Authority and any potential Resident Curators to the property.

PROJECT BACKGROUND

Fairfax County Park Authority is developing a Residence Curator Program that would allow a resident to occupy a historic property owned by Fairfax County that is currently listed on the County's inventory of historic sites. The resident must apply for the property and qualify under the program's requirements, which are still being drafted. The Turner Farm property is being considered as a potentially eligible property for the Resident Curator Program. One of the main requirements of the Resident Curator Program is that the resident must maintain the building and perform the repairs and restoration required by Fairfax County Park Authority. The work must be completed in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

The Turner Farm property was owned by the Turner Family since 1869 until the sale to Fairfax County in April 2010.² During the ownership of Mark Turner, which lasted from 1920 to until his death in 1959, the property was a working dairy farm. Turner was a vital member to the Great Falls community; assisting with the development of the Maryland-Virginia Milk Commission, serving on the Virginia Milk Commission and the Fairfax County Board of Supervisors, being a master of the Pomona Grange and Great

¹ Shaffer, Wilson, Sarver & Gray, PC, *Turner Farmhouse Preliminary Historic Structure Report* (2011), 2.1 - 2.6

² Fairfax County Property Search, Deed Book and page 21007-0122

Falls Grange, and serving as the chairman for the Agricultural Stabilization and Conservation Commission of Fairfax County.^{3,4}

The Great Falls community has expressed great interest to the Fairfax County Park Authority on the need to recognize the historic importance of the property. Fairfax County Park Authority engaged SWG to complete a Preliminary HSR on the farmhouse in June 2011. The purpose of the report was to understand the history of the farmhouse, evaluate the integrity, identify character-defining features, perform a preliminary structural evaluation, understand the evolution of the farmhouse, and document the structure through photos.⁵ The HSR does not provide any information on the property after the ownership of Mark Tuner nor does it include any discussion on the ancillary structures on the property.

During the review of the HSR, it was noted that the report identified several character-defining features of the farmhouse such as an asymmetrical facade, one-story porch with a spindlework frieze, lace-like porch brackets and geometric porch railing, integral recessed second-story porch, cross-gabled roof with varying peaks, decorated gables with differing textures and patterned shingles, triangular-shaped window hood at the top of gable that is bracketed with square-butt shingles irregularly staggered, balcony (Juliet) decorated with a circular wood opening framed with spindlework, doors with delicate incised decorative detailing with a single large pane of glass in the upper section of the door, large and square shaped newel posts, and interior spindlework. Based upon the site work completed April 11 through 13, 2016, WJE would like to also add the following to the list of character-defining features for the farmhouse:

- Original 2/2 wood windows and wood trim;
- Wood shiplap siding;
- Central chimney (angled in the attic) and fireboxes located on the first floor;
- Interior doors and associated hardware including knobs and hinges, which show the 1905 and 1930 architectural evolution;
- Transoms above original doors;
- Wood floors and baseboard; and
- Historic radiators.

The HSR indicates that the farmhouse retains integrity, but does not provide a condition assessment or treatment recommendations for any architectural features. WJE has included a discussion on observed conditions of the architectural features and associated recommendations for treatment. Based upon the site work performed in coordination with a review of the HSR, WJE believes that the roof layout evolutions provided in Appendix B are not entirely accurate. Upon the review of the structure, the initial 1930 addition was at the easternmost area of the current footprint. The 1937 addition then extended the 1930 addition to the west and the 2002 addition extended the 1905 and 1937 footprint further west. The revised foot print is provided in Figure 1. The cardinal directions provided in Appendix B of the HSR are also inaccurate, with the front facade of the house facing north. The floor plan of the first floor does not show the infilled

³ Library of Virginia, Four Virginia Farmers Who Were Presented with Certificates of Merit at the Twelfth Annual Institute of Rural Affairs [photograph], July 30, 1940, Photograph.

⁴ Shaffer, Wilson, Sarver & Gray, PC, *Turner Farmhouse Preliminary Historic Structure Report* (2011), 2.5 - 2.6

⁵ Ibid, 1.1

windows in the Formal Dining Room (102), which was on the south wall adjacent to the stairwell, or the bathroom (105), located at the west wall. The window and door in the Casual Dining Room (103) at the south wall should be switched on the floor plan as the window is to the east and door to the west. The second floor plan also does not show the obscured window in the bathroom (206) along the west wall. These are historic features that provide evidence to the previous footprint of the 1905 and 1930s additions.

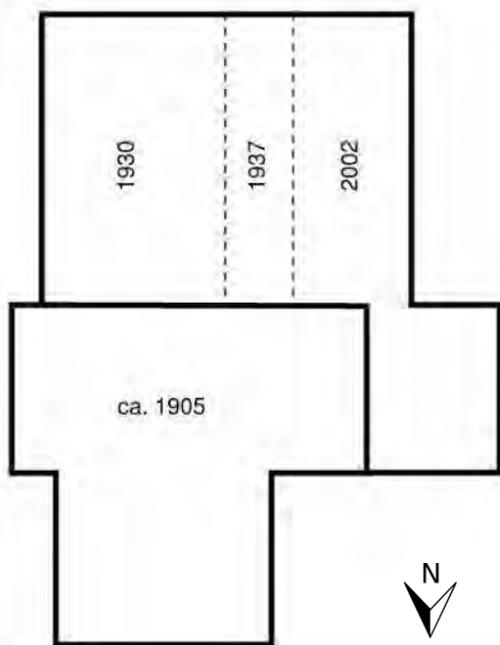


Figure 1. House development since the original construction. North is down.

The HSR states that “A structural analysis was performed that revealed that the house is structurally sound and does not have any major structural defects.”⁶ The structural analysis was performed following their site review to determine an allowable live load capacity for each room on the first floor. It is unclear whether materials sampling and testing was performed to confirm the wood species listed in the report. According to the HSR, the first level of the farmhouse meets “Public Access” use (100 PSF) except for the Formal Dining Room (102) and Parlor (106). A live load rating table was not provided for the second floor as the authors were unable to access the second floor framing. The HSR recommends performing exploratory demolition, documentation, and analysis to determine the live load capacity of the second floor if usage is to be expanded beyond “Residential” use (40 PSF).⁷ WJE did not perform any materials testing or structural analysis to confirm the load ratings provided in the HSR as they are beyond our scope of our services at this time; however, based upon information provided in the HSR as well as on-site observations further structural analysis may be warranted.

The HSR notes termite damage at the joists below the Formal Dining Room (102) at the mid-span of the members. Cracking in the plaster walls is also reported and the HSR indicates that the cracking is the result of differential settlement and extensive renovations, but did not provide any recommendations related to

⁶ Ibid, 1.1

⁷ Ibid, 3.11 - 3.12

this condition.⁸ WJE did not observe any indications of differential settlement; however, the foundation walls were not observable, as they were concealed by concrete and insulation forms. Differential settlement would exhibit cracking in the walls and slab as one side of the house settles to a different elevation than another area. Based on several of the crack patterns that WJE did observe, i.e. diamond-shaped pattern, it appears that the house may have been racked during lifting operations and we anticipate that inadequate support during lifting of the house or uneven lifting caused a majority of the cracking. In addition, WJE observed additional structural issues not discussed in the HSR:

- Warping and non-levelness of first floor;
- Large gaps between interior finishes on the first floor level;
- Majority of the interior doors no longer able to close; and
- Deflection in traditionally non-load bearing members at the cellar wall framing.

The HSR also assessed the mechanical, plumbing, and electrical systems in the house finding that many of the systems appeared to be newer with minimal work required to finish the systems such as heating, plumbing, and electrical wiring in working order.⁹ The house does not have any cooling systems. The HSR recommended testing the water pressure and inspecting the septic system. As part of this report, the mechanical, electrical, and plumbing (MEP) systems, including septic, were inspected and a list of observations and subsequent recommendations are provided. Overall, the MEP found there to be more work than indicated in the HSR. The full MEP report has been provided as Appendix A.

PROJECT DESCRIPTION

The subject property is located on Georgetown Pike in Great Falls, Virginia and is currently noted as 1-1/2 acres. By 1869, the Turner property was as large as 220 acres with a farmhouse situated at the northwestern area of the property. The property currently includes the main farmhouse and six (6) outbuildings, including a garage, equipment shed, crib barn, milk house, dairy barn, and silo. (Figure 2) The farmhouse, which faces the road, is the northern most structure on the property with the garage directly south of the house. The equipment shed is southwest of the garage and the crib barn is south and slightly east of the garage. The milk house is just to the east of the crib barn with the dairy barn directly south of the milk house. The silo is just south of the dairy barn. The milk house, dairy barn, and silo and located closely together, which is attributed to the property being a previously working dairy barn.

⁸ Ibid, 3.12 - 3.13

⁹ Ibid, 3.15 -3.16



Figure 2. Turner Farm Property buildings.

The farmhouse was believed to be constructed c. 1905 with several additions in 1930, 1937, and 2002.¹⁰ The construction dates for the outbuildings are unclear; however, based upon the structural framing and foundation of the Crib barn, in conjunction with our experience on similar structures, it is believed to have been constructed sometime after 1875 and as late as 1910, but the exact date is unknown. The garage appears to have been heavily modified around 2004, the crib barn added onto with the east and west lean-to additions within the last 16 years (based upon the date of the sheathing), the dairy barn received new siding around 2008, and the connection room between the dairy barn and silo was removed at an unknown date.¹¹

In order for the Fairfax County Park Authority and the curator to understand the work required at Turner Farm, WJE has been asked to develop a Treatment Plan for the farmhouse and six (6) outbuildings. The Treatment Plan will be used to guide the work required to maintain the property by the curator. All survey work and observations were conducted from the ground and accessible interior locations. WJE did not utilize a mobile man lift or review conditions in confined spaces.

WJE utilized McDonough Bolyard Peck (MBP) to observe and provide discussions on the accessible mechanical, electrical, and plumbing systems at Turner Farm. Their observations and recommendations have been summarized in this document and their full report included as Appendix A.

TREATMENT PLAN

Treatment recommendations and work undertaken on the buildings and site are to be guided by the following:

- Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards)
- American with Disabilities Act (ADA)
- International Building Code (IBC), 2012

¹⁰ Ibid, 2.7 - 2.17

¹¹ Fairfax County Tax Administration, phone call by Rebecca Wong, May 31, 2016.

- International Existing Building Code (IEBC), 2012
- Applicable National Park Service Preservation Briefs:
 - Preservation Brief #2 “Repointing Mortar Joints in Historic Masonry Buildings”
 - Preservation Brief #4 “Roofing for Historic Buildings”
 - Preservation Brief #6 “Dangers of Abrasive Cleaning to Historic Buildings”
 - Preservation Brief #9 “The Repair of Historic Wooden Windows”
 - Preservation Brief #10 “Exterior Paint Problems on Historic Woodwork”
 - Preservation Brief #15 “Preservation of Historic Concrete”
 - Preservation Brief #16 “The Use of Substitute Materials on Historic Building Exteriors”
 - Preservation Brief #18 “Rehabilitating Interiors in Historic Buildings - Identifying Character-Defining Elements”
 - Preservation Brief #19 “The Repair and Replacement of Historic Wooden Shingle Roofs”
 - Preservation Brief #20 “The Preservation of Historic Barns”
 - Preservation Brief #21 “Repairing Historic Flat Plaster - Walls and Ceilings”
 - Preservation Brief #24 “Heating, Ventilating, and Cooling Historic Buildings: Problems and Recommended Approaches”
 - Preservation Brief #28 “Painting Historic Interiors”
 - Preservation Brief #32 “Making Historic Properties Accessible”
 - Preservation Brief #39 “Holding the Line: Controlling Unwanted Moisture in Historic Buildings”

Newly installed electrical systems and components, including any significant alterations to existing electrical systems, should comply with applicable provisions of the National Electrical Code (NEC).

Four definitions of the four major treatments that may be applied to historic structures have been developed in the Secretary’s Standards: preservation, rehabilitation, restoration, and reconstruction. The four definitions are as follows:

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, general focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.¹²

Preservation, which involves maintaining the buildings in its existing form and spatial relationship, has been partially completed by Fairfax County Park Authority at the exteriors of the farmhouse, dairy barn, and silo through the recent repair work and recoating of the exposed wood elements. However, as a treatment approach preservation may not accommodate future use of the residence and out buildings to meet the needs for the Residence Curator Program. If the use of the dairy barn, milk house, and silo remain unchanged, preservation is considered the most appropriate treatment approach for these structures.

Rehabilitation of the buildings would include all of the repairs necessary to stabilize and preserve the structures in their existing state, coupled with modifications (as needed) to accommodate improvements to heating, ventilating, air conditioning, electrical, and plumbing systems, as well as to meet code and accessibility requirements. The treatment Rehabilitation permits selective restoration of character-defining elements where missing or altered, if appropriate archival documentation is available. Rehabilitation would be the most appropriate treatment approach for the farmhouse and garage.

Restoration would return the buildings to their appearance during an established period of significance. A restoration target date would need to be selected within the period of significance. As a treatment alternative, restoration may also not accommodate future use of the residence and out buildings to meet the needs for the Residence Curator Program. The most impacted structure would be the farm house, which has been added on to and altered since its original construction ca. 1905.¹³ Restoration may be a suitable treatment approach for the crib barn.

Reconstruction would construct new structures on the site on their original location based upon detail archival records. WJE did not observe locations of previous structures nor has been provided with related documentation to indicate there are previous structures that are no longer standing (with the exception of the farmhouse believed to have been razed to facilitate construction of the existing home). Given the deteriorated condition of the equipment shed it may be beneficial to document what is existing and undertake reconstruction. Reconstruction may be a suitable treatment approach for the equipment shed.

Preservation	Rehabilitation	Restoration	Reconstruction
Dairy Barn	Farmhouse	Crib barn*	Equipment Shed*
Milk House	Garage		
Silo			

** denotes structure has multiple options for treatment approach based upon observed conditions and is further discussed in the individual structure summaries.*

To date, numerous interests have been submitted to the County for potential uses including utilizing the farmhouse as a private residence, winery, or restaurant. The future use of the structures at Turner Farm is dependent upon the ultimate end use of the property and whether it remains a residence under the Fairfax County Resident Curator Program. The ultimate use of the farmhouse and outbuildings will directly impact

¹² The Secretary of the Interior’s Standards for the Treatment of Historic Properties

¹³ Shaffer, Wilson, Sarver & Gray, PC, *Turner Farmhouse Preliminary Historic Structure Report* (2011), 2.7 - 2.17

the associated treatment approach. For purposes of this plan, it is assumed that the structures will be used as originally intended. If changes from the original intention are planned, a use that requires significant alterations to the historic exterior or primary interior spaces and features may include changes to the exterior and subsequently changes or removal of the historic fabric are not recommended. Where future modifications are considered to provide universal accessibility, incorporate improvements to mechanical, electrical, and plumbing systems, and meet code requirements (e.g., handrails, public space structural loading), these modifications should be designed taking into consideration the goal of retaining original historic materials and features wherever possible. Where incorporation of new amenities would require significant alterations to the building that could diminish its integrity as a historic resource, consideration should be given to limiting or avoiding these modifications.

Many of the distinctive materials, features, and spaces of the structures at Turner Farm are essentially intact, and in spite of additions to the farmhouse, all buildings retain a high degree of integrity. Repairs to the original materials and character-defining features as part of a future rehabilitation is practical, appropriate, and achievable.

Ultimate Treatment and Use

Guidelines for Treatment

Guidelines and requirements for treatment were developed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

The Secretary of the Interior's Standards for **Preservation** are as follows:

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

The Secretary of the Interior's Standards for **Rehabilitation** are as follows:

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The Secretary of the Interior's Standards for **Restoration** are as follows:

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically will not be constructed.

The Secretary of the Interior's Standards for **Reconstruction** are as follows:

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.¹⁴

¹⁴ *ibid*

The basic guidelines for work on the structures at Turner Farm are as follows:

- Undertake work in compliance with the Secretary of the Interior's Standards for:
 - ◆ **Preservation** for the Dairy Barn, Silo, and Milk House;
 - ◆ **Rehabilitation** for the Farmhouse and Garage;
 - ◆ **Restoration** for the Crib Barn; and
 - ◆ **Reconstruction** for the Equipment Shed.
- Retain the character of the historic building and environs by protecting the buildings and significant site features.
- Ensure that proposed new elements or construction are compatible with historic character of the buildings and its site.
- Protect adjacent natural resources during construction activities.
- Document through detailed as-built drawings, photographs, and written narrative all changes and treatments to the building and its immediate site. Maintain records of treatments and preserve documentation according to professional archival standards. Maintain a copy of records in Fairfax County archives.
- Retain features and materials at both the exterior and interior of the buildings that date from the period of significance to the greatest extent possible.

Prioritization of Treatment

Based on the observed conditions from the April 11 - 13, 2016 site visit, the following prioritization is recommended for work on the structures at Turner Farm.

1. Perform comprehensive engineering investigation to document as-built conditions of farmhouse and garage framing and perform structural analysis to determine if structural repairs/upgrades are necessary.
2. Perform further investigation to document conditions of the concealed wall framing of the dairy barn.
3. Undertake efforts to structurally stabilize known areas of deterioration and concerns including:
 - a. Repairs to the foundations, timber sills, and wall framing at the equipment shed and crib barn.
 - b. Repairs to and installation of missing pipe columns in the dairy barn.
4. Secure the building envelope such that moisture infiltration cannot further degrade the remaining historic elements. Work related to exterior envelope waterproofing should follow to prevent water infiltration and deterioration of building envelope materials, and to address conditions that may lead to continued deterioration and loss of historic fabric. These types of repairs include repairs to the:
 - ◆ Deteriorated and exposed weather-resistant barrier at the cellar level of the farmhouse;
 - ◆ Tie-ins of missing or disconnected downspouts; and
 - ◆ Window and door repairs.

5. Replacement of broken glass throughout the buildings.
6. The next priority is modifications required to permit continued use of the building, such as work required to meet code, for universal access, for egress, to rehabilitate interior finishes, and to upgrade building systems.
7. Finally, in addition to the specific repairs recommended, cyclical maintenance tasks such as inspection, painting of exterior wood and metal elements, recoating of concrete and parge finishes, pointing of mortar joints in stonework, replacement of joint sealants, tree and vegetation care, cleaning of gutters, and other ongoing maintenance tasks must be continually implemented to avoid damage to the historic site and building fabric and to reduce the need for large-scale repair projects in future.

All work performed on the structures and site features should be documented through notes, photographs, and measured drawings and/or sketches, or with as-built annotations to construction documents at project completion. These records should be permanently archived with Fairfax County Park Authority as a part of the permanent record of the property and to provide information for future repairs and ongoing maintenance. In addition, these records will allow future observers to identify which materials are original, replacement, and their date of installation.

INDIVIDUAL STRUCTURE SUMMARIES

Site Recommendations

Although assessment of the condition of the site's landscaping conditions are outside the scope of this study, consideration of immediate environs and setting of Turner Farm is recommended as part of planning for repair and maintenance. The setting of a farm property, especially spatial relationships between structures, is an important feature of the property. The following general recommendations address the goal of maintaining the historic character of the setting for the farmhouse and out buildings. (Figure 3)

- The existing overall spatial organization and topography of the site should be preserved, as well as the relationship of the farmhouse to the outbuildings.
- Views and vistas to and from the house, including the view of the house from the head of the entrance drive, should be preserved and restored.
- Site grading, such as the slope of the site beyond the house, and circulation pathways that date to the period of significance, such as the patio, should be retained and maintained.



Figure 3. Site view of the structures from the entrance of the driveway.

DRAFT

Farmhouse



Figure 4. Farmhouse as viewed from the northeast.

Structure Description

The farmhouse is a Queen Anne style home built c. 1905 with three later additions to the structure. (Figure 4) One addition occurred in 1930, which expanded directly to the south, another addition in 1937, which expanded the 1930 addition to the west, and the last addition in 2002 that expanded the 1930 addition and original 1905 house to the west.¹⁵ The farmhouse is approximately 2-1/2 stories above grade with a partially subterranean cellar. The exterior is white painted shiplap wood siding with 2/2 double hung, historic wood windows throughout the facade. At the 2002 addition, the windows are simple double hung sash wood windows. The historic windows show evidence of previous storm shutters, which are no longer in place with remaining hinge pintles and notches for closing pins. The original farm house includes a wrap-around porch with decorative geometric railing at the perimeter and decorative spindle work at the entry stairs. The porch includes two separate entry doors and a standing seam metal roof.

The house has an intersecting gable roof with asphalt shingles. At the secondary gables, there are patterned shingles and evidence of previous half-timbered decorative trusses with the profile of exposed wood and missing paint. At the second floor of the north facade, there is a Juliet balcony with a single fixed pane window with decorative spindle work at the perimeter. A chimney is located near the center of the original structure for the two fireplaces at the first floor. The chimney is angled in the attic space. In the attic, there is evidence of the historic roof prior to the 1930 addition at the south as there are stamped metal shingles on a section of the enclosed roof. At the west, the 2002 addition cut through and expanded past one of the secondary gables. The remaining sections of the enclosed gable in the attic are still intact. The decorative trusses are no longer in place, but the ghosting of the trusses profile is visible, which is similar to the secondary gable visible at the north facade.

Two additional, non-historic, porches are located at the west and south facades of the house. Two historic doors are located at the non-historic porch on the south facade while one door and a sliding glass door are located at the non-historic porch on the east. In 2002, the house was reportedly raised approximately 4 feet

¹⁵ Shaffer, Wilson, Sarver & Gray, PC, *Turner Farmhouse Preliminary Historic Structure Report* (2011), 2.7 - 2.17

to provide additional clearance in the cellar.¹⁶ Once the house was raised, the cellar walls were constructed of insulation forms and poured concrete. The exterior of the forms were covered in a weather-resistant barrier (WRB), which appears to be ElastoSeal 2000. As part of the assembly construction, the manufacturer recommends that the assembly be covered with an exterior layer of sheathing, which did not occur. Modern 1/1 windows were installed around the perimeter of the cellar with glass cubes installed in two windows below the historic porch on the north facade.

Farmhouse Conditions

Architectural

Based upon site observations, it is apparent that some repair work has been completed since the 2011 HSR; mainly to the porch, siding, and roof. At the northeast corner of the 1905 structure roof, a course of six asphalt shingles near the gutter are lifted and out of plane. There are isolated areas of deteriorated flaking paint and exposed wood throughout the exterior, most notably at the secondary gables. The secondary gable to the north of the deteriorated wood has resulted in a hole, as well as general flaking of paint that does not appear to have been addressed in any recent work. The roof termination at this secondary gable also appears to be inadequate with black roof felt attached to the gable and asphalt shingles serving as some sort of seam lap. (Figure 5)



Figure 5. Roof felt at the secondary gable and roof shingles. Note hole in wood and profile from previous decorative trusses as well as miscellaneous horizontal wood boards on forefront gable.

Most potentially original windows and doors are still in place with a few doors and windows having cracked glazing. WJE noted that in some locations, primarily at the 1930, 1937, and 2002 additions to the original structure that the window frame and/or trim pieces were not properly sized and a gap existed between the two. There are several windows and doors that are covered with plywood, obscuring any assessment of their condition. The modern door to the kitchen (104) has a loose handle and a modern window on the west has a damaged screen. The Juliet balcony at the second floor of the north facade has slight separation between the decorative wood posts and metal flashing as well as the metal flashing to the metal roof. At

¹⁶ Ibid, 2.16 - 2.17

the northeast corner of the Juliet balcony, the metal flashing appears to be missing revealing the wood substrate, which has been painted white along with the flashing. One of the decorative wood spindlework elements at the west is cracked and there are miscellaneous horizontal wood boards attached to the diamond shaped shingles at the above gable to the west of the attic window. There is a visible gap between the metal flashing at the base of the second floor east of the Juliet balcony and the porch metal standing seam roof. While the gutter and downspouts appear to have been replaced at some point recently and seem to be functioning, there is a missing downspout on the north, a disconnected downspout on the south, and a stained gutter on the north.

With the lifting of the house in 2002, expanded polystyrene insulation form boards and poured concrete were used to form the cellar walls. A WRB was applied to the exterior of the foam and new windows installed. The WRB was left exposed and has resulted in significant deterioration of the WRB and all tie-in details around the windows and the top of the insulation foam. (Figure 6) The insulation foam has become visible in numerous areas because of this. Typically, insulation foam should not be exposed to UV for longer than 30 days and a WRB should not be exposed for longer than six weeks.^{17, 18} As part of the cellar wall installation, exterior sheathing (such as siding) should have been installed. A wide unpainted wood cellar door is located at the east corner of the south facade. A CMU retaining wall was constructed adjacent to the steps leading to the cellar door, which has exposed reinforcement and heavy biological staining.



Figure 6. Deteriorated WRB and exposed insulation form where WRB is no longer in place.

The north and south porches are supported by CMU columns with unfinished wood lattice work spanning between columns to screen off the view under the porch. In some locations there is no lattice and access to the porch crawl space remains open. The west porch is supported by wood columns also with unfinished lattice work between the columns. At the historic north porch, the CMU columns were added to support the porch after the lifting of the house. The porches at the south and west are not painted and thus exposing

¹⁷ Owens Corning, Fold-Form Insulated Concrete Forms Specification Sheet, n.d.

¹⁸ Henry Blueskin® Weather Barrier Technical Data Sheet, July 15, 2002

the wood to the environment. One of the wood floor planks on the west porch is bowed and out of plane. The railings at this porch are not connected to the building, and there are no railings or access points in place at the south porch.

Two salvaged bricks were found outside on the ground and brought into the house. They appear to have originated from the deteriorating chimney. The chimney has been potentially extended twice as the upper courses of brick protruding through the roof are different in color and texture than the historic brick. There is flashing that extends on the chimney upward approximately 6 inches tall on the chimney, but does not appear to terminate into a mortar joint and has sealant applied along the top edge. There was no evidence of previous flashing. Staining is present on the portion of the brick masonry chimney that is exposed in the attic. The mortar is generally soft and there is a vertical crack along the north face which extends the full height of the exposed portion. (Figure 7) When the house was lifted in 2002, CMU blocks at the basement level were used to support the fireboxes at the first floor and chimney.



Figure 7. Vertical crack in the north face of the chimney in the attic.

At the interior of the farmhouse, there are numerous cracks, damage, and water staining throughout the plaster walls at the original 1905 portion and 1930 and 1937 additions. The cracks are most severe at the Hallway (100), Hall, Bedroom (201), and main stairwell. (Figure 8 and Figure 9) Almost all of the historic interior doors and built-in cabinets still in place are racked and unable to close. (Figure 10) There is evidence of historic exterior siding enclosed by the 2002 addition at the doorway from the Kitchen (104) to the Parlor (106). There is a gap between the ceiling and door trim at this location. The transom above the door has been infilled. Hinges are still mostly in place along jambs at openings where doors have been removed, which provide evidence of their historic nature as the 1905 hinges are more decorative with steeple tips and the 1930s hinges are simple with ball/globe tips. At the large sliding wood living room doors, the frame is chipped in a few locations and the doors were not able to be moved. The interior door framing at the south wall of the Casual Dining Room (103) is damaged with part of the wood frame missing.

There is slight flaking and isolated damage of paint and wood at all of the windows and doors. The lifting chains of the windows are heavily coated with paint. All, but one of the historic windows have a decorative sash lifters still in place. Glazing from the lower pane of the large window at the south wall of the Casual

Dining Room (103) is missing. The south window in Bedroom 202 is racked, allowing daylight into the interior space. There are also numerous cracks with associated water staining on the finished plaster surfaces and wood baseboard below historic windows as well as staining on the wood floors below radiators on the first floor, at exterior door thresholds, and in the closets of the second floor Bedrooms (201 and 202). (Figure 11) Some areas that had visible water staining in the plaster and wood floors, were tested with a Delmhorst Navigator Pro Moisture Meter. Most areas tested relatively dry (ranging from 15 to 56) with the plaster below the stairwell patterned windows showing 85 for the middle window and 108 at the northern most window, which are slightly elevated readings. For reference, the max reading in basic scan mode is 300. Two historic windows, one of the Formal Dining Room (102) and one in the first floor bathroom (105), have been infilled with shelving and one window in a second floor bathroom (206) blocked on the west side of the window due to the 2002 addition. There is a historic 2/2 wood window located in the attic at the east gable with deteriorated muntins resulting in wood loss near the center and lower sash. Modern windows installed in Bedrooms 204 and 207 on the second floor of the 2002 addition are not fully finished or tied in with interior finishes and result in exposed insulation around the window. The enclosed porch (208) on the second floor has a modern window and interior infill walls that appear to be particle board. The window is loose in the rough opening and there is heavy staining from previous water infiltration on the particle board and interior wood floor.

Most of the floors on the first floor are not level with the Hallway (100) being the most noticeable. These observations may be due to the lifting of the home performed in 2002 and are discussed in more detail in the structural narrative. The flooring of the Parlor (106) sits approximately 1-1/2" higher than the Hallway (100) as it appears that the height difference between the Parlor and the Hallway is due to the 2002 wood flooring being placed directly on top of the previously existing wood floor. There are penetrations in the wood floor at the Hallway (100) and Formal Dining Room (102) and a crack approximately 3/8" between floor boards running east to west in the floor in the Formal Dining Room (102). There is a gap at the top of the baseboard at the back stairwell with one area of cracked baseboard located between treads on the north wall just below the second floor. There is also a crack in the wood floor at the northeast corner on the landing between floors. At this stairwell, there is a gap between the base of the newel post at the second floor and the first floor ceiling. There are loose tiles and debonded grout at the Kitchen (104), first floor bathroom (105), and second floor bathroom (206). There are also broken tiles near sinks and the location of previous appliances. There are areas of damage to the wood floor at the first floor such as staining near windows and radiators and chipped flooring in the Parlor (106). The flooring in the attic is stained from previous water infiltration, but appeared to be dry during site observations. There is one location of damaged and soft wood flooring at the east portion of the original 1905 structure with a portion of the floor missing allowing the insulation to be visible. Most of the flooring transition strips at the first floor between the 1905, 1930, 1937, and 2002 areas are insufficient and inadequate with voids revealing the cellar below or significant changes in the walking surface. (Figure 12) The area between the Hallway (100) and Hall near the Bathroom (105) have significant voids at the transition and along the wall with the below cellar visible. (Figure 13) In the cellar, are two areas of cracking in the concrete floor spanning from the fireplace foundation to the foundation wall and between the jambs of the rough door opening for the mechanical room (B04).

The first floor bathroom (105) has a loose faucet cap in the shower, shower tiles that are out of plane and not properly secured to the wall sheathing behind the tile. WJE noted gap in the wall sheathing above the medicine cabinet, abandoned fasteners in the walls, gaps in the joints of the decorative crown molding, and soft deteriorated wood at the door framing possibly due to the moist climate of the bathroom. The ceiling in the second floor bathroom (206) is out of plane near the center of the room in what appears to be swollen interior finishes bowing below the ceiling line due to water contact. In the attic, a live bee and evidence of previous hives were observed.



Figure 8. Example cracking in Room 201 at the north wall. Cracks have been traced for clarity.



Figure 9. Example of cracking at the entryway at the northwest corner. Cracks have been traced for clarity.



Figure 10. Door leading into room 102 does not fully close.



Figure 11. Typical staining and cracking below original window. Note this window is racked with visible daylight below the sash.



Figure 12. Transitions between Hallway (100) and adjacent rooms. Note gap between the rear hall to the Hallway (100).



Figure 13. Voids in the floor at the rear hall allowing the below cellar to be visible. Note the missing baseboard and interior finishes at this location.

Structural

General

The house is structurally a wood frame with the cellar floor is a concrete slab on grade and appears to be in serviceable condition. There is evidence of carpet tiles that have been removed from the surface of the slab

and we anticipate that the slab has been in place since before the house was lifted. The first floor framing was visible from the cellar at the time of our assessment. The second floor framing is concealed by the finished plaster ceilings and therefore not accessible during our visual review. Several periods of expansion are apparent by the different wood species, member sizes, and construction styles present.

Modifications

Significant structural changes and modifications have taken place from the time of original construction. The house underwent major alterations when it was raised a reported four feet in 2002¹⁹. We understand the owner at the time intended to create a finished basement and evidence of this is apparent by the interior partition wall framing and bathroom fixtures now present in the cellar.

The original foundation walls are concealed. At both the exterior and interior facing sides of the foundation wall, WJE observed rigid foam insulation believed to be, in part, a manufactured system used to form new concrete walls. These types of systems utilize two (2) separate layers of insulation boards that are separated and braced with hard plastic struts. The void space between the two layers of insulation can vary between 4 inches and 16 inches. Wet concrete is poured into the void space between the two layers of insulation to form the structural/load bearing wall. The insulation remains after the concrete is cured to provide insulating value to the new wall system. The sill plate and other structural elements may be tied into the new foundation wall assembly. What is unclear, due to the insulation boards running from floor to ceiling and obscuring a visual review, is whether any of the original foundation wall remains in place or if the original walls were replaced in totality with the new formwork and concrete spanning from floor to ceiling. There are multiple blockouts in the top of the walls that are partially infilled with miscellaneous building materials, i.e. CMU, brick masonry units, and grout (Figure 14). At one blockout location where a CMU unit was damaged, we observed a reinforcing bar in an interior cell (Figure 15). Although no information is available concerning the method by which the house was raised, we anticipate that these blockouts were locations where equipment was installed to raise the house and after the house was positioned on the new walls, the equipment was removed and the blockouts were infilled.

We did not observe any indication of differential settlement as presented in the HSR; however, we were not able to view the foundation walls as they were concealed by concrete and insulation forms, to verify whether or not they are cracked. It should also be noted that unless the soil was disturbed as part of the jacking efforts, a house or building of 100 years of existence should not be experiencing typical soil settlement. Settlement of soils is a result of the consolidation of the particulate matter and removal of the voids (air spaces between the solids in the soil). This generally occurs in very short order after the soils are loaded and can be ongoing for several years. In the absence of certain soil types (that are not common in this region) or water tables or sources that would cause subsurface erosion, settlement is unlikely to be ongoing, even if the soils were disturbed in 2002.

¹⁹ Shaffer, Wilson, Sarver & Gray, PC, *Turner Farmhouse Preliminary Historic Structure Report* (2011), 2.17



Figure 14. Blockout in cellar wall infilled with CMU, brick masonry, and grout.



Figure 15. CMU infill at blockout in cellar wall. Note the reinforcing bar present inside the damaged cell.

Original main structural members have been removed while several new ones have been installed, resulting in a different distribution of load to framing members than was originally designed for. We observed deflection of members in interior partition walls (Figure 16), which are not typically designed to carry load, indicating that they are taking load. It is unlikely they were designed to act as structural supports and the amount of deflection observed indicates that they are potentially overloaded. The first floor walking surface is significantly warped and out of level and gaps exist between many of the interior finishes as discussed in the Architectural section. There does not appear to be a subfloor below the original finished floor at the first

floor but a subfloor is visible at the additions. It is unclear what the condition of the floor was prior to being raised, but it is possible that the process of raising the house to create additional height in the basement combined with the reconfiguration of structural support for the floor has caused the noted warping. In general, the load distribution is difficult to follow and will require further documentation and evaluation.



Figure 16. Deflection of header at interior partition wall.

Built-up areas of wood members are located throughout the first floor framing in apparent attempts to make up differences in framing and wall heights (Figure 17). Framing members installed during the first southward expansion are no longer being utilized for structural support as the west ends are no longer supported (Figure 18); new structural composite lumber (SCL) joists now span the entire twenty-seven foot length of the south expansion from east to west. This is a long distance for wood to span and it is common to see steel used to carry load when this distance between supports is necessary or desirable. The SCL joists are notched at their tops at what appears to be an old perimeter beam which runs perpendicular to the joists²⁰ (Figure 19). New built-up wood columns are installed at several locations in the north portion of the original house and are offset from the interior walls approximately one inch. At one location the bearing area at the base of the column is not sound (Figure 20). Several bolts mechanically connecting built-up flexural members together along the south edge of the original construction are disengaged or missing (Figure 21). Wood bridging between first floor joists, which provides lateral support for the joists, is disengaged or missing at a majority of locations (Figure 22). A new masonry structure consisting of CMU and brick masonry units is installed under the fireplace near the center of the original house and several new and existing wood beams frame into it (Figure 23).

²⁰ The International Residential Code specifically addresses this. Section 502.8.2 prohibits “cuts, notches and holes bored in trusses, structural composite lumber, structural glue-laminated members or I-joists...except where permitted by the manufacturer’s recommendations or where the effects of such alterations are specifically considered in the design of the member by a *registered design professional*.



Figure 17. Built up wood blocking.



Figure 18. New framing members span the entire width of the south addition (red arrow). Original framing is no longer supported at west ends (blue arrow).



Figure 19. SCL joists are notched at their tops at what appears to be an old perimeter beam which runs perpendicular to the joists.



Figure 20. Void in concrete slab below column.



Figure 21. Disengaged bolt in built-up member.



Figure 22. Disengaged and missing wood bridging between first floor joists (typical at original first floor framing).



Figure 23. New CMU structure supporting fireplace.

Deterioration

The majority of the first floor wood framing is in fair condition; however, decay is present at isolated locations along several of the original joists (Figure 24 and Figure 25). The extent of the damage observed was limited and does not suggest that the joists are structurally undermined. WJE took limited moisture readings at the original joists using a handheld moisture meter and measured an average moisture content of thirteen percent, which is on the high side for interior wood members not exposed to weather, but less than the twenty percent threshold which is the general value recognized to support the initiation of decay. Since the house has not been occupied for several years, we anticipate that it has not been conditioned, i.e. heated and cooled, like typical interior spaces and that this has contributed increased humidity levels in the below-grade space and higher moisture readings in the wood framing. Water stains and deteriorated floor boards are present at isolated locations along the edge of the original farmhouse (Figure 26).



Figure 24. Deterioration at first floor joist in original farmhouse.



Figure 25. Deterioration at first floor joist in original farmhouse.



Figure 26. Staining and deterioration at first floor boards at the west edge of original farmhouse footprint

The second floor framing is concealed by interior ceiling and floor finishes and therefore was not included in our review. Significant cracking is present in the plaster wall finish and ceilings throughout the second floor. The cracking is concentrated along the eastern portion of the original house and is most significant in Rooms 201 and 202 (Figure 8 and Figure 9). It is unclear how long the cracks have existed but based on their patterns, i.e. diamond shaped (Figure 27), and our observations from the first floor framing review, it is likely that the cracking occurred while the house was being raised or shortly thereafter. We anticipate that the house experienced substantial movement during the lifting process and the plaster finish did not have enough flexibility to withstand the movement, resulting in cracking. The cracks appear to be static, i.e. not actively moving, and we do not anticipate that they will grow.



Figure 27. Diamond shaped cracking in closet of Bedroom 202.

Water stains are present on wood sheathing and roof framing members adjacent to the chimney as well as several other isolated areas of the roof framing (Figure 28). Despite the staining, the roof framing appears to be in fair condition.



Figure 28. Staining in original roof wood framing adjacent to the chimney. Note the two types of brick indicating that the chimney may have been extended at one point.

Mechanical, Electrical and Plumbing

The farmhouse had relatively modern electrical equipment; however, the panels did not have final inspection stickers from Fairfax County indicating that the equipment was either temporary or roughed-in. There were several areas of improperly cut and disconnected wire that did not conform to current electrical code requirements. (Figure 29 and Figure 30) Plumbing fixtures throughout the house varied in age, which were consistent with the house construction and subsequent space development. All of the toilets have some staining, which will continue to worsen without consistent flow of water. Most of the piping to the plumbing was modern copper piping and have been winterized. The plumbing systems also lacked a final inspection sticker from Fairfax County. A plumbing vent in the attic was not fully flashed into the roofing allowing visible daylight into the interior space and could be a source for potential water infiltration. (Figure 31) The water supply was turned off at the utility meter located approximately 25 feet west of the driveway. As such, most of the systems in the house could not be tested. In the basement, there was evidence of previous leaks and water infiltration. The septic tank was located and cleaned and the distribution box and associated septic field was located. Please see Appendix A for the layout of the system provided by the Fairfax County Health Department. The small asphalt paved section east of the driveway appears to be on top of the distribution box and adjacent to the drain fields not allowing these elements to be inspected. Public sewer is not available in the immediate vicinity with the closest tie-in point more than 5,800 feet away.²¹ Additional information is provided in Appendix A.

²¹ MBP, *The Turner Farm House Draft Limited Facility Condition Assessment Report* (2016), 56 - 61



Figure 29. Unsecured wires in the attic. Photo courtesy of MBP.



Figure 30. Electrical wire that was improperly terminated. MBP installed the wire nut. Photo courtesy of MBP.



Figure 31. Daylight visible in attic around plumbing vent. Photo courtesy of MBP.

The house has a natural gas line running from the utility box to the house. The house has heating systems and comes from a natural gas fired cast iron boiler, which appears to be new, but is not functioning. There are several gas pipes that have been improperly disconnected in the kitchen caused by the removal of the appliances. (Figure 32) The boiler has water and an operating circulating pump, but low system water pressure. The black piping from the boiler connects to modern copper distribution lines to the radiators throughout the house. Radiators in the house appear to be in good condition with no obvious leaks or issues. One disconnected radiator was observed in the second floor bedroom (204) at the south wall and another radiator was located in the upstairs hallway (203), which may be a spare unit. Cast iron basement floor heaters are in poor condition with corrosion and improper separation between the unit and foundation and slab.



Figure 32. Gas piping improperly terminated in the kitchen. Photo courtesy of MBP.

Farmhouse Recommendations

Architectural

Exterior

- All exterior wood elements should be clean and repainted on a cyclical basis. Although the siding has been recently repaired and painted, there are other areas of flaking paint and exposed wood elements at gables, windows, and porch elements that need to be painted to limit any deterioration to the wood. In this climate, maintenance cycles for residential grade coatings on wood are typically between seven (7) and ten (10) years and depend heavily on the preparation the substrate received, the exposure, and the bond between the new coating and the existing elements. Coatings can last longer or wear more quickly, but this is a general target for budgeting purposes.
- Repair deteriorated wood at secondary gable and install half-timbered decorative trusses following the pattern of missing paint. Repaint. (Figure 33) Inspect asphalt shingle roof termination when painting the gable and repair for proper integration, if needed.
- The historic color scheme for painting of the building siding, trim, and exterior windows and doors should be confirmed and replicated in repainting campaigns. Consideration can be given to also replicating historic interior color schemes as work is performed on the interior.



Figure 33. Deteriorated paint with evidence of previous decorative trusses at the secondary gable.

- At doors with broken or missing glazing, replace glass with similar glazing, clean and repair wood where needed, and paint. Remove boards at the exterior from obscured doors and windows, inspect and address any additional damage not observable from interior.
- Replace broken glazing and replace with an era appropriate pattern/texture on west facade. (Figure 34)
- Once windows are cleaned and repainted where needed, install sealant fillet joint at perimeter of windows between the window frame and the adjacent exterior siding to help limit air infiltration at the rough opening for the window.
- Replace damaged, non-historic, screen on west facade first floor window.



Figure 34. Broken glazing in stairwell fixed window.

- Re-secure or replace door handle at the non-historic door of the Kitchen (104) on the west facade.
- Engage a local chimney inspector to inspect the interior of the firebox and chimney. Do not use chimney until inspection and any recommended repairs have been completed. Once chimney repairs have been completed as recommended by the chimney inspector (if any), repoint 100% of the exposed chimney mortar as it is at the end of its life cycle, rebuild and reset the upper courses of the chimney, and install chimney cap. (Figure 35)



Figure 35. Missing and loose bricks at the chimney.

- Repair shingles at the northeast corner to ensure roofing is watertight. (Figure 36)
- Infill fastener holes at window of enclosed porch on the north facade. Paint.
- Inspect flashing at Juliet balcony to ensure secure and lapped properly to encourage water shed. (Figure 37)
- Repair cracked wood decorative spindle element at Juliet balcony. (Figure 38)
- Remove miscellaneous horizontal boards at decorative gable shingles above Juliet balcony unless archival documentation provides information on why these were installed.



Figure 36. Asphalt shingles out of plane above the gutter.



Figure 37. Lifted and separated flashing at Juliet balcony. Note gap between second floor flashing and porch roof.



Figure 38. Cracked decorative element at the Juliet balcony.

- Review the gap between the second floor flashing and porch roof on the north façade up close and determine if it poses a risk for water infiltration due to wind driven rain or snow accumulation. As part of cyclical maintenance, inspect standing seams of metal roof over the porch and repair if needed.
- Research archival documentation to see if there is a photo of the previous storm shutters for potential replacements.
- Remove exposed cable at the porch on north facade.
- Door from formal dining room to porch should be inspected and repaired when the door can be opened.
- The WRB (appears to be ElastoSeal 2000) is not designed for long term UV exposure and is not a suitable cladding material. Consult with product manufacturer for guidance on how to either remove or encapsulate the existing WRB while trying to protect insulation from damage. Install new WRB as recommended by the insulation block manufacturer since insulation should not be exposed longer than 30 days. Install new exterior cladding once WRB is in place. Selection of the cladding should be compatible with the architectural style and period of construction of the building. Consider a simple siding to tie-in to the rest of the house without creating a false sense of history.
- Repair and integrate all flashing and detail conditions at cellar insulation foam once existing WRB is removed.
- Consider removing wood lattice between the porch columns as it is not a historic feature of the home. If it is to remain in place, paint.

- Install new downspout on north facade at daylighting connection at valley and reconnect fallen downspout at southeast corner.
- Investigate stained gutter at north facade and ensure any debris is removed to ensure proper drainage.
- Replace any deteriorated and damaged wood at non-historic porch on west facade. Apply sealer or paint to exposed wood.
- Replace any deteriorated and damaged wood on the south non-historic porch. Install new access to patio and railings. Apply sealer or paint to exposed wood.
- Apply sealer or paint exposed wood to the exposed wood cellar door.
- Recommend cleaning CMU retaining wall and applying a breathable coating for masonry. Clean and apply corrosion inhibiting coating on reinforcement and install coping cap to protect reinforcing. A breathable coating for masonry is important to allow for any moisture from the soil being retained by the wall to evaporate and not be withheld in the masonry.

Interior

- Monitor cracks in concrete floor slab at east wall and near mechanical room. Route and seal if no movement is observed.
- Engage a local chimney inspector to inspect firebox and chimney. Do not use chimney until inspection and any recommended repairs have been completed. (Figure 39)



Figure 39. Cracked firebox in the fireplace of Room 102.

- Repair and paint the exposed wood cellar door.

- Repair damage to entry door from porch in the Formal Dining Room (102).
- Repair frame at large doors to the Living Room (101). Clean and rest doors on tracks as they were unable to be moved.
- Maintain and document hinges at door openings where doors have been removed. If door is to be replaced, look at inventory of doors in the equipment shed for potential replacements.
- Clean and repair wood elements at door frame on the south wall of the Casual Dining Room (103), the left jamb may need to be completely replaced. Repaint.
- Consider removing transom infill at historic door between the Kitchen (104) and Parlor (106) where door has been removed. Install glass to restore transom.
- Clean and repaint door at Closet in Parlor (106).
- Interior doors are racked and most are not able to be closed. This is possibly due to the lifting of the home. Based upon our structural review, the racking was likely a result of the 2002 lifting of the home. Performing the recommended structural repairs may correct the issues caused by the lifting.
- The cabinet adjacent to the fireplace in the Formal Dining Room (102) may need to be removed from the wall and reset, if possible, once structural repairs are made. The cabinet, along with other doors and built-in amenities, may have become racked as a result of lifting the house.
- Cabinet in the north corner of the Casual Dining Room (103) may need to be removed from the wall and reset, if possible. The cabinet, along with other doors and built-in amenities, may have become racked as a result of lifting the house.
- Document historic window infills in the Formal Dining Room (102), first floor bathroom (105), and second floor bathroom (206).
- Replace broken glazing in the lower pane of a window in the Living Room (101), lower pane in the Casual Dining Room (103), closet window in Bedroom (204), upper left pane of northeast window in Bedroom (201), and top pane of glass on north window in Bedroom (201). Clean and repair wood where needed. Replacement glass should be similar to historic glass existing at the house, if possible.
- Clean and repaint all windows and baseboards. Ensure windows are operational. Once windows have been cleaned, inspect wood for any deteriorated wood elements and repair. Maintain profile and orientation of window elements such as muntin spacing and size.
- Replace metal sash lifter piece at south window in the Casual Dining Room (103). Utilize other sash lifter pieces intact as an example.
- Replace missing glass with similar glazing at the large window on the south wall of the Casual Dining Room (103), clean and repair wood where needed, and paint. Remove board at the exterior and inspect for additional damage not observable from interior.

- Remove baseboard and repair any deteriorated areas below windows on the east wall of the Casual Dining Room (103). Re-install once plaster has been repaired and paint.
- Modern windows in Kitchen (104) are exposed wood. Wood should be protected either by clear coating or paint.
- Complete interior finishes in Bedroom (204) and Bedroom (207) around windows to obscure insulation and gaps.
- Replace window at the Enclosed Porch (208) with a proper fitting window. Replace all non-historic wood wall finish (particle board) and install new interior finishes with proper interfaces with window. (Figure 40)



Figure 40. Deteriorated and stained particle board at the enclosed patio on the second floor.

- Clean and repair/replace deteriorated wood elements at the historic attic window. Paint.
- As we have determined that the plaster cracking is likely a result of the house being lifted in 2002, repair plaster cracking once structural repairs have been completed. Repaint all interior plaster finishes once repaired.
- Remove and clean spindlework at entryway while plaster repairs are being undertaken. Reinstall spindlework once plaster repairs and repainting is complete.
- Infill penetrations in wood floor of the Hallway (100) and Formal Dining Room (102) with wood filler and finish.

- Inspect stained wood flooring for any soft wood that should be repaired. The staining typically occurring near radiators. As such, the radiators may need to be removed to fully inspect and perform any repairs and cleaning.
- Repair crack in wood flooring along south wall in the Formal Dining Room (102) with similar wood species and finish. (Figure 41)



Figure 41. Split in flooring at the south wall of Room 102.

- Install baseboard and infill all gaps at the floor at Hallway (100) and Hall transition to ensure they tie back to the structure.
- Install proper transitions between rooms throughout the first floor to full span gaps between floor boards and to make the first floor accessible (if this area will be open to the public).
- Re-secure baseboard at back hall stairs and install sealant, paint.
- Investigate newel post at second floor back hall stairs to ensure stable, infill gap.
- Floor not level in the Parlor (106) and has visible chipping and missing wood. This is possibly due to the 2002 addition that laid the new floor over the historic floor.
- After installation of new appliances in the Kitchen (104), fix loose and debonded tiles and grout or replace non-historic flooring. Reset loose tiles and re-grout, or replace non-historic flooring in the Bathroom (205).
- Repair any cracked tiles and tile grout in the Bathroom (105).
- Repair crack in baseboard between stair treads in rear hall stairs.
- Remove soft and damaged wood at the hole in the attic floor and repair. (Figure 42)



Figure 42. Deteriorated wood flooring in the attic.

- Re-secure faucet cap at shower in the Bathroom (105).
- Install backer rod and sealant above medicine cabinet in the Bathroom (105).
- Remove abandoned fasteners and patch at the walls of the Bathroom (105).
- Install sealant at crown molding joints where they have separated in the Bathroom, paint (105).
- Inspect for soft deteriorated wood at the door frame and repair and repaint at the Bathroom (105).
- Infill gap at ceiling at the 2000s Kitchen (104) and the original doorway of the house with backer rod and sealant, which allows for this material to be removed in the future (reversible). (Figure 43)



Figure 43. Gap at ceiling and historic door frame.

- Replace interior finishes in the Kitchen (104) once new appliances are in place to address existing holes. Finishes in this room are not historic.
- Monitor for active water leaks in the closets for Bedrooms 201 and 202.
- Monitor for active leaks in the Enclosed Porch (208). Clean and refinish wood floor. Seal.
- Monitor attic area for any active water leaks. There is staining throughout the area; however it may be evidence from previous water leaks that have been addressed with the new roof assemblies.
- Contact Department of Agricultural for a list of registered beekeepers to inspect the attic and potentially relocate bees.

Structural

- Based on several of the crack patterns that we observed, gaps at interior finishes, out of plumb window and door openings, and warping of the first floor, it appears that the house may have been racked during lifting operations and we anticipate that inadequate support during lifting of the house or uneven lifting caused a majority of these issues. Deflections were observed in several framing members which indicate the members are potentially being overloaded and it is unknown whether the current support configuration for the farmhouse is adequate without further documentation and analysis. WJE observed wood beam spans that approached 27 feet; a length not commonly spanned by unsupported beams. WJE also observed beams that were not properly braced and wood framing elements that appeared to be taking on load. Although the type and extent of repairs cannot be determined without further investigation, we anticipate that potential repairs include:

- Sistering of wood members that exhibit decay or have been compromised due to notching;
 - Installation of supplemental wood members and posts (often metal columns) to address spans that are excessive or load paths that create members which are overloaded; and
 - Jacking to level the first floor.
- Monitor gaps between interior finishes and cracks in the plaster walls and ceiling for any substantial movement or change but hold off on performing repairs until repairs are made to level the first floor framing as additional movement and cracking may occur as a result of efforts to correct those deficiencies.
 - Repair wood bridging between first floor joists by installing new bridging where missing and re-anchoring disengaged bridging.
 - Replace deteriorated floor boards on the first floor walking surface.
 - Perform a core sample, or other destructive testing method in coordination with a structural engineer, to determine original foundation.

Mechanical, Electrical, and Plumbing

Priorities

- The electrical panels in the Farmhouse have inspection stickers applied to the front of the panel indicating that only initial inspections have occurred including temporary electric and gas. Recommend that all construction is completed and final inspections are received for all trades prior to occupancy or use of the structure.
- In several locations within the basement and attic, electrical wires are cut off, disconnected, or have exposed wire ends either inside or outside of an approved junction box or panel. Recommend having a skilled electrician survey the building to locate, identify, safe, or remove electrical wiring that does not meet current code requirements. Temporary wiring should no longer be left in place. Panel directories should be corrected and completed.
- The roof collar around the gas vent flue serving the boiler and water heater leaks water into the attic. Water stains are evident in the attic and daylight can be seen around the flue pipe.
- The boot or roof collar around the plumbing vent stack leaks water into the attic. Daylight can be seen around the vent boot from inside the attic.
- Recommend installing a plug in the gas rough-in for the stove until the stove is replaced to prevent accidental discharge of gas. Additionally, relocate the gas piping penetration from below to the exterior wall to allow flexibility in placement of the stove/oven.
- The boiler appears to have been left operating to prevent freezing conditions over the winter, despite the plumbing fixtures being winterized. However, the boiler does not fire, likely due to a faulty ignition module or flame sensor. This exposes the heating system to possible freezing conditions and may jeopardize one or more of the existing radiators. The risk of flooding is minimized with the water service being turned off at the meter. Fairfax County Park Authority should determine if the boiler should be left running, or drained and turned off. Please note that MBP turned off the

manual gas valve following visual inspection, but the circulator pump continues to run based on demand from one of the zone valves.

- There is an open Tee fitting in the washer rough-in piping at the basement level near the floor. This appears to have a rag stuffed in the pipe with obvious signs of past leakage. This tee should be capped or plugged if unused and the rag should be removed.

General

- All electrical panels are dirty and dusty with leftover parts. The panels should be vacuumed and wiped out prior to final inspection.
- All panels have some screws missing in the covers. Recommend that these are replaced.
- Breakers have been removed or relocated but blank covers are missing in the open slots. Recommend providing blanks for all open breaker slots.
- The panel schedules are outdated and incomplete. Recommend updating prior to final inspection, use, or occupancy.
- Recommend verifying that all bolted electrical connections are torqued to manufacturer recommended torque values.
- Though not a residential requirement, the County should verify the requirements of NFPA 70E are met if the structure will be used for commercial purposes.
- Storm drain box inlet at basement stairs should be cleaned at least annually. If possible, a screen should be applied on the outlet pipe (into the basement) to prevent leaf trash from entering the basement sump.
- Recommend having an electrician review the junction boxes installed in the basement on foundation walls where corrosion is present. It may be beneficial to replace these with plastic boxes due to corrosion.
- Recommend having an electrician review the installation of wiring near the stove and sink rough-in, including installation of Romex near or through tile flooring, junction box installation, and wire support.
- The burner section of the boiler should be cleaned to remove dust and corrosion from the tops of the burner and to ensure that the jets are clear.
- Following correction of the ignition cycle of the boiler, the automatic vent damper operation should be checked. The damper does rotate, but its closed position should be verified when the boiler firing cycle is satisfied to ensure maximum efficiency.
- The boiler is currently running with a very low system pressure (cold) and the water service has been turned off. Makeup water should be available when the boiler is operating, however, possible unchecked flooding could occur. The pressure regulating valve operation and setting should be checked upon restart of the boiler.

- The basement thermostat has been removed from the wall and hangs freely. This may cause a false heat signal, or prevent heating when needed. Recommend the thermostat is mounted and leveled on the exposed framing to ensure that heating reaction is correct.
- The hot water heater manual gas valve was turned off prior to visual inspection. Recommend that the heater is fully flushed, heat exchanger and pilot is cleaned, and the system is checked prior to beginning operation in the future.
- MBP was not able to remove the sewage ejector pit lid to access the pump due to stripped bolts. Recommend that the ejector pump is inspected and operation is ensured prior to placing the basement level waste piping system into operation, including washer rough-in piping and lower level bathroom.
- The sump pump operation was confirmed by raising the float. There appears to have been an old battery backup system installed at some point, as well as an alarm system. This system is now unused. Fairfax County Park Authority should determine if there is a need for alarm and battery backup as flooding may have occurred in the past.
- The flue vent pipe for the basement wood stove enters a damaged (broken) clay thimble less than 12" from combustible subflooring and floor joists for the first level above. Additionally, it is not clear that the clay thimble is rated for zero clearance from combustible materials as it passes through the floor. Recommend that this chimney flue is abandoned at the basement level and the woodstove is removed. If the chimney is allowed to remain, review installation with a code official.
- Pipe insulation at the basement level should be completed to increase the efficiency of the heating and domestic hot water systems.
- There is an existing cistern or well located just east of the outside basement steps, currently covered with an aluminum plate. Although historical, the presence of collected water adjacent to the foundation should be reviewed. Note that it does not appear that the piping in the well is currently active.
- MBP was not able to test the quality of water supplied to the farmhouse as it appears that the utility meter has been turned off at the street. MBP recommends water testing prior to any occupancy or use of the facility. Additionally, it may be beneficial to visually inspect the interior condition of the water service piping inside the structure, which is galvanized piping. Galvanized piping is known to corrode from the inside of the pipe and can clog valves or strainers, affect pressure reducing valves, or contribute to contamination of the water system. Replacement of service piping from the meter to the house with plastic piping is recommended if possible or feasible. It should be noted that the frost proof ground hydrant installed outside the barn tested positive for E. Coliform bacteria and lead and it is possible that existing underground piping serving the farmhouse may exhibit similar test results.
- The septic system and drain field were evaluated by Five Star Septic and Portables. The distribution box was unable to be definitively located, but it appears to be located under a section of asphalt driveway. Locating this distribution box is recommended. Septic field components are required to be accessible and this portion of the driveway should be removed to allow access and prevent damage to the distribution box and potential damage to the nearby drain field lines.

- The Farm House septic tank was located and cleaned by a contractor, Five Star Septic, who also located and defined the boundaries of the existing septic field. During a supplemental visit, Five Star Septic attempted to locate the distribution box using a camera and utility locator. The camera was refused at a length of just over 100 feet due to the poor conditions of the existing concrete sewer piping and lack of intermediate cleanouts between the septic tank and distribution box. Five Star Septic recommends that the concrete pipe be replaced due to the damage (breaks or holes) visible on the inspection video.
- The location, routing and connection of the Garage sewer pipe was investigated on a supplemental site visit. The existing (original) cast iron sewer piping exiting the Garage slightly below grade through the west wall is damaged and the camera was not able to extend more than 18 inches beyond the entry point due to corrosion of the pipe restricting the movement of the camera. This pipe should also be replaced due to its age and condition.
- The basement bathroom has been installed with some finishes not yet in place. There is a hole under the tub drain into the foundation that should be filled, after the drain connections are tested and confirmed as acceptable by code. The sink waste pipe rough-in has paper stuffed into the pipe as a plug and should be capped pending completion of the installation.
- Baseboard heater conditions should be checked prior to use. Several of the pipes are improperly supported and the enclosure covers and end caps are loose and are starting to rust. Piping to the radiators should be insulated, including down the walls.
- The cold water pipe to the tub faucet assembly has evidence of a leak near the faucet assembly connection and should be inspected under pressure and corrected. This is visible through the access hatch in the hallway.
- In general, the heating radiators are in good to excellent condition. The system should be evaluated under operating temperature and pressure to verify that no leaks are occurring. Additionally, it may be beneficial to change the manual shutoff (and tempering) valves for thermostatically actuated valves to better control temperature within individual spaces.
- At several locations where hot water piping extends to the second floor through occupiable rooms, all thread fittings have been used as couplings. These fittings are not allowed by code on hot water piping and should be replaced with malleable fittings if possible. It is noted that no evidence of leaks is present at either of these fittings.
- There is no access door to allow access to the bathtub valve and shower diverter assembly. It is recommended that an access panel is installed through the bedroom wall to allow access for inspection and service.
- The access to the boiler, water heater, and sewage ejector pump is limited by installed framing to one access point. Recommend considering installing a framed doorway from the larger basement room to the mechanical equipment area to allow ease of access and removal of the water heater due to the proximity of framing to the existing boiler.

Garage



Figure 44. Garage as view from the northeast.

Structure Description

The garage is a 2-1/2 story structure with an asphalt shingled gable roof, skylights, and gabled dormers. (Figure 44) The first floor is comprised of CMU with a parge coat and wood exterior and the second floor is sheathed in wood horizontal siding. There are two large car bay doors along with two doors and one window blocked by wood boards at the east facade. French doors are also boarded on the south facade. There are scalloped patterned wood shingles at the side and dormer gables with evidence of a previous half-timbered decorative truss at the south gable. All observable windows appears to not be original to the construction of the garage. At the interior, there are two phases of CMU construction. The north portion of the building is older CMU with brick and steel lintels above the door openings. The south portion of the building appears to be a newer addition with a concrete slab foundation and curb and wood framing with wood sheathing.

Garage Conditions

Architectural

At the Garage, there is consistent deteriorated flaking paint and exposed and stained wood at the exterior with some areas of missing materials such as siding. There are numerous cracks and spalls in the parge, most notably along the jambs of the car bay doors, at installed light fixtures, and along grade. (Figure 45) The cracks in the parge also correspond with a crack in the CMU that protrudes to the interior. There is also exposed flashing between the first and second floor as well as exposed roof underlayment at the first floor. (Figure 46) There is a gap between the first and second floors at the east facade of the southern addition. All of the observable windows from the exterior were more recent replacements with a crack in the glazing of one of the gabled dormers on the east facade. Part of the wood casing is missing below the same dormer. The majority of the doors and windows at the first floor were boarded and the stairs have been removed rendering the upper floor inaccessible.

The wood scalloped shingles at the side gables are exposed wood and not painted with vents installed at the top center of the gable. At the southern gable, the upper course and a half are missing, revealing peeling white paint and sheathing. There are miscellaneous wood boards fastened to the roof eaves on the east and west facades. At the first floor exterior walls, there are numerous penetrations and abandoned fasteners from previous use. Some penetrations are filled with insulation. The overhang of the second floor on the west facade is exposed wood. There is a vertical crack on the first floor of the west facade. Vegetation has grown around the north and west facades.

At the interior, there is a historic door located at the northeast corner of the building that is normally obscured by wood. The wood door has four glazing lites above the paneled wood. There are gaps at the joints of the wood sheathing of the first floor of the south addition.



Figure 45. Cracking in the first floor parge coating of the garage.



Figure 46. Exposed roof underlayment (black) and building paper (white).

Structural

The two-story garage was constructed in multiple phases as evidenced by construction detailing and variety of materials used; however, the actual sequencing and extent of construction phases and modifications are not known at this time. Access was not provided to the second level of the garage therefore our review was limited to the first floor and the exterior. Based upon aerial surveys available publicly, we can discern that a garage has been in existence at this location since before 1998, but had a footprint about half the size and was expanded sometime between 2002 and 2005. A phone call with the Fairfax County Tax Administration indicates they have a record of a major alteration to this structure occurring in 2004. WJE speculates that at one time, the upper portion of the garage may have been a separate structure and was lifted and set on top of the walls of the first level based upon the unusual overhang on either side of the building. (Figure 47) The entire first level is unfinished on the interior, revealing all of the structural framing. It appears that the first level was constructed in two different phases with the north portion being built first and the south portion at a later time.



Figure 47. South elevation of garage. Note the overhang at the second floor line.

The north portion of the first level features CMU exterior walls, concealed by a cementitious parge coat on the exterior and a slab on grade. Several shrinkage cracks are present in the slab on grade but the slab is generally in good condition. The CMU walls are generally in good condition but cracking is present through the CMU and parge coat at isolated locations along the walls. Steel lintels over door openings are corroded and appear to be causing adjacent cracking in the parge coat. (Figure 48) On the interior, it is apparent that the original structure has been modified. Joists have been removed leaving behind pockets in the CMU walls. (Figure 49) A steel beam runs in the north/south direction through the north portion of the garage. (Figure 50) The wood floor framing for the second level sits several feet above the steel beam and original joist line.



Figure 48. Corroded steel lintel and adjacent cracking in parge coat (orange arrow).



Figure 49. Joists have been removed leaving behind pockets in the CMU walls.



Figure 50. Steel beam runs longitudinally through the first floor of the north portion of the garage.

The south portion of the first level features a concrete slab on grade, which is in good condition, and a combination of CMU and modern wood framed walls. Painted plywood is installed on the exterior of the walls. The plywood is deteriorated at isolated locations and daylight can be seen on the interior between the bottom of the plywood and the wall framing. (Figure 51)



Figure 51. Daylight is visible between exterior wall sheathing panels in south portion of the first level.

The floor framing for the second level wood structure appears to be modern. We observed the presence of metal joist hangers, treated lumber, and plywood sheathing. Wood bridging is sporadically installed

between wood joists (Figure 52) and gaps are present between the ends of the wood bridging and the joists at multiple locations. (Figure 53) Since the interior of the second level was not accessible during our site visits, a review of the interior space should be completed to determine if there is distress resulting from lifting a portion of the house similar to what was observed at the farmhouse. No structural analysis was performed as a part of our evaluation as it is outside of our current scope. In general, the load distribution is difficult to follow as a result of the different additions to the structure. Connections between the first level and second level along with the framing should be further documented and evaluated.



Figure 52. Wood bridging is sporadically installed between joists.



Figure 53. Gap is present between end of wood bridging and joist.

Mechanical, Electrical, and Plumbing

Visible systems located in the spaces opened at the first level were inspected. The garage had relatively modern electrical equipment; however, the panels did not have final inspection stickers from Fairfax County indicating that the equipment was either temporary or roughed-in. Several open junction boxes in the upper levels were observed. Some of the wires extended outside the enclosure and were cut and not properly terminated. (Figure 54) The plumbing systems also lacked a final inspection sticker from Fairfax County. The water supply was turned off at the utility meter located approximately 25 feet west of the driveway. As such, most of the systems in the garage could not be tested. Septic piping for the garage could not be located, but it is anticipated that it goes back to the same distribution box and septic fields tied to the farmhouse. The garage has a natural gas supply line, which feeds one or more high efficiency gas furnaces. The furnace is modern, but was not functioning due to the turned off utilities. The indoor heat pump is in relatively good condition, but ductwork at the unit should be cleaned and insulated. Areas of previous water infiltration at the upper floors was observed at interior finishes and around electrical boxes. The garage has systems for air conditioning; however, one or more of the condensing units had been removed, which was evident from cut refrigerant lines.



Figure 54. Improperly terminated electrical lines. Photo courtesy of MBP.

Garage Recommendations

Architectural

It is difficult to accurately recommend a treatment approach given the inability to access the second floor of the structure; however, given the modification viewed from the first floor, WJE recommends the following:

- Clean and repaint all exterior finishes. The historic color scheme for painting of the building siding, trim, and exterior windows and doors should be confirmed and replicated in repainting campaigns.

- Inspect wood shingles at dormer gables for deterioration and repair. Install new patterned wood shingles at south side gable to match existing and half-timbered decorative truss following paint outline (if possible). Paint. (Figure 55)



Figure 55. Missing shingles and deteriorated paint.

- Replace broken glass at dormer window.
- Inspect area for any deterioration caused by missing wood under dormer and repair (as appropriate). Install new wood and paint.
- Remove miscellaneous boards and repair/paint underneath wood members unless archival documentation reveals the historic use of these elements.
- Install sealant at gap between the first and second floor and at the east facade of the south addition. If gap is too large for a proper sealant profile (generally less than 1 inch is desirable), infill gap with wood and paint. (Figure 56)



Figure 56. Gaps between the first and second floor and at the south addition.

- Remove boards covering previous doors and windows to allow for observation and inspection.
- At all exposed wood, inspect for any soft or deteriorated wood that needs to be repaired and paint.
- Repair cracks and spalls in parge coat on CMU walls. Repaint after repairs to parge coat are complete.
- Remove all abandoned fasteners and patch. Repaint.
- Remove boards covering previous doors and windows to allow for observation and inspection at the second floor.
- Remove remaining stair reinforcement and re-evaluate reinforcement needs when new egress is installed. Remove abandoned concrete supports from previous stairs. Reinstall stairs or other means of access to upper floor.
- White WRB on west facade is degraded and compromised and has caused the wood sheathing to be exposed and deteriorate. Remove WRB and inspect wood for any deterioration and repair as needed. Install WRB and new siding. Paint.
- Observe from interior if type of exposed flashing can be determined. Some flashing materials are not intended to be exposed to UV for extended periods.
- Install weather resistive barrier at southwestern corner of missing siding and install new siding.

- Roof underlayment was placed over the wood at the southwest first floor and has been exposed. This particular underlayment should not be exposed to UV for longer than 6 months.²² Remove and inspect the interior for indication on why this may have been installed. Evaluate installation of new WRB and exterior finish to protect the WRB.
- Re-install lid to cover brick pit.
- Temporarily fill penetrations through the building's first floor walls to reduce water infiltration. Future use of this building will dictate need of re-using these penetrations.
- Re-secure or replace loose non-historic railings on north facade.
- Remove exposed wood sheathing at first floor south facade and replace with permanent siding. (Figure 57)



Figure 57. Exterior wood sheathing used for the southern addition to the garage.

Structural

- Access the interior of the second level and roof and perform a review of the framing. Connections between the first level and second level along with the framing should be further documented and evaluated; therefore, we recommend performing a comprehensive engineering investigation to document as-built conditions of the exterior walls and floor framing and perform structural analysis to determine if structural repairs/upgrades are necessary. Although the type and extent of repairs cannot be determined without further investigation, we anticipate that potential repairs include:
 - Sistering of wood members;
 - Installation of supplemental structural members; and

²² Grace Construction Products, Grace Tri-Flex Product Data, August 2013

- Modifications to existing structural members.
- Review lintels for corrosion induced section loss and replace if necessary; otherwise, remove existing paint and corrosion from steel lintels and paint with a corrosion inhibiting coating.
- Perform isolated repointing and crack repairs to CMU walls following comprehensive engineering evaluation of structural framing and subsequent repairs, if required.

Mechanical, Electrical, and Plumbing

Priorities

- The electrical panels in the Farmhouse have inspection stickers applied to the front of the panel indicating only initial inspections have occurred including temporary electric and first gas. Recommend that all construction is completed and final inspections are received for all trades prior to occupancy or use of the structure.
- A dual breaker was shut off, but left in place. Wires connected to the breaker extended outside of the enclosure and were cut off, leaving a potential hazard. Recommend removing the wires from the breaker immediately.

General

- All electrical panels are dirty and dusty with leftover parts. The panels should be vacuumed and wiped out prior to final inspection.
- All panels have some screws missing in the covers. Recommend that these are replaced.
- Breakers have been removed or relocated but blank covers are missing in the open slots. Recommend providing blanks for all open breaker slots.
- The panel schedules are outdated and incomplete. Recommend updating prior to final inspection, use, or occupancy.
- Recommend verifying that all bolted electrical connections are torqued to manufacturer recommended torque values.
- Though not a residential requirement, the County should verify the requirements of NFPA 70E are met if structure will be used for commercial purposes.

Equipment Shed



Figure 58. Equipment shed.

Structure Description

The equipment shed is a simple rectangular wood framed structure with a corrugated metal roof and painted sheet metal siding. (Figure 58) The shed includes two bays at the east running the full depth of the building. The bays are open at the south facade and the large west room has a central entry door opening and windows located at each side of the door. The central bay currently houses miscellaneous windows, doors, and siding that may have been from the farmhouse. The east bay has a slanted gravity feeder with a hinged lid. The bays have wood tongue and groove floors with the central bay previously having a door to the north, which has been blocked at the exterior. There are doors between each of the rooms.

Equipment Shed Conditions

Architectural and Structural

The shed is supported by timber sills which appear to bear directly on the ground. (Figure 59) No evidence of a foundation was observed. The shed appears to have settled over time as a result of deteriorated wood framing. Tongue and groove floor planks were visible on the east half of the shed. The floor planks are significantly deteriorated towards the north half of the shed. Complete section loss of the plank members along with the presence of an animal habitat, as evidenced by chew marks in a wood plank, are apparent in the east bay. (Figure 60) Carpet is installed on the floor of the west side of the shed and generally conceals the substrate below. At areas that are not concealed by carpet, we observed exposed soil. (Figure 61)



Figure 59. Timber sill bears directly on the ground.



Figure 60. Complete section loss of the plank members along with the presence of an animal habitat, as evidenced by chew marks in a wood plank (orange arrow).



Figure 61. Carpet installed on the floor of the west side of the shed conceals the substrate below.

Corrosion is present on portions of the sheet metal siding and roofing. Vegetation covers the roof and several areas of the roof and siding are out of plane. There is a missing fascia board at one location along the west facade. The glass and sashes of the windows and storm windows in the west room are broken and do not fit in the openings with the lower sash sitting below the window opening. The entry door to the west room is also missing and the remaining wood frame is heavily deteriorated. There were numerous bees and previous hives observed during the site work at this structure.

The wood framing of the walls and roof is generally in fair condition on the interior; however, framing exposed to the exterior or in contact with soil is significantly deteriorated and includes exposed rafters, corner columns, and door and window framing. At one location near the southwest corner, a roof rafter is no longer bearing on the header. (Figure 62) During the site visit, numerous bees were observing going in and out of the structure.



Figure 62. Rafter no longer bears on header.

Mechanical, Electrical, and Plumbing

The equipment shed had derelict electrical systems with one light fixture and visible wiring. No plumbing or mechanical systems were observed in this structure.

Equipment Shed Recommendations

It is difficult to recommend a treatment plan without further historical research to support whether it has significance and merits the expense and exertion of restoration efforts. Based on our observations, the timber sills and wood framing near grade are significantly deteriorated. This deterioration has resulted in settlement of the structure over time. It will likely require an immense amount of work to repair and restore the structure. As such, we recommend a reconstruction approach as described in the Treatment Approach section. However, if the owner chooses to restore the structure, we recommend the following:

Architectural

- Re-secure siding to frame in areas where the siding is out of plane or bowed. Perform repair patches where siding has been compromised and treat corroded areas. Once repairs are complete, paint siding.
- Remove vegetation, clean, and inspect metal roof. Perform repairs where needed and treat any corrosion. Paint or coat to protect metal.
- Remove windows and discard. Salvage any windows that may have any historical value for muntin example. Reinstall new windows once building repairs have been completed.
- Repair door framing and install new door once building repairs have been completed.
- Replace missing wood fascia board on west facade.

- Inventory materials in the center stall as they may prove to be salvageable replacement materials for other areas. It may also be advantageous to store them with the salvaged patio wood in the farmhouse cellar as documentation of previous fabric.
- Contact Department of Agricultural for a list of registered beekeepers to inspect the interior spaces and potentially relocate bees.

Structural

- Excavate the soil below the shed and create short foundation walls to hold the wood structure off the ground, thereby limiting future deterioration of the wood framing due to moisture.
- Perform repairs to the timber sills or replace as necessary.
- Consider installing a new floor system commensurate with the building's function in lieu of tongue and groove floor planks.
- Perform isolated repairs to the wall framing and rafters.

Mechanical, Electrical, and Plumbing

Priorities

- Electrical service and wiring in this building is derelict and should be removed.

Crib Barn



Figure 63. Crib barn as viewed from the north. Note the two “wings” adjacent to the central bay are not original to the structure.

Structure Description

The crib barn features two storage cribs separated by a central passageway and is also referred to as a double crib barn. The crib barn is a wood framed structure on a field stone foundation. (Figure 63) The crib barn has a hewn-and-pegged joint framing system. Based upon the construction and building type, the structure is likely to have been constructed between 1890 and 1910. There is a large two story central bay with two side lean-to additions to the east and west. The structure currently has wide vertical grooved plywood siding on the north facade and wide wood siding at the gable with thinner spaced vertical wood slats above the crib doors on the south facade. The wide siding would have historically been in place above the central drive lane and the spaced wood slats would have been the siding for the rest of crib barn. The central bay has a metal seam gable roof and the lean-tos have a shed asphalt shingle roof. The east and west lean-to additions and installation of wide vertical plywood grooved wood siding are modern additions that took likely place in the early 2000s. At the interior, the sheathing has a stamped date of October 2000. The metal seam roof is historic, although not original. The spaced decking is visible at the deteriorated sections of the roof indicates the barn originally had wood shingles.

At the central bay there are two large plywood doors at the north, with one no longer attached. Each lean-to has a door on the north facades. The west lean-to addition also has a door opening on the south facade whereas the east wing has a modern window. At the south facade, there are two additional openings at the side cribs of the central bay for the storage cribs. These would have historically been smaller hatches, but have been enlarged at some time. Above these entry areas are spaced vertical wood slats, which is consistent with what was in place around the building historically. The crib on the east has a wooden ladder that provides access to the loft above the central bay. There are wood floors at the cribs and west lean-to addition. The east lean-to addition could not be observed as the door to the space was locked. There is a large modern 6/6 ganged window over the main barn doors at the upper level, an ocular window on the north facade, and a simple sash window on the south facade of the east lean-to.

Crib Barn Conditions

Architectural

There is significant deterioration of the exterior modern plywood siding, corrugated metal roof, and interior wood framing system including soft and rotted wood and several areas of the wide grooved vertical plywood siding are out of plane. Also visible at the deteriorated areas are heavy amounts of vegetation. The majority of the central bay doors are no longer intact. The east lean-to could not be observed due to the entry door being locked. The south facade of the lean-tos reveals exposed plywood, deteriorated building paper, and a lack of vertical siding (Figure 64). The west lean-to addition's interior walls and underside of the roof are also plywood. The roof of the lean-to additions are asphalt shingles, which are sagging between rafters at the west addition. There is also a gutter located along the west eave, but it is set too far away from the roof resulting in an adequate location to fully direct run off. Throughout the structure is significant evidence of vegetation growth, which has possibly contributed to the deterioration of the roof and wood elements in the structure as the vegetation holds moisture on the material and does not allow the materials to fully dry.

Other issues, such as the open roof and vegetation growth, have allowed additional water infiltration into the space and has contributed to the deterioration of the wood members. (Figure 65) It might take an immense amount of work to repair all of these structural columns, associated wood deterioration to the framing and flooring, as well as other interior and exterior finishes.



Figure 64. South elevation of the crib barn as viewed from the southwest. Note the historic wood slats and siding.



Figure 65. Missing metal roof section along with evidence of heavy vegetation. Note sagging asphalt shingles between rafters on the wing addition.

Structural

The crib barn is of wood framed construction and sits on top of a dry laid stone foundation. Wood framed additions to the original structure are constructed on the east and west sides. The original stone foundation is deteriorated. Many of the stones are loose and appear to have displaced, leaving behind large gaps in the foundation and placing the wood framing in direct contact with the ground at many locations. (Figure 66) Large timber sills at the storage cribs support floor joists and wall framing. The timber sills are significantly deteriorated likely due to their proximity to grade. (Figure 67) Long-term exposure to moisture in the soil has likely expedited deterioration of these members. As a result of deterioration of the stone foundation and wood framing, the structure appears to have settled over time. Floor joists are also in direct contact with the soil along with the majority of the floor planks in the west bin. (Figure 68) There is no floor framing present between the two cribs since the central portion of the structure functions as a passageway. Most of the east bin floor framing is concealed by sheet metal and plywood and therefore was not included in our review.



Figure 66. Large gaps are present in the stone foundation.



Figure 67. Significantly deteriorated timber sill.



Figure 68. Floor joists and planks are in direct contact with the soil at the west crib.

Portions of the metal roof are missing at the northeast and southwest corners of the original structure. (Figure 69) The wood framing below the openings in the roof is significantly deteriorated, likely as a result of long-term exposure to water. Nearly complete loss of bearing is present at the northeast corner column in the east crib. (Figure 70)



Figure 69. A portion of the metal roof is missing at the northeast and corner of the original structure.

DRAFT



Figure 70. Nearly complete loss of bearing at the northeast corner column in the east crib.

Wooden pegs which hold the mortise and tenon joinery together are missing at several of the interior connections. (Figure 71) Surface corrosion is present on sheet metal installed inside the east crib. (Figure 72) A loft is located over the central passageway and the wood framing is generally in good condition. Only isolated areas of deterioration were observed along with displaced and missing rough sawn planks. (Figure 73) The roof framing is generally in good condition (Figure 74) except at locations where the metal roof is missing.



Figure 71. Missing wooden peg at interior connection.



Figure 72. Surface corrosion present on corrugated sheet metal inside of east crib.



Figure 73. Rough sawn planks in loft.



Figure 74. Roof framing as viewed from the loft.

Non-structural vertical wood slats installed on the interior are generally in fair condition; however, WJE did observe several that are fractured from what appears to be impact damage (Figure 75) and several that are deteriorated near grade. Vertical wood slats and vertical rough sawn boards installed as cladding on the exterior facades are slightly deteriorated. Splits in the rough sawn boards and splintering at the ends of the wood slats were observed on the south elevation (Figure 76). WJE anticipates that they will continue to deteriorate unless they are coated with an exterior grade of paint in the near-term.



Figure 75. Fractured vertical wood slat.



Figure 76. Splintering at the ends of the wood slats (orange arrow) on the south elevation along with two fractured slats (red arrows).

The east and west lean-to additions are of modern wood framed construction. WJE was not able to access the wood framing of the east lean-to addition but it appears to be of similar construction to the west lean-to

addition. The west lean-to addition is in poor condition. Although a modern addition, it is apparent that the building envelope was not constructed with consideration for moisture protection. Untreated plywood roof and wall sheathing is deteriorated, most significantly at the roof, where staining, rot, and biological growth are visible from the underside. (Figure 77) Staining and deterioration of the wood rafters was also observed.



Figure 77. Staining, rot, and biological growth are visible on the underside of the plywood roof sheathing on the west lean-to addition.

Mechanical, Electrical, and Plumbing

The crib barn appears to have some minimal modern electrical systems; however, access to the east lean-to addition of the structure was restricted. Extension cords and light fixtures were observed in the open central bay areas. The secondary service conductors were not visible, but it is possible that the electrical supply originates from the garage or farmhouse. No plumbing or mechanical systems were observed in this structure.

Crib Barn Recommendations

It is difficult to recommend an exact treatment plan without further historical research. Given the construction type, the Crib barn is a historic structure that could potentially pre-date the farmhouse. Based on our observations, the stone foundation and main structural members near grade are significantly deteriorated. This deterioration has resulted in settlement of the structure over time. Other issues, such as the open roof and vegetation growth, have allowed additional water infiltration into the space and have exacerbated the deterioration of the wood members. It will likely require an immense amount of work to repair and restore the structure and architectural components; therefore, it may not be economical to restore the structure.

To perform a restoration the structure, WJE recommends the following:

Architectural

- Remove vegetation from building.

- Remove side shed lean-to additions.
- Install access doors at the crib entry areas of similar wood slat spacing as above the openings.
- Remove modern oriented strand board (OSB) siding. Install wide vertical siding above central bay and spaced slats at the remaining exterior of the structure similar to those in place above crib access doors on south facade.
- Remove large modern window above central bay and infill with wide wood vertical siding (similar to the historic siding on the south facade).
- Remove areas of deteriorated metal at roof at central bay and perform large patches.
- Once other repairs have been made to this structure, install new doors at the south facade at the sides of the central bay and central bay. Design should be simple unless archival documentation can be found on original doors. Iron pintles (hinges) from previous doors at the central bay are still in place.

If the owner chooses to maintain the existing lean-to shed additions and pursue a Rehabilitation treatment approach, WJE recommends the following:

- Replace missing wood fascia board on north facade.
- At areas where siding is out of plane, investigate interior condition (east lean-to space was locked and west lean-to has modern plywood at the interior). Siding may be able to be reset in place if just simply loose.
- Reset large barn door and repair where needed. Evaluate if connection, size, and number of hinges is appropriate for door weight. Paint doors.
- Consider removing the west lean-to as it is significantly deteriorated from water damage. Inspect east lean-to to determine condition.
- Gutter at west lean-to does not have any downspouts and it not providing any benefit to this one side. Either reset gutter to allow for proper watershed from roof to gutter and install downspout and splash pads directing water away from siding. Otherwise, remove gutter.
- Remove shingles and plywood at west lean-to, discard. Investigate condition of wood rafters and perform repairs where needed. Install new roofing system.
- Investigate for soft or deteriorated wood at the vertical closure wood piece between central bay roof and lean-to roofs. Potentially replace entire wood unit with a properly sized member that will completely close gap. Paint.
- Removed degraded white building paper and inspect exposed plywood for degradation at south facade. Install new weather resistive barrier and new siding of similar wood species and installation techniques as central bay.
- Once other repairs have been made to this structure, install new doors at the south facade at the sides of the central bay, west lean-to, and central bay. Design should be simple unless archival

documentation can be found on original doors. Iron pintles (hinges) from previous doors at the central bay are still in place.

Structural

- Perform repairs to original stone foundations. Temporary repairs, stabilization, and shoring or jacking of the wood framing will likely be necessary prior to making repairs to the foundations.
- Perform replacement of existing timber sills and wood joists. We anticipate that a majority of the floor planks will also require replacement but should be salvaged where deterioration is not present.
- Perform isolated repairs to wall framing elements, specifically the bases of vertical elements.
- Replace severely deteriorated framing under openings in roof.
- Perform isolated repairs to interior wood slats where fractured or deteriorated.
- Fasten loose wood planks to loft framing and install new planks where missing. Perform isolated repairs at wood planks where deterioration is present.
- Install wooden pegs at mortise and tenon connections where missing.
- We anticipate that exterior wood cladding will continue to deteriorate if not addressed. Consider the installation of a protective exterior coating on the wood cladding.
- Remove sheet metal installed on the inside of the east bin.

Mechanical, Electrical, and Plumbing

Priority

- MBP was not able to access the finished section of the Crib barn where the electrical service appears to enter the building. The origin of this service was not able to be established. In the unfinished portions of the building, the wiring and fixtures are derelict and should be removed.

Milk House



Figure 78. Milk house as viewed from the east.

Structure Description

The milk house is a rectangular painted CMU structure with a corrugated metal gable roof. (Figure 78) There is a chimney located on the north facade, 6/6 wood windows on the east and west facades, a historic door on the east facade, and a large door on the south facade. There are two rooms, a smaller room on the north that possibly housed a stove that connected to the chimney, and a larger room on the south closest to the dairy barn. The structure has concrete floors and concrete parge coat on the walls. The interior ceiling of the large room appears to have two different finishes, the southernmost is smooth while the other is board formed. There is a small attic space with vents located at the asphalt shingled side gables.

Milk House Conditions

Architectural

There is a considerable amount of debris and vegetation in and around the Milk House. As a result, there is some deterioration to the paint, wood elements, CMU, and interior walls resulting in flaking, stained, and missing paint as well as missing sections of wood. (Figure 79) There is also spray paint above the door on the south facade. The corrugated metal roof is slightly deteriorated; there are signs of corrosion of the base metal at locations where the original coating has faded. The southwest corner of the roof is slightly out of plane and the venting louver is missing on the south gable. A section of fascia board at the eave on the south is missing. Also at the south gable there are a pair of hanging copper lines from the antiquated lightning protection system. The concrete entry slab at the east facade is cracked and spalled. The majority of the doors and windows still in place are in varying stages of deterioration resulting in loss of wood material and glazing. The entry door at the south room on the east facade is missing. The door on the south facade is in place, but a wood board has been installed over the lower half of the door with wood deterioration near grade from contact with moist conditions from adjacent vegetation. One of the lower panes is broken and all glazing is coated with paint.

The window on the north facade is heavily deteriorated with most of the wood muntins and all of the glazing missing. The west facade windows are boarded at the exterior and the east facade window is boarded at the interior. There is debonded mortar at the chimney and building interface, chimney concrete foundation, and throughout the brick coursing on the north facade. There are water stains in the ceiling and walls at the north room. Numerous penetrations and abandoned pipes protrude through the concrete masonry block walls daylighting to the exterior with some filled with insulation. Isolated abandoned metal fasteners are also visible at the exterior walls.

At the interior, there is collected debris and salvaged materials at the south room, and in the attic space. . Bees were observed going in and out of the attic space during the site work. The water heater in the north room is corroded and iron staining was observed at the adjacent wall and floor surfaces. There is also considerable water staining at the interior finishes in this room. Vegetation covers the ceiling and walls from the open window. There is a visible gap between the window and adjacent masonry. The windows at the east facade and the southern window on the west facade have broken glazing and deteriorated muntins. The central window on the south room is intact and may serve as an example for window profiling.



Figure 79. Heavy vegetation at the milk house.

Structural

The milk house is of CMU construction with a concrete foundation and wood framed gable roof. The interior floor is a concrete slab on grade and appears to be in fair condition. There are several cracks, but no visible spalls. In general the CMU walls and concrete foundation are in good condition. Only shallow, isolated spalls are present in the concrete foundation. (Figure 80) Isolated cracking is present in the CMU and mortar joints and can likely be addressed with minor grouting and repointing. A brick masonry chimney is installed on the north side of the house and is supported by a concrete foundation. No structural distress was observed at the chimney.



Figure 80. A small spall is present in the concrete foundation wall.

The interior walls and portions of the ceiling are concealed with a parge finish. Cracks are present throughout the parge coat. Other portions of the ceiling feature tongue and groove wood sheathing which appears to be in fair condition. There are several openings in the ceiling that allowed for the observation of the wood framing above. The interior wood framing is in fair condition with only limited deterioration and staining present while the exposed portions of the framing are in poor condition. (Figure 81)



Figure 81. Exposed wood framing is in poor condition.

A concrete landing is present in front of the east entrance and appears to be supported by CMU. A large crack through the full thickness of the landing and deterioration of the supporting CMU are present.

(Figure 82) Differential movement is likely the cause of the cracking. If the landing and supporting CMU are installed on top of grade, it will likely be necessary to remove and replace the landing with one that has an adequate foundation. Otherwise, the landing will likely continue to move as the ground expands and contracts due to changes in moisture levels and freeze thaw cycles.



Figure 82. Large crack through concrete landing and deterioration of the supporting CMU.

Mechanical, Electrical, and Plumbing

An electrical panel was observed in the milk house, but is deteriorated with signs of degradation. The milk house has a natural gas supply line, however, the gas meter has been removed and the gas piping appears to have been damaged or pulled away from where the previous meter was located. The piping is not properly terminated. A deteriorated water heater was observed in the north room, but is in a state of disrepair. There is a sink mounted to the east wall near the doorway of the larger south room. A lightning protection cable extends from the roof on the south facade. (Figure 83) No other plumbing or mechanical systems were observed in this structure.



Figure 83. Lightning protection cable extended from the roof. Note heavy vegetation and damage to the fascia board.

Milk House Recommendations

Architectural

Exterior

- Remove vegetation from building and observe building for any additional damage that was not previously visible.
- Clean and inspect all wood trim. Remove soft and deteriorated wood trim and replace/repair. Paint.
- Repoint mortar at chimney to building interface and repair concrete at base. Visually inspect for additional deterioration of chimney to structure once mortar is removed.
- Perform isolated repointing of mortar at debonded areas at chimney.
- Clean exterior concrete masonry block surface with a gentle cleaner once debris and vegetation is removed from the building. This may not remove the staining; however, it will prepare the surface for repainting. Spray paint on the south facade may be slightly lightened when the structure receives an overall cleaning and will be covered when structure is painted.
- Remove pipes on north facade and infill holes or cap pipes and install sealant around pipes at concrete masonry block to reduce water infiltration.
- Remove metal fasteners from the concrete masonry block and patch.
- Remove insulation and infill vent at interior to maintain vent location while allowing the infill to be reversible.

- Window on the north facade is not salvageable. Remove existing wood elements and replace with a new window. Window should be wood and match the muntin arrangement similar to windows still in place at the building (e.g. east facade window).
- Remove boards from windows and repair areas where fasteners penetrated material when windows are repaired.
- Once vegetation is removed from the building, remove interior board and clean and inspect historic window on the east facade. Repair any soft or deteriorated wood. Repaint. This window may serve as a model for additional window replacements or restorations in this building.
- Remove vegetation from the south door. Remove boards at door to fully clean and inspect wood and glazing. Remove coating from glazing (if possible), replace broken glazing in lower pane. If coating cannot be removed from glass, replace glass. Clean and inspect door frame, which may have some deterioration due to vegetation growth and lack of paint. Perform wood repairs where needed and paint all wood elements.
- Clean and inspect wood frame at east facade for repair. Install new door.
- Clean and inspect wood and glass on historic door at the small south room with wood deterioration (due to no protection from paint). Door frame has significant wood deterioration near grade and is unable to close. Remove soft and deteriorated wood at frame. Repair or replace (depending on amount of deterioration). If frame needs to be replaced, salvage strike plate for reinstallation in new frame. Install new door knob assembly that is era appropriate. Paint.
- Reset out of plane roof metal at southwest corner and inspect for any metal deterioration.
- Clean roof and inspect for any material loss that was not observable from the ground. Apply corrosion inhibiting coat or paint roof.
- At the east facade, there is a miscellaneous concrete slab that is not connected to the building. Evaluate if this should be relocated to previous location, if that can be determined. At the north east corner of the dairy barn there appears to have been a removed slab. Otherwise, discard.
- Discard all miscellaneous materials around building. Evaluate if any material holds a potential for historic salvage/replacement materials.
- Install vent/louver similar to louver on south facade. Clean and inspect exposed wood. Paint.
- Replace missing fascia board on south facade and paint.
- The existing lightning protection creates fire hazard with the rod not being properly ground and directing the charge to the wood, which is flammable. Remove the current assembly and if lightening protection is warranted, reconfigure with a properly anchored and grounded assembly.
- Once vegetation and debris is removed, repoint at concrete masonry block to concrete joint. Time work with the repair, cleaning, and repainting of exterior.

Interior

- Investigate attic space along north facade for any potential locations for water infiltration. Observe conditions along chimney once mortar is removed for repointing. The water damage may be from the immense vegetative growth or a previous leak that is no longer active. Interior finishes may need to be removed and replaced once the condition can be fully observed after vegetation is removed.
- Clean attic space of debris and install hatches at openings in the ceiling.
- Once vegetation and debris is removed from the interior, clean all interior finishes and evaluate if isolated repairs can be made and walls repainted or if all interior finishes at the walls should be removed and replaced.
- Remove water heater as it is corroding beyond its serviceable life.
- Once interior and exterior repairs have been made to the walls and windows installed, install perimeter sealant at each window opening between the window frame and the adjacent masonry.
- Remove interior finishes in the north room and replace.
- Clean and inspect wood and glazing at the central window on the west facade. This may require removing the sashes from the frame since the upper sash is out of alignment. Repair if possible and repaint. Repair any deteriorated wood at the frame. Repaint and set back in place.
- Remove exterior boards at windows to observe conditions that could not be viewed from the interior.
- Upper sash of the southernmost window may be salvageable and should be cleaned and inspected. Lower sash needs to be replaced and should use the window in the west facade as an example for muntins and glazing. Repair deterioration in wood at frame near sill. Remove curtains and discard. Repaint and reinstall window.
- Contact Department of Agricultural for a list of registered beekeepers to inspect the attic and potentially relocate bees.

Structural

- Perform isolated partial depth concrete repairs at deteriorated areas of concrete foundation.
- Perform isolated grouting and repointing at cracks in CMU exterior walls and mortar joints.
- Perform isolated repairs to wood roof framing.
- Install new concrete landing at the east entrance.

Mechanical, Electrical, and Plumbing

Priority

- All electrical panels are dirty and dusty with leftover parts. The panels should be vacuumed and wiped out prior to final inspection.

General

- Panel developing surface rust inside. Recommend cleaning and repainting.

DRAFT

Dairy Barn



Figure 84. Dairy barn as viewed from the east.

Structure Description

The dairy barn is a large wood framed structure with a metal standing seam gambrel roof and a large hay loft opening at the north gable with a triangular hay hood. (Figure 84) The metal track for moving the hay is visible just below the hood. There is also a smaller loft opening at the south gable. There are three cupola roof ventilators at the central roof ridge and shed dormer at the center on the west facade. The structure has large white painted lapped siding with windows along the east and west facades. There are large sliding barn doors on the north and south facades and a smaller sliding door on the east facade directly adjacent to a concrete “pit”. There are regularly spaced windows along the east and west facades. Windows appear to be modern (not observable from interior) with modern storms that are currently covered with black plastic at the interior. The hay loft has a wood floor and extends the majority of the interior space of the barn stopping approximately 50 feet from the south wall where the loft height decreases approximately 5 feet. At this location, there are two doors in the hay loft half wall for access to the first floor. There are two hay hatches or chutes at the interior to obtain access to this space or drop hay to the first floor. The barn floor is a concrete slab on grade with evidence of remaining cattle stanchions and two previous doors, one at the northeast corner and one at the southwest corner near the silo. The previous door at the southwest corner would have been connected to the silo with a “feeder” room between the two structures.²³ Cylindrical metal support beams run down the length of the hay loft providing support to the first floor concrete slab. The gambrel roof is covered with COP-R-LOY, which is a sheet steel roofing material manufactured by the Wheeling-Pittsburgh Steel Corporation. The structure is currently being used for storage.

Dairy Barn Conditions

Architectural

At the exterior, there are areas of siding of loose boards and some board with gaps (no overlap). Throughout the siding there are also areas of cracked siding. (Figure 85) There is a consistent gap between the window

²³ Department of Agricultural Engineering, *Dairy Barn Plans* (1929)

and siding on the east and west facades and the loft door on the north facade. There is also a penetration through siding to the interior on the northeast corner. There double sliding doors to the barn on the north facade have batten vertical members short of the full door height revealing exposed wood near grade. The coating of the roof appears to be intact with isolated areas of damage, corrosion, and coating failure. There is some metal loss at the eave of the southeast corner with an adjacent loose soffit board and a missing and loose fascia boards on the south facade. Two of the roof cupola ridge ventilators are missing upper elements such as the spires. The southernmost cupola ridge ventilator is intact. At the dormer on the west facade, there is exposed wood below the gable. This window also has cracked glazing.

There are also areas of deteriorated paint and some wood throughout the building most noticeably at the interior. The wood siding at these areas are also deteriorated, particularly around the drain holes. The track to move the hay bales to the loft is still in place, but shows signs of corrosion. There is a significant amount of bird waste at the hay loft.



Figure 85. Cracks in siding. The lower crack is due to the installed latch.

Structural

The dairy barn is of wood framed construction and is supported by a combination of stone, concrete, and CMU foundation walls. The ground floor is a concrete slab on grade and interior steel pipe columns support a loft story above. It should be noted that the exterior walls are clad on both sides with wood siding or sheathing and therefore could not be reviewed except at isolated locations.

The concrete slab at the interior is generally in fair condition but isolated areas of deterioration are apparent, specifically at the perimeter of the barn, feed alley, and near the drains. Portions of the concrete foundation walls along the east elevation are deteriorated. Concrete spalls and cracks are present at exposed portions of the exterior walls where it was observed that a cementitious parge coat installed on the exterior face of

the wall is cracking and spalling. (Figure 86) It is unclear whether the parge coat is original or installed as a remedial repair. The foundation walls along the west elevation are generally concealed by wood siding but both stones (Figure 87) and CMU (Figure 88) were observed at the top of the walls. An unknown finish is installed on portions of the interior face of the walls. The finish is generally deteriorated near the base of the building. (Figure 89)



Figure 86. Typical condition of foundation with deteriorated parge coat and concrete spalls.



Figure 87. Stones present at foundation wall along west elevation.



Figure 88. CMU present at foundation wall along west elevation.



Figure 89. Deteriorated finish at base of interior walls.

At one location where an opening in the wood cladding exists, we were able to observe a wood column on top of the concrete foundation wall. The base of the column is significantly deteriorated. (Figure 90) Several interior steel pipe columns have been removed. (Figure 91) Complete section loss through the thickness of the member is present at several of the pipe columns which support built-up wood beams in the loft floor. (Figure 92) The built-up wood beams are clad in wood trim; therefore, we were not able to evaluate their condition except at isolated locations. At one location, trim was removed from the end of the beam and the wood appears to be in good condition. (Figure 93)

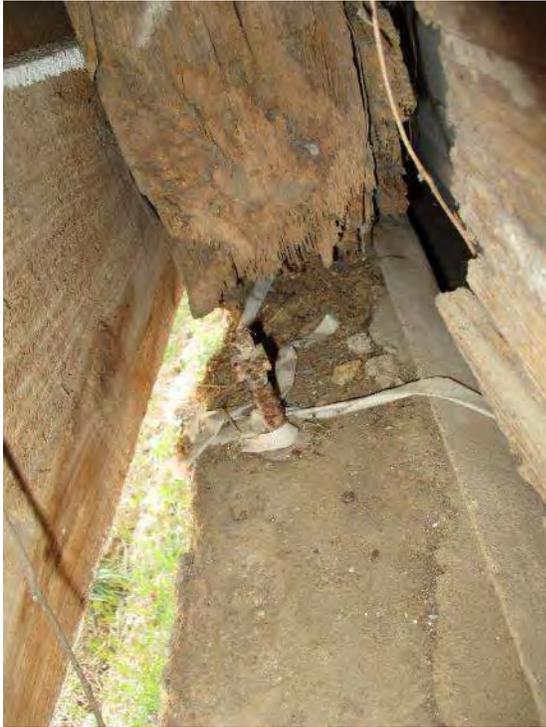


Figure 90. Loss of bearing at wood column.



Figure 91. Missing pipe column.



Figure 92. Section loss at base of pipe column.



Figure 93. Ends of built up interior beam appear to be in good condition.

The wood framing and tongue and groove flooring in the loft are generally in good condition and only exhibit isolated deterioration. Deterioration of the wood framing is present at the central dormer along the west elevation (Figure 94) and at floor boards directly below the dormer. (Figure 95) This deterioration was presumably the result of uncontrolled water penetration from an open dormer. Evidence of insect damage

is also apparent near this area. Repairs have been made to enclose the dormer but the deteriorated wood adjacent to the dormer was observed. Deteriorated floor boards were observed at one other location near the northwest corner of the loft below a hole in the structural metal roof. (Figure 96) Other discrete and isolated areas of deterioration exist, including at truss framing members. (Figure 97) Wood framing around several of the roof vents exhibit some evidence of water staining. Vegetation is present between the roof framing and the metal roof at an area along the east elevation. (Figure 98) Limited deterioration is present at the eave soffit and the eave rafters. (Figure 99) Several of the horizontal wood members in the soffit have been replaced with painted plywood. (Figure 100)



Figure 94. Deterioration of the wood framing at the central dormer along the west elevation.



Figure 95. Deterioration of the wood floor boards below the central dormer along the west elevation.



Figure 96. Hole in metal roof with resultant corrosion staining below.



Figure 97. Isolated deterioration at truss framing member.



Figure 98. Vegetation between the roof framing and the metal roof.



Figure 99. Deterioration at eave rafter.

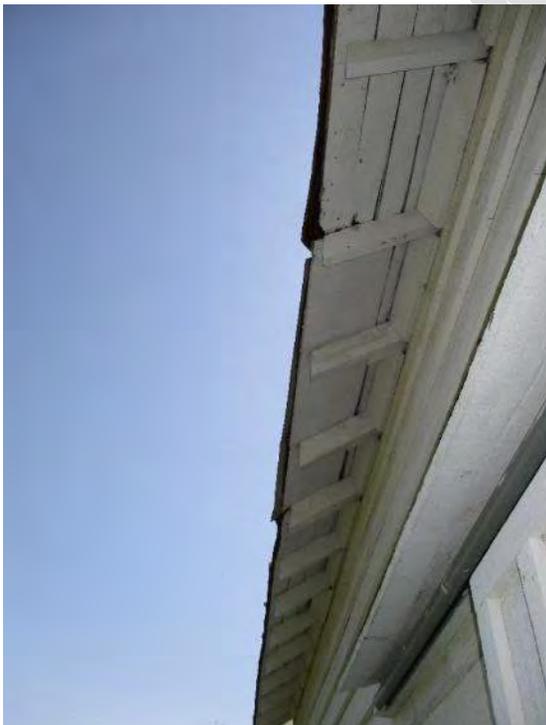


Figure 100. Painted plywood installed at isolated area of soffit.

A crescent shaped concrete pit structure is connected to the dairy barn along the east elevation adjacent to a door opening. (Figure 101) Concrete spalls and exposed reinforcing are apparent at the edge of the concrete walls.



Figure 101. Concrete structure along east elevation of dairy barn. Note exposed reinforcing and concrete spalls.

Mechanical, Electrical, and Plumbing

A sixty-amp electrical panel at the utility pole and small distribution breaker box was observed at the dairy barn, but the point of origin could not be located. A non-potable frost proof hydrant is located at the east adjacent to the dairy barn. The water was tested and resulted in an unacceptable level of lead and E. Coliform bacteria. Please refer to the full MEP report included in Appendix A for the results. No plumbing or mechanical systems were observed in this structure.

Dairy Barn Recommendations

Architectural

Exterior

- Replace spire at the northernmost and top section of the central cupola ridge ventilator. Use southernmost cupola ridge ventilator as an example.
- Perform patch repairs of metal roof with appropriate materials. Treat exposed and corroding metal (if needed) to arrest corrosion.
- Remove unstable corroded metal on east roof and treat exposed edges (if needed) to arrest corrosion. Repair metal loss through new metal patch.

Monitor minor cracks at 1/8" or greater) and paint any exposed wood. Some cracks occur near nails, which could be a result of corroding metal or overdriven nails. Replace siding where crack exceeds 1/8" or allows for the potential of water to enter the interior space. If cracks are static and the wood is sound, they may be filled with a sealant to prevent moisture intrusion.

- Infill space at window frame to building opening joint with backer rod or other filler material. Install sealant around perimeter of all windows in an effort to improve weatherization.
- Re-secure loose siding boards.

- Investigate cause of gaps between siding boards (interior siding did not allow for observation). If the board gap exists, either reset the boards to close gap ensuring adequate lap with above course, or infill the gap to prevent moisture intrusion. Paint wood infill the same as exterior siding.
- Clean and repaint isolated areas of deteriorated paint.
- Re-secure loose siding boards.
- Infill space at gap between siding and foundation with backer rod and sealant. If gap is too wide to obtain a proper sealant profile, install wood infill and paint same color as siding.
- Re-secure loose soffit board at east facade.
- Infill penetration at northeast corner to reduce water infiltration to the interior.
- Clean and treat metal elements of hay track to prevent additional corrosion.
- Install sealant around perimeter of loft door on north facade. If gap is too wide to obtain a proper sealant profile, install wood infill and paint same color as siding.
- Paint exposed wood on the north double sliding doors.
- Replace missing wood fascia board on south facade.
- Reset fascia board that is out of plan on the south facade.
- Investigate cause of corrosion at the edge of metal roofing at the east facade and remove any corroded materials. Paint metal.
- Remove unsound coating at roof and treat metal (if needed). Repaint.
- Paint exposed wood at the underside of the dormer roof.
- Replace cracked glazing at dormer roof.

Interior

- Clean and inspect wood soffit. Remove soft and deteriorated wood and replace. Paint. (Figure 102)
- Document interior evidence of previous doors. (Figure 103)



Figure 102. Interior condition of the dairy barn.



Figure 103. Evidence of previous door at the southwest corner of the barn. This would have connected to the silo.

- Remove soft and deteriorated wood at drains and repair taking care to maintain the drain, which would have allowed drainage when the area was washed down. Paint.
- Remove deteriorated paint (may contain hazardous materials) and repaint. Paint or seal all exposed wood

- Repair concrete at the jambs of the double doors.
- Consider removing plastic from interiors of windows to inspection condition.

Structural

- Perform isolated concrete repairs to foundation walls and interior slab on grade.
- Perform repairs to exterior parge coat and interior coating on foundation walls. Given the amount of already spalled and deteriorated parge coating, it may be more efficient to replace in total.
- Create inspection openings in the interior wood sheathing to allow for observation of the wood framing in the walls. Perform evaluation of wood framing in walls and make repairs as necessary.
- Remove corrosion from interior pipe columns and install a new corrosion inhibiting coating. Perform repairs to the base of the steel columns where section loss is apparent. Install new steel pipe columns at locations where columns have been removed.
- Remove trim on built-up wood beams supporting loft floor to allow for observation of the beam members. Perform evaluation of wood framing members and make repairs as necessary.
- Perform partial rebuilding of the loft floor framing at isolated locations. This work should include selective replacement of decayed tongue and groove floor boards and floor joists.
- Perform selective replacement and repairs to deteriorated roof framing.
- Remove vegetation between wood framing and metal roof.
- Repair deteriorated portions of eave soffit and eave rafters. Remove painted plywood and install new wood members to match the existing.
- Treat reinforcement at concrete pit to prevent additional corrosion. This concrete area was possibly used as a collection area for waste. Perform concrete repairs if this area will be re-utilized in the same manner. Consider adding a coating to the interior surface of the concrete to protect concrete from caustic materials.

Mechanical, Electrical, and Plumbing

Priorities

- All electrical panels are dirty and dusty with leftover parts. The panels should be vacuumed and wiped out prior to final inspection.
- The ground and neutral bars have a lot of oxidation/corrosion. This appears to be the result of dissimilar metal contact as opposed to water exposure and replacement is recommend.
- The wire to a two pole breaker was disconnected and capped off, but left in place. The wire cable appears to lead to the non-potable well pump circuit and is also disconnected immediately inside the Dairy Barn (next to the wall where the wire would exit). Recommend removal of unused conductors.
- The frost proof ground hydrant installed outside the barn on the east side has been tested and shows contamination (E. Coliform bacteria and lead). This hydrant is already posted as "Non-Potable"

and should continue to be. The origin of service for this water was not able to be determined as the power cables that appear to feed the nearby well-head are disconnected on the interior of the Milk House. This is significant because the source should be determined and tested fully to ensure that no other outlets have similar contamination.

General

- Panel developing surface rust inside. Recommend cleaning and repainting.

DRAFT

Silo



Figure 104. Silo adjacent to the dairy barn.

Structure Description

The silo is a white painted concrete stave silo with steel hoops and turnbuckles. (Figure 104) The structure has a domed metal roof and a secondary metal roof at the ladder enclosure on the north adjacent to the dairy barn. Originally, the silo would have been connected to the dairy barn by a “feed” room which is no longer in existence, but there is evidence of the door that would have connected the two structures at the interior southwest corner of the dairy barn.

Silo Conditions

Architectural and Structural

The silo is of cast in place concrete construction and is reinforced with steel tension rings around its exterior circumference. The spacing of tension rings is more frequent on the lower half of the silo as a result of the load distribution of the potential fill material. The silo structure is generally in good condition but it should be noted that our review of the interior was limited to what we could observe through a small door at the base of the silo. The silo appears to have been painted recently as the exterior appeared clean with no obvious signs of issues.

There is an open segment in the main roof, which has allowed water to enter the interior of the structure resulting in some green staining at the interior concrete. Just below the roof on this facade, a square cut opening has been made into the concrete. (Figure 105) There is related cracking of the concrete at the interior of this opening which is likely static and no longer actively moving. At the ladder enclosure, there is deterioration of the secondary roof resulting in material loss, which appears to be of similar metal as the main roof. (Figure 106) One concrete spall is present at the base of the silo. (Figure 107)



Figure 105. Interior view of silo. Note small hatch (orange arrow).

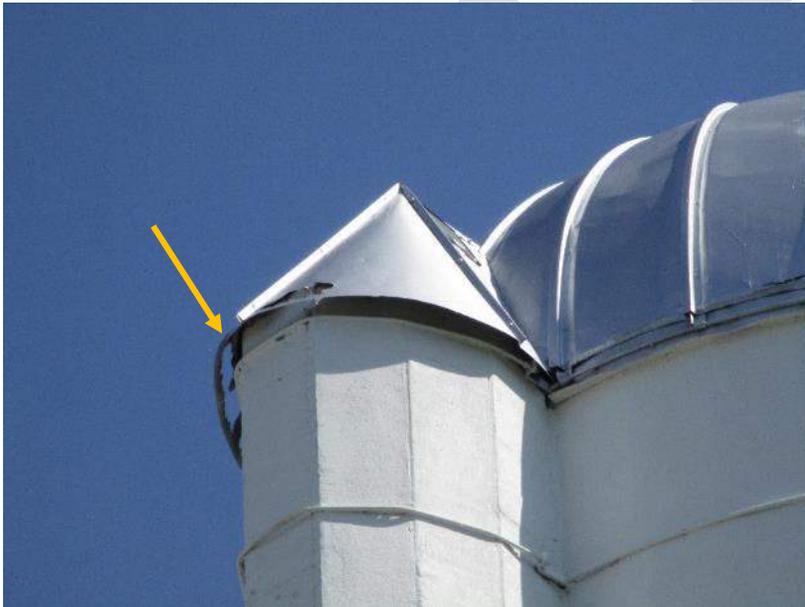


Figure 106. Deteriorated ladder enclosure roof at the silo.



Figure 107. Concrete spall at the base of silo.

Mechanical, Electrical, and Plumbing

No plumbing, electrical, or mechanical systems were observed in this structure.

Silo Recommendations

Architectural

- Install closure piece for roof or, if the silo were to be used as a silo again, temporarily close this opening to allow for future use. (Figure 108)



Figure 108. Openings in silo from historic use.

- Install hatch at roof and wall opening to prevent further moisture infiltration.
- Green staining at the upper interior portion of the silo may be a result of the open roof. The source of moisture will be mitigated once the roof opening is closed. The staining could be cleaned, if desired, however it is mostly aesthetic.
- Repair metal roof at secondary roof to stop deterioration and protect ladder enclosure.
- Perform isolated concrete repair at base of silo.

Mechanical, Electrical, and Plumbing

Priority

- No plumbing, mechanical, or electrical equipment was observed in the Silo. Grounding or lightning protection conductors are incomplete and may need to be re-installed or removed.

DRAFT

Appendix A - Turner Farm House Final Limited Facility Condition Assessment Report

DRAFT



The Turner Farm House

FINAL LIMITED FACILITY CONDITION ASSESSMENT REPORT

Prepared for:
Wiss, Janney, Elstner Associates, Inc.
2751 Prosperity Ave, Suite 450
Fairfax, VA 22031

Prepared by:
MBP
3040 Williams Drive, Suite 300
Fairfax, Virginia 22031



June 22, 2016

Wiss, Janney, Elstner Associates, Inc.
2751 Prosperity Ave, Suite 450
Fairfax, VA 22031

Attention: Rebecca Wong, PMP
Senior Associate

Reference: **Final Limited Facility Condition Assessment Report – MEP Systems
The Turner Farm House, Great Falls, Virginia**

Dear Ms. Wong,

MBP is pleased to submit the DRAFT report of the designated heating, ventilating, and air conditioning (mechanical), electrical, and plumbing equipment at the Turner Farm House in Great Falls, Virginia. Revisions to your comments received on May 16 have been made as directed. This draft remains pending work to be completed at the subject property's Garage pending approval of change order pricing, and access to the upper levels of the Garage.

If you have any questions or need additional information, please do not hesitate to contact me at 800-898-9088 or by email at tboyer@mbpce.com.

Sincerely,

A handwritten signature in black ink that reads "Thomas Boyer".

Thomas Boyer, CBCP
Commissioning Project Manager

cc: J16089.001

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY	1
A. Buildings Description	1
B. Scope of Equipment Assessment.....	1
C. General Building Equipment Conditions.....	1
II. SCOPE.....	4
A. Scope of Services	4
B. Approach.....	4
III. SUMMARY OF FINDINGS.....	5
Notable Concerns.....	5
A. Farm House	5
B. Garage.....	9
C. Equipment Shed.....	14
D. Crib Barn	14
E. Milk House	15
F. Dairy Barn.....	16
G. Silo.....	17
IV. MAINTENANCE AND REPLACEMENT COST IMPLICATIONS.....	18
V. APPENDICES	18
A. Equipment Assessment Reports – Plumbing, Mechanical, Electrical Equipment.....	18
B. Maintenance Issues Log.....	18
C. Septic System Information.....	18
D. Water Quality Test Reports – Dairy Barn Outdoor Hydrant	18

I. EXECUTIVE SUMMARY

A. Buildings Description

The Turner Farm House and support buildings consist of the main Farm House and six supplementary structures, all of which are currently vacant. The property is located at 10609 Georgetown Pike, in Great Falls, Virginia. According to research information provided to MBP, the current Farm House was constructed circa 1905 and has undergone significant additions or renovations three times. A more recent expansion to two wings of the house between 2000-2002 included the raising of the foundation to provide a large useable basement area. The Garage was renovated at nearly the same time as the Farm House, with one or more floors added as living space above the Garage bays. Access to the upper levels of the Garage was granted on June 9 by Fairfax County Parks and Recreation staff by way of ladder due to the lack of stairs. The Dairy Barn appears to be of largely original construction, with the addition of a small electrical service panel. The Crib Barn is a rustic structure with limited electrical service located inside a finished area that was not accessible due to locked doors. The Equipment Shed and Milk House structures have only derelict electrical systems that should be removed or replaced. The Silo was not observed to have any electrical service or equipment.

B. Scope of Equipment Assessment

Because there was no water or gas, and a number of electrical circuits were turned off, MBP conducted a limited visual condition assessment sampling of the following existing physical plant equipment:

- Domestic water heaters and piping
- Sump and sewage ejector pumps
- Evaluate septic system, including locating tank and distribution box
- Water testing of available water sources
- Plumbing fixtures
- Circulating pumps and piping
- Boilers, furnaces, air conditioners
- Air handling units and accessories
- Electrical panels, associated breakers, and wiring

C. General Building Equipment Conditions

General conditions of the plumbing, mechanical, and electrical (PME) equipment in the buildings varied widely. The Farm House and Garage both appear to have relatively new electrical panels, and these panels display inspection stickers that include first inspections (rough-in or temporary) dating to 2001 (Farm House) and 2004 and 2007 (Garage). There are no final inspections for either plumbing or electrical systems noted on the inspection stickers, which typically serve as the records for inspection in residences. Of the potentially occupiable structures (Farm House and Garage), the interior conditions are generally good, with the exception of the Farm House basement, which is in rough finish condition and would require

substantial work to repair and complete where foundation seepage or leaks from plumbing or waste systems appear to have dampened floors and affected the finish of some systems.

Where observed in the Farm House, the plumbing fixtures such as toilets, tubs, and sinks varied widely by age, including some that are assumed to be original (c. 1905), and some that are very recent (c. 2000) and are largely typical of the section of the building where they are located. The public water service to the building has been turned off at the meter box located near Georgetown pike, approximately 25 feet west of the driveway. It was noted that there are two meters within the meter box, one of which was turned on. The service of the functioning meter was not determined but appears to be the outdoor frost proof hydrant located outside the east side of the Dairy Barn. Plumbing fixtures in the Farm House have been winterized and the operating condition of each is unknown. It appears that the majority of the distribution piping was modern copper piping. Minor maintenance can be expected to be required for each fixture but no significant damage was noted; staining of toilet bowls may continue to worsen. Plumbing fixtures inside the Garage were not accessible. Water service to the Farm House and Garage have been shut off at the utility meter. Water testing was conducted by sampling water available at the outdoor hydrant located outside the east wall of the Dairy Barn. Water testing exhibited unacceptable levels of E. Coliform bacteria and lead (Appendix D). As a result, all water systems serving potable outlets in all structures should be tested prior to use or occupancy.

The Farm House septic tank was located and cleaned by a contractor, Five Star Septic, who also located and defined the boundaries of the existing septic field. The distribution box, however, is located beneath a section of asphalt driveway and the location was not confirmed. The layout of the system from the Fairfax County Health Department is included as Appendix C, with additional information and photographs. During an additional visit on June 9, 2016, Five Star Septic attempted to locate the distribution box using a camera and utility locator. The camera was refused at a length of just over 100 feet due to the poor conditions of the existing concrete sewer piping and lack of intermediate cleanouts between the septic tank and distribution box. Five Star Septic recommends that the concrete pipe is replaced due to damage (breaks or holes) visible on the inspection video. Additionally, the location, routing and connection of the Garage sewer pipe was attempted to be ascertained on June 9 as well with similar disappointing results. The existing (original) cast iron sewer piping exiting the Garage slightly below grade through the west wall is damaged and the camera was not able to be pushed more than 18 inches due to resistance from corrosion. This pipe is also recommended to be replaced due to age and condition.

Natural gas piping is extended from the utility to the Farm House, Garage and Milk House. The Milk House meter has been removed and the utility gas piping appears to have been damaged or pulled away from the structure near the location of the old gas meter. The service utility should review the condition of this pipe and the owner should consider that it may be capped or plugged below ground, or disconnected at another location, removed, or abandoned in place.

The Farm House and Garage were the only structures observed to have heating and/or cooling systems. Heat is provided by a natural gas-fired, cast iron boiler in the Farm House and by a high efficiency gas furnace (lower two levels) and heat pump (upper level) in the Garage. The heating boiler in the Farm House is relatively new but is not currently functioning. The boiler is full of water, and appears to have minimal system water pressure, and a functioning circulating pump. Portions of the heating distribution piping are black steel piping mains with some branch piping upgraded more recently to copper up to the radiators. The associated radiators on the upper two levels appear to be in excellent condition and no leaks were observed. There is at least one radiator that is not connected in the upper level master bedroom with an additional spare radiator standing in the upstairs hallway. Basement level cast iron baseboard heaters are in moderately poor condition due to rust and improper separation from concrete or concrete masonry unit (CMU) foundation and slab assemblies. They may require re-piping, finishing and cleaning prior to being placed back into operation. There is no provision for central air conditioning in the Farm House. The gas furnace observed at the ground level of the Garage is also relatively new (date code 1999), but does not function because the utilities are turned off. The upper level is served by a newer heat pump fan coil with five kilowatt electric heat strip installed in an attic access off one of the assumed bedrooms. It should be noted that both of the air conditioning or heat pump condensing units were removed at some time as evidenced by disconnected (cut) refrigerant lines at the rear of the building. The remaining out-buildings did not have serviceable heating or cooling equipment. The Milk House has a rusted, presumably abandoned-in-place gas water heater.

Electrical systems and panels appeared to be largely modernized in the Farm House, Crib Barn, and Dairy Barn. However, original sections of the Farm House should be investigated further to ensure that there is no remaining knob-and-tube wiring concealed above ceiling or within walls. Several circuits within the Farm House, notably inside the electrical panels (basement) and in the attic are improperly cut or have wire nuts on conductors, but are not properly disconnected or made safe per electrical code requirements. The electrical panel within the Milk House, and light fixture and wiring in the Equipment Shed should be removed due to degradation and corrosion. Secondary service conductors for the Crib Barn were not able to be seen inside the finished wall, and the point of origin was not clearly marked at either the Farm House, Garage, or Dairy Barn where independent electrical services originate.

II. SCOPE

A. Scope of Services

The MBP team performed a limited facility condition assessment of the Turner Farm House and outbuildings in Great Falls, Virginia. The purpose of the assessment was to document the condition of the existing PME systems and provide a summary of equipment and system conditions, recommendations for major and minor repairs, and develop recommendations for capital (major) renovations required with budget estimates. The assessment was not intended to be a design-level survey for the purpose of soliciting bids for the recommended repairs or to develop a detailed maintenance and repair scope of work; however, maintenance and repair items were found during the assessment which are listed in the issues log. This evaluation of the facility systems was limited in scope to a visual inspection only. Not all covers were removed to view internal component conditions or wiring conditions, and no manipulation of controls was performed to evaluate response.

B. Approach

A two-phase approach was used for the assessment and report. The first phase included a review of the “Turner Farm House Historical Structure Report” (Shaffer, Wilson, Sarver and Gray, PC, 2011) (HSR) document, associated records available on-line, and requests for documentation from County personnel. The second phase of the project was a visual assessment of the equipment. This included field analysis and reporting on the current condition of the equipment.

Record Review and Visual Assessment

- **Record Review** - The MBP team reviewed the HSR detailing the history of the farm and Farm House as well as architectural details and limited PME system information. Reviewed septic system record drawings received from Fairfax County Health Department.
- **Visual Assessment** – MBP observed the condition of the building PME systems and commented on their condition and any observed deficiencies. The purpose of the evaluation was visual in nature and not intended to be destructive to the facilities in order to gain access to hidden conditions. MBP opened equipment operator access panels in order to observe the operation and/or condition of internal components such as coils, filters, filter housing, automatic control valves, automatic control dampers, wiring, motors, and belts. The equipment was evaluated in the operating mode at the time of our onsite field investigation. It should be noted that the majority of mechanical equipment was not running at the time of our site visit, due to utility interruption or equipment fault.

III. SUMMARY OF FINDINGS

MBP's initial inspection checklists are included as Appendix A - Turner Farm House Equipment Assessment. The section below includes observations made during the conditional overall assessment of mechanical equipment. Some of the observations fall under routine maintenance and can be fixed in the immediate future to preserve the lifespan of the HVAC system. Any maintenance items which require immediate action are shown below and in the issues log included with this report as Appendix B.

Notable Concerns

MBP identified several major problems areas that negatively impact the facility's condition and it is MBP's opinion these should be addressed as a first priority. Actual requirements may vary based on when occupancy or use will occur. The issues below are considered to be fire or life safety hazards, critical equipment failures, or first-replacement equipment to be considered by Parks and Recreation staff.

A. Farm House

The Farm House was originally built circa 1905 and has seen several significant renovations, most recently with a raised foundation/basement addition and expansion in the early 2000 timeframe as evidenced by inspection stickers.

- Electrical wiring survey and correction
 - In several locations within the basement and attic, electrical wires are cut off, disconnected, or have exposed wire ends either inside or outside of an approved junction box or panel. Recommend having a skilled electrician survey the building to locate, identify, safe, or remove electrical wiring that does not meet current code requirements. Temporary wiring should no longer be left in place. Panel directories should be corrected and completed. Please note that this recommendation should be applied to all of the structures.



Photo 1: Loose cable near front door



Photo 2: Abandoned box and wires in basement



Photo 3: Unsecured wires in attic



Photo 4: Unsupported box in attic



Photo 5: Loose cable near front porch

Photo 6: Unsecured conductor in basement panel
(MBP installed orange wire nut)

- Kitchen stove gas connection
 - The gas line intended for a stove/oven in the kitchen was turned off when the appliance was removed, however, the line should receive a pipe plug due to long term abandonment. Recommend installing a one-half inch pipe plug to make the abandoned line safe. Additionally, the location of the floor penetration should be reviewed and relocated closer to the wall to allow better appliance selection.



Photo 7: Kitchen gas piping through floor



Photo 8: Kitchen gas piping needs plug

- Roof penetrations
 - The gas vent flue and plumbing vent stack roof boots or collars are leaking water into the attic. Water stains are evident on the flue vent and stack vent pipe. Recommend repairing/re-sealing, or replacing roof penetration boots and collars and a review of flashing around the chimney to prevent water infiltration into the attic space.



Photo 9: Flue vent with water stains

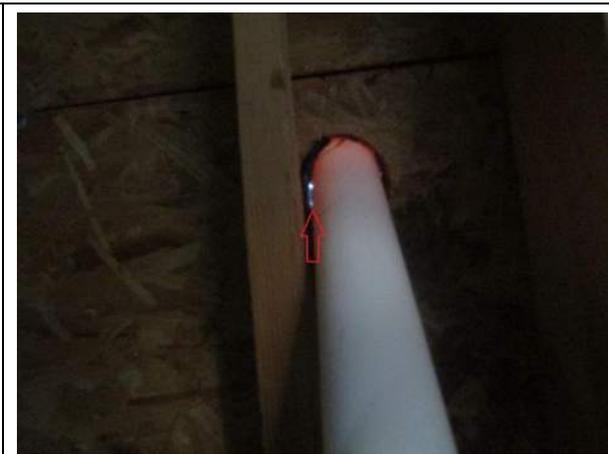


Photo 10: Plumbing vent with light visible thru roof

- Heating boiler
 - The boiler appears to have been left operating to prevent freezing conditions over the winter, despite the plumbing fixtures being winterized. However, the boiler does not fire, likely due to a faulty ignition module or flame sensor. This exposes the heating system to possible freezing conditions and may jeopardize one or more of the existing radiators. The risk of flooding is minimized because the water service is turned off at the meter. The Park Authority should determine if the boiler should be left running, or drained and turned off. Please note that MBP turned off the manual gas valve following visual inspection, but

the circulator pump continues to run based on demand from one of the zone valves.

- Code inspection status
 - The inspection stickers noted on the electrical panels show a “temporary” inspection date of 11-13-01 (electric) and 12-3-01 (first gas). MBP recommends that all construction is completed and final inspections are received for all trades prior to occupancy or use of the structure.



- Basement chimney vent installation
 - The flue vent pipe for the basement wood stove enters a damaged (broken) clay thimble less than 12” from combustible subflooring and floor joists for the first level above. Additionally, it is not clear that the clay thimble is rated for zero clearance with combustible materials as it passes through the floor. Recommend that this chimney flue is abandoned at the basement level and the woodstove is removed. If the chimney is allowed to remain, please review installation with a code official.



- Radiator care
 - Existing radiators in the building are generally in good condition with three exceptions. One radiator in a second floor bedroom at the southeast corner of the original structure has the remnants of a candle behind the radiator. The wax should be cleaned and removed from around the radiator piping. Future occupants should be warned against placing candles or other materials on the radiators in the future because it could be a fire hazard if the candle is aflame when the radiator is heating and melts the base. Additionally, one of the radiators in the southwest corner of the master bedroom is not connected to piping and the piping is not capped. This piping should be connected or capped to prevent flooding if the hand valve fails in the basement. The spare radiator currently in the second floor hallway should be removed to the basement, out of the hallway and should be mounted on a base or strapped to the wall because of the top-heavy nature of the device. Additionally, the heating system should be brought on-line and tested under pressure to ensure that no leaks exist at any of the radiators.



Photo 15: Candle wax behind radiator



Photo 16: Disconnected radiator

- Basement bathroom
 - The basement bathroom has been installed with some finishes lacking. There is a hole under the tub drain into the foundation that should be filled, after the drain connections are tested and confirmed as acceptable by code. The sink waste pipe rough-in has paper stuffed into the pipe as a plug and should be capped pending completion of the installation.

B. Garage

The Garage is an existing structure that was renovated more recently to include structural improvements and added floors above the Garage level, used more recently as an apartment.

- Code Inspection Status

- Similar to the Farm House, the electrical panel in the Garage has an inspection sticker applied to the front of the panel indicating only initial inspections have occurred including temporary electric (8/10/06) and first gas (2/9/07). MBP recommends that all construction is completed and final inspections are received for all trades prior to occupancy or use of the structure.



Photo 17: Electrical panel with inspection label

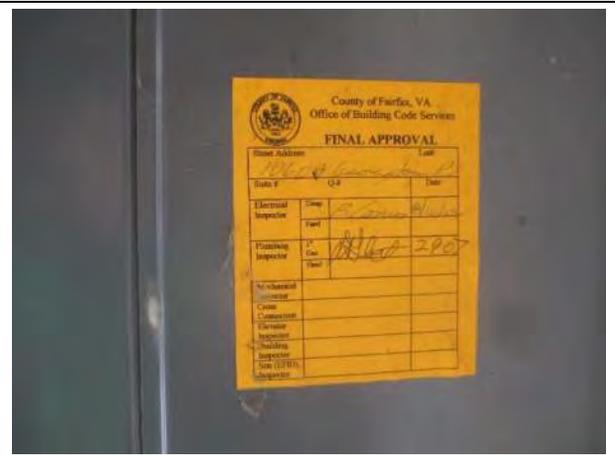


Photo 18: Inspection label

- The bottom right breaker was shut off, but left in place. Wires connected to the breaker extended outside of the enclosure and were cut off, leaving a potential hazard. Recommend removing the wires from the breaker immediately.



Photo 19: Electrical hazard

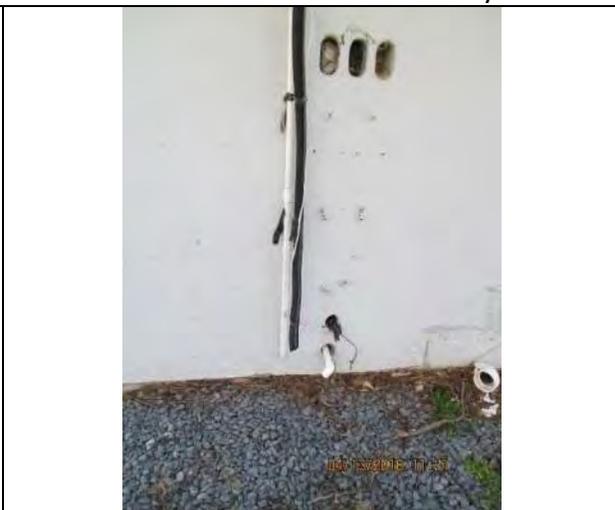


Photo 20: Removed condensing unit

- Gas Furnace (ground floor mechanical room)
The gas supply is turned off at the meter and the unit service valve and the electrical circuit could not be identified or energized during visual observations. The unit operation should be checked by a qualified technician prior to operation. There is some rust and water leakage evident at the exhaust vent connection (lower right PVC pipe). The pipe has been cut and taped back together and the slope back to the unit is

compromised. This taped joint appears to leak. The exhaust pipe is not supported properly between the unit and the exterior wall. One of the pipe clamps at the exhaust connection is unsecured. Long sweep elbows are required on the PVC exhaust piping rather than the short 90 degree elbows currently installed. The condensing unit has been removed and the refrigerant lines are cut. These should be replaced prior to replacing the condensing unit due to moisture and contamination risk. For maximum efficiency, the combustion air inlet should have piping extended to the exterior (note that short 90 degree fittings may be used on the outside air intake if necessary). The condensate pump, necessary for heating and cooling operation, has been removed and is required for operation. All piping penetrations through the exterior CMU wall should be properly sleeved, sealed, and packed.



Photo 21: Taped pipe joint on exhaust



Photo 22: Loose exhaust clamp



Photo 23: Penetrations not sleeved/sealed (Int.)



Photo 24: Penetrations not sleeved/sealed (Ext.)



Photo 25: Short 90 fittings on exhaust



Photo 26: Condensate pump removed (lower left)

- Lower level ductwork
 - Lower level ductwork appears to have at least two elbows installed that are not connected to diffusers and do not have balancing dampers installed. All ductwork should be connected to diffusers with balancing devices so the system can be balanced. It may be necessary to confirm that holes in the next level floor that appear to have previously served diffusers are properly sealed and supported to floor ratings required.



Photo 27: Duct fittings without dampers/diffusers



Photo 28: Old floor penetrations

- Upper level facilities
 - Bathrooms, including fixtures and surrounds are largely incomplete and appear to require renovation. Operation of fixtures was not able to be determined due to the water supply being turned off.
 - Selection of wood finish materials within some shower areas is inappropriate due to exposure to moisture.
 - Electrical fixtures are incomplete with several open junction boxes.

- Past water damage has caused damage to drywall near and around electrical boxes, and may have damaged wiring. A qualified electrician should be employed to review the condition of all fixtures, switches, and cabling.
- The indoor heat pump is in relatively good condition but ductwork should be insulated up to the unit connection boxes and the interior of the unit should be cleaned, including the fan wheel.
- The condensing unit has been removed and the refrigerant lines are cut. These should be replaced prior to replacing the condensing unit due to moisture and contamination risk.



Photo 29: Mid-level hall bath toilet



Photo 30: Mid-level hall bath shower enclosure with damage evident



Photo 31: Water damage at mid-level ceilings due to water from floor above



Photo 32: Unfinished bathroom at mid-level (assumed) master suite



Photo 33: Ill-fitting filter at upper level heat pump unit



Photo 34: Condition of fan wheel at upper level heat pump unit

C. Equipment Shed

The Equipment Shed is an older structure with only derelict electrical wiring that does not appear to be serviced from the other buildings at this time. Removal of the electrical wiring and fixtures is recommended.



Photo 35: Derelict overhead service



Photo 36: Interior light fixture

D. Crib Barn

The Crib Barn is an older structure with only minimal electrical circuitry that appears to be provided from the Farm House or Garage. The point of origin could not be determined. The finished portion of the building where the electrical circuits enter is finished and was locked during MBP's observations. Removal of the electrical wiring and fixtures in the open sections of the Crib Barn is recommended.



Photo 37: Crib Barn with finished section at left side



Photo 38: Extension cord for power in unfinished sections

E. Milk House

The Milk House is an older structure with only derelict electrical wiring and plumbing systems that does not appear to be serviced from the other buildings at this time. Removal of the gas and plumbing piping and fixtures, electrical wiring, fuse box, and fixtures from the interior is recommended. The utility gas piping extends to the northeast corner of the building and appears damaged where the meter has been removed from the outside of the building. It is recommended that this utility piping be cut and capped below grade, or abandoned at its connection point to prevent further damage and leaks in the future. Ground or lightning protection cables (copper conductors) extend from the room down to head level at the south doorway of the Milk House exterior and should be removed or replaced. If grounding or lightning protection cables are required, they should be engineered for replacement.



Photo 39: Damaged utility gas piping at NE corner



Photo 40: Derelict fuse box and wiring

F. Dairy Barn

The Dairy Barn is an older structure and was observed to have only a small 60 Amp electrical service from the utility pole at the northwest corner, and a small distribution breaker box on the interior.

- Electrical wiring
 - The wire to a two pole breaker was disconnected and capped off, but left in place. The wire cable appears to lead to the non-potable well pump circuit and is also disconnected immediately inside the Dairy Barn. This should be rectified by connecting or removing the circuit.



Photo 41: 60 Amp service at utility pole (NE corner)



Photo 42: Oxidation/rust at terminations in panel inside the Dairy Barn



Photo 43: Disconnect well pump circuit

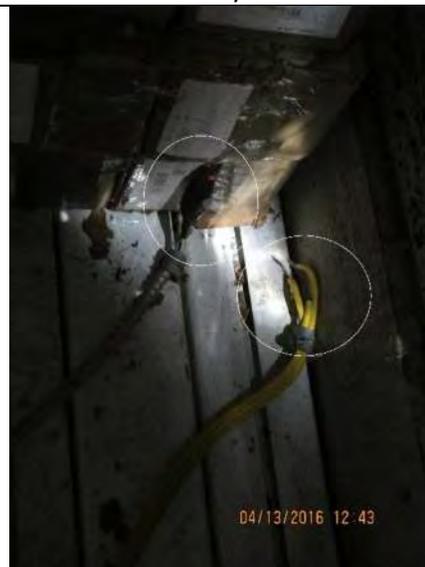


Photo 44: Well pump circuit at exterior wall

- If grounding or lightning protection cables are required, they should be engineered for replacement.

- Water Quality Test
 - Water samples were taken from the outdoor frost proof hydrant located at the east side of the Dairy Barn, which is clearly marked as “non-potable”. Independent laboratory testing indicates the presence of unacceptable levels of Total Coliform Bacteria and Lead. Complete test records are included as Appendix D.



Photo 45: Outdoor hydrant at Dairy Barn

G. Silo

The Silo is an older structure and was secured with padlocks during visual observations. There were no PME systems observed. If grounding or lightning protection cables are required, they should be engineered for replacement.



Photo 46: The Silo stands at the southwest corner of the Dairy Barn

IV. MAINTENANCE AND REPLACEMENT COST IMPLICATIONS

MBP has indicated that the majority of all necessary repairs can be accomplished by the Parks and Recreation maintenance staff due to the limited nature of the work required to make the facilities safe. Where major renovations are required for occupancy, the cost implications for repairs or new work should be determined by estimate at the time that plans are completed for the work required. For example, the costs associated with renovations to the basement level of the Farm House should be determined at the time that the renovations are planned and permitted.

V. APPENDICES

A. Equipment Assessment Reports – Plumbing, Mechanical, Electrical Equipment

- Farm House
- Garage
- Dairy Barn

B. Maintenance Issues Log

- This issues log contains the potential maintenance items observed during the visual assessment of equipment in MBP's scope of work. In general, the issues log is considered to be staff level or regular contracted maintenance related work, unless replacement or major repairs are included. Maintenance related work such as operating repairs to the heating boiler does not necessarily have a cost estimate associated since this work should be considered routine maintenance of equipment, sensors, or systems. Some contracted labor costs have been estimated using hourly rates, however; estimates are general in nature as much of the work that is indicated may involve investigation of existing conditions prior to repairs being conducted.
- Please note that MBP intends to provide a contractor's estimate for the replacement of the sewer piping from the Garage to the main sewer line (prior to tank) and from the tank to the distribution box as an amendment to this report.

C. Septic System Information

D. Water Quality Test Reports – Dairy Barn Outdoor Hydrant



**(Domestic) Water Heater
Condition Assessment and Observations**

Appendix A

Project Name	Turner Farm House		
Building Name/Number	Farm House		
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer Richard Mouri
Equipment Tag #	NA	Equipment Location	Basement
		Manufacturer	Not Accessible
Equipment Description	Nat Gas, Standing Pilot	Model Number	41V50
		Serial Number	RHNG0401H02530

Item			Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Unit							
1	1.01	Cleanliness		✓		1.01	
	1.02	Connections	✓			1.02	
	1.03	Insulation			✓	1.03	
	1.04	Visible Damage	✓			1.04	
	1.05	Corrosion Present	✓			1.05	
Gauges							
2	2.01	Visible Damage			✓	2.01	
	2.02	Locations			✓	2.02	
	2.03	Working Condition			✓	2.03	
Condition							
3	3.01	Excessive Noise			✓	3.01	
	3.02	Excessive Vibration			✓	3.02	
Piping System							
4	4.01	Manual Valves Open		✓		4.01	
	4.02	Piping Configuration	✓			4.02	
	4.03	Check Valve Provided			✓	4.03	
	4.04	Balance Valve Provided			✓	4.04	
	4.05	Type of Balance Valve			✓	4.05	
	4.06	PT Ports Provided			✓	4.06	
	4.07	Air Vents Provided			✓	4.07	
	4.08	Differential Pressure Gauges			✓	4.08	
	4.09	Temperature Indicators			✓	4.09	
	4.10	Vibration Isolators / Flex Connectors			✓	4.10	
	4.11	Pipe Insulation Satisfactory			✓	4.11	
	4.12	Noise, Vibration, Water Hammer			✓	4.12	
	4.13	Leaks	✓			4.13	
Control System							
5	5.01	Control System Type			✓	5.01	
	5.02	Motor Operation Type			✓	5.02	
	5.03	Sensor Location			✓	5.03	

Comments
 Water heater is effectively turned off. The manual gas valve is off and the domestic water to the structure is turned off at the utility meter. MBP was unable to test the operation of the unit and recommends that full testing, cleaning and flushing occur prior to occupancy and use.



PUMP

Appendix A

Condition Assessment and Observations

Project Name	Turner Farm House		
Building Name/Number	Farm House		
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer Richard Mouri
Equipment Tag #	NA	Equipment Location	Basement
		Manufacturer	Not Accessible
Equipment Description	Sump Pump	Model Number	MS33PV1
		Serial Number	Date: 033J15B, MFG# 4464217

Item		Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Pumping Unit						
1	1.01	Cleanliness	✓			1.01
	1.02	Piping Connections	✓			1.02
	1.03	Insulation	✓			1.03
	1.04	Visible Damage	✓			1.04
	1.05	Corrosion Present	✓			1.05
Filter/Strainer/Check Valve						
2	2.01	Filter/Strainer Housing Clean			✓	2.01
	2.02	Filter/Strainer Damage			✓	2.02
	2.03	Check Valve Installed	✓			2.03
	2.04	Check Valve Functions Correctly (no leaks)	✓			2.04
	2.05	Float Location	✓			2.05
	2.06	Float Action - On/Off Control	✓			2.06
	2.07	Alarm Level Float Action			✓	2.07
Pump Volute/Head						
3	3.01	Housing Cleanliness	✓			3.01
	3.02	Pump Rotation	✓			3.02
	3.03	Pump Volute			✓	3.03
	3.04	Piping Connection	✓			3.04
	3.05	Pump Volute				3.05
	3.06	Piping Connection	✓			3.06
Sump Condition						
4	4.01	Sump Cleanliness	✓			4.01
	4.02	Incoming Pipe Condition	✓			4.02

Comments
 As a general note, there is an old, discarded battery backup and alarm system that has been disconnected. It should be evaluated whether a battery backup should be installed since this building is not monitored regularly.



SEWAGE PUMP Condition Assessment and Observations

Appendix A

Project Name	Turner Farm House			
Building Name/Number	Farm House			
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer	
			Richard Mouri	
Equipment Tag #	Sewage Ejector	Equipment Location	Basement	
		Manufacturer	Not Accessible	
Equipment Description	Sump Pump	Model Number		
		Serial Number		

Item	Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time		
Pumping Unit							
1	1.01	Cleanliness				1.01	
	1.02	Piping Connections				1.02	
	1.03	Insulation				1.03	
	1.04	Visible Damage				1.04	
	1.05	Corrosion Present				1.05	
Filter/Strainer/Check Valve							
2	2.01	Filter/Strainer Housing Clean				2.01	
	2.02	Filter/Strainer Damage				2.02	
	2.03	Check Valve Installed				2.03	
	2.04	Check Valve Functions Correctly (no leaks)				2.04	
	2.05	Float Location				2.05	
	2.06	Float Action - On/Off Control				2.06	
	2.07	Alarm Level Float Action				2.07	
Pump Volute/Head							
3	3.01	Housing Cleanliness				3.01	
	3.02	Pump Rotation				3.02	
	3.03	Pump Volute				3.03	
	3.04	Piping Connection				3.04	
	3.05	Pump Volute				3.05	
	3.06	Piping Connection				3.06	
Sump Condition							
4	4.01	Sump Cleanliness				4.01	
	4.02	Incoming Pipe Condition				4.02	

Comments
Ejector pump was not accessible due to stripped bolts on the cover and mastic or other sealant at the lid. This pump should be evaluated prior to any occupancy or use of the building.



Boiler Condition Assessment and Observations

Appendix A

Project Name	Turner Farm House			
Building Name/Number	Farm House			
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer	
Equipment Tag #	Boiler	Equipment Location	Basement	
		Manufacturer	Not Accessible	
Equipment Description	Nat Gas, Cast Iron HX	Model Number	209NCL-GEI2	
		Serial Number	64298552	

Item	Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time		
Unit							
1	1.01	Cleanliness		✓		1.01	
	1.02	Connections	✓			1.02	
	1.03	Insulation	✓			1.03	
	1.04	Visible Damage	✓			1.04	
	1.05	Corrosion Present		✓		1.05	
Gauges							
2	2.01	Visible Damage	✓			2.01	
	2.02	Locations	✓			2.02	
	2.03	Working Condition		✓		2.03	
Condition							
3	3.01	Excessive Noise	✓			3.01	
	3.02	Excessive Vibration	✓			3.02	

Comments

1.01 and 1.03: Burner assembly is dirty with fallen dust and corrosion laying on top of the burners. Recommend cleaning the boiler heat exchanger section prior to running the boiler.

2.03: Pilot would not stay lit, indicating that the ignitor is probably bad. When lit by hand, the pilot did not stay lit. Together these may indicate a bad control board or ignitor module.



Pump Condition Assessment and Observations

Appendix A

Project Name	Turner Farm House			
Building Name/Number	Farm House			
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer	
			Richard Mouri	
Equipment Tag #	Boiler HW Pump	Equipment Location	Basement	
		Manufacturer	Not Accessible	
Equipment Description	Centrifugal In-Line	Model Number	Type 15-42	
		Serial Number	P/N 59896153	

	Item	Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time	
y							
1	1.01 Cleanliness		✓		1.01		
	1.02 Piping Connections		✓		1.02		
	1.03 Insulation			✓	1.03		
	1.04 Visible Damage			✓	1.04		
	1.05 Corrosion Present		✓		1.05		
Filter/Strainer							
2	2.01 Filter/Strainer Housing Clean			✓	2.01		
	2.02 Filter/Strainer Damage			✓	2.02		
	2.03	Filter/Strainer	Filter/Strainer Type		✓	2.03	
	2.04		Filter/Strainer Clean		✓	2.04	
	2.05		Filter/Strainer Size(s)		✓	2.05	
	2.06		Filter/Strainer Qty.		✓	2.06	
Pump Volute/Head							
3	3.01 Housing Cleanliness			✓	3.01		
	3.02 Pump Rotation	✓			3.02		
	3.03 Pump Volute			✓	3.03		
	3.04 Piping Connection			✓	3.04		
	3.05 Pump Volute			✓	3.05		
	3.06 Piping Connection			✓	3.06		

Comments

All: Corrosion is present and it appears that the male adapter into the pump assembly is leaking slightly. Piping connection should be checked when the system is under pressure to see where the leak is occurring.



Electrical Panelboard Condition Assessment and Observations

Appendix A

Project Name	Turner Farmhouse			
Building Name/Number	Farm House			
Assessment Date	4/13/16	Commissioning Agent(s)	Tom Boyer Richard Mouri	
Equipment Tag #	N/A	Equipment Location	Basement	
		Record Manufacturer	Not Accessible	
Equipment Description	Electrical Service Panel (left side)	Record Model Number	B15D4622	
		NEMA Rating	1	

Item	Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
------	------------	---------------	----------------	----------	-------------------

Model Verification

Installed Information

1.01	Short Circuit Capacity - 22,000 amps	✓			1.01
1.02	Main Bus Amperage - 200 amps	✓			1.02
1.03	Neutral Bus Amperage				1.03
1.04	Fault Current Rating				1.04
1.05	Other Rating Information				1.05

Installation Checks

Enclosure/Cabinetry - Panelboard

2.01	Verify mounting, location and clearances are per plans, specifications, manufacturer requirements and applicable codes	✓			2.01
2.02	Inspect for physical, electrical and mechanical condition of equipment and cabinet - no damage evident	✓			2.02
2.03	Inspect panels and doors for proper fit and alignment	✓			2.03
2.04	Equipment labels permanently affixed	✓			2.04
2.05	Verify that Arc Flash and warning labels are permanently affixed			✓	2.05
2.06	Panel is clean and clear of dust or dirt		✓		2.06
2.07	Verify the application of manufacturer's recommended torque values applied to bolted connections			✓	2.07
2.08	Verify that all metal filings have been removed from electrical connection cabinets and areas with moving parts	✓			2.08
2.09	Inspect insulators, barriers and shields for damage or contamination	✓			2.09
2.10	Verify that all bolted electrical connections are torqued to manufacturer recommended torque values			✓	2.10
2.11	Verify correct circuit breaker sizes and types per the specs and manufacturer's drawings			✓	2.11

Comments

2.02 - Breakers have been removed or relocated but blank covers are missing in the open slots.
 2.03 - Several of the panel screws were missing.
 2.04 - The panel schedule is outdated and incomplete. The breaker for the well pump is no longer there (we understand that the house is now on city water). Eight breakers have loads that are not identified on the schedule. Dual breaker 10/12 is a 50-amp breaker marked bathroom/basement/lights. It's either mislabeled or a space heater (some other high load) has been plugged in. Recommend verifying and relabeling the schedule.
 2.05 - Though not a residential requirement, the County should verify the requirements of NFPA 70E.
 2.06 - Panel had accumulation of dust and dirt from construction activity. Should be cleaned prior to final inspection.
 2.07 - This could not be verified. Recommend verifying torque values prior to final inspection.
 2.10 - This could not be verified. Recommend verifying torque values prior to final inspection.



Electrical Panelboard Condition Assessment and Observations

Appendix A

Project Name	Turner Farm House				
Building Name/Number	Farm House				
Assessment Date	4/13/16	Commissioning Agent(s)		Tom Boyer Richard Mouri	
Equipment Tag #		Equipment Location		Basement	
		Record Manufacturer		Square D	
Equipment Description	Electrical Service Panel (right side)	Record Model Number		014332	
		NEMA Rating		1	

Item	Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
------	------------	---------------	----------------	----------	-------------------

Model Verification

Installed Information					
	1.01	Short Circuit Capacity - 22,000 amps	✓		1.01
	1.02	Main Bus Amperage - 200 amps	✓		1.02
	1.03	Neutral Bus Amperage			1.03
	1.04	Fault Current Rating			1.04
	1.05	Other Rating Information			1.05

Installation Checks

Enclosure/Cabinetry - Panelboard

	2.01	Verify mounting, location and clearances are per plans, specifications, manufacturer requirements and applicable codes	✓		2.01
	2.02	Inspect for physical, electrical and mechanical condition of equipment and cabinet - no damage evident	✓		2.02
	2.03	Inspect panels and doors for proper fit and alignment	✓		2.03
	2.04	Equipment labels permanently affixed	✓		2.04
	2.05	Verify that Arc Flash and warning labels are permanently affixed		✓	2.05
	2.06	Panel is clean and clear of dust or dirt		✓	2.06
	2.07	Verify the application of manufacturer's recommended torque values applied to bolted connections		✓	2.07
	2.08	Verify that all metal filings have been removed from electrical connection cabinets and areas with moving parts	✓		2.08
	2.09	Inspect insulators, barriers and shields for damage or contamination	✓		2.09
	2.10	Verify that all bolted electrical connections are torqued to manufacturer recommended torque values		✓	2.10
	2.11	Verify correct circuit breaker sizes and types per the specs and manufacturer's drawings		✓	2.11

Comments

2.02 - A hot lead was removed from a breaker (the breaker was also removed) and left exposed in the cabinet (see issues log). A wire nut was added so that the exposed end could not come contact with the bus bar or a breaker.

- Breakers have been removed or relocated but blank covers are missing in the open slots.

2.03 - Several of the panel screws were missing.

2.04 - The panel schedule is outdated and incomplete. Thirteen breakers have loads that are not identified on the schedule. Half of the breakers were observed to be in the off position. We cannot turn on or reset tripped breakers. Recommend verifying and relabeling the schedule.

2.05 - Though not a residential requirement, the County should verify the requirements of NFPA 70E.

2.06 - Panel had accumulation of trash, parts, dust and dirt from construction activity. Should be cleaned prior to final inspection.

2.07 - This could not be verified. Recommend verifying torque values prior to final inspection.

2.10 - This could not be verified. Recommend verifying torque values prior to final inspection.



**(Domestic) Water Heater
Condition Assessment and Observations**

Appendix A

Project Name	Turner Farm House			
Building Name/Number	Garage			
Assessment Date	4/13/16		Commissioning Agent(s)	Tom Boyer Richard Mouri
Equipment Tag #	NA		Equipment Location	Ground Level Mech Room
			Manufacturer	Not Accessible
Equipment Description			Model Number	NA
			Serial Number	RHNG0401H02530

Item			Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Unit							
1	1.01	Cleanliness			✓	1.01	
	1.02	Connections			✓	1.02	
	1.03	Insulation			✓	1.03	
	1.04	Visible Damage			✓	1.04	
	1.05	Corrosion Present			✓	1.05	
Gauges							
2	2.01	Visible Damage			✓	2.01	
	2.02	Locations			✓	2.02	
	2.03	Working Condition			✓	2.03	
Condition							
3	3.01	Excessive Noise			✓	3.01	
	3.02	Excessive Vibration			✓	3.02	
Piping System							
4	4.01	Manual Valves Open			✓	4.01	
	4.02	Piping Configuration			✓	4.02	
	4.03	Check Valve Provided			✓	4.03	
	4.04	Balance Valve Provided			✓	4.04	
	4.05	Type of Balance Valve			✓	4.05	
	4.06	PT Ports Provided			✓	4.06	
	4.07	Air Vents Provided			✓	4.07	
	4.08	Differential Pressure Gauges			✓	4.08	
	4.09	Temperature Indicators			✓	4.09	
	4.10	Vibration Isolators / Flex Connectors			✓	4.10	
	4.11	Pipe Insulation Satisfactory			✓	4.11	
	4.12	Noise, Vibration, Water Hammer			✓	4.12	
	4.13	Leaks			✓	4.13	
Control System							
5	5.01	Control System Type			✓	5.01	
	5.02	Motor Operation Type			✓	5.02	
	5.03	Sensor Location			✓	5.03	

Comments
Water heater has been removed. Connections are still present indicating that it may have been a high efficiency gas water heater.



Furnace and Split AC Condition Assessment and Observations

Appendix A

Project Name		Turner Farmhouse				
Building Name/Number		Garage				
Assessment Date		4/13/16		Commissioning Agent(s)		
				Tom Boyer Richard Mouri		
Equipment Tag #		NA		Equipment Location		
				Ground Level Mech Room		
				Manufacturer		
				Not Accessible		
Indoor Equipment Description		HE Gas Furnace w/AC Coil		Model Number		
				58MXA060-16		
				Serial Number		
				4999A0000 (not legible)		
Outdoor Equipment Description				Model Number		
				REMOVED, NA		
				Serial Number		
Item		Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Furnace						
1	1.01	Cleanliness		✓		1.01
	1.02	Connections		✓		1.02
	1.03	Insulation	✓			1.03
	1.04	Visible Damage	✓			1.04
	1.05	Corrosion Present		✓		1.05
	1.06	Filter Condition	✓			1.06
Connected Ducts/Flex Connectors						
2	2.01	Visible Damage		✓		2.01
	2.02	Return Duct Cleanliness (Supply if accessible)	✓			2.02
	2.03	Working Condition	✓			2.03
Fuel Lines/Piping/Electrical Connection						
3	3.01	Visible Damage or Leaks at fuel connections	✓			3.01
	3.02	Emergency shut off valve installed within service distance?	✓			3.02
	3.03	Electrical Disconnect within service distance	✓			3.03
	3.04	Electrical connection/wires acceptable condition	✓			3.04
Flame Management/Firing						
4	4.01	Pilot light/ignitor functions correctly			✓	4.01
	4.02	Flame is visible and clean during heating			✓	4.02
	4.03	No roll-out, puffing, smoke is visible			✓	4.03
	4.04	Purge fan is audible for pre and post-purge operation			✓	4.04
AC Coil Condition						
5	5.01	Duct Connection/Flexible connector condition		✓		5.01
	5.02	Coil and condensate pan cleanliness	✓			5.02
	5.03	Coil Fin condition	✓			5.03
	5.04	Corrosion Present	✓			5.04
Humidifier Condition						
6	6.01	Piping connections			✓	6.01
	6.02	Drain Connections			✓	6.02
	6.03	Leaks			✓	6.03
	6.04	Water Pad Condition			✓	6.04
Condenser Condition						
7	7.01	Electrical Disconnect within service distance			✓	7.01
	7.02	Coil and condensate pan cleanliness			✓	7.02
	7.03	Coil Fin condition			✓	7.03
	7.04	General condition of unit			✓	7.04
	7.05	Corrosion Present			✓	7.05
Comments						
<p>1. The gas supply is turned off at the meter and the unit service valve and the electrical circuit could not be identified or energized during visual observations. The unit operation should be checked by a qualified technician prior to operation.</p> <p>2. There is some rust and water leakage evident at the exhaust vent connection (lower right PVC pipe). The pipe has been cut and taped back together and the slope back to the unit is compromised. This taped joint appears to leak. The exhaust pipe is not supported properly between the unit and the exterior wall. One of the pipe clamps at the exhaust connection is unsecured. Long sweep ells should be used on the exhaust pipe.</p> <p>3. The condensing unit has been removed and the refrigerant lines are cut. These should be replaced prior to replacing the condensing unit due to moisture and contamination risk.</p> <p>4. For maximum efficiency, the combustion air inlet should have piping extended to the exterior.</p> <p>5. The condensate pump, necessary for heating and cooling operation, has been removed and is required for operation.</p>						



Split System Heat Pump Condition Assessment and Observations

Appendix A

Project Name		Turner Farmhouse				
Building Name/Number		Garage				
Assessment Date		6/9/16		Commissioning Agent(s)		
				Tom Boyer Richard Mouri		
Equipment Tag #		NA		Equipment Location		
				Manufacturer		
				First Company		
Indoor Equipment Description		Indoor Fan Coil with HP A-Coil		Model Number		
				18MBX5-51		
				Serial Number		
				FC335172 444203		
Outdoor Equipment Description				Model Number		
				REMOVED, NA		
				Serial Number		
Item		Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Blower Coil						
1	1.01	Cleanliness	✓			1.01
	1.02	Connections	✓			1.02
	1.03	Insulation		✓		1.03
	1.04	Visible Damage	✓			1.04
	1.05	Corrosion Present	✓			1.05
	1.06	Filter Condition		✓		1.06
Connected Ducts/Flex Connectors						
2	2.01	Visible Damage	✓			2.01
	2.02	Return Duct Cleanliness (Supply if accessible)	✓			2.02
	2.03	Working Condition	✓			2.03
Piping/Electrical Connection						
3	3.01	Visible Damage or Leaks at fuel connections	✓			3.01
	3.02	Emergency shut off valve installed within service distance?			✓	3.02
	3.03	Electrical Disconnect within service distance	✓			3.03
	3.04	Electrical connection/wires acceptable condition	✓			3.04
Flame Management/Firing						
4	4.01	Pilot light/ignitor functions correctly			✓	4.01
	4.02	Flame is visible and clean during heating			✓	4.02
	4.03	No roll-out, puffing, smoke is visible			✓	4.03
	4.04	Purge fan is audible for pre and post-purge operation			✓	4.04
AC Coil Condition						
5	5.01	Duct Connection/Flexible connector condition	✓			5.01
	5.02	Coil and condensate pan cleanliness	✓			5.02
	5.03	Coil Fin condition	✓			5.03
	5.04	Corrosion Present	✓			5.04
Humidifier Condition						
6	6.01	Piping connections			✓	6.01
	6.02	Drain Connections			✓	6.02
	6.03	Leaks			✓	6.03
	6.04	Water Pad Condition			✓	6.04
Condenser Condition						
7	7.01	Electrical Disconnect within service distance			✓	7.01
	7.02	Coil and condensate pan cleanliness			✓	7.02
	7.03	Coil Fin condition			✓	7.03
	7.04	General condition of unit			✓	7.04
	7.05	Corrosion Present			✓	7.05
Comments						
<p>1. The condensing unit has been removed and the refrigerant lines are cut. These should be replaced prior to replacing the condensing unit due to moisture and contamination risk.</p> <p>2. Supply and return ductwork near furnace connection "boxes" should be externally insulated.</p> <p>3. Filter is damaged and stuck in place. Filter should be changed with correctly sized filter prior to running equipment.</p> <p>4. Nameplate indicates a 5 KW electric heat strip is installed.</p>						



Electrical Panelboard Condition Assessment and Observations

Appendix A

Project Name	Turner Farmhouse					
Building Name/Number	Garage					
Assessment Date	4/13/16	Commissioning Agent(s)			Tom Boyer Richard Mouri	
Equipment Tag #		Equipment Location			Basement	
		Record Manufacturer			Square D	
Equipment Description	200-amp, main electric service panel.	Record Model Number			B15D4622	
		NEMA Rating			1	
Item		Acceptable	Un-Acceptable	Not Applicable	Comments	Photo Record Time
Model Verification						
Installed Information						
	1.01	Short Circuit Capacity - 22,000 amps	✓		1.01	
	1.02	Main Bus Amperage - 200 amps	✓		1.02	
	1.03	Neutral Bus Amperage			1.03	
	1.04	Fault Current Rating			1.04	
	1.05	Other Rating Information			1.05	
Installation Checks						
Enclosure/Cabinetry - Panelboard						
	2.01	Verify mounting, location and clearances are per plans, specifications, manufacturer requirements and applicable codes	✓		2.01	
	2.02	Inspect for physical, electrical and mechanical condition of equipment and cabinet - no damage evident	✓		2.02	
	2.03	Inspect panels and doors for proper fit and alignment	✓		2.03	
	2.04	Equipment labels permanently affixed	✓		2.04	
	2.05	Verify that Arc Flash and warning labels are permanently affixed		✓	2.05	
	2.06	Panel is clean and clear of dust or dirt		✓	2.06	
	2.07	Verify the application of manufacturer's recommended torque values applied to bolted connections		✓	2.07	
	2.08	Verify that all metal filings have been removed from electrical connection cabinets and areas with moving parts	✓		2.08	
	2.09	Inspect insulators, barriers and shields for damage or contamination	✓		2.09	
	2.10	Verify that all bolted electrical connections are torqued to manufacturer recommended torque values		✓	2.10	
	2.11	Verify correct circuit breaker sizes and types per the specs and manufacturer's drawings		✓	2.11	
Comments						
<p>2.02 - A dual breaker was shut off, but left in place. Wires connected to the breaker extended outside of the enclosure and were cut off, leaving a potential hazard (see issues log). Recommend removing the wires from the breaker immediately.</p> <p>2.03 - Several of the panel screws were missing.</p> <p>2.04 - The panel schedule is outdated and incomplete. Recommend verifying and relabeling the schedule.</p> <p>2.05 - Though not a residential requirement, the County should verify the requirements of NFPA 70E.</p> <p>2.06 - Panel had accumulation of trash, parts, dust and dirt. Should be cleaned prior to final inspection.</p> <p>2.07 - This could not be verified. Recommend verifying torque values prior to final inspection.</p> <p>2.10 - This could not be verified. Recommend verifying torque values prior to final inspection.</p>						



Electrical Panelboard Condition Assessment and Observations

Appendix A

Project Name	Turner Farmhouse					
Building Name/Number	Milk Barn					
Assessment Date	4/13/16	Commissioning Agent(s)			Tom Boyer Richard Mouri	
Equipment Tag #	N/A	Equipment Location			Basement	
		Record Manufacturer			Square D	
		Record Model Number			B15D4622	
Equipment Description	100-amp, electric subpanel.	NEMA Rating			1	
		Item	Acceptable	Un-Acceptable	Not Applicable	Comments
Model Verification						
Installed Information						
	1.01	100 amp max load center		✓		1.01
	1.02	Main Bus Amperage - 100 amps	✓			1.02
	1.03	Neutral Bus Amperage				1.03
	1.04	Fault Current Rating				1.04
	1.05	Other Rating Information				1.05
Installation Checks						
Enclosure/Cabinetry - Panelboard						
	2.01	Verify mounting, location and clearances are per plans, specifications, manufacturer requirements and applicable codes	✓			2.01
	2.02	Inspect for physical, electrical and mechanical condition of equipment and cabinet - no damage evident		✓		2.02
	2.03	Inspect panels and doors for proper fit and alignment	✓			2.03
	2.04	Equipment labels permanently affixed	✓			2.04
	2.05	Verify that Arc Flash and warning labels are permanently affixed			✓	2.05
	2.06	Panel is clean and clear of dust or dirt	✓			2.06
	2.07	Verify the application of manufacturer's recommended torque values applied to bolted connections			✓	2.07
	2.08	Verify that all metal filings have been removed from electrical connection cabinets and areas with moving parts	✓			2.08
	2.09	Inspect insulators, barriers and shields for damage or contamination	✓			2.09
	2.10	Verify that all bolted electrical connections are torqued to manufacturer recommended torque values			✓	2.10
	2.11	Verify correct circuit breaker sizes and types per the specs and manufacturer's drawings			✓	2.11
Comments						
<p>1.01 - Two phases cut outside at the utility pole.</p> <p>2.02 - The ground and neutral bars have a lot of oxidation/corrosion. Appears to be the result of dissimilar metals as opposed to water exposure. (see issues log) - The wire to a dual breaker was disconnected and capped off, but left in place. The wire cable leads to the non-potable water pump circuit. (see issues log)</p> <p>2.04 - The panel schedule is not filled out at all. Recommend verifying and relabeling the schedule.</p> <p>2.05 - The County should verify the requirements of NFPA 70E.</p> <p>2.06 - Panel has surface rust forming at the bottom of the enclosure.</p> <p>2.07 - This could not be verified. Recommend verifying torque values prior to final inspection.</p> <p>2.10 - This could not be verified. Recommend verifying torque values prior to final inspection.</p>						

Facility Project Information

Client	Wiss, Janney Elstner, Associates, Inc (WJE)
Project Type	Facility Condition Assessment
Building Name/Number	Turner Farm House
	1 Farm House
	2 Garage
	3 Crib Barn
	4 Equipment Shed
	5 Milk House
	6 Dairy Barn
	7 Silo
State	Virginia
City	Great Falls
Address	10609 Old Georgetown Pike, Great Falls, VA 22066
Contact Name	Becky Wong (WJE)
Contact Phone Number	
Contact Cell Number	
Contact E-Mail	bwong@wje.com
MBP	
Project Branch	Fairfax
Branch Phone	703-641-9088
Project Number	J16089.001
Project Manager	Richard Mouri
Project Manager Cell #	540-878-8349
Project Manager E-Mail	rmouri@mbpce.com
Attachment	Appendix A
Commissioning Agents	
Branch	Name
Fairfax	Tom Boyer
	Richard Mouri



Turner Farmhouse FCA
Equipment Issues Log

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
1	All	All	Inspection Record	The electrical panels in the Farmhouse and Garage have inspection stickers applied to the front of the panel indicating only initial inspections have occurred including temporary electric and first gas. Recommend that all construction is completed and final inspections are received for all trades prior to occupancy or use of the structure.	4/13/16	N/A	Maintenance	
2	EL	All	Electric panels	All electrical panels are dirty and dusty. There are leftover parts as well. The panels should be vacuumed and wiped out prior to final inspection.	4/13/16	N/A	Maintenance	
3	EL	All	Electric panels	All panels have some screws missing in the covers. Recommend that these are replaced.	4/13/16	N/A	Maintenance	
4	EL	All	Electric panels	Breakers have been removed or relocated but blank covers are missing in the open slots. Recommend providing blanks for all open breaker slots.	4/13/16	N/A	Maintenance	
5	EL	All	Electric panels	The panel schedules are outdated and incomplete. Recommend updating prior to final inspection, use, or occupancy.	4/13/16	N/A	Maintenance	
6	EL	All	Electrical Wiring Survey and Correction	In several locations within the basement and attic, electrical wires are cut off, disconnected, or have exposed wire ends either inside or outside of an approved junction box or panel. Recommend having a skilled electrician survey the building to locate, identify, safe, or remove electrical wiring that does not meet current code requirements. Temporary wiring should no longer be left in place. Panel directories should be corrected and completed.	4/13/16	N/A	Maintenance	
7	EL	All	Electric panels	Recommend verifying that all bolted electrical connections are torqued to manufacturer recommended torque values.	4/13/16	N/A	Maintenance	
8	EL	All	Electric panels	Though not a residential requirement, the County should verify the requirements of NFPA 70E are met.	4/13/16	N/A	Maintenance	
9	EL	Dairy Barn	Electric panel	The ground and neutral bars have a lot of oxidation/corrosion. Appears to be the result of dissimilar metal contact as opposed to water exposure. Recommend replacement.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
10	EL	Dairy Barn	Electric panel	The wire to a two pole breaker was disconnected and capped off, but left in place. The wire cable appears to lead to the non-potable well pump circuit and is also disconnected immediately inside the Dairy Barn (next to the wall where the wire would exit). Recommend removal of unused conductors.	4/13/16	N/A	Maintenance	
11	EL	Dairy Barn	Electric panel	Panel developing surface rust inside. Recommend cleaning and repainting.	4/13/16	N/A	Maintenance	
12	EL	Garage	Electric panel	A dual breaker was shut off, but left in place. Wires connected to the breaker extended outside of the enclosure and were cut off, leaving a potential hazard (see issues log). Recommend removing the wires from the breaker immediately.	4/13/16	N/A	Maintenance	
13	PL	Farmhouse	Storm Drain	Storm drain box inlet at basement stairs should be cleaned at least annually. If possible, a screen should be applied on the outlet pipe (into the basement) to prevent leaf trash from entering the basement sump.	4/13/16	N/A	Maintenance	
14	PL	Farmhouse	Gas Vent Flue	The roof collar around the gas vent flue serving the boiler and water heater leaks water into the attic. Water stains are evident in the attic and daylight can be seen around the flue pipe.	4/13/16	N/A	Maintenance	
15	PL	Farmhouse	Plumbing Vent Stack	The boot or roof collar around the plumbing vent stack leaks water into the attic. Daylight can be seen around the vent boot from inside the attic.	4/13/16	N/A	Maintenance	
16	EL	Farmhouse	Basement Electrical Boxes	Recommend having an electrician review the junction boxes installed in the basement on foundation walls where corrosion is present. It may be beneficial to replace these with plastic boxes due to corrosion.	4/13/16	N/A	Maintenance	
17	EL	Farmhouse	Kitchen Wiring	Recommend having an electrician review the installation of wiring near the stove rough-in and sink rough-in, including installation of Romex near or through tile flooring, junction box installation, and wire support.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
18	PL	Farmhouse	Kitchen Gas Piping at Stove	Recommend installing a plug in the gas rough-in for the stove until the stove is replaced to prevent accidental discharge of gas. Additionally, relocate the gas piping penetration from below to the exterior wall to allow flexibility in placement of the stove/oven.	4/13/16	N/A	Maintenance	
19	PL	Farmhouse	Boiler	The boiler appears to have been left operating to prevent freezing conditions over the winter, despite the plumbing fixtures being winterized. However, the boiler does not fire, likely due to a faulty ignition module or flame sensor. This exposes the heating system to possible freezing conditions and may jeopardize one or more of the existing radiators. The risk of flooding is minimized because the water service is turned off at the meter. The Park Authority should determine if the boiler should be left running, or drained and turned off. Please note that MBP turned off the manual gas valve following visual inspection, but the circulator pump continues to run based on demand from one of the zone valves.	4/13/16	N/A	Maintenance	
20	PL	Farmhouse	Boiler	The burner section of the boiler should be cleaned to remove dust and corrosion from the tops of the burner and to ensure that the jets are clear.	4/13/16	N/A	Maintenance	
21	PL	Farmhouse	Boiler	Following correction of the ignition cycle of the boiler, the automatic vent damper operation should be checked. The damper does rotate, but it's closed position should be verified when the boiler firing cycle is satisfied to ensure maximum efficiency.	4/13/16	N/A	Maintenance	
22	PL	Farmhouse	Boiler	The boiler is currently running with a very low system pressure (cold) and the water service has been turned off. Makeup water should be available when the boiler is operating, however, possible unchecked flooding could occur. The pressure regulating valve operation and setting should be checked upon restart of the boiler.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
23	PL	Farmhouse	Basement Thermostat	The basement thermostat has been removed from the wall and hangs freely. This may cause a false heat signal, or prevent heating when needed. Recommend the thermostat is mounted and leveled on the exposed framing to ensure that heating reaction is correct.	4/13/16	N/A	Maintenance	
24	PL	Farmhouse	Hot Water Heater	The hot water heater manual gas valve was turned off prior to visual inspection. Recommend that the heater is fully flushed, heat exchanger and pilot is cleaned, and the system is checked prior to beginning operation in the future.	4/13/16	N/A	Maintenance	
25	PL	Farmhouse	Sewage Ejector Pump	MBP was not able to remove the sewage ejector pit lid to access the pump due to stripped bolts. Recommend that the ejector pump is inspected and operation is ensured prior to placing the basement level waste piping system into operation, including washer rough-in piping and lower level bathroom.	4/13/16	N/A	Maintenance	
26	PL	Farmhouse	Sump Pump	The sump pump operation was confirmed by raising the float. There appears to have been an old battery backup system installed at some point, as well as an alarm system. This system is now unused. The Park Authority should determine if there is a need for alarm and battery backup as flooding may have occurred in the past.	4/13/16	N/A	Maintenance	
27	PL	Farmhouse	Washer Rough In Waste Piping	There is an open Tee fitting in the washer rough-in piping at the basement level near the floor. This appears to have a rag stuffed in the pipe with obvious signs of past leakage. This tee should be capped or plugged if unused and the rag should be removed.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
28	ME	Farmhouse	Basement Wood Stove	The flue vent pipe for the basement wood stove enters a damaged (broken) clay thimble less than 12" from combustible subflooring and floor joists for the first level above. Additionally, it is not clear that the clay thimble is rated for zero clearance from combustible materials as it passes through the floor. Recommend that this chimney flue is abandoned at the basement level and the woodstove is removed. If the chimney is allowed to remain, review installation with a code official.	4/13/16	N/A	Maintenance	
28	PL	Farmhouse	Piping insulation	Pipe insulation at the basement level should be completed to increase the efficiency of the heating and domestic hot water systems.	4/13/16	N/A	Maintenance	
29	Site	Farmhouse	Existing Cistern or Well	There is an existing cistern or well located just east of the outside basement steps, currently covered with an aluminum plate. Although historical, the presence of collected water adjacent to the foundation should be reviewed. Note that it does not appear that the piping in the well is currently active.	4/13/16	N/A	Maintenance	
30	PL	Farmhouse	Water Quality Testing	MBP was not able to test the quality of water supplied to the farmhouse as it appears that the utility meter has been turned off at the street. MBP recommends water testing prior to any occupancy or use of the facility. Additionally, it may be beneficial to visually inspect the interior condition of the water service piping inside the structure, which is galvanized piping. Galvanized piping is known to corrode from the inside of the pipe and can clog valves or strainers, affect pressure reducing valves, or contribute to contamination of the water system. Replacement of service piping from the meter to the house with plastic piping is recommended if possible or feasible. It should be noted that the frost proof ground hydrant installed outside the barn tested positive for E. Coliform bacteria and LEAD and it is possible that existing underground piping serving the farmhouse may exhibit similar test results.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
31	PL	Farmhouse	Drain Field Distribution Box	The septic system and drain field were evaluated by Five Star Septic and Portables. The distribution box was unable to be definitively located, but it appears to be located under a section of asphalt driveway. Septic field components are required to be accessible and this portion of the driveway should be removed to allow access and prevent damage to the distribution box and possibly the nearby drain field lines. Updated 6/22/16.	4/13/16	N/A	Contractor's estimate will be provided as addendum to report.	
32	PL	Farmhouse	Septic Line to Distribution Box	The existing septic line from the septic tank to the distribution box transitions to existing concrete pipe and is broken in two or more locations. Inspection camera was refused at 107 feet, prior to locating distribution box. Recommend replacing existing pipe from tank to distribution box, adding intermediate cleanouts for future access, and replacing distribution box, which is installed under asphalt parking area.	6/22/16	NA	Contractor's estimate will be provided as addendum to report.	
33	PL	Farmhouse	Lower Level Bathroom installation	The basement bathroom has been installed with some finishes lacking. There is a hole under the tub drain into the foundation that should be filled, after the drain connections are tested and confirmed as acceptable by code. The sink waste pipe rough-in has paper stuffed into the pipe as a plug and should be capped pending completion of the installation.	4/13/16	N/A	Maintenance	
34	PL	Farmhouse	Lower level baseboard heaters	Baseboard heater condition should be checked prior to use. Several of the pipes are improperly supported and the enclosure covers and end caps are loose and are starting to rust. Piping to the radiators should be insulated, including down the walls.	4/13/16	N/A	Maintenance	
35	PL	Farmhouse	First Floor Bathroom	The cold water pipe to the tub faucet assembly has evidence of a leak near the faucet assembly connection and should be inspected under pressure and corrected. This is visible through the access hatch in the hallway.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
36	PL	Farmhouse	Hot Water Radiators	In general, the heating radiators are in good to excellent condition. The system should be evaluated under operating temperature and pressure to verify that no leaks are occurring. Additionally, it may be beneficial to change the manual shutoff (and tempering) valves for thermostatically actuated valves to better control temperature within individual spaces.	4/13/16	N/A	Maintenance	
37	PL	Farmhouse	Radiator piping and fittings	At several locations where hot water piping extends to the second floor through occupiable rooms, all thread fittings have been used as couplings. These fittings are not allowed by code on hot water piping and should be replaced with malleable fittings if possible. It is noted that no evidence of leaks is present at either of these fittings.	4/13/16	N/A	Maintenance	
38	CAR	Farmhouse	Master Bath Valve Access	There is no access door to allow access to the bathtub valve and shower diverter assembly. It is recommended that an access panel is installed through the bedroom wall to allow access for inspection and service.	4/13/16	N/A	Maintenance	
39	CAR	Farmhouse	Mechanical and Plumbing Equipment Access	The access to the boiler, water heater, and sewage ejector pump is limited by installed framing to one access point. Recommend considering installing a framed doorway from the larger basement room to the mechanical equipment area to allow ease of access and removal of the water heater due to the proximity of framing to the existing boiler.	4/13/16	N/A	Maintenance	
40	PL	Garage	Hot Water Heater	The hot water heater in the ground floor mechanical room has been removed. Recommend that all service piping is capped or plugged and that penetrations are sealed.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
41	ME	Garage	Gas Furnace	At the lower level mechanical room, the gas supply is turned off at the meter and the unit service valve and the electrical circuit could not be identified or energized during visual observations. The unit operation should be checked by a qualified technician prior to operation. There is some rust and water leakage evident at the exhaust vent connection (lower right PVC pipe). The pipe has been cut and taped back together and the slope back to the unit is compromised. This taped joint leaks. The exhaust pipe is not supported properly between the unit and the exterior wall. One of the pipe clamps at the exhaust connection is unsecured. Long sweep elbows should be used on the PVC exhaust piping rather than the short 90 degree elbows currently installed. The refrigerant lines should be replaced prior to replacing the condensing unit due to moisture and contamination risk. For maximum efficiency, the combustion air inlet should have piping extended to the exterior. The condensate pump, necessary for heating and cooling operation, has been removed and is required for operation. All piping penetrations through the exterior CMU and wood walls should be properly sleeved, sealed, and packed, including those serving the upstairs furnace and air conditioning systems.	4/13/16	N/A	Maintenance	
42	ME	Garage	Lower Level Ductwork	Ductwork extending to the south should be checked thoroughly for extra fittings installed and not properly extended with ductwork and adjustable volume dampers and diffusers to allow for balancing of the distribution system. Additionally, proper sealant should be used at all duct fittings, including the A-coil at the furnace which is currently sealed with Tyvek tape. Insulation should be complete on all ductwork as well.	4/13/16	N/A	Maintenance	
43	EL	Garage	Temporary light fixtures	Temporary light fixtures in the garage and workshop area (south end) of the garage should be replaced or permanently installed.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
44	PL	Garage	Hydrant Penetration at Exterior Wall	Recommend sealing the piping penetration for the frost proof hydrant on the east wall of the garage, as well as insulating the stud cavity and the interior piping for freeze protection.	4/13/16	N/A	Maintenance	
45	Site/PL	Garage	Exterior Drain Pipe and Box	There is an exterior drainage box near the middle of the west wall of the garage. This may be an abandoned structure, but this should be confirmed. A cap should be secured at the top of the box to prevent fall injuries. Similarly, approximately 15 feet from the north west corner, there is a severe depression in the lawn. MBP uncovered a section of broken cast iron pipe below a rock. The purpose of this pipe should be established and the depression should be filled to prevent injury.	4/13/16	N/A	Maintenance	
46	EL	Garage	Upper Level Electrical	In the upper two levels of the Garage, fixtures are not installed on several boxes that are open. Cover plates should be installed to safe this installation. Fixtures and cables should be inspected for damage near areas where previous water damage has occurred. It is recommended that all electrical work be inspected prior to occupancy.	6/22/16	NA	Maintenance	
47	PL	Garage	Upper Level Plumbing Fixtures	It is recommended that upper level plumbing fixtures be inspected prior to occupancy. Several shower fixtures are incomplete or appear damaged and use of wood trim within the enclosure is not recommended.	6/22/16	NA	Maintenance	
48	CAR	Garage	Upper Level Subfloor	Upper level subfloor appears to have been damaged by past water infiltration and may need to be replaced. Recommend flooring is inspected by a qualified carpenter, architect, or engineer.	6/22/16	NA	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
49	PL	Garage	Sewer line from Garage to Septic Tank	The 4" existing cast iron sewer line from the Garage to the septic tank exits the west wall just below grade and routes to the sewer line entering the septic tank on the Farmhouse side of the tank (assumed per permit drawing). The existing 4" cast iron line is corroded and will not pass an inspection camera. Recommend this line is replaced and additional intermediate cleanouts be installed for future service.	6/22/16	NA	Contractor's estimate will be provided as addendum to report.	
50	EL	Milk House	Electrical Service and Wiring	Electrical service and wiring in this building is derelict and should be removed.	4/13/16	N/A	Maintenance	
51	PL	Milk House	Plumbing System	Plumbing piping in this building is derelict and should be removed.	4/13/16	N/A	Maintenance	
52	PL	Milk House	Gas Utility Piping	Gas utility piping at the northeast corner of the building appears damaged and should be removed or capped below ground if not to be used in the future.	4/13/16	N/A	Maintenance	
53	EL	Milk House	Electrical Service and Wiring	Ground or lightning protection cables (copper conductors) extend from the room down to head level at the south doorway of the Milk House exterior and should be removed or replaced.	4/13/16	N/A	Maintenance	
54	EL	Milk House	Electrical Service and Wiring	The outdated, fused panelboard should be removed and not put back into service.	4/13/16	N/A	Maintenance	
55	EL	Equipment Shed	Electrical Service and Wiring	Electrical service and wiring in this building is derelict and should be removed.	4/13/16	N/A	Maintenance	
56	EL	Silo	Electrical Service and Wiring	No PME equipment was observed in the Silo. Grounding or lightning protection conductors are incomplete and may need to be re-installed or removed.	4/13/16	N/A	Maintenance	
57	EL	Crib Barn	Electrical Service and Wiring	The electrical wiring in the crib barn is deficient, temporary, and should be removed. It is installed to be connected to an extension cord, is unfinished, and appears to be dangerous in the existing condition. Recommend this is removed or made safe.	4/13/16	N/A	Maintenance	



Turner Farmhouse FCA
Equipment Issues Log

APPENDIX B
MBP Project#: J16089.001
June 22, 2016

Issue No:	Trade	Location	Item	Description	Date Initiated	Recommended Year of Replacement	Cost Estimate	Date Closed
			Legend	Red highlight indicates high priority issue				
58	PL	Dairy Barn	Well Service and Piping / Outdoor Hydrant Water Quality	The frost proof ground hydrant installed outside the barn on the east side has been tested and shows contamination (E. Coliform bacteria and lead). This hydrant is already posted as "Non-Potable" and should continue to be. The origin of service for this water was not able to be determined as the power cables that appear to feed the nearby well-head are disconnected on the interior of the Milk Barn. This is significant because the source should be determined and tested fully to ensure that no other outlets have similar contamination.	4/13/16	N/A	Maintenance	

FAX

To: customer
Company:
Fax: 7036418965
Phone:

From: Teresa Cleveland
Fax:
Phone: 703-246-8738
E-mail: Teresa.Cleveland@fairfaxcounty.gov

NOTES:

Turner Farmhouse Approximate Drainfield Location



Septic tank

Hand dug well

Approximate location of distribution box under existing asphalt

Existing sewer drainfield. Four lines, each 100 feet long.



----- Sewer line from Garage to septic tank (shared) recommended for replacement

----- Septic line from tank to distribution box recommended for replacement



1. Septic pipe between tank and distribution box is broken at 74 feet, immediately west of sidewalk outside existing chain link fence.



2. Camera was refused at 107 feet, still west of existing driveway. Location of distribution box is approximate.



3. Existing parking space east of driveway should be removed. Septic distribution box is located in this area (shown approximate) and would be required to have a traffic rated structure if the parking area remains. Additionally, most local codes require separation between driveways and septic fields.



4. Garage sewer line is shown immediately outside west wall of garage. A small existing hole in the top of the pipe was enlarged to allow camera entry because the camera could not be pushed through the cast iron elbow inside the house. The camera could not be pushed more than 18" into the pipe at this location due to corrosion and debris. Recommend replacement of pipe to septic tank.

Report of Analysis



Lab Sample ID: 16041402-01

Client

MBP, Inc.
3040 Williams Drive, Suite 300
Fairfax, VA 22031

Project

Turner Farmhouse
10609 Georgetown Pike
Great Falls VA 22066

Lab Sample ID: 16041402-01

Subdivision; Lot
Health Dept. ID #
Map Ref. #

Client Sample ID: 10609 Georgetown Pike

Source: Public Water System

Sample Location: Barn Outdoor Hydrant ←

Collected By: Tom Boyer

Collection Date/Time: 4/13/2016 12:40 PM

Received Date/Time: 4/14/2016 10:19:00 AM

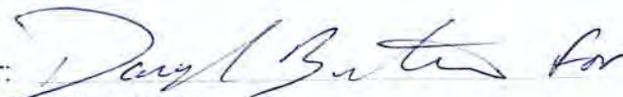
Received From: T.B.

<u>Analyte</u>	<u>Method</u>	<u>Sample Result</u>	<u>Analyst</u>	<u>Analysis Date/Time</u>
Total Coliform Bacteria	SM 9221 B-2006	Present	FRW	4/14/2016 2:46:00 PM
Escherichia coli	SM 9221 F-2006	Absent	FRW	4/14/2016 2:46:00 PM
Chlorine Screen	HACH screen	ND	FRW	4/14/2016 2:46:00 PM

ND = not detected
NA = not analyzed
< = less than
> = greater than

This water sample **DOES NOT PASS** the bacteriological standard for safe drinking water established by the Virginia Department of Health and US Environmental Protection Agency (US EPA).

Laboratory Director:


Robyn Joiner

18-Apr-16

Reported results relate only to the items tested, as received by the laboratory.
The test results in this report meet all NELAC requirements for accredited parameters, unless otherwise noted in this report.
Pursuant to NELAC, this report may not be reproduced except in full, without written consent from Joiner Micro Laboratories.
For questions please contact the laboratory at the email address listed on this page.



Summary of Analysis



Lab Order ID: 16041402

Client

MBP, Inc.
3040 Williams Drive, Suite 300
Fairfax, VA 22031

Project

Turner Farmhouse
10609 Georgetown Pike
Great Falls VA 22066

Lab Sample ID: 16041402-01

Subdivision; Lot

Client Sample ID: 10609 Georgetown Pike

Health Dept. ID #

Source: Public Water System

Map Ref. #

<u>Analyte</u>	<u>Location</u>	<u>Collection Date</u>	<u>Collection Time</u>	<u>Collected By</u>	<u>JML Received Date/Time</u>
Lead	Barn Outdoor Hydrant	4/13/2016	12:40 PM	Tom Boyer	4/14/2016 10:19:00 AM

REMARKS: See attached detailed report for results.

Robyn Joiner
Laboratory Director
21-Apr-16



Analytics Corporation
10329 Stony Run Lane
Ashland, VA 23005
Phone: (804) 365-3000
Fax: (808) 365-3002

April 20 2016

ROBYN JOINER
JOINER MICRO LABORATORIES, INC
77-F WEST LEE STREET
WARRENTON, VA 20186

Account ID: 45109230 45109230
Purchase Order: N/A
Client ID: 16041402 TURNER FARMHOUSE
Work Order: 1031818

Dear ROBYN JOINER

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, April 15, 2016. The signature below certifies that the results are based on the referenced methods and applicable certifications or accreditations are noted for each parameter reported (see key at end of report).

Unless otherwise specified all analyses of solid materials are based on dry weight.

Reported results relate only to the items tested, as received by the laboratory.

On-site analysis (analysis ASAP) is recommended for the following tests: pH, temperature, dissolved oxygen, residual chlorine and sulfite. When performed off-site, these tests do not meet NELAC standards.

Abbreviations ug/L = micrograms per Liter, mg/L = milligrams per Liter, ug/g = micrograms per gram, mg/kg = milligrams per kilogram ug/wp = micrograms per wipe, ug/ml = micrograms per milliliter, uS/cm = microsiemens per centimeter at 25 degrees Celsius ppb = parts per billion, DF = Dilution Factor

If you have any questions concerning this report, please feel free to call Client Services at 1-800-888-8061

Sincerely,

Dawn Casto
Technical Director (or designee)

Enclosures

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Analytics Corporation.



Analytics Corporation
10329 Stony Run Lane
Ashland, VA 23005
Phone: (804) 365-3000
Fax: (908) 365-3002

ANALYTICAL RESULTS

Workorder: 1031818 16041402 TURNER FARMHOUSE

Lab ID: 1031818001 Date Received: 04/15/2016 11:20 Matrix: Drinking Water
Sample ID: 1 BARN OUTDOOR HYDRANT Date Collected: 04/13/2016 12:40 Sample Type: NA

Parameters Results Units LOQ DF Prepared By Analyzed By Qual Certifications

Analytical Method: EPA 200.8

Lead 0.0402 mg/L 0.0025 1 NA NA 4/20/2016 11:04 HB V

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Analytics Corporation



Analytics Corporation
10329 Stony Run Lane
Ashland, VA 23005
Phone: (804) 365-3000
Fax: (908) 365-3002

ANALYTICAL RESULTS

Workorder: 1031818 16041402 TURNER FARMHOUSE

Qualifiers

-

Certification Index:

V = Virginia (NELAC) - 1 VAC 30-46 H 1, Laboratory ID: 460160, Certificate #: 8254

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Analytics Corporation



ANALYTICS

Sample Container Receipt Form

Version 6-24-2011

Work Order: 1031818
Customer Name: JOINER MICRO LABORATORIES, 45109230 4510923

CLIENT SAMPLE ID	LAB CONTAINER ID	TYPE OF CONTAINER	QTY	Temp(C)	pH	Chlorine on Arrival (ppm)	Condition Code	Preservative
1 BARN OUTDOOR	1031818001-A	500P	1	2	2	NA	OK	HNO3
Notes								

Sample Custodian Signature

RICHARD CATLYN

Date:

4/15/16

Condition Code Definitions

OK Received in good condition

CHAIN OF CUSTODY RECORD

Joiner Micro Laboratories, Inc.
 77 West Lee Street, #202
 Warrenton, Virginia 20186
 540-347-7212 Fax 540-347-1606

KEEP SAMPLES ON ICE *NA*

BILL TO: MBP 3040 Williams Drive, Suite 300 Fairfax VA 22031 Contact: Tom Boyer Phone: 703-641-9088	PROPERTY REFERENCE Turner Farmhouse	Sample Type Code <input checked="" type="checkbox"/> DW - Drinking Water <input type="checkbox"/> MW - Wastewater <input type="checkbox"/> S - Solid <input type="checkbox"/> A - Aqueous	Container Code <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Co. Glass <input type="checkbox"/> V. Amber <input type="checkbox"/> V. VOA/Vol	Preservation Code <input checked="" type="checkbox"/> None <input type="checkbox"/> H - H ₂ SO ₄ <input type="checkbox"/> C - NaOH <input type="checkbox"/> D - HNO ₃ <input type="checkbox"/> F - HCl <input type="checkbox"/> I - Iodo
--	---	--	--	--

Results are to be: Mailed or Picked up at lab or faxed or Emailed *hboyer@mbpce.com*
(Data deliverables via Email will not be mailed unless requested)

SAMPLED BY
 Print Name: Thomas Boyer
 Signature: *Thomas Boyer*

PRIORITY ANALYSIS
 3 DAY - 100 % Surcharge
 5 DAY - 75 % Surcharge
 Standard Turn Around is 10 Business Days

Shaded areas for lab use only

Sample ID (Location)	Date/Time of Collection	Sample Type	Comp/Grab	Number of Containers	ANALYSIS REQUESTED										Date	Analyst		
					1	2	3	4	5	6	7	8	9	10			11	12
#1 Brien Outdoor hydrant	4-13-16 12:40 pm	DW		1	LEAD												4-14-16	<i>[Signature]</i>

Relinquished By: (Signature) <i>Thomas Boyer</i>	4/13/16 8:30 PM	Received By: (Signature)
Relinquished By: (Signature)		Received By: (Signature)

Lab Receipt By: (Signature) <i>[Signature]</i>	Comments <i>(in cooler) Info found in bottle</i> <i>[Signature]</i>	Temp upon receipt N/A °C
--	---	-----------------------------

Drinking Water Quality Standards

Contaminant	MCL/(SMCL) ¹	Potential Health Effects or Water Quality Issues
Copper ²	1.3 mg/L	People who drink water containing copper in excess of the MCL over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the MCL over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor. Copper in drinking water can come from corrosion of household plumbing systems and erosion of natural deposits.
Lead ²	0.015 mg/L	Infants and children who drink water containing lead in excess of the MCL could experience delays in their physical and mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. Lead in drinking water can come from corrosion of household plumbing systems and erosion of natural deposits.
Nitrate as Nitrogen; Nitrate-Nitrite	10 mg/L	Infants below the age of six months, who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Nitrite as Nitrogen	1.0 mg/L	Infants below the age of six months, who drink water containing nitrite in excess of the MCL, could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Iron	(0.3 mg/L)	Iron at levels above the recommended secondary standard can cause staining on laundry and porcelain fixtures.
Manganese	(0.05 mg/L)	Manganese at levels above the recommended secondary standard can cause staining on laundry and porcelain fixtures.
pH	(6.5-8.5)	Typical pH values for well water in the Virginia Piedmont are on the acidic side - below 7 - of the pH scale. Low pH may not pose a health concern directly, but may be corrosive to household plumbing.
Sulfates	(250 mg/L)	Sulfate levels above the secondary contaminant level may result in adverse taste as well as cause a laxative effect.
Total Dissolved Solids (TDS)	(500 mg/L)	High concentrations of dissolved solids may cause adverse taste effects and may also deteriorate household plumbing and appliances.

Degrees of Water Hardness	
Concentration of Calcium Carbonate (mg/L)	Extent of hardness
0-75	soft
75-150	moderately hard
150-300	hard
over 300	very hard

EPA MCL= EPA Maximum Contaminant Level
EPA SMCL= EPA Secondary Maximum Contaminant Level

77 West Lee St. # 202
Warrenton, VA 20186
540-347-7212



¹ National Primary Drinking Water Regulations, EPA/816-F-09-004, May 2009

² If your result is equal to or greater than the EPA MCL, it is recommended to flush the tap water before using it for drinking or cooking any time the water has gone unused for more than six hours. The longer water resides in your home's plumbing the more copper or lead it may contain. Flushing the tap means running the cold-water faucet until the water gets noticeably colder.

Appendix E – Public Sanitary Sewer Availability

Existing sanitary sewer maps, as available on Fairfax County's Digital Map Viewer (<http://www.fairfaxcounty.gov/gis/dmv/default.aspx>) were evaluated to judge the feasibility of connection of the Turner Farm House to public sewer service in lieu of the existing septic tank and field. The subject property appears at the intersection of maps identified as 12-1 and 12-2, with the closest adjacent quadrants identified as 7-3 and 7-4 located to the north of the property. Please see the following pages for map reference data.

Based upon the information available, the Turner Farmhouse is surrounded by what may be described as large lot single family development. No public sewer is available surrounding the property. The closest tie-in point is more than 5,800 feet away in a straight line (as shown on map grid 12-1), disregarding any consideration or requirements for easements, crossing utilities, and elevation changes. The cost associated with installation would be prohibitive.

The existing septic tank and field have been visually inspected by Five Star Septic and Portables and found to be in "good" condition with no obvious signs of disrepair. The septic tank was pumped to allow inspection of the tank and connected piping. The distribution box appears to be located under a section of asphalt driveway (to be confirmed by video inspection and location). The asphalt area surrounding the box should be removed to prevent damage by vehicular traffic.



Digital Map Viewer

Address Search: 10609 Georgetown Pike Select Map Tile by Click

Find Maps

Select the Map Type
Wastewater

Select the Map Tile
12-2

Select the Map Year
Current

Open in a New Window
 Open in a New Map Tab

List all maps for this address:
10609 GEORGETOWN PIKE

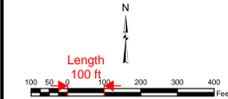
Map Legends

Current Address
0609 GEORGETOWN PIKE, GREAT FALLS, VA, 22066

Subject Area
surrounding Turner
Farm House



A Fairfax County, Virginia Publication



Map file is 50" X 75" based on USGS 1:24,000 scale 7.12 minute Quad. Virginia Coordinate System values are of 1983 North Zone in U.S. Feet based on NAD 83/93 High Precision GPS Network Adjustment.

National Geodetic Vertical Datum 1929

Legend

Sanitary Sewer - Structures

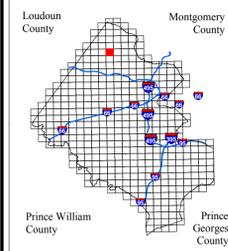
- Structure Type**
- Chambers
 - Clean Outs
 - ▲ Grinder Pump
 - Holding Tank
 - In-line Flushing
 - Lamp Hole
 - Meter
 - Odor Control Facility
 - Pump Station
 - ▲ Reducer
 - Siphon Inlet
 - Standard Manhole
 - Stub
 - Terminal Flushing
 - Treatment Plant
 - ▲ Valve

Sanitary Sewer - Sewerlines

Line Type, Jurisdiction

- Force Main, County of Fairfax
- Gravity Lines, County of Fairfax
- Pressure Sewer, County of Fairfax
- Siphon, County of Fairfax
- Water Reuse, County of Fairfax
- Force Main, Non County
- Gravity Lines, Non County
- Pressure Lines, Non County
- Non Active Lines
- Encasements

The information contained on this page is to be construed or used as a "legal description" in a survey product. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination. While Fairfax County strives to provide the best data possible, it does not provide any guarantee of accuracy or completeness regarding the map information. Any errors or omissions should be reported to the Fairfax County Geographic Information Systems and Mapping Services Branch of the Department of Information Technology. In no event will Fairfax County be liable for any damages, including but not limited to loss of data, lost profits, business interruption, loss of business information or any other pecuniary loss that might arise from the use of this map or information contained thereon.



ADMINISTRATIVE INDEX

6-4	7-3	7-4
11-2	12-1	12-2
11-4	12-3	12-4

SHEET INDEX

SANITARY SEWER

12-1

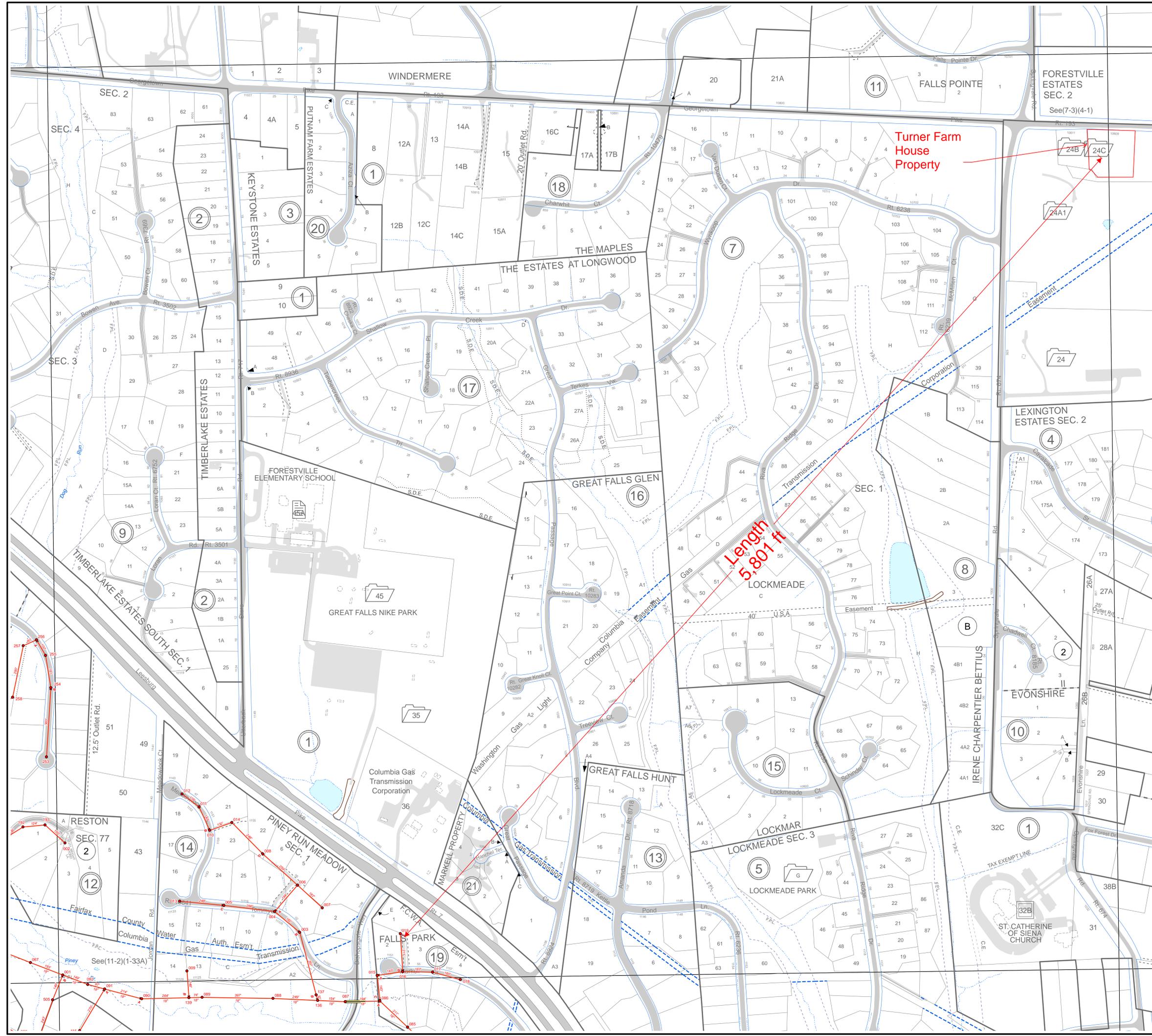
Revised to : 01 - 05 - 2016

Prepared by:
 DEPARTMENT OF INFORMATION TECHNOLOGY
 Enterprise Services Division
 Geographic Information Services
 12000 Government Center Parkway, Suite 117
 Fairfax, Virginia 22035-0010
 (703) 224-2112
 FAX (703) 324-3937

DEPARTMENT OF PUBLIC WORKS
 & ENVIRONMENTAL SERVICES
 Wastewater Planning & Monitoring Division
 12000 Government Center Parkway, Suite 358
 Fairfax, Virginia 22035-0058
 (703) 224-5030
 FAX (703) 803-3297

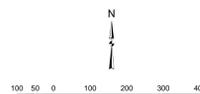
© THE COUNTY OF FAIRFAX

Print Date 05 Jan 2016





A Fairfax County, Virginia Publication



Map file is 50" X 75" based on USGS 1:24,000 scale 7 1/2 minute Quad. Virginia Coordinate System values are of 1983 North Zone in U.S. Feet based on NAD 83/93 High Precision GPS Network Adjustment.

National Geodetic Vertical Datum 1929

Legend

Sanitary Sewer - Structures

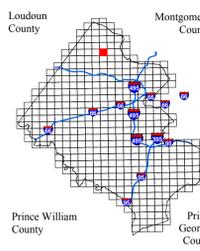
- Structure Type**
- Chambers
 - Clean Outs
 - Grinder Pump
 - Holding Tank
 - In-line Flushing
 - Lamp Hole
 - Meter
 - Odor Control Facility
 - Pump Station
 - ▲ Reducer
 - Siphon Inlet
 - Standard Manhole
 - Stub
 - Terminal Flushing
 - Treatment Plant
 - ▲ Valve

Sanitary Sewer - Sewerlines

Line Type, Jurisdiction

- Force Main, County of Fairfax
- Gravity Lines, County of Fairfax
- Pressure Sewer, County of Fairfax
- Siphon, County of Fairfax
- Water Reuse, County of Fairfax
- Force Main, Non County
- Gravity Lines, Non County
- Pressure Lines, Non County
- Non Active Lines
- Encasements

The information contained on this page is NOT to be construed or used as a "field description" of a site survey product. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination. While Fairfax County strives to provide the best data possible, it does not provide any guarantee of accuracy or completeness regarding the map information. Any errors or omissions should be reported to the Fairfax County Geographic Information Systems and Mapping Services Branch of the Department of Information Technology. In no event will Fairfax County be liable for any damages, including but not limited to loss of data, lost profits, business interruption, loss of business information or any other pecuniary loss that might arise from the use of this map or information it contains.



ADMINISTRATIVE INDEX

7-3	7-4	8-3
12-1	12-2	13-1
12-3	12-4	13-3

SHEET INDEX

SANITARY SEWER

12-2

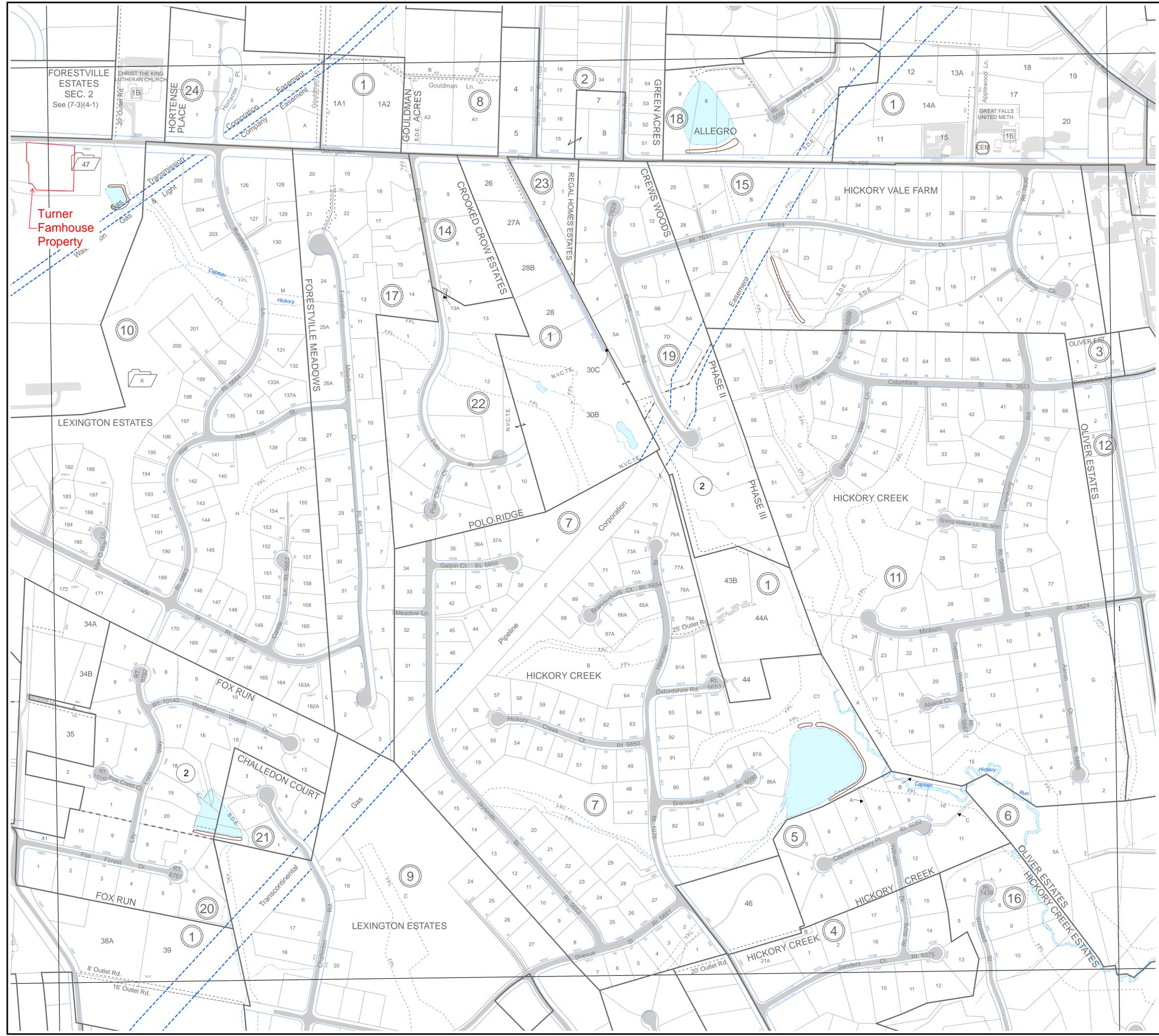
Revised to : 01 - 05 - 2016

Prepared by:
 DEPARTMENT OF INFORMATION TECHNOLOGY
 Enterprise Services Divisions
 Geographic Information Services
 12000 Government Center Parkway, Suite 117
 Fairfax, Virginia 22035-0010
 (703) 324-2112
 FAX (703) 324-3937

DEPARTMENT OF PUBLIC WORKS
 & ENVIRONMENTAL SERVICES
 Wastewater Planning & Monitoring Division
 12000 Government Center Parkway, Suite 358
 Fairfax, Virginia 22035-0058
 (703) 324-5030
 FAX (703) 803-3297

© THE COUNTY OF FAIRFAX

Print Date 05 Jan 2016





A Fairfax County, Virginia Publication



Map Date: 09/15/2016 based on USGS 1:24,000 scale 7 1/2 minute Quad, Virginia Coordinate System
Elevation of 1984 North American Datum (NAD 83) High Precision GPS Network adjustment
National Geodetic Vertical Datum 1959

Legend

Sanitary Sewer - Structures

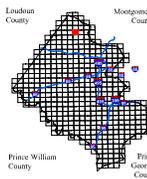
- Structure Type**
- Chambers
 - Clean Outs
 - Gender Pump
 - Holding Tank
 - In-line Flushing
 - Lamp Hole
 - Manhole
 - Odor Control Facility
 - Pump Station
 - Reducer
 - Siphon Inlet
 - Standard Manhole
 - Stub
 - Terminal Flushing
 - Treatment Plant
- Valve**
- Valve

Sanitary Sewer - Sewerlines

Line Type, Jurisdiction

- Force Main, County of Fairfax
- Gravity Lines, County of Fairfax
- Pressure Sewer, County of Fairfax
- Siphon, County of Fairfax
- Water Reuse, County of Fairfax
- Force Main, Non County
- Gravity Lines, Non County
- Pressure Lines, Non County
- Non-Active Lines
- Encasements

The information contained on this map is not intended to constitute a "best" description of the actual conditions of the property or the location of the structures shown. It is intended to provide a general overview of the location of the structures shown. It is not intended to be used as a legal description of the property or as a basis for any legal action. The County of Fairfax is not responsible for any errors or omissions in this map. The County of Fairfax is not responsible for any damages or losses resulting from the use of this map. The County of Fairfax is not responsible for any claims or liabilities arising from the use of this map. The County of Fairfax is not responsible for any claims or liabilities arising from the use of this map.



ADMINISTRATIVE INDEX

7-1	7-2	8-1
7-3	8-3	
12-1	12-2	13-1

SHEET INDEX

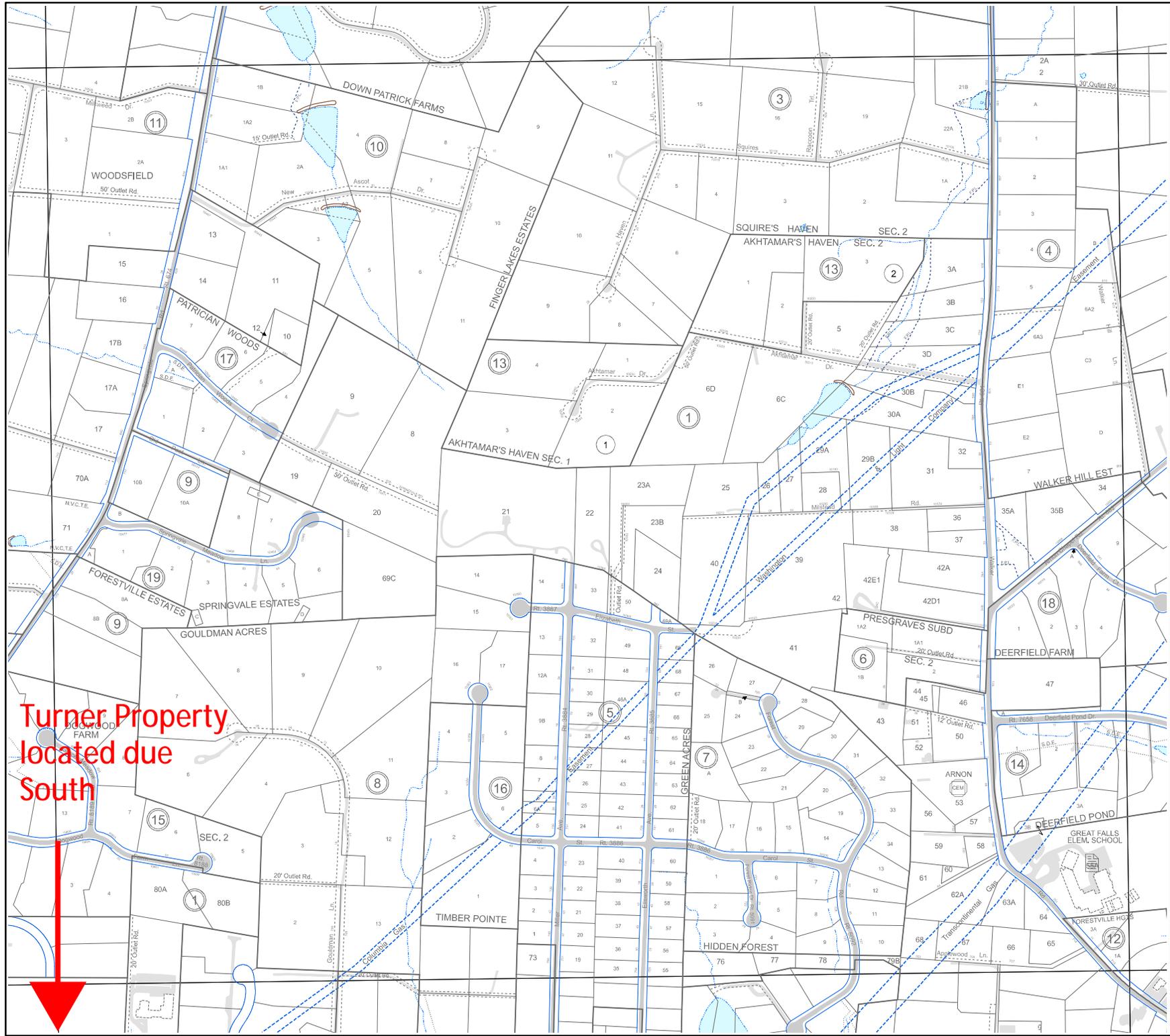
SANITARY SEWER

7-4

Revised to : 01 - 05 - 2016

Prepared by:
DEPARTMENT OF INFORMATION TECHNOLOGY
Enterprise Services Division
Geographic Information Services
12000 Government Center Parkway, Suite 117
Fairfax, Virginia 22035-0019
(703) 242-7112
FAX (703) 242-9857

DEPARTMENT OF PUBLIC WORKS & ENVIRONMENTAL SERVICES
Wastewater Planning & Monitoring Division
12000 Government Center Parkway, Suite 304
Fairfax, Virginia 22035-0018
(703) 242-6000
FAX (703) 242-1397

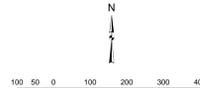


Turner Property
located due
South





A Fairfax County, Virginia Publication



Map file is 50" X 75" based on USGS 1:24,000 scale 7 1/2 minute Quad. Virginia Coordinate System values are of 1983 North Zone in U.S. feet based on NAD 83/93 High Precision GPS Network Adjustment. National Geodetic Vertical Datum 1929

Legend

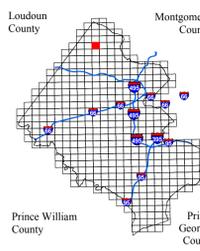
Sanitary Sewer - Structures

- Structure Type**
- Chambers
 - Clean Outs
 - ▲ Grinder Pump
 - Holding Tank
 - In-line Flushing
 - Lamp Hole
 - Meter
 - Odor Control Facility
 - Pump Station
 - ▲ Reducer
 - Siphon Inlet
 - Standard Manhole
 - Stub
 - Terminal Flushing
 - Treatment Plant
 - Valve

Sanitary Sewer - Sewerlines

- Line Type, Jurisdiction**
- - - Force Main, County of Fairfax
 - Gravity Lines, County of Fairfax
 - Pressure Sewer, County of Fairfax
 - Siphon, County of Fairfax
 - Water Reuse, County of Fairfax
 - - - Force Main, Non County
 - Gravity Lines, Non County
 - Pressure Lines, Non County
 - Non Active Lines
 - Encasements

The information contained on this page is NOT to be construed or used as a "field description" or a survey product. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination. While Fairfax County strives to provide the best data possible, it does not provide any guarantee of accuracy or completeness regarding the map information. Any errors or omissions should be reported to the Fairfax County Geographic Information Systems and Mapping Services Branch of the Department of Information Technology. In no event will Fairfax County be liable for any damages, including but not limited to loss of data, lost profits, business interruption, loss of business information or any other pecuniary loss that might arise from the use of this map or information it contains.



ADMINISTRATIVE INDEX

6-2	7-1	7-2
6-4	7-3	7-4
11-2	12-1	12-2

SHEET INDEX

SANITARY SEWER

7-3

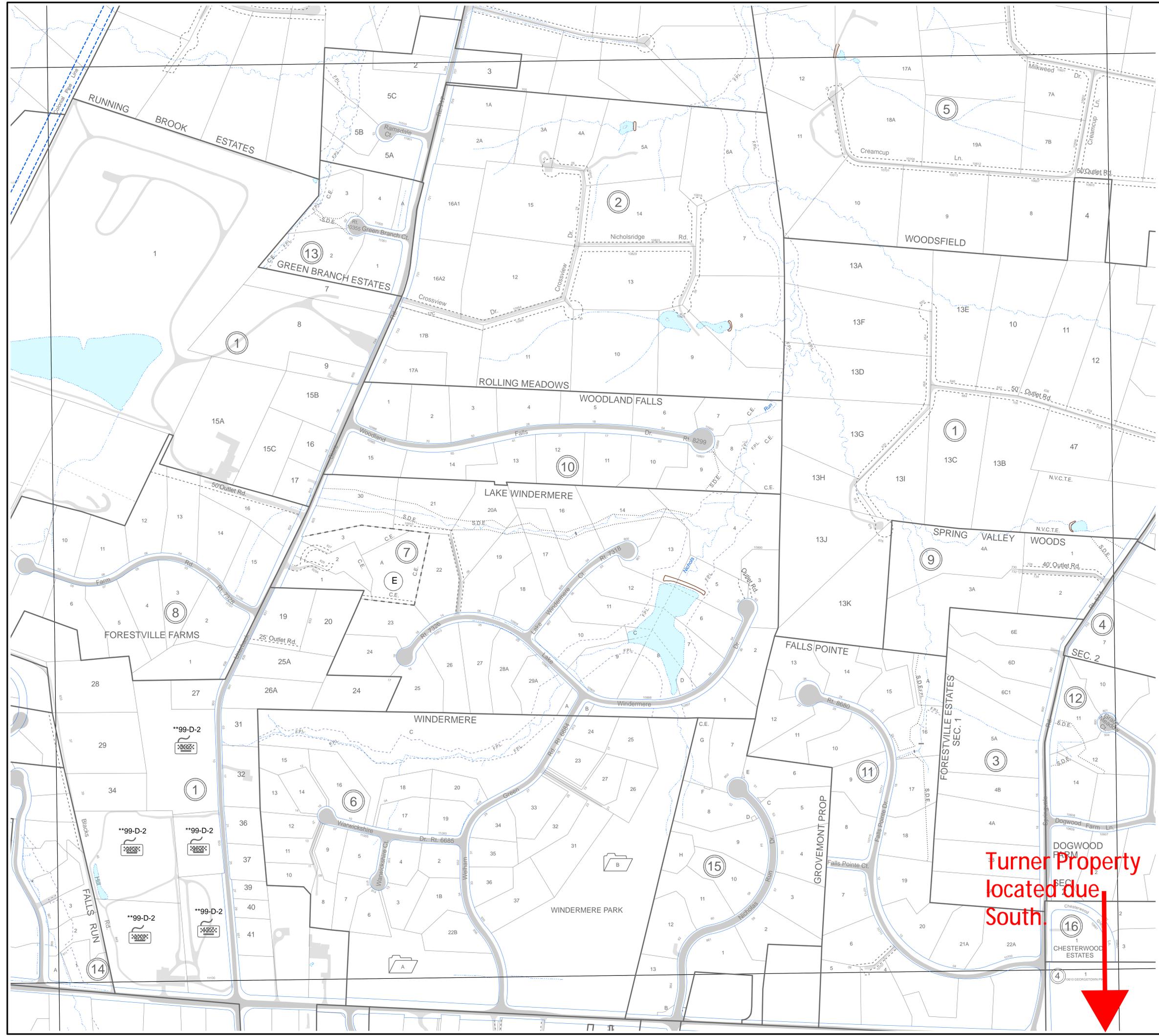
Revised to : 01 - 05 - 2016

Prepared by:
DEPARTMENT OF INFORMATION TECHNOLOGY
Enterprise Services Divisions
Geographic Information Services
12000 Government Center Parkway, Suite 117
Fairfax, Virginia 22035-0010
(703) 224-2712
FAX (703) 324-3937

DEPARTMENT OF PUBLIC WORKS
& ENVIRONMENTAL SERVICES
Wastewater Planning & Monitoring Division
12000 Government Center Parkway, Suite 358
Fairfax, Virginia 22035-0058
(703) 224-5030
FAX (703) 803-3297

© THE COUNTY OF FAIRFAX

Print Date 05 Jan 2016



Turner Property located due South.

