

**Business/Economic Analysis for the
Proposed Green Branch Multi-Field Sports Complex
in Prince George's County, Maryland**



Submitted to:

Maryland Stadium Authority

Submitted by:



**Final Report
January 2014**



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October 10, 2014

Mr. Ronnie Gathers, Director
Maryland-National Capital Parks and Planning Commission
Department of Parks of Recreation
6600 Kenilworth Avenue
Riverdale, Maryland 20737

**RE: Prince George's County Lacrosse Stadium and Multi-Use Field
Complex – Phase II Study
Green Branch Athletic Complex**

Dear Mr. Gathers,

The Maryland Stadium Authority (MSA) is pleased to present the business/economic study for the proposed lacrosse stadium and multi-use field complex at the Green Branch Athletic Complex. The study was undertaken pursuant to your request on January 21, 2013 and with the approval of the budget committees of the Maryland General Assembly.

The following independent consultants were engaged to determine the viability of the project:

- **Crossroads Consulting LLC** completed the market study, economic analysis and provided business advice.
- **Hord Coplan Macht, Inc.** lead a team of sub-consultants to provide program development, planning and design services.
- **Barton Malow Company** provided preconstruction and estimating services.

The individual reports produced by the consultants comprise the study and are complementary to each other.

Based on the initial findings of the study and as part of the due diligence efforts, the M-NCPPC requested the MSA to investigate the merits of utilizing an alternate location to construct the program. The MSA was also requested to estimate the construction and resulting economic/fiscal impacts associated with reducing the program from 12 to 8 fields. The sketches, cost estimates and economic/fiscal sensitivity analysis associated with this effort are included in Attachment 1.

Very truly yours,

Michael J. Frenz
Executive Director



January 22, 2014

Mr. Al Tyler, Senior Project Manager
Maryland Stadium Authority
333 W. Camden St., Suite 500
Baltimore, MD 21201

Dear Mr. Tyler:

Crossroads Consulting Services LLC (Crossroads Consulting) is pleased to present this business/economic analysis to the Maryland Stadium Authority (MSA) regarding the proposed Green Branch Multi-Field Sports Complex (Complex) in Prince George's County, Maryland (County). In accordance with our agreement, this report summarizes our research and analysis which is intended to assist the MSA, the Maryland-National Capital Park and Planning Commission (M-NCPPC), the County and the State of Maryland (State) with their decisions regarding the potential development of the proposed new complex.

The information contained in the report is based on estimates, assumptions, and information developed from market research, industry knowledge, input from potential demand generators, as well as other factors including data provided by the MSA, the M-NCPPC, the County, the State and other secondary sources. We have utilized sources that are deemed to be reliable but cannot guarantee their accuracy. All information provided to us by others was not audited or verified and was assumed to be correct. Because the procedures were limited, we express no opinion or assurances of any kind on the achievability of any projected information contained herein and this report should not be relied upon for that purpose. Furthermore, there will be differences between projected and actual results because events and circumstances frequently do not occur as expected, and those differences may be material. We have no responsibility to update this report for events and circumstances that occur after the date of this report. The accompanying report is restricted to internal use by the MSA, the M-NCPPC, the County and the State and may not be relied upon by any third party for any purpose including financing. Notwithstanding these limitations, it is understood that this document may be subject to public information laws and as such can be made available to the public upon request.

Although you have authorized reports to be sent electronically for your convenience, only the final hard copy report should be viewed as our work product.

We have enjoyed serving you on this engagement and look forward to providing you with continued service in the future.

Sincerely,

Crossroads Consulting Services LLC

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Introduction

Project Background

The M-NCPPC is a bi-county agency serving Prince George's and Montgomery Counties in Maryland. The original purpose of the M-NCPPC was to practice "long-range planning and park acquisition and development." Since its inception, the M-NCPPC's responsibilities have expanded to include administration of Prince George's County's public recreation program. The M-NCPPC operates and maintains more than 27,000 acres of parkland throughout the County including land developed to provide parks, picnic areas, athletic fields, historic sites, community centers, and recreation facilities as well as undeveloped green buffers and stream valley parks. The M-NCPPC owns and oversees certain aspects of operations at Prince George's Stadium, which is home to the Class AA Bowie Baysox minor league baseball team. The M-NCPPC also operates and maintains more than 35,000 acres of parkland in Montgomery County.

The M-NCPPC currently owns land just south of Prince George's Stadium which is known as Green Branch Park. In 2008, the M-NCPPC prepared a master plan for a proposed new athletic complex on that site. At the time, Phase 1 was envisioned to include three irrigated softball fields with bleacher seating; three irrigated combination soccer/football fields with bleacher seating; a non-irrigated informal field area that could accommodate two youth size soccer fields; a central concession/restroom pavilion; a 8,800 square foot play area; picnic pavilions; a loop pedestrian trail; and 495 parking spaces. Although none of the fields were to be lighted, underground conduit for future lighting was anticipated to be provided as part of the Phase 1 development. These program elements were planned to be built on approximately 65 acres of the 319-acre parcel. The State allocated a \$1 million grant towards the development or improvement of Green Branch Athletic Complex in 2012 contingent on the County providing and expending a matching amount.

As part of its long-term planning efforts, the M-NCPPC also developed a preliminary Phase 2 concept plan for the remaining acreage which included a variety of recreational uses based on formal and informal levels of interest by potential user groups.

During the M-NCPPC's planning process, the County was approached to consider the merits of constructing a new 22,000-seat lacrosse stadium to host the Major League Lacrosse (MLL) Chesapeake Bayhawks and an adjacent 10-field sports complex that could accommodate youth/amateur leagues and tournaments as part of the Phase 2 development at the Green Branch Athletic Complex.

In December 2012, the market and economic analysis for a proposed new MLL stadium and an adjacent multi-field sports complex at Green Branch Park conducted by Crossroads Consulting was released. The work plan included qualitative and quantitative analyses that focused on the unique attributes of Prince George's County, market supply relative to demand for the proposed new MLL stadium and multi-field sports complex, operating strategies, and project economics. Specific research tasks included:

- Surveying/interviewing stakeholders such as area governments and related agencies, the Chesapeake Bayhawks, educational institutions, the convention/visitor industry, the business community and others to obtain their input on the project.
- Reviewing previous studies related to the project to obtain a thorough background of the project.
- Summarizing historical and projected industry trends to provide perspective on the growth and changes in lacrosse as well as an overview of its participants and their preferences.
- Analyzing market attributes such as trends and projections in population, age distribution and income; employment base; accessibility; hotel supply; tourism/visitor statistics; climate/seasonality; as well as existing and planned facilities.
- Reviewed available information regarding historical sports activity occurring in Prince George's County including the type of events, the number of events, average and total attendance, seasonality, and location held.
- Surveying/interviewing representatives from area scholastic and collegiate programs; State, regional and national sports organizations; event producers of various special athletic events; concert/entertainment promoters; and others to assess potential demand for the proposed MLL stadium/multi-field sports complex and required program elements.
- Analyzing data from competitive/comparable facilities.
- Commenting on the proposed MLL stadium and multi-field sports complex's building program and its ability to address the needs of potential target markets including MLL and other activities that draw out-of-town attendees.
- Developing an estimate of potential usage/event activity as well as economic and fiscal benefits for both the proposed new MLL stadium and multi-field sports complex.

The market analysis assessed various supply and demand factors that may influence the type and amount of event activity at the proposed new MLL stadium and multi-field sports complex. One of the most important indicators of market support was the direct input obtained from representatives from potential users including private club programs, community-based youth programs, tournament promoters, national governing bodies, national sports sanctioning organizations, scholastic/collegiate organizations as well as concert and family show promoters. As part of the study effort, input regarding interest in hosting events, program requirements and event characteristics was obtained from the following organizations:

- Aloha Tournaments
- Annapolis Hawks Lacrosse Club
- Atlantic Coast Conference
- Bowie Boys and Girls Club
- Bowie State University
- Chesapeake Bayhawks
- Concert Promoters
- Dave Cottle Tournaments
- Elite Tournaments
- Family Show National Tours
- Freestate Soccer Alliance
- Hogan Lacrosse
- Interscholastic Athletic Association of Maryland
- Maryland Interscholastic Athletic Association
- Maryland Public Secondary School Athletic Association
- Maryland State Youth Soccer Association
- Maryland Winter League
- National Collegiate Athletic Association
- National Junior College Athletic Association
- Potomac Rugby Union
- Prince George's Community College
- Prince George's County Public Schools
- Prince George's Pride Lacrosse
- USA Cricket Association
- USA Rugby
- US Club Soccer
- US Lacrosse
- USA Ultimate
- US Youth Soccer
- Washington Area Frisbee Club
- Washington Cricket League
- Washington Metro Cricket Board

Although study results indicated relatively limited demand for the proposed 22,000-seat MLL stadium, market research including input from potential users suggested the ability to create a sports destination with the proposed multi-field sports complex that could serve diverse demand generators including various levels of youth and amateur competitions/tournaments for multiple sports. The proposed multi-field sports complex would also provide an opportunity to develop and expand existing youth sports programs currently playing elsewhere. These results are consistent with trends that suggest youth sports have historically fared well during economic downturns whereas professional sports teams often struggle to maintain attendance.

While nearly all of the activity at both the proposed MLL stadium and the proposed multi-field sports complex would be incremental new to the County, only 25% and 40%, respectively, are estimated to be incremental new to the State. In addition, the estimated economic and fiscal benefits associated with on-going operations of the proposed MLL stadium are significantly less than those estimated for the proposed multi-field sports complex

Purpose of This Study

The M-NCPPC requested that the MSA proceed with Phase 2 of the study effort. This study primarily focuses on performing site due diligence studies related to construction of a multi-field sports complex with up to 12 fields. More specifically, key tasks included:

- Programming analysis
- Environmental impact analysis
- Phase II archaeology analysis
- Determination of Eligibility (DOE) reporting to the Maryland Historical Trust for the five existing tobacco barns on the site
- Traffic impact analysis
- Site planning



- Preliminary design work
- Construction and total project cost estimating
- Operating strategy research
- Economic analysis

In addition, the study also evaluated the potential of incorporating a 12,000 to 14,000 seat professional lacrosse-specific stadium including an estimate of its development cost as well as an assessment of any traffic impacts it may have if it was built on the same site as the multi-field sports complex.

Consequently, the MSA engaged a team of design, construction and economic consultants to jointly conduct the Phase 2 study.

Hord Coplan Macht, Inc. provided preliminary design services including program development/evaluation, site development and planning, and programmatic/schematic design. Hord Coplan Macht retained several specialty sub consultants to provide the following services:

- 360 Architecture – Conceptual Site Planning/Cost Estimating Assistance for the Lacrosse-Specific Stadium
- Sabra Wang & Associates – Traffic Study
- Site Resources – Site and Utility Infrastructure Analysis
- Applied Archaeology and History Associates – Archaeological Analysis
- Navarro and Wright – Environmental Impact Analysis
- Retrospect Architectural Research LLC - Determination of Eligibility Reporting to the Maryland Historical Trust for Existing Tobacco Barns Located on the Site

The above research is summarized in the *Green Branch Multi-Field Sports Complex – Conceptual Design Study* dated January 22, 2014 which can be found under separate cover.

Barton Malow provided pre-construction services including program evaluation, project cost estimating and budgeting, scheduling, constructability reviews, and value engineering for the Green Branch Multi-Field Sports Complex. Barton Malow also developed pricing estimates for various alternates to the base program elements such as adding a grass, synthetic turf, and/or covered championship field or constructing a 12,000 to 14,000 seat professional lacrosse-specific stadium. Barton Marlow contracted with Site Resources to provide specific services related to sitework, infrastructure, storm water disturbance, and utilities. Barton Malow also utilized the services of various industry-specific vendors/suppliers to assist with project cost estimating and budgeting.

Barton Malow's analysis is summarized in the *Green Branch Multi-Field Sports Complex – Concept Estimate, Final* dated January 22, 2014 which can be found under separate cover.



Crossroads Consulting was retained to provide specific business advice in the areas of sports, entertainment, and economic development related to the proposed new Green Branch Multi-Field Sports Complex. The specific scope of services for this engagement consisted of the following tasks:

- Interviewing key stakeholders including representatives from potential user groups.
- Conducting due diligence for program analysis and critical success factors.
- Analyzing ownership, management, and on-going maintenance options as a result of the current design, program, and project cost estimates developed for the proposed new Green Branch Multi-Field Sports Complex by the MSA and its advisors.
- Updating the previous estimates of incremental new economic and fiscal impacts associated with operations of the proposed new multi-field sports complex based on factors such as additional input from potential users, current program elements, specific location on the site, an increased estimate event activity and newer economic multipliers.
- Developing estimates of the one-time economic and fiscal benefits associated with construction.
- Summarizing our analysis and observations and participating in work sessions/presentations with the MSA, the M-NCPPC, the County, the State and their advisors.

Although the results of the market and economic analysis that was completed in December 2012 served as a basis for this engagement, we analyzed facility operating data on the following comparable sports complexes as part of this engagement:

- Ashton Brosnham Soccer Complex in Pensacola, Florida
- Aurora Sports Park in Aurora, Colorado
- Georgia Soccer Park in East Point, Georgia
- Hampton Roads Soccer Complex in Hampton, Virginia
- Kirkwood Soccer Complex in New Castle, Delaware
- Lawrence Sports Complex in Lawrence, Indiana
- Manchester Meadows in Rock Hill, South Carolina
- Maryland SoccerPlex in Germantown, Maryland
- Mesa Soccer Complex in Greer, South Carolina
- Mike Rose Soccer Complex in Memphis, Tennessee
- Overland Park Soccer Complex in Kansas
- Reach 11 Sports Complex in Phoenix, Arizona
- Striker Park in Glen Allen, Virginia

Reference to these facilities and their operating strategies is made throughout the report and more detailed information is included in the Appendix in the form of case studies.

Collectively, the information provided by the project team is intended to serve as a resource for the MSA, the M-NCPPC, the County, and the State in their future planning decisions for this project.

Summary of Key Findings

PROPOSED GREEN BRANCH MULTI-FIELD SPORTS COMPLEX

Program Elements

The youth/amateur sports industry withstood the recent recession better than many discretionary-income activities. Over the past decade, more communities have recognized the value of youth/amateur sports from the quality of life aspects for residents to the economic value of tournament activity. As such, there are a growing number of complexes for tournament producers to choose from and site selection has become highly competitive.

Input from potential user groups, information from comparable facility building programs as well as interviews with management at these facilities suggest that the following building program elements be pursued in order to maximize flexibility and usage:

- 12 lighted, synthetic turf fields
- 1,200 lighted parking spaces
- Concessions pavilion
- Administration building
- Maintenance building
- Picnic pavilions
- Open space for player warm up and centralized tournament headquarters
- Other site amenities including playground equipment, walking paths, an entrance gate, signage, etc.

Conceptual Site Plan

As illustrated in the following conceptual site plan prepared by Hord Coplan Macht, the Green Branch Park site is able to accommodate the desired building program elements in a functional manner that allows the proposed new Green Branch Multi-Field Sports Complex to maximize its marketability to youth/amateur tournament activity. From a long-term planning perspective, the size and layout of the Green Branch site can support the core program in the short-term and allows for expansion of program elements in the future (e.g., championship field) based on market demand. More detail regarding the preliminary design services provided by Hord Coplan Macht and its subconsultants is summarized under separate cover in the *Green Branch Multi-Field Sports Complex – Conceptual Design Study* dated January 22, 2014.

Project Cost Estimate

Based on the above program elements at this site location, the MSA, in conjunction with its design advisors (Hord Coplan Macht), pre-construction management advisors (Barton Malow) and other project team members, estimated the preliminary total project costs for the proposed new Green Branch Multi-Field Sports Complex to be approximately \$46.8 million. A more detailed analysis related to the preliminary project cost estimate can be found under separate cover in Barton Marlow's report entitled the *Green Branch Multi-Field Sports Complex – Concept Estimate, Final* dated January 22, 2014.

Green Branch Multi-Field Sports Complex - Conceptual Site Plan



Operating Strategy

As mentioned previously, the M-NCPPC owns Green Branch Park. In order to assist the M-NCPPC with its assessment of business model alternatives to operate and manage the proposed new Green Branch Multi-Field Sports Complex, we interviewed management at comparable sports complexes to obtain input regarding their overall operating strategy/mission, ownership/management structure, and maintenance responsibility. In general, similar sports complexes are typically operated by a traditional governmental management such as a City/County departmental structure; a third party non-profit organization; and/or a third party for-profit organization.

Regardless of the operating business model chosen, common factors that enhance the success of multi-purpose sports complexes include, but are not limited to, the following:

- The mission statement outlines distinct goals/objectives of the complex.
- A booking policy is in place that prioritizes market segments supporting the mission statement.
- The mission statement and objectives of the complex are understood and supported by elected officials, business community, local residents, local user groups, and tournament promoters.
- There is an established partnership with a limited number of primary users (e.g., local sports organizations) that exclusively book the majority of field time outside of tournament activity in order to maximize weekday usage and revenue.
- There is a full-time, dedicated staff of experienced professionals that manage and market the complex and understand the unique needs of the youth/amateur sports industry.
- The management team has strong relationships with State, regional and national industry personnel representing multiple sports.
- Key performance indicators are implemented based on facility benchmarks and industry best practices.
- The operator is a financially sustainable entity that has a vested interest in the complex's success through an initial capital contribution and/or an on-going financial commitment and associated risk with respect to operations and capital improvements.
- There is sufficient strategic and financial oversight in addition to a clear reporting and accountability structure.
- Maintaining high-quality, tournament-level fields and supporting infrastructure at the complex is an operating priority.
- Management has latitude in staffing, compensation, and contract negotiation with user groups.
- The ownership/operating structure allows for the ability to foster financial support from a variety of public and private parties.
- Strategic partnerships are formed with local youth/amateur sports clubs, national organizations, area marketing agencies, and key private sector sponsors.



These objectives can be accomplished by any of the profiled business models. As with any business operation, each approach has advantages and disadvantages depending on the situation. Because the structure of certain contractual agreements such as management agreements can impact the tax status and fundraising efforts, consideration will need to be given to the legal and financial implications of each management approach. As the M-NCPPC continues to explore the merits of developing the proposed new Green Branch Multi-Field Sports Complex, it will need to determine which operating strategy best meets its short and long-term objectives for success.

Economic Analysis

In recent years, several communities have constructed sports complexes in order to capitalize on existing assets and enhance market opportunities by targeting a diverse set of demand generators. One objective of this analysis is to update the previous estimate of incremental new economic and fiscal impacts associated with operations of the proposed new multi-field sports complex to the local and State economies. Based on factors such as additional input from potential users, current program elements, specific location on the site, an increased estimate event activity and newer economic multipliers, the estimated economic and fiscal impacts are higher than in the Phase 1 study. In addition, this analysis estimates the one-time economic and fiscal benefits associated with construction.

Estimated Usage/Event Activity

As shown in the following table, the proposed new Green Branch Multi-Field Sports Complex is estimated to host between 20 and 22 tournaments annually that attract between 280,000 and 308,000 total attendee days and generate between 56,000 and 61,600 room nights during a stabilized year which is assumed to occur in the fifth year of operations. The Complex is also estimated to accommodate between 54,000 and 64,800 total participant days from league activity. Based on market research, it is assumed that nearly all of the activity would be incremental new to the County whereas approximately 40% is assumed to be incremental new to the State. This incremental activity reflects new events as well as increased attendance at events currently taking place in other locations throughout Maryland with the proposed new Green Branch Multi-Field Sports Complex.

Proposed Green Branch Multi-Field Sports Complex Estimate of Event Activity		
Category	Range	
Season	March 1 - November 30	
Tournament Activity		
Total Events	20 -	22
Total Event Days	40 -	44
Number of Participants	40,000 -	44,000
Number of Spectators	100,000 -	110,000
Average Length of Stay (Days)	2.0 -	2.0
Total Attendee Days	280,000 -	308,000
Room Nights	56,000 -	61,600
League Activity		
Total Participant Days	54,000 -	64,800
Grand Total Attendee Days	334,000 -	372,800

Tournaments include multi-day youth and amateur competitions in a variety of sports such as lacrosse, soccer, rugby, and ultimate Frisbee. These events may include teams from throughout Maryland, the surrounding region and/or national level competitions. League activity includes elite (or premier) club sport play for youth and amateurs in various sports such as lacrosse, soccer, rugby, and ultimate Frisbee. League activity at the proposed multi-field sports complex is not envisioned to include recreational play on a regular basis.

This estimate is based on several factors including market attributes, the competitive environment, input from potential user groups, data on comparable facilities, the proposed program described previously, the identified site location at Green Branch Park as well as other primary and secondary research.

On-Going Financial Operations and Capital Improvement Planning

As the site's land owner, the M-NCPPC also needs to ascertain the financial impact of developing the proposed new Green Branch Multi-Field Sports Complex. Research indicates that the operating revenues (e.g., facility rental/programming, food/beverage, advertising/sponsorship, etc.) and operating expenses (e.g., salaries & wages, benefits, utilities, repairs/maintenance materials/supplies, insurance, general/administrative, sales/marketing, etc.) varied significantly among comparable complexes based on the program elements (e.g. number and type of fields), usage levels, operating models, and other factors. As such, the on-going operating requirements for the proposed new Green Branch Multi-Field Sports Complex will be dependent on the business model selected including specific operating responsibilities and financial terms negotiated with the operator. For instance, the ability to share human and/or financial resources with other municipal departments would result in lower facility operating costs. By contrast, the ability to transfer certain operating responsibility risk to the facility operator would lessen the financial burden for the M-NCPPC and other public entities. The ability to generate non-operating revenues such as hotel rebates/reimbursements and/or naming rights could positively impact financial operations. For preliminary business planning purposes, a minimum operating budget of approximately \$1 million to \$1.2 million would be in line with other comparable complexes.

In addition, a facility's physical state relative to that of its competitive supply has an impact on its marketability, resulting financial performance and return on investment. As such, effective capital improvement planning and appropriate funding of projects is an important aspect of developing and maintaining a facility's competitiveness in the marketplace. Because these types of venues typically experience a great deal of use, they can physically deteriorate quicker than other publicly-owned assets. Throughout the U.S., it is not uncommon for local governments to struggle to adequately maintain and improve their sports complexes at a level that allows them to maximize functionality and competitiveness. As such, it is recommended that the M-NCPPC and/or the operator plan for an annual payment specifically designated as a maintenance reserve fund in order to safeguard the investment. This fund is intended to cover any extraordinary annual/future capital repairs or improvements to the proposed new Green Branch Multi-Field Sports Complex. As a point of reference, the M-NCPPC's current capital reinvestment strategy is to reinvest 2% of an asset's value each year toward asset protection and preventative maintenance using a Capital Asset Lifecycle Monitoring Plan.

Annual Incremental New Economic and Fiscal Benefits Associated with On-Going Operations

One of the primary reasons for developing these types of facilities is the economic activity that they can generate in terms of spending, employment, earnings, as well as tax revenues to local and state governments. Prince George’s County and the State of Maryland would benefit from on-going operations of the proposed new Green Branch Multi-Field Sports Complex in a number of ways.

Qualitative benefits associated with the proposed new Green Branch Multi-Field Sports Complex include enhancing the County’s appeal as a sports destination; receiving increased State, regional and national media exposure; providing a first-class sports complex for area residents and out-of-town attendees that complements other existing venues; enhancing the overall quality of life and livability of the area; capitalizing on existing and planned tourism efforts; serving as a catalyst for other potential development initiatives; as well as providing venues to retain and expand existing sports programs as well as develop new ones.

Although the value of many of these benefits is difficult to measure, the economic activity generated can be quantified. The table below summarizes the estimated annual economic impacts generated from on-going operations of the proposed new Green Branch Multi-Field Sports Complex in terms of direct, indirect/induced and total spending, jobs and earnings for a stabilized year of operations. As mentioned earlier, the incremental new economic benefits related to on-going operations are greater in the County than the State as some events that are programmed to be held at the proposed new Green Branch Multi-Field Sports Complex are currently taking place elsewhere in the State.

Proposed Green Branch Multi-Field Sports Complex Estimated Annual Incremental Economic Benefits From On-Going Operations		
Category	Prince George's County	State of Maryland
	Range	Range
Spending		
Direct Spending	\$19,649,000 - \$21,666,000	\$10,193,000 - \$11,237,000
Indirect/Induced Spending	\$11,440,000 - \$12,620,000	\$7,423,000 - \$8,185,000
Total Spending	\$31,089,000 - \$34,286,000	\$17,616,000 - \$19,422,000
Total Jobs	350 - 380	180 - 200
Total Earnings	\$11,127,000 - \$12,269,000	\$6,593,000 - \$7,267,000

The annual fiscal impacts generated from the on-going operations of the proposed new Green Branch Multi-Field Sports Complex are estimated to range from \$1.4 million to \$1.6 million in a stabilized year of operation.

Proposed Green Branch Multi-Field Sports Complex Estimated Incremental Tax Revenues From On-Going Operations	
Municipality/Tax	Range
Prince George's County	
Hotel Occupancy Tax	\$315,000 - \$347,000
Local Personal Income Tax	120,000 - 133,000
Admissions & Amusement Tax	46,000 - 54,000
Total	\$481,000 - \$534,000
State of Maryland	
Sales and Use Tax	\$678,000 - \$746,000
Personal Income Tax	229,000 - 253,000
Corporate Income Tax	49,000 - 54,000
Total	\$956,000 - \$1,053,000
GRAND TOTAL	\$1,437,000 - \$1,587,000

One-Time Economic and Fiscal Benefits Associated with Construction

Development of the proposed new Green Branch Multi-Field Sports Complex also generates one-time economic impacts to the County and State during the construction period. The economic impacts generated from construction-related spending depend on the nature of the spending (e.g., labor, materials/supplies, etc.) and where the spending takes place (e.g., County, State, etc).

Approximately \$40.0 million of the estimated total project cost of \$46.8 million is attributable to “hard” construction costs. However, because not all construction related costs (e.g., labor, materials/supplies) are assumed to be spent in the County or the State, this amount is discounted. Based on information from the preconstruction consultants, it is estimated that approximately \$29.6 million of the construction costs would be spent on labor and materials/supplies derived from within the State which would generate an estimated \$50.2 million in total spending. This economic activity is estimated to support 400 total jobs that create \$23.2 million in personal earnings at the State level.

Proposed Green Branch Multi-Field Sports Complex Estimated One-Time Economic Benefits From Construction		
Category	Prince George's County	State of Maryland
Direct Spending	\$11,010,000	\$29,646,000
Induced/Indirect Spending	\$5,936,000	\$20,601,000
Total Spending	<u>\$16,946,000</u>	<u>\$50,247,000</u>
Total Jobs	140	400
Earnings	\$7,727,000	\$23,207,000

Note: State amounts include County amounts.

The tax revenues generated during the construction period are estimated to be \$1.9 million at the State level and \$167,000 at the County level.

Proposed Green Branch Multi-Field Sports Complex Estimated One-Time Tax Revenues From Construction	
Municipality/Tax	Construction (One-Time)
Prince George's County	
Local Personal Income Tax	\$167,000
Total	<u>\$167,000</u>
State of Maryland	
Sales and Use Tax	\$935,000
Personal Income Tax	808,000
Corporate Income Tax	139,000
Total	<u>\$1,882,000</u>
GRAND TOTAL	\$2,049,000

Note: Fiscal benefits shown for construction occur during the entire construction period.

Next Steps

Typical next steps in the development planning process include securing potential public and private sector funding partners, selecting a business operating model, negotiating the terms of the operating agreement and identifying a dedicated source of capital improvement funding.

PROPOSED NEW MLL STADIUM

Although the Phase 1 market/economic study indicated relatively limited demand and economic justification for the proposed MLL stadium based on the State's historical funding model for similar projects, the M-NCPPC directed the MSA and its advisors to estimate the potential development cost of a 12,000 to 14,000 seat professional lacrosse-specific stadium and assess any traffic impacts the stadium may have if it was built on the same site as the proposed new multi-field sports complex as part of its due diligence and long-term planning efforts.

Despite the lacrosse stadium concept being smaller than that originally proposed in the Phase 1 study effort, development would still require a relatively large portion of the site, particularly given wetlands and archaeological concerns. From a land planning perspective, research conducted by Hord Coplan Macht indicates that approximately 43 of the site's 90 developable acreage would be required to accommodate the stadium footprint and supporting infrastructure (e.g., access, parking). As such, the Green Branch site would not be able to house both the proposed new lacrosse-specific stadium and the proposed 12-field complex. Therefore a decision would need to be made as to which project should be pursued.

From a cost perspective, the MSA, in conjunction with its advisors, estimated the preliminary total project costs for a 12,000 to 14,000 seat professional lacrosse-specific stadium at the Green Branch site to be approximately \$108 million. As stated previously, the incremental new economic and fiscal impacts are not as significant for the lacrosse-specific stadium relative to the proposed new multi-field sports complex since a large portion of that activity is already occurring in the State where the Bayhawks currently play. This makes it difficult to justify constructing the stadium from a traditional cost-benefit perspective.

Hord Coplan Macht and its subconsultants also evaluated the potential traffic impacts associated with a proposed new lacrosse specific stadium on the Green Branch site. Research indicated that the industry standard parking requirements in terms of people/car does not present a viable scenario, particularly when combined with the multi-field sports complex program. The option of sharing parking with existing Bowie Baysox parking lots was also considered. However, utilizing shared parking with the Bowie Baysox would prove to be difficult due to the overlapping schedules of the two teams. In addition, even if shared parking schedules could be negotiated and managed, the cost of physically connecting the two sites across the tributary via a vehicular or pedestrian bridge would be very high. Lastly, a preliminary traffic analysis suggested that a combined event day involving both a Bowie Baysox and Chesapeake Bayhawks game could potentially result in intersection traffic failures which would negatively impact both teams.

Based on these and other factors, the remainder of the report focuses exclusively on the proposed Green Branch Multi-Field Sports Complex.

Program Elements and Cost Estimate

The market and economic analysis previously conducted suggested strong market demand for the proposed multi-field sports complex, particularly given the lack of a comparable complex in the County and the relatively limited date and space availability at other existing venues in Maryland. The proposed multi-field sports complex could serve a diverse set of demand generators including various levels of competitions/tournaments for multiple sports.

Extensive interviews with local, regional, and national event promoters representing multiple sports including soccer, lacrosse, and rugby were conducted to determine the programmatic needs to attract their tournaments and events to the proposed complex.

In-depth interviews were also held with management and government officials at the previously referenced comparable facilities to identify the programmatic needs they deem necessary to maximize usage.

Program Elements

Market research suggests that the proposed new Green Branch Multi-Field Sports Complex should initially include 12 fields with the potential to expand based on market demand. Based on the charge of the facility to function as an economic generator attracting events and out-of-town patrons as well as input from potential demand generators and interviews with management at comparable complexes, the following summarizes programmatic elements considered important when selecting a site location:

- Critical mass of fields at the same location
- Fields with an artificial surface allows for use irrespective of weather
- Lighted fields allows for increased use in the evenings and seasonally
- Fields maintained at a tournament-level quality
- Patron amenities including quality restrooms, concessions stands, and Wi-Fi service
- Sufficient on-site parking and appropriate ingress/egress to and from the site that is able to accommodate tournament traffic and flow
- On-site equipment to accommodate daily usage and tournament needs (e.g., moveable soccer goals, netting behind goals for lacrosse, flags and cones, etc.)
- On-site storage for equipment for both the complex and for tournament coordinators
- Locker rooms for officials
- Office space for tournament coordinators
- Designated space for a ‘tournament central’ area
- Open space for team gathering areas and warm-ups for tournament participants
- Open space for complex and tournament-specific vendors
- Playground(s) for younger players and siblings of players



Hord Coplan Macht incorporated the following programmatic elements into the current conceptual architectural design:

- 12 fields with appropriate irrigation and drainage
- Synthetic turf to maximize flexibility and usage
- Lighted fields to maximize usage
- Concessions pavilion
- Maintenance building
- Administration building
- Picnic pavilions
- 1,200 lighted parking spaces equating to a ratio of 100 spaces per field
- Open space for player warm up
- Open space for centralized tournament headquarters
- Site amenities including playground equipment, walking paths, an entrance gate, signage, etc.

As shown in the following table, the proposed new Green Branch Multi-Field Sports Complex compares favorably with the 13 profiled sports complexes in terms of key programmatic elements and is most similar in concept to the Overland Park Soccer Complex in Kansas.

Summary of Profiled Facilities - Program Elements										
Complex	Number of Full-Size Soccer/Multi-Use Fields					Parking Spaces	Other Elements			
	Synthetic		Total	Lighted	Championship Field/Stadium		Concessions Facilities	Restroom Facilities	Picnic Pavilions	Playground Equipment
	Turf	Grass								
Ashton Brosnahan Soccer Complex	0	10	10	10	Yes	n/s	Yes	Yes	Yes	Yes
Aurora Sports Park	0	23	23	0	Yes	3,100	Yes	Yes	Yes	No
Georgia Soccer Park ¹	0	6	6	0	No	n/s	Yes	Yes	No	No
Hampton Roads Soccer Complex	2	12	14	2	No	n/s	Yes	Yes	Yes	Yes
Kirkwood Soccer Complex ²	1	13	14	0	No	n/s	Yes	Yes	Yes	Yes
Lawrence Sports Complex	0	21	21	3	n/s	5,000	Yes	Yes	Yes	No
Manchester Meadows	2	6	8	8	No	720	Yes	Yes	Yes	Yes
Maryland Soccerplex ²	3	19	22	3	Yes	2,000	Yes	Yes	Yes	Yes
Mesa Soccer Complex	0	16	16	16	No	1,250	Yes	Yes	Yes	Yes
Mike Rose Soccer Complex	0	17	17	17	Yes	n/s	Yes	Yes	No	No
Overland Park Soccer Complex	12	0	12	12	Yes	1,100	Yes	Yes	Yes	Yes
Reach 11 Sports Complex	1	17	18	18	No	n/s	Yes	Yes	Yes	Yes
Striker Park	1	10	11	1	Yes	850	Yes	Yes	Yes	No
Proposed Green Branch Multi-Field Sports Complex³	12	0	12	12	No	1,200	Yes	Yes	Yes	Yes

Notes: Number of fields excludes baseball/softball fields.
¹ Concessions/restroom facilities are portable.
² Concessions and restrooms are located at the indoor venue.
³ Restroom facilities are planned to be portable.
 Complexes are sorted alphabetically.
 n/s denotes not supplied.
 Sources: Representatives at individual facilities; secondary research.

Conceptual Site Plan

As shown in the following conceptual site plan prepared by Hord Coplan Macht, the Green Branch Park site can adequately accommodate all of the recommended programmatic elements in a manner that maximizes its marketability to youth/amateur tournament activity. Although the majority of event promoters indicated that a championship field could enhance the complex’s marketability and competitiveness for hosting certain competitions/tournaments, it was viewed as a complementary enhancement not a necessity. Having said that, most event promoters stated they would likely utilize all available field space for large-scale tournaments. From a long-term planning perspective, the size and layout of the Green Branch site can support the recommended core program in the short-term and allows for expansion of program elements in the future (e.g., championship field) based on market demand.

More detail regarding the preliminary design services provided by Hord Coplan Macht and its subconsultants is summarized under separate cover in the *Green Branch Multi-Field Sports Complex – Conceptual Design Study* dated January 22, 2014.

Green Branch Multi-Field Sports Complex - Conceptual Site Plan





Preliminary Project Cost Estimate

Based on this program, the MSA, in conjunction with its design advisors (Hord Coplan Macht), pre-construction management advisors (Barton Malow) and other project team members, estimated the preliminary total project costs for the proposed new Green Branch Multi-Field Sports Complex to be approximately \$46.8 million.

Proposed Green Branch Multi-Field Sports Complex - Project Cost Estimate	
Category	Total Project Cost
Athletic Fields	\$18,734,000
- Playing Surface	
- Coaching Platforms & Benches	
- Lighting Fixtures, Controls, Branch Wiring	
- Fencing	
- Electrical Distribution	
- Irrigation	
- Field Drainage	
Site Improvements	\$12,262,000
- Concessions Pavilion	
- Maintenance Barn	
- Park Admin Bldg	
- Picnic Pavilions	
- Playground Equipment & Surfacing	
- Walking Paths	
- Furnishings	
- Entrance Monument & Gate	
- Signage	
- Seeding & landscaping	
- Parking Lot Fine Grading, Asphalt & Striping	
- Parking Lot Lighting	
- Wi-Fi	
- Security	
On-Site Utilities & Infrastructure	\$12,972,000
- Spine Road Fine Grading, Asphalt & Lighting	
- Mass Grading / Earthwork to Sub Grade	
- Unsuitable Soils Allowance	
- Sediment & Erosion Controls, Bioswales	
Off-Site Utilities & Infrastructure	\$2,805,000
- Access Roads	
- Haul Road Fine Grading & Drainage	
- Earthwork / Grading	
Total	\$46,773,000

Note: Total project cost includes hard construction costs and soft costs such as design, permitting, contingencies, etc.



Development of the Green Branch site has several challenges such as topography, grade changes, waterways, wooded areas, potential archeological testing needs as well as the need to add public utilities and access roads. As such, the preliminary project cost estimate shown above will continue to be refined.

A more detailed analysis related to the preliminary project cost estimate can be found under separate cover in Barton Marlow's report entitled the *Green Branch Multi-Field Sports Complex – Concept Estimate, Final* dated January 22, 2014.

Operating Strategy

As mentioned previously, the M-NCPPC owns Green Branch Park. In order to assist the M-NCPPC with its assessment of business model alternatives to operate and manage the proposed new Green Branch Multi-Field Sports Complex, we interviewed management at comparable sports complexes to obtain input regarding their overall operating strategy/mission, ownership/management structure, and maintenance responsibility. The following summarizes key points obtained from these conversations.

Overall Operation/Mission

Discussions with management at comparable complexes stressed the importance of establishing the proposed sports complex's mission at the outset. The mission and purpose of the complex should be understood by elected officials, business community, local residents, local users, and tournament promoters. The primary goal of serving as an economic generator rather than meeting local sports and recreational needs will create different marketing, booking, staffing and maintenance procedures. If the sports complex is primarily focused on generating economic impact, it may choose to limit local play and reserve fields for large-scale tournaments. There is a growing trend to build special-purpose facilities that serve these two unique sets of user groups: large-scale tournament activity and local resident usage. Balancing the objectives of being a catalyst for economic impact generation from tournaments and another goal of serving the local sports-playing residents is challenging. Meeting the goals of these two types of activity demands an established mission and an operator capable of handling such a balance.

Ownership/Management Structure

There are several potential management options for the proposed new sports complex. While the governance structure should play a significant role in oversight, establishing and administering policy as well as maintaining accountability for the complex, the management team should be responsible for overseeing the day-to-day operations of the complex including implementing the mission statement and operating policies. Consequently, the management approach is important because it typically impacts all aspects of operations including marketing, utilization, financial operations and overall efficiency of a complex. For instance, management's ability to effectively negotiate rental rates and be flexible in implementation of the booking policy can directly impact utilization, financial performance and/or economic impact generated from the complex. In some instances, publicly run complexes are limited in their capability to act as quickly as other management approaches.

As such, some sports complex owners choose to delegate the management to a non-profit or for-profit third party entity that provides industry knowledge and representation. In addition to these benefits, management through a third party can offer stability and insulation from political influence which can be desired attributes by customers, vendors, facility management and staff who typically prefer a continuity of purpose and ability to function within a business environment that is not affected by each political election. Examples of existing management options at multi-sport field complexes include, but are not limited to, the following:

- Operated through traditional governmental management such as a City/County departmental structure.
- Operated by a third party non-profit organization.
- Operated by a third party for-profit organization.

Each of these alternative approaches to management can be found within the sports complex industry and are discussed in more detail on the pages that follow as well as in the case studies found in the Appendix.

Traditional Governmental Management

Historically, public assembly facilities are one of the few public assets that operate in a semi-business atmosphere requiring contractual agreements, frequent short term lease/use of facilities by customers, management of part-time and temporary staff resources for numerous events and partnership with third party vendors and tenants. These operating conditions are unique within the public services provided by government whose natural inclination is to apply one set of guidelines to all municipal departments.

Unlike many municipal services where citizens do not have a choice, tournament promoters/producers have a variety of facilities to choose from when deciding where to host their event. In addition, attendees have a variety of options where they can spend their discretionary income. Given the competitiveness among sports complexes, these facilities need to operate in a manner that is consistent with well-established industry practices.

As with any governmentally run facility, the goals and objectives may change with each political cycle. For instance, the number and diversity of events may be the primary objective of one official and fiscal performance may be the priority of another. These changes in the complex's objectives can be counter-productive if not managed effectively. Clearly defining a mission statement that reflects community consensus and operating objectives (e.g., maximizing economic impact) can allow a complex to set forth an operating and marketing strategy that is consistent and long-term in implementation. This approach can also provide a more stable environment for event promoters/producers when considering a complex for future use. In general, governmentally operated facilities are more successful when management has the ability and the authority needed to aggressively operate and book the facility without incurring onerous procedures.

Typically, publicly operated sports complexes are overseen by the owner's (e.g., City or County) Parks and Recreation Department. Advantages of this method include shared human and financial resources among the jurisdiction's various parks/recreational facilities; as well as economies of scale in terms of utilities, insurance, and maintenance expenses. However, disadvantages include balancing residential usage needs with those of tournaments which can be politically challenging and limited staff connections in the broader youth/amateur sports industry.

Examples of governmentally run sports complexes include: Aurora Sports Park in Colorado; Manchester Meadows in Rock Hill, South Carolina; Overland Park Soccer Complex in Kansas; and Reach 11 Sports Complex in Phoenix, Arizona. Public agencies that operate these profiled complexes have sports tourism and economic impact generation as an objective of their booking policy. Of these, most serve their residents on Mondays through Thursdays with club play and/or recreational programs and reserve the complex on weekends for economic impact generating tournaments. The publicly operated complexes that focus on attracting tournament activity that produce economic impact to the community are funded through hospitality, hotel, and/or sales taxes.

In the case of Reach 11, the complex is focused solely on tournament activity and not on local play. The City of Phoenix Parks and Recreation Department has a dedicated, experienced staff to solicit bids from and select tournaments with the most out-of-town participants. The complex has a dedicated budget for marketing to national governing bodies and major tournament promoters.

In Overland Park, there was strong demand for field space from local sports clubs. Based on the significant public investment and the desired goal of generating economic impact from tournament activity, the City of Overland Park chose to operate the sports complex with a dedicated team of professionals. The City is a neutral party in the highly competitive realm of youth athletics.

Third Party Non-Profit Organization

In some cases, sports complexes are owned and/or operated by non-profit organizations dedicated to a particular sport. Examples include the Hampton Roads Soccer Complex in Virginia; Kirkwood Soccer Complex in New Castle, Delaware; Lawrence Sports Complex in Indiana; Maryland Soccerplex in Germantown, Maryland; Mesa Soccer Complex in Greer, South Carolina; Georgia Soccer Park in East Point, Georgia; and Striker Park in Richmond, Virginia.

The non-profit organizations that operate the profiled facilities listed above are all established soccer based clubs that serve as the primary soccer organization in their area. In most cases, they provide programming to the majority of soccer-playing residents in the area. Local governmental officials recognized that these non-profits were uniquely qualified to operate their sports complex given their experience with sports programming and field management. Despite having soccer roots, these organizations actively book non-soccer tournaments (e.g., lacrosse, rugby, and ultimate Frisbee) in order to increase utilization of the complex and support community needs as well as generate economic and fiscal impacts.

Typically, a non-profit organization is established to manage and fund the operations of a sports complex. While some non-profit organizations manage a complex they own, others manage a publicly owned asset. As such, a public entity may participate in the initial funding of the project's development and then delegate some or all of the operating responsibilities and risk to a non-profit organization that has specialized experience as well as established relationships with local, State, regional and national sports organizations representing multiple sports.

Non-profit organizations are usually governed by a Board of Directors that provides oversight and accountability. While the Board of Directors provides objectives for the complex to accomplish, the management team is charged with formulating the best course of action to achieve the goals and objectives of the organization.

This type of operating structure is common among soccer complexes where local, elite level clubs want high quality practice space and a complex that can play host to a variety of tournaments for broader regional exposure. In cases where the non-profit organization is the operator, the club(s) represented has first priority in scheduling practice time (typically during the week) without having to compete for publicly owned recreational fields.

In several of the profiled complexes, the non-profit operator was established at organizing and managing large-scale tournaments that produced significant economic impact to their respective communities. In the case of the Mesa Soccer Complex in Greer, South Carolina the Greenville County Recreational District sports tourism manager and the Convention and Visitors Bureau work closely with Carolina Elite Soccer Academy to maximize the economic impact of established and potential new tournaments.

Of the profiled complexes, only the Lawrence Sports Complex has a Board of Directors that includes governmental officials. Its Board is comprised of two representatives from each of the two soccer clubs that joined together to create the non-profit and the City of Lawrence Parks and Recreation Director. Other profiled complexes operated by a non-profit are overseen by a Board of Directors with representatives from the various elite level soccer organizations/clubs.

On-going funding can be a challenge since many non-profit entities are dependent on external funding from private or public sources such as government grants and direct donations. Any changes to the funding of the organization can impact the ability to hire and retain staff as well as sustain facility operations. Non-profits are typically more effective when they have a dedicated funding source such as an endowment to fund on-going operations, capital improvements, and/or debt service.

Third Party For-Profit Organization

There are for-profit management companies that are typically local or regional in nature that may operate a municipally-owned sports complex. This alternative is advantageous when a municipality wishes to delegate its mission/operating strategy and allow a third party to nimbly juggle the programming needs of local residents as well as tournament activity. This operating structure is relatively new for sports complexes as there are a limited number of companies that specialize in this type of management. Some tournament management companies are expanding their scope of services to include facility operations of sports complexes while some communities have a unique scenario whereby a locally based for-profit organization emerged as the operator.

The Mike Rose Soccer Complex in Memphis, Tennessee is the only profiled facility utilizing this operating structure. The for-profit organization that operates this complex has its roots in a non-profit soccer development organization. It is operated by a local company established by a resident who was instrumental in the complex's development. The President and Founder of Shelby County Soccer Complex Inc., a non-profit corporation, organized the private/public partnership that raised construction

funds through corporate contributions, foundations and grants. The President worked with the local clubs, associations and Tennessee Soccer to coordinate participation at the complex. Once the complex was constructed in partnership with Shelby County, the operator became an off-shoot of Shelby County Soccer Complex, Inc. known as OS Memphis. OS Memphis is a for-profit organization that operates the Mike Rose Soccer Complex.

For-profit management companies can address a variety of needs and issues confronted by sports complexes that, in many cases, result in a more effective and efficient means of facility operations than municipally run venues. Although some comparable facilities realize an operating deficit, these facilities are usually developed because of the broader community objectives they can achieve. Consequently, these facilities typically aim to provide sports/entertainment to area residents and develop new activity that can draw patrons from outside the immediate market area who spend money on hotels, restaurants, and other similar services. Given these unique economics and the financial constraints in the broader youth/amateur sports industry, there is sometimes a conflict for the management team which struggles to balance hosting events that operate at a profit and positively impact the facility's financial performance, accommodating tenant needs (e.g., local club sports), and hosting events that do not necessarily contribute positive cash flow but generate significant economic impact to a community (e.g., tournaments). As such, for-profit management of a sports complex may be more effective under certain conditions which include, but are not limited to, the following:

- Civil service constraints may limit a municipality's ability to retain and hire qualified personnel that are experienced in the industry and compensated for their skill set relative to other similar positions in the industry.
- Efficient operations will likely be hampered by strong political influence and operating autonomy is desired.
- Facility management will likely be unable to effectively negotiate rates and other concessions and consequently would not be as competitive with other facilities because of municipal constraints in negotiating financial terms with tournament promoters.
- Contract approval requirements would likely be onerous and time consuming in a municipal setting.
- Municipalities have limited funds for significant maintenance requirements and/or capital improvements to facilities and a for-profit company agrees to provide funding as part of its management agreement.

One common apprehension for municipalities considering third party management is losing control of the asset. However, third party management is an agent of the municipality charged with managing and promoting the complex. As such, the municipality can manage the amount and type of control that it retains through the terms of its management agreement. For instance, in most for-profit management agreements, municipalities still retain ownership; approve the operating and capital budgets; provide input and direction regarding policy; receive regular financial and management reports; and have the ability to terminate the management company.

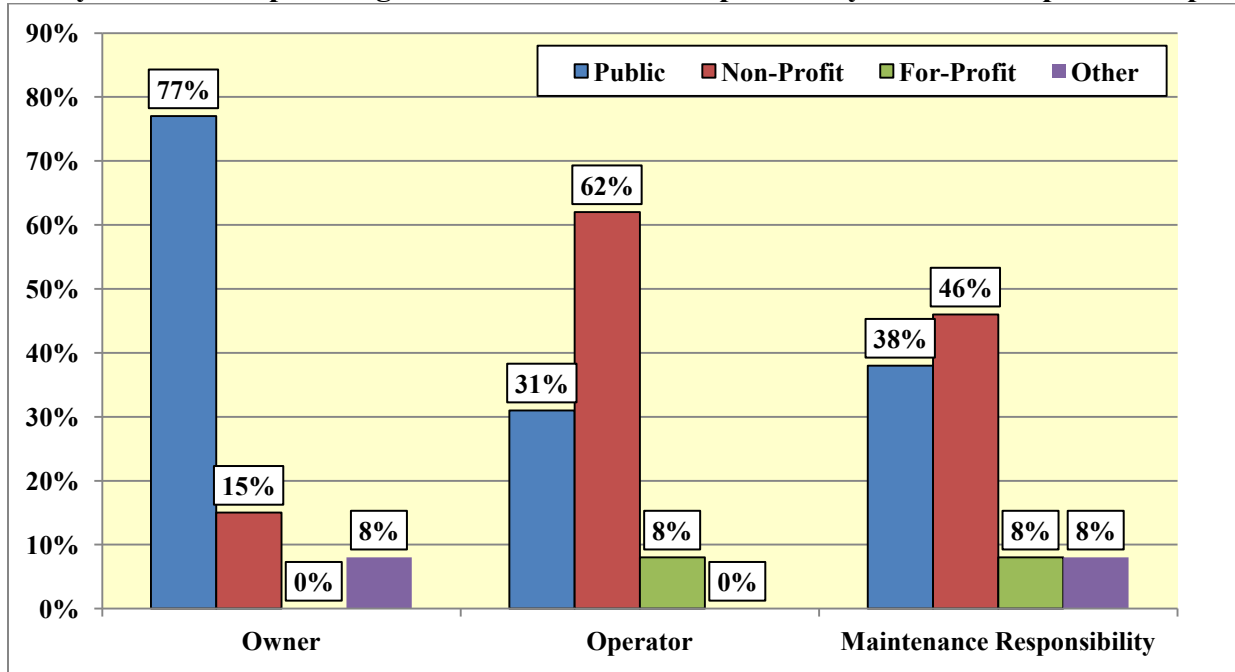
The following table provides a summary of the relative advantages and disadvantages of each of the three operating strategies previously described.

Proposed Multi-Field Sports Complex - Potential Operating Strategies	
Advantages	Disadvantages
Traditional Government	
Existing relationships with other quasi public agencies Neutral on sports politics Ability to focus on mission Potential to share human and financial resources	Competitive industry atypical of government departments Onerous contractual procedures Limited flexibility in negotiating rental rates Staffing/compensation constraints Limited industry contacts/relationships Limited funding partners for on-going operations/capital Political cycle changes/influence
Third Party Non-Profit	
Strong industry connections Dedicated tenants Volunteer pool Shared risk between owner and operator Board representation from youth/amateur sports Less political influence Ability to solicit donations	Ability to provide on-going funding for operations Need for clear ownership oversight
Third Party For-Profit	
Strong industry connections Less political influence Experienced sports programming and field management Hiring/staffing flexibility Ability to negotiate rental rates Potential to receive capital from management company	Need for clear ownership oversight Relatively few companies with relevant experience

Ownership/Management Structures and Maintenance Responsibilities at Profiled Facilities

While 77% of profiled complexes are publicly owned, only 31% are publicly operated. Approximately 62% of the profiled sports complexes are managed by a non-profit organization. On-going maintenance of a sports complex is critical to its long-term success and marketability. Approximately 46% of the profiled sports complexes are maintained by a non-profit organization while 38% utilize public entities for this function.

Summary of Ownership/Management/Maintenance Responsibility at Profiled Sports Complexes



The tables on the pages that follow provide more detailed information on the profiled complexes.



Ownership/Management Structure at Profiled Facilities

The following table summarizes the ownership and management structures of the profiled complexes. Ten (10) of the 13 profiled complexes are owned by a public agency and two are owned by non-profit organizations. The Mesa Soccer Complex is owned by a public/non-profit partnership. Eight (8) of the profiled complexes are operated by a non-profit organization.

Owner/Operator Structure at Profiled Sports Complexes				
Complex	Owner	Type	Operator	Type
Ashton Brosnahan Soccer Complex	Escambia County	Public	Gulf Coast Texans Soccer Club	Non-profit
Aurora Sports Park	City of Aurora	Public	City of Aurora ¹	Public
Georgia Soccer Park	Georgia Soccer Development Foundation	Non-profit	Georgia Soccer Development Foundation	Non-profit
Hampton Roads Soccer Complex	City of Virginia Beach	Public	Hampton Roads Soccer Council	Non-profit
Kirkwood Soccer Complex	County of New Castle	Public	Kirkwood Soccer Club	Non-profit
Lawrence Sports Complex	City of Lawrence	Public	Lawrence Soccer Corporation, Inc.	Non-profit
Manchester Meadows	City of Rock Hill	Public	City of Rock Hill ²	Public
Maryland Soccerplex	M-NCPPC	Public	Maryland Soccer Foundation	Non-profit
Mesa Soccer Complex	Carolina Elite Soccer Academy and Greenville County Recreational District	Public and non-profit	Carolina Elite Soccer Academy	Non-profit
Mike Rose Soccer Complex	Shelby County	Public	OS Memphis	For-profit
Overland Park Soccer Complex	City of Overland Park	Public	City of Overland Park ³	Public
Reach 11 Sports Complex	City of Phoenix	Public	City of Phoenix ⁴	Public
Striker Park	Richmond Strikers Soccer Club	Non-profit	Richmond Strikers Soccer Club	Non-profit

Notes: ¹ Aurora Sports Park is operated by the City of Aurora Parks, Recreation & Open Space Department.

² Manchester Meadows is operated by the Parks, Recreation & Tourism Department.

³ Overland Park Soccer Complex is operated by the City Parks & Recreation Department. The Parks sub department is responsible for maintenance while the Recreation sub department handles wellness and health programs. There is a dedicated Manager of Soccer Complex Operations within Recreation Services.

⁴ Reach 11 Sports Complex is operated by Recreational Facilities and Services which is part of the Parks and Recreation Department. The City has a dedicated Park Manager for the facility.

Sources: Representatives at individual facilities; secondary research.

Facility Maintenance Responsibility at Profiled Facilities

Successful maintenance of sports complexes, particularly those that cater to elite club play and/or tournaments, require the appropriate human and financial resources. Maintenance responsibilities for the profiled complexes generally mirror that of the operating model. As shown in the table below, six sports complexes are maintained by a non-profit organization, five by a public agency, one by a public/non-profit partnership, and one by a for-profit group.

Summary of Profiled Facilities - Maintenance Responsibility		
Complex	Maintenance Responsibility	Type
Ashton Brosnahan Soccer Complex	Gulf Coast Texans Soccer Club	Non-profit
Aurora Sports Park	City of Aurora	Public
Georgia Soccer Park	Georgia Soccer Development Foundation	Non-profit
Hampton Roads Soccer Complex	Hampton Roads Soccer Council	Non-profit
Kirkwood Soccer Complex	Kirkwood Soccer Club	Non-profit
Lawrence Sports Complex	City of Lawrence & Lawrence Soccer Corporation	Public and non-profit
Manchester Meadows	City of Rock Hill	Public
Maryland Soccerplex	Maryland Soccer Foundation	Non-profit
Mesa Soccer Complex	Greenville County Recreational District	Public
Mike Rose Soccer Complex	OS Memphis	For-profit
Overland Park Soccer Complex	City of Overland Park	Public
Reach 11 Sports Complex	City of Phoenix	Public
Striker Park	Richmond Strikers Soccer Club	Non-profit

Sources: Representatives at individual facilities; secondary research.

The maintenance of the proposed new Green Branch Multi-Field Sports Complex is a major consideration as it affects multiple components of the operating and financial strategy both from a short-term and long-term planning perspective. A focus on the ability to maintain the Complex in the most effective manner is recommended from a design perspective. From an operating perspective, there are multiple options on how to manage the maintenance operation.

The case studies presented in this report highlight different options for maintenance responsibilities including a non-profit group, a public agency/department, or a for-profit group. In each of the case studies, the approach to selecting a maintenance group was unique to their specific community needs and development of their complex.

As shown in the table above, the same non-profit group is responsible for both facility operations and maintenance at Ashton Brosnahan Soccer Complex, Georgia Soccer Park, Hampton Roads Soccer Complex, Kirkwood Soccer Complex, Maryland Soccerplex, and Striker Park.

Lawrence Soccer Complex is maintained by a hybrid of both the City of Lawrence Parks and Recreation Department and the non-profit operating entity, Lawrence Soccer Corporation. Additionally, the Lawrence Soccer Corporation relies heavily on volunteers throughout the year to handle many aspects of field maintenance including field lining and movement of goal structures.

A public agency or department can also have maintenance responsibilities. Of the profiled sports complexes, Aurora Sports Park, Manchester Meadows, Mesa Soccer Complex, Overland Park Soccer Complex, and Reach 11 Sports Complex are maintained by a public agency – more specifically through a division of each respective community’s Parks and Recreation Department. These departments have both the necessary existing staff and equipment as they maintain multiple other parks in their communities. As previously mentioned the Lawrence Soccer Complex is a hybrid for maintenance with the City of Lawrence Parks and Recreation Department handling mowing, trash removal, and snow removal.

At the Mike Rose Soccer Complex, the for-profit operator is also responsible for the maintenance of the complex.

There are several key financial and operational considerations when contemplating what entity should be responsible for maintenance of the proposed new Green Branch Multi-Field Sports Complex which are closely related to the criteria for selecting an operator for the Complex. More specifically, the entity in charge of maintenance must be able to:

- Budget appropriate, qualified staff available to accommodate the unique schedule of activity (i.e., nights, weekends, holidays, etc.) as well as any emergencies that may arise
- Budget sufficiently for the annual maintenance costs
- Budget long-term for renewal and replacement of maintenance equipment
- Preserve long-term market share with first-class facilities
- Protect a community asset
- Maintain the Complex in a first-class, tournament-quality manner
- Market the Complex in an effective manner to event promoters
- React on a day-to-day basis to the unique demands of each user since specific needs vary by sport and individual event promoter

If the operating entity does not have maintenance responsibilities, there must be clearly defined responsibilities between the two organizations for a smooth and seamless overall operation of the Complex. If the operating entity is also responsible for the maintenance of the Complex, the scope of these services and expectations of the M-NCPPC and the State should be clearly stated. As such, careful consideration is advised as the approach to maintenance of the Complex is strategized by stakeholders.

Common Success Factors

Regardless of the operating business model chosen, the following common factors enhance the success of multi-purpose sports complexes:

- The mission statement outlines distinct goals/objectives of the complex.
- A booking policy is in place that prioritizes market segments supporting the mission statement.
- The mission statement and objectives of the complex are understood and supported by elected officials, business community, local residents, local user groups, and tournament promoters.
- There is an established partnership with a limited number of primary users (e.g., local sports organizations) that exclusively book the majority of field time outside of tournament activity in order to maximize weekday usage and revenue.
- There is a full-time, dedicated staff of experienced professionals that manage and market the complex and understand the unique needs of the youth/amateur sports industry.
- The management team has strong relationships with State, regional and national industry personnel representing multiple sports.
- Key performance indicators are implemented based on facility benchmarks and industry best practices.
- The operator is a financially sustainable entity that has a vested interest in the complex's success through an initial capital contribution and/or an on-going financial commitment and associated risk with respect to operations and capital improvements.
- There is sufficient strategic and financial oversight in addition to a clear reporting and accountability structure.
- Maintaining high-quality, tournament-level fields and supporting infrastructure at the complex is an operating priority.
- Management has latitude in staffing, compensation, and contract negotiation with user groups.
- The ownership/operating structure allows for the ability to foster financial support from a variety of public and private parties.
- Strategic partnerships are formed with local youth/amateur sports clubs, national organizations, area marketing agencies, and key private sector sponsors.

As with any business operation, each approach has advantages and disadvantages depending on the situation. Because the structure of certain contractual agreements such as management agreements can impact the tax status and fundraising efforts, consideration will need to be given to the legal and financial implications of each management approach. As the M-NCPPC continues to explore the merits of developing the proposed new Green Branch Multi-Field Sports Complex, it will need to determine which operating strategy best meets its short and long-term objectives for success.

Economic Analysis

One objective of this analysis is to update the previous estimate of incremental new economic and fiscal impacts associated with operations of the proposed new multi-field sports complex to the local and State economies. Based on factors such as additional input from potential users, current program elements, specific location on the site, an increased estimate event activity and newer economic multipliers, the estimated economic and fiscal impacts are higher than in the Phase 1 study. In addition, this analysis estimates the one-time economic and fiscal benefits associated with construction.

Tangible and intangible benefits associated with the proposed new Green Branch Multi-Field Sports Complex include, but are not limited to, the following

- Enhancing the County's appeal as a sports destination
- Receiving increased State, regional and national media exposure
- Providing a first-class complex for area residents and out-of-town attendees that complements other existing venues
- Enhancing the overall quality of life and livability of the area
- Capitalizing on existing and planned tourism efforts
- Serving as a catalyst for other potential development initiatives
- Providing venues to retain and expand existing sports programs as well as develop new ones
- Generating economic activity in terms of spending, jobs, and earnings
- Generating fiscal revenues for local and State governments

Each of these benefits is important in assessing the overall impact of the proposed new multi-field sports complex to the County. While the value of most of these benefits is difficult to measure, the estimated economic activity generated can be quantified. This analysis quantifies the direct, indirect and induced benefits associated with the construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex including the associated tax revenues. Although the majority of events estimated to be held at the proposed new Green Branch Multi-Field Sports Complex represent incremental new activity to the County, some of these are currently held at other facilities in the State.

General Methodology Overview

An assessment of the economic benefits that could occur in the County and State as a result of annual on-going operations of proposed new Green Branch Multi-Field Sports Complex can be approached in several ways. The approach used in this analysis considers estimated gross facility revenues (e.g., field rental, concessions, parking, and advertising/sponsorship) as well as spending by participants and spectators outside the complex on items such as hotels/lodging, restaurants, retail, entertainment/recreation and transportation as the initial measure of economic activity in the marketplace.

Construction impacts are based on the preliminary total project costs prepared by the MSA in conjunction with its design advisors (Hord Coplan Macht), pre-construction management advisors (Barton Malow) and other project team members.


Once the amount for direct spending is quantified, a calculated multiplier is applied to generate the indirect and induced effects. The sum of direct, indirect and induced effects equals total economic impact which is expressed in terms of spending (output), employment (jobs), and personal earnings.

This analysis also estimates the fiscal impacts generated from construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex including admissions and amusement tax, corporate income tax, hotel occupancy tax, personal income tax, and sales and use tax.



Estimate the Economic and Fiscal Impacts Associated with the Construction and On-Going Operations of the Proposed Green Branch Multi-Field Sports Complex

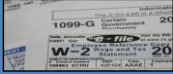
Spending (Output)
 Total direct, indirect, induced spending effects generated by the project




Employment (Jobs)
 Number of full and part-time jobs supported by the project



Personal Earnings
 Wages and salaries earned by employees of businesses associated with or impacted by the project



Tax Revenues (Fiscal)
 Admission and Amusement tax
 Corporate income tax
 Hotel occupancy tax
 Personal income tax
 Sales and use tax



All amounts depicted in this analysis are presented in current dollars, reflect a stabilized year of operations and assume taxes continue at their current rates.

Methodology – Economic Impact Analysis

Regional input-output models are typically used by economists as a tool to understand the flow of goods and services among regions and measure the complex interactions among them given an initial spending estimate.

Direct Spending

Estimating direct spending is the first step in calculating economic impact. Direct spending represents the initial change in spending that occurs as a direct result of construction and on-going operations of the proposed new multi-field sports complex. Adjustments are made to account for leakage (spending that occurs outside of the local and State economies) and displacement (spending that would have occurred elsewhere in the local economies without the presence of the proposed new multi-field sports complex) in order to reflect incremental new spending to the local and State economies.

Indirect and Induced Impacts

The economic activity generated by construction and on-going operations of the proposed new multi-field sports complex affects more than just the facilities. In preparation for new spending in the economy, several other economic sectors are impacted and jobs are created. Indirect effects reflect the re-spending of the initial or direct expenditures or the business-to-business transactions required to satisfy the direct effect. Induced effects reflect changes in local spending on goods and services that result from income changes in the directly and indirectly affected industry sectors. The model generates estimates of these impacts through a series of relationships using local-level average wages, prices and transportation data, taking into account commute patterns and the relative interdependence of the economy on outside regions for goods and services.

Multiplier Effect

In an effort to quantify the inputs needed to produce the total output, economists have developed multiplier models. The estimation of multipliers relies on input-output models, a technique for quantifying interactions between firms, industries and social institutions within a local economy. This analysis uses IMPLAN software and databases which are developed under exclusive rights by the Minnesota IMPLAN Group, Inc. IMPLAN, which stands for *Impact Analysis for Planning*, is a computer software package that consists of procedures for estimating local input-output models and associated databases. The IMPLAN software package allows the estimation of the multiplier effects of changes in final demand for one industry on all other industries within a defined economic area. Its proprietary methodology includes a matrix of production and distribution data among all counties in the U.S. As such, the advantages of this model are that it is sensitive to both location and type of spending and has the ability to provide indirect/induced spending, employment and earnings information by specific industry category while taking into account the leakages associated with the purchase of certain goods and services outside the economy under consideration.

Once the direct spending amounts are assigned to a logical category, the IMPLAN model estimates the economic multiplier effects for each type of direct new spending attracted to or retained in the County resulting from construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex.

For purposes of this analysis, the following industry multipliers were used:

Summary of Multipliers						
Category	Prince George's County			State of Maryland		
	Spending	Employment*	Earnings	Spending	Employment*	Earnings
Hotels	1.5933	12.7	0.5342	1.7435	13.8	0.6299
Eating & Drinking Places	1.5121	21.4	0.5334	1.6806	21.5	0.6302
Retail Trade	1.5920	19.3	0.6823	1.7130	19.9	0.7484
Transportation	1.5457	13.9	0.5365	1.7092	13.6	0.6364
Entertainment/Recreation	1.7660	29.5	0.6138	1.8545	25.9	0.7586
Business Services	1.5674	9.7	0.4904	1.7080	10.4	0.6498
New Construction	1.5392	12.9	0.7018	1.6949	13.4	0.7828

Note: *indicated the number of jobs per \$1 million in spending.

Source: IMPLAN.

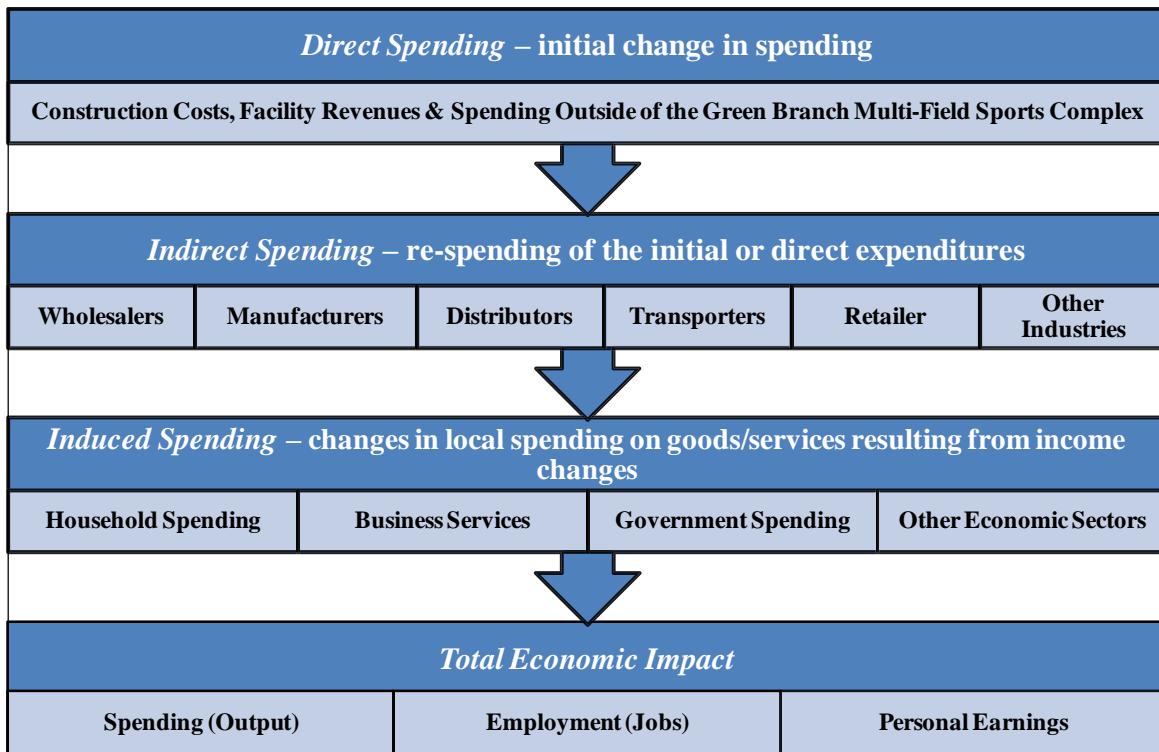
These multipliers have been updated since the previous study effort to reflect IMPLAN's latest available economic data for 2011 transactions and the complex interactions among regions.

Total Economic Impact

The calculated multiplier effect is then added to the direct impact to quantify the total economic impact in terms of spending, employment and earnings which are defined below:

- *Spending (output)* represents the total direct and indirect/induced spending effects generated by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex. This calculation measures the total dollar change in spending (output) that occurs in the local economy for each dollar of output delivered to final demand.
- *Employment (jobs)* represents the number of full and part-time jobs supported by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex. The employment multiplier measures the total change in the number of jobs supported in the local economy for each additional \$1.0 million of output delivered to final demand.
- *Personal Earnings* represent the wages and salaries earned by employees of businesses associated with or impacted by the construction and on-going operations proposed new Green Branch Multi-Field Sports Complex. In other words, the multiplier measures the total dollar change in earnings of households employed by the affected industries for each additional dollar of output delivered to final demand.

The following graphic illustrates the multiplier effects for calculating total economic impact.



Methodology - Fiscal Impact Analysis

The estimated spending generated from construction and on-going operations of the proposed new multi-field sports complex also creates tax revenues for the County and the State. Experience in other markets suggests that while a significant portion of the direct spending likely occurs near the project, additional spending occurs in other surrounding economies. Major tax sources impacted by facility operations were identified and taxable amounts to apply to each respective tax rate were estimated. Although other taxes may also be positively impacted, this analysis estimated the revenues generated from the following taxes based on the direct and indirect/induced spending amounts previously defined:

Prince George’s County

- Admissions and amusement tax
- Hotel/motel tax
- Local personal income tax

State of Maryland

- Corporate income tax
- Personal income tax
- Sales and use tax

Summary of Annual Incremental New Economic Benefits Associated with On-Going Operations

On-going activities at the proposed new Green Branch Multi-Field Sports Complex are estimated to generate between \$19.6 million and \$21.7 million annually in incremental new direct spending to the County of which approximately \$10.2 million to \$11.2 million would be incremental new to the State. This initial spending generates between \$31.1 million and \$34.3 million in total spending at the County level which is estimated to support between 350 and 380 total jobs annually.

Proposed Green Branch Multi-Field Sports Complex						
Estimated Annual Incremental Economic Benefits From On-Going Operations						
Category	Prince George's County			State of Maryland		
	Range			Range		
Spending						
Direct Spending	\$19,649,000	-	\$21,666,000	\$10,193,000	-	\$11,237,000
Indirect/Induced Spending	\$11,440,000	-	\$12,620,000	\$7,423,000	-	\$8,185,000
Total Spending	\$31,089,000	-	\$34,286,000	\$17,616,000	-	\$19,422,000
Total Jobs	350	-	380	180	-	200
Total Earnings	\$11,127,000	-	\$12,269,000	\$6,593,000	-	\$7,267,000

The following section provides a description of the assumptions used in this analysis.

General Assumptions

Based on input from the client group, several assumptions were used to develop estimates of event activity, financial operations and economic/fiscal impacts for the proposed new multi-field sports complex. It should be noted that these assumptions are preliminary and will be further refined as decisions related to the building program and other operating characteristics continue to evolve. The analysis performed was limited in nature and, as such, Crossroads Consulting does not express an opinion or any other form of assurance on the information presented in this report. As with all estimates of this type, we cannot guarantee the results nor is any warranty intended that they can be achieved. The estimates are based on the anticipated size, quality and efficiency of the proposed new multi-field sports complex. Since these estimates and assumptions are based on circumstances that have not yet transpired, they are subject to variation. Further, there will usually be differences between estimated and actual results because events and circumstances frequently do not occur as expected, and those differences may be material.

- The proposed new multi-field sports complex is built at Green Branch Park in Prince George's County.
- The preliminary building program with 12 lighted synthetic turf athletic fields outlined in this report for the proposed new multi-field sports complex is built and offers the required infrastructure and amenities to support the facility.

- The proposed new multi-field sports complex is designed specifically to accommodate the unique aspects of the tournament industry as well as local user groups.
- The proposed new multi-field sports complex is owned by the M-NCPPC and managed by personnel that specializes in marketing/management/programming of similar facilities and has established contacts and strong relationships with State/regional/national event promoters/producers from various sports organizations as well as area collegiate/scholastic/recreational sports entities in order to maximize marketability and usage.
- The proposed new multi-field sports complex is aggressively marketed by established tourism and sports marketing agencies in the County and State in addition to facility and team marketing efforts.
- A high level of quality customer service is provided.
- The site is adequate in terms of visibility, ingress/egress, parking, safety and other similar issues.
- Sufficient supporting infrastructure is located nearby to support the multi-field sports complex activities (i.e., hotel rooms, restaurants, retail, entertainment, etc.)
- No other similar competitive/comparable facilities are built in the region.
- No major economic fluctuations or acts of nature occur that could adversely impact the project.

Estimated Usage/Event Activity

The economic and fiscal impacts analysis is based on several factors including a hypothetical estimate of utilization that was developed from the research previously summarized including input from the client group, market research, industry trends, input from potential users, the proposed building program, information on comparable facilities as well as other research.

Event activity at new facilities typically experiences a “ramp up” period to a stabilized level of activity which occurs for several reasons. For instance, some groups that book their event several years in advance may not want to risk that a facility’s construction is delayed and not completed in time for their event. In addition, some groups may choose to let management “fine tune” its operations before hosting an event at a new facility. In addition, event promoters noted that attendance at many larger tournaments takes time to grow and mature in a new facility and geographic location. Consequently, the length of time for new venues to reach stabilized operations typically varies between three and five years. Although this analysis assumes that Year 5 represents a stabilized year of operations, the proposed new Green Branch Multi-Field Sports Complex could potentially achieve stabilized operations in a shorter period of time. However, it is important to recognize that the overall utilization at any facility is typically dependent on a number of factors (e.g., market size; accessibility; nearby amenities; size, configuration and quality of the facilities offered; effectiveness of the management team in booking the facility; date availability; cost, etc.) and is rarely consistent. As such, estimated utilization represents a stabilized year of operations.

As shown in the following table, the event activity at the proposed new Green Branch Multi-Field Sports Complex is estimated to range from 20 to 22 tournaments and 334,000 to 372,800 in total attendance which reflects an increase from the previous study effort for the reasons previously cited. Based on market research, it is assumed that nearly all of the activity would be incremental new to the County whereas approximately 40% is assumed to be incremental new to the State. This incremental activity reflects new events as well as increased attendance at events currently taking place in other locations throughout Maryland with a new multi-field sports complex.

Proposed Green Branch Multi-Field Sports Complex			
Estimate of Event Activity			
Category	Range		
Season	March 1 - November 30		
Tournament Activity			
Total Events	20	-	22
Total Event Days	40	-	44
Number of Participants	40,000	-	44,000
Number of Spectators	100,000	-	110,000
Average Length of Stay (Days)	2.0	-	2.0
Total Attendee Days	280,000	-	308,000
Room Nights	56,000	-	61,600
League Activity			
Total Participant Days	54,000	-	64,800
Grand Total Attendee Days	334,000	-	372,800

Event types used in the analysis are defined as follows:

- Tournaments include multi-day youth and amateur competitions in a variety of sports such as lacrosse, soccer, rugby and ultimate Frisbee. These events may include teams from throughout Maryland, the surrounding region and/or national level competitions.
- League activity includes elite (or premier) club sport play for youth and amateurs in various sports such as lacrosse, soccer, rugby and ultimate Frisbee. League activity at the proposed multi-field sports complex is not envisioned to include recreational play on a regular basis.

Based on the amount and diversity of supply of regional facilities as well as input from event promoters, research suggests relatively limited demand for other sports and entertainment activities such as concerts, festivals and family shows.

On-Going Financial Operations and Capital Improvement Planning

As the site's land owner, the M-NCPPC also needs to ascertain the financial impact of developing the proposed new Green Branch Multi-Field Sports Complex. Research indicates that the operating revenues (e.g., facility rental/programming, food/beverage, advertising/sponsorship, etc.) and operating expenses (e.g., salaries & wages, benefits, utilities, repairs/maintenance materials/supplies, insurance, general/administrative, sales/marketing, etc.) varied significantly among comparable

complexes based on the program elements (e.g. number and type of fields), usage levels, operating models, and other factors. As such, the on-going operating requirements for the proposed new Green Branch Multi-Field Sports Complex will be dependent on the business model selected including specific operating responsibilities and financial terms negotiated with the operator. For instance, the ability to share human and/or financial resources with other municipal departments would result in lower facility operating costs. By contrast, the ability to transfer certain operating responsibility risk to the facility operator would lessen the financial burden for the M-NCPPC and other public entities. The ability to generate non-operating revenues such as hotel rebates/ reimbursements and/or naming rights could positively impact financial operations. For preliminary business planning purposes, a minimum operating budget of approximately \$1 million to \$1.2 million would be in line with other comparable complexes.

In addition, a facility's physical state relative to that of its competitive supply has an impact on its marketability, resulting financial performance and return on investment. As such, effective capital improvement planning and appropriate funding of projects is an important aspect of developing and maintaining a facility's competitiveness in the marketplace. Because these types of venues typically experience a great deal of use, they can physically deteriorate quicker than other publicly-owned assets. Throughout the U.S., it is not uncommon for local governments to struggle to adequately maintain and improve their sports complexes at a level that allows them to maximize functionality and competitiveness. As such, it is recommended that the M-NCPPC and/or the operator plan for an annual payment specifically designated as a maintenance reserve fund in order to safeguard the investment. This fund is intended to cover any extraordinary annual/future capital repairs or improvements to the proposed new Green Branch Multi-Field Sports Complex. As a point of reference, the M-NCPPC's current capital reinvestment strategy is to reinvest 2% of an asset's value each year toward asset protection and preventative maintenance using a Capital Asset Lifecycle Monitoring Plan.

Direct Spending

As mentioned previously, the first step in calculating economic impact is estimating the direct spending generated in the area. Direct spending relates to revenues generated from on-going operations of the proposed new multi-field sports complex as well as attendee spending outside of the complex. Adjustments were made in order to account for leakage and displacement and better reflect net new spending.

Gross Incremental Operating Revenues – Based on the estimated event activity, annual incremental gross operating revenues at the proposed new Green Branch Multi-Field Sports Complex are estimated to range from \$1.6 million to \$1.8 million in the County of which approximately \$655,000 to \$743,000 are assumed to be net new to the State.

Attendee Spending Outside the Complex - This category reflects the spending patterns of attendees outside the multi-field sports complex before and after events. Based on the estimated mix of event activity, attendees were categorized as tournament overnight (which generate hotel room nights) or tournament non-local, non-overnight and assigned different spending amounts based on data provided by secondary sources.

These spending amounts were then allocated among various categories including lodging, eating and drinking places, retail, entertainment/recreation and transportation. For purposes of this analysis, a spending amount of \$103 per day for tournament overnight attendees and \$26 per day for tournament non-local, non-overnight attendees are utilized. The estimated spending amounts and the allocation among specific categories are based on various primary and secondary sources including, but not limited to, Maryland Office of Sports Marketing, Maryland Office of Tourism as well as national surveys of sporting event attendees. Based on these and other assumptions, incremental new direct attendee spending outside the proposed new Green Branch Multi-Field Sports Complex is estimated to range from \$18.1 million to \$19.9 million in the County of which \$9.5 million to \$10.5 million would be new to the State.

Summary of Direct Spending

Based on these assumptions, the incremental new direct spending related to on-going operations and attendee spending outside the proposed multi-field sports complex is estimated to range between \$19.6 million and \$21.7 million in the County. The portion of direct spending estimated to be incremental new to the State ranges from \$10.2 million to \$11.2 million.

These spending amounts are considered direct spending and, therefore, serve as the basis for the multiplier analysis. Direct spending amounts were assigned logical industry categories and relevant multipliers were applied to these amounts in order to calculate estimates for total spending, jobs and earnings.

Indirect/Induced Spending

The IMPLAN model is used to generate the indirect and induced impacts spawned from the estimated economic activities within the area. The indirect impacts represent inter-industry trade from business to business. Likewise, the induced impacts represent the economic activity spurred by the household trade that occurs when employees make consumer purchases with their incomes. According to the IMPLAN model, incremental new direct spending spurred by the proposed new Green Branch Multi-Field Sports Complex is estimated to generate between \$11.4 million to \$12.6 million annually in indirect/induced spending in the County. The portion of indirect/induced spending estimated to be incremental new to the State ranges from \$7.4 million to \$8.2 million.

Total Spending

Outputs from the IMPLAN model indicate that total (i.e., direct, indirect and induced) spending generated from the proposed new Green Branch Multi-Field Sports Complex is estimated to range from \$31.1 million to \$34.3 million annually in the County. The portion of total spending estimated to be incremental new to the State ranges from \$17.6 million to \$19.4 million. Dividing the total impacts by the direct impacts yields an economic multiplier of approximately 1.6 at the County level and 1.7 at the State level. Thus, every dollar of direct spending is estimated to generate \$1.60 in total economic activity at the County level and \$1.70 at the State level.

Total Jobs

The IMPLAN model calculates the number of total jobs by dividing the estimated direct spending by \$1.0 million then multiplying by the appropriate multiplier. Using this methodology, the economic activity associated with the on-going operations of the proposed new Green Branch Multi-Field Sports Complex is estimated to support between 350 and 380 incremental new total jobs in the County of which approximately 180 to 200 would be incremental new to the State. These jobs would be created in many sectors of the economy, which both directly and indirectly support the increased level of business activity in the area.

Total Earnings

Outputs from the IMPLAN model indicate that incremental new earnings generated from the on-going operations of the proposed new multi-field sports complex are estimated to range from \$11.1 million to \$12.3 million in the County of which \$6.6 million to \$7.3 million would be incremental new to the State.

Summary of One-Time Economic Benefits Associated with Construction

Development of the proposed new Green Branch Multi-Field Sports Complex also generates one-time economic impacts to the County and State during the construction period. The economic impacts generated from construction-related spending depend on the nature of the spending (e.g., labor, materials/supplies, etc.) and where the spending takes place (e.g., County, State, etc).

Approximately \$40.0 million of the estimated total project cost of \$46.8 million is attributable to “hard” construction costs. However, because not all construction related costs (e.g., labor, materials/supplies) are assumed to be spent in the County or the State, this amount is discounted. Based on information from the preconstruction consultants, it is estimated that approximately \$29.6 million of the construction costs would be spent on labor and materials/supplies derived from within the State which would generate an estimated \$50.2 million in total spending. This economic activity is estimated to support 400 total jobs that create \$23.2 million in personal earnings at the State level.

Proposed Green Branch Multi-Field Sports Complex Estimated One-Time Economic Benefits From Construction		
Category	Prince George's County	State of Maryland
Direct Spending	\$11,010,000	\$29,646,000
Induced/Indirect Spending	\$5,936,000	\$20,601,000
Total Spending	\$16,946,000	\$50,247,000
Total Jobs	140	400
Earnings	\$7,727,000	\$23,207,000

Note: State amounts include County amounts.

Summary of Incremental Fiscal Benefits (Tax Revenues) Associated with On-going Operations and Construction

Annual tax revenues related to on-going operations of the proposed new Green Branch Multi-Field Sports Complex are estimated to range from \$481,000 to \$534,000 at the County level and \$956,000 to \$1.1 million at the State level. The tax revenues generated during the construction period are estimated to be \$1.9 million at the State level and \$167,000 at the County level.

Proposed Green Branch Multi-Field Sports Complex		
Estimated Incremental Tax Revenues - Construction and On-Going Operations		
Municipality/Tax	On-Going Operations (Annually Recurring)	Construction (One-Time)
Prince George's County		
Hotel Occupancy Tax	\$315,000 - \$347,000	\$0
Local Personal Income Tax	120,000 - 133,000	167,000
Admissions & Amusement Tax	46,000 - 54,000	0
Total	<u>\$481,000 - \$534,000</u>	<u>\$167,000</u>
State of Maryland		
Sales and Use Tax	\$678,000 - \$746,000	\$935,000
Personal Income Tax	229,000 - 253,000	808,000
Corporate Income Tax	49,000 - 54,000	139,000
Total	<u>\$956,000 - \$1,053,000</u>	<u>\$1,882,000</u>
GRAND TOTAL	\$1,437,000 - \$1,587,000	\$2,049,000

Note: Fiscal benefits shown for construction occur during the entire construction period.

The pages that follow outline key assumptions used to estimate the incremental new fiscal benefits associated with the on-going operations of the proposed multi-field sports complex.

Prince George's County Taxes

Admissions and Amusement Tax - The admissions and amusement tax is a local tax collected by the State Comptroller's Office for local municipalities. The entire amount of the tax collected, less administrative expenses, is returned to the municipalities and counties imposing the local tax. The tax is generally levied on the admission or amusement cost for activities such as movies, amusements, athletic events, concerts, golf and the sale of refreshments at a nightclub or other similar entertainment venue. The tax on admissions differs among local municipalities in Maryland. Prince George's County applies a 5% tax on movies on the historic register and single-screen movie theatres and a 10% tax on the admission or amusement cost for all other activities such as movies, athletic events, concerts and rental of athletic facilities. If the gross receipts from the activity is also subject to the sales and use tax, the admissions and amusement tax is limited to 5%. For purposes of this analysis, the amusement and admissions tax is based on applying a 10% tax rate to the incremental new field rental at the proposed new Green Branch Multi-Field Sports Complex.

Local Personal Income Tax – Prince George’s County imposes a local personal income tax of 3.2% which is applied to adjusted gross income and it applies to the taxable income of residents and nonresidents who derive income from a County source. For purposes of this analysis and based on information provided by the Comptroller of Maryland, an overall effective tax rate of 2.2% is calculated based on the federal adjusted gross income and the total personal income tax paid to the County for calendar year 2011. This effective tax rate is applied to total earnings estimated to be generated by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex. In addition, an adjustment is made to reflect that local income tax is based on where you live, not where you work.

Hotel/Motel Tax – Prince George’s County imposes a tax on accommodations at a rate of 5.0%. Proceeds from this tax are collected by the County, of which a portion is distributed to the municipality where the tax was collected and to the Board of Education. For purposes of this analysis, the 5.0% hotel/motel tax is applied to incremental new direct hotel spending estimated to be generated by on-going operations of the proposed new Green Branch Multi-Field Sports Complex.

State of Maryland

Sales and use tax, personal income tax, and corporate income tax revenues represent the majority of the State’s total tax proceeds. While other taxes may be positively impacted by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex, they are not quantified in this analysis.

In general terms, all State tax proceeds are collected in the State’s General Fund and then allocated to variety of program areas, such as education, transportation, public safety, and others. As such, individual revenue sources, such as sales and use tax, are not designated to fund specific programs. As a result of this process, municipalities and counties may benefit from a variety of State and locally administered programs. For purposes of this analysis, only collections have been quantified, without regard as to how these funds are ultimately spent through the individual State departments/funds.

The following describes the primary State-level taxes quantified in this analysis based on information obtained from the State of Maryland Comptroller.

Sales and Use Tax – The State of Maryland collects a sales and use tax from sales and leases of tangible personal property and some services throughout the State. Sales and use tax is uniform throughout the State at 6.0%. This tax source is the State’s second largest source of general fund revenue. For purposes of this analysis, the tax rate was applied to estimated taxable direct and indirect/induced spending at the State level generated by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex.

Personal Income Tax – The State of Maryland imposes a personal income tax assessed against personal income earned in the State. The State income tax is a graduated rate ranging from 2.0% to 5.75% of taxable income. Non-residents are subject to a special nonresident tax rate of 1.25% in addition to the State income tax rate. This tax source is the State’s largest single source of general fund revenue. For purposes of this analysis and based on information provided by the Comptroller of Maryland, an effective tax rate of 3.5% was calculated based on the federal adjusted gross income and the total personal income tax paid to the State in 2011 (the most recent year for which data was available).



This effective tax rate was applied to total State-level earnings estimated to be generated by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex.

Corporate Income Tax – A corporate income tax of 8.25% of corporate federal taxable income adjusted by State modifications is also levied by the State of Maryland on corporations. For purposes of this analysis and based on information provided by the Comptroller of Maryland, an effective tax rate of 0.3% was calculated based on the Gross State Product and the total corporate income tax paid to the State in 2012. This effective tax rate was applied to total State-level spending estimated to be generated by construction and on-going operations of the proposed new Green Branch Multi-Field Sports Complex.

Next Steps

Typical next steps in the development planning process include securing potential public and private sector funding partners, selecting a business operating model, negotiating the terms of the operating agreement and identifying a dedicated source of capital improvement funding.

Case studies suggest that communities have used a variety of financing techniques and funding sources to construct, operate and maintain similar sports complexes. Using traditional municipal funding sources, harnessing multiple funding partners and/or capitalizing on private investment opportunities are all being used to develop sports complexes across the U.S.

Based on the experience of other communities as well as the estimated \$46.8 million project cost budget for the proposed sports complex, it appears that diverse funding mechanisms will likely be needed. Potential funding sources used at other facilities include surplus revenues or designated facility revenues, sales and use tax, hotel/motel tax, food/beverage tax, special taxes such as admissions and amusement tax, vendor funding, ad valorem tax, as well as local and State appropriations.

Some local governments have been able to capitalize on special funding that may require approval at the state level (e.g., changes in taxes imposed, rebates for collections within local jurisdictions or amounts on existing taxes) to assist in their project. Tax increment financing secured by a pledge of net increases in property or sales taxes resulting from the development of an area within a defined redevelopment district is an option that has been utilized. The success of this type of financing is dependent upon a redevelopment district being established and a strong market driven redevelopment atmosphere that would provide a constant source of new privately owned and financed projects within the district. Creating partnerships with multiple jurisdictions such as the City of Bowie, Prince George's County and the State of Maryland as well as seeking grants and private investment (e.g., naming rights, donations, advertising/sponsorships, etc.) will likely be required to move the proposed sports complex to the next stage of development.

Given the unique nature of event activity at the proposed complex in Prince George's County and no stable tenant base, a financing plan predicated on the use of operating revenue sources would be tenuous at this time. The core financing plan will need to be based on traditional public financing with the utilization of governmental tax sources. That said, efforts should be made to maximize private sector investment to minimize the public risk, where possible. To the extent that certain specific sources such as those noted above can be identified, they can be considered a supplemental revenue stream to the core finance plan.

Appendix A - Case Studies

As part of our research, we analyzed data on several comparable facilities relative to ownership/management structure, building program elements, event activity, financial operations, and operating strategies obtained from direct interviews with management as well as secondary sources. Although not all facilities profiled in this section are directly comparable to the proposed new Green Branch Multi-Field Sports Complex, they can still offer a frame of reference in certain areas of operation.

Ashton Brosnaham Soccer Complex – Pensacola, Florida

The 10-field complex is owned by Escambia County and operated and maintained by the Gulf Coast Texans Soccer Club through a lease agreement. All 10 fields are lighted and natural grass. One of the fields is a stadium field and includes seating for 2,500, a press box, and adjacent restroom and concession facilities. The complex had four softball fields that are being converted to additional soccer fields.

The complex is primarily utilized by the Gulf Coast Texans Soccer Club and its travel and recreational youth and adult soccer clubs and leagues. Tournaments are regularly programmed with the NCAA Division II Men's and Women's Soccer National Championships being played in 2006.

Site Plan



Program Summary

- 10 lighted natural grass fields
- Lighted stadium field - 2,500-seating capacity
- Concession facilities (2)
- Restroom facilities (2)
- Picnic Pavilion (1)
- Playground (1)

Aurora Sports Park – Aurora, Colorado

The 23 soccer/multi-use fields are part of a larger development that is owned, operated, and maintained by the City of Aurora. The complex includes the 23-field soccer/multi-use fields and 12 baseball/softball fields. The soccer/multi-use fields are utilized for soccer, lacrosse, rugby, and football. The complex is open from the third weekend of March through the first weekend of November.

The Park has a booking priority system with the following groups having first priority on field space: 1) independent youth sports organizations that are recognized by the City as having a certain percentage of Aurora residents. The sport must be considered “in season” when requesting field space. 2) City-run youth and adult recreational programs. 3) Tournament promoters. Weekends from May through July are reserved specifically for tournaments with league play slotted around tournaments if available.

The complex hosts approximately 350,000 users annually. The five major tournaments hosted at the complex (on both the baseball/softball fields and multi-use fields) are estimated to generate \$18.5 million annually in direct economic impact.

There are six full-time employees at the complex with five full-time staff for maintenance and one for booking/operations management.

Site Plan



Program Summary

- 23 soccer/multi-use natural grass fields
- Championship field with berm seating for 500
- Parking capacity: 2,800 + additional 300 unpaved
- Restroom / concession facilities (2)
- Picnic Shelters (3)
- Walking Trail

Georgia Sports Park – East Point, Georgia

The six-field complex is owned, operated, and maintained by the Georgia Soccer Development Foundation (GSDF). Five of the fields were opened in 2006 and the sixth was developed in 2009. All six fields are natural grass and none are lighted. The GSDF is a non-profit organization that was originally comprised of two sports groups: Georgia Soccer Park, LLC; and Concorde Fire Soccer Club.

The Concorde Fire Soccer Club, the Atlanta Flying Disc Club, and the Atlanta District Amateur Soccer League each have booking priority of the complex. The complex is by reservation only and is also used by Soccer in the Streets, Liga de el Sueno, The Luke Project Sports, USA Ultimate, Clan Na NGael Gaelic Football, America Scores/Atlanta, and Woodward Academy Athletics.

There is one full-time manager, one contract full-time labor position, and one part-time maintenance employee. The manager is responsible for the field condition, budget, scheduling of fields, event management, and fundraising for planned future development. There is a nine-member Board of Directors that is comprised of regional business leaders and a representative of the Concorde Fire Soccer Club.

The complex hosts 100,000 users annually and 37 weekends of tournament and league play activity. The complex has paved parking sufficient to accommodate their player and participant needs. There are limited on-site amenities with portable restrooms used and no bricks and mortar facilities. The goal of the GSDF is to become a 16-field complex that includes permanent restrooms and concessions, office building, and small capacity stadium.

Site Plan



Note: The above site plan is prior to the addition of the sixth field.

Program Summary

- Six (6) natural grass fields
- Paved parking
- Portable restrooms
- Portable concessions

Hampton Roads Soccer Complex – Virginia Beach, Virginia

The 21-field complex is located on land owned by the City of Virginia Beach. The Hampton Roads Soccer Council (HRSC), a non-profit organization, leases the land at the cost of \$1.00 per year and is responsible for operating and maintenance. The site includes seven small-sided fields, 12 full-size fields, and two full-size artificial turf fields. There is a 2,500 square foot Headquarters Building with offices, restrooms, concessions, meeting room, and trainers/first aid room as well as a second restroom/concession facility on site. There are two picnic pavilions that serve as tournament centers.

The HRSC was privately developed. Fundraising was accomplished through corporate donations, foundation grants, and fundraising events. The North American Sand Soccer Championships, which are promoted by HRSC, is the primary fundraising event with all proceeds specifically directed to capital development at the complex. The complex has three full-time staff and a reported operating budget of \$695,000 annually.

Created in 1991, the HRSC consists of three soccer clubs including Beach FC, Virginia Rush, and Southeastern VA Women’s Soccer Association. There is a 24-member Board of Directors with 12 representatives from the three soccer clubs and 12 At-Large community members.

The complex is home to an average of 12 regional tournaments annually. There are approximately 60,000 out-of-town visitors accounting for approximately \$8 million in annual direct economic impact.

Site Plan



Program Summary

- 21 fields
 - Seven (7) small-sided, natural grass, irrigated fields
 - 12 full-size, Bermuda grass, irrigated fields
 - Two (2) full-size artificial turf fields
- Headquarters Building – 2,500 square foot with restrooms, concessions, meeting room, trainers/First Aid room, and staff offices
- Restroom / concession facility (1)
- Picnic Pavilions (2)
- Playground (1)

Kirkwood Soccer Complex – New Castle, Delaware

Owned by the County of New Castle and leased to the Kirkwood Soccer Club (KSC), the 14-field and indoor soccer complex opened in 1992. The complex is home to the 3,000 member Kirkwood Soccer Club’s programs, high school soccer, collegiate soccer, tournaments, camps, and clinics.

KSC has a 50-year lease with the County to operate and maintain the complex. KSC pays the County \$1.00 annually. KSC developed the original 13 natural grass fields and indoor field arena through US Soccer Federation grants and private fundraising. In 2005, the complex added the 14th artificial turf field and paved the parking lots. Kirkwood Soccer Complex does not have permanent lighting on any fields. When required, the complex utilizes portable lighting for the artificial turf field. The complex also offers portable lighting as a rental option with field rentals.

The KSC, through its arrangement with the County, is home to county soccer leagues after KSC practices have finished and grants rights to the County for the use of the indoor arena. There are six high schools that utilize the complex for games.

The complex hosts approximately eight annual tournaments with KSC hosting four and the others being held by outside promoters. The annual economic impact associated with the complex is estimated to be \$3.5 million.

There are five full-time employees that manage both the complex and soccer programs and four seasonal part-time grounds crew staff. KSC is a non-profit and has a break-even annual budget of \$1 million.

Site Plan



Program Summary

- 14 fields
 - 13 natural grass fields and one (1) artificial turf
- Indoor field surface (1)
- Field House – 10,000 square foot with indoor field surface, bleacher seating, offices, concessions, restrooms
- Picnic pavilions (2)

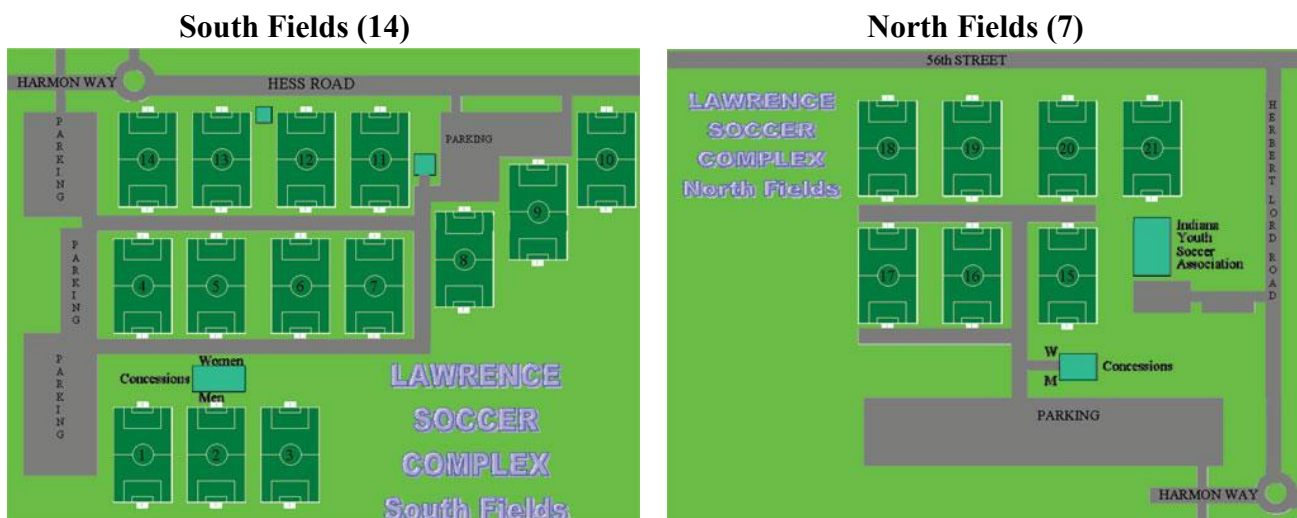
Lawrence Sports Complex – Lawrence, Indiana

The 21-field complex is owned by the City of Lawrence and operated by the Lawrence Soccer Corporation, Inc. Maintenance is shared between both the City of Lawrence and the Lawrence Soccer Corporation, Inc. The complex originally had seven fields and an additional 14 were added in 1999 on the site of the adjacent recently decommissioned Fort Benjamin Harrison site. The complex is primarily used for soccer.

Prior to 1999 as the Fort was being decommissioned, the City was interested in a possible field expansion but would only get involved if the six local soccer clubs that were constantly competing for field space would merge into two clubs. One club, Northeast Youth Soccer League (NYSL) would handle recreational soccer programs and the other, FC Pride (FCP) would handle travel soccer programs. From those discussions the Lawrence Soccer Corporation, Inc., (LSC) a non-profit organization, was formed. The LSC has a five-member board that is comprised of two members from NYSL and FCP and one member from the City of Lawrence Parks and Recreation Department.

The complex is operated by one full-time staff member and one part-time person and utilizes volunteers throughout the year for field lining and maintenance. The complex has annual operating revenues of approximately \$170,000 to \$220,000 and both the LSC and the City realizes approximately \$200,000 to \$300,000 in operating expenses. Operating losses are absorbed by the City.

The complex is estimated to produce approximately \$9 million annually in direct economic impact. There are four major tournaments hosted by the LSC annually. The complex is used by the FCP, NYSL, Lawrence Central High School as well as the local Hispanic soccer league and an adult soccer league.



Program Summary

- 21 natural grass fields
- Three (3) fields are lighted and have scoreboards
- Parking capacity: 5,000+ (use of the adjacent decommissioned Fort Benjamin Harrison grounds)
- Restroom / concession facilities (2)
- Picnic shelters (2)

Manchester Meadows – Rock Hill, South Carolina

The eight-field complex is owned by the City of Rock Hill and operated by the City of Rock Hill's Parks, Recreation & Tourism Department. The complex opened in 2006 and has six natural grass fields and two artificial fields with all fields being lighted. Both artificial turf fields have seating for 750 and all fields have scoreboards.

The City of Rock Hill recreation programs and Discoveries Soccer Club are the main users of the complex on weekdays. Weekends are reserved for tournament play. Discoveries Soccer Club pays \$11,000 annually. The Discoveries Soccer Club is required to pay all bid fees for tournaments and exclusively utilizes one field on weekdays, is entitled to two complimentary weekends to host tournaments, and is not charged for conference room/pavilion usage or to host camps.

There is seven full-time staff dedicated to the complex and three part-time equivalents. Additionally, there are two sports programmers that work with Manchester Meadows and the other city facilities. There is an approximate annual budget of \$500,000 in expenses and \$100,000 in revenue. The City sells sponsorships for the fields and scoreboards and generates revenue through field usage fees, pavilion rentals, and concessions.

There is an established booking priority system: 1) City of Rock Hill youth programs; 2) tournaments that drive economic activity to the City; and 3) Discoveries Soccer Club related activities. The 275,400 users at the complex are estimated to generate \$8.5 million annually in direct economic impact.

Site Plan



Program Summary

- Eight (8) lighted fields
 - Six (6) natural grass fields and two (2) artificial turf
- Seating for 750 at each artificial turf field
- Field house – 9,000 square foot with restrooms, concessions, 150-capacity meeting room
- Parking capacity: 720
- Restroom/concessions in Field House
- Picnic pavilions (2)
- Playground

Maryland SoccerPlex – Germantown, Maryland

The Maryland SoccerPlex is owned by the M-NCPPC. The 22-field complex was built by the private, non-profit Maryland Soccer Foundation (MSF). The MSF has a 40-year lease agreement with the County and is responsible for operating and maintaining the complex at the MSF's sole expense. The complex is used primarily for soccer and lacrosse.

Opened in 2000, the complex has a 3,200-capacity championship stadium and a 64,000 square foot indoor venue with office space, restrooms, concessions, meeting room, and eight convertible basketball/volleyball courts that are also able to accommodate indoor futsal, lacrosse, rugby as well as trade shows and special events. Three lighted, artificial turf fields were added in 2008.

The complex is used by multiple soccer club programs representing over 25,000 youth players from the area, camps, clinics, and tournaments. The MSF has a booking priority that gives preference to organizations that support children from Maryland with a majority of games allocated to Montgomery County children specifically those living in Upper County. There are approximately 650,000 annual users of the complex which hosts an average of 10 tournaments annually.

The MSF annual expenses, including debt service, are approximately \$3.6 million. The MSF's revenue streams include, but are not limited to, field rental charges; rentals of the indoor venue; hotel rebates; and a portion of concessions from contracted vendor. The facility is operated by 15 full-time staff and five to seven part-time staff.

Site Plan



Program Summary

- 22 fields and indoor venue
 - 19 natural grass fields, one (1) indoor playing surface
- Three (3) lighted, artificial turf fields
- Parking capacity: 2,000
- Concessions and restrooms at indoor venue

Mesa Soccer Complex – Greer, South Carolina

The 16-field complex is owned by the Carolina Elite Soccer Academy (CESA) and the Greenville County Recreational District (GCRD) and operated by CESA. Ten of the fields were constructed by the CESA in 1995 and the GCRD developed the six additional fields, field lighting, additional parking, bathroom and concession area, and a playground in 2007. The Mesa Soccer Complex is primarily focused on soccer but recently began hosting lacrosse and ultimate Frisbee events.

CESA is the largest soccer club in the area with over 4,000 participants and four full-time staff that manages the soccer operations of the club, schedules the fields, and manages the tournaments. GCRD is responsible for maintenance for the complex.

CESA promotes four tournaments annually and one regional tournament every two years with additional tournaments added on an occasional basis. The complex was estimated to generate \$6.2 million in direct economic impact in 2012 based on five tournaments with 16,635 tournament players and 68,370 spectators. The direct economic impact for the first five years of operation was estimated to be \$16.7 million.

Site Plan



Program Summary

- 16 lighted, Bermuda grass fields
- Parking capacity: 1,250
- Restroom/concessions facilities (2)
- Picnic shelter (1)
- Playgrounds (2)
- Walking Trail

Mike Rose Soccer Complex – Memphis, Tennessee

The 17-field complex is located on land owned by Shelby County and is operated by a for-profit company, Soccer Management, who does business as OS Memphis. There are 16 natural grass fields that were constructed in 1999 and a 2,500-seat stadium field was added in 2001. All 17 fields are lighted, have scoreboards, and are natural grass with irrigation and drainage systems. Each of the 16 fields has two sets of seating for a total seating capacity of 80 per field. The stadium has television compatible lighting, showers and locker rooms, food court, corporate skybox, media services, administrative offices and a conference room. The complex was privately funded through revenue from private donors and corporate supporters.

The complex is home to many local youth soccer clubs and leagues, adult leagues, Hispanic leagues, summer camps, and tournaments. Through an agreement with Shelby County youth programs have a priority when booking fields. The parking lots are used for car shows, road races, and other miscellaneous events on a regular basis.

The fields are closed from mid-December through mid-February and only four fields are used in the summer so that the other fields can be maintained. The complex has 10 full-time employees. There are approximately 600,000 users at the complex annually.

Site Plan



Program Summary

- 17 lighted, Bermuda natural grass fields
- Stadium with 2,500-seat capacity
- Seating for 80 at each field
- Paved parking
- Restroom facilities (3)
- Concession facility (1)
- Walking Trail

Overland Park Soccer Complex – Overland Park, Kansas

The 12-field complex is owned and operated by the City of Overland Park. All 12 fields are lighted and are artificial turf with cooling systems installed in every field and at each team bench. Opened in 2009, the complex was constructed to be a tournament facility on weekends and support local youth sports on weekdays and open weekends. Although the complex primarily hosts soccer, it also holds lacrosse and ultimate Frisbee events.

Sporting Blue Valley Soccer Club (SBV), the largest soccer club in the region, signed a long-term lease agreement for office space in the field house and for ten fields on Mondays through Thursdays. In 2012, the complex hosted 37 weekend events including: 21 tournaments; 14 SBV League play weekends; and two ultimate Frisbee tournaments. There are approximately one million annual users. The annual direct economic impact of the complex is estimated to be between \$6.75 million and \$7 million.

Management has the ability to bump SBV League play on weekends if there is a tournament with substantial economic impact requesting that weekend. However, management cited that its 21 tournaments annually provide sufficient positive budgetary and economic impact and allows local play to be accommodated.

The complex has annual operating revenue of \$1.2 million. It originally was programmed to have a small net revenue but higher than anticipated electrical costs brought it to a break-even budget. There are two full-time staff members and 12 to 14 part-time staff. To manage the concessions operations there are five part-time staff. The City of Overland Park handles snowplowing, irrigation system maintenance, and mowing of non-field surface grounds.

Site Plan



Program Summary

- 12 lighted, artificial turf fields
- Seating for 40 at 11 fields and 800 at the Championship Field
- Scoreboards at every field
- Field house – 16,000 square feet with office space for staff, SBV, referees and tournaments; referees showers and restrooms; permanent First Aid area; lobby; and storage
- Parking capacity: 1,100
- Restroom/concession facilities (3)
- Shade shelters throughout complex
- Wi-Fi throughout complex
- Playgrounds (3)
- Skateboard Park and Basketball Court on-site

Reach 11 Sports Complex – Phoenix, Arizona

The 18-field complex was constructed by the City of Phoenix on land owned by the Federal Bureau of Reclamation. The City of Phoenix Parks and Recreation operates and maintains the complex. One of the fields is artificial turf while the other 17 fields are natural grass. All 18 fields are lighted. Phase I was completed in 2007 with ten fields and Phase II was completed in 2009 with an additional eight fields. The complex hosts soccer, lacrosse, field hockey, rugby, flag football and road races. Phase III is in the planning stages and will potentially include a championship quality 10,000-seat stadium with a press box and locker rooms.

The complex was created with the primary objective of attracting tournament play and allows very limited local play on the one artificial turf field only. There are approximately one million annual users of which 80% are estimated to be from out-of-state. The Reach 11 Sports Complex is estimated to generate approximately \$120 million in sales and \$2.9 million in tax revenue within the City of Phoenix boundaries.

The Parks and Recreation management team utilizes a booking priority system. Tournament applications are rated based on how many teams will be participating in the tournament, how many hotel rooms are being utilized, how many fields, and the ability to sign a multi-year contract. If there is a booking conflict the Parks and Recreation Director make the decision as to which tournament will be allocated the dates based on the maximum economic impact of the tournament.

Due to the majority of the fields being natural grass the complex is offline for almost four months of the year for maintenance. If there is a major tournament opportunity the maintenance schedule will be adjusted. There are eight full-time and ten part-time staff at the complex. The complex has operating revenues of approximately \$90,000 to \$120,000 annually and expenses of approximately \$1 million. Per the City of Phoenix’s agreement with the Bureau of Reclamation all revenues must go directly back into the complex via a designated reserve fund.

Site Plan



- **Program Summary**
- 18 lighted fields
 - 17 natural grass fields and one (1) artificial turf field
- Seating for 800 and permanent scoreboard at artificial turf field
- Parking capacity: 2,200
- Field house with management office space
- Restroom facilities (2) – one facility also contains storage, concessions, and office space
- Shaded picnic areas
- Playground

Striker Park – Glen Allen, Virginia

The 11-field complex is owned, operated, and maintained by the Richmond Strikers Soccer Club (RSSC). There are 10 natural grass fields and one lighted, artificial turf field. Striker Park, the first soccer specific complex on the East Coast at the time, opened in the early 1980's and was privately funded. The RSSC has 4,000 youth and adult members.

Striker Park is used exclusively by the RSSC for its soccer programs. The RSSC also have exclusive utilization and maintenance responsibilities for the ten-field West Creek Fields and exclusive utilization rights to the five-field Capital Park for its programs. Additionally, RSSC is the biggest user of the River City Sports, a 12-field artificial turf complex.

There is seven full-time staff focused on fields programming and maintenance. There is an additional six full-time staff that are concentrated on the soccer coaching aspect of the RSSC. The RSSC is a non-profit organization with an approximate annual budget of \$3.3 million and achieves a break-even goal. The RSSC hosts three major tournaments annually with the Jefferson Cup being its largest. The Jefferson Cup is in its 35th year and attracts 1,000 participating teams with an estimated 98% coming from outside of a 50-mile radius. The Jefferson Cup has an estimated economic impact of \$15 million and is held over the course of multiple weekends in March. The RSSC's other two tournaments, the Capital Fall Classic and Jefferson Open, are estimated to have an economic impact of \$2 million each and 65% of participants are estimated to be from outside a 50-mile radius. In addition to their own tournaments, the RSSC also contracts with other soccer club programs in the Richmond area to manage their tournaments.

Site Plan



Program Summary

- 11 fields
 - 10 natural grass fields and one (1) artificial turf, lighted field
- Seating for 400 at one 'stadium field'
- Scoreboard at 'stadium field'
- Parking capacity: 850
- Restroom Facility (1)
- Concession Facilities (2)
- Picnic pavilions (1) plus two open air areas

Conceptual Design Study
Green Branch Multi-Field Sports Complex
Prince George's County



Submitted to the Maryland Stadium Authority

by Hord Coplan Macht

January 22, 2014

Conceptual Design Study
Green Branch Multi-Field Sports Complex
Prince George's County
January 22, 2014

INTRODUCTION

SUMMARY OF TEAM INVESTIGATION

PROGRAM SUMMARY

FINAL CONCEPT DESIGN

NEXT STEPS

APPENDIX

INTRODUCTION

Hord Coplan Macht, Inc. (HCM) is pleased to present this site design feasibility report to the Maryland Stadium Authority (MSA) regarding the proposed Green Branch Multi-Field Sports Complex in Prince George's County, Maryland. In accordance with our agreement, this report summarizes our analysis, programming and conceptual site design for the multi-field complex and potential major league lacrosse stadium, which is intended to assist the MSA, the Maryland-National Capital Park and Planning Commission (M-NCPPC), Prince George's County and the State of Maryland with decisions regarding the potential development of the proposed new complex.

Our team's analysis and design work was done in parallel with two interrelated reports as follows:

1. The Business/Economic Analysis for the Proposed Green Branch Multi-Field Sports Complex in Prince George's County, Maryland, by Crossroads Consulting Services dated January 17, 2014.
2. Green Branch Multi-Field Sports Complex Concept Estimate, Final, by Barton Malow, Inc. dated January 17, 2014.

Hord Coplan Macht's programming, site analysis and preliminary design work was utilized by MSA, Barton Malow and the design team to develop a construction cost estimate. Both HCM's design feasibility study and Barton Malow's construction cost estimate were utilized by Crossroads Consulting to develop the Business/Economic Analysis for the MSA.

The information contained in the report is based on a five month programming, site analysis, and preliminary design process that included programmatic input by numerous stakeholders and potential facility users, regular meetings with Prince George's County, M-NCPPC and the MSA.

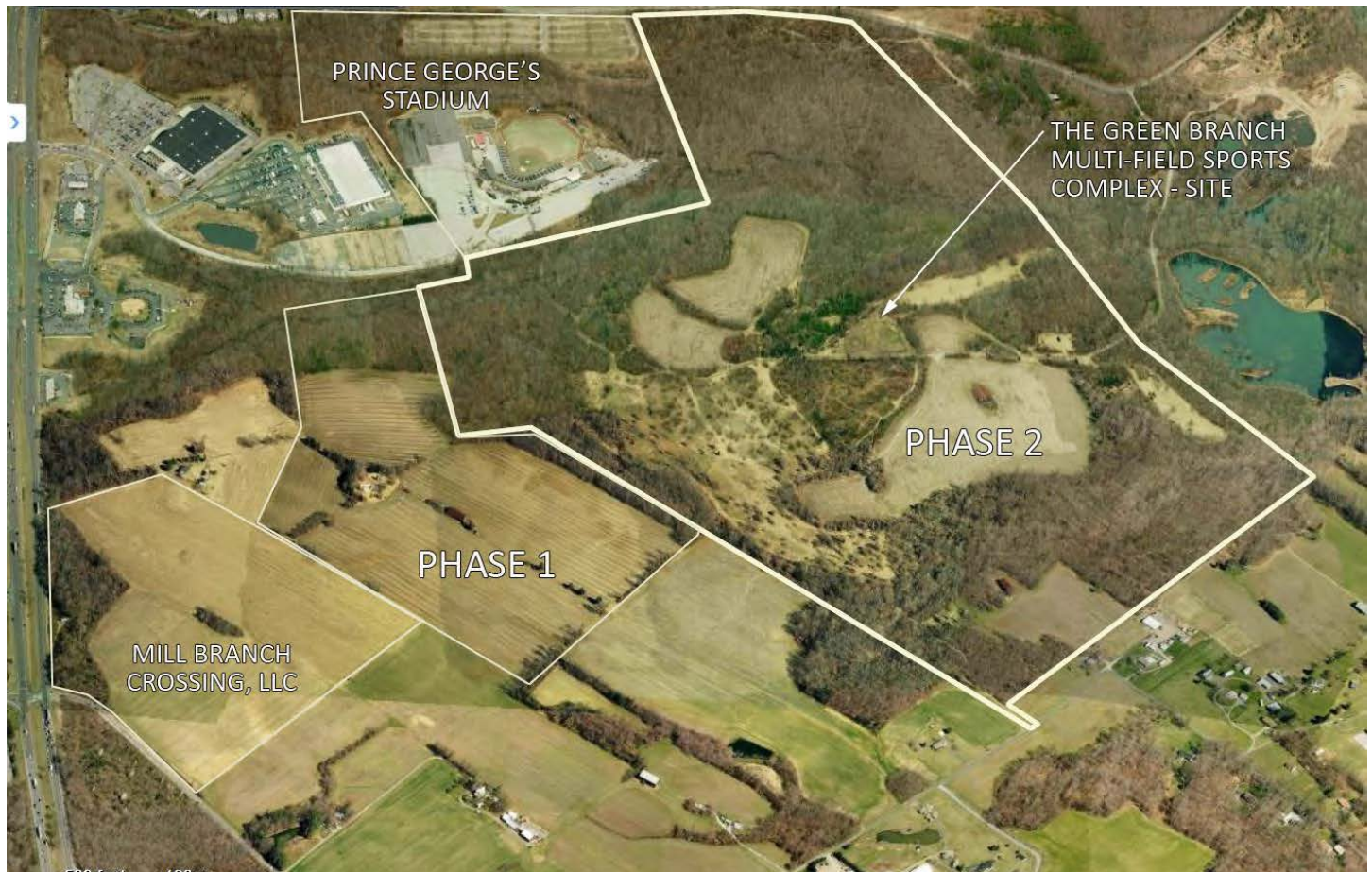
Project Background



Site Location

The proposed project site is located in eastern Prince George's County, south of Governor's Bridge Road, approximately 0.75-miles east U.S. Route 301 and 0.25-miles west of the Anne Arundel County line. The 254 acre project area is located due east of the Phase I M-NCPPC Recreational Park site, comprised of 65 acres and immediately south of the 62 Acre Prince George's County Stadium, home of the Bowie Baysox.

M-NCPPC currently owns both the Prince George's Stadium and the land to the south known as Green Branch Park comprised of 319 acres. The M-NCPPC oversees certain aspects of operations at Prince George's Stadium which is home to the Class AA Bowie Baysox minor league baseball team. M-NCPPC has been planning recreational facilities on two sites adjacent to the Bowe Baysox Stadium as



follows:

Phase 1 Site: Recreational Park at Green Branch (65 Acres)

In 2008, the M-NCPPC Park and Planning division prepared a master plan for a proposed new recreational athletic complex on a 65 acre (Phase 1) site due east of the 254 acre (Phase 2) study area. The Phase 1 site included a recreational park that was envisioned to include three (3) irrigated softball fields with bleacher seating; three (3) irrigated combination soccer/football fields with bleacher seating; a non-irrigated informal field area that could accommodate two (2) youth size soccer fields; a central concession/restroom pavilion; a 8,800 square foot play area; picnic pavilions; a loop pedestrian trail; and 495 parking spaces. Although none of the fields were to be lighted, underground conduit for future lighting was anticipated to be provided as part of the Phase 1 development. These program elements were planned to be built on the western 65 acres of the total 319-acre parcel.

Phase 2 Site: Multi-Field Sports Complex Facility at Green Branch (254 Acres)

As part of its long-term planning efforts, the M-NCPPC also developed a very preliminary concept plan for the 254 Acre Phase 2 study area which included a variety of recreational uses based on formal and informal levels of interest by potential user groups.

In December of 2012, M-NCPPC completed a study that considered the merits of constructing a new 22,000-seat lacrosse stadium to host the Major League Lacrosse Chesapeake Bayhawks and an adjacent 10-field sports complex that could accommodate youth/amateur leagues and tournaments as part of the Phase 2 development at the Green Branch Athletic Complex. While the results of this study indicated relatively low demand/viability for the MLL stadium it indicated a strong demand for a multi-field complex at this location.

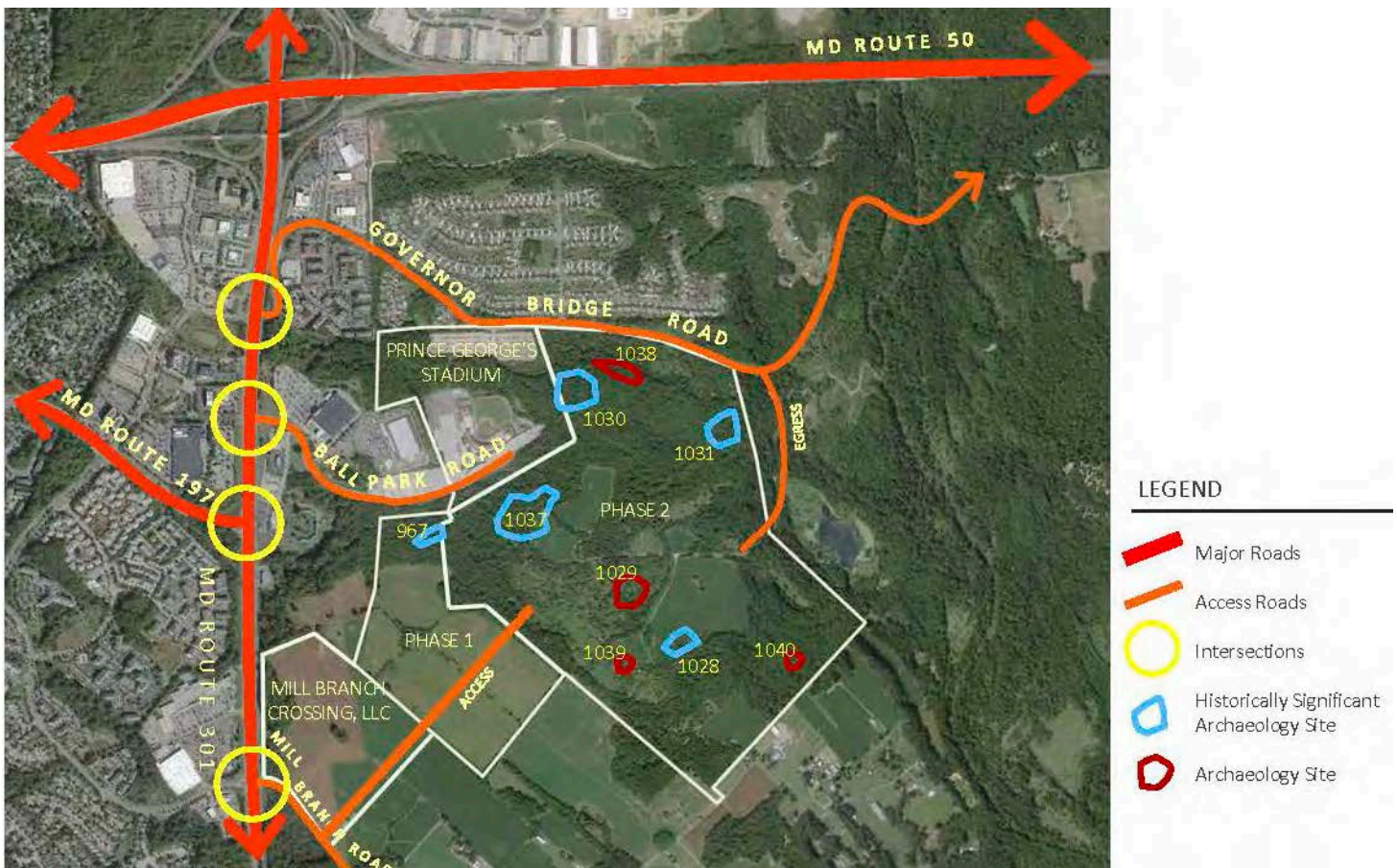
In August 2013 the MNCPPC requested the Maryland Stadium Authority (MSA) to complete a Phase II study that focused on performing site due diligence investigations and cost estimating associated with constructing a multi-field sports complex containing up to 12 fields at the Green Branch Park location. MNCPPC also requested the MSA perform an evaluation of potentially locating a 12-14,000 seat lacrosse stadium on the site, provide an estimate of its development cost and to perform an assessment of any traffic impacts it may have upon the site if constructed.

Scope of Work

Program Development, Site Analysis and Preliminary Design for the Phase 2 Site (254 Acres)

In response to MNCPPC's request, the MSA issued an RFP for A/E services to provide preliminary design and programming services. Hord Coplan Macht and our team of consultants was the successful respondent. Our team's scope of services for this engagement consisted of the following tasks:

- Program Development
- Environmental Analysis - Phase I (not to be confused with the "Phase 1" M-NCPPC site)
- Utility and Infrastructure Analysis
- Archaeological Analysis
- Providing a "Determination of Eligibility" (DOE) for five (5) Tobacco Barns
- Traffic Study
- Concept Planning for a potential 12-14,000 seat professional lacrosse stadium facility



- Concept Site Design
- Working with MSA's Construction Manager to develop construction cost and value analysis.

Summary of Findings

Working through the tasks above, the following is a summary of HCM's findings:

A multiple field sports facility is feasible. Market analysis from Crossroads Consulting indicated that the multi-field complex should have a minimum of 10 fields and that 12 fields would be ideal. HCM concluded that the 254 acre site can accommodate a 12 field program along with required parking and desired amenities. The site also has limited additional space for expansion of the field program or other use.

A 12-14,000 seat professional lacrosse stadium is less feasible. While the stadium itself and associated parking can fit on the 254 acre site, there are traffic impact challenges related to site access and potential off-site traffic impacts that would be very costly to resolve.

Based on the access and traffic challenges, this report also concludes that the Green Branch Phase 2 site will not accommodate both a 12-14,000 seat stadium and a 10-12 sports field program combined.

The following sections of this report provide further detail into HCM's process and results from the program development, site analysis and preliminary design

SUMMARY OF TEAM INVESTIGATION

HCM assembled a design team that combines local and experienced park and sports field complex consultants. The consultant team collaborated closely with the Maryland Stadium Authority (MSA), Prince George's County division of the Maryland National Park and Planning Commission (M-NCPPC), the M-NCPPC Prince George's County Department of Parks and Recreation, Crossroads Consulting (Economic Development Consultant) and Barton Malow (Construction Manager).

The following summarizes HCM's consultant team and each consultant's role and investigations:

Hord Coplan Macht (HCM) – Lead Consultant / Design Lead / Planner

Hord Coplan Macht (HCM) is a collaborative multidisciplinary firm with offices in Baltimore, Maryland and Alexandria, Virginia offering architecture, landscape architecture and planning services. HCM served as "Lead Consultant" and "Design Lead" for the interdisciplinary team. The HCM team brings together Maryland based experts in the planning, design and implementation of athletic facilities and public parks with a nationally recognized expert in the design of sports stadiums. The team has extensive experience on facility programming, planning and design. HCM worked very closely with the MSA, M-NCPPC and other team members to produce this study. HCM coordinated the work of the following consultants and utilized the results of each consultants investigations to prepare the final conceptual design illustrated within this report.

360 Architecture - Sports Venues Design

360 Architecture, based in Kansas City, Missouri, is an internationally known architecture firm specializing in sports venue design. 360 has built an extensive portfolio of widely respected arenas, stadiums, training facilities, recreation centers and sports complexes.

360 provided concept design services for the major league lacrosse stadium planning. 360 also provided cost data to the MSA for the stadium based on their experience in designing and constructing similar professional sports venues.

Please refer to Appendix A for the professional lacrosse stadium concept by 360 architects.

Sabra Wang & Associates – Traffic Engineering

Sabra, Wang & Associates, Inc. (SWA) is a Maryland Department of Transportation Certified Minority Owned Business headquartered in Columbia, MD with offices in Maryland, Virginia, and Washington, DC. SWA provided the team with Traffic Engineering and Transportation Planning services. SWA consulted with the team on site access, traffic context, traffic analysis, parking and internal circulation.

SWA provided traffic analysis for the 12-14,000 seat stadium and a 12-field multi-field program. Their evaluation summarizes that a 12-14,000 seat professional lacrosse stadium presents significant traffic feasibility challenges related to site access and potential off-site traffic impacts that would be very costly to mitigate. SWA concluded that a 12 field tournament facility is feasible.

The traffic evaluation conclusions from SWA combined with economic feasibility information provided by Crossroads Consulting provided valuable input and direction for the consultant team to proceed with developing a final program and site concept design based on the 12 field multi-sport facility without a professional lacrosse stadium programmatic component.

The traffic evaluation concludes that the sports complex can support (12) twelve tournament fields, a 4,000 person spectator event and supporting infrastructure without requiring additional off-site roadway or traffic control improvements.

Site Access

A single main access point from the south is recommended through a 50-foot easement located on the Mill Branch Crossing, LLC land parcel providing access from Mill Branch Road. In the event that the Phase I M-NCPPC recreational park at Green Branch is built on the 65 acres to the west, there will need to be design coordination between the Phase 2 access road alignment and the Phase 1 M-NCPPC park.

Two alternate locations were examined as potential site access points. One alternative is accessing the site from Ball Park Road. The

difficulties with this alternative are avoiding impact to Archeological Site 1037, the Bowie colonial plantation, and the prohibitive cost of constructing a roadway across the steep Green Branch stream ravine. A second alternative is off of Governor's Bridge Road. This location has an existing, unpaved, graded WSSC haul road that accesses the site from the east. Site traffic arriving at this access point would be required to drive through residential areas on Governor's Bridge Road, which is a two-lane roadway. This location is not feasible as a main access road but is recommended to be developed as an emergency access point only.

Parking

The team made a final recommendation of parking at a ratio of 100 cars per athletic field. Shared parking options were considered with the Prince George's Stadium complex to the north, however this alternative was not recommended due to the feasibility of connecting the two sites across the environmentally protected steep slopes and stream valley of the Green Branch tributary. In addition, the potential for overlapping schedules of the Baysox baseball games with future tournament events further reinforces that shared parking is not practical.

Please refer to Appendix B for SWA's traffic evaluation report.

Site Resources – Civil Engineer

Site Resources (SR), a Maryland Department of Transportation Certified Woman Owned Business, is the team's civil engineer located in Phoenix, MD. SR has extensive experience completing studies for recreation facilities at a variety of competition levels, including interscholastic, club, NCAA and professional teams. SR provided the team with a survey base plan, and provided utility and infrastructure analysis for the site. SR also consulted with HCM on the storm water management feasibility and conceptual storm water design requirements.

Site and Utility Infrastructure

The Phase 2 portion of the Green Branch Park site does not have a readily available connection point for utilities. This report recommends that water, septic and electric utilities be brought in from potential connection points on the west side of Route 301. From this point, the utilities are planned to come down Mill Branch Road, through the 50 ft easement located on the south side of the Mill Branch Crossing, LLC site, through the Phase 1 M-NCPPC park site to the Phase 2 multi-field athletic facility.

Stormwater Management

The State of Maryland Stormwater Management Regulations will require the treatment of stormwater runoff for all proposed impervious surfaces be managed on the Green Branch site. The SWM program will be satisfied by designing Environmental Site Design (ESD's) features integrated within the parking lots, along roadways and beneath the playing fields.

Please refer to Appendix C for SR's Site and Utility evaluation.

Navarro Wright – Environmental Design Services

Navarro Wright Consulting Engineers (NW), a Maryland Department of Transportation Certified Minority Owned Business (Hispanic) located in Baltimore, MD. NW is an interdisciplinary engineering firm with offices in Maryland, Delaware and Pennsylvania. NW's Environmental Services division evaluated the Green Branch environmental resources and constraints within the State of Maryland and Prince George's County regulatory framework.

Environmental Overview

NW guided our team's conceptual site design efforts with input from their Phase I environmental impact assessment. A Phase 1 Environmental Impact Assessment (EIA) identifies any regulated environmental resources present on the site through research and preliminary field walking. A Phase 2 EIA includes fieldwork and detailed field surveying to perform assessments required to obtain environmental permitting approval. This includes specific field work such as field delineation of wetlands, streams and associated buffers. It also includes items such as providing a Forest Stand Delineation (FSD). A Phase 2 EIA was not part of the scope of this study.

Primary Management Area

For the purposes of this feasibility study, HCM was informed by NW's Phase 1 environmental overview. In consultation with NW, HCM made conservative estimations of the boundaries of the protected Primary Management Area (PMA). A PMA is a vegetated buffer established or preserved along all regulated streams outside of the Chesapeake Bay Critical Area Overlay Zones.

The PMA includes:

- All regulated stream and associated stream buffers;
- 100-year floodplain.
- All wetlands and associated wetland buffers that are adjacent to the regulated stream, stream buffers, or the 100-year floodplain

- All areas having slopes of 15 percent or greater adjacent to the regulated stream or stream buffer, the 100-year floodplain, or adjacent wetlands or wetland buffers;
- Adjacent critical habitat areas.

The combination of streams, floodplain, wetlands, steep slopes and forest on the Green Branch site limit the amount of land available for level fields and parking areas. The environmental resources also limit the site's available access points.

Please refer to Appendix D for NW's Environmental Overview Document and Preliminary environmental Impact Assessment Report.

Applied Archaeology and History Associates (AAHA) - Archaeology

Applied Archaeology and History Associates, Inc. (AAHA), a Maryland Department of Transportation Certified Woman Owned Business located in Annapolis MD, provides all aspects of cultural resources services, including archaeological investigations, architectural history and historic studies. AAHA specializes in investigations conducted in advance of development, primarily in Prince George's and Anne Arundel County, Maryland.

AAHA provided general archaeology consulting and provided Phase II archaeological investigations on the archeology site 18PR1028. HCM utilized AAHA recommendations for the preservation of historical sites summarized below to establish physical planning limits for the development of a concept plan for the Green Branch athletic facility

Archaeology Overview

In response to M-NCPPC's early preliminary planning efforts to investigate a recreational concept plan for the 254 Acre Phase 2 site, a Phase I Archaeology study was provided by Greenhorne & O'Mara, Inc. in 2011 and submitted to the Maryland Historic Trust (MHT). The MHT then requested M-NCPPC to provide further evaluations of certain archeology sites and a Determination of Eligibility (DOE) for four (4) tobacco barns located on the Phase 2 site.

A Phase I archaeological investigation consists of a combination of background research and fieldwork designed to identify resources and define site boundaries within a given project area or Area of Potential Effect (APE). Phase I fieldwork consists of a number of methods including pedestrian survey, excavation of shovel test probes, remote sensing, and deep testing of appropriate landscapes. The use of specific field methods and techniques is dependent upon the type of ground cover present, the topographic setting, and the amount of observed disturbance in a given situation

A Phase II archaeological investigation is conducted in order to test or evaluate an archaeological site's eligibility for inclusion in the National Register of Historic Places (NRHP). A number of field methods and techniques may be implemented during Phase II investigations. These include systematic, controlled surface collection, additional shovel tests, mechanical augering, hand-excavated test units, deep testing, mechanical removal of the plow-zone, and use of remote sensing techniques.

A Phase III archaeological investigation is conducted once an archaeological site is determined to be eligible for inclusion in the National Register. The Maryland Historic Trust will then consider the effect of a proposed undertaking on the resource. If the property cannot be avoided, and if any damage or disruption of the resource will result from implementation of the project, a determination of adverse effect is made. Phase III investigation, also known as data recovery, is one response to such a determination. Data recovery efforts are undertaken by recovering significant data prior to disturbance. A number of field methods may be implemented during Phase III investigations, including hand excavated test units, deep testing, and mechanical removal of the plow-zone and other sediments. A Phase III investigation is often utilized as a public outreach in the form of interpretive signage and exhibits. Green Branch Park presents an excellent opportunity for these types of interpretive exhibits and public outreach.

Phase 1 Archaeology Summary

The 2012 Phase I archaeology survey resulted in the identification of eight archaeological sites. No additional archaeological investigation was recommended for four of these sites; as they were determined to lack the potential to provide additional information concerning life in the past.

The remaining four sites appear to possess the potential for intact subsurface archaeological deposits. These include sites **18PR1028** and **18PR1037** both domestic sites dating to the mid-18th – 20th century; **18PR1031**, an early 18th-century possible slave quarter; and **18PR1030**, the Late Archaic/Early Woodland Period prehistoric site. Additional Phase II level archaeological evaluation was recommended for these four sites should preservation in place of these not be possible.

Two of the historical sites, Site **18PR1037** and Site **18PR1028**, are both located on the Phase 2 Green Branch Park site. These sites are considered historically significant and each site would require a minimum of a Phase II archaeology study, and potentially a Phase III study if these sites are disturbed by the construction of the athletic complex. Site **18PR1037** is considered the most significant site and should be preserved as a very high priority. Because of its location, Site **18PR1028** is likely to be disturbed for the construction of the athletic facility. A Phase II archeology evaluation was performed by our team for Site **18PR1028** and submitted to Maryland Historic Trust (MHT) for review. While portions of Site **18PR1028** may be substantially preserved, it is anticipated that a Phase III archaeology study will be required as part of the final athletic facility project design.

Historic Site 18PR1028 - Phase II Archaeology Evaluation

As requested by the MHT, AAHA conducted the Phase II archaeological evaluation investigation of the T. Watkins Site (**18PR1028**) under contract with HCM. This evaluation is currently in for review with the MHT. It is AAHA's conclusion that Site **18PR1028** is historically significant and a Phase III Archeology evaluation will be required in the next phases of design. The archaeological resources at site **18PR1028** are recommended eligible for listing on the National Register of Historic Places.

Historic Site 18PR1037

Due to the high historic integrity of Site **18PR1037**, the Bowie Mansion site, significant effort was made by HCM to avoid disturbing this site in the planning of the Green Branch athletic facility. In the event that the site must be disturbed in the future, it is assumed that a Phase II and a Phase III archaeology investigation will be required.

Please reference Appendix E for AAHA's archeology investigation summarized above.

Retrospect LLC – Architectural Preservation

Retrospect, LLC, based in Anne Arundel County, is a private research and consulting firm specializing in architectural documentation and historic preservation. Retrospect provides clients with a range of cultural resource services, including architectural and historical research, survey and documentation and historic preservation law compliance. Retrospect specializes in mid-Atlantic vernacular architecture and has experience documenting a variety of property types throughout the continental United States.

Retrospect provided the "Determination of Eligibility" (DOE) evaluation and submission to the Maryland Historic Trust for five (5) Tobacco Barns located on the Green Branch site.



Tobacco Barn Determination of Eligibility (DOE)

Retrospect's DOE examines four (4) tobacco barns located on the Phase 2 site, as well as a previously undocumented tobacco barn located on the Phase 1 M-NCPPC park site. The later structure was not recorded in an earlier DOE (2001) and was included in this evaluation as it could be impacted by the proposed development of Phase 2. All but one of the barns are located in open fields. One structure, Barn 4, is surrounded on three sides by a copse of new-growth woods, although the area was likely open at the time of the barn's construction.

Retrospect has concluded and recommended that none of the five (5) barns was determined to be eligible for the National Register. The reasoning behind this conclusion is mainly due to the lack of integrity of the design, materials and/or workmanship. In several cases, the deterioration of the structures is too far advanced and in one case the structure is completely collapsed. The description for each of the barn structures can be reviewed in the full DOE attached in the Appendix E.

The final DOE must be reviewed and approved by the MHT, however HCM assumed that the barns will not require preservation for this feasibility evaluation for the Green Branch Multi-field Complex.

Please refer to Appendix E for the AAHA'S tobacco barn DOE evaluation.

KCI Technologies, Inc. (KCI) - Green Branch Park's Past Use by the Washington Suburban Sanitary Commission (WSSC) as a Sludge Entrenchment Site

In 2002, KCI Technologies, Inc. (KCI) was retained by the Maryland Environmental Service (MES) to conduct a Comprehensive Site Assessment and Engineering Analysis/Cost Estimate for nine (9) biosolids entrenchment sites in Prince George's and Montgomery Counties, Maryland.

In 1980, the Washington Suburban Sanitary Commission (WSSC) purchased 316-acres for the disposal of biosolids, and has since transferred portions of the land to Maryland National Capital Park and Planning Commission (MNCPPC). Prior to 1980, land use, was primarily agricultural.

The 254 acre Phase 2 Green Branch athletic facility site was entrenched with sludge in 1980 and 1981 and digested biosolids were surface land applied outside of the entrenched areas in 1983 and 1985. The entrenchment operation involved placing the biosolids in trenches typically 18 to 24 inches wide, three (3) to four (4) feet deep, and spaced on four (4) feet centers. After placement in the trenches, the biosolids were then covered with soil.

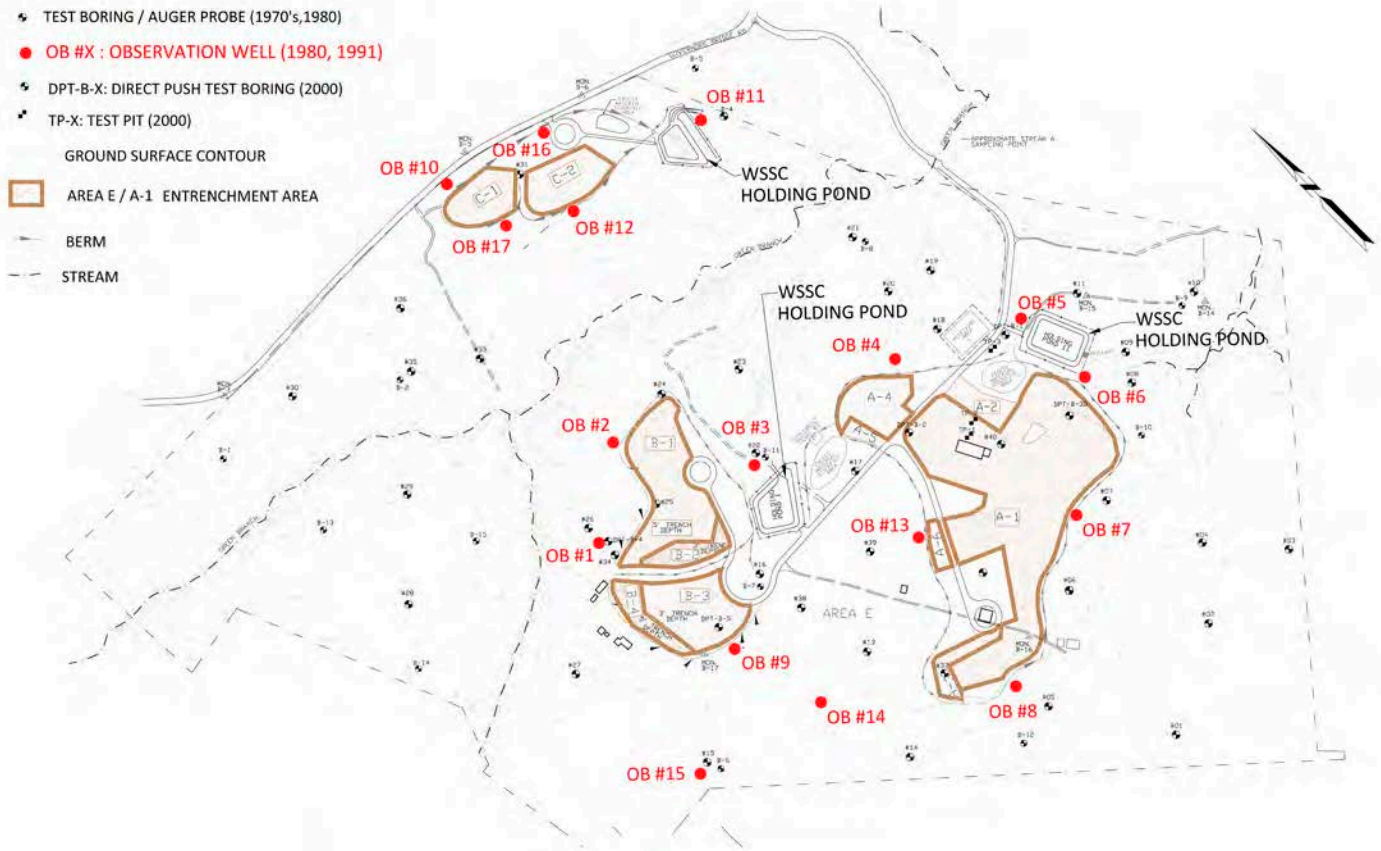
Groundwater and surface water monitoring has been conducted in accordance with conditions issued by the Maryland Department of the Environment (MDE). MES manages the monitoring program for the WSSC and the District of Columbia Water and Sewer Authority (DC WASA).

According to MES, the reuse of the Green Branch site as an athletic facility is feasible and there is precedent for such an adaptive reuse of a WSSC entrenchment site. Future land development, including roads, parking lots and structures at the site should consider the compressible nature of the entrenched soils. Geotechnical borings, soil analysis should accompany any future design work on the athletic facility and appropriate design modifications made based upon those engineering data findings.

Preservation, Relocation and Adjustment of WSSC Ground Water Observation Wells

The numerous observation wells associated with the previous WSSC biosolids entrenching operations must be preserved in place to the extent practical. There are a few wells that will need to be adjusted to meet the new elevations for the new grading and there are also a few wells that will need to be relocated. According to MES, the monitoring wells must remain, however they can be relocated and/or adjusted to accommodate new development of a recreational facility.

(Note: KCI Technology's report was not done as part of HCM's work).



PROGRAM DEVELOPMENT

To develop and refine the program for our conceptual design study, HCM worked very closely with the MSA, M-NCPPC and Crossroads Consulting team. This core team held numerous meetings and interviewed various staff members within Prince George's County M-NCPPC Park and Planning, lacrosse tournament operators, soccer tournament operators, soccer organizers from the State of Maryland, a cricket association, State and County legislators, maintenance and operations staff and other stakeholders. Questions were posed to each group or individual to prompt important and valuable programming input from these potential stakeholders, athletic facility users and operators.

Issues discussed included programmatic needs related to, but not limited to, the athletic facility's program, amenities, use, operation, maintenance and security needs. Specific questions asked related to tournament operations, field types, field configuration, field quantity, field surface, parking, multimodal transportation, vending, bathroom facilities and other desired amenities.

HCM utilized research of similar tournament athletic facility case studies provided by Crossroads Consulting. These precedents and case studies included facilities such as Maryland SoccerPlex located in Germantown MD. (See Crossroads Business/Economic Analysis report for complete list of case studies)

Key Preliminary Programmatic and Site Design Criteria

Based on the stakeholder and user interviews the following key programmatic design criteria were developed to provide direction for our initial site design studies.

1. There is a completed design concept for a limited access vehicular interchange at the 197 and 301 intersection. This interchange improvement is unfunded, but could be implemented in the future. Therefore the team evaluated the impact of this eventual road and interchange improvement in the development of our site planning.
2. The program for the fields and the stadium should be expandable for future demand.
3. Buses come to the tournaments, but they do not tend to park on site. They tend to park off site and only drop-off and pickup teams.
4. Lacrosse tournaments produce heavy continuous car traffic as there is continuous turnover throughout the day between games.
5. Players, teams and families like to bring their own tents and set up for the day. They tend to bring their own food and drink in coolers. They also bring their own folding chairs.
6. According to Lacrosse tournament organizers and operators, a bus-shuttle system from a satellite parking lot for lacrosse tournaments can be a 'tournament killer, in that the parents won't come back the next year. Families of players want the flexibility to come and go throughout the weekend in their own vehicles.
7. Parking and traffic management are very important factors in organizing large regional lacrosse tournaments.
8. Lighted fields are highly desirable since that extends play time for the tournaments and enables tournaments to have more games and host more teams.
9. Nets are required on the ends of the fields to stop shots behind the goals; depending on the field arrangement, this can be a significant safety factor.
10. Spectator viewing areas should be limited to sides of the fields and not at the ends of the fields.
11. Team assembly areas are needed.
12. Team warm-up areas are needed.
13. Central medical and athletic trainer areas are needed.
14. Portable toilets are a "must". There are so many players with families that typical park bathroom facilities are not adequate and should never be relied upon as they do not have capacity and will become quickly overrun. Port-a-johns need to be maintained 1-2 times per day during tournaments due to intensity of use.
15. Shade in the tournament area is highly desired and should be achieved through the incorporation of shade pavilions and shade tree plantings.
16. Synthetic Turf fields are desirable over natural grass in that the tournaments can still be played if it rains. Natural grass fields do not hold up under severe weather combined with intense weekend tournament use. Utilizing synthetic turf greatly reduces the chances that a tournament will need to be postponed or cancelled due to bad weather.
17. Synthetic Turf fields also remove the problem of shared fields with lacrosse and soccer where the wear of the natural grass in front of the goals in both lacrosse and soccer is not an issue.
18. Synthetic Turf Fields, although preferable over natural grass for tournaments, can get very hot in the summer months. Providing a spray irrigation system for synthetic turf fields was mentioned as a method to cool the fields down during the summer. This option was mentioned but not verified as a successful way to cool fields nor was it confirmed as a final programmatic desire.
19. Food vendors and merchandise vendors are an important part of the weekend tournament.
20. Retail vending needs to include a space for lacrosse, soccer or other sport equipment merchandise retailers.
21. Central food concessions are desirable.
22. Food Truck vendors work well for tournament operators in that they are self-contained, independent and flexible and they do not require a lot of financial investment in buildings, utilities or manpower to support the demand for food at tournaments. Food trucks offer the capability to provide diversity in food choice. The quantity and types of food can be adjusted and programmed to be geared toward specific tournament events. The leasing of space to food truck vendors for each tournament is revenue

producing and simplifies the operation of the facility by eliminating the need for the operator to organize and manage all food vending operations. This reduces the operator's need to provide labor for food preparation and sales. It also reduces the need to order and store food inventory for each event.

23. Several tournament operators and other research suggests that an optimal field arrangement is in groups of 4 or 6 fields (maximum) that provide separated areas for the team benches and the parents/spectator areas.
24. Providing for filming and TV coverage is important especially if college or other high level competitions are being played at this venue.
25. A play area for players' siblings and others is desirable.
26. Cookout/grilling/picnic areas are desirable.
27. A separate area for college coaches to view games is desired. Preferably this area is centrally located so that coaches can view more than one game at a time.
28. A tournament administration office and a referee pavilion were also mentioned as desirable amenities. Or a "headquarters" area.
29. A college coach's lounge with a meeting room is desirable. This can be a tent but in a separate area where parents cannot continually try to interact with coaches.
30. A central electronic board would be desirable (scores, announcements, etc.)
31. WIFI connectivity/access was mentioned as a desired amenity. WIFI can be utilized as a way to communicate with tournament teams, players and families throughout events. WIFI also enables parents to work remotely during weekend long events.
32. Lightning detectors are important in that they provide more accurate and needed warnings of pending safety concerns. Lighting detectors remove some of the guess work for postponing play for lighting and the safety of players and spectators.
33. Trash and Recycling containers are needed.
34. Trash Dumpsters are needed.
35. A "Show Case" field is a desirable element, but not an absolute necessity, within a sports complex to highlight premiere games, final tournament rounds, or other special games.

ATHLETIC FACILITY PROGRAM SUMMARY

Input from stakeholders and potential user groups listed above, information from comparable facility programs as well as interviews with management of these facilities suggest the following program elements be pursued in order to maximize flexibility and usage:

- 12 lighted, synthetic turf fields designed and sized to accommodate multiple sports events and tournaments including lacrosse, soccer, field hockey and ultimate frisbee.
- 1,200 lighted parking spaces (100 parking spaces per field)
- Player Bench Areas
- Parent/Family Viewing Areas
- Player warm-up areas
- Family Tailgate Areas
- Family and Team Picnic Areas
- Picnic pavilions
- Children's Playground(s)
- Centrally located Food Truck Vending area
- Centrally located Concessions pavilion
- Centrally located toilet facilities (Portable)
- Coaches viewing platforms
- Centrally located Administration building

- Athletic Trainers Area
- Maintenance building
- Provide for future program expansion such as a “Show Case Field”, a small stadium or other future programmatic use.
- A central open space for player warm up and centralized tournament administration office.
- Evaluate the potential for a 12-14,000 seat major league lacrosse stadium.
- Other site amenities including playground equipment, walking paths, an entrance gate, way-finding signage, etc.

PRELIMINARY CONCEPT DESIGN

Preliminary Site Design Options

The site constraints exhibited by the 254 acre site are considerable. The design team’s site accessibility evaluation determined that there is only one adequate and feasible main point of access, which is from the south-west off of Mill Branch Road. Secondly, the combination of streams, wetlands, steep slopes and forest on the site significantly limit the amount of land available for level fields and parking areas. Placing the approved program on the site was evaluated and the team quickly realized that the plan must be compact and efficient to fit the program on the available flatter open areas of the site. Site design concepts were tested with dialogue and input from the MSA, the consultant team and M-NCPPC. HCM made site design refinements based on MSA, consultant and M-NCPPC input. HCM met regularly with MSA, Crossroads Consulting, Barton Malow and M-NCPPC to discuss and refine the conceptual site plan.

Professional Lacrosse Stadium

Evaluating the feasibility of placing a Major League Lacrosse Stadium with 12-14,000 seats was part of the scope of HCM's feasibility work. While there is space for the stadium in several possible configurations, this programmatic component presents several challenges as follows.

With a single site access point from the south, the site cannot handle a 12,000 seat stadium, nor a 12,000 seat stadium event plus events at the 12 multi-purpose fields. This traffic volume added to the potential traffic from the Mill Branch Crossing LLC planned development and existing local traffic will have significant negative off-site traffic impacts. The Mill Branch Road / Site Access intersection will not accommodate this volume of traffic. Major improvements would be required to widen this intersection, widen the internal roadways within the park, and possibly even improve some intersections along US 301 resulting in very costly off-site intersection and roadway improvements.

Beyond costly off-site intersection and roadway improvements, an option considered to mitigate increased traffic was to have the MLL stadium share parking with the Prince Georges Stadium facility. This scenario is also costly as it would require the construction of a vehicular and/or pedestrian bridge from Prince Georges Stadium across the Green Branch stream to the Major League Lacrosse Stadium. Shared parking is also impractical because the playing schedules of the Bowie Baysox and Chesapeake Bayhawks overlap and conflict with one another.

In consultation with MSA, Crossroads Consulting and Barton Malow, HCM did not pursue developing a conceptual site plan that prioritized the placement of a 12-14,000 seat MLL stadium as the main central programmatic feature for this project. Doing so would have reduced the size, quality and arrangement of the multi-field program, thus reducing its emphasis and making the multi-field complex a secondary element.

Based on the above conclusions for the feasibility of a MLL Stadium combined with information from Crossroads Consulting's Business and Economic Analysis and Barton Malow's cost estimate, the team elected to pursue a conceptual site plan that prioritizes the multi-field complex program to create a tournament facility with a strong sense of place and quality of experience.

Preliminary Cost Evaluation and Value Engineering

Based on the initial preliminary site design concept, Barton Malow provided an initial cost estimate for construction. This estimate was reviewed by HCM, MSA and M-NCPPC and the team made recommendations for a final program including cost reduction modifications to the concept plan. Site features and elements that were considered non-essential were either eliminated or reduced. Parking areas were consolidated and the overall layout of the fields and parking lots was refined to provide a more efficient layout. The total area of synthetic turf area was reduced without eliminating the number of fields. A spray irrigation system for the primary purpose of cooling the synthetic turf fields in hot weather was eliminated.

The cost estimate was refined based on the design refinements and other programmatic input from the team.

FINAL CONCEPT DESIGN

Concept Design Description

Based on input from the consultant team, MSA, M-NCPPC, Crossroads Consulting and Barton Malow, the conceptual site plan was refined into the attached final conceptual site design. The elements of the design program include:

- Site Access
- Internal Site Traffic and Circulation
- Parking Lots
- Pedestrian Circulation
- Site Lighting
- Field Layout and Field Features
- Site Grading
- The Central Green
- Central Administration Building
- Portable Toilet Areas
- Children's Play Areas
- Warm up / Practice Areas and Picnic Areas
- Shade Pavilions/ Picnic Shelters
- Trees and Plantings
- Central Concessions Pavilion
- Food Truck Vending Areas
- Sports Apparel & Equipment Vending
- Maintenance Barn and Yard
- Way-finding Signage
- Expansion Area



Site Access

The main site access point is from the south through the Mill Branch Crossing, LLC property at US 301 and Mill Branch Road. At this location there is a 50-foot easement to provide access from Mill Branch Road through the Phase 1 M-NCPPC park site and onto the Phase 2 Green Branch Athletic Facility site.

A secondary access point is located off of Governor's Bridge Road, utilizing the existing WSSC "haul road" which accesses the Green Branch site from the east. This access point is not suitable as a main entrance, however it is planned as an emergency access route.



Internal Site Traffic and Circulation

The southern access point through the Mill Branch Crossing, LLC property is planned to be a four-lane undivided roadway between Mill Branch Road and Mill Branch Crossing, LLC property. The project then anticipates a two-lane roadway through the M-NCPPC Phase I park site and into the Green Branch Sport Complex. The internal roadway network is composed of two lane roadways (one lane in each direction) and the main internal intersection roadway section adjacent to the parking lots can be stop-controlled with additional inbound, exclusive, left- and right-turn lanes. All roads and parking lots are planned to be curbsless to allow rain water to sheet flow into ESD stormwater facilities.

With inbound traffic at event start times, the internal intersection will function adequately with the three-lane approach and the queues are anticipated to be within the site boundaries. Outbound traffic at event end times is expected to queue into the parking lots. It is recommended that the outbound traffic be directed to use both lanes leaving the sports complex.

Parking Lots

A parking ratio of 100 cars per athletic field was determined to be the final parking program. Parking lots are designed to be evenly distributed, central, convenient and efficient allowing for internal site circulation within each parking lot with the ability to circumnavigate each parking area. Parking lots are planned to be conventional asphalt pavement and striped with painted lines. All stormwater bio retention storm water quality areas (ESDs) are to be located within the parking lot planting islands and/or along the perimeter of each parking lot and along the curbsless drives.

Pedestrian Circulation

The layout of roads, drives, parking lots and pedestrian walkways are designed to provide for separation of vehicular and pedestrian circulation to the extent practical. Parking lots are connected to each other and connected to the central field and assembly area by wide concrete walks. The fields are also interconnected with walkways and there is a curvilinear perimeter walk that interconnects the picnic areas and player warm up areas.

Site Lighting

All internal roadways, parking lots and fields are planned to be lighted. Lighting of public parking lots and roadways is required by Prince

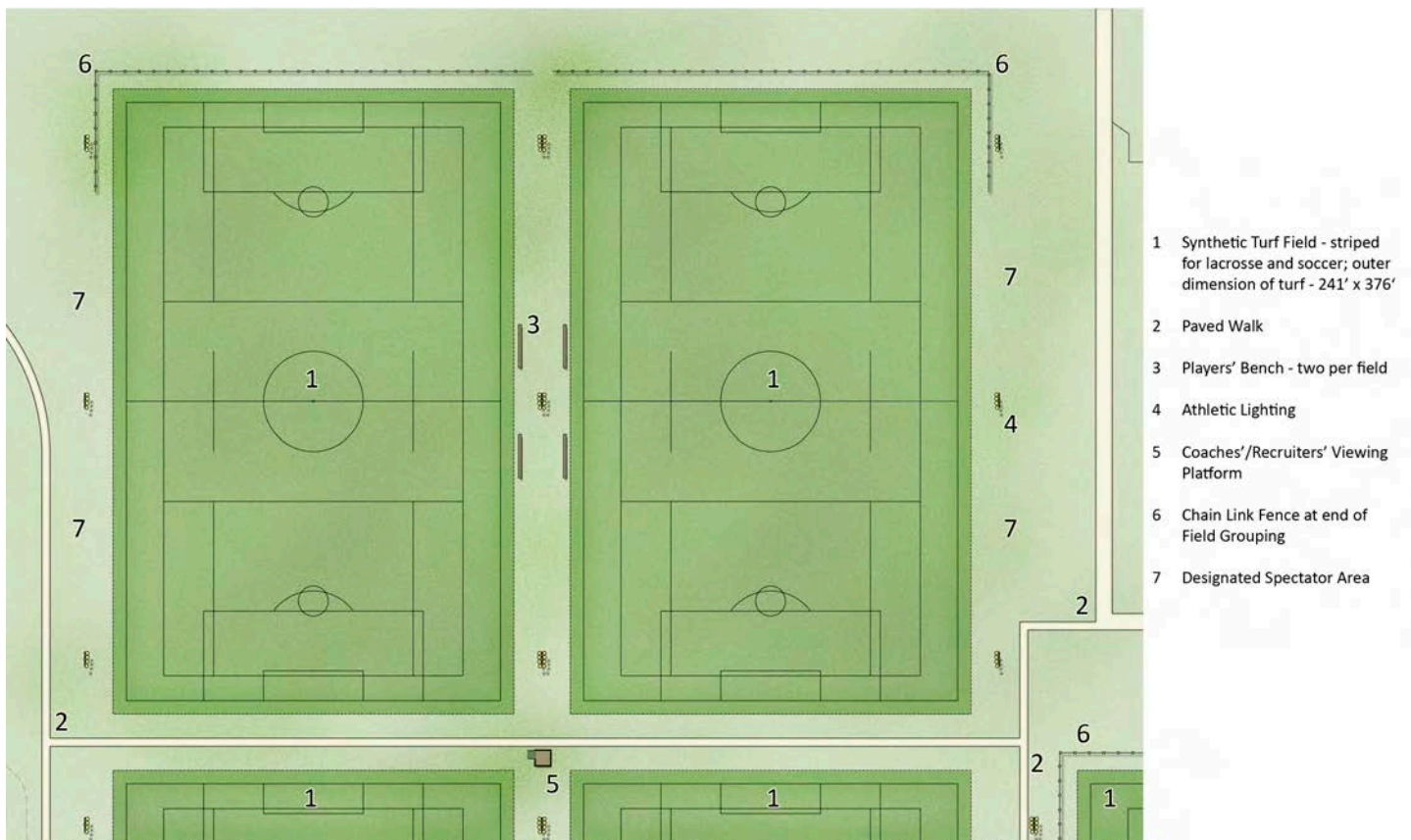
George's County code.

Field Layout and Features

The site is faced with significant environmental constraints; therefore the 12 turf fields are centrally located in the portion of the site with the most ideal topography for field development. The fields are oriented in the optimal north-south orientation. Groupings of 4 fields were viewed as optimal from our programming interviews with tournament operators, therefore the 12 fields are divided into three (3) interconnected groups of four (4) fields.

The athletic field surface is planned to be synthetic turf. Field size and turf areas are based on accommodating lacrosse, soccer, field hockey and ultimate Frisbee events. Soccer is the largest field requirement; therefore the turf dimensions are sized to accommodate soccer with ample space to provide for "over-run" space for the players. It is anticipated that the fields will be painted (lined) for soccer and lacrosse only. Placement of fields and field spacing is also based on our team's review of case study precedents provided by Crossroads Consulting.

Each group of four fields contains separated areas for player benches, spectator viewing and a central coaches viewing platform for coaches to view games from the center of each grouping of four fields. This would enable a coach to view four games and multiple players at once.



Site Grading

As a result of the various site constraints and rolling topography, the site will require significant grading investigation to optimize earth moving and limit disturbance to existing environmental resources to be preserved. HCM worked with Barton Malow to anticipate an average elevation of Elevation105 for the parking areas and the fields. Preliminary estimates indicate that this will provide a large enough level area for the fields and also balance the cut and fill required for the excavation work.

The synthetic field will have gravel and graded aggregate sub base. Additional depth of gravel is programmed to accommodate the requirement for rainwater storage below the fields for the purposes of storm water quality treatment.

The Central Green

A large central green located adjacent to the playing fields and the central parking lot contains the main tournament administration building and the central food concession building. This large open space is planned to be natural grass and multifunctional for a variety of potential activities such as team meetings, player warm ups, family tailgating, sports training and instruction, or other facility function.

Central Administration Building

New one story administration building to be approximately 4,000 gsf and will contain a park staff office (320 nsf), Event coordinator office (160 nsf), Classroom/Training Room (1,000 nsf), Medical Suite (600 nsf), locker rooms (800 nsf), and bathrooms. The building will be slab on grade (assume spread footings), masonry walls with board and batten siding, custom roof trusses, wood roof deck, standing seam metal roof, exterior doors to be solid core simulated solid wood, and metal clad wood windows. Interior walls will be metal stud with GWB. Flooring will be carpet in the offices and classroom; ceramic tile in the medical suite, locker rooms and toilet rooms. The medical suite and classroom will have built-in cabinetry. The building will be heated and air conditioned using a heat pump system meeting code-required ventilation/fresh air requirements. Plumbing fixtures to be low flow water conserving. Lighting to be low energy LED fixtures. Data/WIFI connectivity will be provided.

Portable Toilet areas

Based on interviews with tournament operators the use of portable toilets is highly recommended as compared to constructing a large expensive brick and mortar restroom facility. The Portable toilet areas are centrally located to be in close proximity to the fields and the parking areas on either side of the central administration building. Toilet facilities are anticipated to include a permanent screen fence, a concrete pad for the placement of the toilets and convenient vehicular access for service and maintenance of the facility.

Children's Play Areas

On either side of the central administration building, are two children's play areas that are far enough away from the playing fields and parking lots to be safe, but close enough to provide convenient access for parent supervision during tournament activities.



Warm up / Practice Areas and Picnic Areas

Located around the perimeter of the 12 playing fields are 3 large level natural grass areas that are open to flexible programming for uses such as team warm ups, meetings and practice spaces. These areas are available to teams while fields are in use and players need space to meet and get prepared for games. Each of the level areas contains a picnic shelter for use by the teams, their families and visitors to the facility.

Shade Pavilions / Picnic Shelters

Tournament operators highly recommend providing shade shelters and planting shade trees where they won't interfere with player safety. Four (4) picnic shelters are planned to be evenly distributed along the perimeter of the fields and connected by the pedestrian trail system. Each picnic shelter will be approximately 800 gsf. The structures will be slab on grade with large dimension wood columns supporting exposed custom roof trusses, wood roof deck and standing seam metal roof. Lighting to be low energy LED fixtures. Data/WIFI connectivity will be provided.

Trees and Plantings

Trees are planned to align all roadways and are also planted in parking lot islands to provide shade for the parking lots. Additionally the pedestrian trails surrounding the field perimeter and adjacent to the player warm up and picnic area are ideal locations for trees to provide shade for players and families.

Shrub and ground cover plantings will be required in the parking lots and to screen parking and loading areas. Plantings will also be required in the storm water management ESD facilities located in the parking lots and along the roads. All plantings should emphasize the utilization of native and low maintenance species.

Vending and Food Concessions

From our programming meetings and interviews, input from tournament operators indicate that vending is an important programmatic component of most tournaments. The vending needs to take on several forms as follows:

Central Concessions Pavilion – This building is for basic food and snack preparation and sales. It is not intended to provide all food vending for large tournaments. A central concession allows for limited food sales for smaller events and to supplement other vending activities. The building is one story and approximately 1,000 gsf. It contains a serving area (300 nsf), food prep area (300 nsf), office (80 nsf) and storage (150 nsf). Anticipated items to be sold include: Snacks, candy, soft drinks, hot dogs, nachos, and other pre-prepared foods. Facilities for cooking and dishwashing are not planned. Transaction and food preparation counters, hand wash sink and glass front refrigerators should be provided. The building will be slab on grade (assume spread footing), masonry walls with board and batten siding, wood truss roof structure, standing seam metal roof, exterior doors to be simulated solid core wood, and overhead coiling door at transaction counter. Interior walls to be painted masonry, exposed concrete floors and exposed ceiling structure. The building will be heated and air conditioned using a heat pump system meeting code-required ventilation/fresh air requirements. Plumbing fixtures to be low flow water conserving. Lighting to be low energy LED fixtures. Data/WIFI connectivity will be provided.

Food Truck Vending Areas – The plan provides for a central area for numerous food trucks, located in spaces along the perimeter of the central parking lot. The food truck vending spaces are also conveniently located adjacent to the Administration Building and the Concessions Pavilion.

Sports Apparel & Equipment Vending

Retail vending space for sports related apparel and equipment for lacrosse, soccer or other sport is provided. This vending activity can occur within the Central Concessions Pavilion, in a truck vending space, or in a strategically located tent or kiosk near the central green as determined by the athletic facility operator.

Maintenance Barn and Yard

A maintenance barn and storage/staging yard is located at the eastern portion of the site. The barn and yard are strategically placed to be out of view from the public, screened by the preserved woodlands. The barn area is accessed by a small road leading to the south off of the main east/west access drive at the eastern property boundary. The Maintenance Barn is planned as a one story maintenance and storage building approximately 1,620 gsf and containing a 4-bay garage (1,152 nsf), shop (288 nsf) and an office (180 nsf). The facility will house lawn maintenance, snow removal, turf field supplies, hand tools, and other maintenance equipment. The building will be slab on grade with a pre-engineered metal exterior wall and roof structure. The office space is to be heated and air conditioned; and the garage ventilated. Toilets with hand wash sinks are to be provided. Lighting to be low energy LED fixtures. Data/WIFI connectivity will be provided.

Signage:

There will be one masonry monument sign announcing the sports complex at the eastern property threshold along the entrance drive. Way-finding and traffic directional signage will be located at parking lots and along the main drive.

Expansion Area Options

Early programming requests by M-NCPPC determined that space should be provided for future expansion of the athletic facility to respond to changing and/or increased demand if possible. As indicated on the enclosed diagrams, HCM's final concept plan provides this area to the north of the main entrance drive. It is likely that this area will need to be cleared and graded as part of the 'base' project in order to help balance the cut and fill amounts needed to construct the 12 field complex. As such, the 'base project and estimate' includes this area as a graded natural turf space which is envisioned to be used for overflow parking, tailgating, player warm-up and/or practice.

Future expansion opportunities evaluated for this area if the need or desire by the County arises are listed below. The corresponding conceptual estimate amount for each item can be found in the cost estimate provided by Barton Malow.

- Option 1: Grass / natural turf lighted field with permanent seating to accommodate 1,000 spectators and the ability to install up to 3,000 additional temporary seats.
- Option 2: "Show Case" synthetic turf lighted field with permanent seating to accommodate 1,000 spectators and the ability to install up to 3,000 additional temporary seats.
- Option 3: Install a bubble enclosure over Alternate #2 above.

NEXT STEPS

Based on the recommended feasibility to construct a 12 field Multi-field Sports complex at Green Branch Park, the following next steps are recommended to complete final design and construction of the facility.

HCM recommends that M-NCPPC engage an A/E consultant team to provide A/E services for final facility programming, site design, architectural design, engineering and landscape design for Green Branch Multi-field Sports Complex. The A/E team should include qualified consultants to provide final program development, site design, architecture, landscape architecture, civil engineering, MEP engineering, geotechnical engineering, traffic engineering, environmental consulting, archaeology and construction cost consulting. The A/E team will provide final design and construction documents for the bidding of the Green Branch Multi-field Sports Complex for construction by a qualified general contractor. M-NCPPC and MSA may also elect to work with a Construction Manager (CM) as a member of design and development team.

As part of the full interdisciplinary A/E services required for the final design and construction of the Green Branch Multi-field Sports Facility, the following selected items are highlighted as important site design and due diligence steps that must be taken in the final design.

Entitlement Process

The A/E team will be required to work with M-NCPPC to attain the required entitlement approvals for allowing the planning and development of the Green Branch site into a multi-field sports complex.

Environmental Permitting

Phase 2 Environmental investigations must be provided including:

- A Natural Resource Inventory
- Forest Stand Delineation
- Type 1 Tree Conservation Plan
- Final determination of wetlands and wetland buffers (along with attached slopes of 15% or greater)
- Final determination of streams and stream buffers
- Final determination of the 100 year floodplain
- Final determination of steep slopes
- Final determination of the existence of critical area habitats

Site Utilities

Further due diligence is required to recommend cost effective utility solutions. Design for actual athletic facility utility demands, points of connection, size and location of utilities all need to be determined. Meetings with jurisdictional agencies will be required to best determine how the Green Branch property can be served with utilities.

Archaeology

The Site 18PR1028 Phase II Archaeology investigation report by AAHA is currently submitted for review and approval by the Maryland Historic Trust. It is assumed that a Phase III Archaeology evaluation of archaeology Site 18PR1028 will be required in the final design of the Green Branch Multi-field Sports Complex.

Historic Preservation - Tobacco Barn Determination of Eligibility (DOE)

The Determination of Eligibility report prepared by HCM's history consultant, Retrospect, LLC, is currently submitted for review and approval by the Maryland Historic Trust (MHT). It is the recommendation of Retrospect, LLC that the 5 barns included in the DOE are not recommended to be eligible for the National Register of Historic Places. MHT must approve the DOE prior to the demolition of any barn structures.

References:

1. Business/Economic Analysis for the Green Branch Multi-Field Sports Complex in Prince George's County, Maryland; By Crossroads Consulting Services; Prepared January 2014.
2. Market and Economic Analysis for a Proposed New Major League Lacrosse Stadium and Multi-Field Sports Complex at Green Branch Park in Prince George's County , MD; By Crossroads Consulting Services ; Prepared December 2012.
3. Green Branch Multi-Field Sports Complex Concept Estimate, Final; By Barton Malow, Inc.; Prepared January 17, 2014
4. Final Phase I Archaeological Survey of the Green Branch Athletic Complex Parcel 6 in Prince George's County, Maryland; By Greenhome & O'Mara, Inc. and EHT Tracerics; Prepared July 2012.
5. Comprehensive Environmental Assessment for the WSSC / DC WASA Biosolids Entrenchment Site PG-202, Prince George's County, Maryland; By KCI Technologies for Maryland Environmental Service; Prepared April 1, 2002

Appendices

Appendix A – 360 Stadium Concept

Appendix B – Sabra Wang - Prince George's County Green Branch Sport Complex Traffic Feasibility Analysis

Appendix C - Site Resources - Final Utility and Stormwater Management Overview

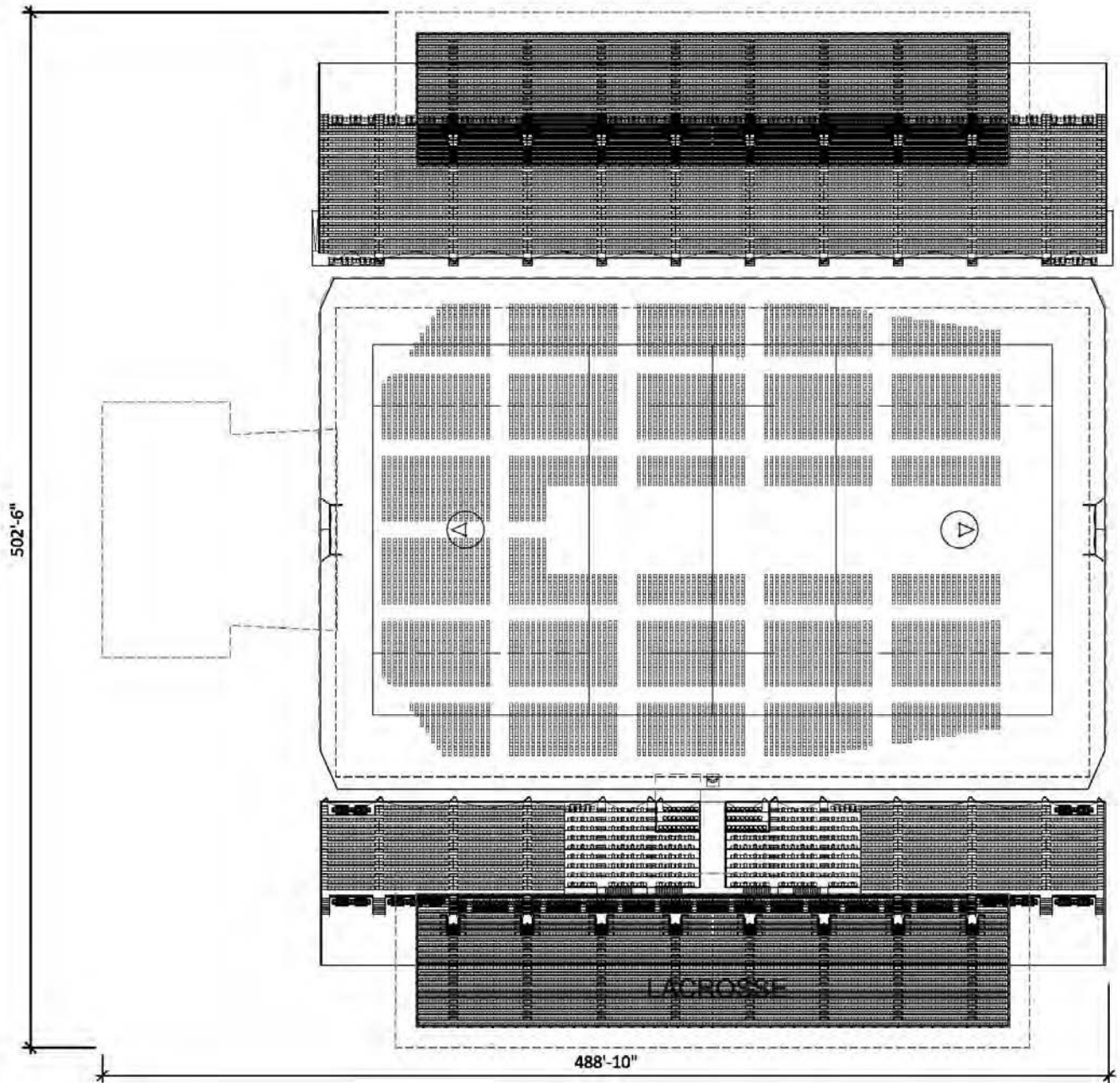
Appendix D – Navarro Wright - Environmental Overview Document and Preliminary Environmental Impact Assessment Report

Appendix E – AAHA – Archaeology Report

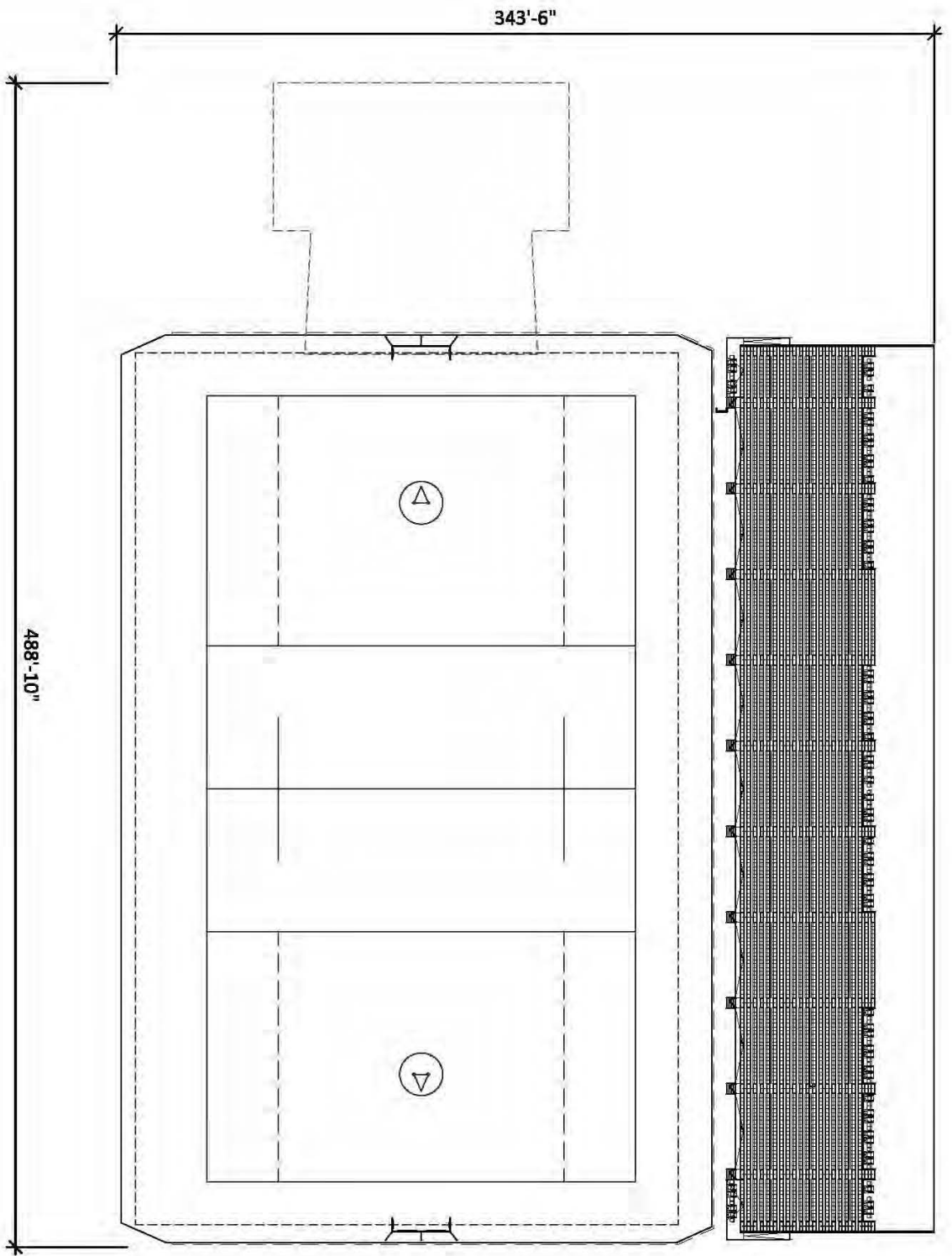
Appendix F – Retrospect – Tobacco Barn DOE

Appendix A

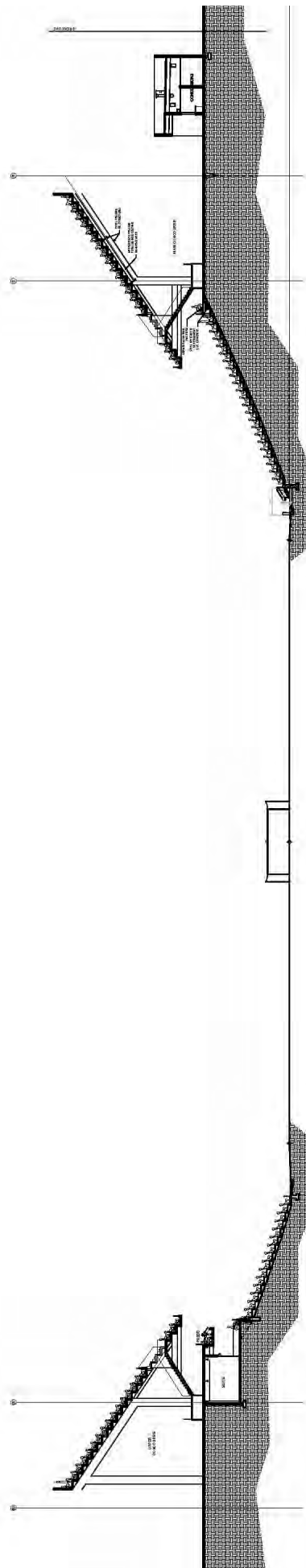
360 Stadium Concept

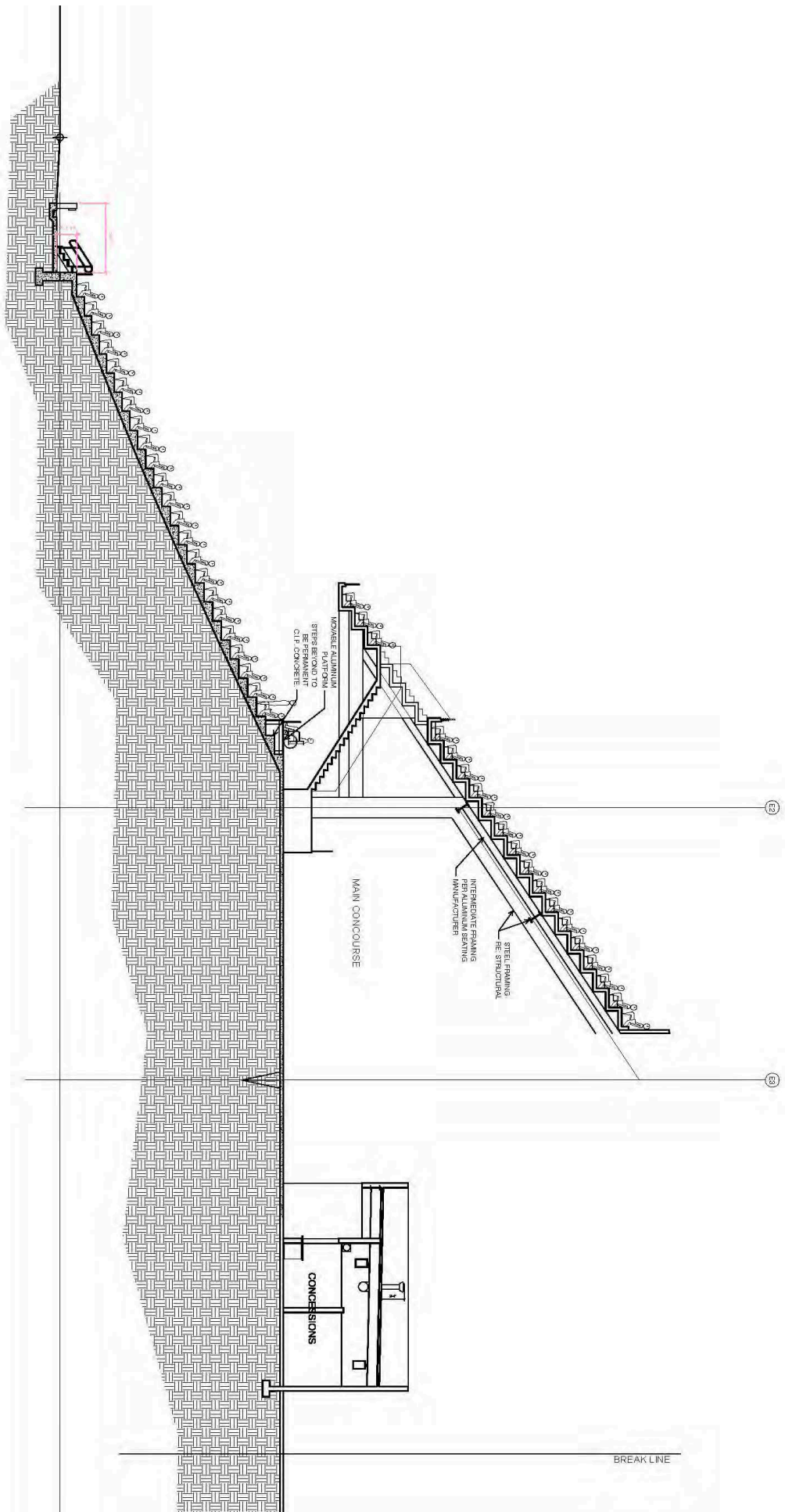


14,178-SEAT PROFESSIONAL LACROSSE STADIUM
CONCEPT PLAN BY 360 ARCHITECTURE



4,044-SEAT 'SHOW CASE' FIELD
 CONCEPT PLAN BY 360 ARCHITECTURE





Appendix B
Sabra, Wang & Associates - Traffic Analysis



Technical Memorandum

To: Thomas P. Spies, AIA LEED AP, Principal
Christopher Schein, ASA, Principal
Hord Coplan Macht
Hord Coplan Macht

From: Paul Silberman, P.E., PTOE
Erin Brinton, P.E.
Sabra, Wang & Associates, Inc.
Sabra, Wang & Associates, Inc.

Subject: Prince George's County Green Branch Sports Complex Traffic Feasibility Analysis

Date: December 19, 2013

1 INTRODUCTION

This memorandum summarizes the results of an evaluation of the existing and future internal and external transportation network for the proposed Prince George's County Green Branch Sports Complex. The proposed multi-sports complex would be located just southeast of Prince George's Stadium in Bowie, Maryland. It is currently undeveloped. The sports complex is anticipated to consist of twelve sports fields, a 4,000-seat stadium, and supporting infrastructure.

The evaluation included traffic volumes, intersection geometry and operations, parking, and site access. The study area included the following intersections, as illustrated in **Figure 1**.

1. US 301 and Heritage Boulevard/Ball Park Road
2. US 301 and MD 197 (Collington Road)
3. US 301 and Excalibur Road/Mill Branch Road
4. Mill Branch Road and Site Access

The existing lane geometry at each of the study intersections is illustrated in **Figure 2**.

2 EXISTING CONDITIONS

Historical counts were compiled from the Maryland State Highway Administration's (SHA) traffic count database, and where not available or outdated, new turning movement counts were performed in October of 2013. The two time periods examined in this study are the weekday PM peak hour and the Saturday peak hour. These peak hours are expected to have the highest levels of traffic at the study intersections. The traffic counts for the study intersections in the analysis can be found in Appendix A.

Figure 3 shows the existing volumes for the study intersections.



Figure 1. Site Location and Study Intersections

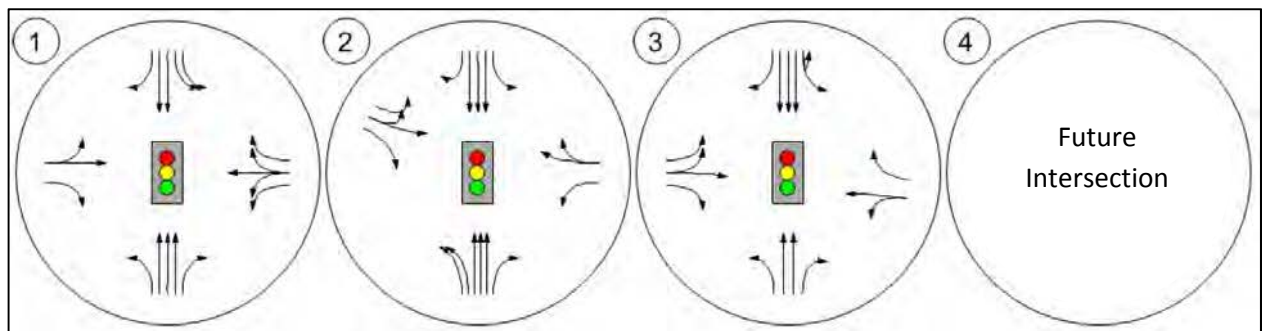


Figure 2. Existing Lane Configuration

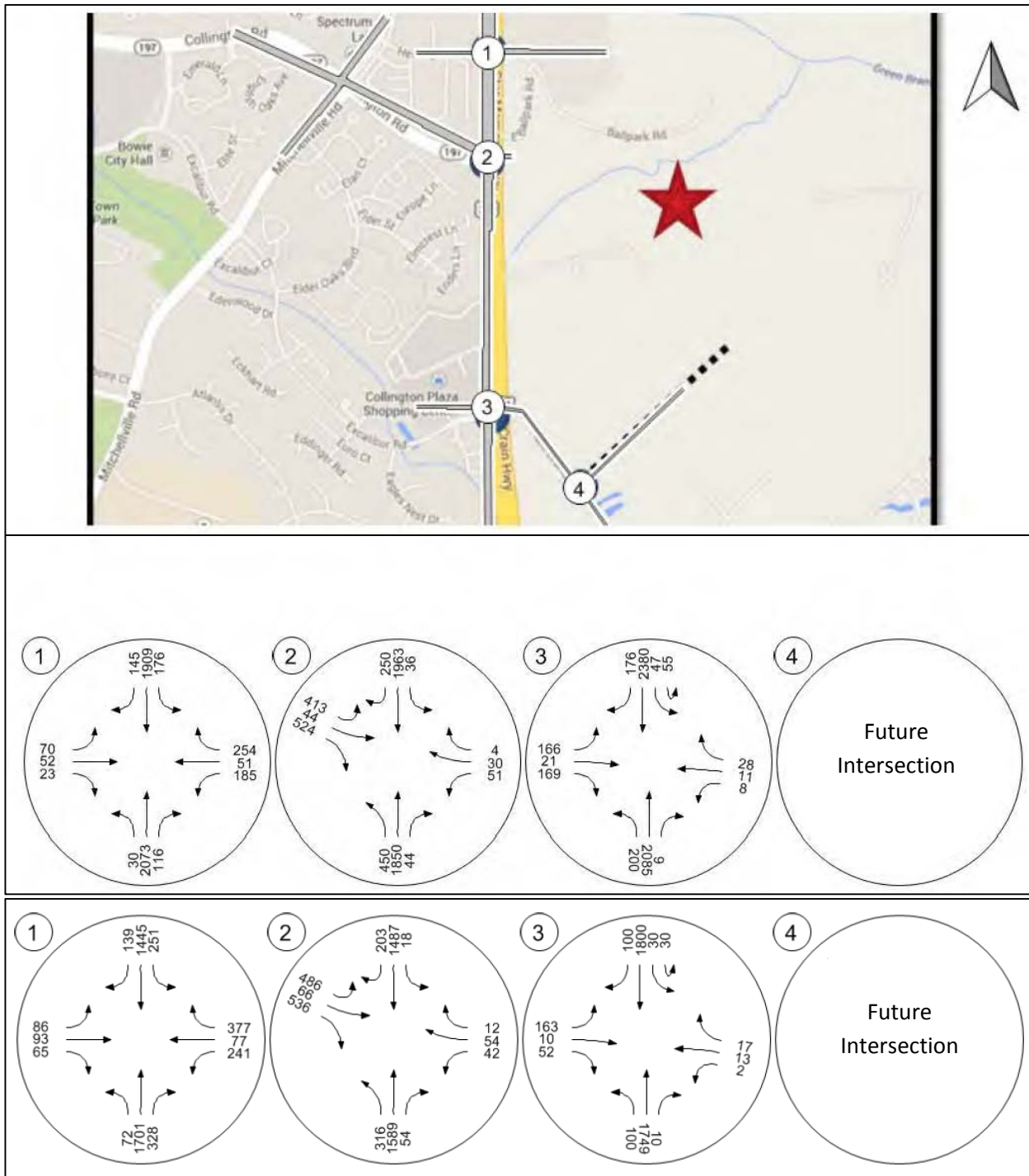


Figure 3. Existing Volumes – PM Peak Hour, Saturday Peak Hour

Synchro files were obtained from SHA to reflect existing lane configurations and signal timings. The Synchro model provides the level of service capacity analyses for each study intersection using Highway Capacity Manual (HCM) methodology. The measures of effectiveness evaluated in the study include average control delay, level of service (LOS), and volume to capacity (v/c) ratio. LOS, as defined by the HCM, is a “qualitative measure describing operational conditions within a traffic stream.” LOS ranges from A to F, where a LOS A represents optimal conditions and a LOS F represents saturated or failing conditions. The State and County standard for an acceptable level of service is LOS D or better. The v/c ratio is the ratio of the current flow rate to capacity and is used to assess the sufficiency of a roadway facility such as an intersection. A v/c ratio of 1.0 indicates that the facility is operating at capacity, and a ratio greater than 1.0 indicates that the facility is failing as the number of vehicles exceeds the roadway capacity.

A capacity analysis was performed for the study intersections. The results of the existing capacity analysis are summarized in **Table 1** and illustrated in **Figure 4**.

Table 1. Existing Conditions Peak Hour Capacity Analysis

HCM 2000 Intersection	Delay (sec)		V/C Ratio		Level of Service	
	PM	Saturday	PM	Saturday	PM	Saturday
<i>US 301 and Heritage Blvd/Ball Park Rd (signalized)</i>						
Overall	23.4	45.3	0.79	0.85	C	D
Eastbound Approach	84.2	109.2	0.70	0.95	F	F
Westbound Approach	78.7	128.5	0.64	1.13	E	F
Northbound Approach	14.1	20.7	0.71	0.67	B	C
Southbound Approach	15.5	30.8	0.84	0.74	B	C
<i>US 301 and MD 197 (Collington Rd) (signalized)</i>						
Overall	34.5	30.9	0.83	0.72	C	C
Eastbound Approach	39.5	47.3	0.81	0.89	D	D
Westbound Approach	82.6	87.5	0.56	0.67	F	F
Northbound Approach	35.8	31.0	0.68	0.59	D	C
Southbound Approach	29.1	16.8	0.89	0.66	C	B
<i>US 301 and Excalibur Rd/Mill Branch Rd (signalized)</i>						
Overall	37.2	23.9	0.85	0.75	D	C
Eastbound Approach	78.4	78.9	0.62	0.57	E	E
Westbound Approach	82.6	83.0	0.25	0.18	F	F
Northbound Approach	38.8	26.2	0.91	0.82	D	C
Southbound Approach	29.0	14.0	0.81	0.59	C	B

The results show that each study intersection operates overall at LOS D or better during the PM and Saturday peak periods. Some side street movements at each intersection operate at LOS F.

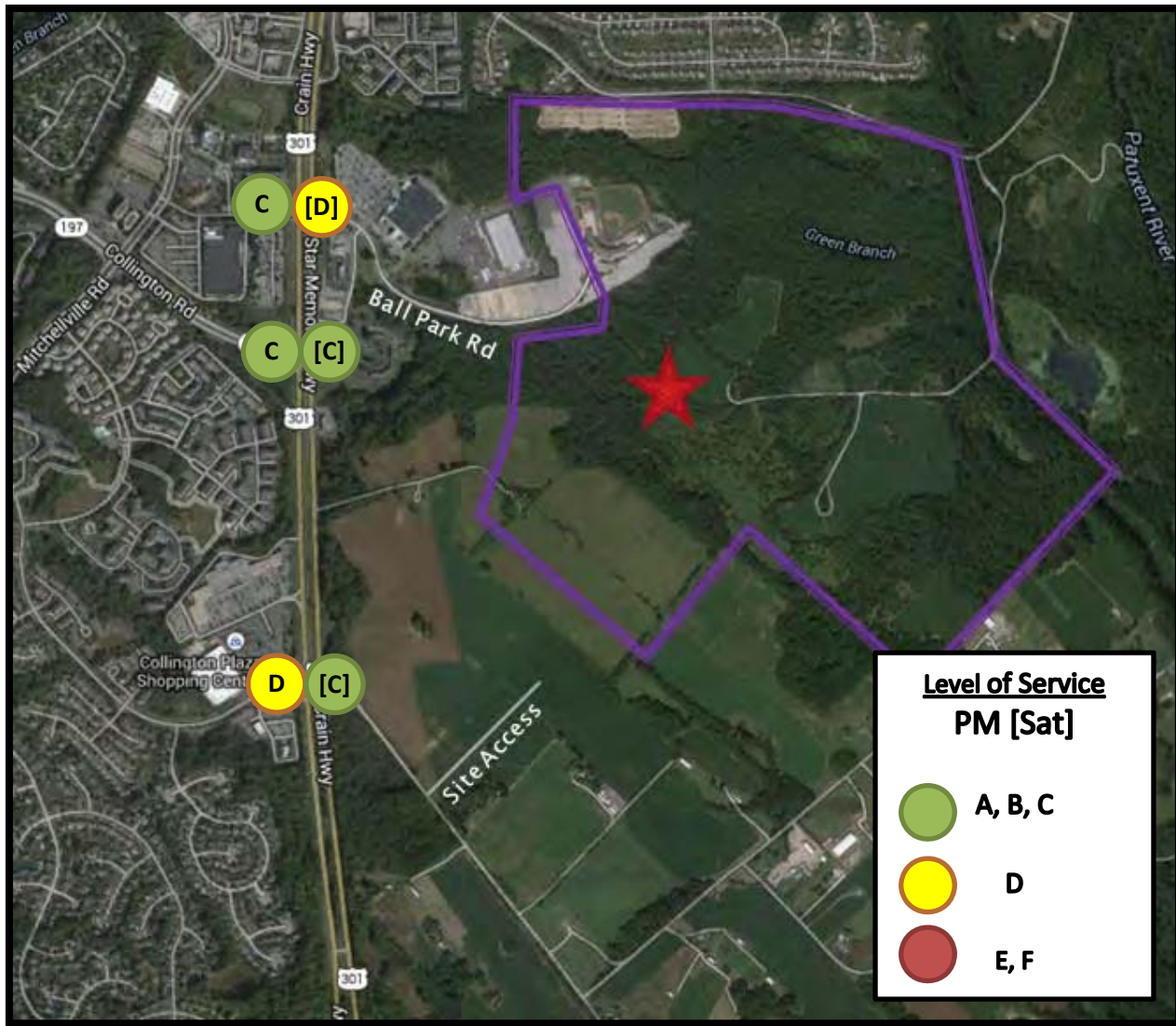


Figure 4. Existing Level of Service

ALTERNATIVE TRANSPORTATION

Two WMATA Metrobus commuter routes (B29 and B31) serve the study area, as shown in Figure 4. The buses operate on a Monday through Friday schedule for approximately two hours in the mornings and six hours in the evenings. There is no weekend bus service. Sidewalk is not present at any of the study intersections nor are there designated bicycle facilities in the study area. **Figure 5** illustrates the transit network within the study area.



Figure 5. Existing Transit Network

3 FUTURE LAND USE

There are several other proposed developments within the study area that are expected to be completed prior to the Green Branch Sport Complex opening year of 2016. Development activity was determined with the use of the Prince George's County's online Atlas database. Approved detailed site plans in the vicinity of the sites were taken into consideration. An assessment of background development was also performed at the preliminary plan level. The site plans are detailed in **Table 2** and illustrated in **Figures 6** and **7**.

Table 2. Background Developments

Approved Detailed Site Plans				
CASE NUMBER	CASE TITLE	DESCRIPTION	LOCATION	YEAR
DSP-09023	Bowie Valvoline	Construct a vehicle lubrication facility on the undeveloped portion of Parcel C	SE quadrant of US 301 & Ball Park Rd	2010
DSP-94011-06	Mill Branch Shopping Center	A 2-story 15,000 SF medical office building on Lot 3 to replace an eating establishment	S. of Excalibur Rd, approx. 322 ft. W. of US 301	2012
DSP-98061-02	City of Capitals, Navy Federal Credit Union	Commercial bank pad site	NW quadrant of MD 301 & MD 197	2007*
Approved Preliminary Plans				
4-03086	Governor's Bridge Road Estates	Lots 1-4, Residential	Governor Bridge Rd, approx. 680 ft. E. of Whispering Leaves Ln	2003
4-08052	Mill Branch Crossing	Future mixed use development, retail and hotel, 74 acres (Walmart)	NE quadrant of MD 301 & Mill Branch Rd	2009
4-05140	Mill Branch Property	Lots 1-39, 38 dwelling units - single family residential	S side of Mill Branch Rd, E of US 301	2006
4-05143	Charles Carroll Subdivision	Car Wash & Quick Lube, 5,000 square feet gross floor area	SW quadrant of US 301 & MD 197	2006

*Dormant

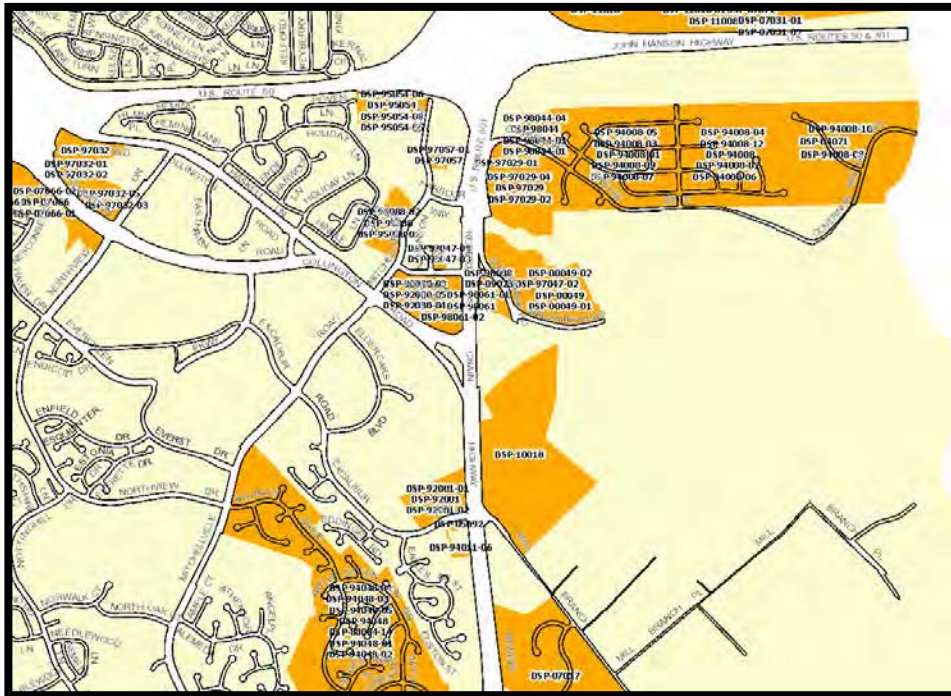


Figure 6. PG Atlas – Approved Detailed Site Plans

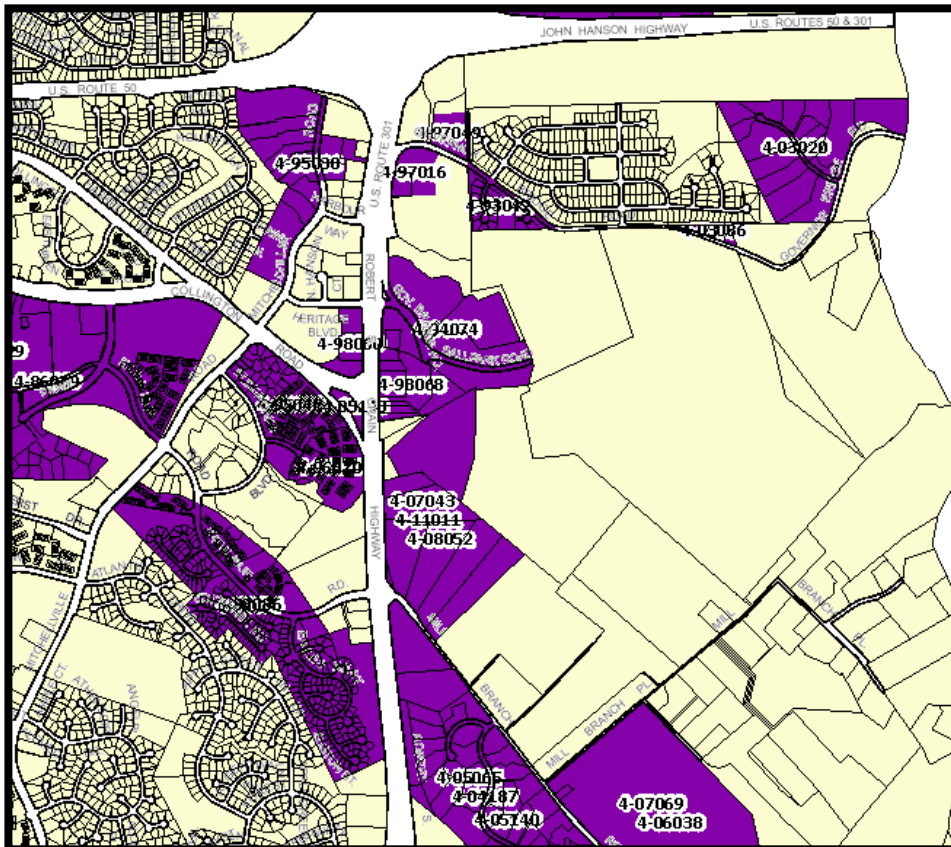


Figure 7. PG Atlas – Approved Preliminary Site Plans

4 FUTURE TRAFFIC FORECASTS WITHOUT THE MULTI-SPORTS COMPLEX

Traffic forecasts for the proposed developments were developed using the *Trip Generation Report* published by the Institute of Transportation Engineers (ITE). The proposed developments include residential, retail, office, and service land uses. Site-specific factors can reduce the number of new personal vehicular trips generated by a new development or land use including:

- the effect of **pass-by** traffic which includes personal vehicles already on the roadway network making an intermediate stop on the way from an origin to a primary trip destination without a route diversion, and
- the availability of **alternative modes** of transportation such as sidewalks, bicycle facilities, and public transportation.

Given the limited existing sidewalks, bicycle facilities, and transit service in the study area, and the lack of any documented mode share data available, to be conservative no discounts were applied to account for non-auto mode share. Using ITE standards, pass-by and net new vehicle trips were estimated for the Saturday and PM peak hours. The trip generation from each of the identified developments is detailed in **Table 3**. A total of 1,951 new Saturday peak hour trips and 1,634 new PM peak hour trips are estimated.

Table 3. Background Developments Trip Generation

ITE Code	Type	Number of Units	Unit Name	Saturday Peak Hour			PM Peak Hour		
				Entry	Exit	Total	Entry	Exit	Total
<i>Bowie Valvoline (DSP-09023)</i>									
941	Quick Lube	3	Servicing Positions	11	10	21	9	7	16
<i>Mill Branch Shopping Center (DSP-94011-06)</i>									
720	Medical-Office	15,000	Square Feet Gross Floor Area	31	23	54	15	38	53
<i>City of Capitals/Navy Federal Credit Union (DSP-98061-02)</i>									
912	Drive-In Bank	3,500	Square Feet Gross Floor Area	47	45	92	43	42	85
	- Pass By Trips			-	-	-	(20)	(20)	(40)
<i>Governor's Bridge Road Estates (4-03086)</i>									
210	Residential	4	Single Family, Detached	2	2	4	3	1	4
<i>Mill Branch Crossing (4-08052)</i>									
710	Office	91,000	Square Feet Gross Floor Area	21	18	39	31	149	180
820	Retail	405,000	Square Feet Gross Floor Area	1,128	1,042	2,170	734	795	1,529
	- Pass By Trips			(338)	(313)	(651)	(191)	(207)	(398)
310	Hotel	150	Rooms	60	48	108	46	44	90
<i>Mill Branch Property (4-05140)</i>									
210	Residential	38	Single Family, Detached	23	20	43	28	16	44
<i>Charles Carroll Subdivision (4-05143)</i>									
948	Car Wash & Quick Lube	5,000	Square Feet Gross Floor Area	36	35	71	36	35	71
Total:				1,021	930	1,951	734	900	1,634

Trip distribution and assignment were determined based on the expected land uses and surrounding roadway network. **Figure 8** shows the weekday PM peak hour and Saturday peak hour net new background vehicle trips at the study intersections.

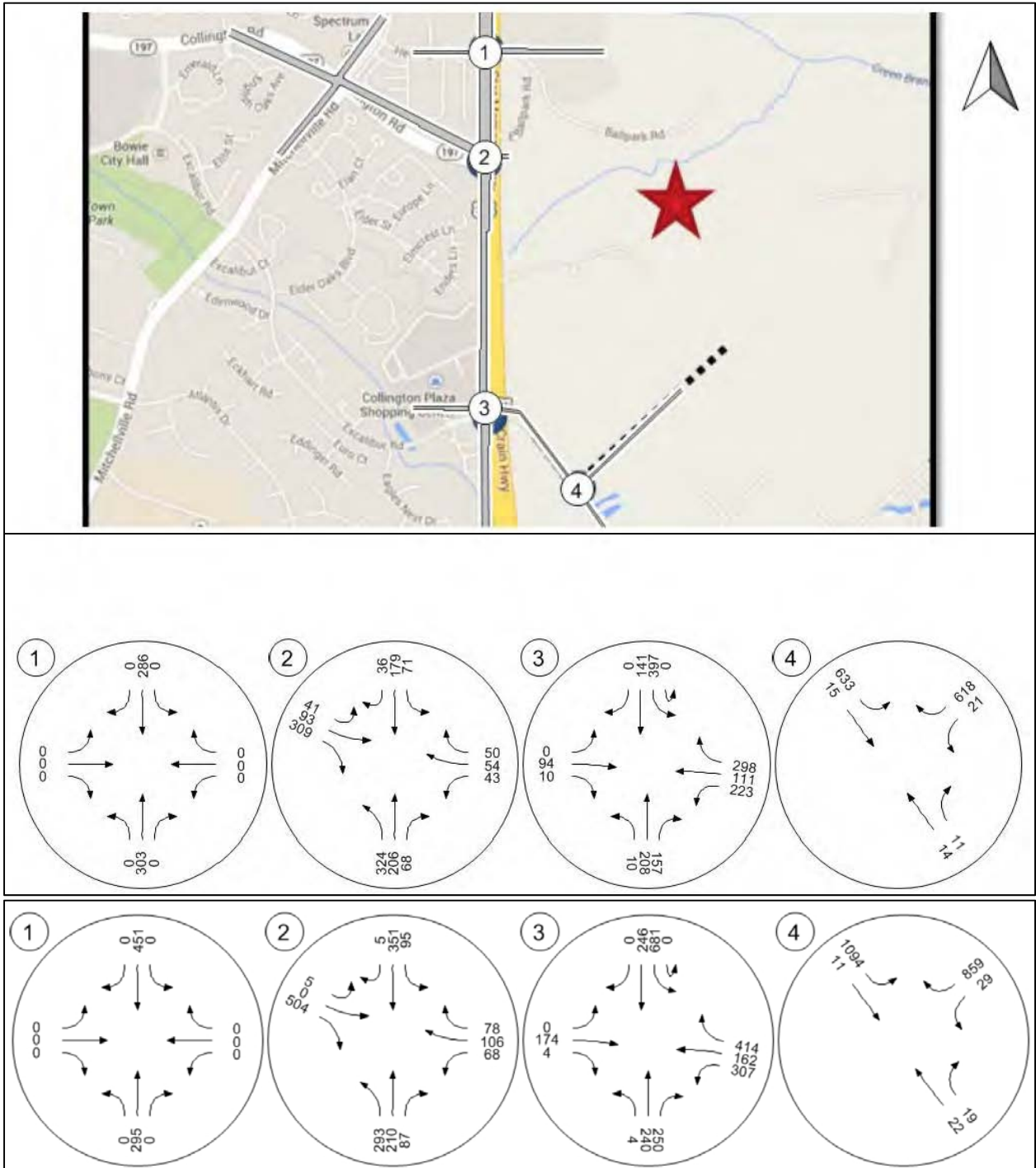


Figure 8. Future Volumes from Other Developments – PM Peak Hour, Saturday Peak Hour

5 ROADWAY NETWORK IMPROVEMENTS BY OTHER DEVELOPMENTS

In the vicinity of the study area, multiple roadway improvements are planned by other developments, particularly the future Mill Branch Crossing set to be located in the northeast quadrant of US 301 and Mill Branch Road. The following paragraphs describe the planned background improvements to the study intersections, which are illustrated in **Figure 9**.

- **US 301 and Heritage Boulevard/Ball Park Road**
 - Restripe the southbound right turn lane as a shared through/right turn lane.

- **US 301 and MD 197 (Collington Road)**
 - Modify the westbound Rip's Restaurant access to provide three exclusive lanes: left turn, through, and right turn.
 - Install a third northbound left turn lane with a receiving lane on MD 197.

- **US 301 and Excalibur Road/Mill Branch Road**
 - Install a second southbound left turn lane with an additional receiving lane on Mill Branch Road.
 - Widen westbound Mill Branch Road to four lanes with two left turn lanes, one through lane, and a free right turn lane.
 - Install a third northbound through lane to begin south of Mill Branch Road and end north of Mill Branch Road.

- **Mill Branch Road and Site Access**
 - Provide dual eastbound left turn lanes with two receiving lanes.
 - Provide one eastbound through lane.
 - Provide a shared westbound through/right turn lane.
 - Provide an exclusive, channelized, free, right turn lane and an exclusive left turn lane on the southbound approach.
 - Install a traffic control signal.

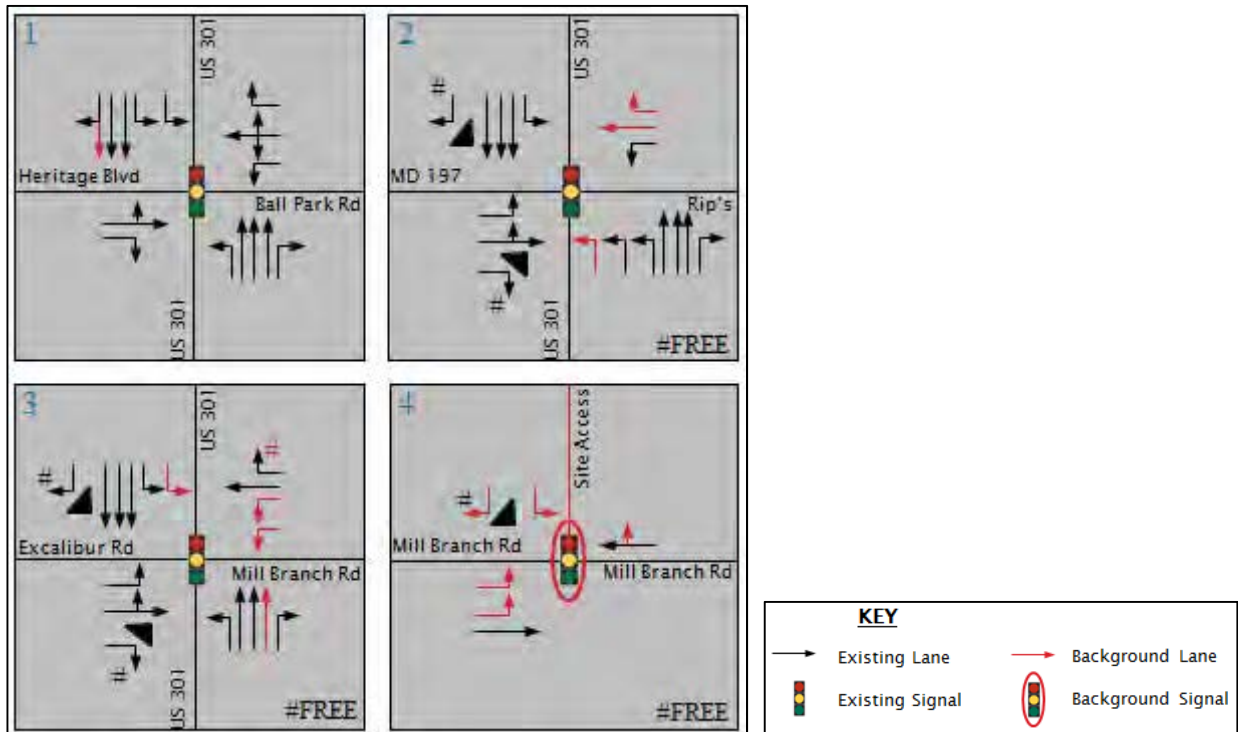


Figure 9. Planned Background Geometry Improvements by Other Developments

6 TRAFFIC FORECASTS

Traffic forecasts for the proposed multi-sports complex were developed individually for the twelve playing fields on the site, the 4,000-seat stadium, and the planned Green Branch Park Phase 1 that will be located in the area just south of the study site.

Since the most recent ITE Trip Generation Handbook, 9th Edition, does not provide information on stadiums or sports complexes, other information specific to the anticipated sports, including lacrosse and soccer, was utilized. The anticipated event programming will be larger than a typical recreational park and more regional in nature. Therefore, trip generation rates were determined using data provided by tournament organizers. Average vehicle rates were provided by Elite Tournaments, a tournament event management company, and by Premier Lacrosse, which runs major youth lacrosse events throughout the region and state.

Tournaments are expected to occur on weekends and recreational leagues are expected to use the fields on weekdays. The lacrosse tournaments are anticipated to create higher traffic volumes over a shorter time period; therefore, these values were used to develop the traffic forecasts. For the twelve playing fields, a conservative estimate of 1.25 cars per player was used. With an average of 22 players per team and two teams per field, the estimated number of vehicles is 660. Turnover during a lacrosse tournament is typically continuous due to varying start and end game times. Players tend to arrive earlier than spectators to warm up. This site traffic, combined with the weekday PM peak hour or the Saturday peak hour of adjacent street traffic, gives a conservative estimate of the heaviest traffic periods experience with a recreational league activity or a tournament on the site.

Conservatively, half of the vehicles using the twelve sports fields are expected to turn over during peak hour, as shown in **Table 4**.

Table 4. Forecasted Site Trips: 12 Fields

SITE	Cars per Player	Players per Team	Peak Hour Volume (vph)	Entering		Exiting	
				%	Vehicles	%	Vehicles
Site (12 Fields)	1.25	22	660	50%	330	50%	330

To calculate the anticipated traffic for the proposed 4,000-seat stadium, various other stadium studies were examined. **Table 5** shows the studies that were used to determine the rates for calculating the peak hour traffic for the site's stadium. This research also documented that approximately 61 percent of attendees arrive at a stadium during the single hour prior to an event. To remain conservative, a vehicle occupancy rate of three people per car was applied to the site, which calculates to 800 vehicles per hour. This value was checked against the calculation of three attendees per vehicle and a 60 percent arrival during the peak hour, which also yields 800 vehicles entering during the peak hour of an event.

Table 5. Comparison of Stadium Traffic Generation Rates

Code	Type	Units		Trip Rate Per Seat
		No.	Type	
ITE Trip Generation	No Stadium Data Available	4,000	seats	-
Ripken Stadium (Aberdeen, MD) ¹	Minor League Baseball Stadium	6,000	seats	0.16
Coca-Cola Park (Allentown, PA) ¹	Minor League Baseball Stadium	10,000	seats	0.17
Allentown, PA ¹	Proposed Arena	10,000	seats	0.22
Prince George's County	Sports Complex Stadium	4,000	seats	0.20

Traffic forecasts for the Green Branch Phase I recreational park were based on local vehicle trip rates for recreational athletic fields provided by the Howard County Department of Recreation and Parks and are shown in **Table 6**. During peak hour, for eight athletic fields, 240 vehicles enter and exit every 1.5 hours; therefore, 240 vehicles per hour were assumed due to the high concentration of trips around the starting and ending of games. The number of trips per field would then be 30 vehicles per hour.

Table 6. Forecasted Site Trips: Green Branch Park Phase I

Green Branch Park Phase I	Peak Hour Volume (vph)
8 Athletic Fields ²	240
1 Pavilion ²	100
1 Playground, 2 tennis, & 2 basketball ²	30
TOTAL	370

¹ Allentown Arena and Mixed-Use Development – Master Plan Traffic Analysis, Prepared by Traffic Planning and Design, Inc., May 31, 2011
<http://www.allentownpa.gov/Portals/0/files/2011-05-31%20Allentown%20Arena%20Traffic%20Analysis.pdf>

² Howard County Department of Recreation and Parks

Table 7 summarizes the vehicle trips forecasted for the multi-sports complex. As this effort was a feasibility study and not a formal traffic impact study, to be conservative no discounts were assumed for non-auto trips or internal capture. A total of 1,910 new peak hour trips are estimated.

Table 7. Forecasted Site Trips: Total

Land Use	PM Peak Hour Trips			Saturday Peak Hour Trips		
	Total	Entering	Exiting	Total	Entering	Exiting
12 Fields	660	330	330	660	330	330
4,000-Seat Stadium (Start of Event)	800	800	0	800	800	0
Green Branch Park Phase I	370	185	185	370	185	185
Total	1,910	1,315	515	1,910	1,315	515

SITE ACCESS

Three locations were examined as future potential site access points. One alternative is accessing the site from Ball Park Road. The difficulties with this alternative are avoiding impacting historic archeological sites (including archeology site 1037, a colonial plantation) and the prohibitive cost of constructing a roadway across the steep stream ravine.

A second alternative is off of Governor's Bridge Road. This location has an existing, unpaved, graded haul road that accesses the site from the east. Site traffic arriving at this access point would be required to drive through residential areas on Governor's Bridge Road, which is a two-lane roadway. This location is recommended to be developed as an emergency access point.

The third alternative is providing site access from the south. As part of the planned Mill Branch Crossing, LLC development in the northeast quadrant of US 301 and Mill Branch Road, a 50-foot easement will be procured to provide access from Mill Branch Road. Currently, the sports complex expects to use the same roadway for its site access. To remain conservative, the analysis tested the transportation network with one single access point. **Figure 10** shows the site and the proposed access point.

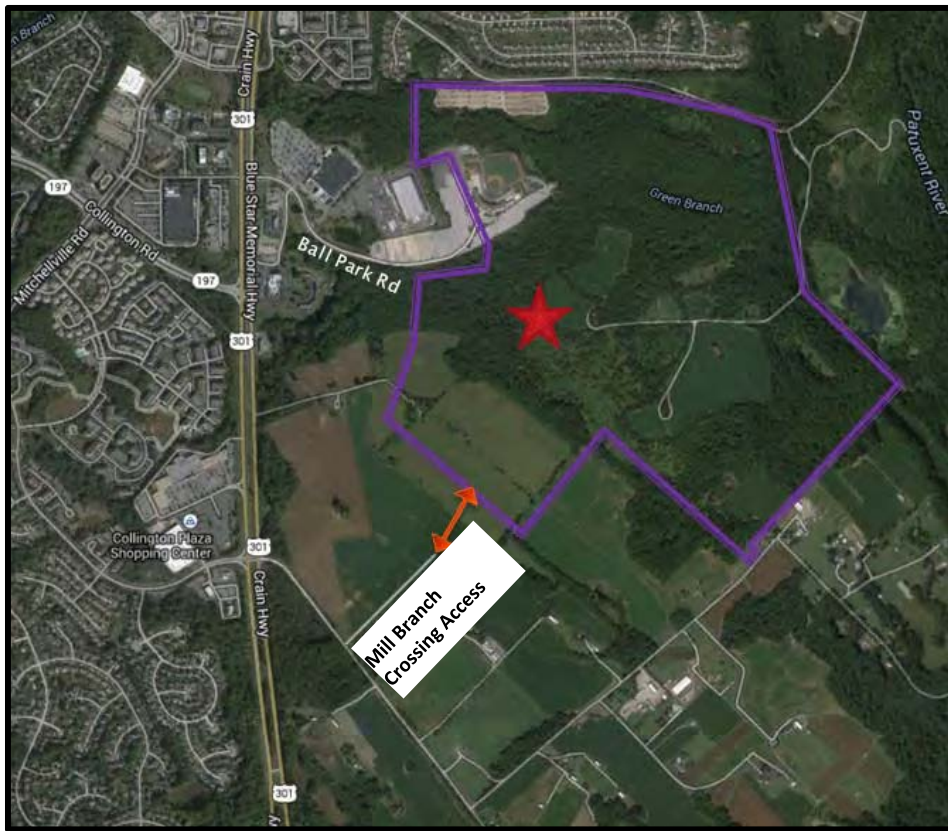


Figure 10. Site Access

TRIP DISTRIBUTION

As a regional park, traffic is expected to come from the surrounding area as well as from local trips. Trip distribution and assignment were determined based on the expected land uses and surrounding roadway network and are depicted in **Figure 11**. It accounts for trips from Baltimore and Annapolis, Maryland, using US Routes 3 and 50 from the north and east, and trips from the District of Columbia using US Route 50 and MD 197 from the west. Trips from southern Maryland and Virginia via US Route 301 are also accounted for. The site trips at the study intersections for the weekday PM and Saturday peak hours are shown in **Figure 12-14**.

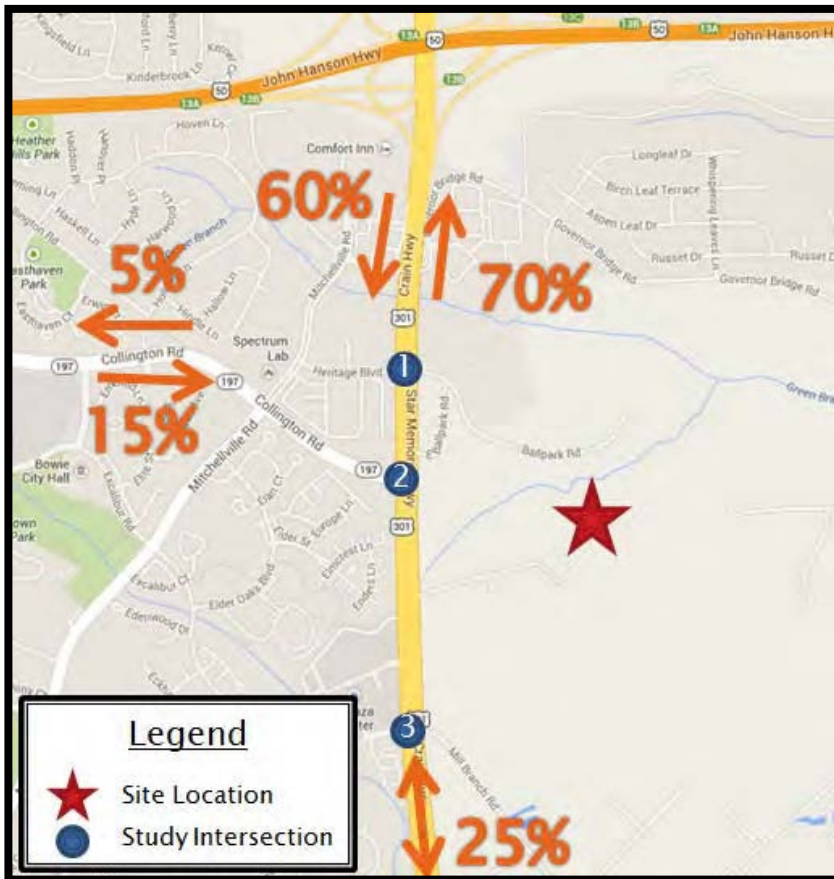


Figure 11. Trip Distribution and Assignment for Green Branch Sport Complex

GROWTH IN EXISTING TRAFFIC VOLUMES

The horizon year for the study area is 2016. A conservative one percent background growth rate was applied to the roadway network based on annual average daily traffic counts over the most recent ten years of data. Two locations within the study area, US 301 0.1 mile north of MD 197 and 0.1 mile south of MD 197, were examined.

FUTURE VOLUMES

Future traffic volumes were determined and analyzed for the following three future traffic scenarios:

1. Green Branch Sport Complex with 12 fields in use
2. Green Branch Sport Complex with 12 fields in use and Green Branch Park Phase I in use
3. Green Branch Sport Complex with 4,000-seat stadium in use and Green Branch Park Phase I in use.

Figures 15-17 show the total future volumes at the study intersections for weekday PM and Saturday peak hours.

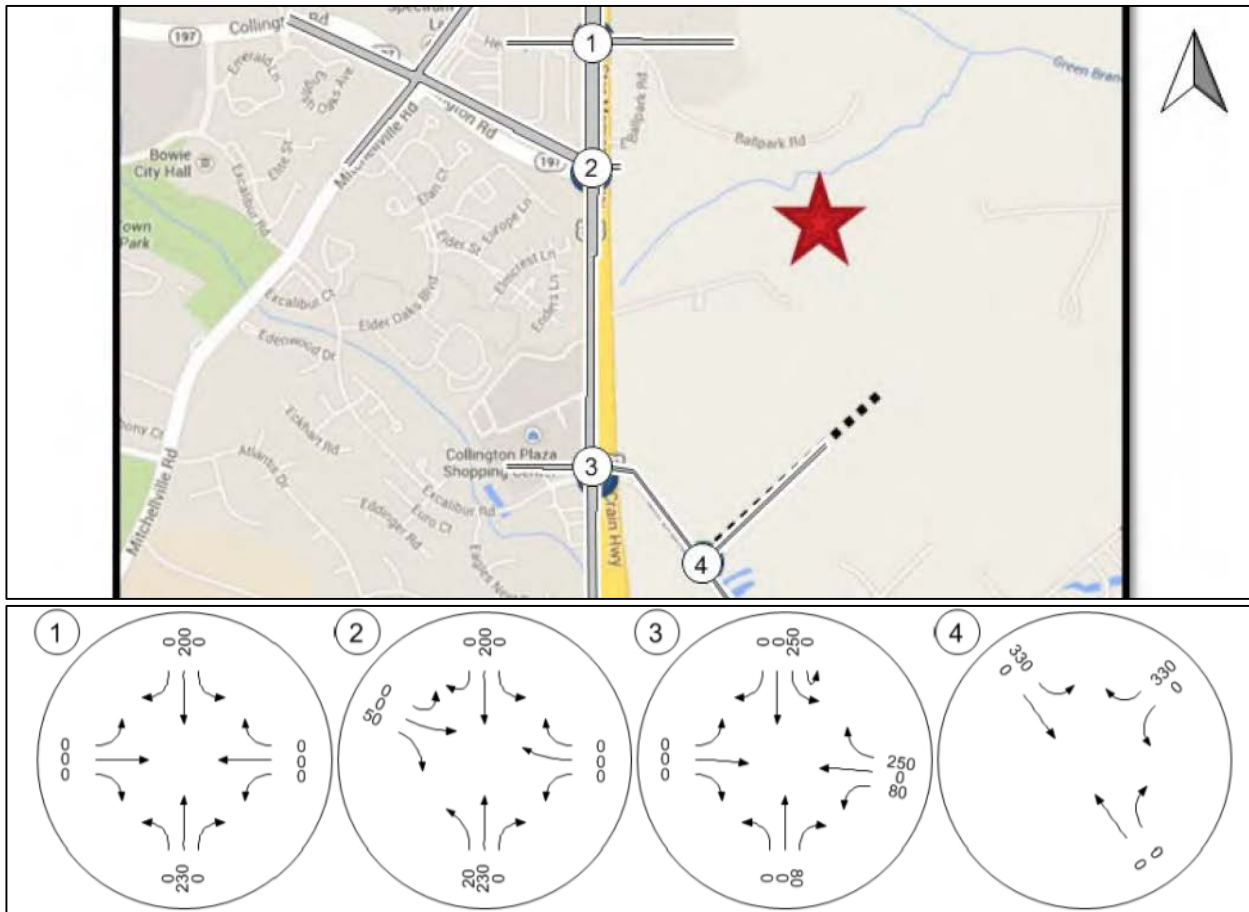


Figure 12. Site Volumes (12 Fields) – PM Peak Hour & Saturday Peak Hour

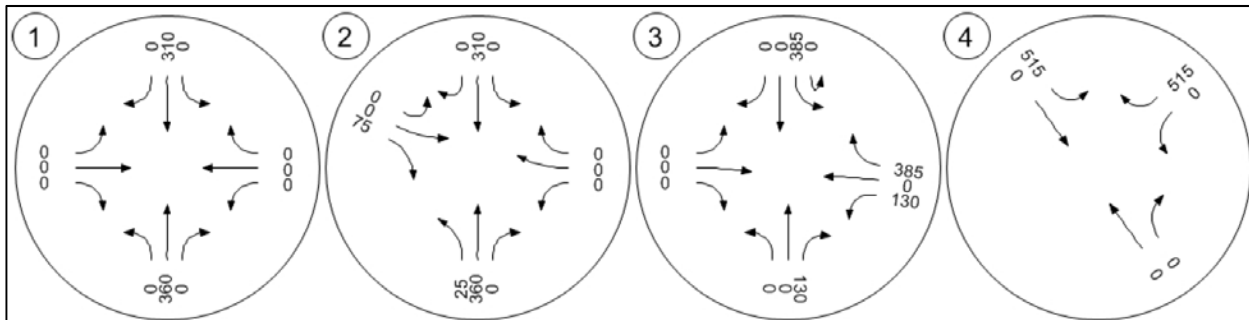


Figure 13. Site Volumes (12 Fields + Park) – PM Peak Hour & Saturday Peak Hour

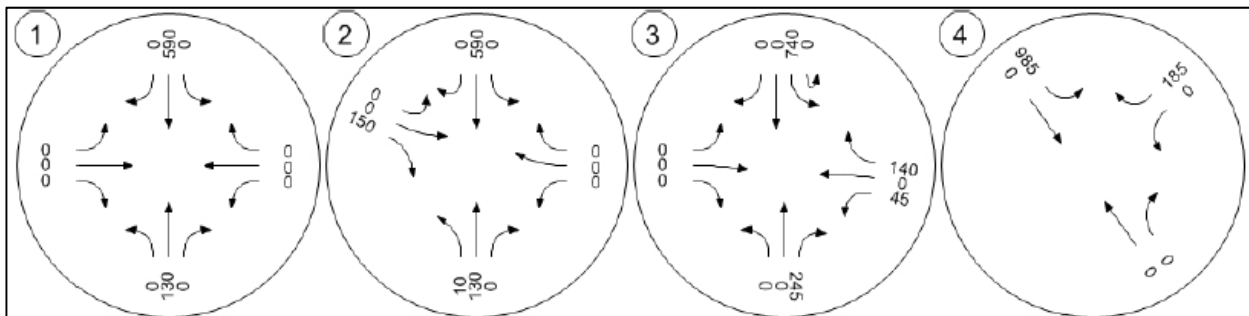


Figure 14. Site Volumes (Stadium + Park) – PM Peak Hour & Saturday Peak Hour

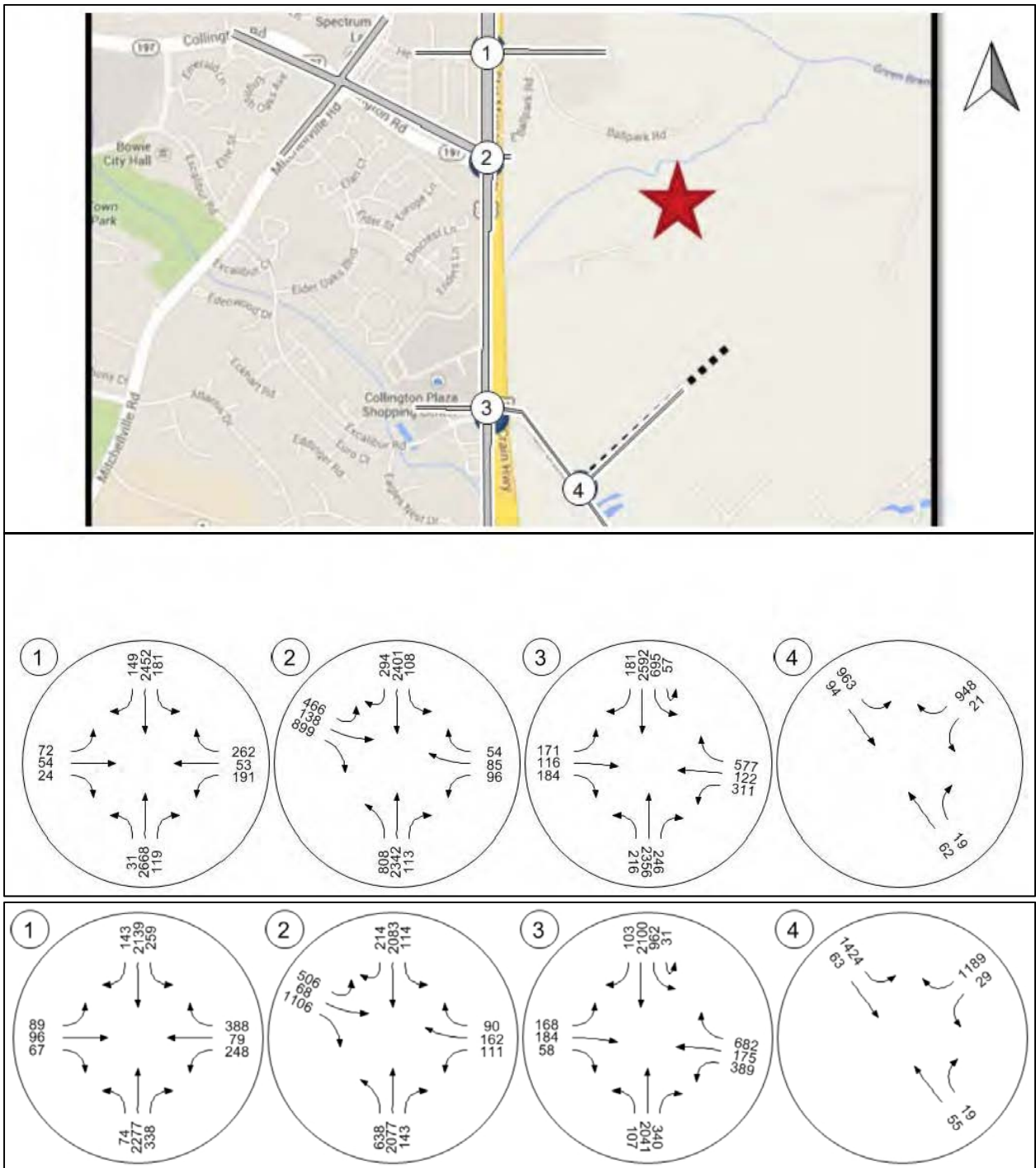


Figure 15. Future Volumes (12 Fields) – PM Peak Hour, Saturday Peak Hour

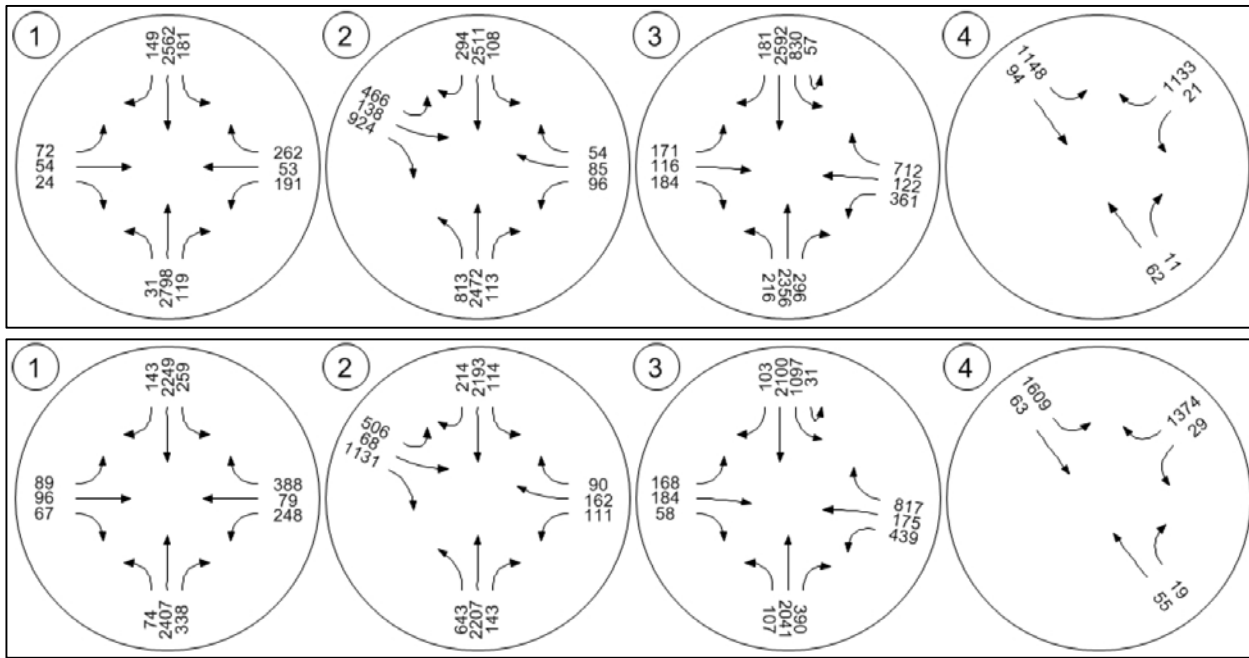


Figure 16. Future Volumes (12 Fields + Park) – PM Peak Hour, Saturday Peak Hour

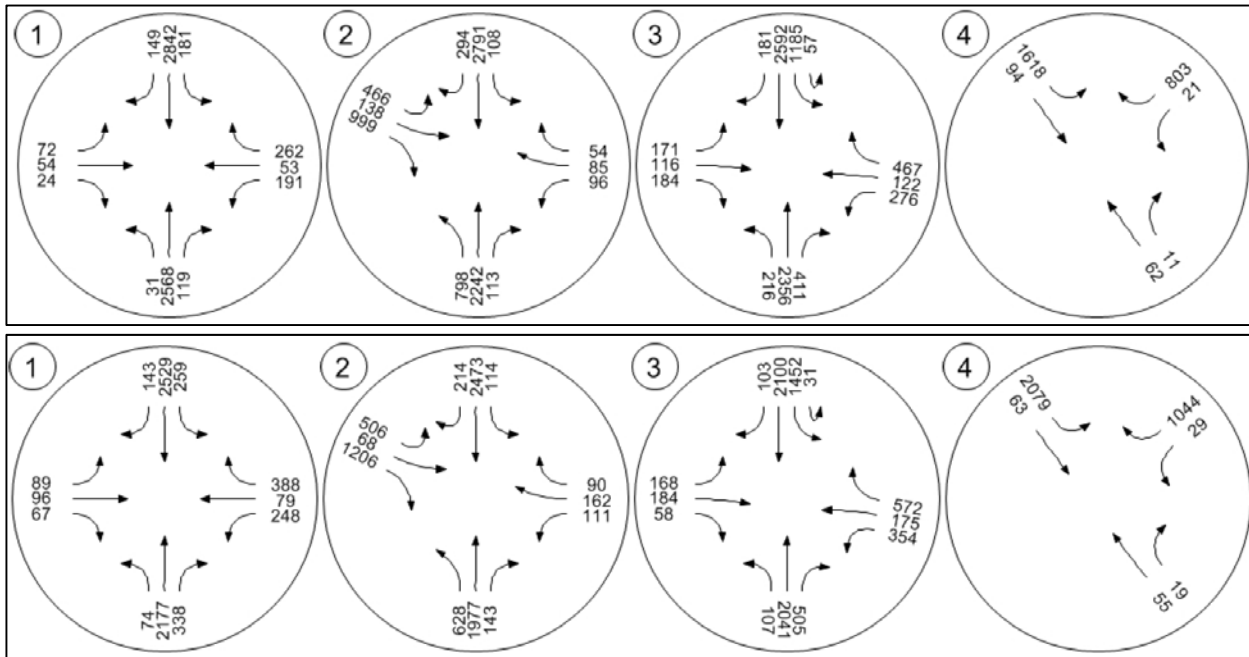


Figure 17. Future Volumes (Stadium + Park) – PM Peak Hour, Saturday Peak Hour

7 PROGRAMMED TRANSPORTATION IMPROVEMENT: US 301/MD 197

The US 301/MD 197 Interchange is part of the SHA roadway improvement project “US 301 Northern Corridor Transportation/Access Management Study” and is listed in the consolidated transportation plan. The preferred alternative, Alternative 2 with Roundabouts, was chosen and received Federal Highway Approval in 2007 and encompasses segments of US 301 and MD 197 as well as the three existing study intersections, as shown in **Figure 18**. The project is currently unfunded, so it is assumed not to be in place by build out year 2016. Once constructed, this alternative would include the following geometrical changes that will affect the study area:

- **US 301**
 - Widen from two through lanes to three through lanes in each direction.
 - Construct collector-distributor roadways on each side of US 301.
 - Provide full access control between Mt. Oak Road and US 50.
- **US 301 and MD 197 (Collington Road)**
 - Construct a bridge carrying MD 197 over US 301 with roundabouts at the ends of the ramps.
 - Widen MD 197 to four lanes.
 - Remove traffic control signal
- **US 301 and Excalibur Road/Mill Branch Road**
 - Construct an overpass connecting Excalibur Road and Mill Branch Road.
 - Remove traffic control signal

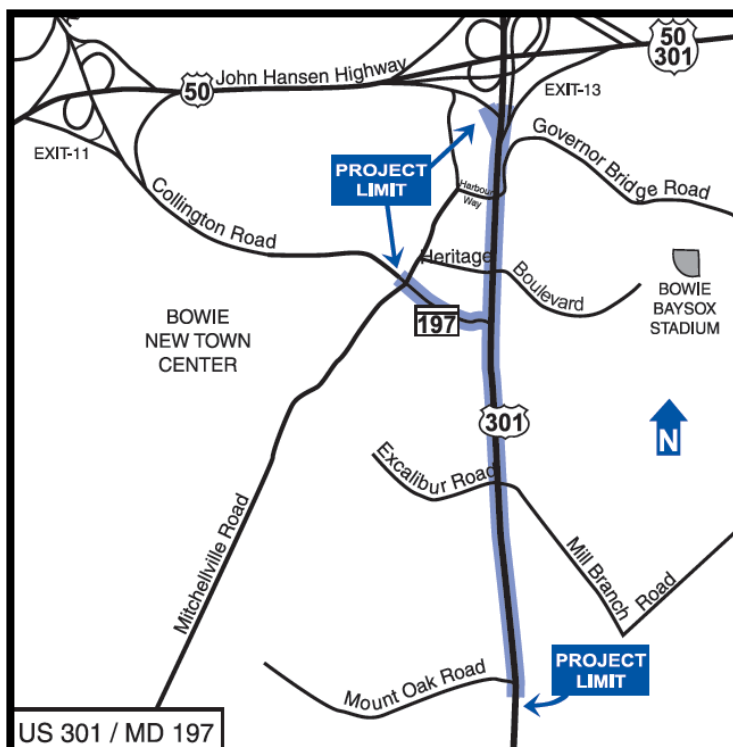


Figure 18. US 301/MD 197 Transportation Study Project Limits³

³ Source: Maryland Department of Transportation State Highway Administration Project Planning Division Informational Newsletter Spring 2007
January 20, 2014

The intersection of Mill Branch Road at the proposed Mill Branch Crossing site entrance was identified as the critical intersection for site access and evaluated for future traffic operations. The total future traffic volumes for the study intersections are shown in **Figure 10**.

A capacity analysis was performed for the study intersections under the same aforementioned scenarios:

1. Green Branch Sport Complex with 12 fields in use
2. Green Branch Sport Complex with 12 fields in use and Green Branch Park Phase I in use
3. Green Branch Sport Complex with 4,000-seat stadium in use and Green Branch Park Phase I in use.

The results of the future capacity analysis with twelve sports fields are summarized in **Table 8** and illustrated in **Figure 20**.

Table 8. Future Conditions Peak Hour Capacity Analysis (12 Fields)

HCM 2000 Intersection	Delay (sec)		V/C Ratio		Level of Service	
	PM	Saturday	PM	Saturday	PM	Saturday
<i>US 301 and Heritage Blvd/Ball Park Rd (signalized)</i>						
Overall	19.6	28.5	0.91	0.91	B	C
Eastbound Approach	88.1	84.9	0.86	0.89	F	F
Westbound Approach	68.6	74.5	0.74	0.91	E	E
Northbound Approach	15.2	12.1	0.94	0.92	B	B
Southbound Approach	11.6	27.2	0.86	0.88	B	C
<i>US 301 and MD 197 (Collington Rd) (signalized)</i>						
Overall	38.9	43.0	1.04	1.06	D	D
Eastbound Approach	42.1	43.0	1.05	1.04	D	D
Westbound Approach	113.2	96.9	0.84	0.98	F	F
Northbound Approach	27.4	33.7	0.87	0.93	C	C
Southbound Approach	44.3	45.8	1.03	1.04	D	D
<i>US 301 and Excalibur Rd/Mill Branch Rd (signalized)</i>						
Overall	44.4	54.9	1.04	1.10	D	D
Eastbound Approach	108.9	126.8	1.03	1.12	F	F
Westbound Approach	42.2	56.0	0.74	0.93	D	E
Northbound Approach	57.2	71.5	1.02	1.06	E	E
Southbound Approach	26.1	32.4	0.94	0.76	C	C
<i>Mill Branch Rd and Site Access (signalized)</i>						
Overall	10.2	8.5	0.78	0.93	B	A
Eastbound Approach	13.5	7.8	0.11	0.05	B	A
Westbound Approach	62.2	68.0	0.50	0.52	E	E
Southbound Approach	2.6	5.8	0.03	0.09	A	A

The results show that each study intersection operates overall at LOS D or better during the PM and Saturday peak periods. Some side street movements operate at LOS E or F.

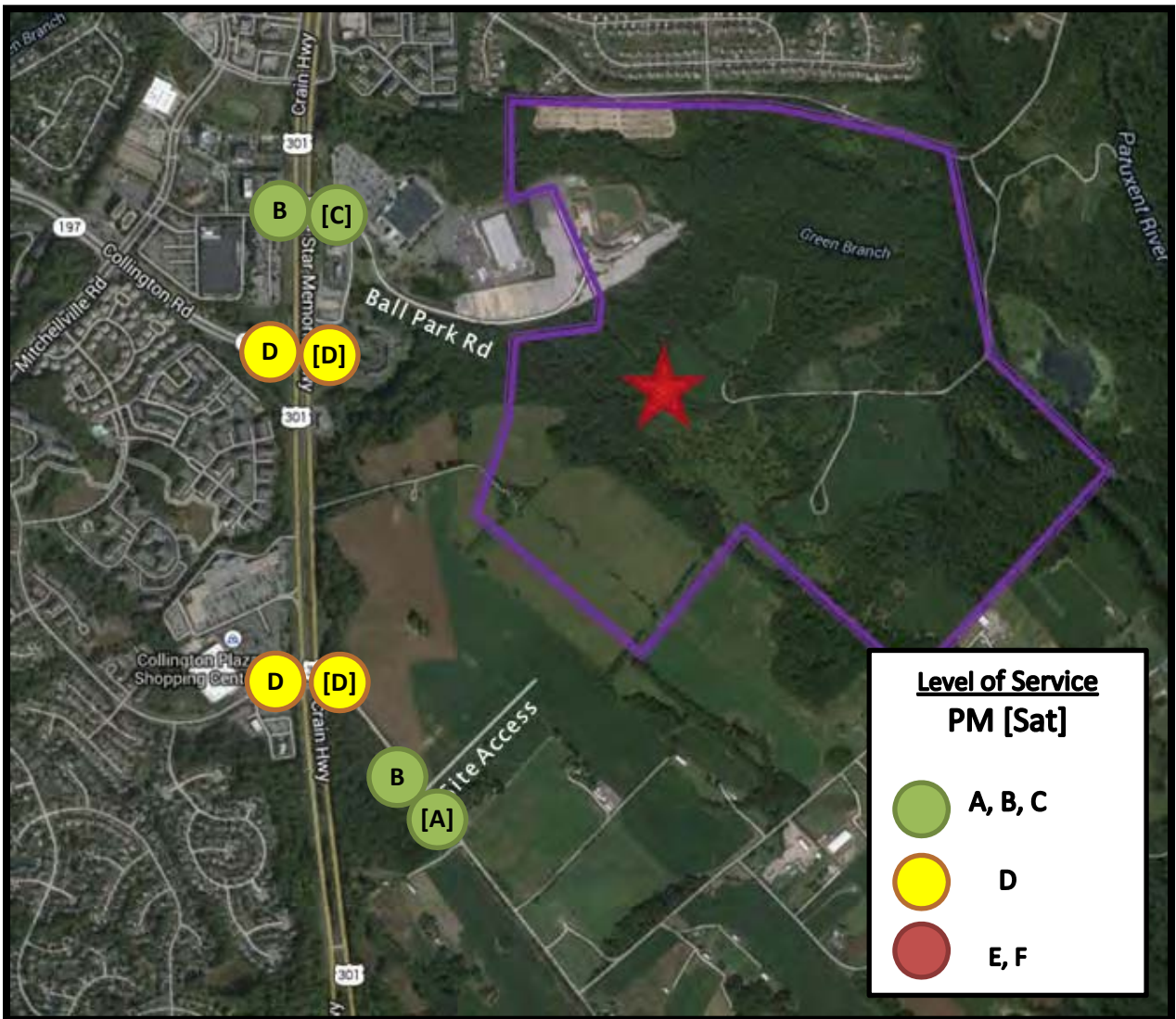


Figure 20. Future Level of Service (12 Fields)

The results of the future capacity analysis with twelve sports fields and the Green Branch Park Phase I are summarized in **Table 9** and illustrated in **Figure 21**.

Table 9. Future Conditions Peak Hour Capacity Analysis (12 Fields + Park)

HCM 2000 Intersection	Delay (sec)		V/C Ratio		Level of Service	
	PM	Saturday	PM	Saturday	PM	Saturday
<i>US 301 and Heritage Blvd/Ball Park Rd (signalized)</i>						
Overall	19.6	30.6	0.94	0.94	B	C
Eastbound Approach	106.2	95.3	0.93	0.94	F	F
Westbound Approach	74.0	79.6	0.78	0.94	E	E
Northbound Approach	12.5	14.3	0.95	0.94	B	B
Southbound Approach	12.8	28.4	0.88	0.90	B	C
<i>US 301 and MD 197 (Collington Rd) (signalized)</i>						
Overall	44.5	45.6	1.06	1.09	D	D
Eastbound Approach	48.3	47.4	1.09	1.08	D	D
Westbound Approach	113.2	109.6	0.84	1.05	F	F
Northbound Approach	25.8	35.5	0.90	0.94	C	D
Southbound Approach	58.7	47.2	1.05	1.05	E	D
<i>US 301 and Excalibur Rd/Mill Branch Rd (signalized)</i>						
Overall	54.9	66.2	1.10	66.2	D	E
Eastbound Approach	108.9	147.7	1.03	1.20	F	F
Westbound Approach	46.4	58.2	0.69	0.87	D	E
Northbound Approach	83.0	83.1	1.10	1.09	F	F
Southbound Approach	28.7	46.7	0.95	0.76	C	D
<i>Mill Branch Rd and Site Access (signalized)</i>						
Overall	8.8	13.2	0.90	1.08	A	B
Eastbound Approach	9.8	10.5	0.09	0.05	A	B
Westbound Approach	62.2	68.0	0.50	0.52	E	E
Southbound Approach	4.3	13.5	0.04	0.13	A	B

The results show that the study intersection of US 301 and Mill Branch Road operates overall at LOS E during the Saturday peak hour.

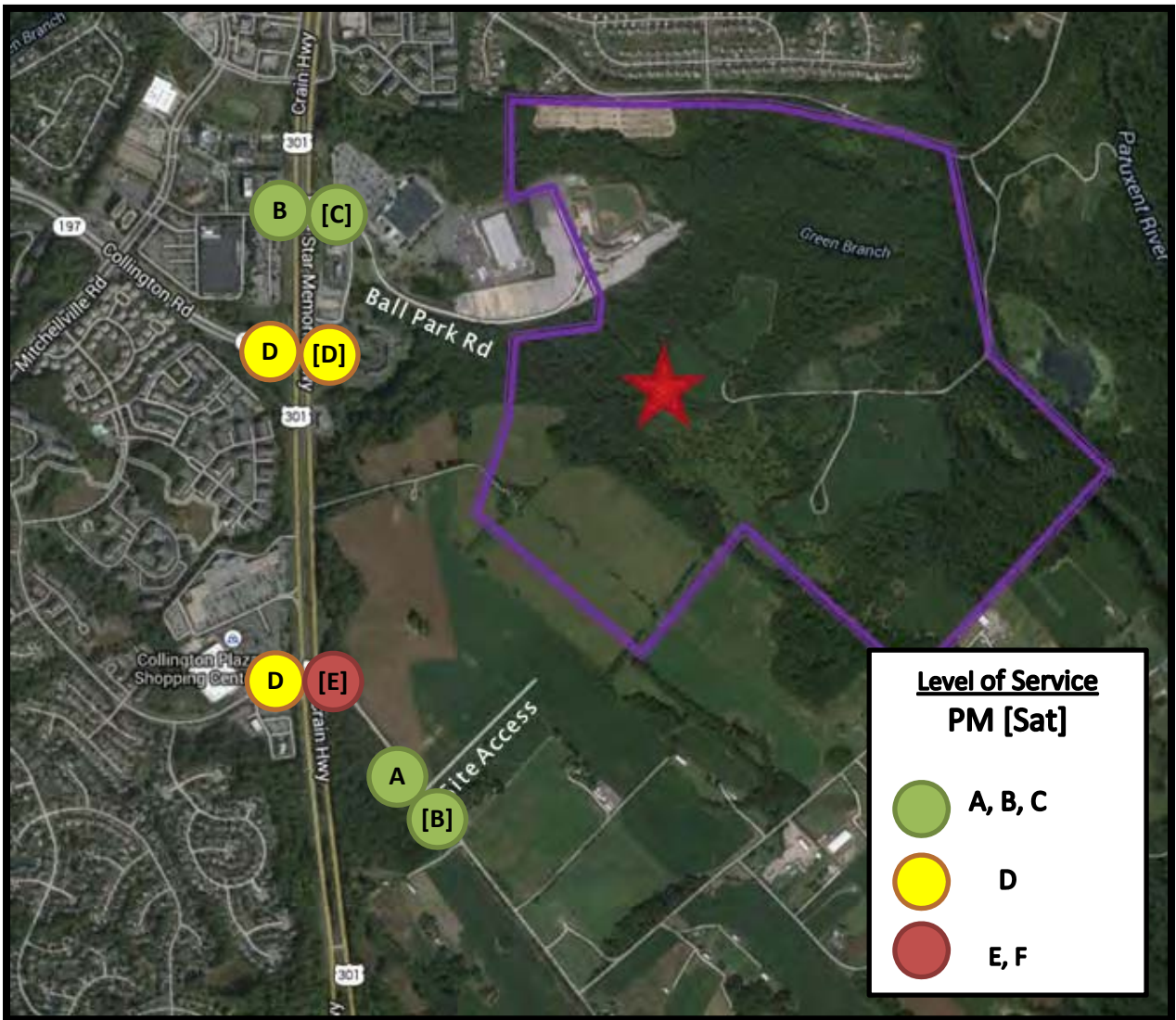


Figure 21. Future Level of Service (12 Fields + Park)

The results of the future capacity analysis with the 4,000-seat stadium and the Green Branch Park Phase I are summarized in **Table 10** and illustrated in **Figure 22**.

Table 10. Future Conditions Peak Hour Capacity Analysis (4,000-Seat Stadium + Park)

HCM 2000 Intersection	Delay (sec)		V/C Ratio		Level of Service	
	PM	Saturday	PM	Saturday	PM	Saturday
<i>US 301 and Heritage Blvd/Ball Park Rd (signalized)</i>						
Overall	22.7	33.3	0.96	0.98	C	C
Eastbound Approach	106.2	95.3	0.93	0.94	F	F
Westbound Approach	81.3	87.0	0.83	0.98	F	F
Northbound Approach	9.3	13.8	0.86	0.87	A	B
Southbound Approach	20.8	32.1	0.95	0.97	C	C
<i>US 301 and MD 197 (Collington Rd) (signalized)</i>						
Overall	56.3	54.5	1.12	1.16	E	D
Eastbound Approach	61.4	57.6	1.19	1.17	E	E
Westbound Approach	113.2	152.1	0.84	1.25	F	F
Northbound Approach	39.9	37.4	0.80	0.82	D	D
Southbound Approach	65.8	56.5	1.10	1.08	E	E
<i>US 301 and Excalibur Rd/Mill Branch Rd (signalized)</i>						
Overall	73.0	94.0	1.20	1.26	E	F
Eastbound Approach	129.3	147.7	1.12	1.20	F	F
Westbound Approach	95.2	90.7	1.07	1.14	F	F
Northbound Approach	91.6	118.9	1.13	1.19	F	F
Southbound Approach	47.8	71.1	0.91	0.73	D	E
<i>Mill Branch Rd and Site Access (signalized)</i>						
Overall	8.5	11.2	0.81	0.94	A	B
Eastbound Approach	9.0	12.5	0.08	0.25	A	B
Westbound Approach	62.3	68.0	0.51	0.52	E	E
Southbound Approach	2.5	4.6	0.07	0.04	A	A

The results show that the study intersections of US 301 and MD 197 and US 301 and Mill Branch Road operate overall at LOS E during the PM peak hour. During the Saturday peak hour, the intersection of US 301 and Mill Branch Road operates at LOS F.

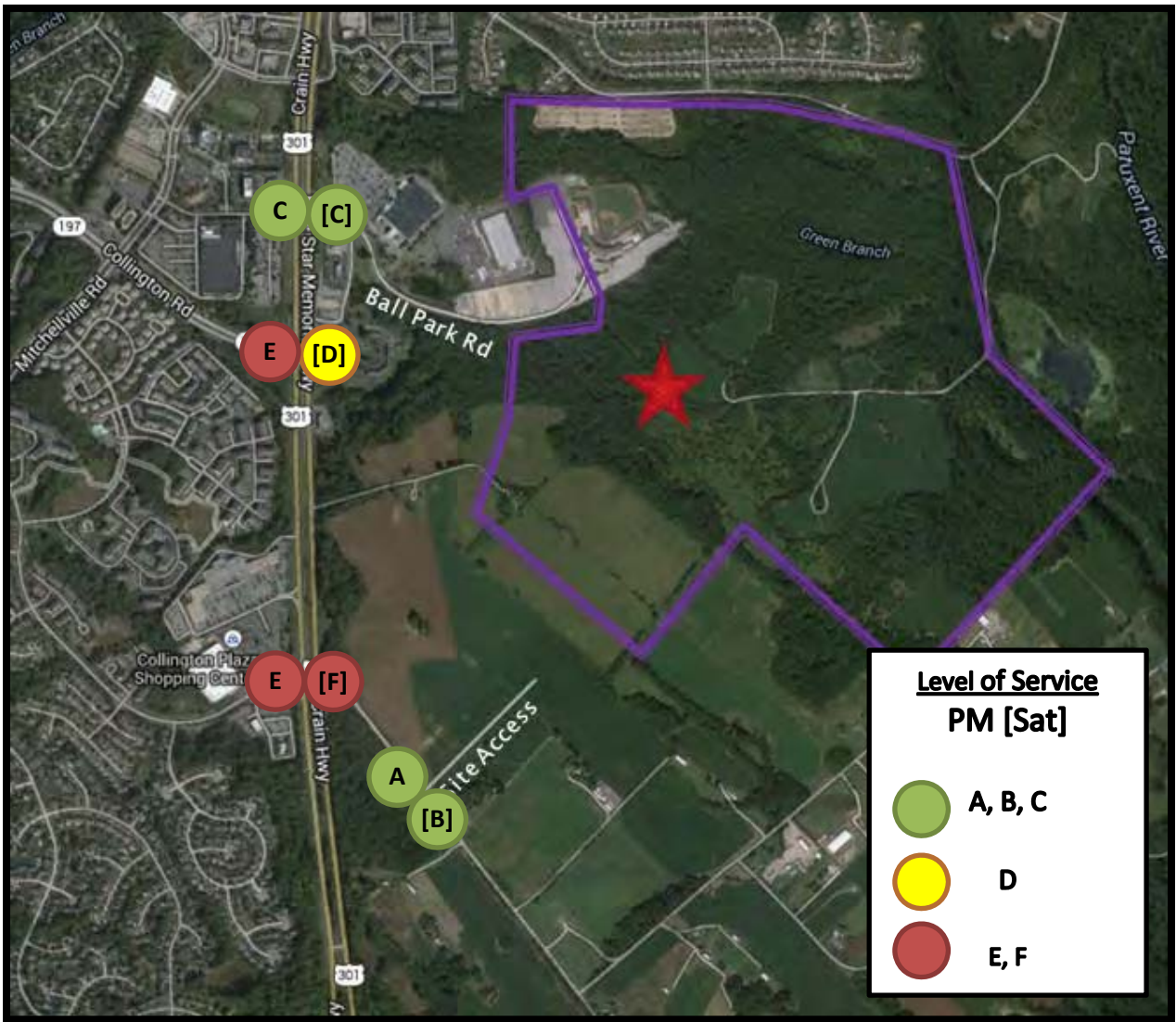


Figure 22. Future Level of Service (Stadium + Park)

INTERNAL SITE TRAFFIC

In addition to the four external study intersections, the internal site traffic was examined. A test scenario was analyzed that tested peak inflow and outflow during event start and end times. The analysis did not look at external intersections since the event start and end times were assumed to be outside of the commuter or Saturday peak hours. Up to 1,500 inbound vehicles or outbound vehicles were assumed on the internal roadways.

The results show that based on the location of parking lots and internal traffic distribution, the internal roadway network can be composed of two lane roadways (one lane in each direction) and the main internal intersection can be stop-controlled with additional inbound, exclusive, left- and right-turn lanes. With inbound traffic at event start times, the internal intersection will function adequately with the three-lane approach and the queues are anticipated to be within the site boundaries. Outbound traffic at event end times is expected to queue into the parking lots. It is recommended that the outbound traffic be directed to use both lanes leaving the sports complex.

The site plan is provided as **Figure 23**.

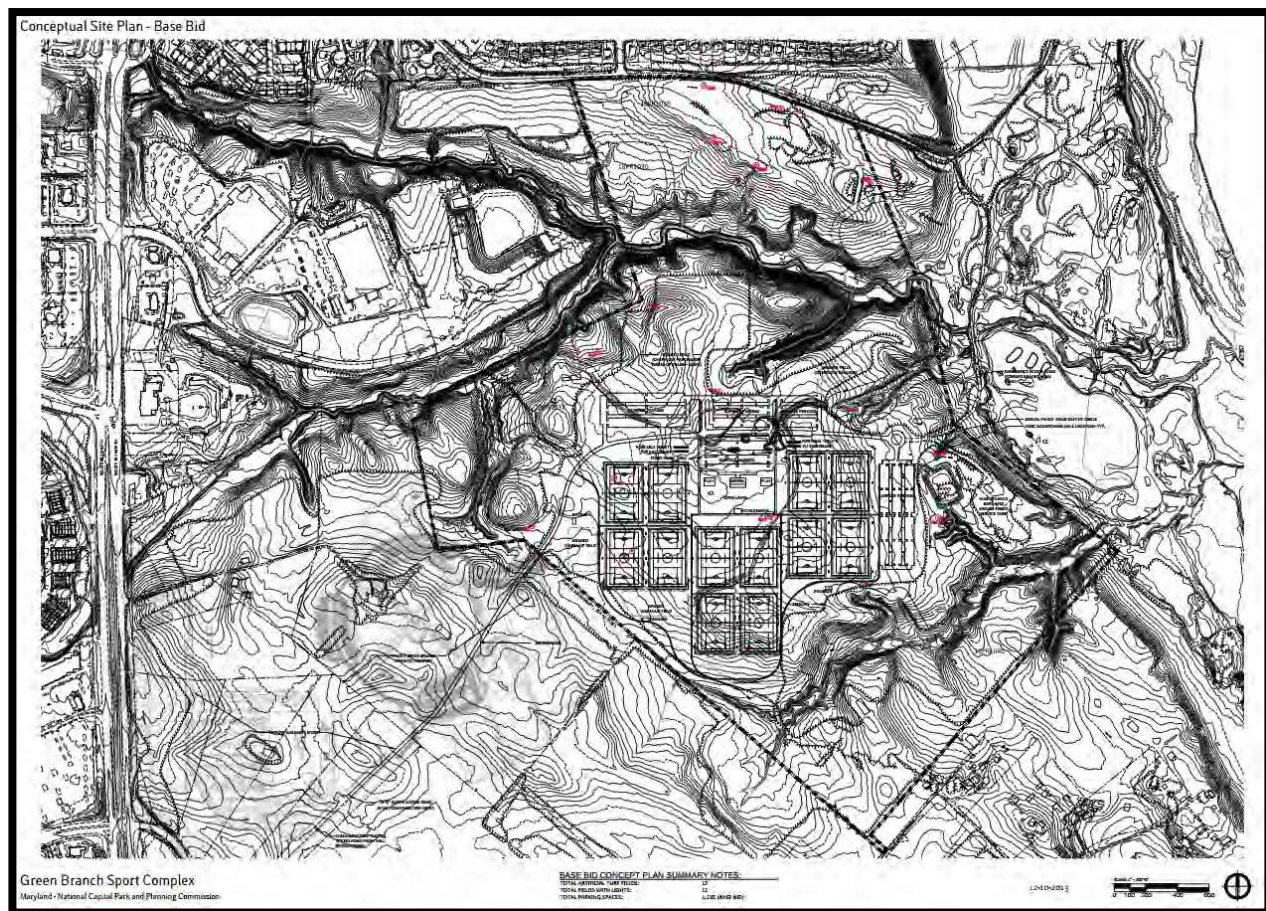


Figure 23. Conceptual Site Plan (Dated: 12-10-2013)

9 PARKING FORECASTS

Currently, the Prince George's Stadium, home of the Bowie Baysox, has approximately 1,260 paved parking spaces and 400 unpaved (gravel) parking spaces. The existing parking lots are shown in **Figure 24**.

A preliminary parking analysis was performed to forecast the future parking demand of the proposed multi-sports complex. Typically, lacrosse tournaments tend to produce continuous traffic, while soccer tournaments tend to see vehicles come in waves. Parking needs were calculated using data gathered from Premiere Lacrosse and engineering judgment. Along with the previous assumptions of 1.25 cars per player and 22 players per team, it was assumed that there would be approximately ten teams per field throughout a Saturday. This results in a total daily accumulation of 3,300 vehicles. If approximately 60 percent of the games are played in the morning and 40 percent are in the afternoon, approximately 2,000 parking spaces would be required for peak parking demand. These calculations do not include any shared parking reductions that could result from consolidating parking facilities with the neighboring sites, such as the Baysox Stadium, which could result in a decrease in the recommended number of parking spaces.

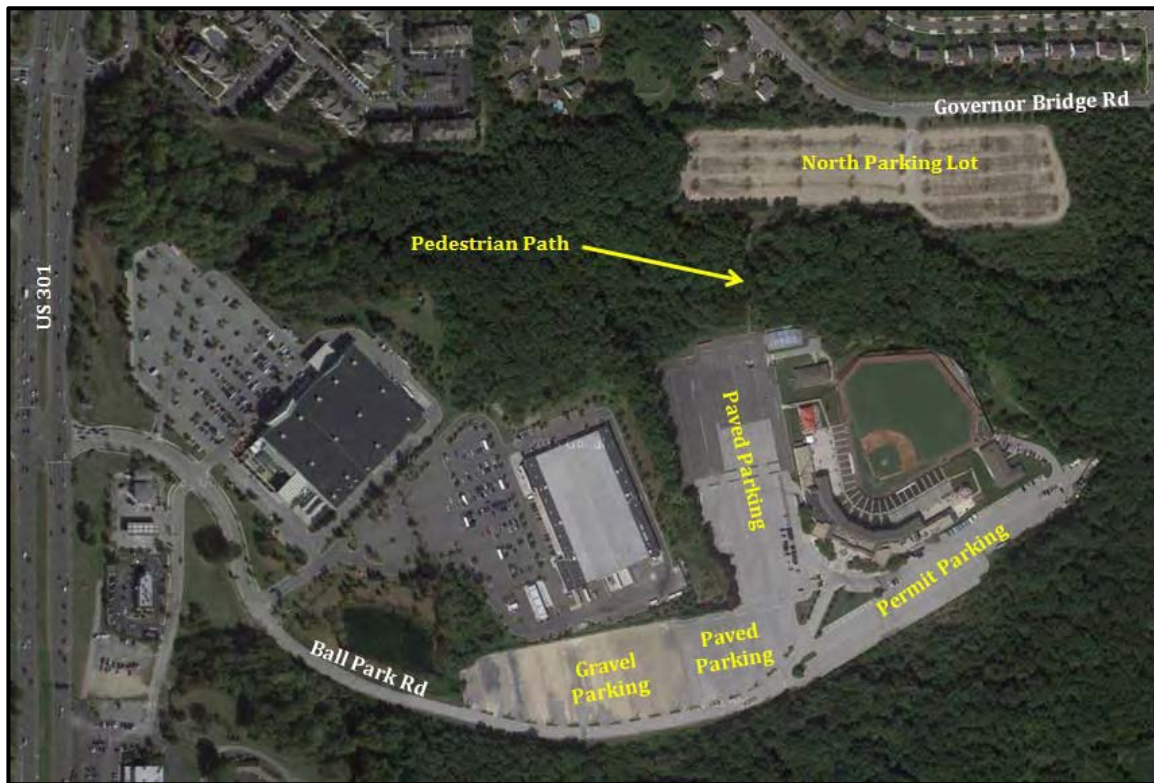


Figure 24. Existing Parking at Prince George's Stadium

10 CONCLUSIONS AND RECOMMENDATIONS

The traffic analyses show that the external roadway network and signal site access point can accommodate either a stadium event, full 12-field tournament, or a Green Branch Park Phase I event in isolation without requiring any additional off-site roadway or traffic control improvements. This assumes the Mill Branch Crossing access point is a four-lane undivided roadway between Mill Branch Road and the shopping center driveway, and a two-lane roadway through the Green Branch Park Phase I and into the Green Branch Sport Complex. However, once simultaneous events occur, such as the Stadium and full use of the Green Branch Park Phase I, the overall intersection of US 301 at Mill Branch Road degrades to LOS E during the PM and LOS F during the Saturday peak hours. The intersection of US 301 and MD 197 would also decline to LOS E during the PM peak period.

Considerations for other site scenarios: Although this report focused on a smaller stadium site, some preliminary discussions did consider a larger (12,000 seat stadium). Based on the same forecasting methodology a 12,000 seat stadium event would generate about 2,500 new vehicle trips (3 person-per car and 60% of attendees arrive during a single hour which would be assumed to overlap with a commuter rush hour). This number is higher than anything tested in this report. With a single access point, the site cannot handle a 12,000 seat stadium (or a 12,000 seat stadium event plus events at the 8 multi-purpose fields) on top of the Mill Branch Crossing and existing local traffic. The Mill Branch Road / Site Access intersection would not be able to accommodate this much traffic. Major improvements would be required to widen this intersection, widen the internal roadways within the park, and possibly even improve some intersections along US 301 resulting in several million dollars in off-site roadway improvements.

As major off-site improvements are beyond the Green Branch Sport Complex budget, the following is a list of event traffic management recommendations that may help limit traffic to levels that the area roadways and intersections can accommodate:

- Coordinate the scheduling of major events to avoid overlap
- As part of the future US 301 upgrade, use Ball Park Road as a second access point
- Realign the roadway through the Green Branch Park Phase I to bypass direct access points to its parking lots
- Share the lots with Prince George's Stadium for overflow parking. ***In particular, limiting the number of cars parking on-site, and distributing parking evenly on other adjacent or nearby parcels would potentially increase the size of a stadium event that the site could handle above 4,000 seats.***
- Provide wayfinding signage for
 - Field numbers
 - Parking lot numbers
 - Drop-off/Pick-up areas
 - Internal site circulation
- Develop Event Traffic Management Plans
 - Utilize on-site traffic control for one-way inbound and outbound roadway operation
 - Provide website for attendees with parking information

- Utilize social media – arrive early, stay late
- Provide variable message signs (VMS)
- Develop event signal timing plans

Appendix C
Site Resources - Utility and Stormwater
Management Overview



January 03, 2014

Final Utility and Stormwater Management Overview Narrative
MSA Multi-Use Stadium and Sports Complex
Prince George's County, Maryland

Introduction

Site Resources Inc. (SRI) was hired by Hord Coplan Macht to assist in the analysis of the Green Branch Park site as a part of the Phase II Study for the Maryland Stadium Authority. The primary role for SRI was to gather site data from various agencies to generate a base plan for master planning, investigate potential utility connections and environmental site constraints, and provide input on stormwater management impacts.

The Phase II portion of the Green Branch Park site is currently projected to include 12 synthetic sport fields with associated surface parking lots and access drive, lawn warm up/ play areas, portable restrooms, concessions, and an administration building.

The site contains several historical and archeological sites of interest which must be preserved and several environmental buffers that cannot be disturbed. Additionally the site is believed to at one time have been used to store bio-fuels, which could impact the potential for on-site wells and septic fields.

Executive Summary

The Phase II portion of the Green Branch Park site does not have a readily available connection point for utilities. Development of this site will require a new access road and long runs of utilities for connection to public systems. Water and Sewer connections may be available at the Bowie Baysox stadium, west of Route 301, or on-site with the use of water wells and/or septic fields. All utility options will require extensive background investigation and discussions with Prince George's County DPW and WSSC into suitability and potential cost implications.

Stormwater Management (SWM) laws will require the treatment of all proposed impervious surfaces through the use of Environment Site Design (ESD) features. Considering the robust program and extensive impervious surfaces needed to adequately support such a program the SWM for the site will be considerable. ESD features will need to be used extensively within parking lot medians and the perimeter of roadways to help meet SWM requirements.

Utility Connections

From the available information on PGATLAS.com there are no water or sewer services to this property or conveniently in the near vicinity. The closest Water and Sewer services are located to the North or West of the MSA site. To the North is the Bowie Baysox Stadium with water and sewer services in Ball Park Drive. If these lines have capacity, the connection to the MSA Multi-Use Stadium would require the water and sewer lines to run under the stream channel that separates the MSA and Ballpark sites. The sewer would require a lift station and pressurization to force the sewage up to the elevation of the existing sewer line at the Ballpark. The lift

station and pressurizing of the sewer line, access will add significant cost to this option.

To the West is the proposed Wal-Mart shopping center and Route 301. The proposed Wal-Mart could potentially offer water and sewer connections, however the Wal-Mart design information available to the MSA consulting team is quite limited. Additionally the Wal-Mart project is in the County review process and likely was not designed to accommodate additional development. Should this connection be desired, a more in depth analysis of the proposed Wal-Mart utility design would be required. At this time MSA has asked the consulting team to forgo addition investigation into utility connections to the proposed Wal-Mart site.

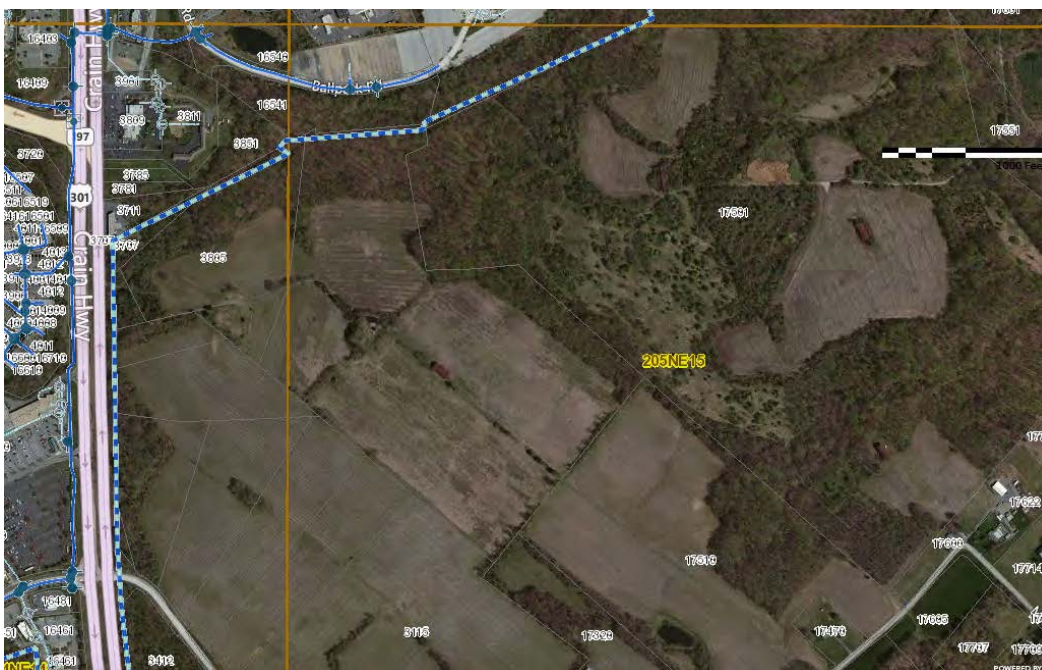
As such, the next available water and sewer connection, according to the WSSC online mapping, is to the West side of Route 301. This connection would require a long run of water extension and sewer outfall or sewer extension and a crossing of Route 301 with reviews and approvals required from PG County DPW and SHA. Additionally a sewer in this location may also need to be a pressure sewer design depending on the intervening elevations between the property being served and the sewer connection point. The closest sewer connection West of Route 301 to the property is about 2,400 feet as the crow flies. As this run of utilities would be very long, need to go under Route 301, and possibly require pressurizing, this option will add significant cost to the project.

On-site water wells and / or septic fields could be an option; however this option will require detailed investigation into the site history to determine the extent of bio-fuel storage. Additionally meetings with Prince George's County Department of Public Works and Washington Suburban Sanitary Commission will be required to determine acceptability of such on-site utility practices.

No water or sewer connections are known to be available from the East or South of the Green Branch Park site.

Considering the above and information available to the consulting team at this time, no suggestion can be made at this time as to which utility option provides the most cost effective solution. Each of the available utility options presents pros and cons with none of the options being a clear cut best solution. A much more intensive study of the various options (with consideration of future park utility demands) and meetings with jurisdictional agencies will be necessary to best determine how this property should be served for utilities and which option is the most cost effective.

An image from the WSSC mapping of existing water service is included below.



Available Water Service in proximity to the MSA site. To the north is Ballpark road; to the west is Route 301. Water lines are shown in blue, while the blue and white dashed line indicates the current limit of WSSC service.

Available Sewer Service in proximity to the MSA site. To the north is Ballpark road; to the west is Route 301. Gravity flow Sewer lines are shown in green with arrows suggesting the direction of flow. Yellow lines represent pressurized Sewer lines.

Stormwater Management

The current State of Maryland 2010 Stormwater Management Regulations will require the treatment of stormwater runoff for all proposed impervious surfaces. Considering the program for the MSA site includes 12 synthetic multi-use fields, 24' wide roadway, parking lots adjacent to the fields, and small pavilions and/or comfort stations, the stormwater management requirements will be considerable. The SWM program will be satisfied by designing Environmental Site Design (ESD's) features integrated within the parking, plazas and fields. Through creative design and engineering the stormwater management requirements for the program will be met while limiting the land consumed for SWM purposes. It is likely some or all of the features below will be employed.

- ESD's (Vegetated Swales, Micro-Bioretenion, Rain Gardens, etc.) must be used to the maximum extent practicable in the Parking Lot medians and perimeters and are valuable opportunities to capture and treat stormwater runoff in aesthetic planted site features
- Roads and paved surfaces will need to be open section where possible with roadside swales and micro-bioretenion facilities
- In the areas where curbing is required, curb cuts will be needed to flow to open section ESD's
- Building's roof drains will be disconnected surface flow or connected to nearby ESD's
- The maximum area each ESD can receive is only 20,000 SF of total drainage area
- The type of soils at each ESD will help determine certain design elements. ESD's within soil groups A and B do not require an underdrain. A and B soils typically have higher infiltration rates thus allowing infiltration stormwater techniques.
- Those ESD's located within soil groups C and D will require an underdrain that discharges to an appropriate outfall.
- Synthetic turf fields will likely also require SWM. Our most recent designs for similar programs in neighboring jurisdictions provided storage below the field and the underdrain system was configured to act as a stormwater management device. This was reviewed and approved by the local jurisdiction and it is likely that it will be required in these fields as well. The design will require some adjustments of the field manufacturer requirements to meet the MDE regulations for SWM.

Field Layout Considerations

As the design team is well aware, this site is faced with many constraints, particularly of the environmental and archaeological variety. Recognizing these challenges to the design team, we wanted to provide some suggestions based on our experiences with similar constrained sites and robust programs.

Based on the provided concept plan the 12 synthetic fields are centrally located in the portion of the site with the most ideal topography for field development. The size of fields (and spectator areas), field slope tolerances coupled with, the direction of the sun, and the number of fields desired is likely to create a need for site retaining walls to separate a few of the fields. It is unlikely that all the fields will be at the same elevation.

As a result of the various site constraints and rolling topography, the site will require significant grading investigation to minimize earthmoving and limit disturbance to any of the nearby environmental buffers.

When possible, comfort stations, concessions and any other structures needing sewer service should be located at higher site elevations in order to facilitate gravity flow systems.

Appendix D
Navarro Wright - Environmental Overview Document
and Preliminary Impact Assessment Report

Environmental Overview Document and Preliminary Environmental Impact Assessment Report

Multi-Use Sports Field Complex Prince George's County, Maryland

N&W # 1308TD088
December 3, 2013

Introduction

Navarro & Wright Consulting Engineers, Inc., in association with Hord Coplan Macht, Inc., is assisting the Maryland Stadium Authority (MSA) and the Maryland – National Capital Park and Planning Commission (M-NCPPC), to complete the environmental clearance documents necessary for the above referenced project.

The project will consist of the construction/grading of twelve (12) artificial turf tournament sports fields, as well as associated parking, stormwater facilities and buildings. The project location is represented on Figure 1 (Project Location Map) which is located in Appendix A.

The following environmental resources may be impacted by the project depending on project development/activities and layout of the proposed sports fields and associated facilities. Refer to Figure 2 (Environmental Overview Map, Appendix A), which shows these environmental resources within the project study area. General photographs of environmental resources located within the project study area are provided in Appendix B. Figure 3 (Photograph Log, Appendix A) shows the location and direction of each photograph.

Forestland

Approximately 73 percent of the 254 acre project study area is forested and 27 percent has been used for agriculture. A Forest Stand Delineation (FSD) will be required for this project. Figure 4 (Forestland, FIDB, and RTE Species Mapping, Appendix A) shows the existing forest located within the project study area.

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Forest Interior Dwelling Bird Species

Forest interior dwelling bird (FIDB) species require large unfragmented forest areas to breed successfully and maintain a viable population. These FIDB species include tanagers, warblers, vireos, woodpeckers, hawks, and owls. Much of the forest across the site was identified as potential habitat for FIDB species by mapping provided by the Maryland Department of Natural Resources (MDNR). This habitat is listed as Class 1: Potential FIDB Core Area, which is a forest patch that contains over 200 hectares (equals 494 acres) of forest interior habitat. Delineation of FIDB buffers, which extends 300 feet from the tree line and into the forest, must be applied to all project mapping. Figure 4 (Forestland, FIDB, and RTE Species Mapping, Appendix A) shows the potential habitat for FIDB species within the project study area.

Rare, Threatened and Endangered Species

Rare, threatened and endangered (RTE) species habitat was reviewed through use of the digital data layers of the MDNR Natural Heritage Program Sensitive Species Project Review Areas (SSPRA) and the MDNR Natural Heritage Areas (NHA). The SSPRA digital data layer provides an overview of all state-regulated and designated areas involving sensitive or listed species. The NHA digital data layers provide an overview of thirty-two (32) areas designated in the state's Threatened and Endangered Species regulations (Code of Maryland Regulation [COMAR] 08.03.08) and these areas consist of the following: 1) one or more threatened or endangered species or wildlife species in need of conservation; 2) a unique blend of geological, hydrological, climatological or biological features; and 3) considered to be among the best statewide examples of its kind. Designation of these NHAs was developed in conjunction with the Critical Area Law. Most of the NHAs fall within the Chesapeake Bay Critical Area; however, sites outside these Critical Areas are already owned by a public agency.

Based on SSPRA mapping, an area of approximately forty-eight (48) acres within the project study area, located in the south portion of the site, is shown to encompass a SSPRA, which is classified as group 4, buffered locations of bald eagle nests. Therefore, further correspondence should be directed to the MDNR Natural Heritage Program and the MDNR Environmental Overview Unit. Based on NHA mapping, no NHA is located within the vicinity of the project study area. Figure 4 (Forestland, FIDB, and RTE Species Mapping, Appendix A) show the SSPRA within the project study area and also shows that NHAs are not located within the project study area.

Based on a review of the USFWS Chesapeake Bay Field Office online list request certification resource on October 21, 2013, it was determined that there are no federally proposed or listed endangered or threatened species known to occur within the United States Geological Survey (USGS) 7.5-minute topographic quadrangle map for Bowie, Maryland; therefore, none are known to be located within the project study area. The Online Certification Letter will need to be incorporated into the Natural Resource Inventory report.

Geology

According to the Maryland Geological Survey Prince George's County (1968) Geologic Map, the project site is underlain by the St. Marys Formation (Ts) and no geologic faults are located within the project site. This formation consists of greenish blue to yellowish gray sandy clay and fine-grained argillaceous sand. This formation has a thickness ranging from 0 to 80 feet.

Soils

According to the Web Soil Survey database (<http://websoilsurvey.nrcs.usda.gov/app/>), there are ten (10) soil mapping units within the project study area. The soil mapping units include Collington-Wist complex (CnA), 0 to 2 percent slopes; Collington-Wist complex (CnB), 2 to 5 percent slopes; Collington-Wist complex (CnC), 5 to 10 percent slopes; Collington-Wist complex (CnD), 10 to 15 percent slopes; Collington-Wist complex (CnE), 15 to 25 percent slopes; Collington-Wist complex (CnF), 25 to 40 percent slopes; Collington-Wist complex (CoD), 25 to 40 percent slopes; Shrewsbury loam (SrA), 0 to 2 percent slopes; Udorthents, reclaimed gravel pits (UdgB), 0 to 5 percent slopes; and Udorthents, reclaimed gravel pits (UdgD), 5 to 15 percent slopes. Soil characteristics are summarized in Table 1 (Soil Characteristics). Figure 5 (Soils and Topography Mapping, Appendix A) shows the soil mapping units for the project study area.

The Collington component of the CnA, CnB, CnC, CnD, CnE, CnF, and CoD mapping units is located on broad interstream divides and uplands. The parent material consists of glauconite-bearing, loamy, fluvio-marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water capacity to a depth of 60 inches is high. Shrink-swell potential is low. These soils are not flooded and are not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is approximately 1 percent. These soils do not meet hydric criteria. CnA is classified as prime farmland with a Land Capability Class of 1. CnB is classified as prime farmland with a Land Capability Class of 2e. CnC is classified as farmland of statewide importance with a Land Capability Class of 3e. CnD is classified as not prime farmland with a Land Capability Class of 4e. CnE is classified as not prime farmland and has a Land Capability Class of 6e. CnF is classified as not prime farmland and has a Land Capability Class of 7e. CoD is classified as not prime farmland and has a Land Capability Class of 4e/8. UrdB is classified as not prime farmland and has a Land Capability Class of 8/2e.

The Wist component of the CnA, CnB, CnC, CnD, CnE, CnF, and CoD mapping units is located on uplands and broad interstream divides. The parent material consists of glauconite-bearing, loamy, fluvio-marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water capacity to a depth of 60 inches is moderate. Shrink-swell potential is low. These soils are not flooded and are not ponded. A seasonal zone of water saturation is at 45 inches during January. Organic matter content in the surface horizon is approximately 4 percent. These soils do not meet hydric criteria.

The Shrewsbury component of the SrA mapping unit is located in swales on uplands. The parent material consists of glauconite-bearing, loamy, fluvio-marine deposits. Depth to a root restrictive layer

is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water capacity to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded and is occasionally ponded. A seasonal zone of water saturation is at 5 inches during January, February, March, and April. Organic matter content in the surface horizon is approximately 3 percent. This soil meets hydric criteria. SrA is classified as farmland of statewide importance with a Land Capability Class of 4w.

The Udorthents, reclaimed gravel pits, component of the UdgB and UdgD mapping units is located on uplands. The parent material consists of gravelly and loamy fluvio-marine deposits and/or human transported material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water capacity to a depth of 60 inches is low. Shrink-swell potential is low. These soils are not flooded and are not ponded. A seasonal zone of water saturation is at 45 inches during January. Organic matter content in the surface horizon is approximately 1 percent. These soils do not meet hydric criteria. UdgB is classified as not prime farmland with a Land Capability Class of 2e. UdgD is classified as not prime farmland with a Land Capability Class of 3e.

Table 1: Soil Characteristics

Mapping Unit Name	Map Unit Symbol	Hydric Status	Land Capability Class	Farmland Classification
Collington-Wist complex, 0 to 2 percent slopes	CnA	No	1	All areas are prime farmland
Collington-Wist complex, 2 to 5 percent slopes	CnB	No	2e	All areas are prime farmland
Collington-Wist complex, 5 to 10 percent slopes	CnC	No	3e	Farmland of statewide importance
Collington-Wist complex, 10 to 15 percent slopes	CnD	No	4e	Not prime farmland
Collington-Wist complex, 15 to 25 percent slopes	CnE	No	6e	Not prime farmland
Collington-Wist complex, 25 to 40 percent slopes	CnF	No	7e	Not prime farmland
Collington-Wist-Urban land complex, 5 to 15 percent slopes	CoD	No	4e/8	Not prime farmland
Shrewsbury loam, 0 to 2 percent slopes	SrA	Yes	4w	Farmland of statewide importance

Mapping Unit Name	Map Unit Symbol	Hydric Status	Land Capability Class	Farmland Classification
Udorthents, reclaimed gravel pits, 0 to 5 percent slopes	UdgB	No	2e	Not prime farmland
Udorthents, reclaimed gravel pits, 5 to 15 percent slopes	UdgD	No	3e	Not prime farmland

According to the PGAtlas, the project study area does not contain soils of the Marlboro clay or the Christiana complex, which are special soils of concern in Prince George’s County. A note stating “Marlboro clay and Christiana complex are not found to occur on or within the vicinity of this property” will need to be provided on the NRI report.

Agricultural Cropland

During the limited field reconnaissance, several areas throughout the project study area were used for agricultural activity in past years. Based on the underlying soils, some of the areas throughout the project study area are classified as prime farmland or farmland of statewide importance. If any part of the project is federally funded, then these resources are protected under the Farmland Protection Policy Act (FPPA), and if impacted, then a Farmland Conversion Impact Rating Form (AD-1006) must be completed for the project. Photograph Numbers 1 and 2 provide a general image of active agricultural cropland that is located within the project study area (within Appendix B).

Watercourses

A review of MDNR mapping revealed that there are three (3) mapped watercourses within the project study area. These watercourses consist of Green Branch and two (2) unnamed tributaries to Green Branch, all classified as riverine, lower perennial, unconsolidated bottom, permanently flooded (R2UBH) systems. Based on the Prince George’s County General Plan, the project site is located within the developing growth policy tier. As such, all stream buffers for the watercourses will be a minimum of 75 feet in width. Watercourses will be delineated and incorporated into the Wetland and Watercourse Identification and Delineation Report and stream buffers will need to be applied to all project mapping. Photograph Numbers 3 through 6 are representative of the watercourses within the project study area. Figure 6 (Watercourses and Wetlands Map, Appendix A) shows the MDNR mapped watercourses, as well as the existing streams base mapping within the project study area.

Topography and Steep and Severe Slopes

Topography with contour intervals of 2 feet will be shown on all project mapping. Steep slopes are classified as slopes equal to or greater than 15 percent. A review of the PGAtlas shows that areas immediately surrounding the mapped watercourses are classified as steep slopes ranging from 15 percent to greater than 25 percent slopes. Steep slopes will need to be displayed on all project mapping.

Photograph Number 7 is a general view of the steep slopes that surround an unnamed tributary to Green Branch, located along the south portion of the project study area. Figure 5 (Soils and Topography Mapping, Appendix A) shows the 2-foot contours throughout the project study area.

Water Quality

Drainage from the Site flows into three (3) mapped watercourses within the project study area. In downstream order, Site drainage flows into the unnamed tributaries to Green Branch, then into Green Branch, then into the Patuxent River, and ultimately into the Chesapeake Bay. According to the Maryland Department of the Environment (MDE) Stream Segment Use Designations in Prince George's County: Code of MD Regulations (COMAR) 26.08.02.08 publication, all waterways within the project study area are classified as Use I (Water Contact Recreation and Protection of Nontidal Warmwater Aquatic Life). According to COMAR 26.08.02.11, Use I waters have channel work limitations from March 1 through June 15 during any year; therefore, no in-stream work associated with the project may be performed during that time period.

Floodplains

A review of the PGAtlas revealed a delineated FEMA 100-year floodplain located along Green Branch. Furthermore, a floodplain easement is mapped surrounding one (1) of the unnamed tributaries to Green Branch, south of the adjacent Bowie Baysox baseball stadium. Only a small portion of this floodplain easement is mapped within the project study area. 100-year floodplain mapping will need to be provided by Prince George's County Department of Public Works and Transportation (DPW&T). Additionally, since there is an established floodplain easement on the project, the easement must be shown on all project mapping. Coordination with DPW&T will be needed to determine if the floodplain easement was established more than ten (10) years ago and to verify that the boundaries of the easement are still valid in that area. Figure 6 (Watercourses and Wetlands Map, Appendix A) shows the existing floodplain within the project study area, as well as the existing floodplain easement.

Groundwater

A review of the USGS's National Water Information System: Map View revealed that the closest groundwater well that has available groundwater level measurements is located along Mill Branch Road (38° 55' 58"N, 76° 42' 48"W), which is located approximately 0.55 miles southwest of the project study area. This well was constructed in the Northern Atlantic Coastal Plain aquifer system and the Magothy Formation local aquifer. According to well data (dated August 1, 1995) the average depth to groundwater is 80 feet below the ground surface.

During a limited field reconnaissance, several groundwater observation wells were observed throughout the project study area. Based on the Comprehensive Environmental Site Assessment – Phase I Report completed by KCI Technologies, Inc., dated April 1, 2002, a total of seventeen (17) observation wells were installed on-site to monitor the effects to groundwater from the biosolids entrenchments and biosolid/compost application to the ground surface. The following was taken directly from Section 3.4 (Local Soils and Hydrogeology) of the Phase I Report, “groundwater data indicates that localized groundwater flows from the biosolids entrenchment areas toward adjacent streams (Green Branch and

its tributaries) along flow paths generally reflecting surface topography. Depths to the water table range from near the ground surface at lower elevations close to streams to more than twenty-five (25) feet below the surface in upland areas.” This Phase I Report recommended that “shallow groundwater should not be used as a source of drinking water at the subject site, since nitrate levels are in excess of the maximum contaminant level (MCL) in some of the monitoring wells.” Groundwater observation well locations are shown in Appendix C (Biosolids Entrenchment Project Prince George's County, Maryland PG-202 Site Plan).

Further coordination with MDE will be necessary if the groundwater observation well locations will be impacted by the anticipated project activities.

Wetlands

A preliminary evaluation was performed through the examination of mapping provided by the National Wetland Inventory (NWI), MDNR Wetlands Inventory, and MDE Wetlands of Special State Concern (WSSC). One (1) Waters of the US (WUS) with tributaries, open water and four (4) wetlands were identified within the project site. The presence or absence of regulated wetlands and WUS will be confirmed through detailed field reconnaissance.

NWI Mapped Wetlands

A review of the digital NWI mapping revealed a palustrine, open water, semi-permanently flooded, diked/impounded (POWFh) wetland system located near the northeast corner of the project study area. Figure 6 (Watercourses and Wetlands Mapping, Appendix A) shows the NWI wetland that is located within the project study area.

MDNR Wetlands

A review of the digital MDNR Wetland Inventory Mapping for Prince George's County revealed four (4) MDNR wetlands within the project study area. Two (2) of these wetlands are mapped at the same location as the NWI POWFh wetland, and are classified as a palustrine, unconsolidated bottom, permanently flooded, excavated (PUBHx) system and a palustrine, scrub-shrub, needle-leaved evergreen, seasonally flooded (PSS4C) system. Near the center of the project study area, a mapped palustrine, emergent, persistent, temporarily flooded, excavated (PEM1Ax) system was shown. Additionally, within the southeast portion of the project study area, a palustrine, unconsolidated shore, temporarily flooded, diked/impounded (PUSAh) system was shown. During the limited field reconnaissance, all of these MDNR wetlands were protected with fencing that surrounded the entirety of the wetlands. Figure 6 (Watercourses and Wetlands Mapping, Appendix A) shows the DNR mapping for the project study area. Based on the PG-202 Site Plan, in Appendix C, these MDNR wetlands are located in the footprint of the holding ponds associated with the former Biosolids Entrenchment Project that occurred at the site. The fencing surrounding these wetlands are security fences for the holding ponds. Coordination with the MDNR and MDE will be necessary to determine if these wetlands/holding ponds can be impacted as part of the project.

MDE WSSC

A review of the digital MDE WSSC mapping did not reveal any WSSCs within the project study area. Figure 6 (Watercourses and Wetlands Map, Appendix A) shows that no WSSC mapped wetlands are located within the project study area.

Based on all of the previous wetland results, a Wetland and Watercourse Identification and Delineation Report will be necessary in accordance with the 1987 U.S. Army Corps Wetland Delineation Manual, as amended by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) as the potential for wetlands exists within the project study area.

In addition, wetland buffers will need to be applied to all project mapping. Minimum 25-foot wide wetland buffers will be applied, unless the area that is adjacent to a wetland contains highly erodible soils and/or steep slopes of 15 percent or greater, then the wetland buffer will be expanded to include those areas and labeled “Expanded Wetland Buffer.”

Historic Resources and Sites

A review of the PGAtlas did not reveal known historic resources, cemeteries, archaeological sites, existing buildings or foundations. However, according to project mapping and a completed Phase I Archaeological Survey of the Green Branch Athletic Complex Parcel 6 in Prince George's County, Maryland, report completed by Greenhorne & O'Mara, Inc., there are nine (9) archaeological sites identified within the project study area. The Phase I Archaeological Survey recommended that four (4) of these sites remain undisturbed or if not possible, then Phase II investigations should be conducted to assess whether they are eligible for the National Register of Historic Places (NRHP). Figure 2 (Environmental Overview Map, Appendix A) shows the archaeological sites and the existing structures within the project study area.

Noise

U.S. Route 301 (Robert S. Crain Highway), which is located to the west of the project study area, is classified as a freeway according to the PGAtlas. Therefore, a note will need to be included on project plans indicating that the site is located within the vicinity of a roadway designated as a freeway.

Primary Management Area

A primary management area (PMA) is a vegetated buffer established or preserved along all regulated streams outside of the Chesapeake Bay Critical Area Overlay Zones. Since the project study area is located outside of the Chesapeake Bay Critical Area Overlay Zones, a PMA will include:

- All regulated stream and associated stream buffers;
- 100-year floodplain;
- All wetlands and associated wetland buffers that are adjacent to the regulated stream, stream buffers, or the 100-year floodplain;

- All areas having slopes of 15 percent or greater adjacent to the regulated stream or stream buffer, the 100-year floodplain, or adjacent wetlands or wetland buffers;
- Adjacent critical habitat areas.

The PMA will need to be shown on all project mapping. If the PMA is impacted as part of the project, a statement of justification for impacts to regulated environmental features (defined in subtitles 24 and 27) will need to be completed and submitted to Prince George's County.

Waste Management

A review of the United States Environmental Protection Agency's (EPA) EnviroMapper website did not reveal any potential waste sites within the project study area.

A review of the MDE Solid Waste Program: Permitted Solid Waste Acceptance Facilities spreadsheet, MDE Solid Waste Program: Groundwater Discharge Permits for Unlined Rubble Landfills spreadsheet, MDE Solid Waste Program: Permitted Natural Wood Waste Recycling Facilities (NWWRF) and Landfills Permitted for NWWRF Activities spreadsheet did not identify potential waste facilities within the project study area.

A review of the MDE Oil Control Program Remediation Sites website and the Land Restoration Program (LRP) Map did not identify potential waste sites within the project study area.

Based on the Comprehensive Environmental Site Assessment – Phase I Report, completed by KCI Technologies, Inc., dated April 1, 2002, during the 1980s, biosolids and unfinished compost was land applied to the site, as well as biosolids being entrenched on-site. The following statement was taken directly from Section 1.1 (Background) of the Phase I Report “The entrenchment operation involved placing the biosolids in trenches typically 18 to 24 inches wide, three (3) to four (4) feet deep, and spaced on four (4) feet centers. After placement in the trenches, the biosolids were then covered with soil.” On the 254-acre site, the Maryland Department of Health and Mental Hygiene (DHMH) permitted only 31.1 acres for the entrenchment of biosolids. Previous test pits that explored entrenchment areas in 1987 noted the average depth below the existing ground surface to the top of the biosolids was 36 inches with a range of 18 to 66 inches. As previously mentioned, a total of seventeen (17) groundwater observation wells were installed around the perimeter of the entrenchment areas, both upgradient and downgradient and ranged in depths of twenty-two (22) to sixty-nine (69) feet below the ground surface. Recommendations for the site included 1) shallow groundwater should not be used as a source of drinking water at the site, since nitrate levels are in excess of the MCL in some of the monitoring wells; and 2) future land development, including roads, parking lots, and structures at the site should consider the compressible nature of the entrenchment soils and worker exposure.

If the entrenched biosolids are impacted, then project specific hazardous waste studies may be warranted to document opinions and conclusions concerning environmental considerations for the anticipated project activities.

References

Critical Area Commission, Maryland Department of Natural Resources, 2001. A Guide to the Conservation of Forest Interior Dwelling Birds in the Chesapeake Bay Critical Area.

Geospatial Data, Maryland Department of Natural Resources, 2010. NAIP09DB – Photo Database, Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

Geospatial Data, Maryland Department of Natural Resources, 2012. Potential Forest Interior Dwelling Species, Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

Geospatial Data, Maryland Department of Natural Resources, 1993. dnrwet – DNR Wetlands, Date Accessed – October 1, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

Geospatial Data, Maryland Department of Natural Resources, 1998. swnha – Maryland's Natural Heritage Area (NHA) Boundaries, Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

Geospatial Data, Maryland Department of Natural Resources, 2003. sspra – Sensitive Species Project Review Areas, Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

Geospatial Data, Maryland Department of Natural Resources, 1998. wssc – Nontidal Wetlands of Special State Concern (WSSC), Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

KCI Technologies, Inc.; April 1, 2002. Comprehensive Environmental Site Assessment – Phase I: WSSC/DC WASA Biosolids Entrenchment Site PG-202 Prince George's County, Maryland, Date Received via email November 12, 2013.

Maryland Department of the Environment; July, 2010. Stream Segment Use Designations in Prince George's County: Code of MD Regulations (COMAR) 26.08.02.08. Date Accessed – October 18, 2013. http://www.mde.state.md.us/programs/Water/TMDL/Water%20Quality%20Standards/Document/s/www.mde.state.md.us/assets/document/PrinceGeorges_Cnty_DUs.pdf.

Maryland Department of the Environment. Land Restoration Program – Map. Date Accessed – October 21, 2013. http://mesgisservices.com/mde_lrp/.

Maryland Department of the Environment. Oil Control Program Remediation Sites. Date Accessed – October 21, 2013. http://www.mde.state.md.us/programs/Land/OilControl/RemediationSites/Pages/Programs/LandPrograms/Oil_Control/RemediationSites/index.aspx.

Maryland Department of the Environment; January, 2012. Solid Waste Program: Groundwater Discharge Permits for Unlined Rubble Landfills. Date Accessed – October 21, 2013. <http://www.mde.state.md.us/programs/Land/SolidWaste/PermittedFacilities/Documents/www.mde.state.md.us/assets/document/solid%20waste%20lists%201-12/rf-GWD.2012.pdf>.

Maryland Department of the Environment; January, 2012. Solid Waste Program: Permitted Natural Wood Waste Recycling Facilities (NWWRF) and Landfills Permitted NWWRF Activities. Date Accessed – October 21, 2013. <http://www.mde.state.md.us/programs/Land/SolidWaste/PermittedFacilities/Documents/www.mde.state.md.us/assets/document/solid%20waste%20lists%201-12/NWWRF.2012.pdf>.

Maryland Department of the Environment; January, 2012. Solid Waste Program: Permitted Solid Waste Acceptance Facilities. Date Accessed – October 21, 2013. <http://www.mde.state.md.us/programs/Land/SolidWaste/PermittedFacilities/Documents/www.mde.state.md.us/assets/document/solid%20waste%20lists%201-12/Refuse%20Disposal%20Permitts.2012.pdf>

Maryland Geological Survey, 1968. Prince Georges County Geologic Map. Date Accessed – October 21, 2013. <http://www.mgs.md.gov/esic/geo/pri.html>.

The Maryland – National Capital Park and Planning Commission, Prince George's County Planning Department, 2010. Environmental Technical Manual.

United States Department of Interior, Fish and Wildlife Service, 2002. nwi – National Wetlands Inventory, Date Accessed – September 27, 2013. <http://dnrweb.dnr.state.md.us/gis/data/data.asp>.

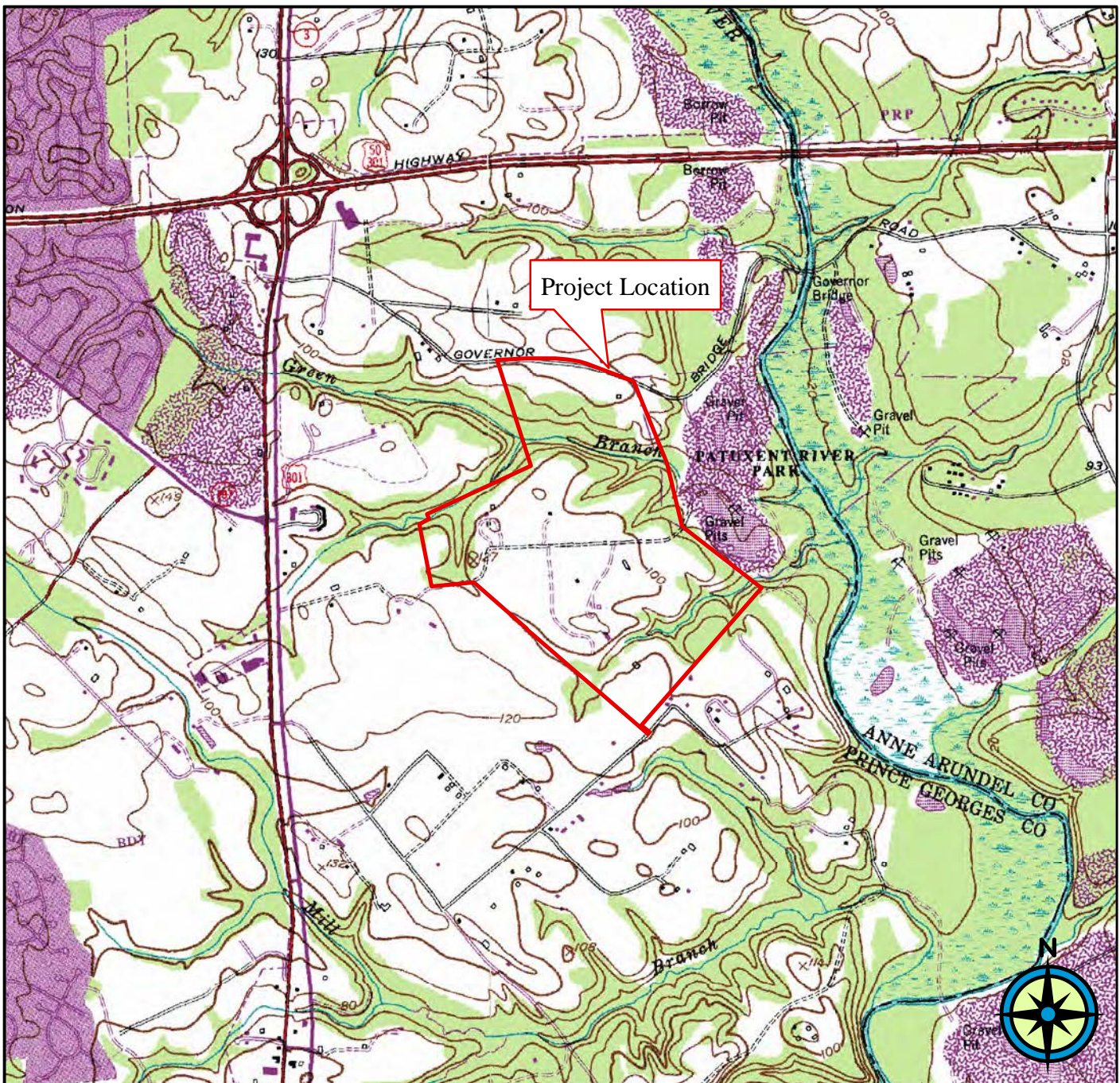
United States Department of Interior, Fish and Wildlife Service, Chesapeake Bay Field Office. Online Certification Letter. Date Accessed – October 21, 2013. <http://www.fws.gov/ChesapeakeBay/EndSppWeb/elements/onlineletter.html>.

United States Environmental Protection Agency. EnviroMapper. Date Accessed – October 21, 2013. <http://www.epa.gov/emefdata/em4ef.home>.

United States Geological Survey. National Water Information System: Map View. Date Accessed – October 21, 2013. http://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=http://nwis.waterdata.usgs.gov/md/nwis/gwlevels?county_cd=24033&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=county_cd&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd.

Appendix A

Figures



Project Location Map

Multi-Use Sports Field Complex
 Prince George's County, Maryland

Figure:
 1

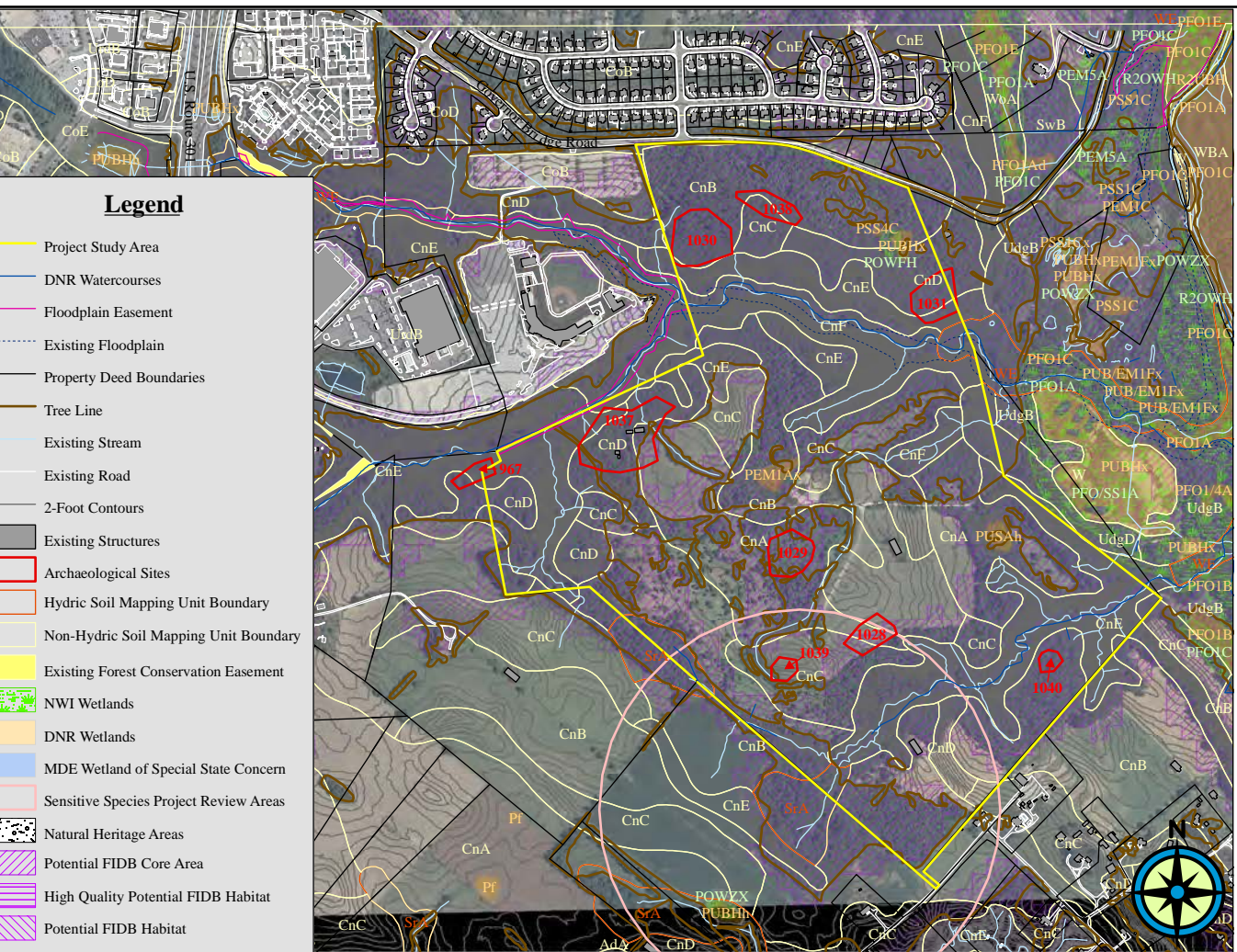
Source: U.S.G.S. Bowie, MD 7.5-Minute Topographic Quadrangle Map, 1957;
 Revised 1993.

Scale:
 1:24,000



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Date:
 10/21/13



Legend

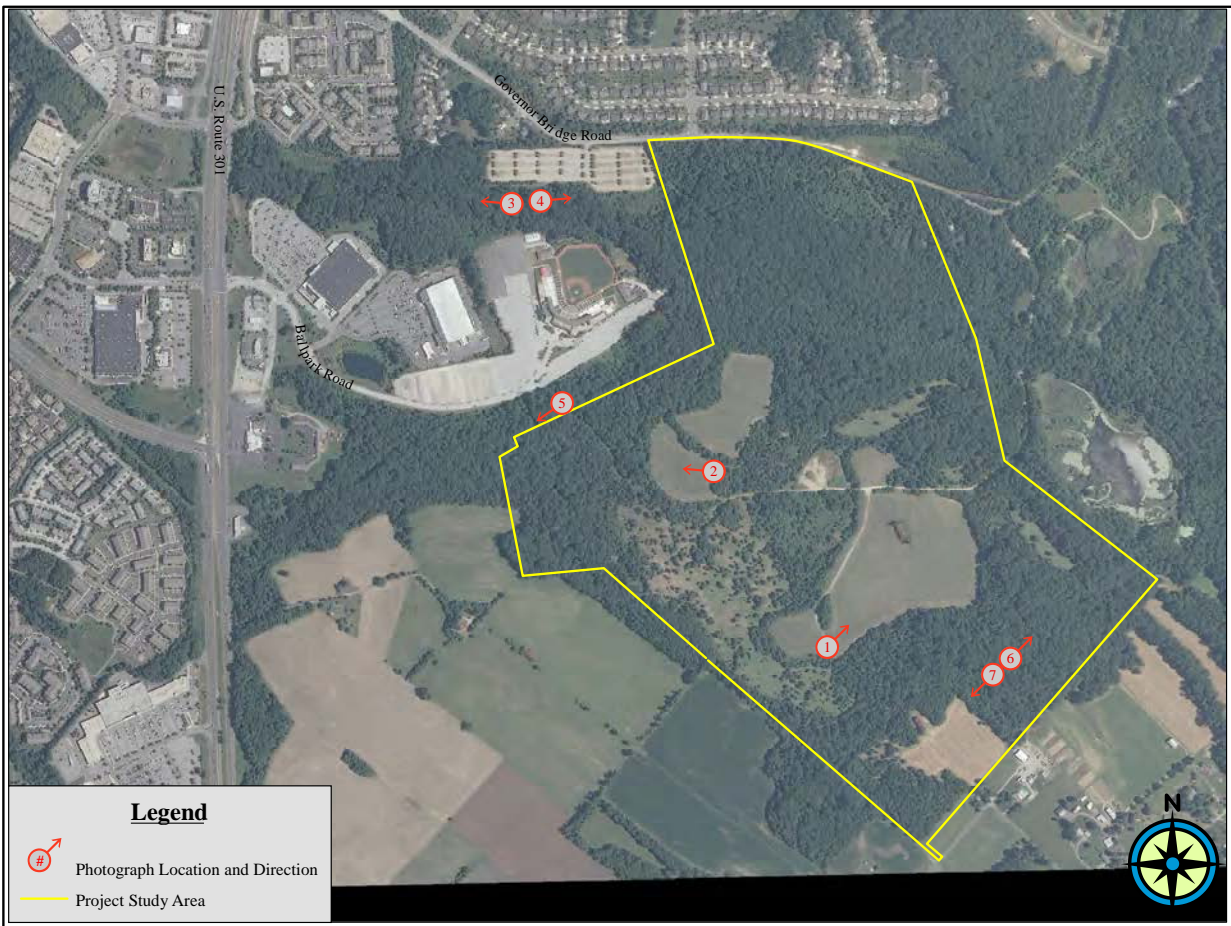
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- DNR Watercourses
- Floodplain Easement
- Existing Floodplain
- Property Deed Boundaries
- Tree Line
- Existing Stream
- Existing Road
- 2-Foot Contours
- Existing Structures
- Archaeological Sites
- Hydric Soil Mapping Unit Boundary
- Non-Hydric Soil Mapping Unit Boundary
- Existing Forest Conservation Easement
- NWI Wetlands
- DNR Wetlands
- MDE Wetland of Special State Concern
- Sensitive Species Project Review Areas
- Natural Heritage Areas
- Potential FIDB Core Area
- High Quality Potential FIDB Habitat
- Potential FIDB Habitat

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Environmental Overview Map
 Multi-Use Sports Field Complex
 Prince George's County, Maryland

Source: MD DNR, NAI09DB - Photo Database, 2010; MD DNR, Potential Forest Interior Dwelling Species, 2012; MD DNR, SSPKA - Sensitive Species Project Review Areas, 2003; USEFWS, National Wetlands Inventory, 2002; MD DNR, DNRWet - DNR Wetlands, 1993; Project Specific Mapping, 2013.

Job number: 1308TD088
Drawn by: KJC
Checked by: KNB
Scale: 1 inch = 600 feet
Date: 12/3/13
Figure: 2



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Photograph Log

Multi-Use Sports Field Complex
Prince George's County, Maryland

Source: MD DNR, NAIP09DB - Photo Database, 2010;
Project Specific Mapping, 2013.

Job number: 1308TD088
Drawn by: KJC
Checked by: KNB
Scale: 1 inch = 600 feet
Date: 12/3/13
Figure: 3



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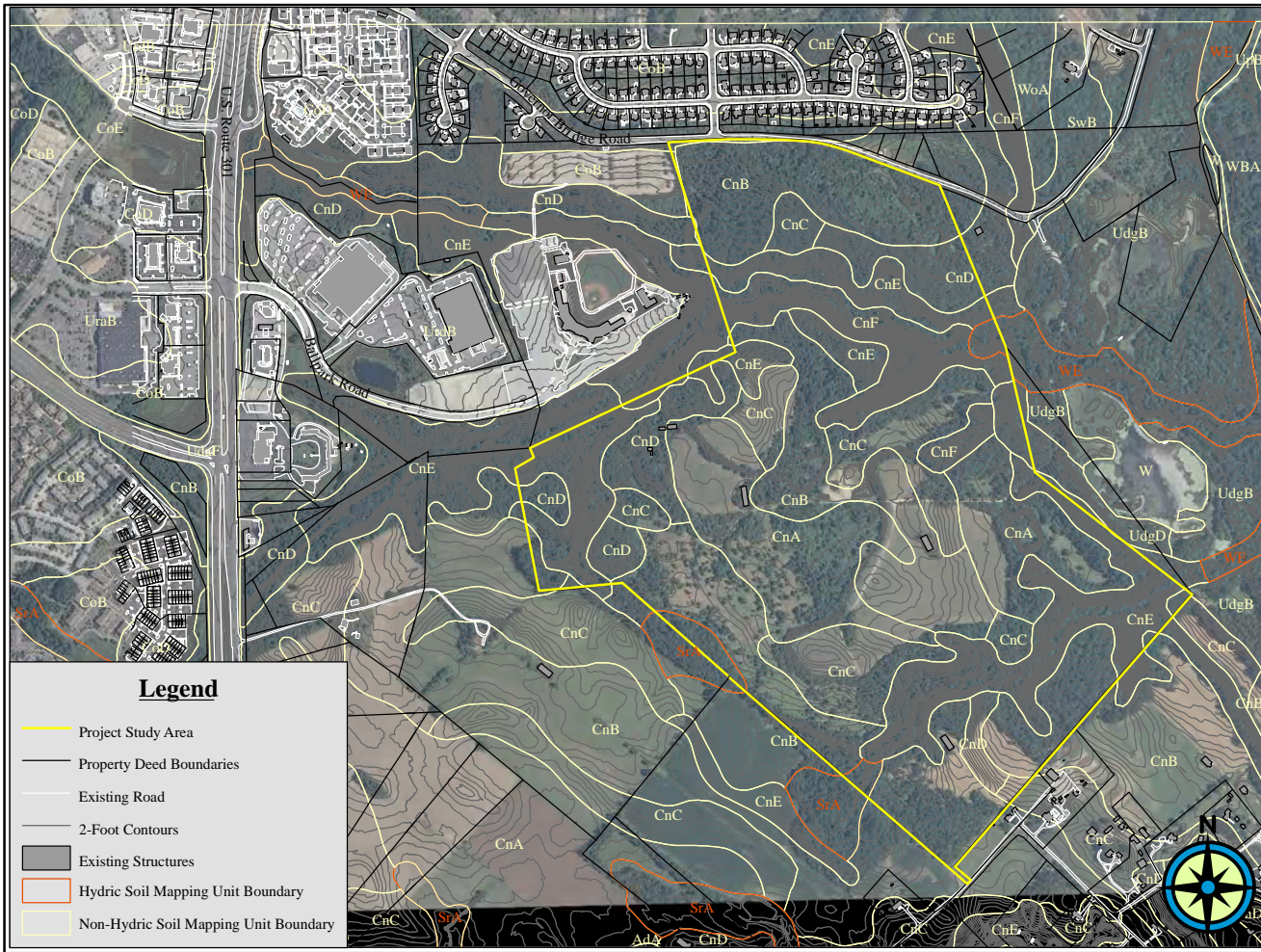
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Forestland, FIDB, and RTE Species Mapping

Multi-Use Sports Field Complex
Prince George's County, Maryland

Source: MD DNR, NAIP09DB - Photo Database, 2010; MD DNR, Potential Forest Interior Dwelling Species, 2012; MD DNR, SSPRA - Sensitive Species Project Review Areas, 2008; Project Specific Mapping, 2013.

Job number: 1308TD088
 Drawn by: KJC
 Checked by: KNB
 Scale: 1 inch = 600 feet
 Date: 12/3/13
Figure:
4



Legend

- Project Study Area
- Property Deed Boundaries
- Existing Road
- 2-Foot Contours
- Existing Structures
- Hydric Soil Mapping Unit Boundary
- Non-Hydric Soil Mapping Unit Boundary



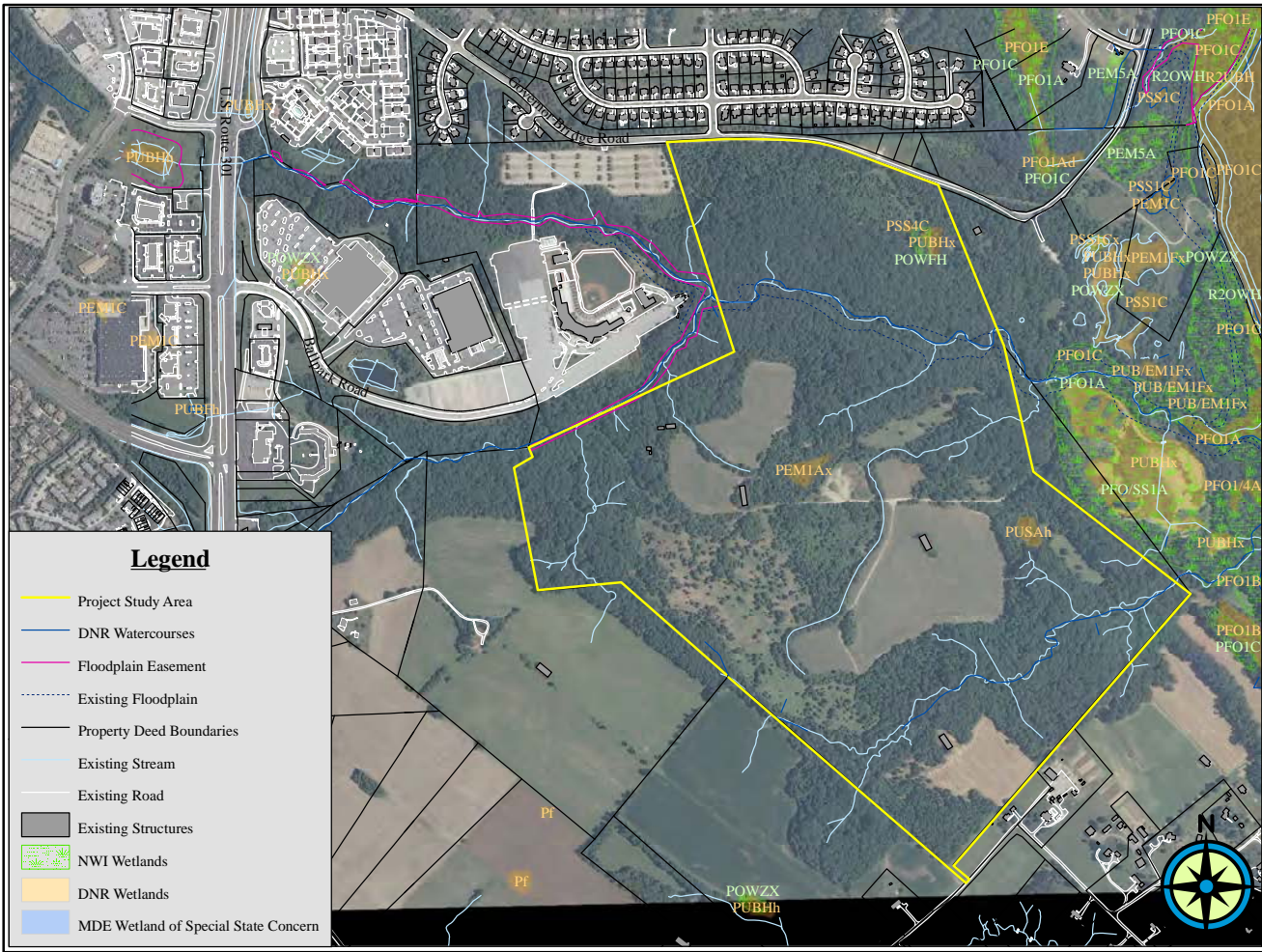
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Soils and Topography Map
Multi-Use Sports Field Complex
Prince George's County, Maryland

Source: MD DNR, NAIP09DB - Photo Database, 2010; USDA, NRCS, Soil Survey Geographic (SSURGO) database for Anne Arundel County, MD, 2011; Project Specific Mapping, 2013.

Job number: 1308TD088
 Drawn by: KJC
 Checked by: KNB
 Scale: 1 inch = 600 feet
 Date: 12/3/13
Figure:
 5



Legend

- Project Study Area
- DNR Watercourses
- Floodplain Easement
- Existing Floodplain
- Property Deed Boundaries
- Existing Stream
- Existing Road
- Existing Structures
- NWI Wetlands
- DNR Wetlands
- MDE Wetland of Special State Concern

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Watercourses and Wetlands Map
Multi-Use Sports Field Complex
Prince George's County, Maryland

Sources: MD DNR, NAI(0)DB - Photo Database, 2010;
USFWS, National Wetlands Inventory, 2002; MD DNR,
DNRWet - DNR Wetlands, 1995; Project Specific Mapping, 2013.

Job number: 1308TD088
Drawn by: KJC
Checked by: KNB
Scale: 1 inch = 600 feet
Date: 12/3/13
Figure: 6

Appendix B

Photographs



Photograph Number 1: General view of agriculture area that is located within the project study area, facing northeast. (Note: in the center of the photograph within the background is an existing barn structure).



Photograph Number 2: General view of agriculture area that is located within the project study area, facing west. (Note: the forestland in the background).



Photograph Number 3: Green Branch (upstream) from the pedestrian bridge that connects the overflow parking lot to the main parking lot adjacent to the Bowie Baysox baseball stadium, facing west.



Photograph Number 4: Green Branch (downstream) from the pedestrian bridge located within the project study area, facing east.



Photograph Number 5: Unnamed tributary to Green Branch located along the mid-west portion of the project study area, facing southwest. (Note: Additional unnamed tributary that follows the left edge of the photograph).



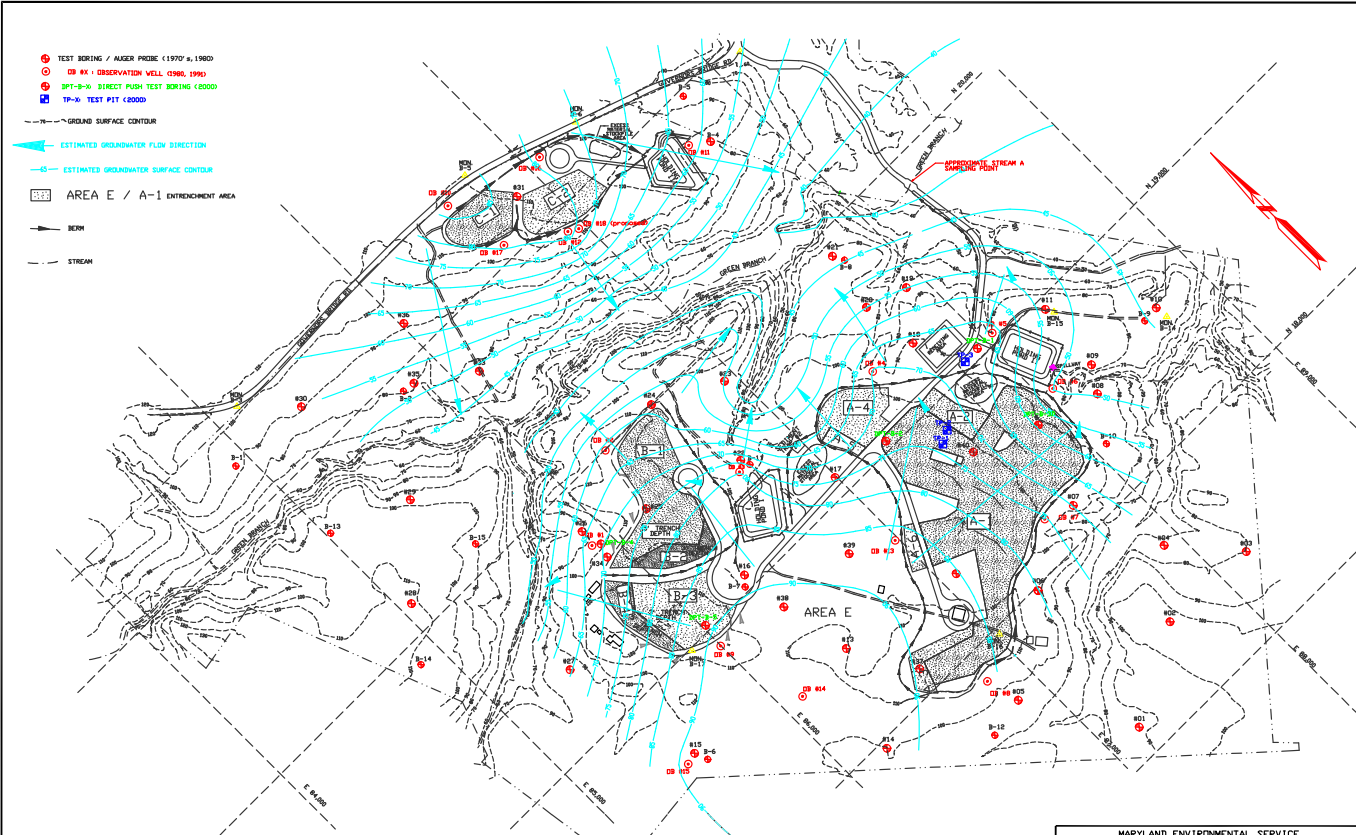
Photograph Number 6: Unnamed tributary to Green Branch located along the south portion of the project study area, facing northeast.



Photograph Number 7: Steep slopes along the unnamed tributary to Green Branch located along the south portion of the project study area, facing southwest.

Appendix C

Biosolids Entrenchment Project Prince George's County, Maryland PG-202 Site Plan



WASHINGTON SUBURBAN SANITARY COMMISSION
 14501 SWITZER LA.
 LAUREL, MD. 20707

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
 5000 OVERLOOK AVE. S.W.
 WASHINGTON, D.C. 20032

MARYLAND ENVIRONMENTAL SERVICE
 2011 COMMERCIAL PARK DR.
 ANNAPOLIS MD. 21401-2909

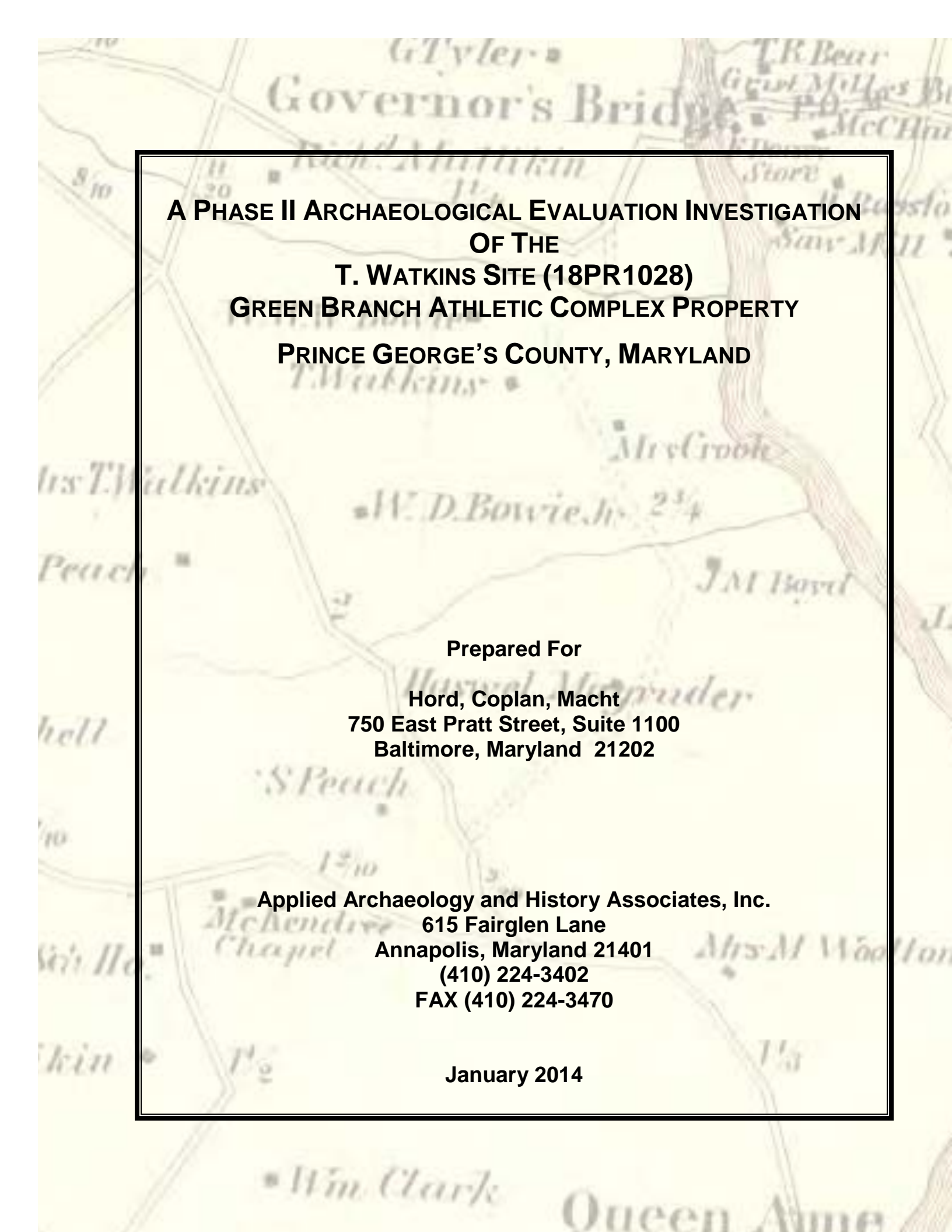
KCI TECHNOLOGIES INC.
 ENGINEERS AND PLANNERS
 12 NORTH PARK DRIVE
 HUNT VALLEY, MARYLAND
 21030-1508
 (410) 316-7900

REVISIONS

MARYLAND ENVIRONMENTAL SERVICE
 STATE OF MARYLAND
BIO-SOLIDS ENTRENCHMENT PROJECT
 PRINCE GEORGES COUNTY, MARYLAND
 PG-202 SITE PLAN

DATE: 09/25/00	SHEET NO. 10
SCALE: 1" = 100'	

Appendix E
AAHA - Archeology Report



**A PHASE II ARCHAEOLOGICAL EVALUATION INVESTIGATION
OF THE
T. WATKINS SITE (18PR1028)
GREEN BRANCH ATHLETIC COMPLEX PROPERTY
PRINCE GEORGE'S COUNTY, MARYLAND**

Prepared For

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January 2014

**A PHASE II ARCHAEOLOGICAL EVALUATION INVESTIGATION
OF THE
T. WATKINS SITE (18PR1028)
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PRINCE GEORGE'S COUNTY, MARYLAND**

By

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ABSTRACT

During November, 2013 Applied Archaeology and History Associates, Inc. conducted a Phase II archaeological evaluation of the T. Watkins Site (18PR1028) under contract with Hord Coplan Macht as part of the proposed development of Green Branch Athletic Complex Parcel 6 by the Maryland Stadium Authority. The Phase II fieldwork was conducted in accordance with the *Standards and Guidelines for Archaeological Investigations in Maryland* (Shaffer and Cole 1994) and the *Guidelines for Archeological Review* of the Prince George's County Planning Board (2005).

Background research resulted in the identification of a chain of title separate from that of the W.W.W. Bowie property with ownership traced to the early 18th century Boyd family. By the late 18th century the property was owned by John Watkins but 1798 Federal Tax Records indicate that it was occupied by Joseph Powell, a tenant. The property likely continued to be used as a tenant farm after its sale in 1801. The property was held by Thomas Watkins of N and his son during the middle of the 19th century. Joshua T. Clarke, Jr. took possession in 1877 and, apparently moved the domestic focus of the property to the north and constructed a new farmhouse (18PR1029). It is unclear whether anyone continued to reside with the T. Watkins Site after this time.

Fieldwork included a pedestrian reconnaissance, additional shovel testing, and the excavation of nine 1 x 1-meter test units and two 1 x 0.5-meter test units. Three test units were excavated in areas anticipated to represent former yard surfaces. These units contained artifact assemblages dating primarily to the late 18th to late 19th -century. Remnants of a house foundation, a mortared brick-lined well, a possible ice house, and three outbuildings were investigated.

Research questions posed at the onset of the Phase II archaeological evaluation of the T. Watkins Site (18PR1028) included questions regarding site boundaries, assemblage date, feature presence and arrangement, occupants, and finally, eligibility for listing on the National Register of Historic Places. The site boundaries have been expanded slightly in all directions although the portion of the site north of the WSSC ditch lacks integrity due to sludge injection in this area. Intact subsurface features and deposits have been identified across the site and above ground structural ruins and subsurface foundation remnants have also been recorded. Background research has identified specific residents from both the 18th and 19th century who can be associated with the artifact assemblage, a portion of which was recovered from contexts which appear to retain archaeological integrity. While the domestic focus of the site appears to have shifted to a new farmstead located to the north of the T. Watkins Site, it seems probable that the area continued to be used for agricultural purposes through the middle of the 20th century.

Based on the background research and field investigations conducted as part of this Phase II archaeological evaluation of the T. Watkins Site (18PR1028) the site is recommended eligible for listing on the National Register of Historic Places under Criteria D: "have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1990 revised 2002). Preservation in place is recommended. Plans for the proposed development as of December 2013 indicate that avoidance of the site is likely. Should preservation in place not be possible additional, Phase III data recovery level archaeological investigations, are recommended.

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INTRODUCTION

Purpose of the Investigation

The Maryland Stadium Authority proposes the development of a sports complex on lands located south of Governor's Bridge Road between US 301 and the Patuxent River in Prince George's County, Maryland (Figures 1 and 2). A Phase I archaeological survey of portions of the 254-acre parcel, known as the Green Branch Athletic Complex Parcel 6, was conducted by Greenhorne & O'Mara, Inc. in 2011/2012 (Kreisa *et al.* 2012). That survey resulted in the identification of eight archaeological sites; with preservation in place or Phase II level archaeological evaluation recommended for four of the sites: 18PR1028 and 18PR1037, domestic sites dating to the mid-18th – 20th century; 18PR1031, an early 18th-century possible slave quarter; and 18PR1030, a Late Archaic/Early Woodland Period prehistoric site (Kreisa *et al.* 2012) (Figure 3). A limited archaeological survey of portions of the property had also been conducted by The American University in 1980 (Evans 1980).

Applied Archaeology and History Associates, Inc. (AAHA) conducted a Phase II archaeological evaluation investigation of the T. Watkins Site (18PR1028) under contract with Hord Coplan Macht (HCM). Fieldwork was conducted during November 2013 and included a non-systematic pedestrian reconnaissance survey; limited, close-interval shovel testing; and the excavation of the nine 1 x 1-meter and two 1 x 0.5-meter excavation units. All work was conducted in accordance with the *Standards and Guidelines for Archaeological Investigations in Maryland* (Shaffer and Cole 1994) and the *Guidelines for Archeological Review* of the Prince George's County Planning Board (2005).

Jeanne A. Ward served as Principal Investigator, Jason L. Tyler served as Project Archaeologist, and Brian Schneider, Emily Swain, W. Brett Arnold, and Kathrina Aben served as archaeological technicians for the project.

Description of the Study Area

The T. Watkins Site (18PR1028) is located on the southern side of an active agricultural field within Patuxent River Park a Maryland-National Capital Park and Planning Commission (M-NCPPC) property located south of Governor Bridge Road and west of the Patuxent River. The site is wooded with dense undergrowth (Figure 4). Surface features include multiple depressions (Figure 5), the remnants of several outbuildings (Figures 6 and 7), and a surface scatter of late 20th-century artifacts – likely the result of dumping. It is located within the Atlantic Coastal Plain with topography consisting of gently rolling hills moderately dissected by broad, shallow valleys. The elevation of the site ranges from approximately 180 to 196 feet (55 to 60 meters) above mean sea level.

Previous Fieldwork

During the Phase I survey (Kreisa *et al.* 2012) shovel test pits (STPs) were excavated at 15-meter intervals resulting in a total of nine positive STPs producing 22 artifacts other than brick and mortar (Figure 3). Close-interval STPs set at 7.5-meter intervals were then excavated producing an additional 20 positive tests. Also identified were three large depressions, a concrete-lined cistern, and a likely fieldstone foundation. As defined during this survey the site encompassed an area of approximately 45-x-30 m with artifacts dating from as early as the early 19th-century. These archaeological remains were postulated as representing the

residence of T. Watkins as illustrated on the 1861 Martenet map and an unnamed residence on the 1878 Hopkins map (Kreisa *et al.* 2012).

Organization of the Report

This report presents five (5) sections of text and a list of references cited. Following this introduction, which includes the goals of the study and a description of the Study Area, the research objectives are presented. This is followed by a summary of the historic background of the archaeological site. The fourth section presents a summary of the field investigation and investigation and is followed by a summary and recommendations. References cited are followed by appendices which present the chain of title, an artifact inventory, a revised site form and qualifications of the investigators.

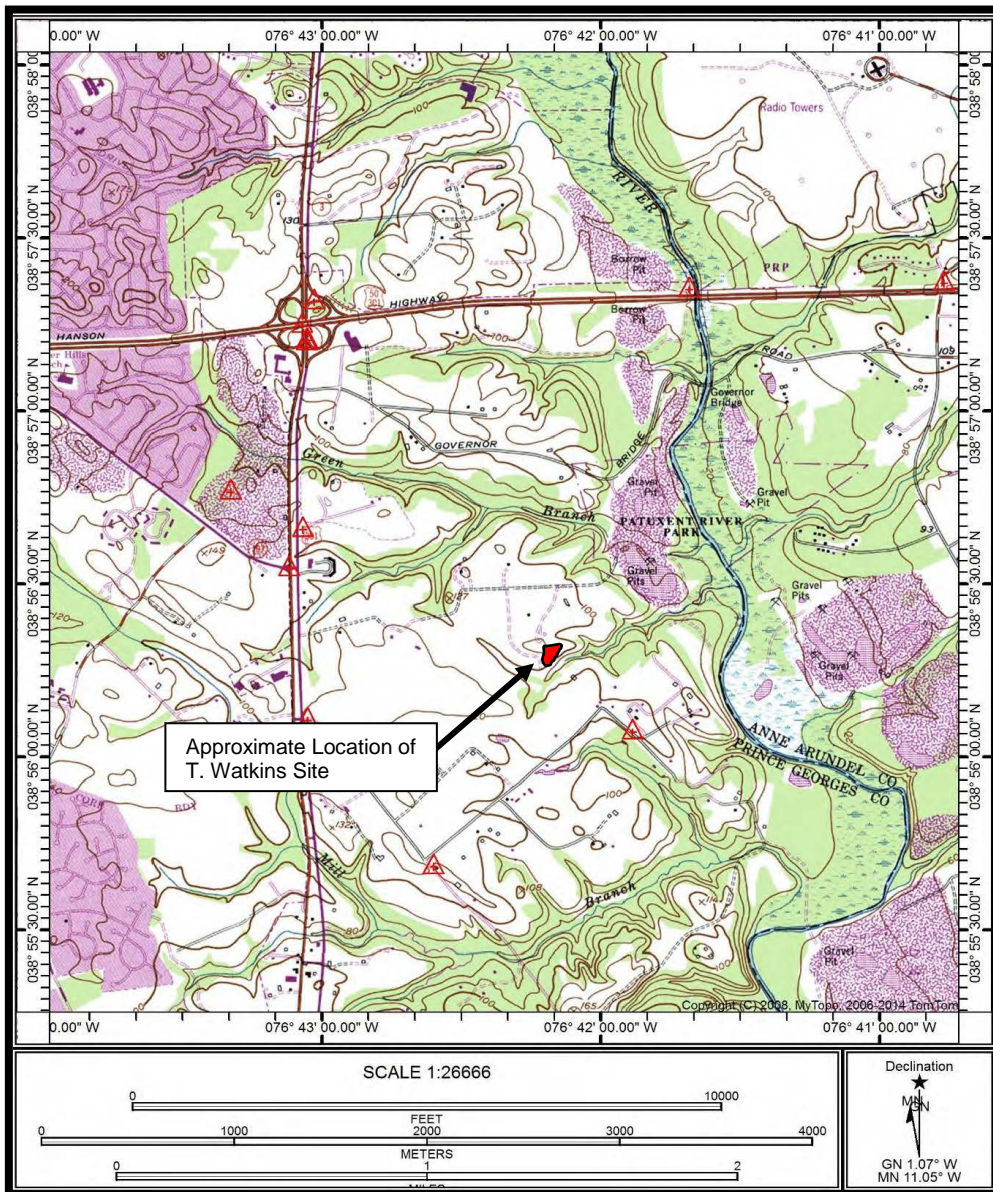


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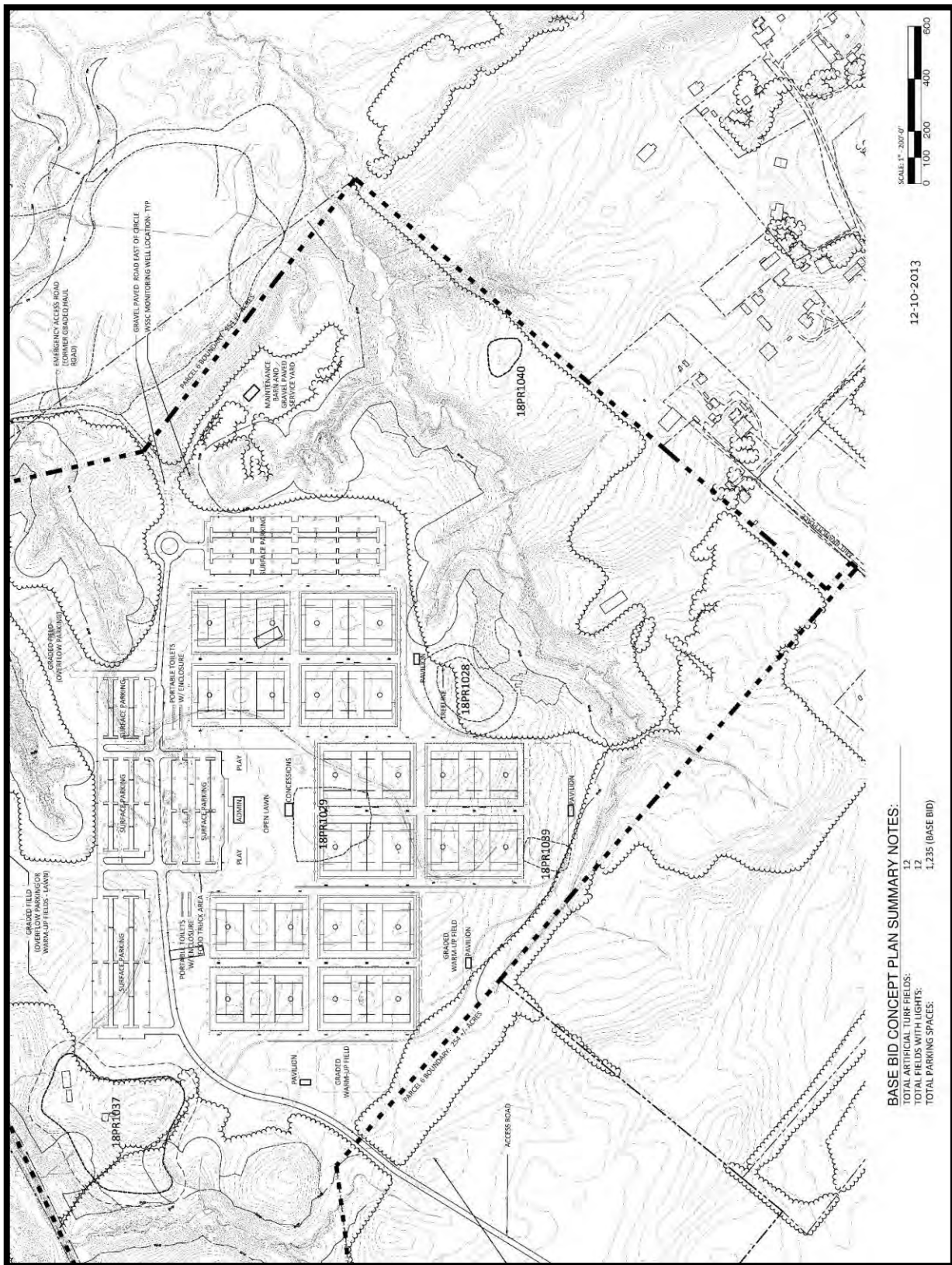


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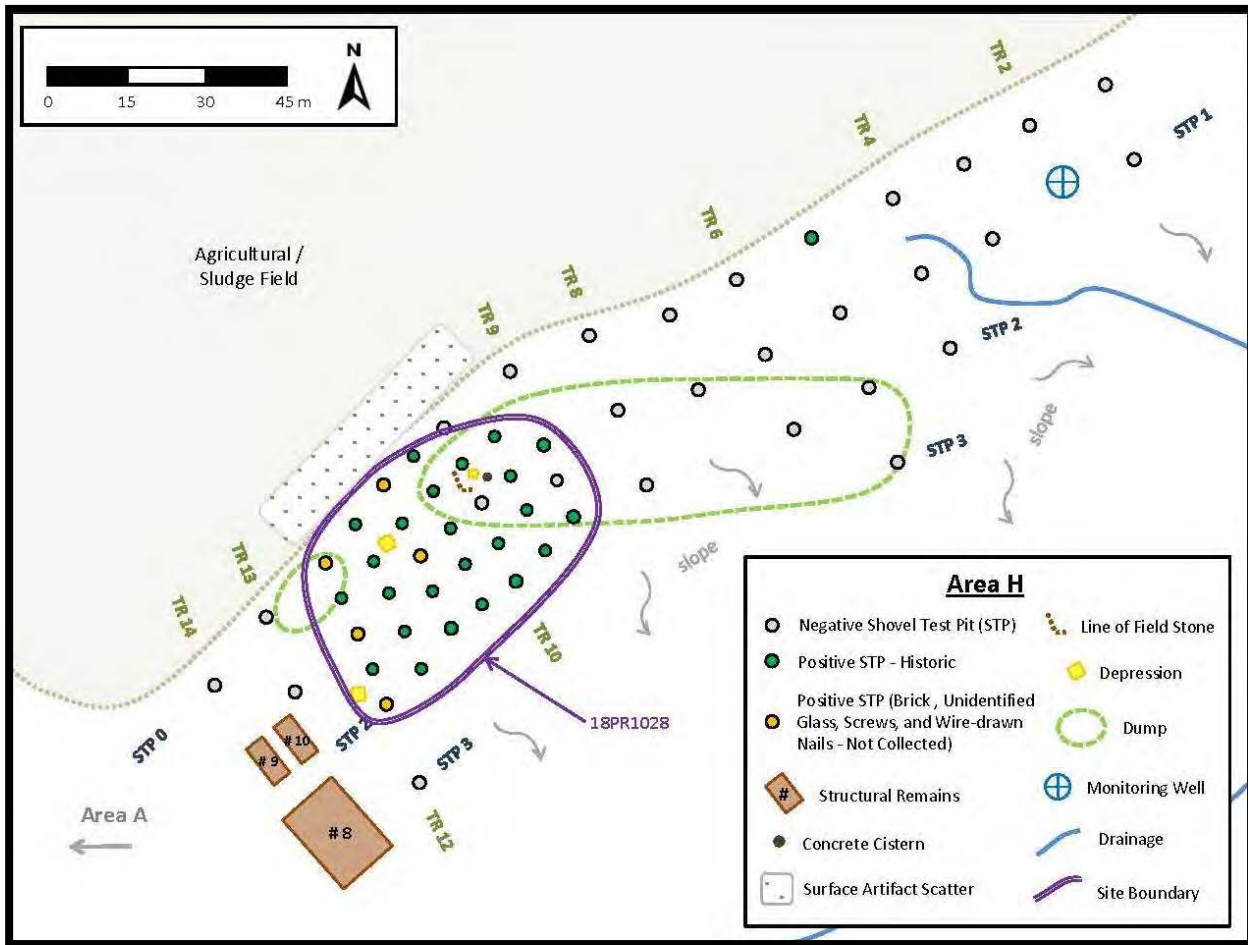


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Figure 6. T. Watkins Site (18PR1028). View to the Southwest of Collapsing Barn on the Western Edge of the Site.



Figure 7. T. Watkins Site (18PR1028). View to the Northeast Showing Fieldstone Foundation of Outbuilding with Multiple Repairs.

RESEARCH OBJECTIVES

Research Objectives and Questions

The Phase II investigations of 18PR1028 sought to evaluate the significance of the site and its ability to address potential research objectives and questions. In general, we attempt to define the extent, age, and significance of the archaeological resources previously identified. Potential research questions include:

- 1) What are the boundaries of the site?
- 2) When was the site occupied? And does it represent a single or multiple occupations?
- 3) Are features present below the plowzone? If so, what do they represent and what is their condition?
- 4) Do the features indicate the presence of structures? If so, how are they organized in relation to one another? and what stylistic attributes do they reflect?
- 5) Is it possible to discern discrete activity areas within the site based upon consideration of the spatial arrangement of artifacts and/or features?
- 6) Are the archaeological resources at the site eligible for listing on the National Register of Historic Places?

BACKGROUND RESEARCH

This section presents an historic background for the study. Background research methods are presented followed by the results of this research, including deed research, census research, and available historic maps and photographs.

Methods

During the Phase I survey a review of existing data on regional and local prehistory, history, and the environment was conducted consisting, in part, of an examination of the pertinent literature and historic maps in the collections of the Maryland Historical Trust (MHT) in Crownsville. This background is presented in the Phase I report (Kreisa *et al.* 2012). As part of this Phase II archaeological evaluation deeds were traced online through MDLandRec.net and a chain of title is presented as Appendix A. The available Federal Censuses for the 18th through 20th centuries were reviewed and tax data was examined.

Results

The interpretation of the T. Watkins Site to this point has been viewed through the understanding that the residence was once part of the larger farm owned by W.W.W. Bowie in the mid-19th century. Additional investigation undertaken as part of the Phase II investigation has shown that Bowie never owned the southern portion of the Green Branch Athletic Complex Parcel 6 that incorporates the T. Watkins Site. As recorded during the Phase I survey Lucy Crabb purchased the 312 acres of land that comprised Eglington and parts of Ample Grange, Frie's/Fry's/Frey's Choice, Sway and Parrots Manor from William Hall in 1795. This parcel of land went on to become the core of W.W.W. Bowie's holdings in the mid-19th century. The parcels of land comprise two main elements: the large singular parcel known as Eglington that was purchased by William Hall's grandfather, Henry Hall, in 1718 and the smaller parcels that were accumulated by Hall's father, Benjamin Hall, from the various members of the Boyd family during the 18th century. The parcels held by the Boyd family resulted from the division of the Ample Grange plantation between the heirs of John and Mary Boyd during the first quarter of the 18th century.

The plantations of various members of the Boyd family have previously been the subject of Phase II archaeological investigations and include the Mill Branch Crossing Site (18PR857), the Canter 5 Site (18PR887), and the Green Branch 2 Site (18PR966) (Ward and Tyler 2007; Tyler *et al.* 2010a; 2010b). Previous deed research has been carried out for many of these sites/properties and the work conducted in respect of the Green Branch 2 Site is especially useful in that it displays the division of Ample Grange by many of the heirs after the property was resurveyed in 1762.

Using the deed research conducted for these other archaeological investigations and combining it with information derived from the 1795 Chancery Court Plat that details Crabb's purchase (Figure 8), as presented in the Phase I report (Kreisa *et al.* 2012), it is possible to more clearly identify Crabb's holdings within the current landscape (Figure 9). Based upon the combination of these separate metes and bounds it becomes clear that Crabb did not purchase the southernmost corner of the Green Branch Athletic Complex Parcel 6 Property and thus the T. Watkins Site does not fall within the land once owned by Hall, Crabb, or Bowie as represented by the Eglington Parcel (Figure 10).

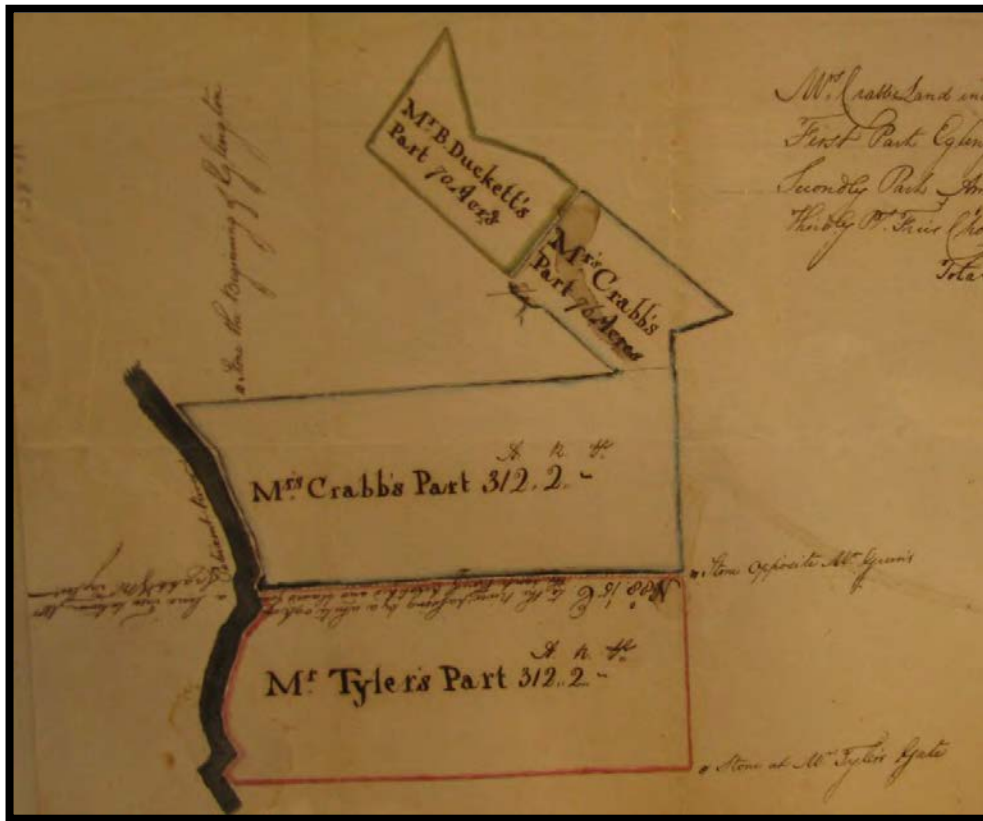


Figure 8. Plat of Lucy Crabb's purchase of Eglington. 1795 Chancery Court Land Records (S517-40) (Kreisa et al. 2012:40).

As presented below, additional research conducted for this Phase II investigation indicates that the T. Watkins Site falls within an entirely different parcel of land and that the ownership of this land can be traced back to the 18th century. Interestingly, when you consider these metes and bounds in conjunction with the 1938 aerial photograph of the area it quickly becomes clear that many of the property boundaries detailed in these 18th century records were still extant within the mid-20th century landscape, with the most striking example being the southern east/west boundary of the rectangular portion of Crabb's purchase from 1795, which in turn was the southern boundary of the Eglington parcel that was originally delineated in the land grant from Lord Baltimore to James White in 1670 (Patent Records 12:299). This landscape feature, which now cuts through the center of the M-NCPPC property and is still in place as the main access road, has been in place since the earliest colonist first settled what was then Charles County in the 17th-century.

As noted above, Crabb's purchase went on to provide the mainstay of W.W.W. Bowie's plantation and this 17th-century field boundary also served to delineate the southern border of Bowie's farm. A review of the respective maps indicates that this boundary occurs to the north of the T. Watkins Site (18PR1028) and, thus, the site did not fall within Bowie's landholdings. A review of the pertinent deed research revealed that the M-NCPPC property did not take its current form until consolidated by Crown Grant Joint Venture in 1979 and that this property primarily consisted of the farm of John and Helene Phelps who had merged multiple parcels into a sizeable farm over the preceding 60 years (PGC 5084:154). The Phelps' farm, at the time of transfer, included four parcels for a total of 353.05 acres, of which the W.W.W. Bowie farm

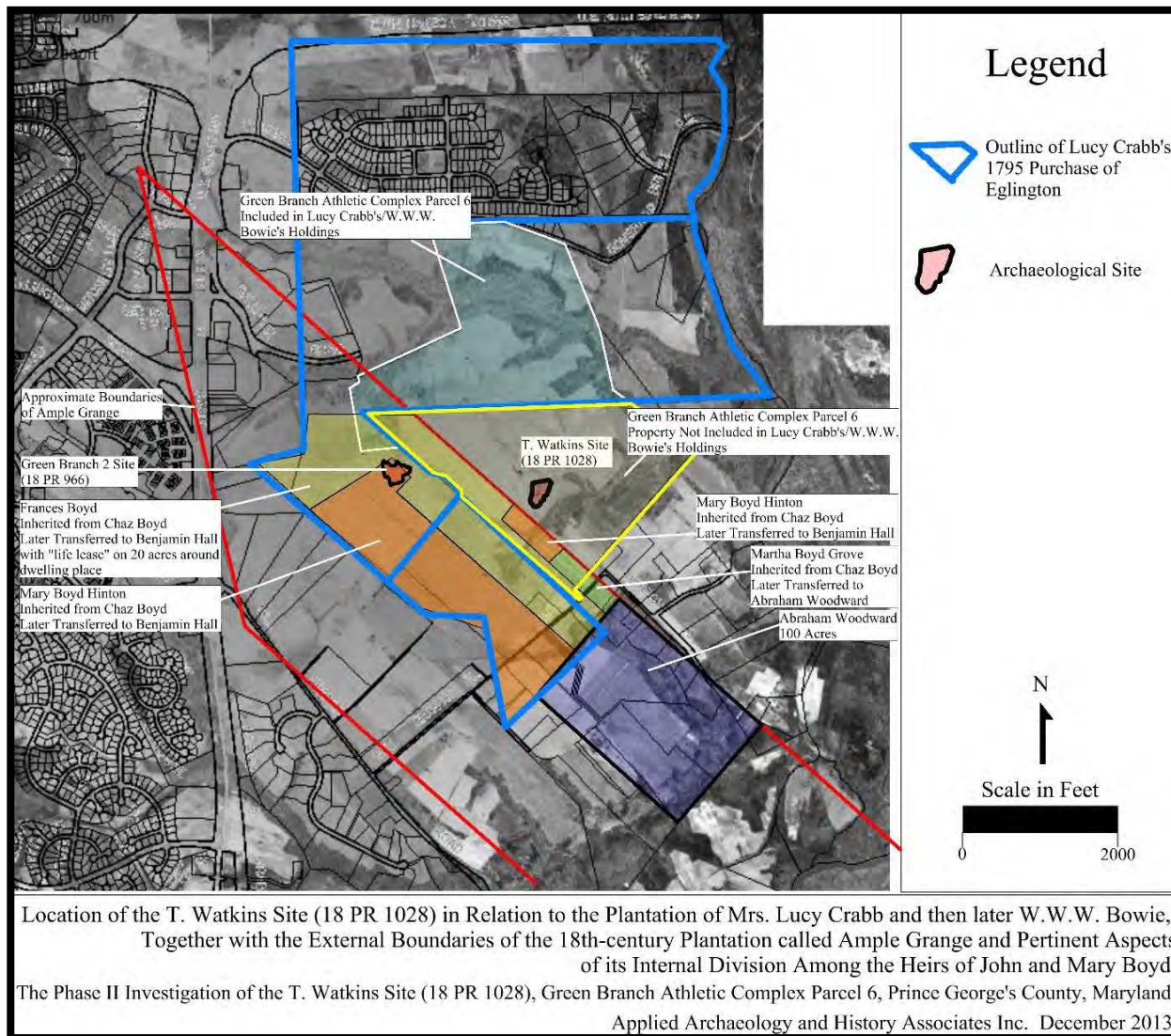


Figure 9. Location of the T. Watkins Site (18PR1028) in Relation to the Plantations of Mrs. Lucy Crabb and W.W.W. Bowie with Ample Grange and Internal Divisions among the Heirs of John and Mary Boyd (M-NCPPC 2013).

made up 230 acres (Parcel 2) and the William F. Smith farm made up 116 acres (Parcel 1) with the remaining two parcels constituting the remaining six or so acres. As noted above, the W.W.W. Bowie farm did not include the portion of the M-NCPPC property that contains the T. Watkins Site and it appears clear that it is instead the former W. F. Smith farm that constitutes the southeastern corner of the property and which includes the T. Watkins Site.

The Phelps acquired the 116-acre William F. Smith farm from the widow, Mary V. Smith, in 1934 (PGC 419:325). The Smith's had only been in possession of the farm since 1923, when William F. Smith had purchased the 150-acre farm from Samuel B. Chaney (PGC 195:252). The farm that Smith acquired comprised two parcels: one, Fry's/Frey's/Frie's choice, of 133 acres and one, part of Ample Grange, of 17 acres. The 133 acre parcel is likely the roughly triangular parcel that is clearly apparent within the field boundaries on the 1938 aerial photograph, with the additional 17 acres likely located immediately to the southeast. The 17-acre Ample Grange

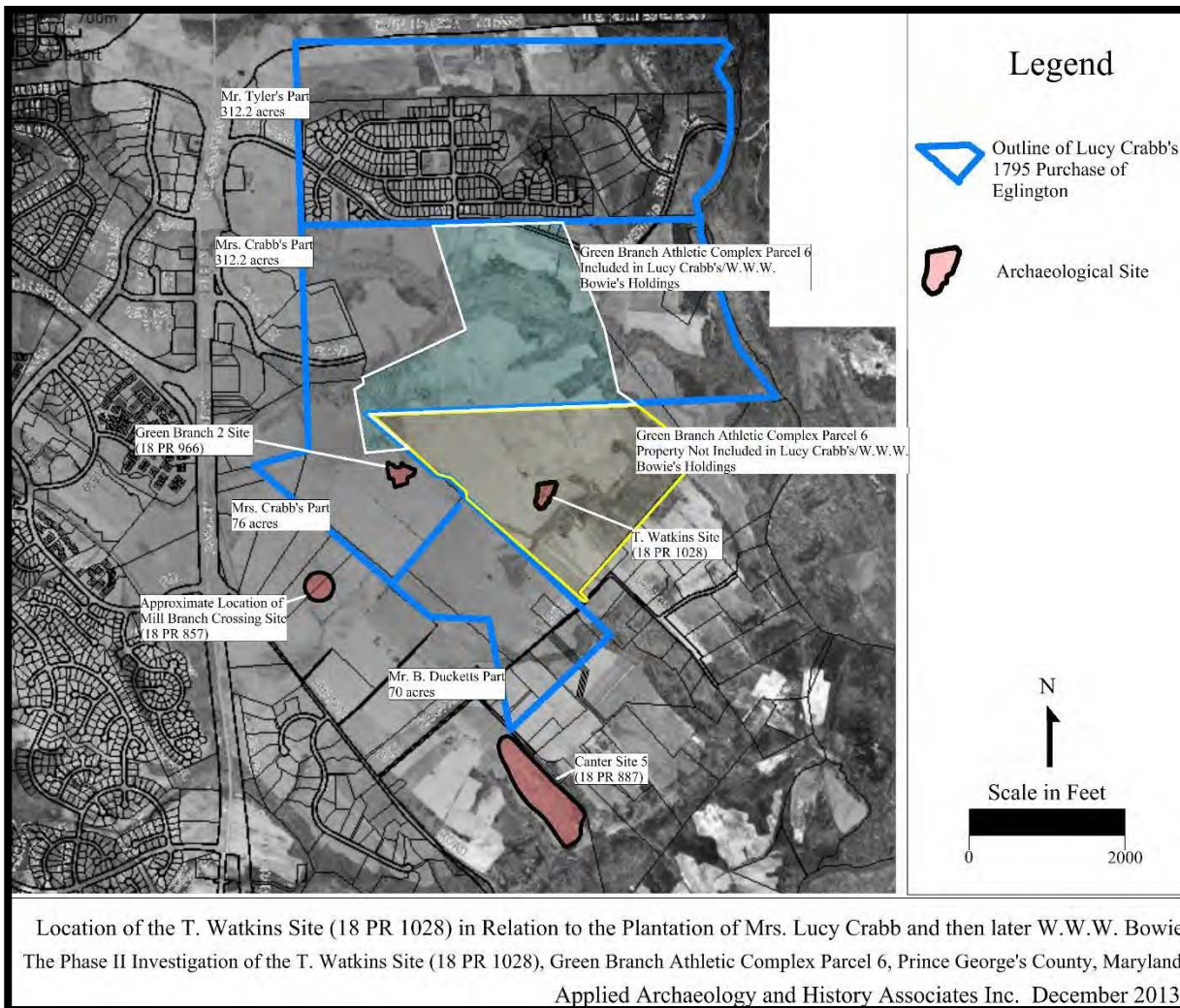


Figure 10. Location of the T. Watkins Site (18PR1028) in Relation to the Planation of Mrs. Lucy Crabb and later W.W.W. Bowie (M-NCPPC 2013).

property did not transfer to the Phelps in 1934 and is not included within the M-NCPPC property. Given the change in ownership at this time it is interesting to consider the 1938 aerial photograph of the area surrounding the T. Watkins Site (Figure 11). Beyond the previously noted field boundaries, the photograph indicates the presence of the two barns (Structures #8, 9, and 10 in Kreisa *et al.* 2012: 57-58), now ruined, that stand within the site as well the shadow of what appears to be a building running perpendicular to the barns (not identified in that report) and another outline of a structure running parallel to and separate from the barns, but which does not cast such a strong shadow as the other structures (Structure #17 in Kriesa *et al.* 2012: 57-58). Farm tracks lead to and from the structures and a small enclosure exists downslope between the structures and the stream. Slight farther to the north is a smaller barn (Structure #16 in Kreisa *et al.* 2012: 57-58) and a domestic structure (Structure #18 in Kreisa *et al.* 2012: 57-58). Although this house was recorded during the Phase I survey as a tenant structure with no evidence for pre 20th-century artifacts (Green Branch Parcel 6 Site 3 – 18PR1029) it would seem likely that this domestic structure was the main farmhouse during the farm's incarnation as the "William F. Smith farm".

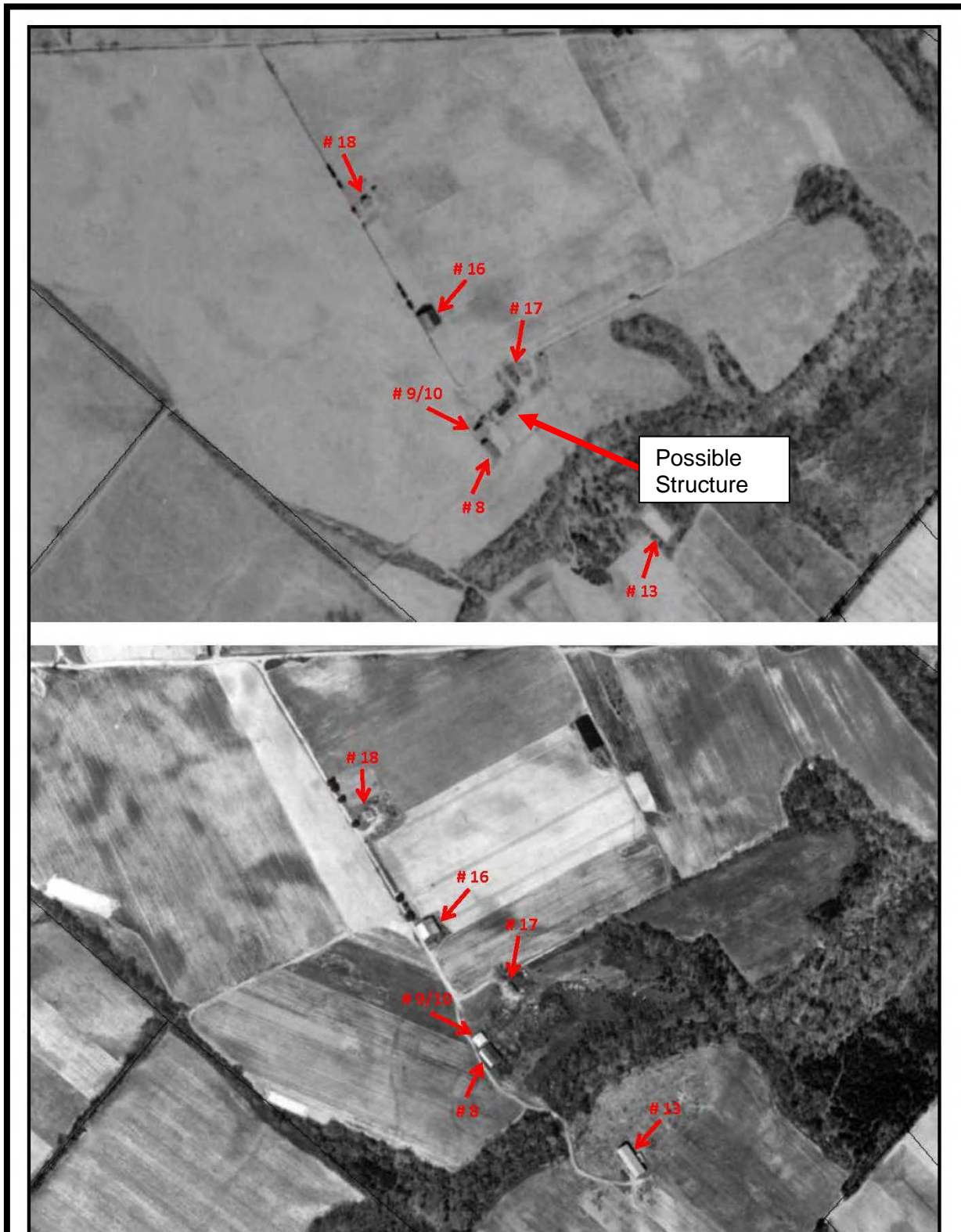


Figure 11. 1938 (Top) and 1965 (Bottom) Aerial Photographs Depicting Structures (Kreisa *et al.* 2012:58 – Figure 16).

Comparing the 1938 aerial photograph to the 1965 aerial photograph is difficult in some ways given the differing quality of the photographs themselves, however, it is clear by 1965 that the area comprising the T. Watkins Site has become more overgrown and looks less “lived-in” than before (Figures 11). The two barns are still in place and the farm track provides access to them and to the crossing of the deeply embedded branch that cuts eastward toward the Patuxent.

The parallel structure that was barely visible within the 1938 photograph is now more clearly defined, while the perpendicular structure appears to be gone and the area where it once stood appears to show evidence of either debris or smaller structures. In general the area appears to just be messy but the clarity of the photograph, while superior to that of 1938, is not good enough to say for certain. Looking at the barn and the residential structure to the north it is apparent that these are still well-maintained and new barns have been constructed in the field to the northeast as well as southeast of the creek. It would appear that while the inclusion of the smaller Smith farm within the larger Phelps holding meant additional investment in infrastructure by way of the construction of new barns and the continued maintenance of the northern domestic structure, the area of older occupation constituting the T. Watkins Site appears to be less well-maintained than 30 years prior.

Samuel B. Chaney sold the property to William F. Smith in 1923 but it is unlikely that Chaney was living on the property at the time. Chaney had come into possession of the property in 1904, when the owners of the 150-acre farm defaulted on the mortgage they had arranged with him the preceding year (PGC 19:522 and 12:479). It is unclear who, if anyone, resided on the property during the time that Chaney owned it. The previous owners, Joseph Walter Clark and Eva M. Clark, are recorded in the 1900 Federal Census with Joseph Clark, age 27, listed as a farmer who is renting the farm on which he lives. This would seem to indicate that Joseph and Eva Clark came into possession of the property at some point between the 1900 census and the 1903 mortgage he took from Chaney. No Federal Census records were found for the Clarks after 1900, so it would seem unlikely that they remained on the property.

The best available map for this period is the 1905 USGS Owensville Quad (Figure 12). Unfortunately, attempts to rubbersheet the current property boundaries onto the USGS map have been unsuccessful. It would appear that the map is somewhat inaccurate and, instead, it is better to match the various topographical features to get a sense of the placement of the structures indicated on the map. Three structures, normally representing residences on this USGS map, are shown in the vicinity of the T. Watkins Site; two in the center of the field and one farther to the west on the banks of the creek. This is interesting because consultation of the 1938 aerial shows no evidence for a third domestic structure outside of those grouped within the T. Watkins Site and 18PR1029 (Structure 18) (Figure 11), and opens the possibility of another residence located on the immediate banks of the creek; an area not tested during the Phase I survey and outside of the area to be disturbed by the proposed project. No other evidence was found for a third residence in this area either before or after the 1905 USGS map, but it seems unlikely that this was a cartographic error.

Until the default in 1904, the farm had been in possession of the Clark family for approximately 25 years. In 1877 Joshua T. Clark, Jr., the father of Joseph W. Clark, had purchased a 133-acre parcel, known as Frey’s Choice, for \$3,400 from John P. Hopkins and Mary Ann Hopkins (PGC HB 12:334). A year later Clark’s father, Joshua T. Clark, Sr., purchased an additional 17-acre parcel, known as part of Ample Grange and believed to be to the immediate southeast of the larger parcel, from William and Mary E. Wickham (PGC HB 14:237). This 17-acre tract is not believed to be located within the M-NCPPC parcel and so, while it is recorded within the Chain of Title in Appendix A, it will not be discussed here. Both of these parcels later ended up

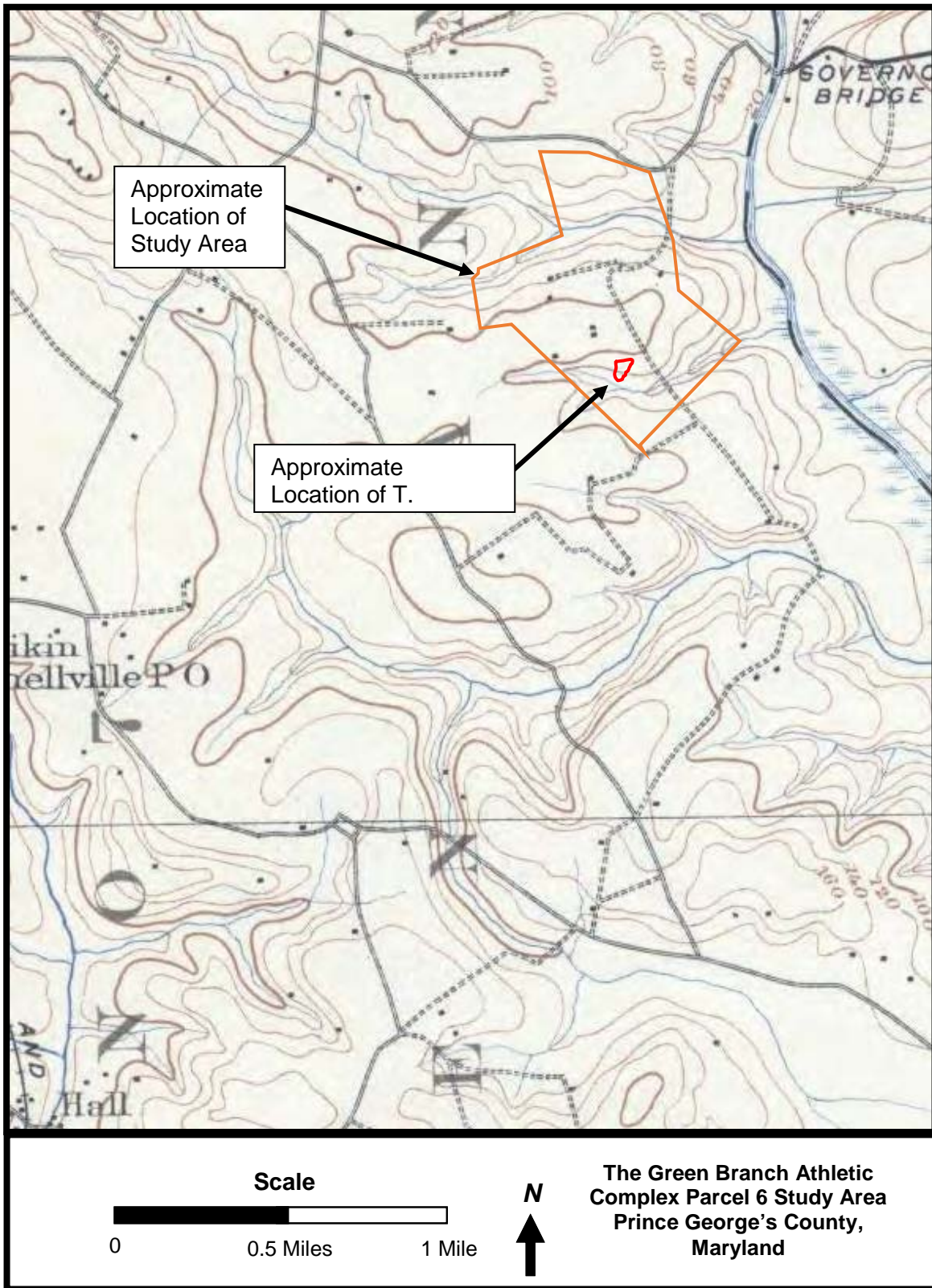


Figure 12. Study Area Location on the Owensville, Maryland 15-Minute USGS Quadrangle (1905).

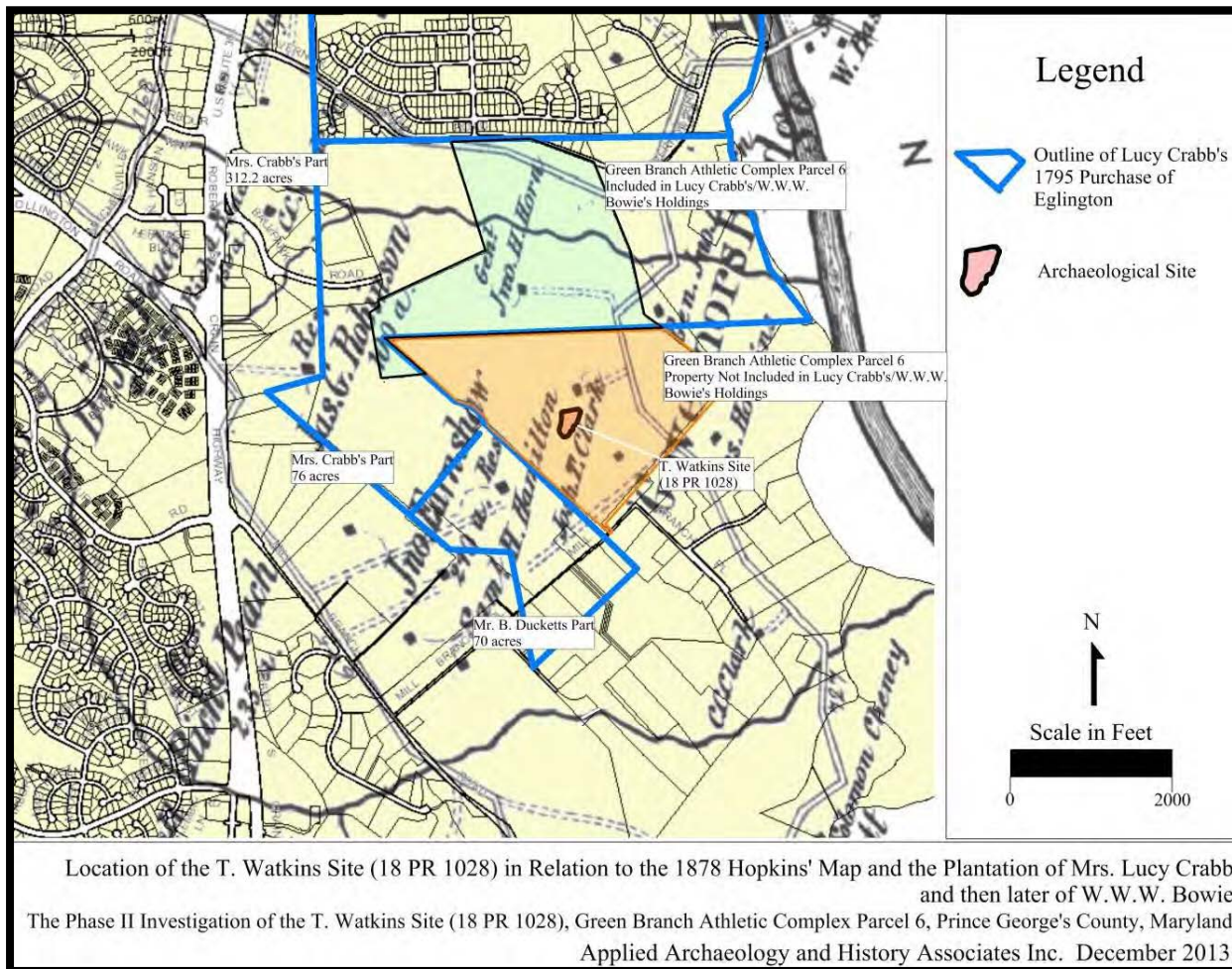


Figure 13. Location of the T. Watkins Site (18PR1028) in Relation to the 1878 Hopkins' Map and the Planation of Mrs. Lucy Crabb and the Later of W.W.W. Bowie (M-NCPPC 2013).

in the possession of Joseph W. and Eva Clark. The purchase of the property in 1877 is timely for our purposes as in the year 1878, the Hopkins map was released, which appears to illustrate Josh T. Clark in possession of two residences within the larger M-NCPPC property (Figure 13). The northern residence, likely Site 18PR1029, is linked directly to the public road that runs through the Clark farm and crosses the stream to east of the T. Watkins Site. This stream crossing is barely visible on the 1938 aerial photograph (Figure 11). The T. Watkins Site, the southern residence, is not shown linked to the public road and this may potentially reflect the change of focus from this older residence to the newer one farther to the north. Consulting the Federal Census for 1880, the time when Joshua T. Clark would have potentially resided on the property, the records show Clark – 45, living with his wife Ann – 44, and his children: Joshua Thomas Clark – 19, Dorcas – 17, J. E. – 15, Daniel – 14, Charles – 12, and Joseph W. – 7. Clark is recorded as “keeping store”, while his eldest son is recorded as working in the store. It is noteworthy that Clark is not recorded as a farmer, given his purchase of the farm in 1877, although it is possible that he was in the process of transitioning from the store or perhaps employed a relative or tenant to farm his land. Looking at the census for 1870, prior to Clark’s ownership of the property, he is recorded as a “merchant (retired)” and as living in District 2 of Anne Arundel County on the other side of the Patuxent River. At the same time Clark’s father,

also Joshua T. Clark, is recorded as a farmer with extensive with expensive, \$32,000, holdings in the Queen Anne area. Following the Clark family back to the 1860's, the Federal Census records Joshua T. Clark, Jr. immediately after the entry for his father. The junior Clark is recorded as being 24 years of age and being without an occupation, but living with his wife Ann and their 6-month old son Joshua T. Clark and an 11-year-old black male by the name of William Rucin(?) The senior Clark's holding are quite extensive and include \$25,000 in land, while his household includes his wife Dorcas, his children, and an African-American servant by the name of John Gaither – 22, and two African-American farm laborers by the name of George Gaither and Mary Baily. Considering the above deed and census research it seems clear that the Clarks were a wealthy landowning family in the Queen Anne area during the middle to late 19th century. Joshua T. Clark, Jr. owned the land on which the T. Watkins Site was located and the historic maps appear to indicate that he had two residences within the property during the time of his ownership. It is not a certainty that he lived on the land himself given that the 1880 census records him as living and “keeping store” on the other side of the Patuxent River. The 1890 Federal Census would hopefully have provided additional information as to whether Clark later moved to the current property, but these records were destroyed in a fire and are not available for consultation.

Johsua T. Clarke, Jr. had purchased the 133-acre parcel known as Frey's Choice from John P. Hopkins and Mary Ann Hopkins in 1877 (PGC HB 12:333). The 1870 Federal Census lists J. P. Hopkins being a merchant in the Queen Anne District and he had not possessed the tract of land for very long having only purchased it from Nicholas Edwin Watkins in 1871 (PGC HB 5:191). A deed listing the transfer of the property to Nicholas E. Watkins was not found, but his name does appear on various indentures with that of his father, Thomas Watkins of N., in respect of the property and it is assumed that Nicholas inherited the parcel from his father. The first of these occurred in 1859 when the pair took a loan of \$500 from Dr. Benjamin Watkins of Anne Arundel County and the property was used as collateral, although it should be noted that Nicholas E. Watkins is listed as being of Baltimore City (PGC ASM 3:120). The loan was repaid in November, 1864, and Dr. Watkins released the property back to Thomas and Nicholas (PGC FS2:239). On the very same day, in 1864, that the original loan was released Thomas and Nicholas, together with Thomas' wife Eliza Ann, took out another mortgage on the property from Thomas Claggett and again used the 130-acre property to secure the loan (PGC FS 2:242). Interestingly, the mortgage records Thomas and Eliza as being of Anne Arundel County and Nicholas Edwin Watkins as residing on the property at that time. However, no census records for Nicholas E. Watkins were found in Prince George's County for any point between 1860 and 1880. The only record found to confirm Nicholas E. Watkins residence at this parcel is an entry within the U.S. Military Civil War Draft Records for 1863 – 1865, which lists him as a married, white, 29-year-old merchant living in Governor's Bridge and enrolling on the 17th September, 1863, with discharge being 4th April, 1865 (Figure 14).

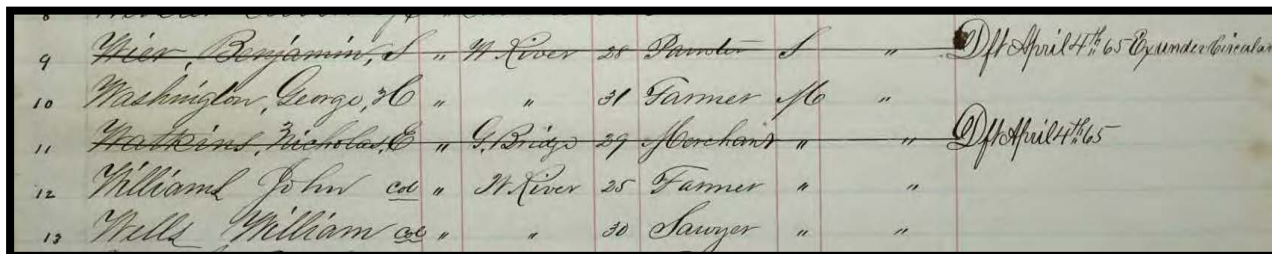


Figure 14. Military Discharge of Nicholas E. Watkins (MSA U.S. Military Civil War Draft Records, 1863 -1865).

Also difficult to find within the Federal Census records were entries for Thomas Watkins. Thomas Watkins purchased a total of 247.5 acres in 1834, from the previous owners, Jacob and Sarah Basford for \$200 (PGC AB9:15) while, at the same time, purchasing all interest in the property from Robert W. Harper and Sarah M. Harper for \$2,500 (PGC AB8:484) and William and Margaret Wooton (PGC AB9:121). It is unclear why Harper and Wooton also had an interest in the property, but based on Harper and Wooton's other transactions it is possible that Basford owed them money. The property is described as constituting 100 acres of Ample Grange and 147.5 acres of Frey's Choice, with the second parcel possibly representing the portion that later was transferred to Joshua T. Clarke, Jr. Without the metes and bounds of the parcels it cannot be said with certainty that the 147.5-acre parcel includes the 133 acres later transferred to Hopkins, but no other parcel was identified as coming into the possession of Thomas Watkins that resembled the later transfer. Having purchased the property in 1834, in 1838 Thomas Watkins took a promissory note of \$632.47¼ from Benjamin Watkins of Anne Arundel County as well as a loan of \$1,400 from the Farmers Bank of Maryland (PGC AB11:564). To secure the loan Watkins put up his own residence, which is described as the parcels he had purchased from Bashford *et al.*, together with seven slaves: Nace – 30, Washington – 19, William – 9, Moses – 3, Dinah – 35, Mary – 22, and Margaret – 4. From this deed we now have the names of some of the enslaved African-American workers who may have toiled and lived on the T. Watkins Site. As noted above, Federal Census records for Thomas Watkins have been difficult to locate, with the only record found within Prince George's County being that of the 1840 census where Watkins is recorded as living in a household containing 11 slaves, four white persons and one free colored person, of which six people were employed in agriculture (Table 1). This would indicate an increase in the number of slaves from seven in 1838 to 11 in 1840, but this may simply be because Watkins did not use all of his slaves to secure the 1838 mortgage.

Table 1
Thomas Watkins' Household – 1840 Federal Census

Sex	Age	Designation	Number
Male	5 – 9	White	1
Male	30-39	White	2
Female	30-39	White	1
Male	10-23	Free Colored	1
Male	Under 10	Slave	2
Male	10-23	Slave	1
Male	24-35	Slave	2
Male	55-99	Slave	1
Female	Under 10	Slave	2
Female	24-35	Slave	1
Female	36-54	Slave	1

The other place in which Watkins' holdings can be observed in association with the current Study Area is the 1861 Martenet map of Prince George's County (Figure 15). When compared with a current map, the Watkins' residence is shown in approximately the same location as that of the T. Watkins Site. Dated 1861, the map records a time between the 1859 indenture that records Nicholas Watkins as living in Baltimore City and the 1864 indenture that records Thomas Watkins as living in Anne Arundel County. It is unclear whether the map is simply recording that T. Watkins owned the property or whether he actually lived there. Further

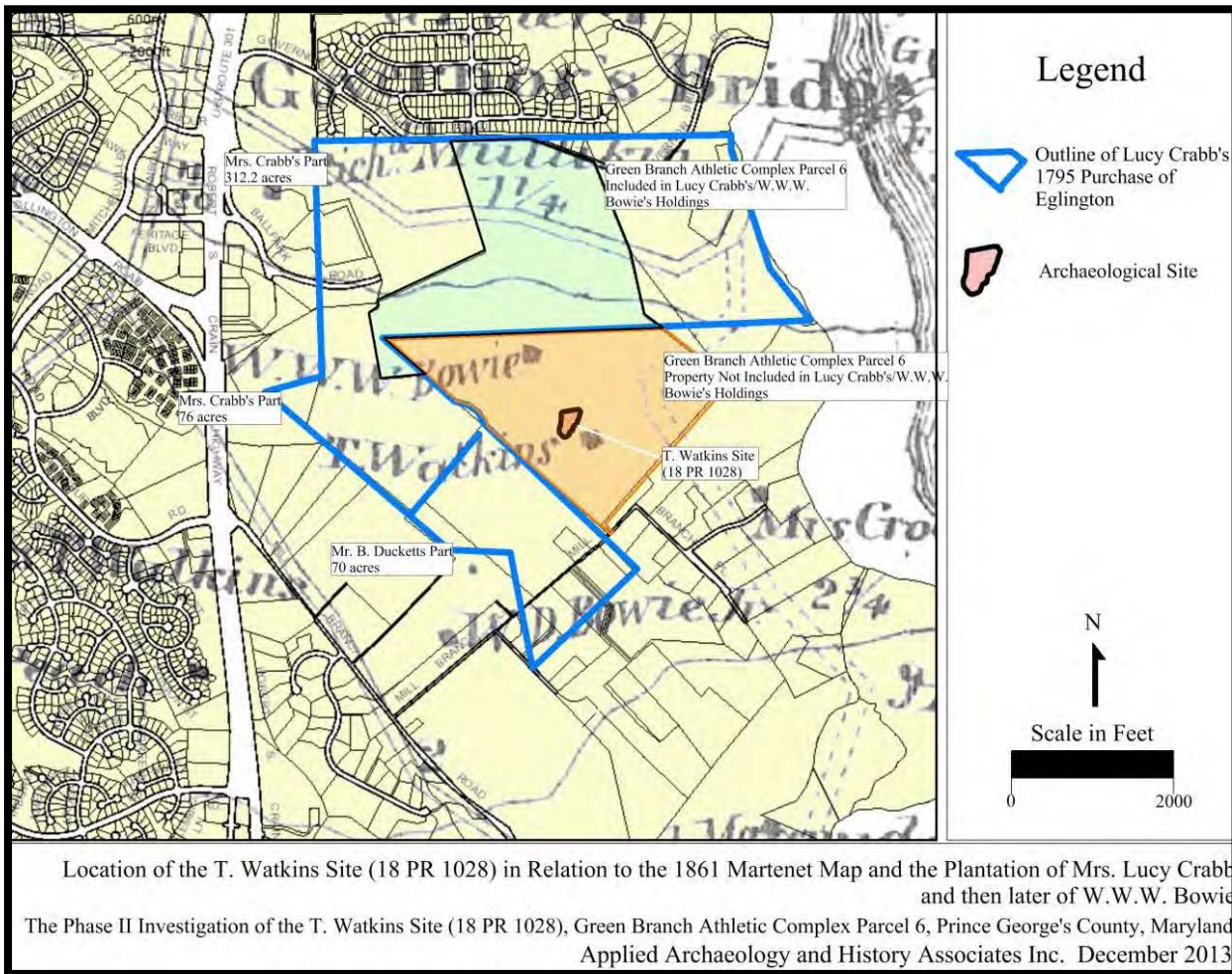


Figure 15. Location of the T. Watkins Site (18PR1028) in Relation to the 1861 Martenet and the Planation of Mrs. Lucy Crabb and the Later of W.W.W. Bowie (M-NCPPC 2013).

complicating the matter is a census entry for 1850, which records a Thomas Watkins as serving as Postmaster for Ellicott Mills in Anne Arundel County and Nicholas Edwin Watkins serving as assistant postmaster for the same town. Although potentially a coincidence, given the dearth of entries within the Federal Census for Thomas and Nicholas Watkins and that we know Nicholas Watkins was living in Baltimore City in 1859 it would seem quite possible that these are the same Watkins'.

It is at this juncture that an added level of uncertainty enters the picture as we do not know for sure how Watkins came into the possession of the property. As previously noted, the 250 acres that Watkins purchased in 1833/1834, had been in the possession of Jacob Basford, but there is no certainty that either of them refer to the one on which the T. Watkins Site was located. Basford had purchased the parcels from the heirs of Thomas Woodward and it was possible to trace two of these indentures: one from William and Cassandra Parker nee Woodward in 1818 for \$850 and one in the same year from Thomas and Octavia Woodward of the District of Columbia (PGC EH1:27 and EH1:29). In the latter indenture it is recorded that Jacob Basford was living on the property at the time of the transfer and it may be that he had already purchased or inherited the property from the estate of Thomas Woodward, deceased, and was

consolidating his interest in the farm. Basford is believed to have married Thomas Woodward's daughter, Permella, in 1814 (PGC Marriage Records:60) and Permella/Pamela, together with the other executors of the Estate of Thomas Woodward, was the subject of a case in the Chancery Court undertaken by Philip Lansdale (Chancery Court 11/08/1815 MSA S512-3253). We have no maps indicating where Basford may have lived within the parcel, but it should be noted that 100 acres of the transfer represented part of Ample Grange and as such was located southeast of the T. Watkins Site, and thus there is no chance that that parcel contained the current archaeological site. The larger parcel of 147 acres has the potential of containing the T. Watkins Site, but given the distance between the site and the 100-acre Ample Grange parcel it would seem a somewhat unusual, but not impossible, configuration of the land parcels to make both contiguous to each other, while still containing the Watkins Site. Therefore it would seem that there is potentially a third parcel of land that may or may not have been within the possession of Jacob Basford. The 1834 purchase by Basford from the Woodward's heirs lists the property as being located south of the lands of John Boyd Watkins, deceased, and this information will come into play as the parcel is traced back into the 18th century.

Due to the quality of the copies of the entries for last names beginning with "W" in the Land Record Index for 1696 to 1800 it was not possible to ascertain when Thomas Woodward came into possession of the two parcels but, based on some later transfers and what is known about the Ample Grange tract, it is possible to gain some small additional insight into Woodward's holding of the property. As part of a back and forth transaction between Thomas Woodward, Sr. and John Boyd Watkins in 1808, we know that Woodward was residing somewhere on the 250-acre parcel at the time of transfer. It was also possible to identify Thomas Woodward, Sr. within the 1790 and 1800 Federal Census. In the 1790 census Woodward is recorded as living in a household consisting of one white male over the age of 16, two white females, and eight slaves, while his household in 1800 is recorded as containing eight people (Table 2). Thomas Woodward, presumably Senior, is also recorded as representing Prince George's County in the Maryland House of Delegates in 1806.

While recorded as being "out of repair" in the 1798 Federal Tax Records, the holdings of Thomas Woodward are far larger than those identified in association with the T. Watkins Site. Listed as residing on a part of Sway, Woodward's plantation comprises a frame dwelling house 32' x 16', a kitchen 24' x 16', a lumber house 16' x 12', a negro house 20' x 14', a corn house 28' x 16' with 8' sheds on each side, a pottery house 10' x 10', and a meat house 12' x 10', all of which are recorded as occupying an approximately two-acre parcel (Figure 16). An additional entry lists Woodward's wider holdings as including two tobacco houses, both 50' by 24', on a 155-acre parcel adjacent to the holdings of J. Watkins, Sway, and a 73-acre parcel adjacent to the holdings of Baruch Duckett, Ample Grange (Figure 16). Woodward is also listed as owning

Table 2
Thomas Woodward's Household - 1800 Federal Census

Sex	Age	Designation	Number
Male	Under 10	White	1
Male	10-15	White	1
Male	26-44	White	1
Female	Under 10	White	3
Female	10-15	White	1
--	Under 16	Slave	6
--	Over 25	Slave	1

At this time we would be well served to note that often the metes and bounds presented in some of the older plats consulted during this research do not mesh exactly with the boundaries presented on modern maps. Obviously the methods and technology have improved greatly since the 18th century and even after taking into account the changes in the earth's magnetic declination the older maps rarely correspond precisely with their modern counterparts. Nevertheless, by overlaying the metes and bounds presented in the 1764 resurvey of the parcel known as Sway we can see how the parcel was redefined to settle the dispute between Boyd and Woodward (Figure 17). Essentially the survey redefined Sway's northern boundary as following the course of what was then called "Gray's Branch", which is the creek that runs to the immediate south of the T. Watkins Site and thus the site falls outside this parcel as resurveyed.

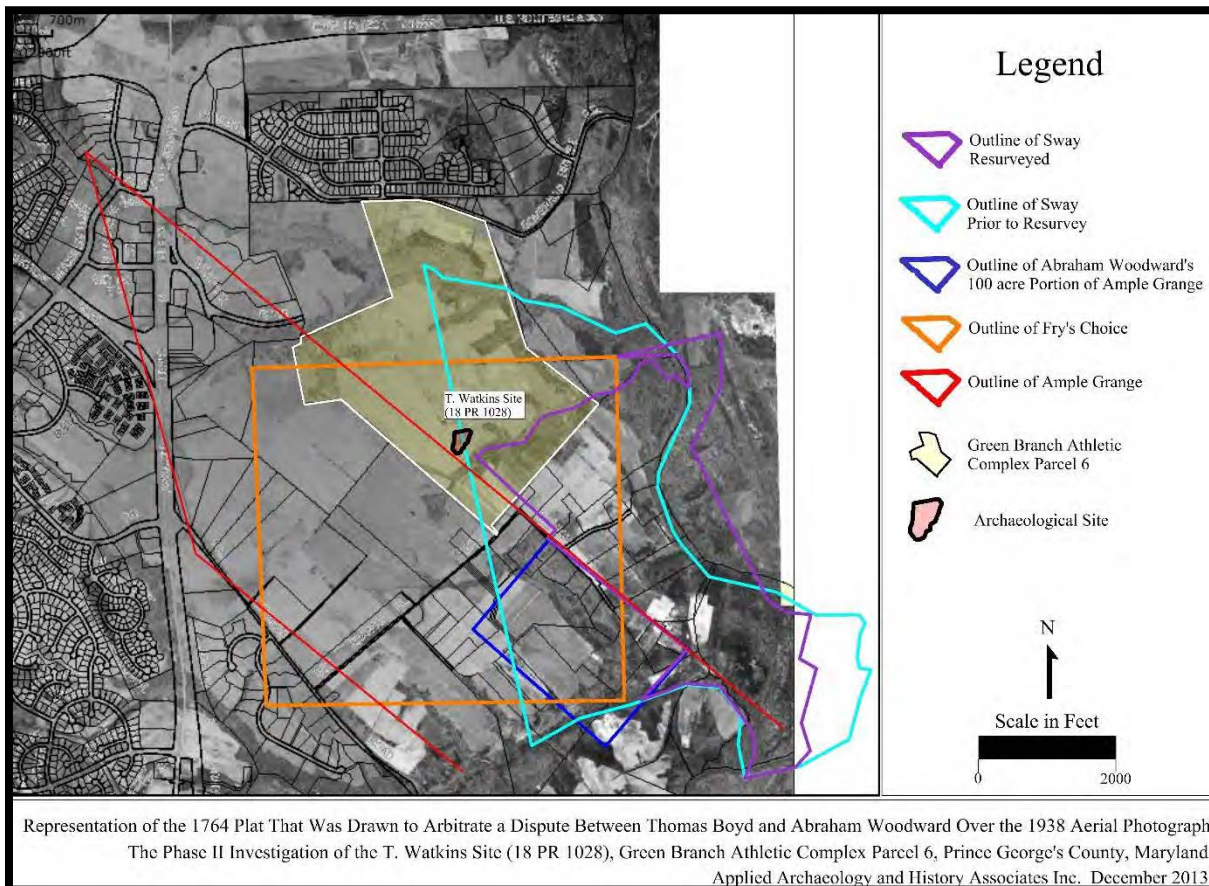


Figure 17. 1764 Plat Drawn to Arbitrate a Dispute Between Thomas Boyd and Abraham Woodward over the 1938 Aerial Photograph (M-NCPPC 2013).

The plat also highlights Abraham Woodward's 100-acre portion of Ample Grange, which was contiguous to Sway (Figure 17). In this way we can see that the T. Watkins Site lies to the north of Sway as it was resurveyed in 1764, but still within the larger parcel called Fry's Choice. Abraham Woodward's will was ratified in 1774 and he is believed to have died fighting in the Revolutionary War in 1881 (MSA C-1326-4 Liber T1 F136). In his will, Woodward bequeathed his holdings of Sway, Ample Grange, and Fry's Choice, with Fry's Choice recorded as measuring 146 $\frac{3}{4}$ acres, to his wife Margaret. The will stipulated that upon Margaret's death the land should transfer to his son, Thomas Woodward. The will also mentions that Abraham Woodward had purchased this portion of Fry's Choice from Thomas Boyd. It would seem most

likely that the parcels of Fry's Choice and Ample Grange are the same 250 acres recorded in the possession of Thomas Woodward in 1808, but not necessarily the parcel containing the T. Watkins Site.

The contention regarding ownership between Thomas Boyd and Abraham Woodward is important, because in 1767, Thomas Boyd is recorded as selling a 118 ¾-acre parcel of land known as Fry's Choice and Sway Resurveyed to Nicholas Watkins, Jr. (PGC BB 2:99). Luckily this deed includes metes and bounds for the property which, when plotted on the map, places the parcel to the immediate north of Gray's Branch and includes much of the southern portion of the Green Branch Athletic Complex Parcel 6, including the T. Watkins Site (Figure 18). No records were identified showing Nicholas Watkins, Jr. transferring the parcel to another owner, but the 1798 Federal Tax Records have an entry for a 118-acre parcel close to that listed for Thomas Woodward. This 118-acre parcel is shown to be owned by John Watkins and is described as being part of Fry's Choice and Sway Resurveyed and adjoining the property of Thomas Woodward. The listed structures comprise a 20' x 12' tenant house, a 12' by 10' kitchen, and a 24' by 15' tobacco house, while the dwelling house is listed as being worth \$30 and the land worth \$475 (Figure 19).

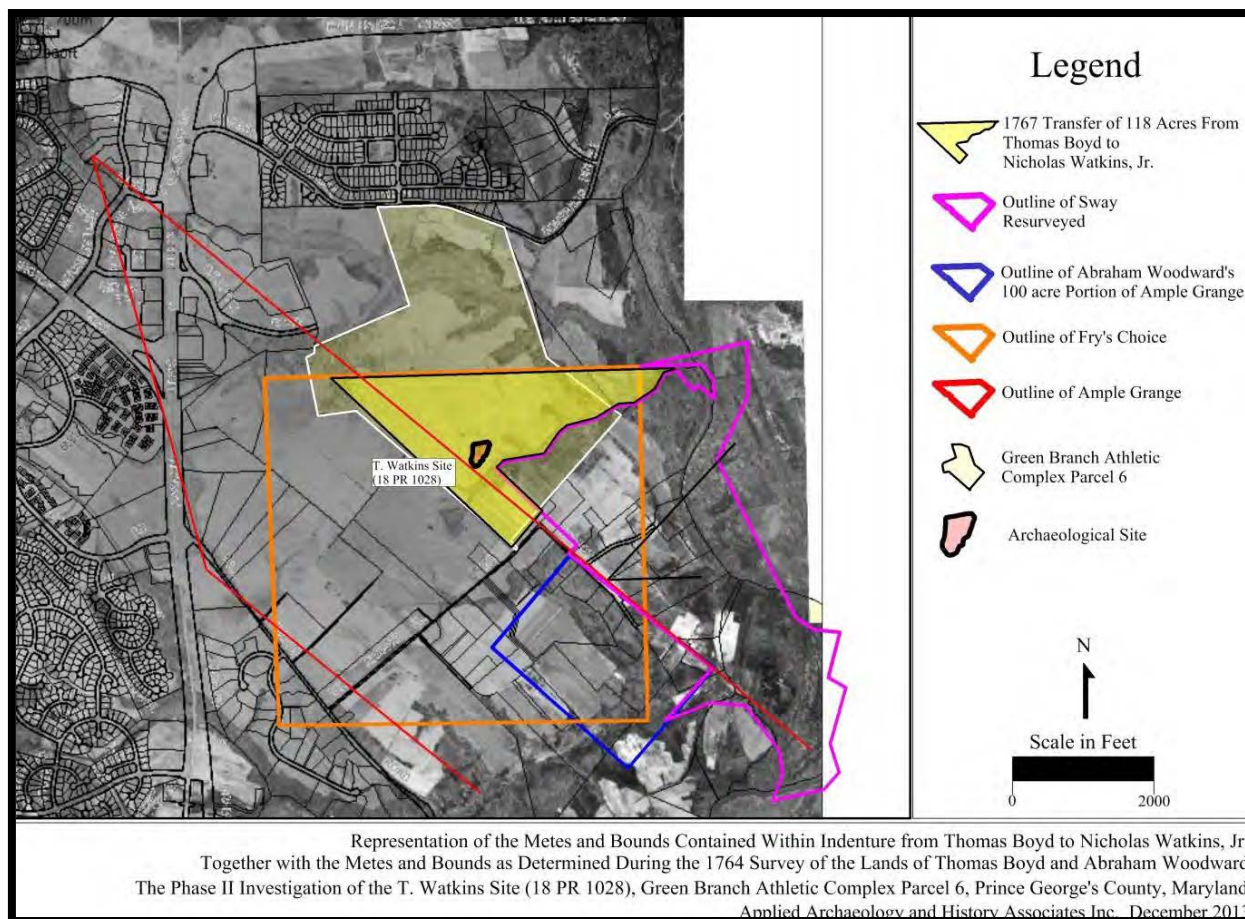


Figure 18. Representation of the Metes and Bounds Contained within Indenture from Thomas Boyd to Nicholas Watkins, Jr. – 1764 Survey (M-NCPPC 2013).

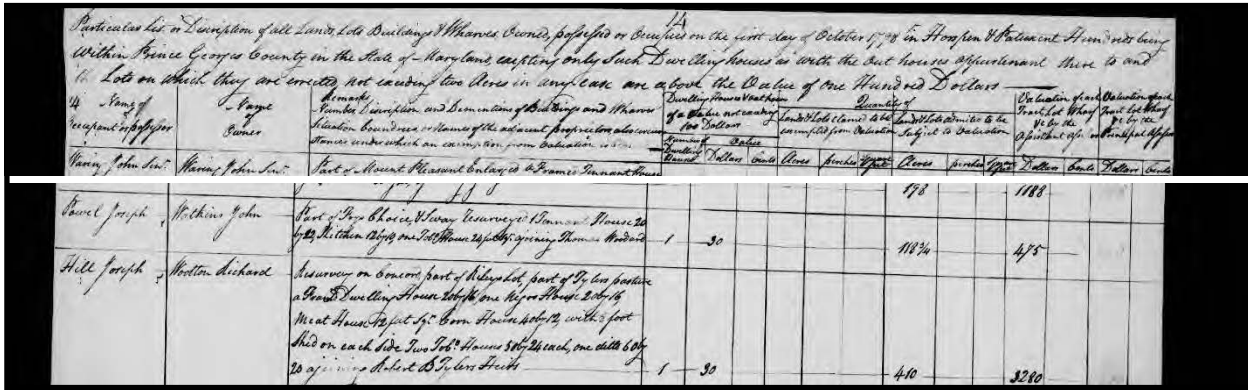


Figure 19. John Watkins/Joseph Powel 1798 Federal Tax Records.

Most importantly a tenant, Joseph Powel/Powell, is listed as living on the property, so here it is possible to start to draw a picture of the occupants of the T. Watkins Site at the turn of the 19th century. In the 1790 census Powell is recorded as living in Prince George’s County and his household comprises two white males over 16, two white males under 16, and three white females. In 1800 the Federal Census lists Powell’s household as comprising one white male over 45, one white male under 10, one white male between 10 and 15, and three white females. No entry for Powell could be found in 1810.

Although only a tenant, record of Powell can be found in 1792, when he sold to John Petty, for the use of Dr. Benjamin Boyd, four head of horses and two cow/calves (PGC JRM 1:205). In exchange for the livestock Powell received 1,200 pounds of merchantable tobacco that had been inspected at Queen Anne Town. Powell also appears in 1800, when he sells three head of horses, four head of cattle, “four thousand weight of tobacco”, and twenty barrels of Indian corn to Thomas Lansdale and Walter Clagett (PGC JRM 7:639).

John Boyd Watkins is believed to have lived on the other side of the Patuxent in Anne Arundel County, but served as Deputy Sheriff of Prince George’s County in the service of Richard Harwood. Watkins actually mortgaged the 118 acres as his security to Harwood when reapplying to become Deputy Sheriff in 1797, having served from 1795 – 1797 (PGC JRM 5:472).

In 1801 John B. Watkins sold the property to Richard Harwood and no additional deeds of transfer were identified to clearly illuminate how the property later came into the possession of Thomas Watkins (PGC JRM 4:61). It is possible that it was later included in the holdings of Thomas Woodward and Basford or it was transferred to Watkins by some other route.

One final record was found for the 118-acre parcel, whereby John and Elinor Boyd transferred the property to Phillip Pindel/Pindell in 1716, but unfortunately no additional information was identified that shed any light on how the property later came into the possession of Thomas Boyd. It is interesting that even in 1716 the boundaries of the larger parcel had already been set by the presence of the Patuxent River to the east, Grays Branch to the south, the 1670 boundary between it and Eglington to the north and the 17th-century boundary with Ample Grange to the east.

In conclusion, despite its muddled history during the early portion of the 19th century, when clear ownership of the property is hard to define, it is possible to draw some clear conclusions

regarding the ownership of T. Watkins Site and the identity of some of those who lived there. The transfer from John Boyd to Phillip Pindle in 1716 provides the earliest record for the property. The 1798 Federal Tax Records indicate that Joseph Powell, a tenant of John Watkins, occupied the property at that time and the available records allow a glimpse into the life of a tenant farmer near the banks of the Patuxent River at the turn of the 18th century. Whether the T. Watkins Site continued to be used as a tenant farm after the sale of the property to Richard Harwood in 1801 is unclear as are Thomas Watkins' interactions with the property in the mid-19th century. Given the parcel's history as a tenant property it is possible that Watkins maintained the holding in a similar manner until his son's transfer of the property to John P. Hopkins in 1871. Hopkins almost assuredly never resided within the T. Watkins Site due to his ownership of a larger farm nearby and when Joshua T. Clarke, Jr. took possession in 1877 it looks increasingly likely that he constructed a new farmhouse a little way to the north (18PR1029) and perhaps never lived within the site itself.

THE FIELD INVESTIGATION

This section details the Phase II field investigations conducted in association with the T. Watkins Site (18PR1028). The section begins with a discussion field and laboratory methods and is followed by a discussion of the results of the fieldwork, an analysis of the historic records as they relate to the fieldwork, and the research objectives.

Field Methods

Pedestrian Reconnaissance: A walkover of the site and its surroundings was conducted prior to the initiation of Phase II excavations with the goal of identifying any previously unidentified surface indications of previous habitation. This would include surface features such as the depressions already identified, foundations, or artifact deposits.

Grid: Because the Phase I survey used a land-form grid AAHA did not re-established that grid, instead placing a datum on the southeastern corner northeastern building foundation located west of the site. The metric grid is laid on magnetic north with the datum representing N1000 E1000 (Figure 20).

Shovel Test Pits: The excavation of shovel test pits (STPs) at close intervals was proposed in order to more closely define the site's boundaries. Measuring approximately 50 cm in diameter these STPs were placed at five and ten-meter intervals around the periphery of the site. Such shovel tests generally extended into natural subsoil or to the limit of practical excavation, whichever was shallower.

Excavation Units: The research design for the Phase II investigation proposed the excavation of 10 1 x 1 m units within the T. Watkins Site with placement based on the results of the Phase I archaeological survey and the limited additional close-interval shovel testing. Units were to be excavated by natural stratigraphy (layers) and where strata were thick, by 10-cm arbitrary levels. Written records were kept detailing the excavation of each unit and units were photographed and drawn in profile and plan as appropriate. Manually excavated soils were passed through a 1/4-inch hardware screen mesh to insure uniform recovery of artifacts, if present. All excavation units were recorded on a map of the site and the soil profile of each unit was also recorded. Narrative field notes and photographs were produced to document the results of the field investigation.

Laboratory Methods

All artifacts recovered during this investigation were transferred to the AAHA's laboratory in Annapolis, Maryland for cleaning, cataloguing, and analysis. After washing they were separated and placed into plastic re-sealable bags with acid-free provenience cards containing the following information: site number, lot number, provenience, level, stratum, and date of excavation. Artifacts were sorted and analyzed according to morphological, material, and functional classes. Artifacts were labeled with their appropriate site number and lot number. Laboratory procedures were performed in accordance with state and federal curation guidelines.

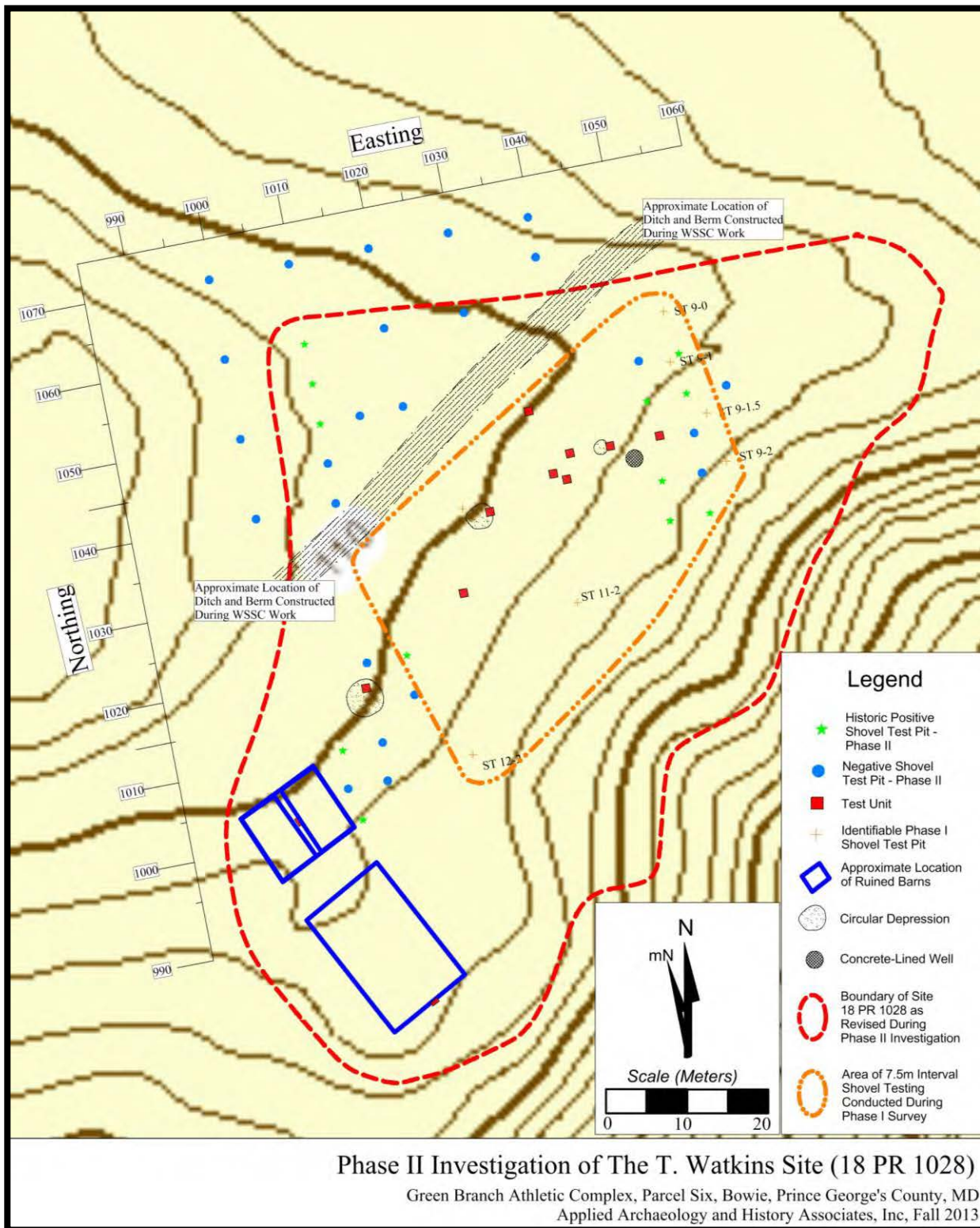


Figure 20. Phase II Investigation of the T. Watkins Site (18PR1028).

The initial phase of artifact analysis consisted of the preparation of an artifact inventory of cultural materials recovered during the investigation. The complete artifact inventory is presented as Appendix B. Historic artifacts were catalogued according to functional category (Architecture, Clothing, Kitchen, Personal, Tobacco, and Activity), raw material, type (nail, ceramic ware, pipe stem, etc), and description (decoration, measurements, etc.).

Results

Pedestrian Reconnaissance

The pedestrian reconnaissance resulted in the re-identification of the surface features noted during the Phase I survey, including three circular depressions of various dimensions, a concrete-lined cistern, and portions of a likely stone foundation wall on the surface of the site (Figure 20). In addition the ditch surrounding the site – a product of the WSSC's sludge deposition activities on the property during the 1980s – was observed and mapped. Also mapped were the collapsed outbuildings located west of the site, as the site was defined during the Phase I survey. The remnants of these outbuildings consist of foundations constructed of stone, poured concrete, and concrete block and appear to have undergone numerous rebuilding episodes during their period of use and may have served multiple purposes over time. Remnants of the superstructure of the northwestern outbuilding indicate its final use as a corn crib. Finally, the pedestrian reconnaissance included the southern slope below the site. This area exhibited a scatter of structural elements and artifacts. It is unclear whether these represent a true extension of the site, overslope deposition, or the effects of the demolition of the property by the WSSC.

Shovel Testing

A total of 40 STPs were excavated primarily to more fully define the boundaries of the site (Figure 20). STPs were excavated within the surface artifact scatter noted in the agricultural field north of the site, between the site's western boundary and the outbuilding foundations, and along the eastern perimeter of the site as defined in the Phase I survey. A total of 12 STPs were positive for historic artifacts including brick fragments, window glass fragments, nails, and ceramics. Recent bottle glass was not retained or inventoried.

As a result of this subsurface testing in combination with the pedestrian reconnaissance, the site's boundaries have been extended to encompass a small portion of the agricultural field, the outbuilding foundations, and the terrace to the south of the site (Figure 20).

Excavation Units

A total of nine 1 x 1-meter test units and two 1 x 0.5-meter test units were excavated within the 1,350 m² site. Each is described below.

Test Unit N1039 E1034 was placed to investigate a linear surface scatter of fieldstones that appeared to be a foundation located in the central portion of the site (Figure 20). The unit was placed such that two large fieldstones from the aforementioned scatter were visible at the surface in the northeast corner of the unit (Figure 21). Layer I consisted of a dark brown (10YR3/3) silty loam and extended to a maximum depth of 28 cm below surface (Figures 22 and 23). Numerous brick fragments were noted in association with the fieldstone. A total of 96 artifacts were recovered including large quantities of mortar, brick, and window glass. Kitchen



Figure 21. N1039 E1034. Fieldstones Visible on Surface and in Initial Layers.

artifacts included oyster and bone as well as creamware (1762 – 1780), pearlware (1780 – 1830), 19th-century ironstone (1813 – 1900), and dark olive green and clear bottle glass.

Layer II consisted of a dark yellowish brown (10YR3/4) silty loam with large field stones remaining in the northeast corner and additional fieldstones revealed in the southwest corner. Brick fragments became more fragmentary with depth (Figures 22 and 23). Layer II was excavated to a maximum depth of 53 cm below surface. Significant rodent activity was noted around the larger fieldstones. A total of 203 artifacts was recovered from Layer II including very large quantities of mortar, brick, window glass, nails, and asphalt roofing tile. Kitchen artifacts included bone and oyster along with pearlware, 20th-century ironstone, aqua, clear, and dark olive green bottle glass. Other artifacts included two buttons, a lens fragment from sunglasses, a penny (194?), a marble, and a tire valve.

Layer III consisted of a dark yellowish brown (10YR4/6) silty clay similar to the subsoil found elsewhere at the site and showed increased rodent activity from the previous layer (Figures 22 and 23). Layers II and III were mottled at the interface, possibly as a result of this rodent activity, and the excavators noted that the rodent intrusions were a dark brown (10YR3/3) silt loam that was much looser than the rest of the subsoil. Layer III was excavated to a maximum depth of 71 cm below surface. Artifacts recovered from Layer III (n = 62) included mortar, brick, nails, and window glass along with bottle glass, and a “sardine” can key.

Test Unit N1036 E1033 was placed to investigate the possible location of a structure near the surface scatter of fieldstone in the central portion of the site. The data generated by the excavation of Test Unit N1039 E1034 proved to be inconclusive in determining whether a structure had once been located in this area (Figure 20). Layer I consisted of a very dark brown (10YR2/2) silt loam that reached a depth of 29 cm below surface. A total of 65 artifacts was recovered from this layer and consisted predominantly of architectural materials (brick, nails, window glass, and asphalt roofing tile fragments). Kitchen artifacts included a single sherd of 19th-century ironstone and eight fragments of bottle glass, including a pharmaceutical bottle

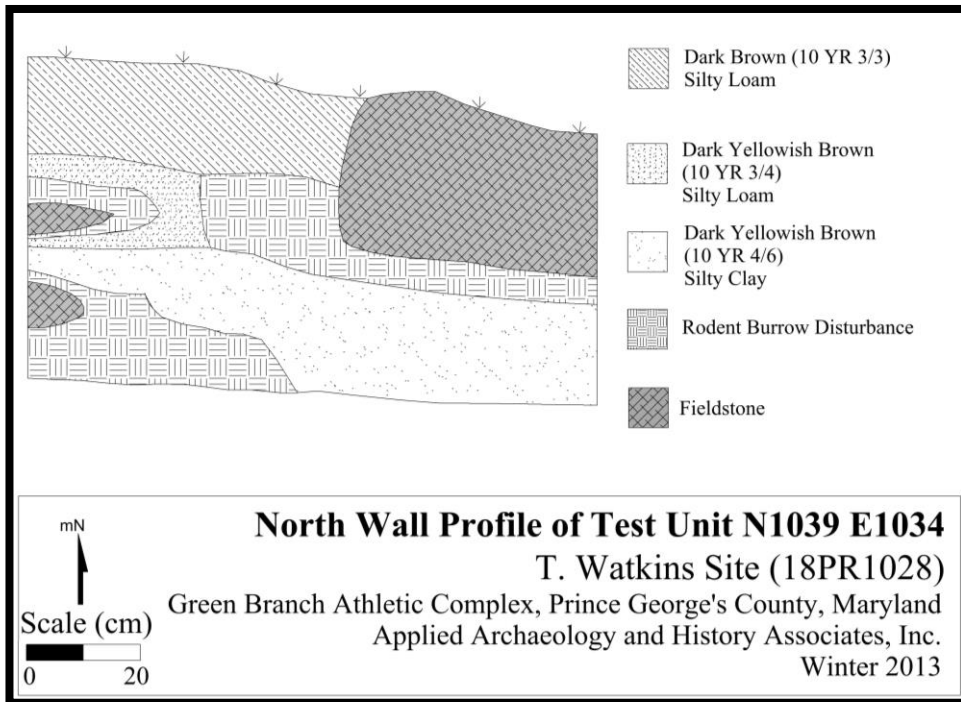


Figure 22. North Wall Profile of Test Unit N1039 E1034.

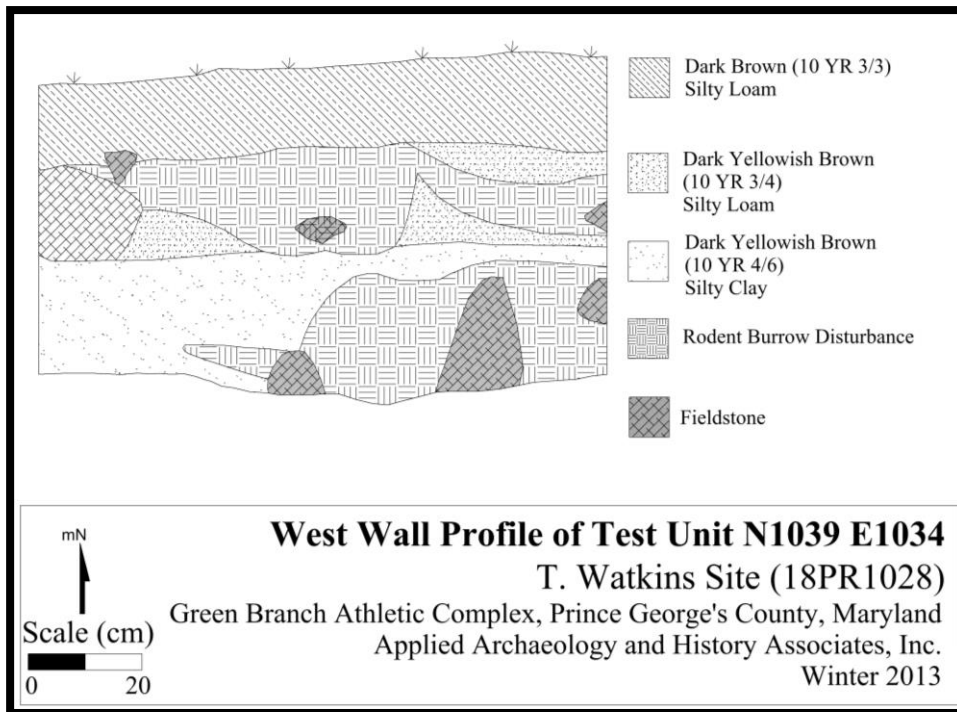


Figure 23. West Wall Profile of Test Unit N1039 E1034.



Figure 24. N1034 E1033. Feature 3 – Concrete Block on Mortar Foundation Wall. Plan View.

neck. Two buttons were also recovered from this layer. Feature 3, a concrete block foundation, was encountered at the base of Layer I (Figure 24). It is postulated that the concrete block may represent a repair in the foundation of the dwelling similar to the repairs evident on the nearby outbuilding foundations.

Layer II comprised a dark brown (10YR3/3) silty sand, reaching a depth of 54 cm below surface. It was identified as the internal fill of the structure represented by Feature 3 and is noted as having been consistently dark throughout. A total of 170 artifacts were recovered from this Layer II and included large quantities of nails as well as smaller quantities of window glass, and roofing slate. Three buttons, a glass drawer knob, and small quantities of bone and oyster shell were recovered along with large quantities of bottle glass (including numerous Ball jar fragments), glass tumbler fragments, a salt shaker top, a can key, and a crimped bottle cap. Other artifacts included a penny (19??), razor blades, a pen nib, a ceramic tobacco pipe bowl, an automobile light lens, and a modern bullet.

Layer III was the same dark yellowish brown (10YR4/6) silt clay subsoil found elsewhere on the site. Devoid of artifacts, it was excavated to a depth of 56 cm below surface. The southeast corner remained unexcavated through Layers II and III due to the presence of mortar associated with Feature 3 in that corner of the unit.

Test Unit N1037 E1031.5 was placed in an attempt to intercept Feature 3 which had been defined in Test Unit N1034 E1033 (see above) and, if possible, to excavate portions of both the interior and exterior soil matrices of the structure (Figure 20). Layer I was a very dark brown (10YR2/2) silty loam containing numerous, large fragments of concrete block, hand-made brick, and mortar (Figures 25 and 26). The large fragments were not collected, nor were the approximately 75 fragments of apparently recent window glass recovered from within this layer. At the base of the layer, at a depth of 32 cm below surface and underneath the larger chunks of concrete, the intact concrete block foundation previously designated as Feature 3 was identified

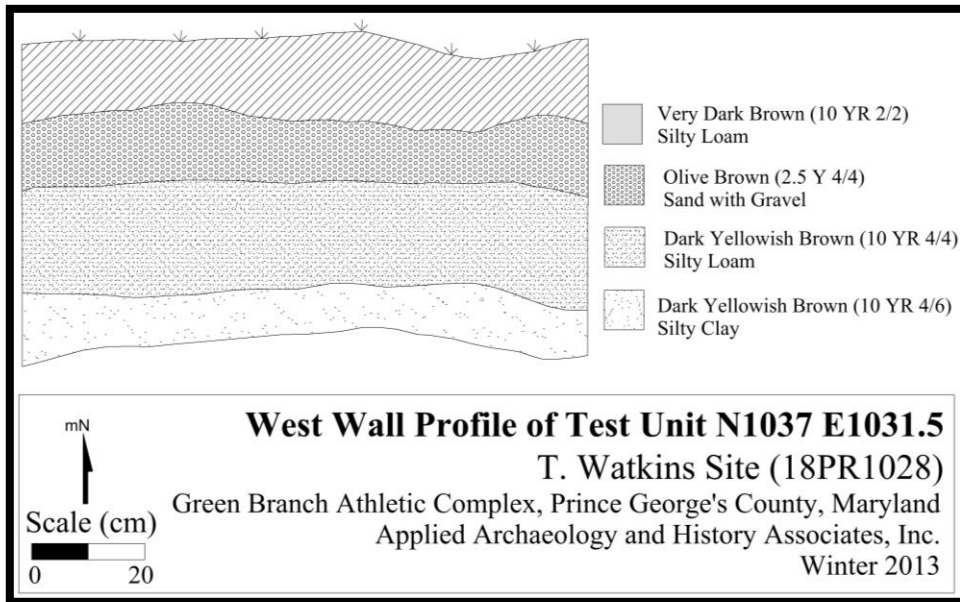


Figure 25. West Wall Profile of Test Unit N1037 E1031.5.

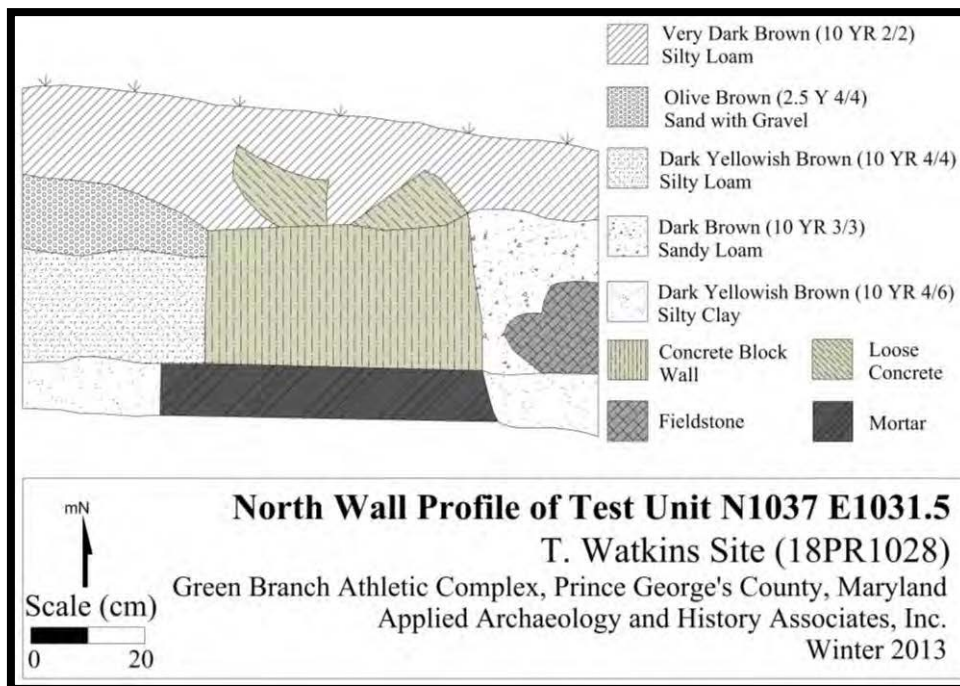


Figure 26. North Wall Profile of Test Unit N1037 E1031.5.



Figure 27. N1037 E1031.5. Feature 3 – Concrete Block on Mortar Wall. Interior on Right. Exterior on Left.

running southeast to northwest approximately halfway across the unit (Figure 27). A total of 58 artifacts was recovered including nails and asphalt roofing tile fragments, as well as 19th-century ironstone, bottle glass, and a sardine can key. Other artifacts included three buttons, a clip-on earring with fake diamonds, a red butane lighter with pink flowers, and a blue plastic alpaca toy.

The soil matrices showed obvious differences between that recovered from what would have been the interior of the structures (east) and the exterior of the structure (west) portions of the unit, so the two layers were excavated separately on the east and west sides of the unit. Layer II, located in the eastern/interior portion of the unit, consisted of a dark brown (10YR3/3) silty loam with many architectural artifacts present (Figure 26). Brick, mortar, shingles, and window glass were found in abundance and only a sample of each was retained. Layer II contained notably more root disturbance than Layer I or Layer III. It extended to a depth of 48 cm, approximately 1 cm below where the mortar base supporting the concrete blocks of Feature 3 ended. Artifacts included the above-mentioned architectural items as well as bone, canning jar lid liners, screw top canning jar fragments, dark olive green bottle glass, a toothpaste tube cap, and an unidentifiable metal item tentatively identified as a farm implement.

Layer III, located in the western/exterior portion of the unit, consisted of an olive brown (2.5Y4/4) sandy gravel with patches of sand containing no gravel (Figure 25). Layer III had comparatively few artifacts, with no notable architectural elements. Layer III extended to a depth of 33 cm before transitioning to Layer IV, which also only appeared in the western/exterior portion of the unit.

Layer IV consisted of a dark yellowish brown (10YR4/4) silty loam containing window glass, brick, and mortar, which was sampled (Figure 26). Layer IV appeared to be a Buried A horizon, and may represent a former yard surface. Artifacts retained included sherds of English Brown stoneware (1820 – 1900), white salt-glazed stoneware (1740 – 1775), and an unidentified stoneware along with small quantities of bottle glass. Layer IV reached a depth of 53 cm, with gravel at transitions with both Layer III and Layer V.

Layer V consisted of the typical dark yellowish brown (10YR4/6) silt clay subsoil with no artifacts present (Figures 25 and 26). Feature 3 was found not to extend into the subsoil on either the interior and exterior sides; instead, it appears to sit directly on top of the subsoil. Layer V was excavated to a maximum depth of 64 cm.

Test Unit N1039 E1038 was opened to explore a circular depression located approximately two meters east of the linear surface scatter of fieldstones and two meters west of the concrete cistern (Figure 20). The unit bisected the eastern edge of the depression and encompassed the majority of its one-meter north to south diameter. Layer I consisted of a black (10YR2/1) silt loam with brick, mortar, and fieldstone concentrated near the north wall of the unit; a sample was collected and the rest was discarded. Layer I reached a maximum depth of 12 cm below surface (Figures 28 and 29). A total of 93 artifacts, predominantly window glass, nails, and bottle glass was recovered. Ceramics included 19th-century ironstone, 20th-century porcelain, and redware. A single sherd of creamware (1762 – 1780) was also recovered from this layer.

Layer II consisted of a dark yellowish brown silt sand densely packed with gravel that extended over much of the eastern portion of the unit (Figures 28 and 29). This layer extended to a depth of 25 cm on the east side. The western portion of the unit within the depression continued as a dark brown (10YR3/3) silt loam notably similar to Layer I to a depth of 32 cm; this was probably a continuation of Layer I lacking the decomposed organic elements that caused that layer to appear so dark. A total of 108 artifacts was recovered from this layer, again, consisting primarily of window glass, nails, and bottle glass. Two sherds of redware and one sherd of 20th-century porcelain in a banded design were also recovered.

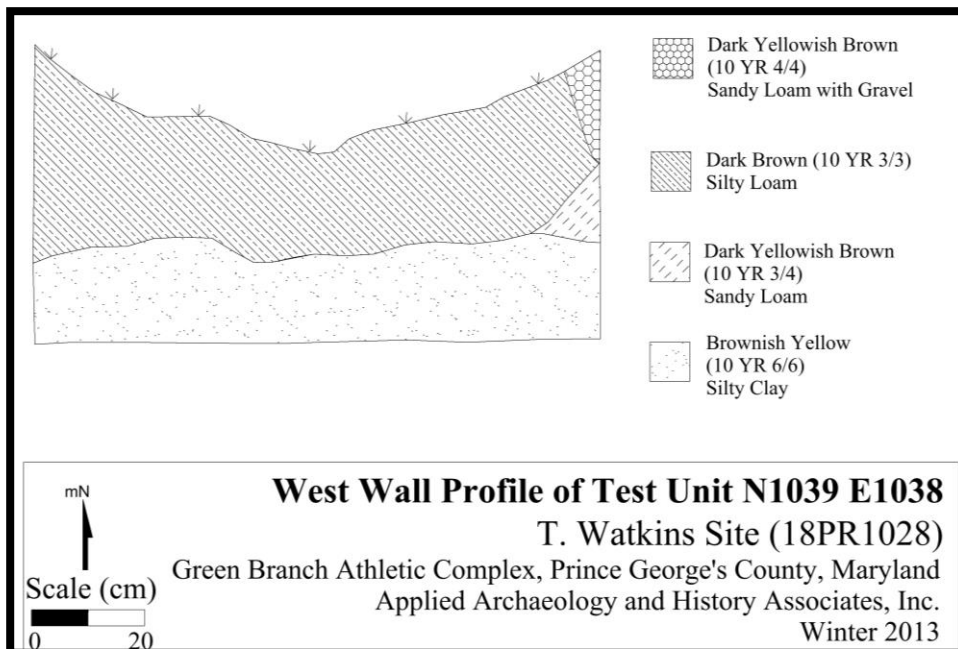


Figure 28. West Wall Profile of Test Unit N1039 E1038.

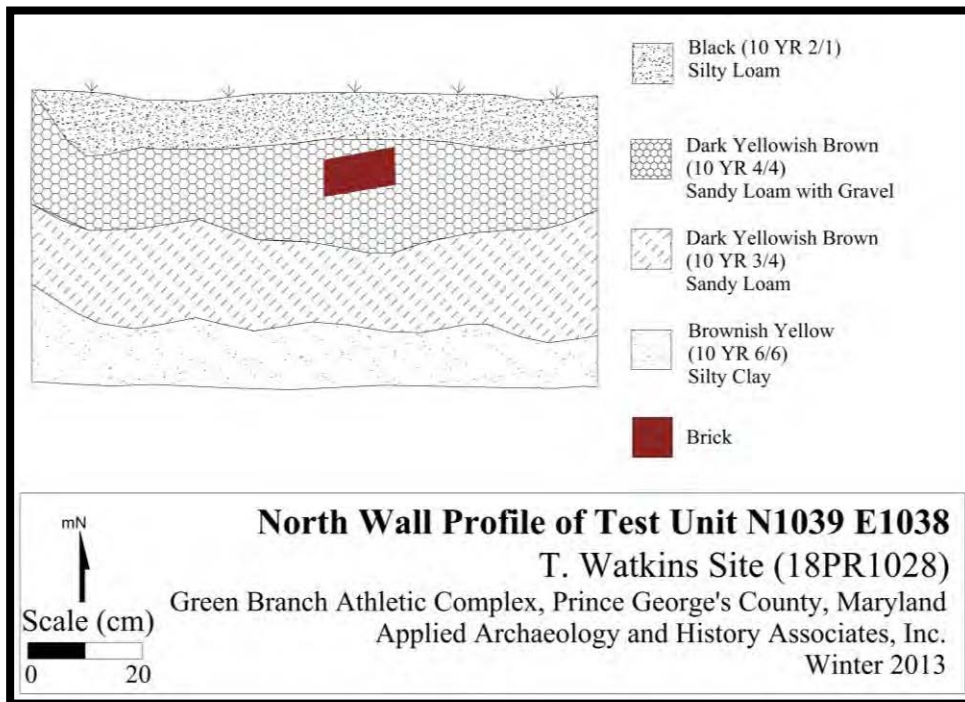


Figure 29. North Wall Profile of Test Unit N1039 E1038.

Layer III was a dark yellowish brown (10YR3/4) silt sand appearing only in the eastern portion of the unit, extending to a depth of 50 cm (Figures 28 and 29). During the excavation of this layer, the large number of small, non-diagnostic pieces of glass began to be discarded after a sample was taken. Even so a total of 162 artifacts were retained including creamware, pearlware, 19th-century, porcelain, and ironstone, and bottle glass. Also recovered were a glass, perfume bottle screw-top stopper, an English gunflint, and a clay pipestem fragment. Both Layer III and the continuation of Layer I in the western portion of the unit came to a mottled transition with Layer IV, a brownish yellow (10YR6/6) silt clay subsoil, at a depth range of 40-50 cm. Layer IV was excavated to a depth of 55 cm (Figures 28 and 29). It was determined that the depression was not a significant feature as it lacked definition and was likely a tree fall with the depression filling with debris from elsewhere on the site.

Test Unit N1044 E1031 was placed less than one meter north of a large tree in an area anticipated to represent the yard surface of the foundation located to the south (Figure 20). Layer I was a dark organic layer, consisting of a very dark grayish brown (10YR3/2) silt loam with a concentration of fieldstone along the west wall of the unit (Figures 30 and 31). Brick and mortar fragments are noted as occurring throughout Layer I, and a sample of each was collected before the rest was discarded. Layer I reached a maximum depth of 26 cm below surface. A total of 77 artifacts included glass, nails, and brick as well as pearlware, a possible sherd of Jackfield ware, white salt-glazed stoneware, and heavily patinated olive green bottle glass. A bakelite comb fragment was also recovered from this layer.

The brick and mortar continued into Layer II, which consisted of a dark brown (10YR3/3) silt loam (Figures 30 and 31). The fieldstone concentration was found to extend to the base of Layer II, which ended at a depth of 36 cm below surface. Artifact recovered included

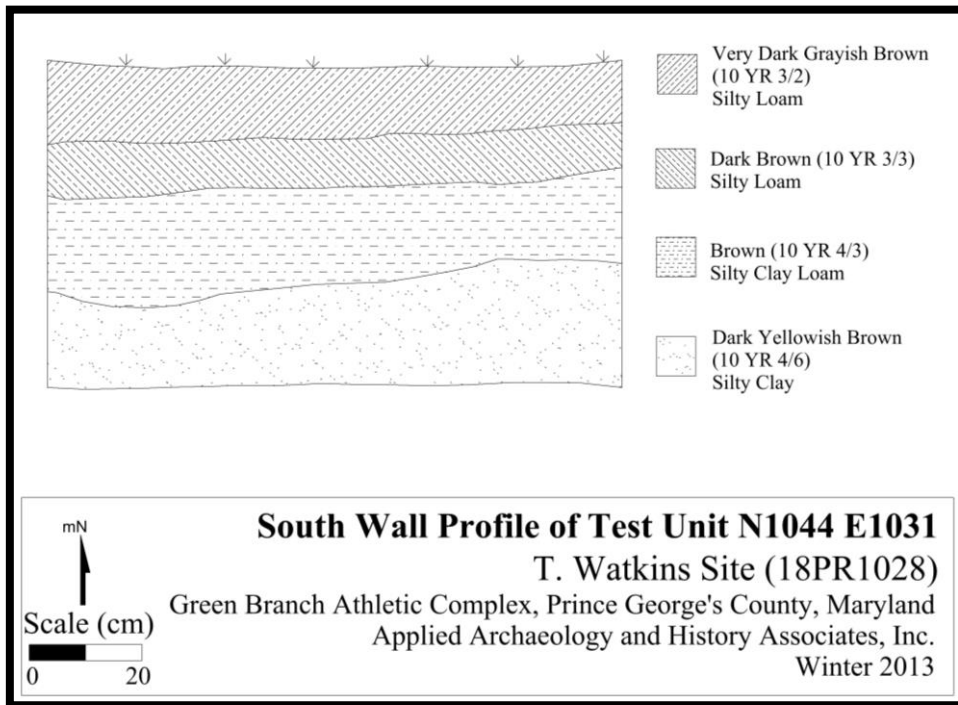


Figure 30. South Wall Profile of Test Unit N1044 E1031.

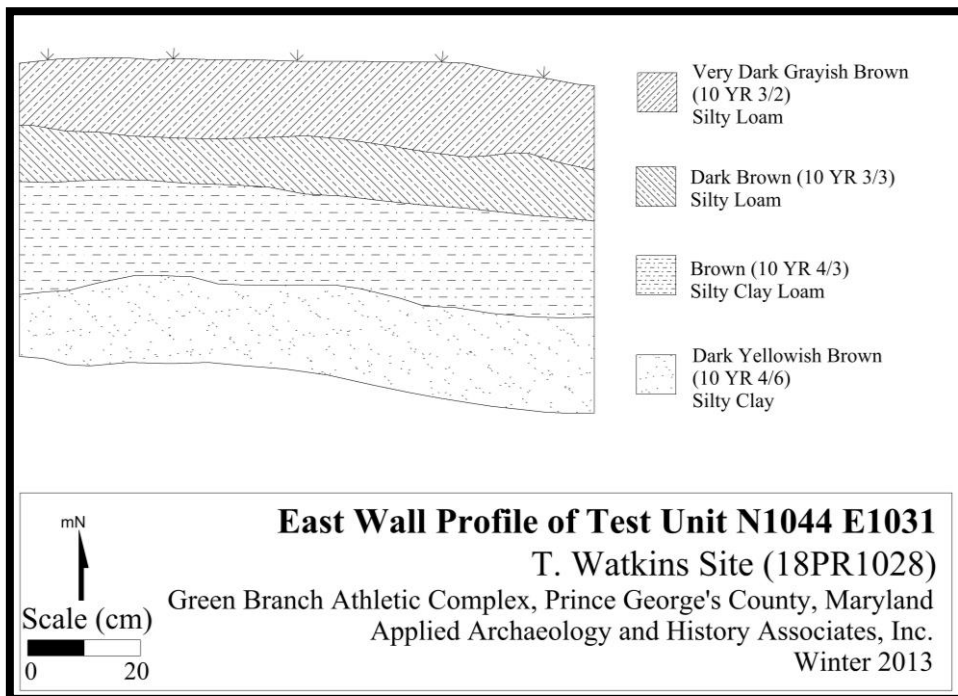


Figure 31. East Wall Profile of Test Unit N1044 E1031.

creamware, redware, English brown stoneware, white salt-glazed stoneware, and dark olive green and clear blown-in-mold bottle glass.

Layer III is described as a brown (10YR4/3) clay silt loam reaching a maximum depth of 52 cm below surface (Figures 30 and 31). Artifacts included tin-enameled earthenware (1640 – 1791), English brown stoneware, white salt-glazed stoneware, free blown olive green bottle glass, and clay pipebowl and stem fragments.

The interface between Layer III and Layer IV is noted to be mottled, with Layer IV appearing to be the yellowish brown (10YR4/6) silt clay subsoil (Figures 30 and 31). It was excavated to a maximum depth of 67 cm below surface with no artifacts present.

Test Unit N1039 E1045 was placed near the eastern edge of the site where close-interval STPs had produced a small number of early ceramics (Figure 20). Layer I was found to be a very dark brown (10YR2/2) silt loam with dense root mat for the first 10 cm but was excavated to a depth of 41 cm below surface (Figures 32 and 33). A total of 39 artifacts was recovered including numerous nails along with creamware, redware, English brown stoneware, cobalt blue decorated stoneware, and a clay pipe bowl fragment.

Layer II was a dark yellowish brown (10YR4/6) silt sand subsoil containing no artifacts and excavated to a depth of 50 cm below surface (Figures 32 and 33). This was one of only two units that produced a single soil stratum over subsoil (the other was N1025 E1018 in the western portion of the site). This is, perhaps, indicative of the use of this area as a yard surface or, perhaps, the disuse of this area in general through the 20th century. The artifact assemblage definitely indicates as relatively early period of accumulation.

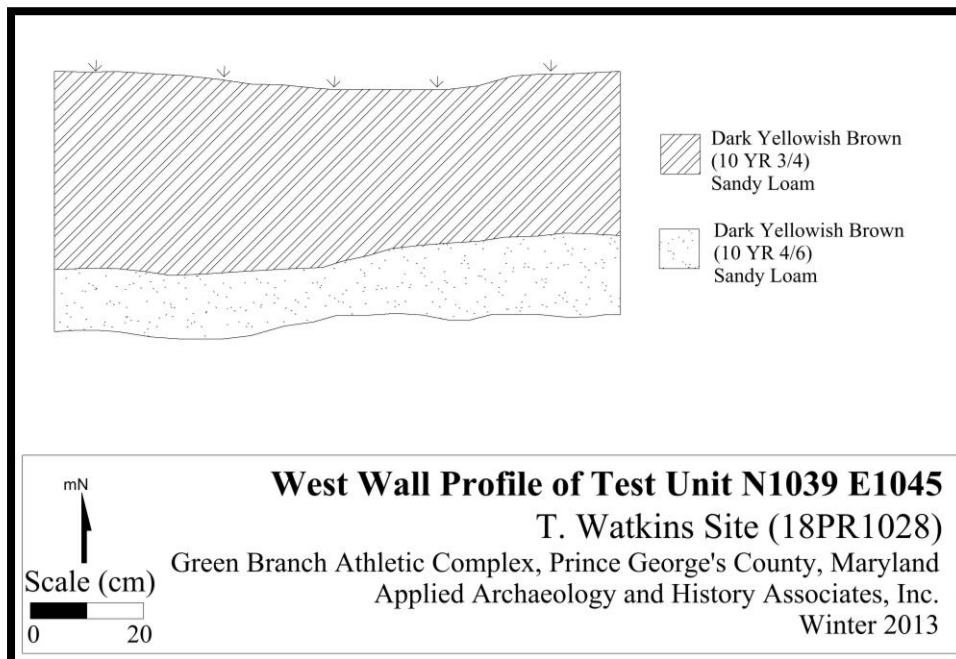


Figure 32. West Wall Profile of Test Unit N1039 E1045.

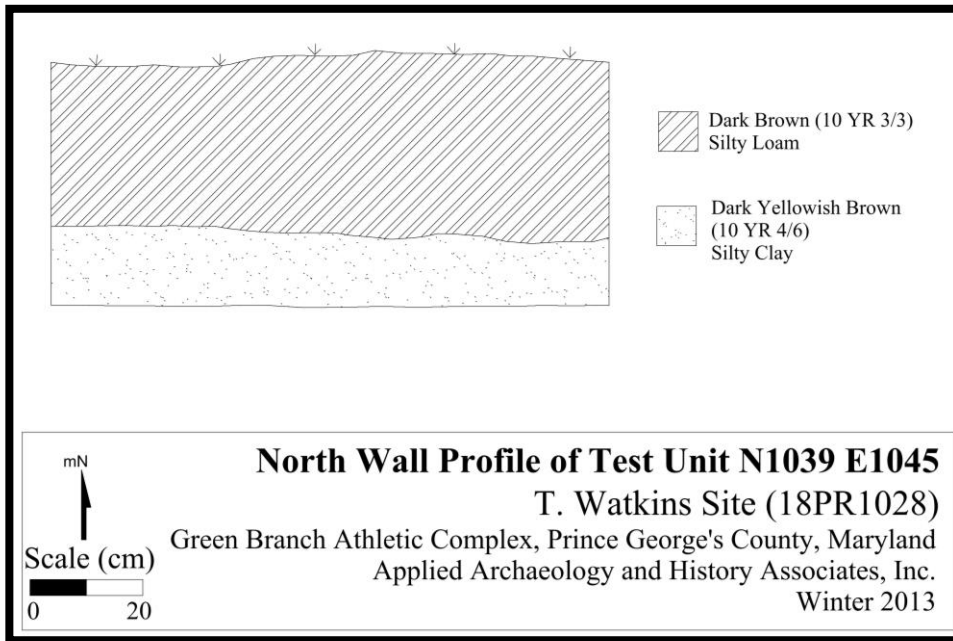


Figure 33. North Wall Profile of Test Unit N1039 E1045.

Unit N1034 E1023 was placed to investigate a large depression near the northern edge of the site that was identified as a possible shaft feature (Figure 20). The unit was situated on the southeastern side of the depression and extended approximately 50 cm into it (Figure 34). As a result, the southeastern corner of the unit is substantially higher than the others,



Figure 34. N1034 E1023. Feature 1. Brick-Lined Well Showing 20th-Century Plastic Bottle Beneath Displaced Lining.

beginning 15 cm above the arbitrary datum established at the northeast corner. A tree that appeared to be approximately 30 years old occupied the east side of the depression to the north of the unit, and brick fragments were scattered on the surface nearby and were also visible in the edge of the depression just under the tree. There were also surface indications of a structure to the east of the depression in the form of an *in situ* board running east to west from the northwestern corner of the depression. Layer I consisted of a very dark grayish brown (10YR3/2) sandy loam extending to a minimum depth of 3 cm below datum and a maximum depth of 45 cm below datum (Figures 35 and 36). A total of 38 artifacts included window glass, nails, and brick as well as redware, 19th-century ironstone, and bottle glass.

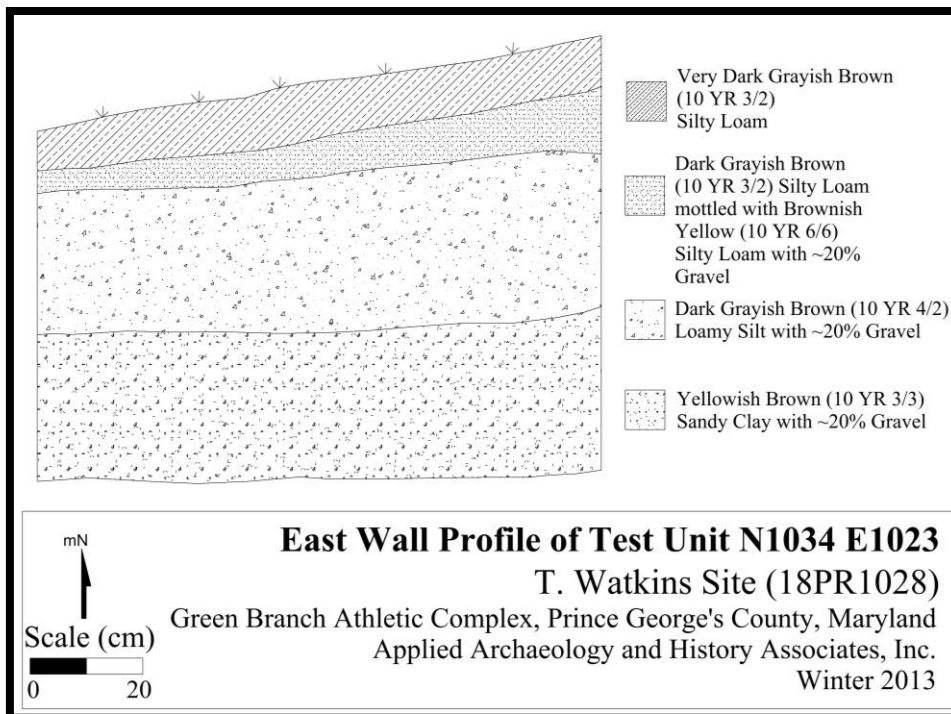


Figure 35. East Wall Profile of Test Unit N1034 E1023.

Layer II consisted of a dark grayish brown (10YR4/2) sandy loam with a heavy gravel content, with a very small potential strong brown (7.5YR5/6) clay lens present in the southeast corner (Figures 35 and 36). A mortar and brick semicircular feature was uncovered in Layer II and designated Feature 1. Layer II continued to a minimum depth of 20 cm below datum and a maximum depth of 45 cm below datum in the northwest corner within the depression. A total of 49 artifacts was recovered including window glass, nails, and brick as well as 19th-century porcelain and ironstone, bottle glass and pressed glass tableware, and a clay pipestem fragment.

Layer III consisted of a clay lens in the southwest corner of the unit, colored strong brown (7.5YR5/6) and mottled with a dark grayish brown (10YR4/2) sandy loam. The mottling was indicative of a disturbance like a rodent burrow, which was determined to be the likely interpretation of this layer after several probable rodent bones were recovered from it. This layer was only present in the southwest corner, and extended to a depth of 36 cm below datum. A total of 17 artifacts was recovered from this layer and included a sherd of creamware as well as a sherd of 19th-century ironstone. In addition a fragment of free blown olive green bottle glass was recovered.

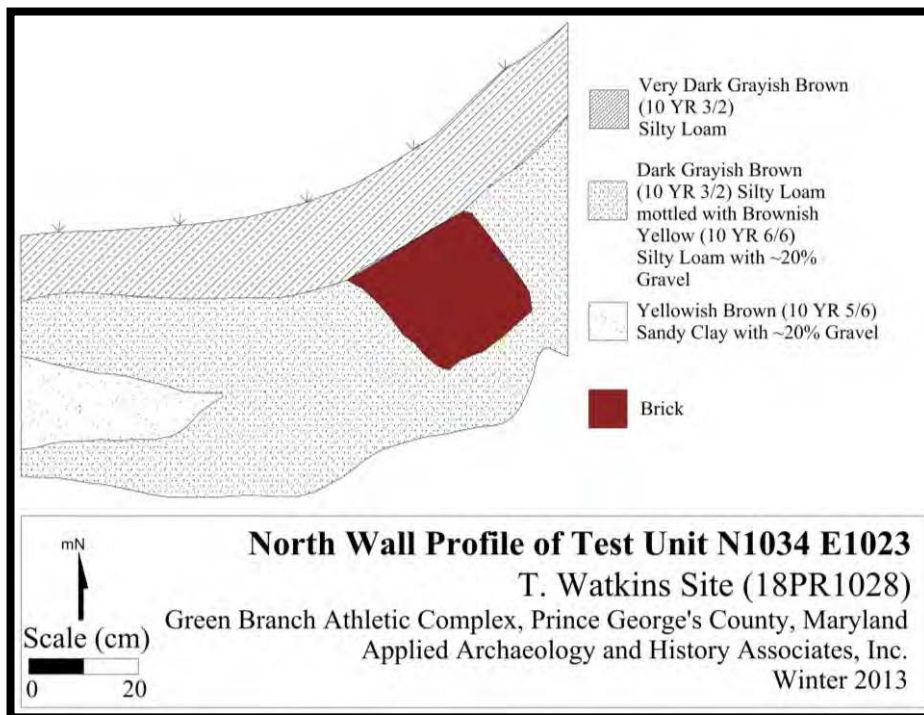


Figure 36. North Wall Profile of Test Unit N1034 E1023.

Layer IV consisted of a dark grayish brown (10YR4/2) loam mottled with a brownish yellow (10YR6/6) clay loam. This layer was present on the east side of the unit outside Feature 1, which was determined to be a probable well (Figure 35). Layer IV reached a maximum depth of 41 cm below datum and, after its initial excavation on the east side, was found to also be present on the west side of the unit (Figure 36). Only two nails were recovered from this layer. Layer V consisted of a gravelly dark grayish brown (10YR3/2) silt loam lightly mottled with brownish yellow (10YR6/6). It extended to a depth of 52 cm below datum. Layer VI was also a dark grayish brown (10YR3/2) silt loam lightly mottled with brownish yellow (10YR6/6), and reached a maximum depth of 60 cm below datum. Subsequent to this, only the interior of Feature 1 was excavated in hopes of reaching a stratum with more diagnostic historic materials within the possible well. Layer VII, within the interior of Feature 1, consisted of a dark grayish brown (10YR4/2) silty clay with gravel with a maximum depth of 72 cm below datum. Layer VIII, also within Feature 1, was a dark grayish brown (10YR4/2) silty clay loam with gravel and reached a maximum depth of 83 cm below datum. Excavation of the feature was halted when the physical constraints of digging within a relatively narrow well and test unit became too difficult to conduct in a safe and orderly manner. Artifacts recovered from the contexts of the well represented a variety of 20th-century trash including plastic fragments and dishwashing soap bottles (Figure 34). Based on the presence of a dishwashing soap bottle directly under what appears to be the mortared remnants of a brick-lined well indicates that – at least the upper portion of the well – was disturbed by heavy equipment, likely during the demolition of the property by the WSSC. It also appears clear that the upper levels of the fill of the well dates to the late 20th century. It is unknown if fill of an earlier date might be present at greater depth.

Test Unit N1025 E1018 was placed midway between the fieldstone foundation and the collapsed buildings (Figure 20). Layer I was a dark brown (10YR3/3) silt loam, with a very dark

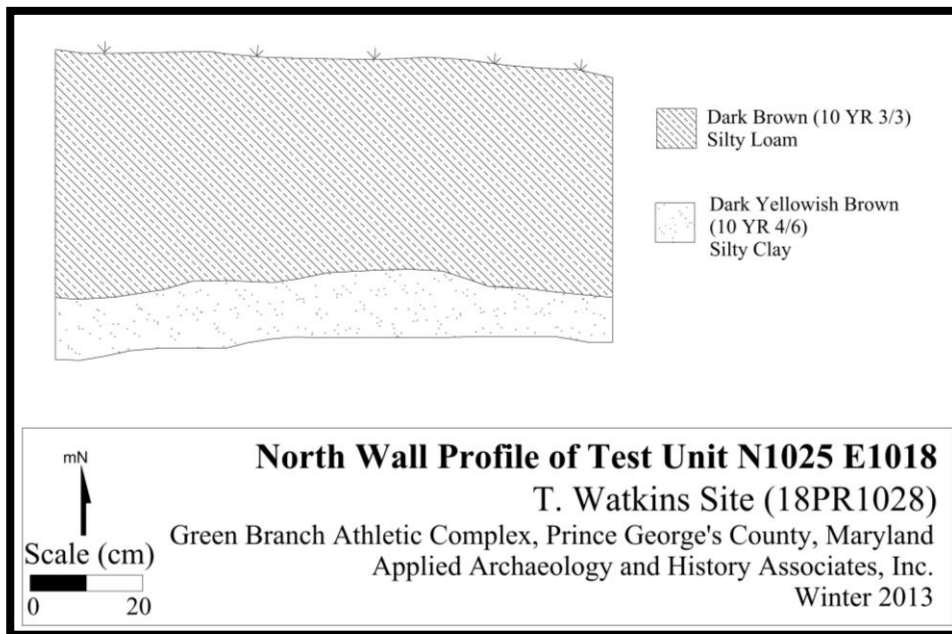


Figure 37. North Wall Profile of Test Unit N1025 E1018.

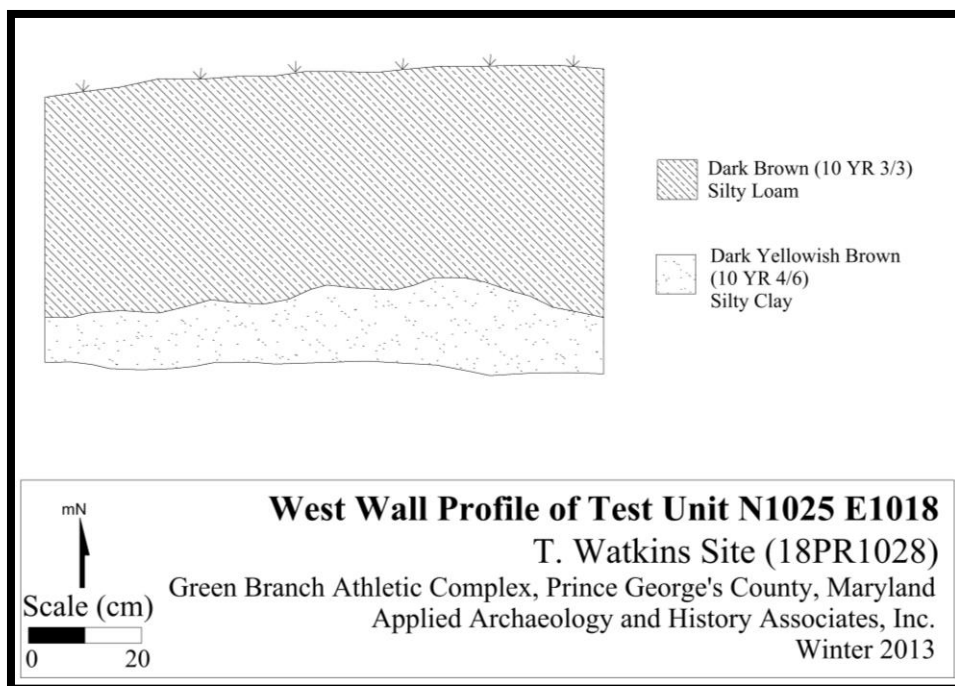


Figure 38. West Wall Profile of Test Unit N1025 E1018.

brown (10YR3/2) organic component at the surface (Figures 37 and 38). Layer I reached a maximum depth of 53 centimeters. A total of 86 artifacts was recovered from this layer. Small quantities of window glass, nails, and brick were recovered along with sherds of creamware, pearlware, white salt-glazed stoneware, 19th-century porcelain and ironstone, bottle glass, a modern bullet and shotgun shell, and a porcelain doll part.

Layer II was separated from Layer I by a large tree root on the southern half of the unit and is the same dark yellowish brown (10YR4/6) silt clay subsoil found elsewhere on the site. It was found to be sterile of artifacts. As with Test Unit N1039 E1045 in the eastern portion of the site, this unit revealed only a single soil stratum above subsoil. Unlike that other unit the artifacts recovered from this unit were mixed with 18th, 19th and 20th century artifacts in generally equal quantities. It appears that this portion of the site may have seen more active use through the two centuries of the occupation of this site.

Test Unit N1016 E1004 was placed to investigate a deep depression approximately four meters in diameter just east of the collapsed structures (Figure 20). The unit extended approximately 72 cm into the north rim of the depression (Figures 39 and 40). The portion of the unit that extended into the depression was shown to have a fairly complicated stratigraphy compared to the portion of the unit outside of it. As excavations progressed past Layer II only the southern portion of the unit, within the depression, continued to be excavated. Layer I was an organic black (10YR2/1) silt loam and consisted of root mat and topsoil, containing minimal artifacts that all appeared to be modern (Figure 40). Among the discarded modern materials were a can lid with an opening tab, a whole incandescent light bulb, and several pieces of clear window glass.



Figure 39. N 1016 E1004. Feature 2. View to the East Showing Large Pit Feature Partially Excavated. Maximum Depth of Excavation – 140 cm Below Surface.

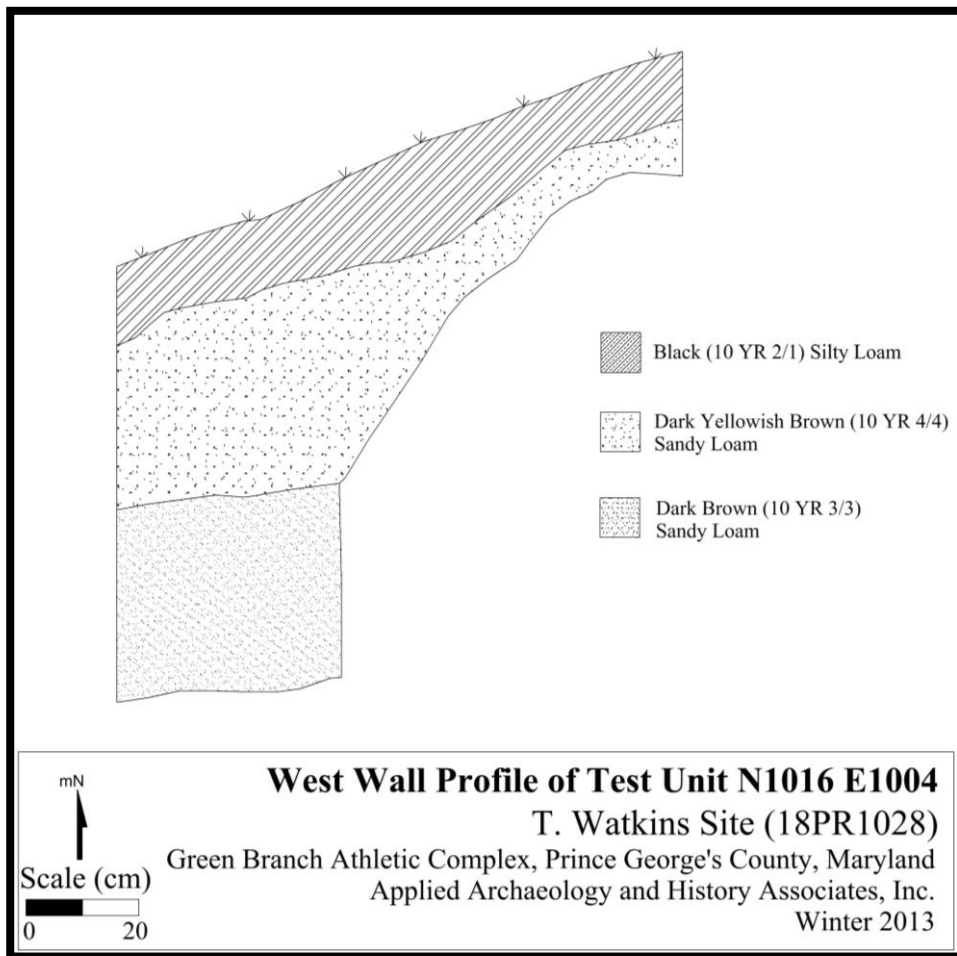


Figure 40. West Wall Profile of Test Unit N1016 E1004.

Layer I came onto a mottled transition with Layer II at a minimum depth of 11 cm and a maximum depth of 42 cm. Layer II consisted of a dark yellowish brown (10YR4/4) sandy loam and extended to a minimum depth of 25 cm and a maximum depth of 66 cm (Figure 40). In the northern portion of the unit a layer of brownish yellow (10YR6/6) silt clay was then encountered that appeared to be subsoil following the natural contour of the slope. The southern portion of the unit, which fell within the depression, did not have this subsoil, and instead Layer II continued to a depth of 66 cm and contained 20th-century trash deposits. Artifacts retained included a number of Pepsi bottles, pressed glass tableware, and a tin can.

The soil then transitioned to a dark brown (10YR3/3) sandy loam for the duration of the excavation, which was conducted to a maximum depth of 116 cm within the depression (Figure 40). Excavation of the unit was halted at the fifth arbitrary level of Layer III because it was becoming difficult to excavate the unit in a safe and orderly manner. Even at the base of the excavations the artifacts being recovered were still overwhelmingly modern. Artifacts included architectural materials, large quantities of bottle glass and tin can fragments together with a sherd of white salt-glazed stoneware and some sherds of 19th-century ironstone. A soil auger was taken at the base of the excavations, 116 cm, and the results indicate that the feature extends at least to a depth of 140 cm, the length of the auger. It is expected that the feature,

designated Feature 2, extends deeper than this depth and probably represents a well, cistern, or ice house.

Test Unit 9A was adjacent to the foundation of one of the northern collapsed barn structures (Figure 20). The objectives of this test unit were to identify a potential builders' trench if present, as well as establish the date of the construction of the structure, and the provide information concerning the construction of the structure. The unit was a 1 x 0.5 m rectangle abutting the southwestern foundation of the northernmost collapsed structure. Layer I consisted of a very dark brown (10YR2/2) silt loam topsoil that extended 22 cm below surface. A small pocket of light olive brown (2.5Y5/6) silt was identified in the northwest corner of the unit, but was thought to be possibly related to a potential builder's trench. Just above the terminus of Layer I, two patches of very dark grayish brown (10YR3/2) silt loam were revealed that could have potentially reflected builders' trenches; upon excavation, however, they were determined to be rodent burrows. Artifacts recovered from Layer I consisted of numerous wire and cut nails along with a sofa bed spring, a coke bottle fragment, a marble, and some likely automobile parts.

Layer II appeared to have been a silt clay subsoil, but was light olive brown (2.5Y5/6) similar to the silt pocket at the base of Layer I. It is likely the silt pocket was turned up by rodents attempting to burrow under the foundation. The subsoil was removed to a depth of 41 cm – 10 cm below the base of the foundation – so that the foundation could be comprehensively sketched. Only mortar and brick were identified in this layer.

With the excavation of Test Unit 9A observation of the subsurface portion of the outbuilding foundation was possible. As can be seen in Figure 41 that portion of the foundation was exclusively fieldstone with large fieldstones making up the base of the foundation followed by a layer of smaller stones. Concrete repairs are only evident along the uppermost portions of the foundation underlying the initial wood superstructure elements. The essentially 20th-century date of the artifacts recovered from this unit do not provide a definitive beginning date for the structure.

Test Unit 9B was placed adjacent to the southern wall of the southern foundation another of the collapsed barn structures. The objectives of this test unit were identical to those for Test Unit 9A. The unit was placed on the southwestern wall of the structure and was a 1 x 0.5 m unit (Figure 20). Layer I consisted of a very dark grayish brown (10YR2/2) silt loam that extended 29 cm below surface. Artifacts were minimal and almost exclusively architectural, with samples of mortar taken and clear window glass discarded. Artifacts retained were predominantly aqua and clear bottle glass fragments.

Layer II consisted of the site's typical dark yellowish brown (10YR4/6) silt clay subsoil. Layer II was devoid of cultural material and no builders' trench was identified, however it was noted that the foundation wall intruded approximately 10 cm into the subsoil and it was possible the builders' trench could be found on the interior of the barn structure (Figure 42). Layer II was excavated to a maximum depth of 37 cm below surface.

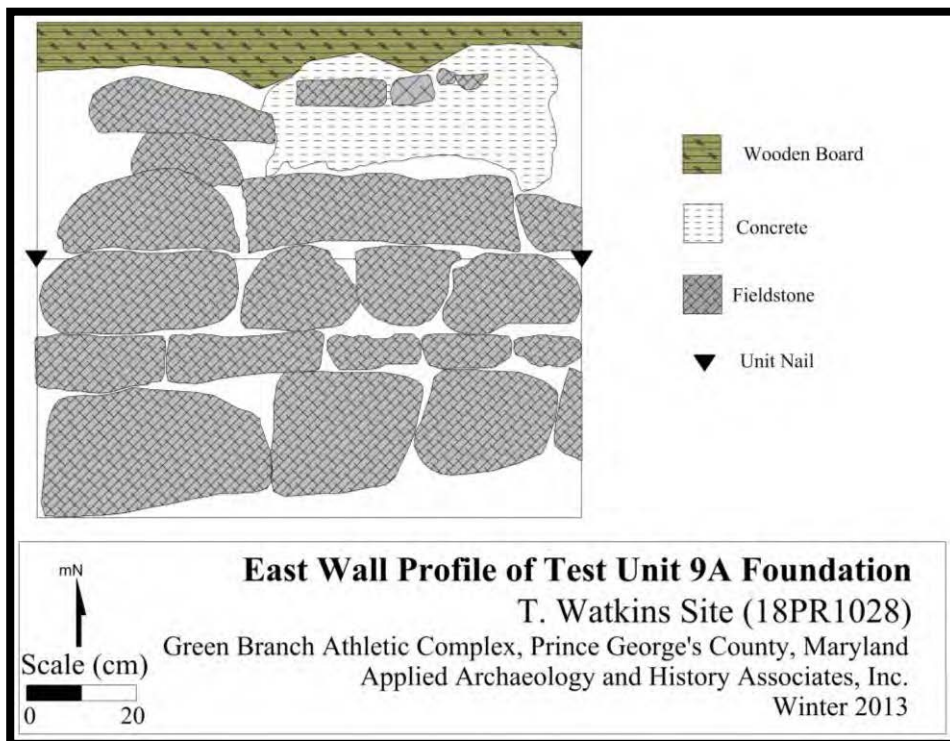


Figure 41. East Wall Profile of Test Unit 9A - Foundation.



Figure 42. Unit 9B. Base of Layer II Showing Foundation Wall of Southern Outbuilding with Subsoil. No Builder's Trench was Identified.

Discussion

Non-Feature Units

Three test units were excavated in areas anticipated to represent former yard surfaces: N1044 E 1031, N1039 E1045, and N1025 E1018. The latter two units revealed only two stratigraphic layers with a single stratum in evidence above subsoil. The unit on the east side of the site (N1039 E1045) produced an artifact assemblage that contained creamware and English Brown stoneware – ceramics that date to the late 18th to late 19th century. In addition it produced two fragments of 19th-century ironstone along with redware and gray salt-glazed stoneware. Its assemblage also included a clay pipebowl fragment. Despite the presence of 20th-century material on the surface, few artifacts associated exclusively with the 20th century were recovered from the subsurface contexts of the unit.

The unit on the west side of the site (N1025 E1018) produced an artifact assemblage that contained creamware, pearlware, white salt-glazed stoneware, and dark olive green bottle glass, but also contained relatively large quantities of 20th-century debris – predominantly architectural materials.

Finally, Test Unit N1044 E1031 exhibited a more complex stratigraphy with four distinct layers. The uppermost layer contained numerous examples of early ceramics including Jackfield, white salt-glazed stoneware, tin-enameled earthenware, and pearlware along with olive green and dark olive green bottle glass – artifacts generally associated with early (late 18th – early 19th century) historic occupations. Little 20th century debris, with the exception of a Bakelite comb, was recovered from this initial layer. Subsequent layers produced similar artifact assemblages of late 18th – early 19th-century date with little 20th-century noise.

It appears that, in the cases of these three test units, there are 18th to early 19th century archaeological deposits which remain undisturbed by the subsequent occupation and use of the property during the 19th and 20th century. As such, these deposits may possess the ability to provide information about the life of the occupants of the site during that time, including Joseph Powell in 1798.

Feature Units

The remaining six 1 x 1 units and both 1 x .5 meter units contained features of some sort or other. The house foundation or remnants thereof were located in Test Units N1039 E1034, N1036 E1033, and N1037 E1031.5. Test Unit N1039 E1034 contained remnants of the possible fieldstone foundation of the house. Its artifact assemblage included small quantities of early ceramics, including pearlware and creamware along with dark olive green bottle glass but all three layers produced relatively large quantities of both architectural materials and 20th-century artifacts including sunglass fragments, pressed glass tableware, crimped bottle caps, and a 1940s penny.

Test Unit N1036 E1033 was the location of a portion of the concrete block foundation of the house which had been placed on a mortar footing. It is postulated that the concrete block represents a repair to the original foundation which was likely fieldstone. Only the interior of the structure was excavated in this unit and exceptionally large quantities of brick, mortar, window glass, and nails were recovered. In addition, ceramics recovered consisted of 19th-century ironstone and a sherd of Fiestaware which post-dates 1936.

Test Unit N1037 E1031.5 revealed an additional segment of the concrete block foundation wall. Layer 1 produced quantities of architectural materials along with a single sherd of 19th-century ironstone, a tablespoon, four buttons, a sardine can key, a lady's butane lighter, an earring, and a plastic toy alpaca (Figure 43). In the strata below Layer 1, artifacts recovered from the east (interior) side of the wall included large quantities of architectural material along with canning jar fragments. A single fragment of dark olive green glass as was recovered. Artifacts recovered from the west (exterior) side of the wall included a fewer architectural materials. A fragment of white salt-glazed stoneware and English Brown stoneware were recovered along with a pen nib. The context for these artifacts was interpreted to be a former yard surface associated with the structure. As the 20th-century material does not extend into this stratum it appears to indicate that these artifacts represent an intact archaeological deposit dating to the late 18th through 19th century.

Test Unit N1034 E1023 was placed to investigate a potential well feature. Excavation did, indeed, confirm the presence of a mortared brick-lined well. It also indicated that, at least in its upper portion the well had been affected by heavy equipment with a portion of the lining pushed in over the fill deposits. The fill deposits were excavated to approximately a meter below



Figure 43. Artifacts Recovered from Test Unit N1037 E1031.5. Left to Right: Earring, Plastic Alpaca, Butane Lighter, Buttons.

the surface and, while some early artifacts were recovered – including a clay pipebowl fragment, pearlware, creamware, and dark olive green bottle glass – the majority of the fill deposits included extremely recent artifacts such as plastic dishwashing soap bottles, plastic tarps, plastic blister packaging, and Styrofoam. These materials were found in varying quantities in all layers excavated and, if anything, were becoming more prevalent with depth. This is not to say that older fill deposits might be recovered from deeper contexts but excavations possible within this Phase II evaluation resulted only in the interpretation of the feature being filled at or about the time of the acquisition of the property by the WSSC.

Test Unit N1016 E1004 was placed to examine a large surface depression. Excavations extended to a depth of 140 cm below surface. As with all other excavations on the site a small quantity of early ceramics, white salt-glazed stoneware and 19th century ironstone were

recovered but the artifact assemblage for all layers of this feature was prominently late 20th century. A Pepsi Cola screw-top bottle was recovered. As with the well feature it appears that this feature was infilled by the WSSC, but perhaps once served as a well, cistern or ice house.

Finally, two 1 x .05 meter test units were excavated to investigate the outbuildings on the western side of the site. Both indicated relatively shallow, fieldstone foundations with no evident builder's trench. The artifacts recovered were 20th century in origin including a sofa bed spring, a spark plug, and a Coke bottle. Also recovered was a single glass marble. Based on the artifact assemblage it appears that these structures were in use through the 20th century and were maintained and repaired during this time. However, based upon construction materials and techniques it is possible that their construction can be traced to the 19th century.

The Artifact Assemblage

Phase II archaeological investigation at the T. Watkins Site (18PR1028) produced a total of 2,266 artifacts. If artifacts such as brick, mortar, and coal are removed a total of 1,850 artifacts were recovered. If artifacts from shovel test pits are removed the test units excavated during the Phase II archaeological evaluation of the site produced a total of 1,773 artifacts.

Functional Analysis

The functional analysis of artifact assemblages as introduced by South is based on the assumption that the relative occurrence of artifacts by function provides a reflection of broad patterns of cultural process, deviations from which can be indicators of depositional process or other behaviors (South 1977). Architectural artifacts are those related to buildings – brick, mortar, nails, window glass, etc. Kitchen artifacts are associated with domestic life and include ceramics, bottle glass, and faunal remains. Other categories include tobacco (predominately fragments of pipe stems and bowls), arms (gun flints and projectiles), clothing (buttons, pins, shoe buckles), personal (coins, jewelry) and activity (such as tools and hardware). The quantitative dominance of the kitchen artifact group, for example, reflects domestic activity, particularly in the settled areas of British North American (Lewis 1982:50). It is generally expected that domestic sites or activity areas will exhibit kitchen group percentages similar to the predicted range of Stanley South's "Carolina Artifact Pattern", that is, between 47.5 and 78.0 percent of the total assemblage (South 1977:119). In addition, the occurrence of unusual quantities of materials from other functional categories can be an indicator of a specialized activity or depositional process.

A total of 1,773 artifacts was recovered from test units during the Phase II archaeological investigations – excluding brick, mortar, and asphalt shingles as these artifacts were not retained uniformly and, had they been, their quantities would overwhelm any calculation. For the purposes of discussion the analysis is presented in Table 3 by provenience and simplified functional groups. As can be seen for the test unit assemblage as a whole kitchen group artifacts predominate with 53.1% (n = 941). This relatively high percentage is due, for the most part, to large quantities of bottle glass recovered across the site. In fact, for the site as a whole the kitchen ceramic percentage is only 7.9% while the kitchen glass percentage is 28.4%. Kitchen metal, plastic, and bone make up the remainder. Individual units produced kitchen percentages as low as 24.2% (Unit 9A) and as high as 82.5% (Unit 9B). For the site as a whole, architectural materials make up 39.0% (n = 691) of the assemblage. Architectural percentages ranged from a low of 17.0% (the well feature) to a high of 66.3% (the house foundation). These percentages were highest in units directly adjacent to the house.

The “other” group is comprised of a mixture of clothing, personal, tobacco, gun, activity and miscellaneous items. Unit 2 produced a single coal fragment. Unit 9A produced a relatively high percentage of activity items including toys and car parts.

General Comments

From the site as a whole – removing brick, mortar, and asphalt, the Phase II resulted in the recovery of 710 architectural items. These consisted predominantly of window glass and nails. A total of 152 were wire nails a type which dominated the 20th century while 223 were common cut nails, a type which spans the 19th and 20th centuries. No identifiable hand-wrought or rosehead nails, types dating to the 18th century were recovered although 130 nails that could not be identified as to type were recovered.

The next most numerous artifact was bottle glass and table glassware with 518 fragments recovered. A great deal of this was broken bottle glass recovered from the upper layers of the excavated units and attributed to late 20th century dumping. In addition, late 20th century bottle glass was also recovered from both shaft features – which were excavated to between 100 and 140 cm below surface without identifying pre-20th century deposits and which were likely filled upon the acquisition of the property by the WSSC.

**TABLE 3
T. WATKINS SITE (18PR1028)
ARTIFACT FUNCTION ANALYSIS BY TEST UNIT**

Provenience	Architecture	%	Kitchen	%	Other	%	Total	Total
N1039 E1034	21	27.6	48	63.2	7	9.2	76	100.0
N1036 E1033	66	33.3	105	53.0	27	13.6	198	99.9
N1037 E1031.5	138	66.3	55	26.4	15	7.2	208	99.9
N1039 E1038	195	56.8	139	40.5	9	2.6	343	99.9
N1044 E1031	55	37.4	83	56.5	9	6.1	147	100.0
N1039 E1034	55	45.8	60	50.0	5	4.2	120	100.0
N1034 E1023	43	17.0	171	67.6	39	15.4	253	100.0
N1025 E1018	31	38.3	36	44.4	14	17.3	81	100.0
N1016 E1004	62	22.6	203	74.1	9	3.3	274	100.0
TU 9A	18	54.5	8	24.2	7	21.2	33	99.9
TU 9B	7	17.5	33	82.5			40	100.0
	691	39.0	941	53.1	141	7.9	1773	100.0

Conversely, 17 fragments of dark olive green bottle glass were recovered - most from Layer 2 or deeper. An additional nine fragments of amber blown-in-mold bottles, dating to the 19th century, were recovered.

The Ceramic Assemblage

The ceramic assemblage recovered from the T. Watkins Site (18PR1028) consisted of a total of 162 sherds. These ranged in date of manufacture from the late 17th century (tin-enameled

earthenware) through the 20th century (Figure 44). Table 4 presents a tabulation of the various ceramic types and their dates of manufacture. The most prevalent ceramic was 19th century ironstone with 60 sherds recovered uniformly across the site. A total of 24 sherds of pearlware, with manufacture dates ranging from 1780 to 1830, were recovered. Creamware (1762 – 1791) was represented by 12 sherds and white salt-glazed stoneware (1715 – 1775) was represented by seven sherds. A calculation of the mean ceramic date produced a date of 1828.19.

Based on the presence of tin-enameled earthenware, white salt-glazed stoneware, Rhenish and English Brown stoneware, and creamware it is evident that the property was occupied during the second half of the 18th century. It is unclear as to who the owner of the property would have been for the majority of that time but we know that Joseph Powell was living on the property as a tenant in 1798.

In addition to its complement of 18th century ceramic, the site's ceramic assemblage was largely 19th century in date. This includes pearlware, 19th-century whiteware, ironstone, and porcelain, and yellowware. Twentieth-century ceramics consisted of small quantities of 20th-century porcelain, ironstone, and a single sherd of Fiestaware. Based on this it would appear that the site was not used domestically during the 20th century and that occupation had ended possibly as early as 1871 when Nicholas E Watkins sold the property to the Hopkins'.



Figure 44. Ceramics Recovered from the T. Watkins Site (18PR1028). Top Row, Left to Right: White Salt-Glazed Stoneware, Feather-Edged Creamware, Tin-Enameled Earthenware, and Undecorated Pearlware. Bottom Row, Left to Right: Edge-Decorated Pearlware, Polychrome Hand-Painted Whiteware, Black Transfer-Printed Ironstone, 20th-Century Porcelain.

TABLE 4
T. WATKINS SITE (18PR1028) – THE CERAMIC ASSEMBLAGE

Type Name	Period of Manufacture	Mean Ceramic Date	Count
Tin-Enameled Earthenware	1640 – 1791	1715.5	1
18 th Century White Salt-Glazed Stoneware	1715 – 1775	1745.0	7
Imported Grey Stoneware – Rhenish	1644 - 1775	1729.5	2
English Brown Stoneware	1690 – 1775	1732.5	4
Creamware – Darker Yellow	1762 – 1780	1771.0	7
Creamware – Feather-Edged	1762 – 1791	1776.5	1
Jackfield – Early Refined Earthenware	1745 – 1818	1781.5	1
Creamware – Lighter Yellow	1762 – 1820	1791.0	4
Pearlware – Edged	1780 – 1820	1800.0	1
Pearlware – Hand-Painted Blue Underglaze	1780 – 1820	1800.0	15
Pearlware – Undecorated	1780 – 1830	1805.0	8
19 th Century Whiteware – Edge Decorated	1825 – 1865	1845.0	1
19 th Century Whiteware – Plain	1820 – 1890	1855.0	21
19 th Century Whiteware – Banded	1820 – 1850	1825.0	1
19 th Century Ironstone	1813 – 1900	1856.5	60
Yellowware	1840 – 1900	1870.0	1
19 th Century Porcelain	19 th century		7
20 th Century Porcelain	20 th century		6
Ironstone – Decal	1902 - 1896	1944.0	1
Fiestaware	1936 – 1974	1955.0	1
Domestic Gray Stoneware	ND		3
Redware, Black Glazed	ND		3
Redware, Unglazed	ND		1
Redware, Clear-Glazed	ND		2
Unidentified Ceramic	ND		3
Total			162

Research Objectives and Questions

The Phase II investigations of 18PR1028 sought to evaluate the significance of the site and its ability to address potential research objectives and questions. In general, we attempted to define the extent, age, and significance of the archaeological resources previously identified. Potential research questions include:

- 1) What are the boundaries of the site?

Based on surface observations and additional shovel testing, the site boundaries have been expanded – encompassing a small portion of the agricultural field north of the WSSC ditch, the remains of the outbuildings to the west, additional yard surface to the east, and the lower terrace to the south (Figure 20).

- 2) When was the site occupied? And does it represent a single or multiple occupations?

The stratigraphic deposits, features, and the artifact assemblage recovered from 18PR1028 indicate occupation of the area as early as the 18th century. The early wares recovered from 18PR1028 correspond relatively closely with those recovered from the Green Branch 2 Site (18PR966) located on the adjacent property (Tyler *et al.* 2010a) as well as the Canter 5 Site (18PR887) located just south of this property (Tyler *et al.* 2010b). It has been postulated that toward the close of the 18th-century that the neighboring Green Branch 2 site and the T. Watkins site were both occupied by tenants of the primary landowner. We know that Joseph Powell, tenant of John Boyd Watkins, was likely occupying the T. Watkins site in 1798, but it is unclear for what length of time he resided here.

An analysis of the artifact assemblage indicates that, beyond its origins in the 18th century, the site was occupied through much of the 19th century as a domestic site. With Thomas and Nicholas Watkins' somewhat ephemeral presence as owners of the property in the mid-19th century it is hard to determine who lived on the property at this time and whether such occupation was consistent or intermittent. The archaeological evidence indicates that someone was likely living here during this period, but offers little evidence as to who that person, tenant or owner, might have been.

During the 20th-century it appears that the T. Watkins site likely served only agricultural purposes – perhaps as storage. The potential abandonment of the site as a place of domestic residence appears to coincide with the purchase of the property by Joshua T. Clarke, Jnr, in the late 19th century. At this point the domestic focus of the farms is believed to have shifted farther to the north; to the 18PR1029 site. What has been interpreted to be periods of dumping during the late 20th-century contributed large quantities of broken bottle glass and other debris. Much of this debris remained on the surface, but it was also recovered in significant quantities in the upper layer of most test units, which would point to the uppermost stratum as having been disturbed in some way – perhaps during the ownership of the W.S.S.C.

- 3) Are features present below the plowzone? If so, what do they represent and what is their condition?

A number of intact archaeological features were identified during the course of the Phase II investigation. Feature 1 is a brick-lined well which appears to have been pushed – possibly with heavy equipment during the ownership of the property by the WSSC – in such a way as to detach and move a portion of the brick lining over the fill of the feature. Excavations of the fill of this well indicated late 20th-century fill at least to a depth of 83 cm below the surface. It is unknown if deeper deposits might predate the late 20th century although, given the predominantly 18th and 19th century occupation of the property it is possible.

Feature 2 represents a structural foundation which appears to have been rebuilt or repaired with concrete block. Phase II excavations have identified one corner of this structure which likely represents the primary dwelling on the property. As noted above, historic records indicate that – in 1798 - Joseph Powell, a tenant of John Watkins, was living on a 118 3/4 -acre property in a house measuring 20 x 12 feet (value - \$30) with a kitchen measuring 12 x 10 feet, and a tobacco house measuring 24 x 15 feet. Thus, Feature 2 likely represents the dwelling of Joseph Powell and some of the 18th-century artifacts recovered from the site are likely associated with

his occupation. It is unclear how long Powell resided on the property and his occupation may have been predated by an earlier tenant or owner

Feature 3 is a large pit, possibly representing an ice house, cistern, or shaft feature such as a well. All fill recovered dated to the late 20th-century but the base of the feature was not reached during Phase II investigations. The full extent, depth, construction, and use of this feature is unknown, but it would appear to be wider and more rudely constructed than the well identified as Feature 1, thus lending credence to the hypothesis that it might have instead served as a cistern or an ice house.

In addition, the expanded site boundaries encompass the remnants of the outbuildings to the east of the original site boundary. These buildings appear to have undergone multiple episodes of addition and repair. They likely were in use as general agricultural outbuildings such as barns or sheds but one appears to have been in use as a corn crib during its final incarnation.

- 4) Do the features indicate the presence of structures? If so, how are they organized in relation to one another? and what stylistic attributes do they reflect?

Feature 2 represents a dwelling with a fieldstone foundation – repaired with concrete block – located within the central portion of the site. This structure appears on multiple aerial photos through the 20th century but likely dates to at least as early as the latter part of the 18th century based on the artifact assemblage. The western outbuildings possess similar repaired/rebuilt foundations. Based on the quantities of nails – both cut and wire – the structures were likely frame. A brick-lined well, Feature 1, is located mid-way between the dwelling and the outbuildings and appears to have been in-filled during the late 20th century – possibly to be replaced by the concrete-lined cistern to the east. In addition, there is the large pit feature of unknown purpose, Feature 3, located to the immediate west of the outbuilding.

- 5) Is it possible to discern discrete activity areas within the site based upon consideration of the spatial arrangement of artifacts and/or features?

The Phase II excavations produced evidence for discrete activity areas within the wider site. A possible Buried-A horizon was identified on the exterior of the foundation (Feature 2) and is believed to represent a discrete yard surface related to the 18th and 19th-century occupation of the structure. The artifacts recovered here were generally domestic in nature and indicate that this area remained the locus of domestic occupation during the earliest portion of its inhabitation. Test units placed to investigate yard scatter identified relatively discrete deposits of late 18th to early 19th-century artifacts to the north and east of the foundation. In addition, artifacts directly associated with children (toys) and women (perfume bottles and a women's lighter) were identified. The outbuildings located in the western portion of the site include a likely corncrib and a barn and attest to the agricultural activity that has taken place within the T. Watkins site. Such agricultural activity likely began with the site's earliest occupation and later extended beyond the site's domestic abandonment in the latter part of the 19th century.

- 6) Are the archaeological resources at the site eligible for listing on the National Register of Historic Places?

The archaeological resources at 18PR1028 are recommended eligible for listing on the National Register of Historic Places under Criterion D – “have yielded, or may be likely to yield, information important in prehistory or history” (NPS 1990). The T. Watkins Site represents the occupation of the Green Branch Athletic Complex Parcel 6 property from as early as the 18th century through the late 20th century. During that time the property – and the site – have transitioned through ownership by multiple individuals. One possible owner, Thomas Woodward, was a representative to the Maryland General Assembly in 1806. Although it is unlikely that any of the occupants of the site were prominent, excavations to date and additional excavations can open a window into the lives of its occupants – particularly the tenants that likely occupied the site from the late 18th to the late 19th century.

The site possesses sufficient integrity – with intact features and stratigraphic deposits – which can, hopefully, be associated specific occupants of the site. Thus, the site possesses interpretive and research value both in and of itself as well as as a comparative assemblage to sites of similar age, type, and ownership. Specifically, information obtained through the excavation of 18PR1028 could be compared with that recovered from the neighboring Green Branch 2 Site (18PR966). At times temporally contiguous, the two sites are both believed to have been occupied by tenants at the turn of the 19th century (Tyler *et al.* 2010).

SUMMARY AND RECOMMENDATIONS

Summary

During November, 2013 AAHA conducted a Phase II archaeological evaluation of the T. Watkins Site (18PR1028) under contract with Hord Coplan Macht as part of the proposed development of Green Branch Athletic Complex Parcel 6 by the Maryland Stadium Authority. A Phase I archaeological survey of the 254-acre parcel had resulted in the identification of eight archaeological sites; with preservation in place or Phase II level archaeological evaluation recommended for four of the sites: 18PR1028 and 18PR1037, domestic sites dating to the mid-18th – 20th century; 18PR1031, an early 18th-century possible slave quarter; and 18PR1030, a Late Archaic/Early Woodland Period prehistoric site (Kreisa *et al.* 2012). The Phase II fieldwork was conducted in accordance with the *Standards and Guidelines for Archaeological Investigations in Maryland* (Shaffer and Cole 1994) and the *Guidelines for Archeological Review* of the Prince George's County Planning Board (2005).

Background research resulted in the identification of a chain of title separate from that of the W.W.W. Bowie property as identified during the Phase I survey. Ownership of the property can be traced to the beginning of the 18th century, when it was in the possession of the Boyd family. Later in the 18th century the property was owned by John Watkins but 1798 Federal Tax Records indicate that Joseph Powell, a tenant, occupied the property, while Watkins likely lived on the other side of the Patuxent. Additional census records provide information about the composition of his household during that period. The property likely continued to be used as a tenant farm after its sale to Richard Harwood in 1801, and it is unclear how long Powell lived on the site. The property was held by Thomas Watkins of N, and his son Nicholas Edwin for approximately 30 years during the middle of the 19th century. It is unclear whether either Watkins specifically lived on the site at that time, but both lived in the immediate vicinity for a portion of this period. When Joshua T. Clarke, Jr. took possession in 1877 it looks increasingly likely that he moved the domestic focus of the property to the north and constructed a new farmhouse (18PR1029). It is unclear whether anyone continued to reside with the T. Watkins Site after this time.

Fieldwork included a pedestrian reconnaissance which resulted in the re-identification of the surface features noted during the Phase I survey, the WSSC ditch surrounding the site, the collapsed outbuildings located west of the site, and a scatter of structural elements and artifact across the southern slope below the site. An additional 40 shovel tests were excavated to more fully define the boundaries of the site. A total of 12 STPs were found to contain historic artifacts including brick fragments, window glass fragments, nails, and ceramics. As a result of this subsurface testing and pedestrian reconnaissance, the site's boundaries have been extended to encompass a small portion of the agricultural field, the outbuilding foundations, and the terrace to the south of the site.

A total of nine 1 x 1-meter test units and two 1 x 0.5-meter test units were excavated within the 1,350 m² site. Three test units were excavated in areas anticipated to represent former yard surfaces. These units contained artifact assemblages dating primarily to the late 18th to late 19th-century.

Remnants of a house foundation, which appears to have been of fieldstone construction repaired with concrete block, were identified in three units. Artifact assemblages recovered from these units included early ceramics and glass as well as large quantities of architectural

material from the interior. In addition, a Buried A horizon found to contain late 18th to late 19th - century artifacts and likely representing a former yard surface, was identified to the immediate exterior of the structure. An additional two test units were excavated to investigate two visible surface depressions. While Phase II excavations reached 83 and 140 cm below the surface respectively, the excavations did not extend to the bottom of either feature. The first, Feature 1, was identified as a mortared brick-lined well which appears to have been filled at or about the time of the acquisition of the property by the WSSC. The second, Feature 3, was identified as a possible well, cistern or icehouse and was also apparently filled during the late 20th century. The deposits identified during the excavations of these features primarily dated to the 20th century, but it is possible that older deposits may exist at a deeper depth. ,

Finally, two 1 x .05 meter test units were excavated to investigate the agricultural outbuildings on the western side of the site with both revealing shallow, fieldstone foundations with no evident builder's trench.

The total artifact assemblage included 2,266 items. Functional analysis indicated a predominance of kitchen related artifacts (53.1%). Architectural artifacts comprised 39% of the assemblage and items representing other functional groups made up the remainder. Ceramics ranged in date from the early 18th century to the late 20th century with the majority of datable ceramics consisting of 19th century whiteware. A distinct assemblage of late 18th century ceramics was recovered from relatively intact contexts.

Research questions posed at the onset of the Phase II archaeological evaluation of the T. Watkins Site (18PR1028) included questions regarding site boundaries, assemblage date, feature presence and arrangement, occupants, and finally, eligibility for listing on the National Register of Historic Places. The site boundaries have been expanded slightly in all directions although the portion of the site north of the WSSC ditch lacks integrity due to sludge injection in this area. Intact subsurface features and deposits have been identified across the site and above ground structural ruins and subsurface foundation remnants have also been recorded. Background research has identified specific residents from both the 18th and 19th century who can be associated with the artifact assemblage, a portion of which was recovered from contexts which appear to retain archaeological integrity. While the domestic focus of the site appears to have shifted to a new farmstead located to the north of the T. Watkins Site, it seems probable that the area continued to be used for agricultural purposes through the middle of the 20th century.

Recommendations

Based on the background research and field investigations conducted as part of this Phase II archaeological evaluation of the T. Watkins Site (18PR1028) the site is recommended eligible for listing on the National Register of Historic Places under Criteria D: "have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1990 revised 2002). Preservation in place is recommended. Plans for the proposed development as of December 2013 indicate that avoidance of the site is likely (Figure 45). Should preservation in place not be possible additional, Phase III data recovery level archaeological investigations, are recommended.

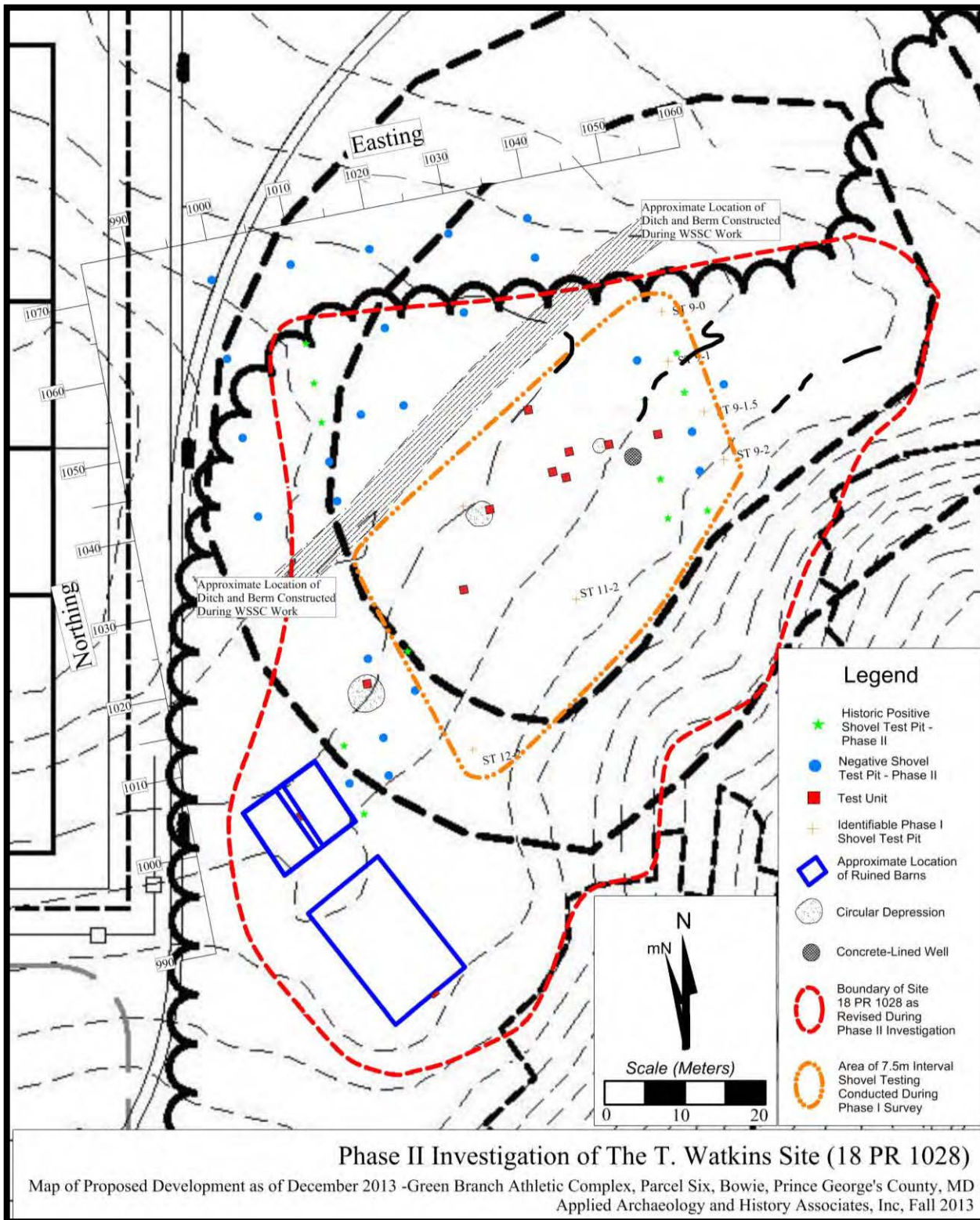


Figure 45. Phase II Investigation of the T. Watkins Site (18PR1028) over Map of Proposed Development as of December 2013.

REFERENCES CITED

Evans, June

1980 *Preliminary Archaeological Reconnaissance of Sludge Trenching Site 202, Prince George's County, Maryland*. Report prepared for the Washington Suburban Sanitary Commission by The American University, Department of Anthropology, Washington, D.C.

Hopkins, G.M.

1878 *Atlas of Fifteen Miles around Baltimore Including the County of Prince George, Maryland*. Philadelphia.

Kreisa, Paul P., Jacqueline M. McDowell, Nancy Powell, Matthew Cochran, and John Liebertz
2012 *Phase I Archaeological Survey of the Green Branch Athletic Complex Parcel 6 in Prince George's County, Maryland*. Report prepared for the Prince George's County Department of Parks and Recreation and the Maryland-National Capital Park and Planning Commission by Greenhorne & O'Mara, Inc., Laurel, Maryland.

Martenet, Simon J.

1861 *A Map of Prince George's County, Maryland*. Copy on file at the Maryland Archives, Annapolis.

Maryland-National Capital Park and Planning Commission (M-NCPPC 2013)

1938 Aerial photographs, Prince George's County, Maryland. Available on-line at www.pgatlas.com/mncppc.

1965 Aerial photographs, Prince George's County, Maryland. Available on-line at www.pgatlas.com/mncppc.

Maryland-National Capital Park and Planning Commission/Prince George's County Planning Department

2005 *Guidelines for Archaeological Review*. Maryland-National Capital Park and Planning Commission and the Prince George's County Planning Department, Upper Marlboro, Maryland.

National Park Service

1990 National Register Bulletin: How to Apply the National Register Criteria for Evaluation. Available online at <http://www.nps.gov/nr/publications/bulletins/nrb15/index.htm>.

Shaffer, Gary D. and Elizabeth J. Cole

1994 *Standards and Guidelines for Archaeological Investigations in Maryland*. Maryland Historical Trust Technical Report Number 2. Office of Archaeology and Office of Preservation Services, Maryland Historical Trust, Department of Housing and Community Development.

Tyler, Jason L., Jeanne A. Ward, James G. Goodwin, and Katherine D. Birmingham

2010a *A Phase II Archaeological Evaluation of Four Sites within the Green Branch Property, Prince George's County, Maryland*. Report prepared for A. Morton Thomas and Associates, Inc. by Applied Archaeology and History Associates, Inc., Annapolis, Maryland.

2010b *A Phase II Archaeological Evaluation of Canter Sites 4 (18PR876) and 5 (18PR877) within the Canter Property, Prince George's County, Maryland.* Report prepared for Vendemia & Decesaris by Applied Archaeology and History Associates, Inc., Annapolis, Maryland.

United States Geological Survey

1905 Owensville, Maryland 15-Minute USGS Quadrangle. United States Geological Survey, Denver.

1993 Bowie, Maryland 7.5-minute quadrangle. United States Geological Survey, Denver.

Ward, Jeanne A. and Jason L. Tyler

2007 *A Phase I Archaeological Investigation of the Canter Property, Prince George's County, Maryland.* Report prepared for Vendemia & Decesaris by Applied Archaeology and History Associates, Inc., Annapolis, Maryland.

APPENDIX A
CHAIN OF TITLE

**CHAIN OF TITLE
T. WATKINS SITE (18PR1028)**

14841:197 – July 23, 2001, Deed

Washington Suburban Sanitary Commission (WSSC) to the Maryland-National Capital Park and Planning Commission (M-NCPPC). 254.0587 acres in Prince George's County, Maryland.

5296:39 – August 20, 1980, Deed

Crown Grant Joint Venture to WSSC. All four parcels that had previously been split included in the deed. Land is the same that Crown Grant Joint Venture received from Henry C. Ellis and C. Calvert Lancaster as guardians of the property of Helene G. Phelps as recorded in Liber No.

4084:154. 324.1802 acres in Prince George's County, Maryland.

5084:154 – April 6, 1979, Deed

Henry C. Ellis and C. Calvert Lancaster, guardians of Helene G. Phelps, to Crown Grant Joint Venture. Ellis and Lancaster acting pursuant to a court order that named them legal guardians of the person and property of Helene G. Phelps. Crown Grant Joint Venture is composed of J. Whitson Rogers, Joseph M. Joyce, Greenhill Company, Inc., James Anderson, Jr, and C. G. Aben. Property was divided into four parcels, all of which are included in the deed; Parcel No. 1 consists of 116 acres, Parcel No. 2 consists of 230.7346 acres, Parcel No. 3 consists of 2,000 square feet, and Parcel No. 4 consists of 6.3200 acres. 353.0546 acres in Prince George's County, Maryland.

419:325 – November 24, 1934, Deed

Mary V. Smith to John and Helene G. Phelps. John and Helene Phelps receive the farm as tenants by entirety so that they both hold legal ownership. At this point, the farm was known as the William F. Smith farm after a previous owner. The land transferred by this deed comprises Parcel No. 1 referred to in the deed dated April 6, 1979, Liber No. 5084 folio 154.

376:370 – April 19, 1932, Deed

John Phelps and Clarence M. Roberts, Trustees, to Mary V. Smith. Mary V. Smith purchased the property at an auction in Upper Marlboro, Maryland for a sum of \$7,000. The deed was transferred after a Prince George's County Circuit Court ruled that John Phelps and Clarence M. Roberts had the legal authority to put the land up for public sale (Equity no. 7966). The land is the same that William F. Smith acquired from Samuel B. Chaney by deed dated July 12, 1923, Liber No. 195 folio 252 and was, at this point, known as Frey's Choice.

195:252 – July 12, 1923, Deed

Samuel B. Chaney to William F. Smith. Chaney sold Smith the land, which lay in the Queen Anne District of Prince George's County, for a sum of \$6,800. The land consisted of two tracts, one of which was known as Frey's Choice and one of which was called Ample Grange. Frey's Choice contained 133 acres adjacent to the Patuxent River and was transferred to Chaney's ownership in the deed recorded in Liber 12 folio 334 and is recorded as Parcel One in this Chain of Title. Ample Grange, Parcel Two of this Chain of Title, which Smith acquired in the deed recorded in Liber HB 14 folio 237, contained 17 acres, making the total land Smith acquired more or less equal 150 acres.

37:338 – June 30, 1907, Deed

Frank Poula *et al.* to Samuel B. Chaney. Chaney bought this small part of the property for \$52 in order to put in a roadway. The deed stipulates that Chaney erect and maintain two or more gates to delineate his property from Poula's. 1.3 acres in Prince George's County, Maryland.

19:522 – September 23, 1904, Deed

T. van Clagett, Trustee to Samuel B. Chaney. Upon default of the mortgage the land was put up for public auction with T. van Clagett acting as trustee until a buyer purchased and took possession of the property. Samuel B. Chaney made the highest bid and purchased the land for \$2,275, which amount was subtracted from the debt that Joseph Walter and Eva M. Clark owed to him.

12:479 – April 7, 1903, Mortgage

Joseph Walter Clark and Eva M. Clark to Samuel B. Chaney. Joseph and Eva were legally indebted to Chaney for a sum of \$1,800 payable over a period of three years with an interest rate of 6%. The land appears to have been left to Joseph Walter Clark by his father, Joshua T. Clarke, Jr., upon his death and subsequently offered as collateral for the loan from Chaney. The land is noted as being the two parcels noted above, including one of 133 acres called Frey's Choice and one of 17 acres called part of Ample Grange.

Parcel One (Frey's Choice – 133 acres)

HB 12:334 – April 30, 1877, Deed

John P. Hopkins and Mary Ann Hopkins to Joshua T. Clark, Sr. The land Clark purchased—for a sum of \$3,400—is only called Frey's Choice, and there is no reference to the name Ample Grange. 133 acres in Prince George's County, Maryland.

HB 5:191 – October 4, 1871, Deed

Nicholas E. Watkins to John P. Hopkins. 130 acres in Prince George's County, Maryland.

FS 2:242 – November 14, 1864, Mortgage

Thomas Watkins of N. and his wife Eliza Ann Watkins of Anne Arundel County together with Nicholas E. Watkins, son, of Prince George's County take a mortgage of \$1500 from Thomas Claggett of Prince George's County and secure the loan with 130 acre property on which Nicholas E. Watkins currently resides.

FS 2:239 – November 14, 1864, Deed

Thomas Watkins of N. and Nicholas E. Watkins repay the outstanding mortgage of \$500 from Dr. Benjamin Watkins of Anne Arundel County. In turn, Dr. Watkins releases the security used in the original loan.

CSM 3:120 – May 3rd, 1859, Indenture

Dr. B. Watkins of Anne Arundel County loans Thomas Watkins of N. and Nicholas Edwin Watkins, son, the sum of \$500. The loan is secured with the landholdings of Thomas Watkins.

AB 11:564 – 5th October, 1838, Indenture

Benjamin Watkins of Anne Arundel County issues Thomas Watkins of Prince George's County a promissory note of \$632.47 $\frac{1}{4}$, while Thomas Watkins also take a loan from the Farmers Bank of Maryland for \$1400. The note is secured with the residence of Thomas Watkins that he acquired from Harper and Wooton in 1833/1834 (100 acres of Ample Grange and 147.5 acres of Frey's/Fry's Choice and Sway) together with the following slaves: Nace 30, Washington 19, William 9, Moses 3, Dinah 35, Mary 22, Margaret 4.

It is unclear whether the 147.5 acre parcel comprises the 133 acre parcel later transferred from Watkins to Hopkins, but the information is nonetheless recorded below.

AB 9:121 – 18th October, 1834, Indenture

William and Margaret Wooton convey all interest in two parcels (100 acres of Ample Grange and 147.5 acres of Frey's/Fry's Choice and Sway) to Thomas Watkins of Anne Arundel County.

AB 9:15 – 26th April, 1834, Indenture

For the sum of \$200, Jacob and Sarah Basford convey all interest in the above mentioned parcels (being south of the lands of the late John Boyd Watkins, east of the lands of W. D. Bowie, north of the lands of Dr. Benjamin Boyd, and west of the Patuxent River) to Thomas Watkins of Anne Arundel County .

AB 8:484 – 8th December, 1833, Indenture

For the sum of \$2500, Robert W. Harper and Sarah M. harper convey all of their interest in the abovementioned parcels to Thomas Watkins of Anne Arundel County.

EH 1:27 – 20th June, 1818, Indenture

William and Cassandra Parker transfer, for the sum of \$850, all interest in the abovementioned parcels to Jacob Basford. The Parkers were likely heirs of the deceased Thomas Woodward, Sr. The original transfer to Basford was not located.

EH 1:29 – 7th March, 1818, Indenture

Thomas and Octavia Woodward of the District of Columbia convey all of their interest in the abovementioned parcels to Jacob Basford of Prince George's County. Jacob Basford is recorded as living on the property at the time of the transfer and it is likely that this represents the transfer of the interests of the heirs of the deceased Thomas Woodward, Sr. The original transfer to Basford was not located.

JRM 13:65 – 28th November, 1808, Indenture

John Boyd Watkins conveys all interest in the abovementioned parcels, which may or may not contain the current Study Area, to Thomas Woodward for a nominal fee. Thomas Woodward is recorded as living on these parcels.

JRM 13:62 – 28th November, 1808, Indenture

Thomas Woodward conveys all interest in the plantation on which he lives, being the two abovementioned parcels, to John Boyd Watkins for a nominal fee.

JRM 8:462 – 9th January, 1801, Indenture

John Boyd Watkins conveys a 118 3/4 acre parcel, being all Watkins' plantation and land in Prince George's County, to Richard Harwood for the sum of \$500. This parcel being part of Fry's Choice and Sway Resurveyed and including the southern portion of the Green Branch Athletic Complex Parcel 6 that contains the T. Watkins Site.

JRM 5:472 – 24th June, 1798, Indenture

John Boyd Watkins of Anne Arundel County uses his plantation and property in Prince George's County, being a 118 3/4 acre parcel of land known as Fry's Choice and Sway Resurveyed, as security to Richard Harwood in respect of Watkins appointment to the position of Deputy Sheriff.

BB 2:99 – 26th August, 1767, Indenture

Thomas Boyd, Gentleman, conveys to Nicholas Watkins, Jnr, Gentleman, a 118 3/4 acre parcel of land known as Fry's Choice and Sway Resurveyed. The metes and bounds presented within indenture places the property to the immediate north of Gray's Branch and includes the portion of the Green Branch Athletic Complex Parcel 6 that contains the T. Watkins Site.

Plat EJ 5:375 - 10th May, 1738, Resurvey

John Boyd of Prince George's County has Fry's Choice and Sway resurveyed. Fry's Choice is recorded as being first surveyed in 1673, and possessing 600 acres. Sway is

recorded as being first surveyed in 1677 and possessing 200 acres. Once resurveyed, the two parcels are recorded as containing 291 acres (MSA Plat EJ 5:375).

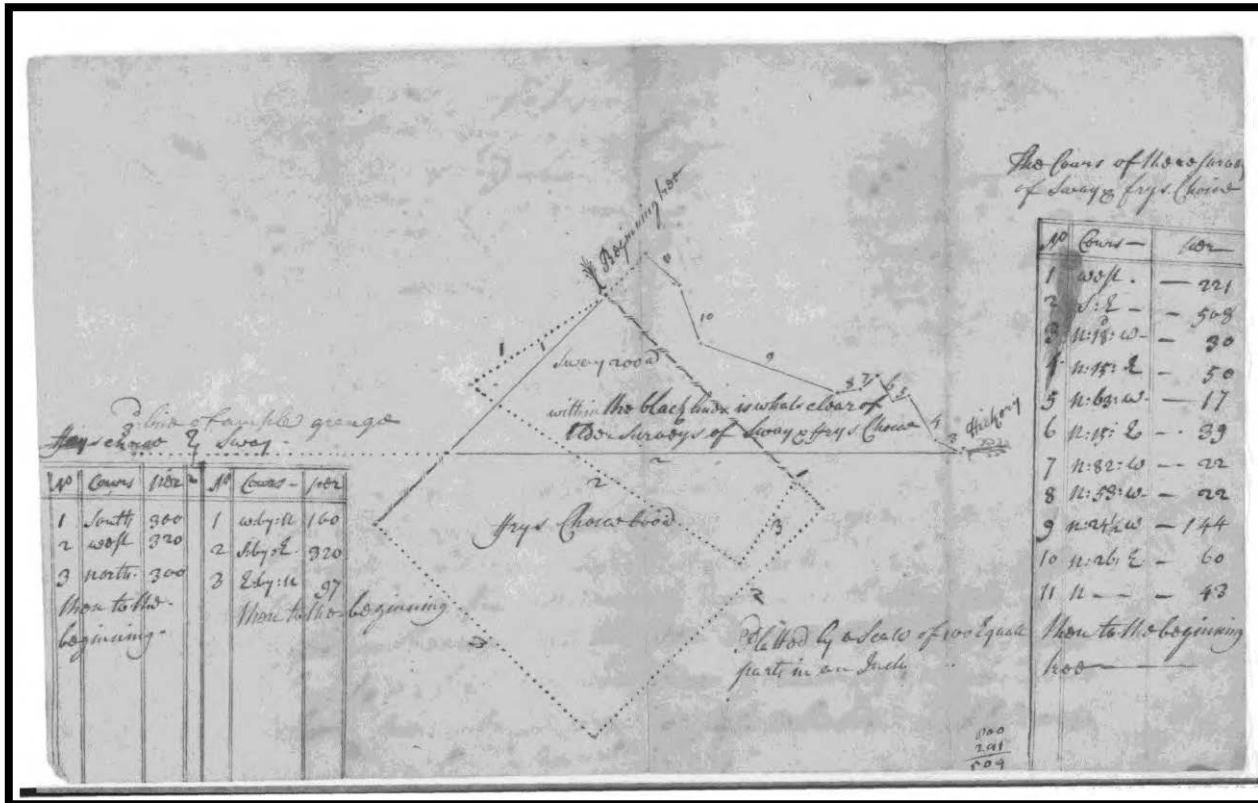


Figure A. Plat of John Boyd's Resurvey of Sway and Fry's Choice.

E:209 – 5th March, 1716, Indenture

John Boyd of Prince George's County conveys to Phillip Pindel/Pindle a 118 acre parcel of land, being part of Sway, for \$50.

Parcel Two (Ample Grange – 17 acres)

HB 14:237 – December 11, 1878, Deed

William and Mary E. Wickham to Joshua T. Clark, Sr. 17 acres in Prince George's County, Maryland.

FS 1:221 – September 15, 1862, Deed

Matilda Ann Crook to William Wickham. Wickham purchased the land from Richard R. Crook's widow for a sum of \$500. The deed indicates that the land Wickham purchased was part of Frey's Choice and part of Ample Grange. 141 acres in Prince George's County, Maryland.

ON 1:416 – March 9, 1853, Indenture

Benjamin Watkins to William Wickham. Although Wickham already had an indenture agreement with Richard R. Crook, it appears Crook did not have full legal ownership of Frey's Choice and Ample Grange until he had completely paid off his mortgage to Benjamin Watkins. It also appears that both Crook and Wickham were indebted to Watkins, and that much of the money Wickham gave to Crook went toward making Crook's mortgage payments. This indenture allows Wickham to keep the land despite an unspecified but large sum he owed to Watkins in exchange for an immediate payment of \$500.

JBB 5:394 – October 18, 1848, Indenture

Richard R. Crook to William Wickham. 141 acres in Prince George's County, Maryland.

APPENDIX B

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II EVALUATION**

**ARTIFACT INVENTORY
T. WATKINS SITE (18PPR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
78	1000	1000	1	0-17 CM	ARCHITECTURAL FASTENER	SPIKE	2	56	
79	1010	1000	I/II		WIRE COMMON NAIL	4 TO 4.5 IN. LONG	1	18.44	
79	1010	1000	I/II		WIRE COMMON NAIL	FRAGMENT	2	10.44	
80	1016	1004	1A	0-42 CM	WIRE COMMON NAIL	FRAGMENT	1	6.08	
80	1016	1004	1A	0-42 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA	1	0.82	
80	1016	1004	1A	0-42 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR	1	3.69	
80	1016	1004	1A	0-42 CM	UNIDENTIFIED HARDWARE	CORRODED	1	11.98	
81	1016	1004	3E	106-115 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	1	0.65	
81	1016	1004	3E	106-115 CM	CUT L-HEAD NAIL	3.5 TO 4 IN. LONG	1	50	
81	1016	1004	3E	106-115 CM	CUT COMMON NAIL	3 TO 3.5 IN. LONG	2	24.71	
81	1016	1004	3E	106-115 CM	CUT COMMON NAIL	FRAGMENT	2	13.91	
81	1016	1004	3E	106-115 CM	BRICK	HANDMADE UNGLAZED	1	400	
81	1016	1004	3E	106-115 CM	19TH CENTURY IRONSTONE	PLAIN WHITE	1	5.9	1856.5
81	1016	1004	3E	106-115 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA	1	3.86	
81	1016	1004	3E	106-115 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR	6	30.42	
81	1016	1004	3E	106-115 CM	TABLE GLASSWARE	TUMBLER, PRESSED	1	19.9	
81	1016	1004	3E	106-115 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN	45	224	
81	1016	1004	3E	106-115 CM	UNIDENTIFIED LAMP GLASS	CLEAR	1	0.49	
82	1016	1004	2A	42-56 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	3	0.8	
82	1016	1004	2A	42-56 CM	FLAT WINDOW GLASS	TO 1 MM THICK	1	0.47	
82	1016	1004	2A	42-56 CM	WIRE COMMON NAIL	2 TO 2.5 IN. LONG	4	26.97	
82	1016	1004	2A	42-56 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG	1	10.02	
82	1016	1004	2A	42-56 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG	1	3.26	
82	1016	1004	2A	42-56 CM	ARCHITECTURAL FASTENER	SPIKE	2	66.1	
82	1016	1004	2A	42-56 CM	ARCHITECTURAL FASTENER	BOLT	1	9.82	
82	1016	1004	2A	42-56 CM	UNIDENTIFIABLE NAIL	PLAIN WHITE	1	30.11	
82	1016	1004	2A	42-56 CM	BRICK	HANDMADE UNGLAZED	8	13.39	
82	1016	1004	2A	42-56 CM	REDWARE	BLACK GLAZED, FINE	3	2.57	
82	1016	1004	2A	42-56 CM	DOMESTIC GRAY STONWARE	SALT-GLAZED, PLAIN	1	66.61	
82	1016	1004	2A	42-56 CM	19TH CENTURY IRONSTONE	PLAIN WHITE	1	4.88	1856.5
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	7	268	
82	1016	1004	2A	42-56 CM	BOTTLE FRAGMENT		1		
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	8	64	
82	1016	1004	2A	42-56 CM	BOTTLE FRAGMENT		1		
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	1	0.24	
82	1016	1004	2A	42-56 CM	BOTTLE FRAGMENT		1		
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	1	26.54	
82	1016	1004	2A	42-56 CM	BOTTLE FRAGMENT		1		
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	1	14.94	
82	1016	1004	2A	42-56 CM	BOTTLE FRAGMENT		1		
82	1016	1004	2A	42-56 CM	MACHINE-MADE, DECORATED OR EMBOSSED	CLEAR	1	70	
82	1016	1004	2A	42-56 CM	SCREW-TOP JAR FRAGMENT	CLEAR	1	28.43	
82	1016	1004	2A	42-56 CM	MACHINE-MADE LIP BOTTLE FRAGMENT	CLEAR	1	0.96	
82	1016	1004	2A	42-56 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA	1	1.14	
82	1016	1004	2A	42-56 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR	17	20.66	
82	1016	1004	2A	42-56 CM	TABLE GLASSWARE	UNIDENTIFIED PRESSED	2		
82	1016	1004	2A	42-56 CM	TABLE GLASSWARE	GLASS	1	21.47	
83	1016	1004	2B	56-66 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	5	1.61	
83	1016	1004	2B	56-66 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG	1	5.94	

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
83	1016	1004	2B 56-66 CM	WIRE COMMON NAIL	FRAGMENT		4	19.24	0
83	1016	1004	2B 56-66 CM	CUT COMMON NAIL	1.5 TO 2 IN. LONG		2	13.93	0
83	1016	1004	2B 56-66 CM	ARCHITECTURAL FASTENER	BOLT		1	8.68	0
83	1016	1004	2B 56-66 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"SEAL OF ASSURANCE OF PURITY"	2	26.62	0
83	1016	1004	2B 56-66 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"PEPSI COLA"	1	13.21	0
83	1016	1004	2B 56-66 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	3.49	0
83	1016	1004	2B 56-66 CM	TABLE GLASSWARE	TUMBLER, PRESSED		1	4.94	0
83	1016	1004	2B 56-66 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		2	15.25	0
83	1016	1004	2B 56-66 CM	INDUSTRIAL METAL	BRACKET		1	54	0
84	1016	1004	3A 66-76 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	DISCARDED	4	3.11	0
84	1016	1004	3A 66-76 CM	WIRE COMMON NAIL	1 TO 1.5 IN. LONG		2	5.11	0
84	1016	1004	3A 66-76 CM	WIRE COMMON NAIL	FRAGMENT		5	24.11	0
84	1016	1004	3A 66-76 CM	ARCHITECTURAL FASTENER	SCREW		1	8.72	0
84	1016	1004	3A 66-76 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		4	12.88	0
84	1016	1004	3A 66-76 CM	TABLE GLASSWARE	UNIDENTIFIED MOLDED GLASS		5	43.38	0
84	1016	1004	3A 66-76 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		5	31.18	0
84	1016	1004	3A 66-76 CM	METAL PROJECTILE	MODERN BULLET	22 SHORT?	1	0.5	0
85	1016	1004	3C 86-96 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		3	26.28	0
85	1016	1004	3C 86-96 CM	WIRE COMMON NAIL	FRAGMENT		1	0.59	0
85	1016	1004	3C 86-96 CM	CUT COMMON NAIL	FRAGMENT		7	27.42	0
85	1016	1004	3C 86-96 CM	18TH CENTURY WHITE STONEWARE	PLAIN SALT-GLAZED		1	2	1757.5
85	1016	1004	3C 86-96 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"6765 3-9"	1	35.47	0
85	1016	1004	3C 86-96 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	38.29	0
85	1016	1004	3C 86-96 CM	MACHINE-MADE BOTTLE FRAGMENT	AMETHYST		1	1.62	0
85	1016	1004	3C 86-96 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	19.89	0
85	1016	1004	3C 86-96 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		31	118	0
86	1016	1004	3D 96-106 CM	WIRE COMMON NAIL	FRAGMENT		3	13.51	0
86	1016	1004	3D 96-106 CM	CUT COMMON NAIL	3 TO 3.5 IN. LONG		1	16.91	0
86	1016	1004	3D 96-106 CM	CUT COMMON NAIL	FRAGMENT		4	20.98	0
86	1016	1004	3D 96-106 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		2	5.42	1856.5
86	1016	1004	3D 96-106 CM	19TH CENTURY IRONSTONE	MOLDED		1	8.03	0
86	1016	1004	3D 96-106 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"2"	1	14.26	0
86	1016	1004	3D 96-106 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		1	136	0
86	1016	1004	3D 96-106 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	8.04	0
86	1016	1004	3D 96-106 CM	MISCELLANEOUS DOMESTIC METAL	MEDICINE TUBE		25	116	0
86	1016	1004	3D 96-106 CM	UNIDENTIFIABLE METAL	STRAP IRON		4	25.49	0
87	1016	1004	F 2 79-100 CM	WIRE COMMON NAIL	FRAGMENT		3	13.27	0
87	1016	1004	F 2 79-100 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		2	11.04	0
87	1016	1004	F 2 79-100 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		1	1.85	0
87	1016	1004	F 2 79-100 CM	MACHINE-MADE BOTTLE FRAGMENT	AMETHYST		1	2.34	0
87	1016	1004	F 2 79-100 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	5.14	0
87	1016	1004	F 2 79-100 CM	UNIDENTIFIABLE METAL	IRON/STEEL		1	0.45	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
88	1020	1010	I	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	COKE BOTTLE GREEN		1	23.37	0
88	1020	1010	I	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	3.57	0
89	1025	1018	1A 0-10 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		2	2.89	0
89	1025	1018	1A 0-10 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	8.99	0
89	1025	1018	1A 0-10 CM	WIRE COMMON NAIL	4 TO 4.5 IN. LONG		1	14.82	0
89	1025	1018	1A 0-10 CM	WIRE COMMON NAIL	FRAGMENT		3	11.91	0
89	1025	1018	1A 0-10 CM	CUT COMMON NAIL	3.5 TO 4 IN. LONG	PLASTIC EMBEDDED IN RUST	1	13.15	0
89	1025	1018	1A 0-10 CM	CUT COMMON NAIL	FRAGMENT		3	17.5	0
89	1025	1018	1A 0-10 CM	BRICK	HANDMADE UNGLAZED		3	18.86	0
89	1025	1018	1A 0-10 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AMBER	"168-38A" "6" ANCHOR	1	18.79	0
89	1025	1018	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	GREEN		1	0.45	0
89	1025	1018	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		6	24.21	0
89	1025	1018	1A 0-10 CM	MISCELLANEOUS DOMESTIC METAL	CAST IRON STOVE PART	LETTERING VISIBLE	6	265	0
89	1025	1018	1A 0-10 CM	CERAMIC PLUMBING	SEWER PIPE		2	20.8	0
89	1025	1018	1A 0-10 CM	FENCING	WIRE		5	34	0
90	1025	1018	1B 10-20 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		2	3.27	0
90	1025	1018	1B 10-20 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	11.1	0
90	1025	1018	1B 10-20 CM	WIRE COMMON NAIL	4 TO 4.5 IN. LONG		3	61.1	0
90	1025	1018	1B 10-20 CM	WIRE COMMON NAIL	FRAGMENT		4	22.91	0
90	1025	1018	1B 10-20 CM	UNIDENTIFIABLE NAIL	NAIL		3	15.37	0
90	1025	1018	1B 10-20 CM	PLASTIC CLOTHING ELEMENT	BUTTON		1	0.29	0
90	1025	1018	1B 10-20 CM	19TH CENTURY PORCELAIN	MOLDED, SOFT PASTE		1	0.42	0
90	1025	1018	1B 10-20 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	17.09	1856.5
90	1025	1018	1B 10-20 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	2.61	0
90	1025	1018	1B 10-20 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		1	2.42	0
90	1025	1018	1B 10-20 CM	MACHINE-MADE BOTTLE FRAGMENT	COBALT BLUE		7	13.33	0
90	1025	1018	1B 10-20 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	0.03	0
90	1025	1018	1B 10-20 CM	UNIDENTIFIABLE PLASTIC	FRAGMENT		1	0.83	0
90	1025	1018	1B 10-20 CM	METAL PROJECTILE	MODERN BULLET		1	1.07	0
90	1025	1018	1B 10-20 CM	METAL PROJECTILE	SHOTGUN SHELL		2	1.07	0
91	1025	1018	1C 20-31 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		4	2.31	0
91	1025	1018	1C 20-31 CM	UNIDENTIFIABLE NAIL	CUT NAIL WITHOUT HEAD/ UNIDENTIFIABLE HEAD		3	36.16	0
91	1025	1018	1C 20-31 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	4.87	1856.5
91	1025	1018	1C 20-31 CM	UNIDENTIFIED CERAMIC	INDETERMINATE WARE		1	0.71	0
91	1025	1018	1C 20-31 CM	MACHINE-MADE BOTTLE FRAGMENT	GREEN		2	3.88	0
91	1025	1018	1C 20-31 CM	MACHINE-MADE BOTTLE FRAGMENT	AMETHYST		1	7.14	0
91	1025	1018	1C 20-31 CM	MISCELLANEOUS BIOLOGICAL MATERIAL	COAL		1	0.66	0
91	1025	1018	1C 20-31 CM	UNIDENTIFIABLE METAL	IRON/STEEL		1	37.06	0
91	1025	1018	1C 20-31 CM	CERAMIC TOY	DOLL PART, PORCELAIN	DISCARDED	1	3.39	0
92	1025	1018	1D 31-42 CM	BRICK	HANDMADE UNGLAZED		2	13.64	0
92	1025	1018	1D 31-42 CM	CREAMWARE	DARK YELLOW		1	0.96	1771
92	1025	1018	1D 31-42 CM	PEARLWARE	PLAIN		2	2.55	1805
92	1025	1018	1D 31-42 CM	18TH CENTURY WHITE STONWARE	SALT-GLAZED, OVERALL MOLDED		1	0.35	1752.5
93	1030	1045	II	WIRE COMMON NAIL	FRAGMENT		2	13.39	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
93	1030	1045	II	UNIDENTIFIABLE NAIL	NAIL		5	42.43	0
93	1030	1045	II	BRICK	HANDMADE UNGLAZED	DISCARDED	3	33.74	0
93	1030	1045	II	19TH CENTURY WHITEWARE	PLAIN		16	18.73	1855
93	1030	1045	II	MACHINE-MADE BOTTLE FRAGMENT	AMBER		1	0.62	0
93	1030	1045	II	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	7.97	0
93	1030	1045	II	MISC DOMESTIC METAL	METAL LID		19	124	
94	1030	1050	I/II	UNIDENTIFIABLE NAIL	NAIL		1	13.09	0
94	1030	1050	I/II	BRICK	HANDMADE UNGLAZED	DISCARDED	2	2.53	0
94	1030	1050	I/II	19TH CENTURY WHITEWARE	PLAIN		3	2.54	1855
94	1030	1050	I/II	IMPORTED GRAY STONWARE	RHENISH, UNDECORATED		2	6.19	1729.5
94	1030	1050	I/II	IMPORTED GRAY STONWARE	UNIDENTIFIED		1	4.92	0
94	1030	1050	I/II	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"413" "5612 8"	2	36.51	0
94	1030	1050	I/II	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	3.99	0
95	1034	1023	4 SE 30-40 CM	MACHINE-MADE BOTTLE FRAGMENT	2 TO 3 MM THICK		2	1.29	0
95	1034	1023	4 SE 30-40 CM	FLAT WINDOW GLASS	FRAGMENT		3	9.87	0
95	1034	1023	4 SE 30-40 CM	CUT COMMON NAIL	LIME	DISCARDED	3	86	0
95	1034	1023	4 SE 30-40 CM	MORTAR	PLAIN		3	4.37	1805
95	1034	1023	4 SE 30-40 CM	PEARLWARE	AMBER		1	2.42	0
95	1034	1023	4 SE 30-40 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		1	1.78	0
95	1034	1023	4 SE 30-40 CM	MACHINE-MADE BOTTLE FRAGMENT	IRON/STEEL ROD		1	1.87	
95	1034	1023	4 SE 30-40 CM	UNIDENTIFIABLE METAL	BAG FRAGMENT	DISCARDED	1	0.06	
95	1034	1023	4 SE 30-40 CM	UNIDENTIFIABLE PLASTIC	1 TO 2 MM THICK	DISCARDED	1	1.56	0
96	1034	1023	1 0-5 CM	FLAT WINDOW GLASS	2.5 TO 3 IN. LONG		1	5.28	0
96	1034	1023	1 0-5 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	8.27	0
96	1034	1023	1 0-5 CM	CUT COMMON NAIL	FRAGMENT		1	1.08	0
96	1034	1023	1 0-5 CM	BRICK	MACHINE-MADE UNGLAZED	DISCARDED	1	30.9	0
96	1034	1023	1 0-5 CM	DOMESTIC FAUNAL MATERIAL	OYSTER		1	3.19	0
96	1034	1023	1 0-5 CM	REDWARE	CLEAR GLAZED INTERIOR		1	6.49	
96	1034	1023	1 0-5 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	0.89	1856.5
96	1034	1023	1 0-5 CM	19TH CENTURY IRONSTONE	TRANSFER-PRINTED, BLACK		1	0.76	
96	1034	1023	1 0-5 CM	MISCELLANEOUS DOMESTIC GLASS	CANNING LID LINER, MILK GLASS		1	2.42	0
96	1034	1023	1 0-5 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		1	3.45	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	LIGHT BLUE		1	1.1	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	SMOKED		2	4.83	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	LIGHT GREEN		1	4.12	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		5	10.66	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		13	29.69	0
96	1034	1023	1 0-5 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	4.07	0
96	1034	1023	1 0-5 CM	TABLE GLASSWARE	UNIDENTIFIED PRESSED GLASS		1	10.02	0
96	1034	1023	1 0-5 CM	UNIDENTIFIED GLASS BOTTLE FRAGMENT	LIGHT AQUA		2	0.85	0
97	1034	1023	4 20-32 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		1	8.87	0
97	1034	1023	4 20-32 CM	ARCHITECTURAL FASTENER	UNIDENTIFIED		3	14.51	
97	1034	1023	4 20-32 CM	MORTAR	LIME	DISCARDED	1	6.33	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PPR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
98	1034	1023	5 SE 40-50 CM	UNIDENTIFIABLE NAIL	NAIL		3	11.17	0
98	1034	1023	5 SE 40-50 CM	MORTAR	LIME	DISCARDED	1	14.71	0
98	1034	1023	5 SE 40-50 CM	19TH CENTURY WHITEWARE	EDGE DECORATED		1	0.36	1845
98	1034	1023	5 SE 40-50 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		3	1.58	0
98	1034	1023	5 SE 40-50 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	4.96	0
99	1034	1023	6 SE 50-60 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		1	0.33	0
99	1034	1023	6 SE 50-60 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	0.42	0
99	1034	1023	6 SE 50-60 CM	PEARLWARE	PLAIN		1	1.27	1805
99	1034	1023	6 SE 50-60 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		2	2.68	0
99	1034	1023	6 SE 50-60 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	0.11	0
99	1034	1023	6 SE 50-60 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		1	1.14	0
99	1034	1023	6 SE 50-60 CM	UNIDENTIFIABLE PLASTIC	FRAGMENT		1	0.07	0
99	1034	1023	6 SE 50-60 CM	UNIDENTIFIABLE PLASTIC	BAG FRAGMENT		3	0.01	0
100	1034	1023	2 5-20 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK	DISCARDED	2	3.29	0
100	1034	1023	2 5-20 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		6	37.24	0
100	1034	1023	2 5-20 CM	WIRE COMMON NAIL	FRAGMENT		1	3.78	0
100	1034	1023	2 5-20 CM	CUT COMMON NAIL	FRAGMENT		3	13.68	0
100	1034	1023	2 5-20 CM	ARCHITECTURAL FASTENER	STAPLE		1	6.02	0
100	1034	1023	2 5-20 CM	ARCHITECTURAL HARDWARE	ESCUTCHEON, KEYHOLE COVER		1	21.55	0
100	1034	1023	2 5-20 CM	BRICK	MACHINE-MADE UNGLAZED	DISCARDED	5	96	0
100	1034	1023	2 5-20 CM	MORTAR	LIME	DISCARDED	5	82	0
100	1034	1023	2 5-20 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		1	1.67	0
100	1034	1023	2 5-20 CM	19TH CENTURY PORCELAIN	PLAIN, SOFT PASTE		1	0.59	0
100	1034	1023	2 5-20 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		2	0.81	1856.5
100	1034	1023	2 5-20 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		2	0.99	0
100	1034	1023	2 5-20 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		7	11.44	0
100	1034	1023	2 5-20 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		7	28.81	0
100	1034	1023	2 5-20 CM	TABLE GLASSWARE	PRESSED, DIAMOND		1	27.21	0
100	1034	1023	2 5-20 CM	UNIDENTIFIABLE METAL	IRON/STEEL		1	1.15	0
100	1034	1023	2 5-20 CM	UNIDENTIFIABLE PLASTIC	OBJECT		1	0.31	0
100	1034	1023	2 5-20 CM	PIPE STEM FRAGMENT	4/64TH IN. BALL CLAY		1	2.31	0
100	1034	1023	2 5-20 CM	METAL HARDWARE	WASHER		1	1.83	0
101	1034	1023	7 SE 60-70 CM	WIRE COMMON NAIL	3 TO 3.5 IN. LONG		1	8.87	0
101	1034	1023	7 SE 60-70 CM	20TH CENTURY PORCELAIN	PLAIN		1	6.08	0
101	1034	1023	7 SE 60-70 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		3	3.31	0
101	1034	1023	7 SE 60-70 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	5.6	0
101	1034	1023	7 SE 60-70 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		3	5.55	0
101	1034	1023	7 SE 60-70 CM	MISCELLANEOUS DOMESTIC METAL	ICE CREAM MAKER		1	0.11	0
101	1034	1023	7 SE 60-70 CM	MISCELLANEOUS DOMESTIC PLASTIC	DISH WASHING LIQUID BOTTLE	POSSIBLY PALVOLIVE BRAND	1	30.3	0
101	1034	1023	7 SE 60-70 CM	MISCELLANEOUS DOMESTIC PLASTIC	BLISTER PACKAGING		3	0.23	0
101	1034	1023	7 SE 60-70 CM	UNIDENTIFIABLE PLASTIC	FRAGMENT	DISCARDED	13	1.45	0
102	1034	1023	8 NW 70-80 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	216	0
102	1034	1023	8 NW 70-80 CM	MORTAR	LIME	DISCARDED	1	7.16	0
102	1034	1023	8 NW 70-80 CM	CREAMWARE	DARK YELLOW		2	1	1771
102	1034	1023	8 NW 70-80 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"FEDERAL LAW FORBIDS SALE OR RE-USE OF THIS BOTTLE"	1	26.3	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
102	1034	1023	8 NW 70-80 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	LIQUOR BOTTLE	1	56.32	0
102	1034	1023	8 NW 70-80 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		1	0.31	0
102	1034	1023	8 NW 70-80 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		3	6.31	0
102	1034	1023	8 NW 70-80 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	1.33	0
102	1034	1023	8 NW 70-80 CM	MISCELLANEOUS DOMESTIC METAL	CRIMPED BOTTLE CAP		1	6.91	0
102	1034	1023	8 NW 70-80 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		8	12.4	0
102	1034	1023	8 NW 70-80 CM	MISCELLANEOUS DOMESTIC PLASTIC	BLISTER PACKAGING		2	0.61	0
102	1034	1023	8 NW 70-80 CM	MISCELLANEOUS BIOLOGICAL MATERIAL	CHARCOAL	DISCARDED	1	2.29	0
102	1034	1023	8 NW 70-80 CM	UNIDENTIFIABLE PLASTIC	FRAGMENT		8	0.55	0
103	1034	1023	9 80-90 CM	WIRE COMMON NAIL	FRAGMENT		1	20.68	0
103	1034	1023	9 80-90 CM	MORTAR	LIME	DISCARDED	1	24.8	0
103	1034	1023	9 80-90 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"9 X 73"	2	28.3	0
103	1034	1023	9 80-90 CM	SCREW-TOP JAR FRAGMENT	CLEAR	METAL LID	3	2.16	
103	1034	1023	9 80-90 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	23.93	0
103	1034	1023	9 80-90 CM	MISCELLANEOUS DOMESTIC METAL	TIN CAN		3	3.92	0
103	1034	1023	9 80-90 CM	MISCELLANEOUS DOMESTIC PLASTIC	BLISTER PACKAGING	SAMPLE RETAINED	7	8.35	
103	1034	1023	9 80-90 CM	UNIDENTIFIABLE PLASTIC	STYROFOAM		1	0.09	0
103	1034	1023	9 80-90 CM	PLASTIC STORAGE	TARP	TARP DISCARDED	1	34	
104	1034	1023	3 CLAY LENS	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		1	2.96	0
104	1034	1023	3 CLAY LENS	CUT COMMON NAIL	FRAGMENT		1	3.6	0
104	1034	1023	3 CLAY LENS	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		6	7	0
104	1034	1023	3 CLAY LENS	CREAMWARE	DARK YELLOW		1	0.46	1771
104	1034	1023	3 CLAY LENS	19TH CENTURY IRONSTONE	PLAIN WHITE		1	0.96	1856.5
104	1034	1023	3 CLAY LENS	FREE BLOWN BOTTLE	OLIVE GREEN, WINE		1	3.42	0
104	1034	1023	3 CLAY LENS	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"QUA"	1	11.68	0
104	1034	1023	3 CLAY LENS	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		4	3.76	0
105	1034	1023	F1 A	CUT COMMON NAIL	2 TO 2.5 IN. LONG		1	8.19	0
105	1034	1023	F1 A	CUT COMMON NAIL	FRAGMENT		3	12.64	0
105	1034	1023	F1 A	BRICK	HANDMADE UNGLAZED	DISCARDED	1	1.26	0
105	1034	1023	F1 A	MORTAR	LIME	DISCARDED	1	19.41	0
105	1034	1023	F1 A	PEARLWARE	EDGED		1	1.81	1800
105	1034	1023	F1 A	19TH CENTURY IRONSTONE	PLAIN WHITE		1	3.95	1856.5
105	1034	1023	F1 A	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AMBER	"NOT"	1	1.71	0
105	1034	1023	F1 A	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		1	3.52	0
105	1034	1023	F1 A	SCREW-TOP JAR FRAGMENT	CLEAR		1	1.08	
105	1034	1023	F1 A	MACHINE-MADE BOTTLE FRAGMENT	AQUA		2	3.81	0
105	1034	1023	F1 A	MACHINE-MADE BOTTLE FRAGMENT	AMBER		2	7.51	0
105	1034	1023	F1 A	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	4.49	0
105	1034	1023	F1 A	TABLE GLASSWARE	UNIDENTIFIED MOLDED GLASS		1	13	0
105	1034	1023	F1 A	METAL POT	KETTLE		1	108	0
105	1034	1023	F1 A	MISCELLANEOUS BIOLOGICAL MATERIAL	COAL	DISCARDED	1	0.42	0
105	1034	1023	F1 A	UNIDENTIFIED LAMP GLASS	CLEAR		1	0.15	
106	1034	1023	F1 A2	FLAT WINDOW GLASS	1 TO 2 MM THICK		1	1.05	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
106	1034	1023	F1 A2	MORTAR	LIME	DISCARDED	1	6.49	0
106	1034	1023	F1 A2	ARCHITECTURAL STONE	BUILDING	DISCARDED	1	102	0
106	1034	1023	F1 A2	YELLOWWARE	UNIDENTIFIED		1	1.03	1870
106	1034	1023	F1 A2	19TH CENTURY IRONSTONE	PLAIN WHITE		1	0.72	1856.5
106	1034	1023	F1 A2	MACHINE-MADE BOTTLE FRAGMENT	AMBER		5	8.26	0
106	1034	1023	F1 A2	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	4.42	0
106	1034	1023	F1 A2	MISCELLANEOUS DOMESTIC METAL	SARDINE KEY		1	4.85	0
106	1034	1023	F1 A2	UNIDENTIFIABLE PLASTIC	OBJECT		4	1.22	0
107	1034	1023	F1 A3	CUT COMMON NAIL	FRAGMENT		3	8.49	0
107	1034	1023	F1 A3	BRICK	HANDMADE UNGLAZED	DISCARDED	1	38.86	0
107	1034	1023	F1 A3	19TH CENTURY IRONSTONE	PLAIN WHITE		1	2.07	1856.5
107	1034	1023	F1 A3	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AMBER	"NOT"	1	1.01	0
107	1034	1023	F1 A3	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"UART"	1	4.03	0
107	1034	1023	F1 A3	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	2.34	0
107	1034	1023	F1 A3	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	17.83	0
107	1034	1023	F1 A3	MISCELLANEOUS DOMESTIC METAL	CRIMPED BOTTLE CAP		1	3.96	0
107	1034	1023	F1 A3	PLASTIC STORAGE	SCREW TOP		1	3.67	0
107	1034	1023	F1 A3	MISCELLANEOUS DOMESTIC PLASTIC	BOTTLE CLOSURE PUSH CAP		1	0.31	0
108	1035	1045	II	CUT COMMON NAIL	2.5 TO 3 IN. LONG		1	3.73	0
108	1035	1045	II	BRICK	HANDMADE UNGLAZED	DISCARDED	7	20.62	0
108	1035	1045	II	MORTAR	LIME	DISCARDED	4	19.27	0
109	1036	1033	1A 0-10 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	1	1.75	0
109	1036	1033	1A 0-10 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	5.18	0
109	1036	1033	1A 0-10 CM	WIRE COMMON NAIL	3.5 TO 4 IN. LONG		1	13.52	0
109	1036	1033	1A 0-10 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG		1	3.11	0
109	1036	1033	1A 0-10 CM	WIRE ROOFING NAIL	1.5 TO 2 IN. LONG		1	3.27	0
109	1036	1033	1A 0-10 CM	MORTAR	HANDMADE UNGLAZED	DISCARDED	6	160	0
109	1036	1033	1A 0-10 CM	ARCHITECTURAL MATERIAL	LIME	DISCARDED	6	192	0
109	1036	1033	1A 0-10 CM	PLASTIC CLOTHING ELEMENT	CINDER BLOCK FRAGMENT	DISCARDED	2	73.16	0
109	1036	1033	1A 0-10 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	0.63	0
109	1036	1033	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		1	1.77	1856.5
109	1036	1033	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	15.09	0
110	1036	1033	1B 10-20 CM	FLORAL ARCHITECTURAL MATERIAL	PAINT CHIP	DISCARDED	6	1.02	0
110	1036	1033	1B 10-20 CM	WIRE FINISH NAIL	1 TO 2 MM THICK		1	0.74	0
110	1036	1033	1B 10-20 CM	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		1	2.06	0
110	1036	1033	1B 10-20 CM	CUT COMMON NAIL	FRAGMENT		2	7.11	0
110	1036	1033	1B 10-20 CM	ARCHITECTURAL HARDWARE	2.5 TO 3 IN. LONG		1	6.66	0
110	1036	1033	1B 10-20 CM	BRICK	FRAGMENT		8	27.44	0
110	1036	1033	1B 10-20 CM	MORTAR	HOOK		1	1.02	0
110	1036	1033	1B 10-20 CM	FAUNAL CLOTHING ELEMENT	HANDMADE UNGLAZED	DISCARDED	2	78.17	0
110	1036	1033	1B 10-20 CM	DOMESTIC FAUNAL MATERIAL	LIME	DISCARDED	9	284	0
110	1036	1033	1B 10-20 CM	DOMESTIC FAUNAL MATERIAL	BUTTON, HARD RUBBER	"ROY"	1	0.58	0
110	1036	1033	1B 10-20 CM	19TH CENTURY IRONSTONE	UNBURNT BONE		1	0.17	0
110	1036	1033	1B 10-20 CM		OYSTER	DISCARDED	1	0.12	0
110	1036	1033	1B 10-20 CM		PLAIN WHITE		1	6.7	1856.5

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
110	1036	1033	1B 10-20 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	1.5	0
110	1036	1033	1B 10-20 CM	PHARMACEUTICAL, DIP MOLDED BOTTLE FRAGMENT	AQUA		1	1.01	0
110	1036	1033	1B 10-20 CM	UNIDENTIFIABLE PLASTIC	FRAGMENT		1	0.88	0
111	1036	1033	2A 20-35 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		1	5.74	0
111	1036	1033	2A 20-35 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK	GREEN PAINT	1	9.62	0
111	1036	1033	2A 20-35 CM	WIRE COMMON NAIL	1 TO 1.5 IN. LONG		3	5.97	0
111	1036	1033	2A 20-35 CM	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		3	10.76	0
111	1036	1033	2A 20-35 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		6	36.43	0
111	1036	1033	2A 20-35 CM	WIRE COMMON NAIL	4 TO 4.5 IN. LONG		1	24.01	0
111	1036	1033	2A 20-35 CM	CUT COMMON NAIL	1 TO 1.5 IN. LONG		4	8.21	0
111	1036	1033	2A 20-35 CM	CUT COMMON NAIL	2 TO 2.5 IN. LONG		7	32.68	0
111	1036	1033	2A 20-35 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		2	14.79	0
111	1036	1033	2A 20-35 CM	CUT COMMON NAIL	FRAGMENT		18	69.05	0
111	1036	1033	2A 20-35 CM	ARCHITECTURAL FASTENER	STAPLE		2	10.8	0
111	1036	1033	2A 20-35 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	26.71	0
111	1036	1033	2A 20-35 CM	MORTAR	LIME	DISCARDED	3	80.04	0
111	1036	1033	2A 20-35 CM	ARCHITECTURAL STONE	ROOF SLATE		1	1.86	0
111	1036	1033	2A 20-35 CM	IRON/STEEL CLOTHING ELEMENT	BUTTON		2	2.62	0
111	1036	1033	2A 20-35 CM	IRON/STEEL CLOTHING ELEMENT	BELT OR OTHER BUCKLE		1	17.87	0
111	1036	1033	2A 20-35 CM	DOMESTIC GLASS	DRAWER OR DOOR KNOB		1	27.14	0
111	1036	1033	2A 20-35 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		11	13.49	0
111	1036	1033	2A 20-35 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	DISCARDED	2	4.54	0
111	1036	1033	2A 20-35 CM	20TH CENTURY REFINED EARTHENWARE	FIESTA WARE		1	25.71	0
111	1036	1033	2A 20-35 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		21	72	1856.5
111	1036	1033	2A 20-35 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		4	16.78	0
111	1036	1033	2A 20-35 CM	MISCELLANEOUS GLASS BOTTLE FORM	HALF-GALLON-SIZED CANNING JAR - AQUA	"BALL" "11"	20	376	
111	1036	1033	2A 20-35 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	4.01	
111	1036	1033	2A 20-35 CM	SCREW-TOP JAR FRAGMENT	CLEAR	MOLDED EYE	1	27.64	
111	1036	1033	2A 20-35 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	2.32	0
111	1036	1033	2A 20-35 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		1	2.64	0
111	1036	1033	2A 20-35 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		12	65.87	0
111	1036	1033	2A 20-35 CM	TABLE GLASSWARE	TUMBLER, MOLDED		5	53.04	0
111	1036	1033	2A 20-35 CM	TABLE GLASSWARE	LID, PRESSED	MEND	5	162	0
111	1036	1033	2A 20-35 CM	MISCELLANEOUS DOMESTIC METAL	CRIMPED BOTTLE CAP		1	4.32	0
111	1036	1033	2A 20-35 CM	MISCELLANEOUS DOMESTIC METAL	SARDINE KEY		1	5.51	
111	1036	1033	2A 20-35 CM	MISCELLANEOUS DOMESTIC METAL	SALT SHAKER TOP	ALUMINUM	1	11.41	
111	1036	1033	2A 20-35 CM	MISCELLANEOUS DOMESTIC METAL	SLIP-ON LID		4	18.84	0
111	1036	1033	2A 20-35 CM	UNIDENTIFIABLE METAL	IRON/STEEL BAR		1	3.7	
111	1036	1033	2A 20-35 CM	UNIDENTIFIABLE METAL	IRON/STEEL BAR		1	134	
111	1036	1033	2A 20-35 CM	BRASS/COPPER ALLOY PERSONAL ITEM	PEN NIB		1	0.53	
111	1036	1033	2A 20-35 CM	BRASS/COPPER ALLOY PERSONAL ITEM	COIN	PENNY "19??"	1	3.08	0
111	1036	1033	2A 20-35 CM	IRON/STEEL PERSONAL ITEM	HAIR PIN		1	1.06	
111	1036	1033	2A 20-35 CM	IRON/STEEL PERSONAL ITEM	RAZOR BLADE		3	12.11	
111	1036	1033	2A 20-35 CM	METAL PROJECTILE	MODERN BULLET	22 SHORT	1	0.51	0
111	1036	1033	2A 20-35 CM	PIPE BOWL	BALL CLAY		1	0.72	0
111	1036	1033	2A 20-35 CM	GLASS AUTO, GARAGE, OR MACHINE PART	AUTO LIGHT LENS	RED	1	10.04	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
111	1036	1033	2A 20-35 CM	UNIDENTIFIED LAMP GLASS	CLEAR		10	9.81	
112	1037	1031.5	1A 0-15 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	3	9.01	
112	1037	1031.5	1A 0-15 CM	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		4	6.95	0
112	1037	1031.5	1A 0-15 CM	WIRE COMMON NAIL	3 TO 3.5 IN. LONG		2	16.59	0
112	1037	1031.5	1A 0-15 CM	WIRE COMMON NAIL	3.5 TO 4 IN. LONG		1	13.24	0
112	1037	1031.5	1A 0-15 CM	WIRE COMMON NAIL	FRAGMENT		1	10.37	0
112	1037	1031.5	1A 0-15 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG		4	11.96	0
112	1037	1031.5	1A 0-15 CM	CUT COMMON NAIL	TO 1 IN. LONG		1	1.34	0
112	1037	1031.5	1A 0-15 CM	CUT COMMON NAIL	2 TO 2.5 IN. LONG		4	21.16	0
112	1037	1031.5	1A 0-15 CM	CUT COMMON NAIL	FRAGMENT		14	41.8	0
112	1037	1031.5	1A 0-15 CM	ARCHITECTURAL FASTENER	STAPLE		1	5.68	0
112	1037	1031.5	1A 0-15 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	4	88	0
112	1037	1031.5	1A 0-15 CM	MORTAR	LIME	DISCARDED	2	71.96	0
112	1037	1031.5	1A 0-15 CM	FAUNAL CLOTHING ELEMENT	BUTTON, SHELL		2	0.18	0
112	1037	1031.5	1A 0-15 CM	GLASS CLOTHING ELEMENT	BUTTON	2-HOLE MILK GLASS	1	0.27	0
112	1037	1031.5	1A 0-15 CM	GLASS CLOTHING ELEMENT	BUTTON	2-HOLE CLEAR GLASS	1	3.84	0
112	1037	1031.5	1A 0-15 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		1	1.42	0
112	1037	1031.5	1A 0-15 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	1.57	1856.5
112	1037	1031.5	1A 0-15 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	1.5	0
112	1037	1031.5	1A 0-15 CM	MACHINE-MADE BOTTLE FRAGMENT	AMBER		1	1.7	0
112	1037	1031.5	1A 0-15 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	8.53	0
112	1037	1031.5	1A 0-15 CM	MACHINE-MADE BOTTLE FRAGMENT	TABLE SPOON		1	38	0
112	1037	1031.5	1A 0-15 CM	METAL UTENSIL	MEDICINE TUBE		1	9.69	0
112	1037	1031.5	1A 0-15 CM	MISCELLANEOUS DOMESTIC METAL	SARDINE KEY		1	3.34	0
112	1037	1031.5	1A 0-15 CM	MISCELLANEOUS DOMESTIC METAL	EARRING	4 FAKE DIAMONDS	1	1.64	
112	1037	1031.5	1A 0-15 CM	IRON/STEEL PERSONAL ITEM	BUTANE LIGHTER	RED WITH PINK FLOWERS	1	25.41	
112	1037	1031.5	1A 0-15 CM	METAL SMOKING ACCESSORY					
112	1037	1031.5	1A 0-15 CM	METAL STABLE ELEMENT	STIRRUP PART		1	150	0
112	1037	1031.5	1A 0-15 CM	PLASTIC TOY	ANIMAL	"ALPACA" FLAT BLUE	1	0.69	
113	1037	1031.5	2A EAST 15-25 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	1	12.1	
113	1037	1031.5	2A EAST 15-25 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG		1	2.99	0
113	1037	1031.5	2A EAST 15-25 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		2	13.51	0
113	1037	1031.5	2A EAST 15-25 CM	CUT COMMON NAIL	3 TO 3.5 IN. LONG		2	28.55	0
113	1037	1031.5	2A EAST 15-25 CM	CUT COMMON NAIL	FRAGMENT		4	24.74	0
113	1037	1031.5	2A EAST 15-25 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	2	122	0
113	1037	1031.5	2A EAST 15-25 CM	MORTAR	LIME	DISCARDED	7	66	0
113	1037	1031.5	2A EAST 15-25 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		8	9.58	0
113	1037	1031.5	2A EAST 15-25 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	10.98	0
113	1037	1031.5	2A EAST 15-25 CM	PLASTIC PERSONAL ITEM	TOOTHPASTE TUBE CAP		1	2.11	
114	1037	1031.5	2B EAST 25-32 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	1	8.83	
114	1037	1031.5	2B EAST 25-32 CM	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		1	1.98	0
114	1037	1031.5	2B EAST 25-32 CM	WIRE COMMON NAIL	1 TO 1.5 IN. LONG		1	2.21	0
114	1037	1031.5	2B EAST 25-32 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	6.95	0
114	1037	1031.5	2B EAST 25-32 CM	WIRE COMMON NAIL	FRAGMENT		8	23.55	0
114	1037	1031.5	2B EAST 25-32 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		2	15.51	0
114	1037	1031.5	2B EAST 25-32 CM	CUT COMMON NAIL	FRAGMENT		6	20.71	0
114	1037	1031.5	2B EAST 25-32 CM	UNIDENTIFIABLE NAIL	NAIL		4	17.51	0
114	1037	1031.5	2B EAST 25-32 CM	MORTAR	LIME	DISCARDED	3	22.62	0
114	1037	1031.5	2B EAST 25-32 CM	ARCHITECTURAL MATERIAL	CINDER BLOCK FRAGMENT	DISCARDED	1	4	

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
114	1037	1031.5	2B EAST 25-32 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		3	16.57	0
114	1037	1031.5	2B EAST 25-32 CM	MISCELLANEOUS DOMESTIC GLASS	CANNING LID LINER, MILK GLASS		1	2.15	0
114	1037	1031.5	2B EAST 25-32 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		9	24.36	0
114	1037	1031.5	2B EAST 25-32 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	12.19	
114	1037	1031.5	2B EAST 25-32 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	1.35	0
114	1037	1031.5	2B EAST 25-32 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		4	9.17	0
114	1037	1031.5	2B EAST 25-32 CM	UNIDENTIFIED GLASS BOTTLE FRAGMENT	DARK OLIVE GREEN		1	0.6	0
114	1037	1031.5	2B EAST 25-32 CM	UNIDENTIFIABLE METAL	BRASS/COPPER ALLOY		1	1.17	0
114	1037	1031.5	2B EAST 25-32 CM	UNIDENTIFIED LAMP GLASS	CLEAR		1	0.23	0
114	1037	1031.5	2B EAST 25-32 CM	FARM TOOL	UNIDENTIFIED		1	362	
115	1037	1031.5	3A WEST 15-26 CM	BRICK	MACHINE-MADE UNGLAZED	DISCARDED	1	49.37	0
115	1037	1031.5	3A WEST 15-26 CM	MORTAR	LIME	DISCARDED	1	3.92	0
115	1037	1031.5	3A WEST 15-26 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	1.15	0
116	1037	1031.5	4A WEST 26-36 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK		3	31.24	0
116	1037	1031.5	4A WEST 26-36 CM	WIRE COMMON NAIL	2 TO 2.5 IN. LONG		1	8.2	0
116	1037	1031.5	4A WEST 26-36 CM	UNIDENTIFIABLE NAIL	NAIL	HEAVILY CORRODED WITH GRAVEL/GLASS EMBEDDED	53	554	0
116	1037	1031.5	4A WEST 26-36 CM	18TH CENTURY WHITE STONWARE	PLAIN SALT-GLAZED		1	1.59	1757.5
116	1037	1031.5	4A WEST 26-36 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		4	31.9	0
116	1037	1031.5	4A WEST 26-36 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	AQUA		1	21.16	0
116	1037	1031.5	4A WEST 26-36 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	14.65	0
116	1037	1031.5	4A WEST 26-36 CM	TABLE GLASSWARE	BURNT OR UNIDENTIFIED	CIRCULAR AMBER LID HANDLE	1	7.85	0
116	1037	1031.5	4A WEST 26-36 CM	IRON/STEEL PERSONAL ITEM	PEN PART		1	0.97	0
116	1037	1031.5	4A WEST 26-36 CM	UNIDENTIFIED LAMP GLASS	CLEAR		1	0.27	0
117	1037	1031.5	4B WEST 36-46 CM	UNIDENTIFIABLE NAIL	NAIL	HEAVILY CORRODED WITH EMBEDDED GRAVEL	17	168	0
117	1037	1031.5	4B WEST 36-46 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	3	39.83	0
117	1037	1031.5	4B WEST 36-46 CM	MORTAR	LIME	DISCARDED	2	17.12	0
117	1037	1031.5	4B WEST 36-46 CM	IMPORTED BROWN STONWARE	ENGLISH BROWN BOTTLE		1	8.64	1860
117	1037	1031.5	4B WEST 36-46 CM	MISCELLANEOUS STONWARE	UNIDENTIFIABLE	HEAVY WHITE-GLAZED EXTERIOR, TAN INTERIOR	1	1.25	0
117	1037	1031.5	4B WEST 36-46 CM	METAL HARDWARE	WASHER		1	1.03	0
118	1039	1038	1A 0-10 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	5	14.97	0
118	1039	1038	1A 0-10 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK	DISCARDED	3	12.64	0
118	1039	1038	1A 0-10 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK	DISCARDED	24	30	0
118	1039	1038	1A 0-10 CM	WIRE FINISH NAIL	1 TO 1.5 IN. LONG		1	1.91	0
118	1039	1038	1A 0-10 CM	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		2	3.92	0
118	1039	1038	1A 0-10 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	6.56	0
118	1039	1038	1A 0-10 CM	WIRE COMMON NAIL	3 TO 3.5 IN. LONG		1	8.3	0
118	1039	1038	1A 0-10 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG		1	2.41	0
118	1039	1038	1A 0-10 CM	CUT COMMON NAIL	FRAGMENT		5	34	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PPR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
118	1039	1038	1A 0-10 CM	ARCHITECTURAL FASTENER	TACK		1	0.63	0
118	1039	1038	1A 0-10 CM	ARCHITECTURAL FASTENER	BOLT		1	14.98	0
118	1039	1038	1A 0-10 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	6	42.93	0
118	1039	1038	1A 0-10 CM	MORTAR	LIME	DISCARDED	6	20.69	0
118	1039	1038	1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	8 DISCARDED	9	42.62	0
118	1039	1038	1A 0-10 CM	CREAMWARE	DARK YELLOW		1	0.88	1771
118	1039	1038	1A 0-10 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	1.6	1856.5
118	1039	1038	1A 0-10 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	AMBER		1	23.29	0
118	1039	1038	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	9.24	0
118	1039	1038	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	2.91	0
118	1039	1038	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		21	13.27	0
118	1039	1038	1A 0-10 CM	METAL HARDWARE	HOOK		1	3.76	0
119	1039	1038	2A 10-22 CM WEST	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	1	3.72	0
119	1039	1038	2A 10-22 CM WEST	FLAT WINDOW GLASS	1 TO 2 MM THICK	DISCARDED	54	78	0
119	1039	1038	2A 10-22 CM WEST	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		2	8.93	0
119	1039	1038	2A 10-22 CM WEST	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		2	11.86	0
119	1039	1038	2A 10-22 CM WEST	WIRE COMMON NAIL	FRAGMENT		6	28.26	0
119	1039	1038	2A 10-22 CM WEST	CUT COMMON NAIL	1.5 TO 2 IN. LONG		1	3.24	0
119	1039	1038	2A 10-22 CM WEST	CUT COMMON NAIL	4 TO 4.5 IN. LONG		1	20.81	0
119	1039	1038	2A 10-22 CM WEST	CUT COMMON NAIL	FRAGMENT		5	17.94	0
119	1039	1038	2A 10-22 CM WEST	ARCHITECTURAL FASTENER	STAPLE		1	7.14	0
119	1039	1038	2A 10-22 CM WEST	BRICK	HANDMADE UNGLAZED	DISCARDED	1	2.53	0
119	1039	1038	2A 10-22 CM WEST	REDWARE	UNGLAZED		2	7.08	0
119	1039	1038	2A 10-22 CM WEST	20TH CENTURY PORCELAIN	BANDED DESIGN		1	23.3	0
119	1039	1038	2A 10-22 CM WEST	19TH CENTURY IRONSTONE	PLAIN WHITE		4	4.74	1856.5
119	1039	1038	2A 10-22 CM WEST	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		5	21.1	0
119	1039	1038	2A 10-22 CM WEST	SCREW-TOP JAR FRAGMENT	CLEAR		1	3.73	0
119	1039	1038	2A 10-22 CM WEST	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	0.35	0
119	1039	1038	2A 10-22 CM WEST	MACHINE-MADE BOTTLE FRAGMENT	AMETHYST		1	0.69	0
119	1039	1038	2A 10-22 CM WEST	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		18	21.74	0
119	1039	1038	2A 10-22 CM WEST	UNIDENTIFIABLE METAL	IRON/STEEL		1	6.82	0
120	1039	1038	3A 22-32 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK	DISCARDED	16	13.99	0
120	1039	1038	3A 22-32 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK	DISCARDED	22	43.21	0
120	1039	1038	3A 22-32 CM	FLAT WINDOW GLASS	7 TO 8 MM THICK		1	11.9	0
120	1039	1038	3A 22-32 CM	WIRE FINISH NAIL	1 TO 1.5 IN. LONG		2	8.67	0
120	1039	1038	3A 22-32 CM	CUT COMMON NAIL	FRAGMENT		35	258	0
120	1039	1038	3A 22-32 CM	UNIDENTIFIABLE NAIL	NAIL		6	45.59	0
120	1039	1038	3A 22-32 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	2	3.59	0
120	1039	1038	3A 22-32 CM	IRON/STEEL CLOTHING ELEMENT	OTHER CLOTHING PART		1	2.39	0
120	1039	1038	3A 22-32 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		3	2.51	0
120	1039	1038	3A 22-32 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		1	0.15	0
120	1039	1038	3A 22-32 CM	CREAMWARE	DARK YELLOW		1	0.2	1771
120	1039	1038	3A 22-32 CM	PEARLWARE	HAND-PAINTED BLUE UNDERGLAZE		1	0.62	1800
120	1039	1038	3A 22-32 CM	19TH CENTURY WHITEWARE	BANDED		1	2.22	1835
120	1039	1038	3A 22-32 CM	19TH CENTURY WHITEWARE	PLAIN		2	3.27	1855
120	1039	1038	3A 22-32 CM	19TH CENTURY PORCELAIN	PLAIN, HARD PASTE		2	1.35	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
120	1039	1038	3A 22-32 CM	19TH CENTURY PORCELAIN	TRANSFER-PRINTED, HARD PASTE		3	6.95	0
120	1039	1038	3A 22-32 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	3.31	1856.5
120	1039	1038	3A 22-32 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		6	16.77	1856.5
120	1039	1038	3A 22-32 CM	19TH CENTURY IRONSTONE	MOLDED		4	0.8	
120	1039	1038	3A 22-32 CM	IRONSTONE	DECAL		1	2.74	1944
120	1039	1038	3A 22-32 CM	MISCELLANEOUS DOMESTIC GLASS	CANNING LID LINER, MILK GLASS	"BALL MASON" "NE ZINC CAP"	4	14.06	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AMBER	"SG Co" WITH ANCHOR	3	51.49	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AMETHYST	"ORMI" "TIMOR"	1	1.45	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"OR R" "12-9"	6	50	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE BOTTLE FRAGMENT	COBALT BLUE	MELTED	1	1.74	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE BOTTLE FRAGMENT	LIGHT BLUE		1	3	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE BOTTLE FRAGMENT	OLIVE GREEN		1	0.51	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		4	8.77	0
120	1039	1038	3A 22-32 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		23	56	0
120	1039	1038	3A 22-32 CM	UNIDENTIFIABLE PLASTIC	OBJECT		1	1.22	0
120	1039	1038	3A 22-32 CM	UNIDENTIFIABLE PLASTIC	OBJECT		2	1.79	0
120	1039	1038	3A 22-32 CM	GLASS PERSONAL ITEM	PERFUME BOTTLE	SCREW STOPPER	1	1.76	
120	1039	1038	3A 22-32 CM	GUN FLINT	ENGLISH, GRAY/BLACK-COLORED		1	0.22	0
120	1039	1038	3A 22-32 CM	PIPE STEM FRAGMENT	5/64TH IN. BALL CLAY		1	2.19	0
121	1039	1038	3B 32-43 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	DISCARDED	1	2.88	0
122	1039	1045	1A 0-10 CM	WIRE COMMON NAIL	FRAGMENT		1	2.46	0
122	1039	1045	1A 0-10 CM	CUT COMMON NAIL	4 TO 4.5 IN. LONG		1	22.24	0
122	1039	1045	1A 0-10 CM	CUT COMMON NAIL	FRAGMENT		1	8.18	0
122	1039	1045	1A 0-10 CM	ARCHITECTURAL FASTENER	STAPLE		1	8.91	0
122	1039	1045	1A 0-10 CM	UNIDENTIFIABLE NAIL	NAIL		3	3.8	0
122	1039	1045	1A 0-10 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	3.68	0
123	1039	1045	1B 10-20 CM	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		1	4.41	0
123	1039	1045	1B 10-20 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		1	8.06	0
123	1039	1045	1B 10-20 CM	CUT COMMON NAIL	3 TO 3.5 IN. LONG		1	21.92	0
123	1039	1045	1B 10-20 CM	CUT COMMON NAIL	FRAGMENT		5	45.44	0
123	1039	1045	1B 10-20 CM	UNIDENTIFIABLE NAIL	NAIL		8	33.39	0
123	1039	1045	1B 10-20 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	22.61	0
123	1039	1045	1B 10-20 CM	REDWARE	CLEAR GLAZED, PLAIN		1	5.77	0
123	1039	1045	1B 10-20 CM	IMPORTED BROWN STONEWARE	ENGLISH BROWN BOTTLE		1	15.16	1860
123	1039	1045	1B 10-20 CM	DOMESTIC GRAY STONEWARE	SALT-GLAZED, BLUE DECORATED		1	10.44	0
123	1039	1045	1B 10-20 CM	19TH CENTURY IRONSTONE	PLAIN WHITE	MAKER'S MARK - LION RAMPANT "ALES"	2	2.57	1856.5
123	1039	1045	1B 10-20 CM	MISCELLANEOUS DOMESTIC GLASS	CANNING LID LINER, MILK GLASS	"NED CAP"	2	6.52	0
123	1039	1045	1B 10-20 CM	PIPE BOWL	BALL CLAY		1	0.55	0
124	1039	1045	1C 20-31 CM	CUT COMMON NAIL	FRAGMENT		4	44.84	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PPR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
124	1039	1045	1C 20-31 CM	CREAMWARE	DARK YELLOW		1	2.62	1771
124	1039	1045	1C 20-31 CM	DOMESTIC GRAY STONWARE	SALT-GLAZED, BLUE DECORATED		1	4.55	0
125	1039	1034	1A 0-10 CM	FLAT WINDOW GLASS	TO 1 MM THICK	DISCARDED	2	0.88	0
125	1039	1034	1A 0-10 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK	DISCARDED	1	1.51	0
125	1039	1034	1A 0-10 CM	CUT COMMON NAIL	FRAGMENT		1	2.95	0
125	1039	1034	1A 0-10 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	10	192	0
125	1039	1034	1A 0-10 CM	BRICK	MACHINE-MADE UNGLAZED	DISCARDED	10	2.86	0
125	1039	1034	1A 0-10 CM	MORTAR	LIME	DISCARDED	4	19.77	0
125	1039	1034	1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	DISCARDED	1	4.09	0
125	1039	1034	1A 0-10 CM	CREAMWARE	DARK YELLOW		1	0.59	1771
125	1039	1034	1A 0-10 CM	PEARLWARE	PLAIN		1	0.64	1805
125	1039	1034	1A 0-10 CM	PEARLWARE	HAND-PAINTED BLUE UNDERGLAZE		1	0.19	1800
125	1039	1034	1A 0-10 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	2.21	1856.5
125	1039	1034	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	1.57	0
125	1039	1034	1A 0-10 CM	STONE	NON-CULTURAL		1	43.03	0
126	1039	1034	1B 10-19 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	6	10.67	0
126	1039	1034	1B 10-19 CM	FLAT WINDOW GLASS	TO 1 MM THICK		4	2.02	0
126	1039	1034	1B 10-19 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK		6	5.16	0
126	1039	1034	1B 10-19 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	9	104	0
126	1039	1034	1B 10-19 CM	MORTAR	LIME	DISCARDED	6	10.67	0
126	1039	1034	1B 10-19 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		7	7.14	0
126	1039	1034	1B 10-19 CM	DOMESTIC FAUNAL MATERIAL	OYSTER		2	35.37	0
126	1039	1034	1B 10-19 CM	PEARLWARE	HAND-PAINTED BLUE UNDERGLAZE		10	10.39	1800
126	1039	1034	1B 10-19 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		4	32.77	0
126	1039	1034	1B 10-19 CM	MACHINE-MADE LIP BOTTLE FRAGMENT	CLEAR		1	28.4	0
126	1039	1034	1B 10-19 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		3	2.47	0
126	1039	1034	1B 10-19 CM	TABLE GLASSWARE	UNIDENTIFIED PRESSED GLASS		2	8.03	0
126	1039	1034	1B 10-19 CM	UNIDENTIFIED LAMP GLASS	CLEAR		1	0.27	0
127	1039	1034	2A 19-29 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		4	7.8	0
127	1039	1034	2A 19-29 CM	WIRE FINISH NAIL	2 TO 2.5 IN. LONG		1	2.06	0
127	1039	1034	2A 19-29 CM	WIRE COMMON NAIL	FRAGMENT		1	3.02	0
127	1039	1034	2A 19-29 CM	WIRE ROOFING NAIL	1 TO 1.5 IN. LONG		1	2.81	0
127	1039	1034	2A 19-29 CM	CJT COMMON NAIL	FRAGMENT		2	8	0
127	1039	1034	2A 19-29 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	2	54.93	0
127	1039	1034	2A 19-29 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	13	136.1	0
127	1039	1034	2A 19-29 CM	MORTAR	MACHINE-MADE UNGLAZED	DISCARDED	4	174	0
127	1039	1034	2A 19-29 CM	MORTAR	LIME	DISCARDED	11	62	0
127	1039	1034	2A 19-29 CM	MORTAR	LIME	DISCARDED	18	79.4	0
127	1039	1034	2A 19-29 CM	ARCHITECTURAL STONE	BUILDING	DISCARDED	12	416.7	0
127	1039	1034	2A 19-29 CM	ARCHITECTURAL MATERIAL	CINDER BLOCK FRAGMENT	DISCARDED	1	27.2	0
127	1039	1034	2A 19-29 CM	BRASS/COPPER ALLOY CLOTHING ELEMENT	BUTTON		1	1.25	0
127	1039	1034	2A 19-29 CM	PLASTIC CLOTHING ELEMENT	BUTTON		1	1.77	0
127	1039	1034	2A 19-29 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE - BUTCHERED		4	6.48	0
127	1039	1034	2A 19-29 CM	DOMESTIC FAUNAL MATERIAL	OYSTER		1	36.74	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
127	1039	1034	2A 19-29 CM	PEARLWARE	HAND-PAINTED BLUE UNDERGLAZE		1	1.73	1800
127	1039	1034	2A 19-29 CM	20TH CENTURY PORCELAIN	POLYCHROME OVERGLAZE		1	0.81	0
127	1039	1034	2A 19-29 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	5.79	1856.5
127	1039	1034	2A 19-29 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"LL"	1	7.84	0
127	1039	1034	2A 19-29 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		1	2.09	0
127	1039	1034	2A 19-29 CM	TABLE GLASSWARE	ETCHED	TUMBLER	1	10.87	0
127	1039	1034	2A 19-29 CM	TABLE GLASSWARE	UNIDENTIFIED PRESSED GLASS		1	7.89	0
127	1039	1034	2A 19-29 CM	MISC DOMESTIC METAL	METAL LID		1	15.08	
127	1039	1034	2A 19-29 CM	UNIDENTIFIABLE PLASTIC	OBJECT	MEND	2	0.35	0
127	1039	1034	2A 19-29 CM	GLASS PERSONAL ITEM	SUNGLASSES	MEND - BLUE GLASS	2	3.48	
127	1039	1034	2A 19-29 CM	BRASS/COPPER ALLOY PERSONAL ITEM	COIN	PENNY "194?"	1	3.03	0
127	1039	1034	2A 19-29 CM	MISCELLANEOUS GLASS	TOY MARBLE		1	5.83	0
128	1039	1034	2B 29-53 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	DISCARDED	3	1.4	0
128	1039	1034	2B 29-53 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	12	20.89	
128	1039	1034	2B 29-53 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	4	11.4	
128	1039	1034	2B 29-53 CM	FLAT WINDOW GLASS	2 TO 3 MM THICK	DISCARDED	4	14.47	0
128	1039	1034	2B 29-53 CM	WIRE WINDOW GLASS	2 TO 3 MM THICK	DISCARDED	3	6.88	0
128	1039	1034	2B 29-53 CM	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		1	4.42	0
128	1039	1034	2B 29-53 CM	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		1	2.75	0
128	1039	1034	2B 29-53 CM	CUT COMMON NAIL	1.5 TO 2 IN. LONG		1	4.6	0
128	1039	1034	2B 29-53 CM	CUT COMMON NAIL	FRAGMENT		2	6.73	0
128	1039	1034	2B 29-53 CM	UNIDENTIFIABLE NAIL	NAIL		1	5.47	0
128	1039	1034	2B 29-53 CM	ARCHITECTURAL HARDWARE	MISCELLANEOUS	WINDOW CLOSURE?	1	2.13	0
128	1039	1034	2B 29-53 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	8	302	0
128	1039	1034	2B 29-53 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	10	336	0
128	1039	1034	2B 29-53 CM	MORTAR	LIME	DISCARDED	20	202	0
128	1039	1034	2B 29-53 CM	MORTAR	LIME	DISCARDED	14	276	0
128	1039	1034	2B 29-53 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE	SOME TURTLE	10	11.56	0
128	1039	1034	2B 29-53 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		5	8.41	0
128	1039	1034	2B 29-53 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE - BUTCHERED		1	1	
128	1039	1034	2B 29-53 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	DISCARDED	1	4.04	0
128	1039	1034	2B 29-53 CM	20TH CENTURY PORCELAIN	BANDED DESIGN		1	2.46	
128	1039	1034	2B 29-53 CM	19TH CENTURY IRONSTONE	PLAIN WHITE		1	3.2	1856.5
128	1039	1034	2B 29-53 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	AQUA	"RF" "MAS"	1	8.95	0
128	1039	1034	2B 29-53 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	1.27	
128	1039	1034	2B 29-53 CM	MACHINE-MADE BOTTLE FRAGMENT	COBALT BLUE		1	1.03	0
128	1039	1034	2B 29-53 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	1.44	0
128	1039	1034	2B 29-53 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	1.56	0
128	1039	1034	2B 29-53 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		1	0.67	0
128	1039	1034	2B 29-53 CM	MISCELLANEOUS DOMESTIC METAL	CRIMPED BOTTLE CAP		1	5.54	0
128	1039	1034	2B 29-53 CM	METAL AUTO, GARAGE, OR MACHINE PART	TIRE VALVE		1	1.67	
129	1039	1034	3A 53-59 CM	WIRE COMMON NAIL	4 TO 4.5 IN. LONG		1	12.84	0
129	1039	1034	3A 53-59 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	15.82	0
129	1039	1034	3A 53-59 CM	MORTAR	LIME	DISCARDED	1	30.4	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
129	1039	1034	3A 53-59 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		1	3.53	0
130	1039	1034	3B 59-69 CM	FLAT WINDOW GLASS	1 TO 2 MM THICK		3	2.36	0
130	1039	1034	3B 59-69 CM	WIRE FINISH NAIL	1.5 TO 2 IN. LONG		1	1.86	0
130	1039	1034	3B 59-69 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		1	4.85	0
130	1039	1034	3B 59-69 CM	CUT COMMON NAIL	3 TO 3.5 IN. LONG		1	9.42	0
130	1039	1034	3B 59-69 CM	CUT COMMON NAIL	FRAGMENT		5	9.32	0
130	1039	1034	3B 59-69 CM	ARCHITECTURAL FASTENER	SPIKE		1	33.53	0
130	1039	1034	3B 59-69 CM	ARCHITECTURAL FASTENER	SCREW		1	8.84	0
130	1039	1034	3B 59-69 CM	UNIDENTIFIABLE NAIL	WIRE NAIL WITHOUT HEAD/ UNIDENTIFIABLE HEAD		1	0.47	0
130	1039	1034	3B 59-69 CM	BRICK	HANDMADE GLAZED	DISCARDED	1	28.87	0
130	1039	1034	3B 59-69 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	7	244	0
130	1039	1034	3B 59-69 CM	MORTAR	LIME	DISCARDED	7	108	0
130	1039	1034	3B 59-69 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		6	2.65	0
130	1039	1034	3B 59-69 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		1	17.9	0
130	1039	1034	3B 59-69 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	4.88	0
130	1039	1034	3B 59-69 CM	SCREW-TOP JAR FRAGMENT	CLEAR		5	49.35	0
130	1039	1034	3B 59-69 CM	MACHINE-MADE BOTTLE FRAGMENT	LIGHT AQUA		1	1.22	0
130	1039	1034	3B 59-69 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		1	0.94	0
130	1039	1034	3B 59-69 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		7	14.92	0
130	1039	1034	3B 59-69 CM	TABLE GLASSWARE	TUMBLER, MOLDED		1	4.96	0
130	1039	1034	3B 59-69 CM	TABLE GLASSWARE	BURNT OR UNIDENTIFIED		1	5.42	0
130	1039	1034	3B 59-69 CM	MISCELLANEOUS DOMESTIC METAL	SARDINE KEY		1	4.6	0
130	1039	1034	3B 59-69 CM	MISCELLANEOUS DOMESTIC PLASTIC	BOTTLE CLOSURE PUSH CAP		1	0.2	0
130	1039	1034	3B 59-69 CM	UNIDENTIFIABLE METAL	IRON/STEEL		1	3.46	0
130	1039	1034	3B 59-69 CM	UNIDENTIFIED LAMP GLASS	CLEAR		2	0.9	0
131	1044	1031	1A 0-10 CM	ARCHITECTURAL PETROLEUM PRODUCTS	ASPHALT ROOF TILE	DISCARDED	3	6.22	0
131	1044	1031	1A 0-10 CM	FLAT WINDOW GLASS	TO 1 MM THICK		2	1.33	0
131	1044	1031	1A 0-10 CM	WIRE FINISH NAIL	1 TO 2 MM THICK		4	9.33	0
131	1044	1031	1A 0-10 CM	WIRE COMMON NAIL	1.5 TO 2 IN. LONG		1	1.98	0
131	1044	1031	1A 0-10 CM	WIRE COMMON NAIL	FRAGMENT		1	2.59	0
131	1044	1031	1A 0-10 CM	CUT COMMON NAIL	1 TO 1.5 IN. LONG		1	1.56	0
131	1044	1031	1A 0-10 CM	CUT COMMON NAIL	2 TO 2.5 IN. LONG		2	10.14	0
131	1044	1031	1A 0-10 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		1	3.66	0
131	1044	1031	1A 0-10 CM	ARCHITECTURAL FASTENER	FRAGMENT		9	34.16	0
131	1044	1031	1A 0-10 CM	BRICK	BOLT		1	13.3	0
131	1044	1031	1A 0-10 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	2	196	0
131	1044	1031	1A 0-10 CM	BRICK	MACHINE-MADE UNGLAZED	DISCARDED	2	34	0
131	1044	1031	1A 0-10 CM	BRICK	BURNED, GLAZED AND UNGLAZED	DISCARDED	1	40	0
131	1044	1031	1A 0-10 CM	MORTAR	LIME	DISCARDED	7	180	0
131	1044	1031	1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		7	16.44	0
131	1044	1031	1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	NON-HUMAN TOOTH/TEETH		1	1.59	0
131	1044	1031	1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	5 DISCARDED	9	152	0
131	1044	1031	1A 0-10 CM	PEARLWARE	PLAIN	FOOTRING	1	4.87	1805
131	1044	1031	1A 0-10 CM	PEARLWARE	HAND-PAINTED BLUE UNDERGLAZE		2	3.6	1800

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (G)	MEDIAN DATE
131	1044	1031	1A 0-10 CM	EARLY REFINED EARTHENWARE	JACKFIELD		1	2.27	1781.5
131	1044	1031	1A 0-10 CM	18TH CENTURY WHITE STONWARE	DIPPED WHITE SALT-GLAZED		1	1.18	1745
131	1044	1031	1A 0-10 CM	FREE BLOWN BOTTLE	OLIVE GREEN, WINE	HEAVILY PATINATED	3	25.16	0
131	1044	1031	1A 0-10 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR		1	2.24	0
131	1044	1031	1A 0-10 CM	FREE BLOWN BOTTLE	DARK OLIVE GREEN		1	3.28	0
131	1044	1031	1A 0-10 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	AMBER		3	28.9	0
131	1044	1031	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	LIGHT BLUE		1	1.54	0
131	1044	1031	1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	7.03	0
131	1044	1031	1A 0-10 CM	TABLE GLASSWARE	TUMBLER, MOLDED		1	1.26	0
131	1044	1031	1A 0-10 CM	MISCELLANEOUS BIOLOGICAL MATERIAL	COAL	DISCARDED	1	0.36	0
131	1044	1031	1A 0-10 CM	UNIDENTIFIABLE PLASTIC	OBJECT		1	0.12	0
131	1044	1031	1A 0-10 CM	PLASTIC PERSONAL ITEM	BAKELITE COMB		1	0.64	0
132	1044	1031	2A 10-25 CM	FLAT WINDOW GLASS	TO 1 MM THICK		3	4.06	0
132	1044	1031	2A 10-25 CM	WIRE COMMON NAIL	FRAGMENT		1	4.38	0
132	1044	1031	2A 10-25 CM	CUT COMMON NAIL	FRAGMENT		14	33.79	0
132	1044	1031	2A 10-25 CM	ARCHITECTURAL FASTENER	SCREW		1	4.01	0
132	1044	1031	2A 10-25 CM	UNIDENTIFIABLE NAIL	NAIL		8	37.64	0
132	1044	1031	2A 10-25 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	9	224	0
132	1044	1031	2A 10-25 CM	MORTAR	LIME	DISCARDED	6	20.76	0
132	1044	1031	2A 10-25 CM	BRASS/COPPER ALLOY CLOTHING ELEMENT	BUTTON	.91" LOOP	1	3.96	0
132	1044	1031	2A 10-25 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		12	39.6	0
132	1044	1031	2A 10-25 CM	DOMESTIC FAUNAL MATERIAL	BURNT BONE		1	0.47	0
132	1044	1031	2A 10-25 CM	DOMESTIC FAUNAL MATERIAL	NON-HUMAN TOOTH/TEETH		2	8.33	0
132	1044	1031	2A 10-25 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	DISCARDED	5	32.61	0
132	1044	1031	2A 10-25 CM	CREAMWARE	FEATHER-EDGED		1	0.75	1776.5
132	1044	1031	2A 10-25 CM	CREAMWARE	LIGHT YELLOW		4	3.98	1791
132	1044	1031	2A 10-25 CM	REDWARE	BLACK GLAZED, FINE		2	15.72	0
132	1044	1031	2A 10-25 CM	IMPORTED BROWN STONWARE	ENGLISH BROWN		1	1.11	1737.5
132	1044	1031	2A 10-25 CM	18TH CENTURY WHITE STONWARE	PLAIN SALT-GLAZED		1	1.65	1757.5
132	1044	1031	2A 10-25 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	AMBER		1	2.4	0
132	1044	1031	2A 10-25 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	DARK OLIVE GREEN		3	5.61	0
132	1044	1031	2A 10-25 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	CLEAR		1	2.73	0
133	1044	1031	3A 25-40 CM	FLAT WINDOW GLASS	TO 1 MM THICK		2	1.03	0
133	1044	1031	3A 25-40 CM	UNIDENTIFIABLE NAIL	NAIL		4	53.98	0
133	1044	1031	3A 25-40 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	7.46	0
133	1044	1031	3A 25-40 CM	MORTAR	LIME	DISCARDED	2	8.08	0
133	1044	1031	3A 25-40 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		2	7.95	0
133	1044	1031	3A 25-40 CM	DOMESTIC FAUNAL MATERIAL	OYSTER	3 DISCARDED	4	11.15	0
133	1044	1031	3A 25-40 CM	TIN-ENAMELLED EARTHENWARE	PLAIN WHITE		1	0.21	0
133	1044	1031	3A 25-40 CM	IMPORTED BROWN STONWARE	ENGLISH BROWN BOTTLE		1	3.2	1860
133	1044	1031	3A 25-40 CM	18TH CENTURY WHITE STONWARE	PLAIN SALT-GLAZED	FOOTRING	2	3.88	1757.5
133	1044	1031	3A 25-40 CM	FREE BLOWN BOTTLE	OLIVE GREEN, WINE		1	5.49	0
133	1044	1031	3A 25-40 CM	BLOWN-IN-MOLD BOTTLE FRAGMENT	CLEAR	FROSTED	1	3.42	0
133	1044	1031	3A 25-40 CM	MISCELLANEOUS BIOLOGICAL MATERIAL	CHARCOAL		3	1.8	0
133	1044	1031	3A 25-40 CM	UNIDENTIFIABLE METAL	IRON/STEEL		5	26.38	0
133	1044	1031	3A 25-40 CM	PIPE BOWL	BALL CLAY		1	0.94	0
133	1044	1031	3A 25-40 CM	PIPE STEM FRAGMENT	4/64TH IN. BALL CLAY		1	1.26	0

**ARTIFACT INVENTORY
T. WATKINS SITE (18PR1028) PHASE II**

LOT	NORTH	EAST	DEPTH	TYPE NAME	DESCRIPTION	NOTES	QUANTITY	WEIGHT (g)	MEDIAN DATE
134	1045	1045	II	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		2	5.57	0
135	1045	1050	I	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		1	14.22	0
136	1050	1005	I	UNIDENTIFIABLE NAIL	NAIL		2	11.07	0
137	1050	1050	II	BRICK	HANDMADE UNGLAZED	DISCARDED	1	15.17	0
138	1055	1005	I	UNIDENTIFIED GLASS BOTTLE FRAGMENT	LIGHT AMBER		1	1.16	0
139	1060	1005	II	20TH CENTURY PORCELAIN	MOLDED		1	3.03	0
140	TU 9A		1A 0-10 CM	FLORAL ARCHITECTURAL MATERIAL	TAR PAPER	DISCARDED	1	0.27	0
140	TU 9A		1A 0-10 CM	WIRE COMMON NAIL	2 TO 2.5 IN. LONG		2	8.87	0
140	TU 9A		1A 0-10 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		5	32.51	0
140	TU 9A		1A 0-10 CM	WIRE COMMON NAIL	4 TO 4.5 IN. LONG		2	30.76	0
140	TU 9A		1A 0-10 CM	WIRE ROOFING NAIL	1.5 TO 2 IN. LONG	LEAD HEAD	1	5.26	0
140	TU 9A		1A 0-10 CM	CUT COMMON NAIL	1.5 TO 2 IN. LONG		1	3.5	0
140	TU 9A		1A 0-10 CM	CUT COMMON NAIL	2.5 TO 3 IN. LONG		2	13.57	0
140	TU 9A		1A 0-10 CM	CUT COMMON NAIL	FRAGMENT		3	11.9	0
140	TU 9A		1A 0-10 CM	MORTAR	LIME	DISCARDED	8	40.47	0
140	TU 9A		1A 0-10 CM	DOMESTIC METAL HARDWARE	SOFA BED SPRING		1	34.4	0
140	TU 9A		1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		5	36.77	0
140	TU 9A		1A 0-10 CM	MISCELLANEOUS GLASS	TOY MARBLE		1	4.63	0
140	TU 9A		1A 0-10 CM	METAL AUTO. GARAGE. OR MACHINE PART	SPARK PLUG		1	24.42	0
140	TU 9A		1A 0-10 CM	METAL AUTO. GARAGE. OR MACHINE PART	UNIDENTIFIED PART	"52-02164" ALUMINUM	3	53.77	0
140	TU 9A		1A 0-10 CM	METAL HARDWARE	SPRING		1	2.65	0
141	TU 9A		1B 10-22 CM	WIRE COMMON NAIL	3 TO 3.5 IN. LONG		1	5.8	0
141	TU 9A		1B 10-22 CM	CUT COMMON NAIL	FRAGMENT		1	2.92	0
141	TU 9A		1B 10-22 CM	BRICK	HANDMADE UNGLAZED	DISCARDED	1	280	0
141	TU 9A		1B 10-22 CM	MORTAR	LIME		2	4.75	0
141	TU 9A		1B 10-22 CM	HAND-TOOLED, EMBOSSED OR LIP BOTTLE FRAGMENT	COKE BOTTLE		3	21.87	0
142	TU 9A		2A 22 - CM	BRICK	HANDMADE UNGLAZED	DISCARDED	4	8.77	0
142	TU 9A		2A 22 - CM	MORTAR	LIME	DISCARDED	4	8.77	0
143	TU 9B		1A 0-10 CM	WIRE FINISH NAIL	1 TO 1.5 IN. LONG		1	3.43	0
143	TU 9B		1A 0-10 CM	WIRE FINISH NAIL	2 TO 2.5 IN. LONG		2	5.72	0
143	TU 9B		1A 0-10 CM	WIRE COMMON NAIL	2.5 TO 3 IN. LONG		2	17.04	0
143	TU 9B		1A 0-10 CM	WIRE ROOFING NAIL	1.5 TO 2 IN. LONG		1	1.46	0
143	TU 9B		1A 0-10 CM	MORTAR	LIME	DISCARDED	6	92	0
143	TU 9B		1A 0-10 CM	DOMESTIC FAUNAL MATERIAL	UNBURNT BONE		1	0.88	0
143	TU 9B		1A 0-10 CM	MACHINE-MADE, DECORATED OR EMBOSSED BOTTLE FRAGMENT	CLEAR	"ME"	2	13.9	0
143	TU 9B		1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		6	33.14	0
143	TU 9B		1A 0-10 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		10	56.31	0
55	TU 9B		1C 20-30 CM	CUT COMMON NAIL	FRAGMENT		1	9.58	0
55	TU 9B		1C 20-30 CM	MORTAR	LIME	DISCARDED	1	8.79	0
55	TU 9B		1C 20-30 CM	SCREW-TOP JAR FRAGMENT	CLEAR		1	61.74	0
55	TU 9B		1C 20-30 CM	MACHINE-MADE BOTTLE FRAGMENT	AQUA		2	0.96	0
55	TU 9B		1C 20-30 CM	MACHINE-MADE BOTTLE FRAGMENT	CLEAR		10	24.93	0

APPENDIX C

MARYLAND ARCHAEOLOGICAL SITE FORM

MARYLAND INVENTORY OF HISTORIC PROPERTIES
ARCHEOLOGICAL SITE SURVEY: BASIC DATA FORM

Date Filed: _____
Check if update: Yes



Maryland Department of Planning
Maryland Historical Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, Maryland 21032

Site Number: 18 PR 1028

County: Prince George's

A. DESIGNATION

1. Site Name: T. Watkins Site
2. Alternate Site Name/Numbers: Green Branch Parcel 6 Site 1
3. Site Type (describe site chronology and function; see instructions):
Late 18th – 20th century tenant farm
4. Prehistoric _____ Historic x Unknown _____
5. Terrestrial _____ Submerged/Underwater _____ Both _____

B. LOCATION

6. USGS 7.5' Quadrangle(s): Bowie, MD (For underwater sites)
NOAA Chart No.: _____
(Photocopy section of quad or chart on page 4 and mark site location)
7. Maryland Archeological Research Unit Number: 8
8. Physiographic Province (check one):
_____ Allegany Plateau
_____ Ridge and Valley
_____ Great Valley
_____ Blue Ridge
_____ Lancaster/Frederick Lowland
_____ Eastern Piedmont
x _____ Western Shore Coastal Plain
_____ Eastern Shore Coastal Plain
9. Major Watershed/Underwater Zone (see instructions for map and list): _____

C. ENVIRONMENTAL DATA

10. Nearest Water Source: _____ Stream Order: _____
11. Closest Surface Water Type (check all applicable):
_____ Ocean
_____ Estuarine Bay/Tidal River
_____ Tidal or Marsh
x _____ Freshwater Stream/River
_____ Freshwater Swamp
_____ Lake or Pond
_____ Spring
12. Distance from closest surface water: 100 meters (or _____ feet)

BASIC DATA FORM**C. ENVIRONMENTAL DATA [CONTINUED]**

13. Current water speed: _____ knots

14. Water Depth: _____ meters

15. Water visibility: _____

16. SCS Soils Typology and/or Sediment Type: _____

17. Topographic Settings (check all applicable):

<input type="checkbox"/> Floodplain	<input type="checkbox"/> Hilltop/Bluff
<input type="checkbox"/> Interior Flat	<input checked="" type="checkbox"/> Upland Flat
<input type="checkbox"/> Terrace	<input type="checkbox"/> Ridgetop
<input type="checkbox"/> Low Terrace	<input type="checkbox"/> Rockshelter/Cave
<input type="checkbox"/> High Terrace	<input type="checkbox"/> Unknown
<input type="checkbox"/> Hillslope	<input type="checkbox"/> Other:

18. Slope: 0 - 1019. Elevation: _____ meters (or 100 feet) above sea level

20. Land use at site when last field checked (check all applicable):

<input type="checkbox"/> Plowed/Tilled	<input type="checkbox"/> Extractive
<input type="checkbox"/> No-Till	<input type="checkbox"/> Military
<input type="checkbox"/> Wooded/Forested	<input checked="" type="checkbox"/> Recreational
<input type="checkbox"/> Logging/Logged	<input type="checkbox"/> Residential
<input checked="" type="checkbox"/> Underbrush/Overgrown	<input checked="" type="checkbox"/> Ruin
<input type="checkbox"/> Pasture	<input type="checkbox"/> Standing Structure
<input type="checkbox"/> Cemetery	<input type="checkbox"/> Transportation
<input type="checkbox"/> Commercial	<input type="checkbox"/> Unknown
<input type="checkbox"/> Educational	<input type="checkbox"/> Other:

21. Condition of site:

Disturbed
 Undisturbed
 Unknown

22. Cause of disturbance/destruction (check all applicable):

<input type="checkbox"/> Plowed	<input type="checkbox"/> Vandalized/Looted
<input type="checkbox"/> Eroded/Eroding	<input type="checkbox"/> Dredged
<input type="checkbox"/> Graded/Contoured	<input type="checkbox"/> Heavy Marine Traffic
<input type="checkbox"/> Collected	<input checked="" type="checkbox"/> Other: Sludge Injection, Features Filled, dumping

23. Extent of disturbance:

Minor (0-10%)
 Moderate (10-60%)
 Major (60-99%)
 Total (100%)
 % unknown

C. ENVIRONMENTAL DATA [CONTINUED]

- 24. Describe site setting with respect to local natural and cultural landmarks (topography, hydrology, fences, structures, roads). Use continuation sheet if needed.

The T. Watkins Site is located downslope from a slight rise to the north of Grey's Branch which feeds into the Patuxent River. The site is accessed via a gated farm road which leads from a parking lot off Governor's Bridge Road into the M-NCPPC park. The site is approximately 750 meters southwest of the parking lot. The site is located within the woodline to the south of an open field with a ruined tobacco barn in its center. The site is adjacent to a farm access road and includes a ditch constructed by the WSSC to contain sludge runoff. The site includes two-three structural ruins.

- 25. Characterize site stratigraphy. Include a representative profile on separate sheet, if applicable. Address plowzone (presence/absence), subplowzone features and levels, if any, and how stratigraphy affects site integrity. Use continuation sheet if needed.

STPs revealed a typical plowzone/subsoil configuration around the periphery of the site. Depths ranged from 10 to 25 cm of brown, dark brown, or grayish brown silty or sandy loam over a subsoil of yellowish brown, dark yellowish brown, brown, or reddish brown clay, sandy clay or sandy loam.

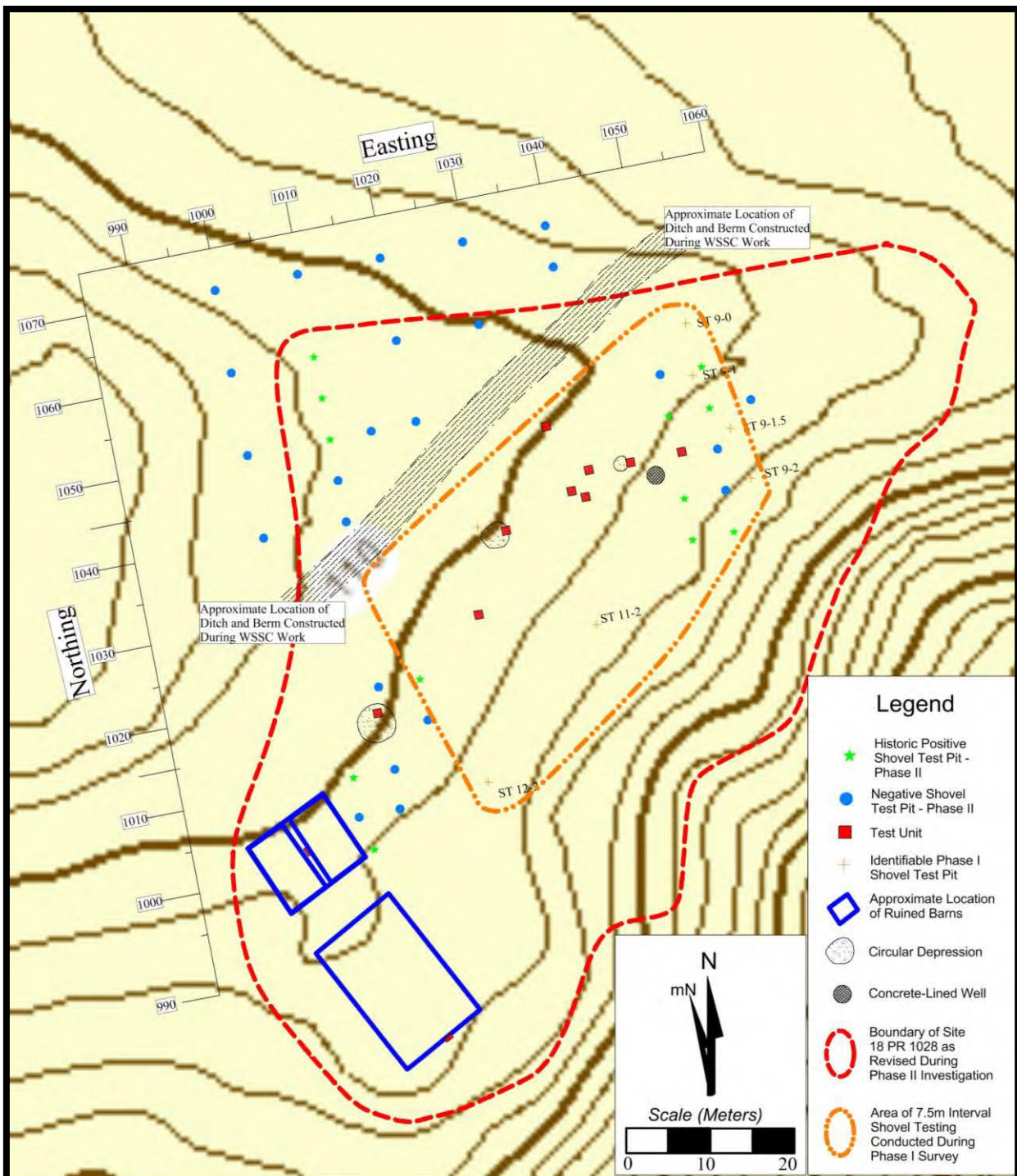
Phase II revealed potential Burial A horizon – possibly a yard surface as well as complex stratigraphy associated with features including a house foundation and a well.

- 26. Site size: 90 meters by 90 meters (or _____ feet by _____ feet)

27. Draw a sketch map of the site and immediate environs, here or on separate sheet:

See Next Page

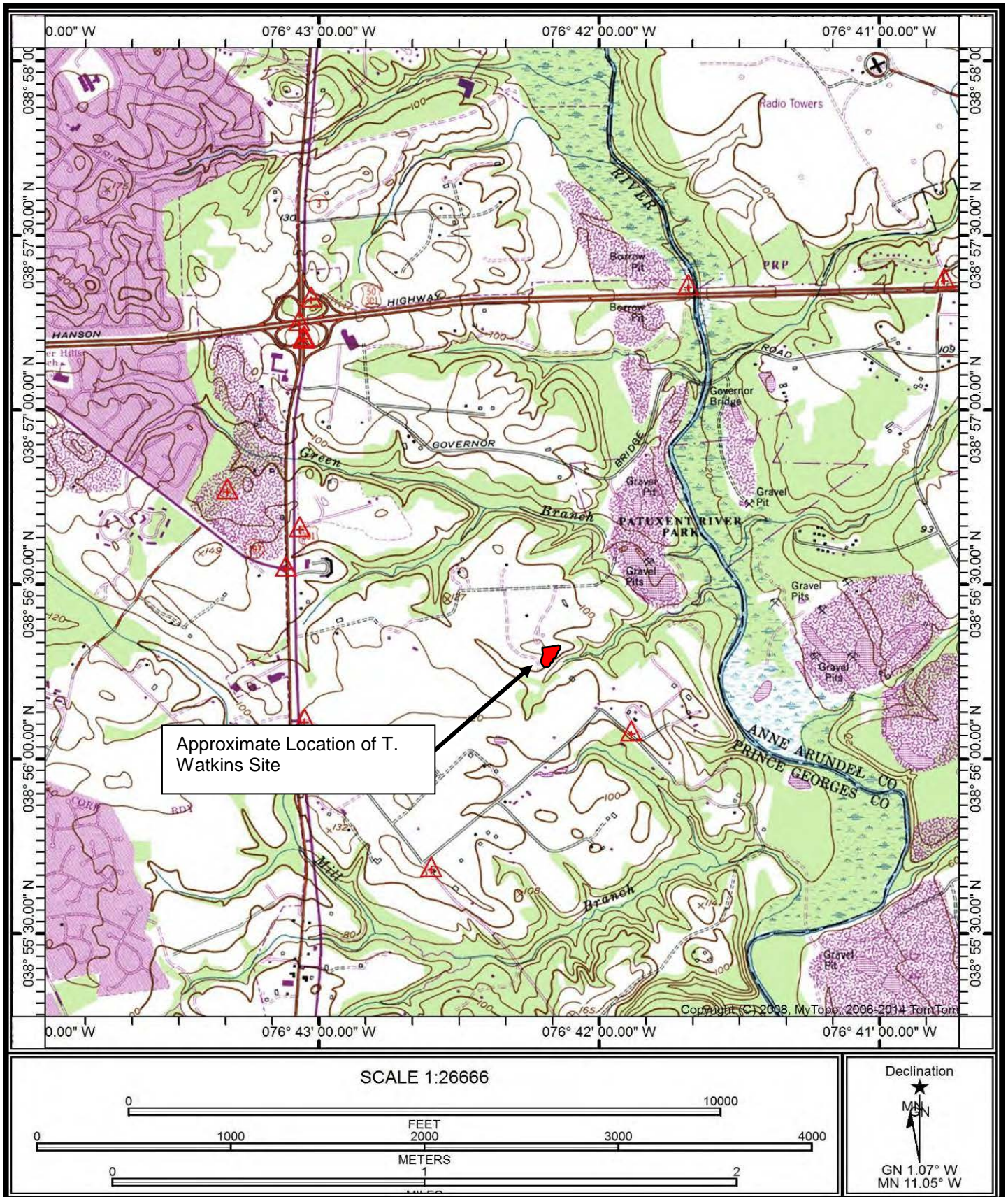
Scale: North arrow:



Phase II Investigation of The T. Watkins Site (18 PR 1028)

Green Branch Athletic Complex, Parcel Six, Bowie, Prince George's County, MD
Applied Archaeology and History Associates, Inc, Fall 2013

Photocopy section of quadrangle map(s) and mark site location with heavy dot or circle and arrow pointing to it.



D. CONTEXT

28. Cultural Affiliation (check all applicable):

PREHISTORIC

- Unknown
- Paleoindian
- Archaic
- Early Archaic
- Middle Archaic
- Late Archaic
- Terminal Archaic
- Woodland
- Adena
- Early Woodland
- Middle Woodland
- Late Woodland

CONTACT

HISTORIC:

- Unknown
- 17th century
- 1630-1675
- 1676-1720
- 18th century
- 1721-1780
- 1781-1820
- 19th century
- 1821-1860
- 1861-1900
- 20th century
- 1901-1930
- post-1930

UNKNOWN

E. INVESTIGATIVE DATA

29. Type of investigation:

- Phase I
- Phase II/Site Testing
- Phase III/Excavation
- Archival Investigation
- Monitoring
- Field Visit
- Collection/Artifact Inventory
- Other: _____

30. Purpose of investigation:

- Compliance
- Research
- Regional Survey
- Site Inventory
- MHT Grant Project
- Other: _____

31. Method of sampling (check all applicable):

- Non-systematic surface search
- Systematic surface collection
- Non-systematic shovel test pits
- Systematic shovel test pits
- Excavation units
- Mechanical excavation
- Remote sensing
- Other: _____

32. Extent/nature of excavation: Phase II archaeological evaluation. 40 STPs. 9 1 x 1 meter units. 2 1 x 0.5 meter units

F. SUPPORT DATA

33. Accompanying Data Form(s):

- Prehistoric
- Historic
- Shipwreck

34. Ownership: Private Federal State Local/County
 Unknown

35. Owner(s): Prince George's County Department of Parks and Recreation
Address: 6600 Kenilworth Avenue, Riverdale, MD
Phone: (301) 699-2255

36. Tenant and/or Local Contact: _____
Address: _____
Phone: _____

37. Other Known Investigations: Evans 1980; Kriesa et al. 2012

38. Primary report reference or citation: Tyler and Ward 2014 A Phase II Archaeological Evaluation Invesitigation of the T. Watkins Site (18PR1028) Green Branch Athletic Complex Parcel 6, Prince George's County, Maryland.

39. Other Records (e.g. slides, photos, original field maps/notes, sonar, magnetic record)?
 Slides Field record Other: _____
 Photos Sonar
 Field maps Magnetic record

40. If yes, location of records: Prince George's County Department of Parks and Recreation

41. Collections at Maryland Archeological Conservation (MAC) Lab or to be deposited at MAC Lab?
 Yes
 No
 Unknown

42. If NO or UNKNOWN, give owner: Prince George's County Department of Parks and Recreation
location: _____
and brief description of collection: Artifact collection, and documetation

43. Informant: _____
Address: _____
Phone: _____

44. Site visited by Jeanne A. Ward, Applied Archaeology and History Associates, Inc.
Address: 615 Fairglen Lane, Annapolis, MD 21401
Phone: 410.224.2304 Date: 11/15/13

45. Form filled out by: Jeanne A. Ward, Applied Archaeology and History Associates, Inc.
Address: 615 Fairglen Lane, Annapolis, MD 21401
Phone: 410.224.2304 Date: 1/24/14

46. Site Summary/Additional Comments (append additional pages if needed):

Background research resulted in the identification of a chain of title separate from that of the W.W.W. Bowie property as identified during the Phase I survey. Ownership of the property can be traced to the beginning of the 18th century, when it was in the possession of the Boyd family. Later in the 18th century the property was owned by John Watkins but 1798 Federal Tax Records indicate that Joseph Powell, a tenant, occupied the property, while Watkins likely lived on the other side of the Patuxent. Additional census records provide information about the composition of his household during that period. The property likely continued to be used as a tenant farm after its sale to Richard Harwood in 1801, and it is unclear how long Powell lived on the site. The property was held by Thomas Watkins of N, and his son Nicholas Edwin for approximately 30 years during the middle of the 19th century. It is unclear whether either Watkins specifically lived on the site at that time, but both lived in the immediate vicinity for a portion of this period. When Joshua T. Clarke, Jr. took possession in 1877 it looks increasingly likely that he moved the domestic focus of the property to the north and constructed a new farmhouse (18PR1029). It is unclear whether anyone continued to reside with the T. Watkins Site after this time.

Fieldwork included a pedestrian reconnaissance which resulted in the re-identification of the surface features noted during the Phase I survey, the WSSC ditch surrounding the site, the collapsed outbuildings located west of the site, and a scatter of structural elements and artifact across the southern slope below the site. An additional 40 shovel tests were excavated to more fully define the boundaries of the site. A total of 12 STPs were found to contain historic artifacts including brick fragments, window glass fragments, nails, and ceramics. As a result of this subsurface testing and pedestrian reconnaissance, the site's boundaries have been extended to encompass a small portion of the agricultural field, the outbuilding foundations, and the terrace to the south of the site.

A total of nine 1 x 1-meter test units and two 1 x 0.5-meter test units were excavated within the 1,350 m² site. Three test units were excavated in areas anticipated to represent former yard surfaces. These units contained artifact assemblages dating primarily to the late 18th to late 19th -century.

Remnants of a house foundation, which appears to have been of fieldstone construction repaired with concrete block, were identified in three units. Artifact assemblages recovered from these units included early ceramics and glass as well as large quantities of architectural material from the interior. In addition, a Buried A horizon found to contain late 18th to late 19th -century artifacts and likely representing a former yard surface, was identified to the immediate exterior of the structure. An additional two test units were excavated to investigate two visible surface depressions. While Phase II excavations reached 83 and 140 cm below the surface respectively, the excavations did not extend to the bottom of either feature. The first, Feature 1, was identified as a mortared brick-lined well which appears to have been filled at or about the time of the acquisition of the property by the WSSC. The second, Feature 3, was identified as a possible well, cistern or icehouse and was also apparently filled during the late 20th century. The deposits identified during the excavations of these features primarily dated to the 20th century, but it is possible that older deposits may exist at a deeper depth. ,

Finally, two 1 x .05 meter test units were excavated to investigate the agricultural outbuildings on the western side of the site with both revealing shallow, fieldstone foundations with no evident builder's trench.

The total artifact assemblage included 2,266 items. Functional analysis indicated a predominance of kitchen related artifacts (53.1%). Architectural artifacts comprised 39% of the assemblage and items representing other functional groups made up the remainder. Ceramics ranged in date from the early 18th century to the late 20th century with the majority of datable ceramics consisting of 19th century whiteware. A distinct assemblage of late 18th century ceramics was recovered from relatively intact contexts.

Research questions posed at the onset of the Phase II archaeological evaluation of the T. Watkins Site (18PR1028) included questions regarding site boundaries, assemblage date, feature presence and arrangement, occupants, and finally, eligibility for listing on the National Register of Historic Places. The site boundaries have been expanded slightly in all directions although the portion of the site north of the WSSC ditch lacks integrity due to sludge injection in this area. Intact subsurface features and deposits have been identified across the site and above ground structural ruins and subsurface foundation remnants have also been recorded. Background research has identified specific residents from both the 18th and 19th century who can be associated with the artifact assemblage, a portion of which was recovered from contexts which appear to retain archaeological integrity. While the domestic focus of the site appears to have shifted to a new farmstead located to the north of the T. Watkins Site, it seems probable that the area continued to be used for agricultural purposes through the middle of the 20th century.

MARYLAND ARCHEOLOGICAL SITE SURVEY: HISTORIC DATA FORM

Site Number 18 PR1028

1. Site class (check all applicable, check at least one from each group):

- a. domestic
 industrial
 transportation
 military
 sepulchre
 unknown

- b. urban
 rural
 unknown

c. standing structure:

- yes
 no
 unknown

d. above-grade/visible ruin:

- yes
 no
 unknown

2. Site Type (check all applicable):

- artifact concentration
 possible structure
 post-in-ground structure
 frame structure
 masonry structure
 farmstead
 plantation
 townsite
 mill (specify: _____)
 raceway
 quarry
 furnace/forge

_____ other industrial (specify):

- _____ road/railroad
_____ wharf/landing
_____ bridge
_____ ford
_____ battlefield
_____ military fortification
_____ military encampment
_____ cemetery
_____ unknown
_____ other:

3. Ethnic Association:

- _____ Native American
_____ African American
 Angloamerican
_____ other Euroamerican (specify):

- _____ Hispanic
_____ Asian American
_____ unknown
_____ other:

4. Categories of material remains present (check all applicable):

- ceramics
 bottle/table glass
 other kitchen artifacts
 architecture
 furniture
 arms
 clothing
 personal items

- tobacco pipes
 activity items
 human skeletal remains
 faunal remains
 floral remains
 organic remains
 unknown
_____ other:

5. Diagnostics (choose from manual and give number recorded or observed):

Tin-enameled earthenware (1)
White salt-glazed stoneware
Rhenish ware
English Brown Stoneware
Pearlware
Creamware
19th century Ironstone
Fiestaware (1)

Dark Olive Green Bottle Glass
Machine Cut Nails
Wire Nails

6. Features present:

- yes
- no
- unknown

7. Types of features present:

- construction feature
- foundation
- cellar hole/storage cellar
- hearth/chimney base
- posthole/postmold
- paling ditch/fence
- privy
- well/cistern
- trash pit/dump
- sheet midden
- planting feature

- road/drive/walkway
- depression/mound
- burial
- railroad bed
- earthworks
- raceway
- wheel pit
- unknown
- other: _____

8. Flotation samples collected:

- yes
- no
- unknown

analyzed:

- yes, by _____
- no
- unknown

9. Soil samples collected:

- yes
- no
- unknown

analyzed:

- yes, by _____
- no
- unknown

10. Other analyses (specify): _____

11. Additional comments:

12. Form filled out by: Jeanne A. Ward, Applied Archaeology and History Associates, Inc.

Address: 615 Fairglen Lane, Annapolis, MD 21401

Phone: 410.224.2304 Date: 1/24/14

APPENDIX D
QUALIFICATIONS OF THE INVESTIGATORS

Jason L. Tyler, MA
APPLIED ARCHAEOLOGY AND HISTORY ASSOCIATES, INC.
ANNAPOLIS, MARYLAND

Mr. Jason Tyler serves as Principal Investigator/Project Manager for Applied Archaeology and History Associates, Inc. He has over 10 years of experience in archaeology, both in the USA and UK, with the past four years being devoted to cultural resource management in the Mid-Atlantic. He received his B.S. with a double major in Anthropology and History from Towson University, Maryland, where he graduated Summa cum Laude. Before attending Towson University in 1998, Mr. Tyler spent seven years working within the finance sector in the United Kingdom. He continued his education at the University of Bristol, England, where he received a M.A. in Landscape Archaeology and interned with Michael Worthington of the Oxford Dendrochronology Laboratory. Although his interests primarily focus on the prehistoric cultures of the Mid-Atlantic, Mr. Tyler has worked on a variety of historic and prehistoric sites across the region.

EDUCATION

Master of Arts in Landscape Archaeology

2002 - 2004 University of Bristol, England, UK,
Combination of Coursework Undertaken in the United Kingdom and in the United States
Dissertation: Re-examination of 8 Years of Excavation at the Elkridge Site (18AN30), Anne Arundel County, Maryland, USA

Bachelor of Science in Anthropology and History

1998 - 2000 Towson University, Baltimore, Maryland, USA,
Graduated Summa cum Laude
Valedictorian speaker at the Towson University Fall 2000 commencement

ARCHAEOLOGICAL FIELD EXPERIENCE AND EMPLOYMENT

- 2005 – Present** PRINCIPAL INVESTIGATOR/PROJECT MANAGER, Applied Archaeology and History Associates, Inc. (AAHA), Annapolis, Maryland, USA
- 2001** FIELD TECHNICIAN, *Joseph Hopkins Associates, Inc., Baltimore, Maryland, USA*
- 2000 – 2001** FIELD TECHNICIAN (individual surveys), Robert Wall & Associates, Inc., Catonsville, Maryland, USA

PROFESSIONAL MEMBERSHIPS

Council for Maryland Archaeology
The Archaeological Society of Maryland
The Mid-Atlantic Archaeological Conference

Phase II Archaeological Evaluation of the T. Watkins Site (18PR1028), Prince George's County, Maryland

JEANNE A. WARD, RPA

Ms. Jeanne A. Ward, RPA, a cultural resources management consultant with over 30 years of professional experience, is President of Applied Archaeology and History Associates, Inc. (AAHA). Ms. Ward's academic credentials include a BA in anthropology from the University of Georgia and an MA in anthropology from the University of Tennessee, Knoxville. Her experience encompasses both historic and prehistoric archaeology and historic structure identification and evaluation. Projects have ranged from cultural resource sensitivity studies, through location/identification surveys, evaluations of significance, National Register of Historic Places nominations, and large scale data recovery excavations. Ms. Ward's professional qualifications exceed all U. S. Department of the Interior criteria for archaeologists and historians (36 CFR 61). In addition, she is a Registered Professional Archaeologist (RPA), a national evaluation and certification of professional qualifications. Ms. Ward is the author, co-author, or contributor to over 300 cultural resources management reports and has presented numerous papers at professional conferences.

EDUCATION

1985 M.A. IN ANTHROPOLOGY, University of Tennessee, Knoxville, TN.

1978 B.A. IN ANTHROPOLOGY, University of Georgia, Athens, GA.
Cum Laude

ARCHAEOLOGICAL FIELD EXPERIENCE AND EMPLOYMENT

2000 - Present PRESIDENT, Applied Archaeology and History Associates, Inc. Annapolis, MD.
1998 – 1999 SOLE PROPRIETOR, Applied Archaeology and History Associates, Annapolis, MD
1995 – 1998 SENIOR ARCHAEOLOGIST/HISTORIAN/WETLANDS SCIENTIST, IMA Consulting, Inc., Minneapolis, MN.
1994 - 1995 PRESIDENT, Jeanne A. Ward, Inc. Consultant, Stony Creek Mills, Reading, PA.
1991 - 1993 SOLE PROPRIETOR, Archaeologist and Cultural Resources Consultant, in Private Practice, Stony Creek Mills, Reading, PA.
1989 - 1991 PROJECT ARCHAEOLOGIST, John Milner Associates, Inc., West Chester, PA.
1986 - 1989 ASSISTANT ARCHAEOLOGIST, John Milner Associates, Inc., West Chester, PA.
1984 - 1986 EDITORIAL ASSISTANT, Institute for Community and Area Development, University of Georgia, Athens, GA.
1982 - 1984 FIELD DIRECTOR, University of Florida, Gainesville, FL.
1982 - 1983 FIELD ARCHAEOLOGIST, Jeffrey Brown Institute of Archaeology, University of Tennessee, Chattanooga, TN.
1979 - 1981 LABORATORY TECHNICIAN, University of Tennessee, Knoxville, TN.
1977 - 1980 FIELD ARCHAEOLOGIST,

PROFESSIONAL MEMBERSHIPS

Society for Historical Archaeology
Council for Maryland Archaeology (Secretary – 2000 to 2004)
Council for Northeast Historical Archaeology
The Archaeological Society of Maryland
American Cultural Resources Association (Board of Directors – 2001 – 2007, Executive Board 2008 - 2012)

Draft Report: Phase II Archaeological Evaluation of the T. Watkins Site (18PR1028), Prince George's County, Maryland

Appendix F
Retrospect - Tobacco Barn Determination of Eligibility

**MARYLAND HISTORICAL TRUST
DETERMINATION OF ELIGIBILITY FORM**

NR Eligible: yes
no

Property Name: Tobacco Barns at W.W.W. Bowie House (site) Inventory Number: PG: 74B-2

Address: 17501 Governors Bridge Road (new) City: Bowie Zip Code: 20716

County: Prince George's USGS Topographic Map: Bowie

Owner: Maryland National Capital Park & Planning Commission Is the property being evaluated a district? yes

56 A#&

Tax Parcel Number: 06&21 Tax Map Number: 55E3 Tax Account ID Number: 0796979 & 0801191

Project: Green Branch Athletic Complex Bond Bill Agency: Commission

Site visit by MHT Staff: no yes Name: _____ Date: _____

Is the property located within a historic district? yes no

<i>If the property is within a district</i>	District Inventory Number: _____
NR-listed district <input type="checkbox"/> yes Eligible district <input type="checkbox"/> yes	District Name: _____
Preparer's Recommendation: Contributing resource <input type="checkbox"/> yes <input type="checkbox"/> no Non-contributing but eligible in another context <input type="checkbox"/>	

<i>If the property is not within a district (or the property is a district)</i>
Preparer's Recommendation: Eligible <input type="checkbox"/> yes <input checked="" type="checkbox"/> no

Criteria: A B C D Considerations: A B C D E F G None

Documentation on the property/district is presented in: Maryland Historical Trust NR-Eligibility Review Form, Green Branch Community Park (POS #3809-16-549, MD 200010221-0137), PG:74B-2, 2001.

Description of Property and Eligibility Determination: *(Use continuation sheet if necessary and attach map and photo)*

Background

A DOE for the buildings examined in this study was carried out in 2001 in preparation for the then-planned Green Branch Community Park Expansion. That investigation recorded seven abandoned farm buildings. The dwelling historically associated with the property, the c. 1840 W.W.W. Bowie House, burned in 1987. The 2001 DOE concluded that the surviving agricultural structures were not eligible for National Register listing. Among the resources evaluated were four mid-20th century tobacco barns.

In the years following that review, Southern Maryland tobacco barns have become a resource type of special interest to preservationists. This is because of the 2001 tobacco buyout program that paid tobacco farmers to cease production. As a result, the majority of Southern Maryland's barns quickly became obsolete. In recognition of the threat posed to these structures, the National Trust for Historic Preservation named Tobacco Barns of Southern Maryland as one of the nation's 11 most endangered historic properties in 2004. This designation brought attention to 20th century tobacco barns that were once

MARYLAND HISTORICAL TRUST REVIEW	
Eligibility recommended <input type="checkbox"/>	Eligibility not recommended <input type="checkbox"/>
Criteria: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D Considerations: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> None	
Comments: _____	
_____ Reviewer, Office of Preservation Services	_____ Date
_____ Reviewer, NR Program	_____ Date

MARYLAND HISTORICAL TRUST
NR-ELIBILITY REVIEW FORM

Continuation Sheet No. 1

considered as an ordinary and common place. As part of the proposed Green Branch Athletic Complex project, MHT asked that the four barns documented in 2001 be examined in the context of evaluation criteria set out in the 2010 National Register of Historic Places multiple property nomination (Thursby and Schomig 2010: F5).

This DOE examines the four tobacco barns identified in the 2001 study, as well as a previously undocumented tobacco barn. The later structure was not recorded in the earlier DOE because it was located on a different parcel. As it will be impacted by the proposed development it is included in this evaluation.

Description:

The 254-acre study area is located on the east side of Crain Highway (Rt. 301) and south of Governor's Bridge Road. Much of this land is historically associated with the c. 1840 W.W.W. Bowie House (destroyed 1987). All but one of the barns are located in open fields. Barn 4 (identified in the 2001 DOE as Structure 7) serves as the exception. This structure is surrounded on three sides by a copse of new-growth woods, although the area was likely open at the time of the barn's construction.

Historically unpaved paths connected the barns. Some of these old routes are still visible, especially from aerial photographs. Some are even traversable, but others are partially or completely overgrown from lack of use.

Barn #1 (Structure 1 in 2001 DOE form):

Built between 1944 and 1957, this drive-through, center-aisle-plan barn measures 100' x 40'. The ridge line of the badly damaged, standing-seam- metal-clad roof runs with the ridgeline oriented north to south. The balloon-framed walls rest on a pier foundation infilled with concrete blocks. Wall sheathing is random-width vertical board siding measuring between 6" and 1'. Siding is fixed to interior 4" x 2.5" horizontal rails with wire nails. An approximately 3/4" gap between vertical boards allows for ventilation. Approximately 50% of the siding is missing. The doors are also missing. Encroaching vines, trees and brush surround much of the structure.

The barn is divided into four, 20' bays with each bay containing four, 5' rooms. The bays/rooms are 16' wide and separated on each side by a 14' center aisle. Each bay begins and ends with a toe-nailed downbrace that extends from the sill to above the fifth tier pole. The barn is 8 tiers high. Common rafters rest on a thin false plate. Curiously, despite the length of this barn, there are no upper level wind braces. The absence of windbraces helps to explain the condition of the siding and roof.

All building material is light circular-sawn material, attached with wire nails. Interior posts are 6" square, formed by assembling two, 2" x 6" pieces of lumber. These are separated by a 2" gap used to receive tier poles. Interior posts rest on a 2'-tall concrete piers. Sills measure 8" x 6", segments of which are lap-joined and nailed together. Framing for three rooms is removed, and approximately 15% of the tiers poles are also gone, but the majority of the interior framing is intact and only beginning to exhibit damage from the extensive siding loss.

Rubble associated with a now-collapsed concrete block stripping shed is located at barn's south end.

Barn #2 (Structure 4 in 2001 DOE form):

This badly over grown and deteriorated transverse-aisle plan barn measures 34' x 130', and displays three building episodes. This fact is not evident from the exterior due to re-siding and re-roofing, apparently associated with the last period of construction. The oldest part probably dates to the second half of the 19th century. Foundation material suggests the two later sections were built at different times in the second quarter of the 20th century. The steeply pitched gable roof, mostly sheathed in deteriorated standing seam metal, is oriented with the longitudinal axis running north to south. Doorways (now absent doors) are located exclusively in the long east and west walls. The entire structure is sheathed, with vertical siding with every fourth or fifth board hinged at the top to open for ventilation. Approximately half of the wall sheathing is now missing and much of that which remains is in poor condition.

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NR-ELIBILITY REVIEW FORM

Continuation Sheet No. 2

The period 1 structure is located at the south end. Measuring 34' x 50', this 8-tier-high section features a 10' center aisle, flanked on either side by two 17' x 20' bays. Each of the four bays is divided into four, 5' rooms. A 10"x 6" continuous sill (except across the doorways) defines the aisles, bays and rooms. The sills use relatively short pieces of timber, and are scarf-joined and pegged together. The sills occasionally rest on ironstone piers, but in many areas the piers have disappeared and the framing rest directly on the ground resulting in a substantial amount of rot.

All framing materials in the period 1 barn, including sills (8" x 6"), posts (6" x 5"), down-braces (4" x 6"), tier polls (3"-4" x 5"), and rafters, were fashioned with a circular saw. Downbraces extend from the sill up to immediately beneath the fourth tier. The original vertical spacing between tier poles has been lengthened to just over 4'. The lateral tiers are joined to the center posts by mortise and tenon joints, while the longitudinal members are removable, and supported by wood blocks scabbed onto the sides of the vertical posts. According to long-time Calvert County tobacco farmer, Wilson Freeland, this feature is known as a "tier pole cleat." Many tier poles have been pulled out and some broken. Where present, secondary framing material and tiers are generally in good condition, but much of the lower 20' of siding, and non-structural members have been removed, leaving only the timber-frame skeleton of the barn.

The center, period 2 section of the barn, measures 40' x 34'. Map evidence indicates this section, and the period 3 structure, were both built between 1944 and 1957. Here the balloon-framed walls rest on a 2'-tall, course, poured concrete foundation. The interrupted wall sills measure 7.5" x 6", with the 5" x 6" wall posts resting directly on the foundation. The gaps between sill and posts has allowed for moisture penetration. As a result, the framing of this section, which may be nearly a century later than the Period 1 barn, is in much worse condition than the original framing.

The 10-wide, long-wall doorways provide access to a transverse aisle (absent doors) that runs immediately adjacent to the end wall of the period 1 structure. The remaining 30' of this section is divided into six, 4'5" rooms. The interior posts, which run longitudinally down the center, are built up from two pieces of 4" x 6" lumber with a center gap, in the same fashion seen in Barn 1. They rest on a low poured concrete pad. This section is 9 tiers high.

The partially collapsed remains of a concrete block, 30' x 15' stripping room projects from the east exterior wall of this section. The stripping room could not be accessed from inside the barn. It appears contemporary with the barn's third period of construction.

The final building episode extended the length of the barn an additional 40' to the north. Originally four, 4'6" rooms were located on either side of the center, 10'-wide, transverse aisle. The rooms on the south side of the aisle have been destroyed by arsonists. Damage extends up into the rafters. Walls rest on a two-block high concrete block foundation. Blocks have a modern quality and appear mid-century or possibly later. Again, the doors and much of the vertical siding is missing. The posts, tier poles and tier cleats are the same types used in the period 2 section.

Barn #3: This 20th century center-aisle-plan barn is a collapsed ruin.

Barn #4 (Structure 7 on 2001 DOE form): Built between 1944 and 1957, this balloon-framed, center-aisle plan barn measures 100' x 36'. It is by far the most intact of the study area's five barns. The galvanized, sheet-metal-clad roof's ridgeline runs north to south. Double hinged doors are located in both of the gable ends. Walls are sheathed with 1' wide siding with a 1.5" gap between boards to allow for ventilation. Every sixth board is hinged at the side and opens like a door. Wall boards are generally in good condition except for minor water damage near the base. The balloon-framed walls originally rested on sills a top of concrete piers, but the foundation was later made continuous by the insertion of concrete blocks.

The interior features a 12' aisle flanked on either side by a 12' wide room and bay system. There are five, 20'-long bays divided into four, 5' rooms. The barn is 8 tiers high. The room and tier system is largely intact. Horizontal tiers measure 2.5" x 4", sills 7 1/2" x 6 1/2" and downbraces 4" x 6". Downbraces are found at the beginning and end of each bay. They begin at the sills, in both the rooms and the exterior wall, and rise up to engage their respective posts just beneath the level of the fourth tier pole.

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Continuation Sheet No. 3

All framing members are modern, circular-sawn pieces attached with wire nails. Again, the vertical posts are 6" square, formed by assembling two 2"x 6" pieces of lumber. These pieces of lumber are separated by a 2" gap used to receive tier poles. The posts rest on concrete piers covered with wood.

Barn # 5 (not documented in 2001 DOE):

This structure dates to between 1944 and 1957. Vines and brush now cover much of this 38' x 98' center-aisle-plan barn, but the internal structure remains mostly intact. The metal-covered roof is in poor condition and, in some areas, missing. The roof's ridgeline runs roughly north to south. Upwards of 15% of the random-width vertical wall siding is absent, and a significant number of other boards broken or otherwise damaged. It is the hinged ventilator boards that have been most susceptible to removal.

The barn is eight tiers high and divided into five bays, each measuring slightly less than 20'. Exterior wall framing exclusively uses hole-set utility poles. There is no foundation or sill structure associated with the exterior wall posts. On the interior, each bay is also structurally defined by the presence of a utility pole. A 4" x 5" down brace is toe-nailed into each interior pole, 1' above grade. It rises upward and is in turn toe-nailed into the exterior wall pole just below the fourth tier pole.

The barn's 20 rooms, measuring slightly less than 4' long, and 13' wide, are situated on either side of a 12' wide center aisle. Spray-painted numbers identify the rooms. Based on the number order, it appears the barn was loaded from north to south. The paired board-and brace doors remain in place, though in deteriorating condition. The vertical posts rest on 1'-6" poured concrete piers that are in turn clad with wood. The building's exterior walls lack intermediate posts. Non-pole interior support posts are typical of the previously described barns, being formed by nailing together two pieces of 2" x 6" lumber, separated by a small gap, with the gap space is used to receive the tier poles. On the pole posts, tier cleats attached to the side of the pole suspend the tiers. Exterior walls lack secondary posts. Here the tier poles rest on the horizontal rails to which the exterior siding is nailed. About 75% of the tier poles remain in place or still inside of the barn.

This barn is unique among the study areas five barns for being the only one with an intact stripping room. Located in the southwest interior corner and measuring 18' (l) x 12' (w) x 8'(h), the walls are a mix of horizontal and vertical siding and the floor is dirt. The siding is various widths and textures and appears to be recycled. There is both an interior and exterior entrance into the now-empty stripping space.

History and Significance:

The tobacco barn represents Southern Maryland's most visible and iconic surviving symbol of the region's 350 year relationship with tobacco production. The paramount importance of tobacco to Southern Maryland's economy, culture and landscape cannot be overstated, and is well documented (see Kulikoff 1986; Middleton 1984). These distinctive buildings represent the most common and enduring tangible artifact of tobacco culture, and through their various designs illustrate how area tobacco farmers negotiated changing economic cycles, technology and farming practices (Ranzetta 2005, 82).

As previously stated, the National Trust for Historic Preservation named *Tobacco Barns of Southern Maryland* as one of the nation's 11 Most Endangered Historic Places in 2004. The attention listing generated resulted in funding for barn preservation projects, and additional research and scholarship, culminating with the 2010 Multiple Property Documentation Form, *Tobacco Barns of Southern Maryland: Anne Arundel, Calvert, Charles, Prince George's and St. Mary's Counties*. That document brings together published and unpublished scholarship about tobacco culture in Maryland's five southern counties. It also describes in valuable detail the various types of Maryland tobacco barns; examines each form in its historic context; and provides a framework for evaluating and nominating tobacco barns to the National Register.

Four of the five barns examined in this study are or, in the case of collapsed Barn #3 were, center-aisle-plan structures. Christopher Martin's 1992 study first revealed how the center-aisle tobacco barn developed in response to the widespread use of gasoline-powered tractors and trucks. Prior to 1900 barns were typically smaller, measuring 20 to 30 feet in width and about 36 feet in length, and usually constructed with a transverse plan with double doors on the long walls. These smaller barns built amid the fields reflected the difficulty in moving tobacco. The crop was not so much brought to the barn as the barn was built near the crop. The advent of trucks and tractors allowed the cumbersome tobacco leaves to be transported directly into larger

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barns built in locations better suited to drying, i.e. open areas or on higher elevation. The benefit of the new style of air-cure barn was recognized by The University of Maryland Agricultural Extension Service whose publications promoted the use of “drive-through barns” and lauded them for their labor-saving benefits (Thursby and Schomig, E 54).

In contrast, Barn #2 is a transverse aisle structure. It has door openings in the long walls. The continuous interior sills in the period 1 structure are typical of barns constructed before motorized vehicles became common. Interior sills are absent in the period 2 and 3 sections, built during the mid-20th century.

Three of the surviving barns in this study (Barn #1, #4 and #5) were built between 1944 and 1957. It was also during this period that Barn #2 was expanded. The years following World War II were a boom period for tobacco farmers. Demand for tobacco greatly increased after the war in response to American and European demand for cigarette tobacco (Thursby and Schomig, E 21).

National Register Eligibility

Barns #1, #3, #4 and #5 are associated with the historically important theme of *tobacco production in Southern Maryland 1630-2005* (Criterion A) and representative of identified *air-curing barn types constructed in Southern Maryland, 1790-1958* (Criterion C). These buildings are not potentially eligible under other criteria as there is no known association with persons important in our past (Criterion B) or have the potential to reveal important information about history (Criterion D).

In addition to historical significance, tobacco barns must retain the majority of character-defining features, and have a somewhat rural or agricultural setting in order to be eligible for the National Register. Because 20th century barns survive greater numbers than their predecessors, integrity should be assessed more stringently than earlier and rarer examples. In addition, a 20th century barns with an intact stripping room should be given weighted more heavily than on barn without this feature (Thursby and Schomig: F1). The Maryland Historical Trust’s *Determination of Eligibility* database was reviewed as part of this study, and no barns of this type and age, or with a commensurate level of deterioration as exhibited by all but one structure in this study, have previously been found eligible for National Register listing.

Barn #1 is not eligible for National Register listing due to its deteriorated condition. About half of the exterior siding has been lost, the doors are missing, the roof is damaged and the structure partially overgrown with vines and brush. In addition, the stripping room has been demolished. It has greatly diminished integrity of materials, workmanship and feeling.

Barn #2 is the most interesting of the barns examined in this study. Barn #2 reflects changing framing techniques over time. Specifically, how transition away from timber frame construction, with mortise and tenon joinery, to balloon frame systems and wire nails. The use of simplified construction methods and a reliance on light-dimensioned construction material dominated tobacco barn construction in the 20th century. The two systems are juxtaposed in this example.

The plan and building materials of the period 1 section are typical of construction practices associated with tobacco barns built between 1830 and 1900.¹ The complete use of circular sawn material, even for the larger timbers, suggests a date of construction in the second half of the 19th century. It likely originally had at least one stripping shed. The change in the height of the tier poles is telling and probably reflects the adoption of the modern Type-32 tobacco species.

This section’s 5’-room spacing system is considered highly unusual for a mid-to late 19th century barn (Thursby and Schomig 2010: E49). The 5’ unit, both for dwellings as well as agricultural buildings, has antecedents in 17th century building traditions, but this metric for tobacco barns fell from practice in favor of a four foot room in the last quarter of the 18th century. (Ranzetta 2005: 86). As such, this barn is interesting and raises questions about lingering building traditions, but it is not considered typical. Do to this, as well as its overall poor condition, is not a good example of its type.

The period 2 and 3 sections reflect changing building practices in response to the use of tractors and other motorized vehicles. For example, the absence of ground sills inside in this part of the structure allowed vehicle ingress/egress, and facilitated ease

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NR-ELIBILITY REVIEW FORM**

Continuation Sheet No. 5

of movement around barn's interior. The construction methods used in these sections are typical for the period, but again are not a good example of their type due to deterioration and arson.

This barn is not eligible due to diminished integrity of design, materials, workmanship and feeling. Its overgrown situation also undermines its integrity of association.

Barn #3 is clearly not eligible due to its complete state of collapse.

Barn #4 is in very good condition. Its feeling and association are somewhat compromised by the fact that it is not in a field, but surrounded by woods, but other aspects of integrity are largely undiminished. Despite these merits, it is not recommended as National Register eligible. Most likely built late in the second quarter of the 20th century, this is a relatively late example of a Southern Maryland tobacco barn, and may only fall within the Period of Significance (built before 1958) by as little as one year. Center-aisle plan barns remain fairly common and survive in the largest numbers out of all tobacco barn types. No less than seven barns of this type and in good condition are located within one-mile of this structure, along Old Mill Lane. This barn is an undistinguished example of its type. Evaluation guidelines state that the eligibility of 20th century barns should weigh heavily in favor of those with an intact stripping room. That feature is absent in this example. Were it present this barn would likely be considered eligible.

Barn #5 has an intact interior, but deteriorated exterior. Although more siding survives than in the case of Barn #1, this structure has lost a significant amount character-defining wall sheathing and the roof is in far worse condition. Vines and brush cover most of the exterior. Some of the roots are so large that they are causing siding to displace. In addition to issues of integrity, the barn's construction using hole-set utility poles for principal framing members is also problematic. These posts are set directly into the ground without use of sills, interrupted or otherwise. Although this technique is not unheard of, it is not typical, and therefore this structure is not a good representative of its type. This seriously undermines its eligibility for listing under Criterion C. But as previously mentioned, Barn #5 retains its stripping room and therefore should be given extra consideration. Despite the presence of this feature, this barn is not recommended as National Register eligible not just because of the Criterion C issues, but also as a result of diminished integrity of workmanship, materials and feeling resulting from the exterior's condition.

Major Bibliographical References

Fowler, Floyd. 1992. Fairbanks-Morse Does Double Duty. *Gas Engine Magazine*. February/March 1992.

Hart, Jon Fraser, and Eugene Cotton Mather. 1961. The Character of Tobacco Barns and Their Role in the Tobacco Economy of the United States. *Annals of the Association of American Geographers* 51(3): 274-93.

Kulikoff, Allan. 1986. *Tobacco and Slaves: the Development of Southern Culture in the Chesapeake, 1680-1800*. Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, Williamsburg, Va.

Martin, Christopher. 1991. *Calvert County Tobacco Culture Survey Phase II: Oral History and Folklife*. Washington, D.C.: Engineering-Science. Submitted to Calvert County Historic District Commission, Prince Frederick, MD.

_____. 1992. *Calvert County Tobacco Cultural Survey Phase III: Oral History and Folklife*. Washington D.C.: Engineering-Science. Submitted to Calvert County Historic District Commission, Prince Frederick, Md.

McGuire, Patricia J. 1990. "Tobacco on the Landscape: Calvert County's Barns." *Patterson Points* 5 (2&3):8.

Middleton, Arthur Pierce. 1984. *Tobacco Coast: A Maritime History of Chesapeake Bay in the Colonial Era*. Baltimore: Johns Hopkins University Press. Original edition, Newport News, Va: Mariners' Museum, 1953.

Ranzetta, Kirk E. *I'm Goin' Down County: An Architectural Journey Through St. Mary's County*. Crownsville: Maryland Historical Trust Press, 2010.

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Continuation Sheet No. 6

Ranzetta, Kirk E. 2005. The Myth of Agricultural Complacency: Tobacco Barns of St. Mary's County, Maryland, 1790-1890. In *Building and Environments: Perspectives in Vernacular Architecture, vol.10*, edited by Kenneth A. Breisch and Alison K. Hoagland. Knoxville: University of Tennessee Press.

Thursby, Lori, and Carrie Schomig. 2010. *Tobacco Barns of Southern Maryland: Anne Arundel, Calvert, Charles, Prince George's, and St. Mary's Counties*. National Register of Historic Places Multiple Property Documentation Form. Wilson, Teresa, "Tobacco Barns: Bellwethers of Change." *Slackwater* Vol V (2006): 57-73.

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Continuation Sheet No. 7

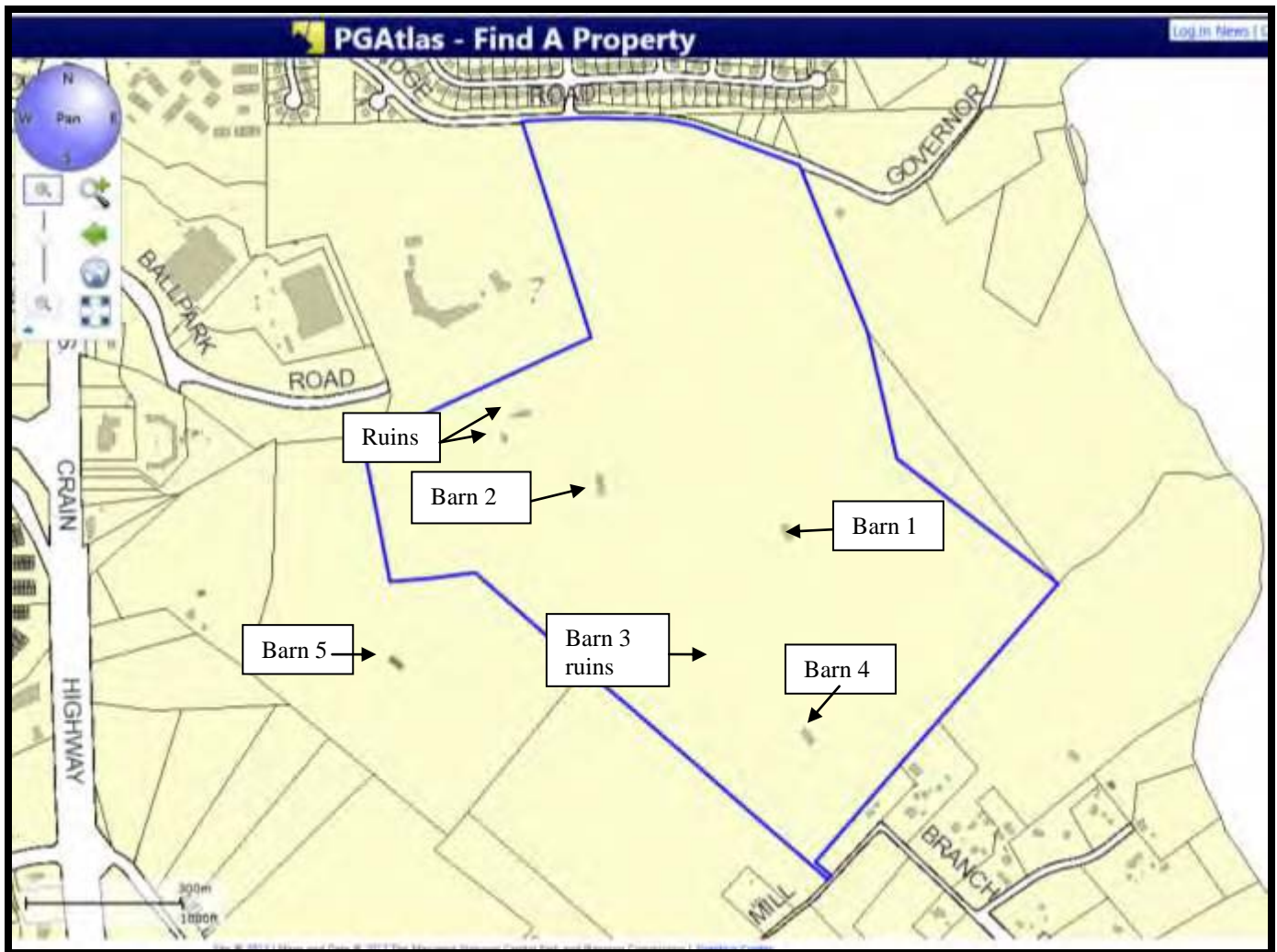


Figure 1: Site plan showing the location of the study's five barns and the ruins of buildings documented in 2001.
Source: PG ATLAS <http://www.pgatlas.com>.

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Continuation Sheet No. 8

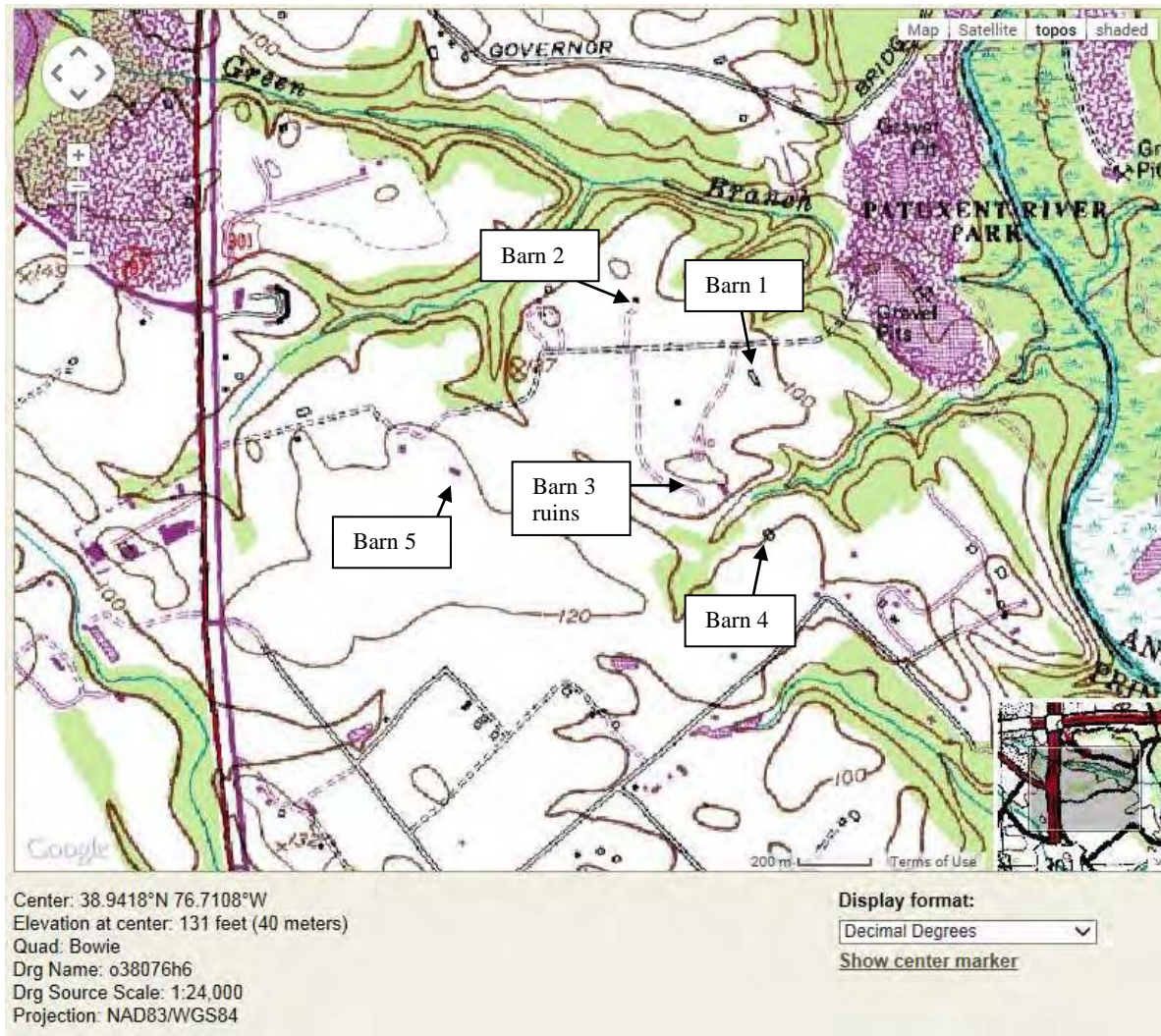


Figure 2: USGS map excerpt (Bowie Quad) showing the location of the tobacco barns discussed in this study.
Source: Trails.com.

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NR-ELIBILITY REVIEW FORM

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Figure 3: This 1944 USGS map show the presence of numerous now lost buildings and a different farm road network than exists at present. Barns #1, #4 and #5 are not shown on this map, and Barn #2 appears smaller.
Source: USGS Map (Quad Bowie, 1944).

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NR-ELIBILITY REVIEW FORM

Continuation Sheet No. 10

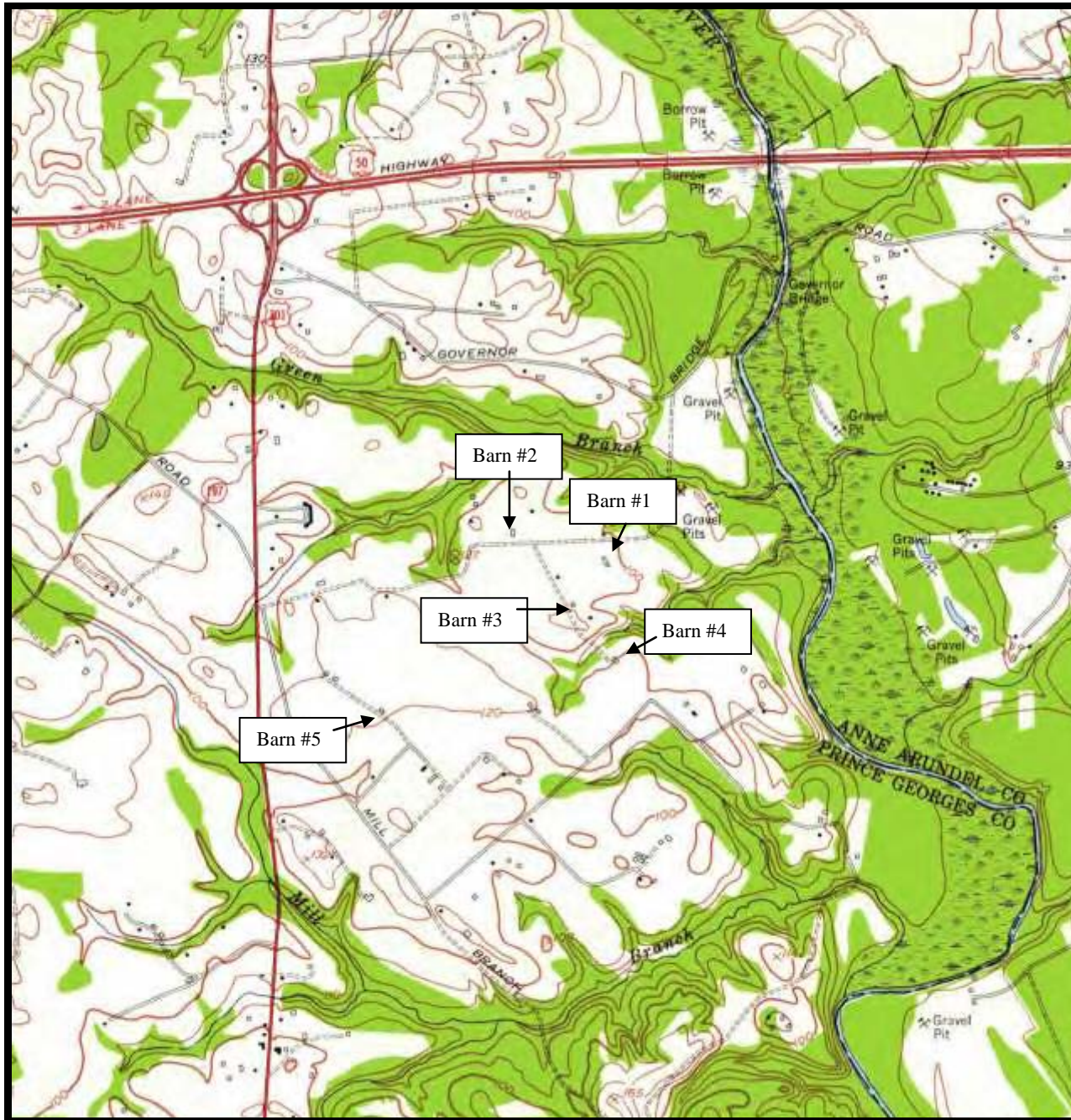


Figure 4: All of the barns examined in this report appear to be in place by the time this 1957 USGS map was published. Source: USGS Map (Bowie Quad, 1957). Note the change in size of Barn #2 and the change in road patterns in response to the new barns.

Prepared by: Sherry Marsh Johns
Retrospect Architectural Research,
LLC

Date Prepared: December 16, 2013

Photograph Log

W.W.W. Weems House Site (PG: 74B-2)

(Determination of Eligibility related to
Green Branch Athletic Complex Bond Bill)

Photographs by Sherri Marsh Johns

October 2013

1. PG;74B-2_2013-10-01_1: Tobacco Barn #1, west elevation
2. PG;74B-2_2013-10-01_2: Tobacco Barn #1, facing northeast
3. PG;74B-2_2013-10-01_3: Tobacco Barn #1, framing detail facing north
4. PG;74B-2_2013-10-01_4: Tobacco Barn #1, framing detail facing northwest
5. PG;74B-2_2013-10-01_5: Tobacco Barn #1, facing detail facing northeast
6. PG;74B-2_2013-10-01_6: Tobacco Barn #1, framing detail facing southwest
7. PG;74B-2_2013-10-01_7: Tobacco Barn #2, southwest corner
8. PG;74B-2_2013-10-01_8: Tobacco Barn #2, northeast corner
9. PG;74B-2_2013-10-01_9: Tobacco Barn #2, period one framing detail facing east
10. PG;74B-2_2013-10-01_10: Tobacco Barn #2, farming detail
11. PG;74B-2_2013-10-01_11: Tobacco Barn #2, framing detail from Period 1 section, looking north;
concrete block stripping shed visible at left of photograph.
12. PG;74B-2_2013-10-01_12: Tobacco Barn #2, framing detail of period 1 section
13. PG;74B-2_2013-10-01_13: Tobacco Barn #2, framing detail of period 1 section
14. PG;74B-2_2013-10-01_14: Tobacco Barn #2, framing detail of period 2 section
15. PG;74B-2_2013-10-01_15: Tobacco Barn #2, view from period 2 section looking at period 2
16. PG;74B-2_2013-10-01_16: Tobacco Barn #2, view from period 3 section looking at period 2
17. PG;74B-2_2013-10-01_17: Tobacco Barn #2, foundation detail and stripping shed remains
18. PG;74B-2_2013-10-01_18: Tobacco Barn #2. Framing detail facing northwest
19. PG;74B-2_2013-10-01_19: Tobacco Barn #3 ruins
20. PG;74B-2_2013-10-01_20: Tobacco Barn #4, southwest corner
21. PG;74B-2_2013-10-01_21: Tobacco Barn #4, north elevation
22. PG;74B-2_2013-10-01_22: Tobacco Barn #4, rafter detail
23. PG;74B-2_2013-10-01_23: Tobacco Barn #4, framing detail facing north
24. PG;74B-2_2013-10-01_24: Tobacco Barn #4, framing detail facing southwest
25. PG;74B-2_2013-10-01_25: Tobacco Barn #4, framing detail facing north
26. PG;74B-2_2013-10-01_26: Tobacco Barn # 4, framing detail facing southwest
27. PG;74B-2_2013-10-01_27: Tobacco Barn #5, south elevation
28. PG;74B-2_2013-10-01_28: Tobacco Barn #5, north elevation
29. PG;74B-2_2013-10-01_29: Tobacco Barn #5 west elevation
30. PG;74B-2_2013-10-01_30: Tobacco Barn #5, faming detail facing north
31. PG;74B-2_2013-10-01_31: Tobacco Barn #5, framing detail facing south
32. PG;74B-2_2013-10-01_32: Tobacco Barn #5, framing detail facing north
33. PG;74B-2_2013-10-01_33: Tobacco Barn # 5, stripping room
34. PG;74B-2_2013-10-01_34: Tobacco Barn #5, stripping room
35. PG;74B-2_2013-10-01_35: Tobacco Barn #5, framing detail/ damage detail

Photographs, printed by Fromex using true black and white chemical process, printed on Ilford black-and-white silver gelatin photograph paper.











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MARYLAND STADIUM AUTHORITY
***Green Branch Multi-Field
Sports Complex***

Concept Estimate, Final

January 22, 2014

January 22nd, 2014

Al Tyler, Senior Project Manager
Maryland Stadium Authority
The Warehouse at Camden Yards
333 West Camden Street, Suite 500
Baltimore, MD 21201-2435

**RE: Green Branch Multi-Field Sports Complex
Concept Estimate, Final**

Dear Al,

We are pleased to present our final estimate for the above referenced project study. It has been a pleasure working collaboratively with the team for the past twenty-four weeks. Our estimate is based on the Hord Copland Macht documents dated January 22nd, 2014. As you will see by our estimate detail, we have completed a thorough quantity survey, filling in several gaps at this conceptual stage of design. We have verified quantities and budgets with the marketplace by consulting several vendors, subcontractors and engineers who are experts in multi-field sports complex design and construction. We look forward to supporting Maryland Stadium Authority as this project progresses.

Sincerely,

Barton Malow Company



Dan Buchta
Project Director

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Alternate 2: Championship Field, Synthetic
Turf and Lights

Tab 4

Alternate 2A: Championship Field, Synthetic
Turf and Lights

Tab 5

Alternate 3: Professional Lacrosse Stadium

PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
Bowie, MD
Concept Estimate, Final

Estimate Date: 01/22/2014
250 ACRE
Construction Start: 05/01/2015
Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost
PROJECT SUMMARY			
TOTAL COST			
1. Base Project: 12 Lighted Synthetic Turf Fields & All Program Elements	250 ACRE	\$187,092	\$46,772,900
2. Alternate 1: VE Effort, 10 Lighted Synthetic Turf Fields and Reduced Program	250 ACRE	\$154,113	\$38,528,224
3. Alternate 2: Add Championship Field w/ Natural Grass & Lights	1 EACH	\$994,904	\$994,904
4. Alternate 2A: Add Championship Field w/ Synthetic Turf	1 EACH	\$2,087,600	\$2,087,600
5. Alternate 2B: Add Install Bubble Enclosure at Championship Field	1 EACH	\$2,684,064	\$2,684,064
6. Alternate 3: Professional Lacrosse Stadium	1 EACH	\$107,879,740	\$107,879,740



**Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
Concept Estimate, Final**

Estimate Clarifications

- 1.0 Purpose** -- The purpose of this document is to serve as a communication tool for the project team by defining the quality and scope of this project. Barton Malow Company (BMC) has evaluated the documents and prepared an estimate based specifically on these documents. The estimate represents construction trade labor, material, equipment and methods anticipated to be utilized on this project. This estimate is not formatted by bid category nor is it our intent to predict low bids by category. This estimate should not be interpreted as a bid. This is a working document that should be reviewed by the project team with necessary revisions duly raised and documented as part of the design process.
- 2.0 Building Gross Area** -- The AIA GSF listed in this document, is based on the American Institute of Architects (AIA) Document D101, Architectural Area and Volume of Buildings, 1995 Edition.

Total AIA Building Gross Area250 ACRE
- 3.0 Design Documents** -- The estimate is based on design documents prepared by Hord Coplan Macht. For a complete listing of documents see attached Document List.
- 4.0 Bonds** -- 100% performance and payment bonds are included for all subcontractor work.
- 5.0 Contingency** -- The estimate excludes all cost associated with Owner, Program, and Design Contingencies. The estimate includes a Construction Contingency to be used at the discretion of BMC for construction related unforeseen conditions and is not intended to serve as an Owner and/or Design Contingency. The Construction Contingency does not provide for A/E errors and omissions and/or Owner requested changes during construction.
- 6.0 Sole Source Exclusion** -- This estimate assumes that the final bid documents will name three or more manufacturers whose product are acceptable under the base bid for each section or work category.
- 7.0 Sales Tax** -- This estimate includes the cost associated with State of Maryland sales tax.
- 8.0 Allowances** -- The following allowances are included in the estimate. Allowances shall cover the total cost of materials, labor, and equipment. This includes material delivery, unloading and handling at the site, installation costs, overhead, profit, and all other expenses contemplated for stated allowance.

A.0 Architectural/Civil/Structural

1. Miscellaneous Metals.....	\$30,000
2. Rough Carpentry.....	\$7,500
3. Cabinets and Countertops	\$15,000
4. Windows.....	\$20,000
5. Painting	\$35,000
6. Miscellaneous Division 10 Items.....	\$20,000
7. Signage	\$10,000
8. Food Warming Equipment	\$10,000
9. Unsuitable Soils	\$1,000,000
10. Erosion Controls.....	\$418,750
11. Plantings	\$500,000

M.0 Mechanical

1. Testing and Balancing.....	\$11,500
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E.0 Electrical

- 1. Musco Lighting\$2,200,000

9.0 Exclusions -- The following items are not included in the construction estimate.

G.0 General

- 1. Financing cost
- 2. Furniture, furnishings and equipment
- 3. Land acquisition cost
- 4. Legal fees
- 5. Materials and soils testing
- 6. Owner fees
- 7. Plan review, permit, inspections and tap fees and cost for all city, state and other agency requiring same
- 8. Property and boundary surveying
- 9. Soils and subsurface investigation expenses
- 10. Utility consumption for water, gas, electricity
- 11. Permit and design fees
- 12. Any special permits for work in wetland areas
- 13. All work associated with Phase 1, including any future modifications to the temporary access.
- 14. Work outside the Phase 2 property line, with the exception of the temporary access road and utilities to the site.

A.0 Architectural/Civil/Structural

- 1. Rock excavation
- 2. Curb and gutter at roads
- 3. Scoreboards
- 4. Road with bridge to baseball stadium
- 5. Portable bleachers and restrooms
- 6. Lacrosse goals, soccer goals, and other field equipment

M.0 Mechanical

- 1. Any item not specifically listed in the estimate.

E.0 Electrical

- 1. Any item not specifically listed in the estimate.
- 2. Emergency power systems.

10.0 Labor Rates – This estimate is based on local labor wage rates and material packaging of trades by jurisdiction. Estimate is based on the Owner providing a parking lot free of charge for all trade contractors. Trade contractors are responsible for providing their own transportation to construction site.

11.0 Estimate Baseline -- The estimate is based on the following categories of cost. This forms the baseline for monitoring scope changes in the future.

- 1. Design Documents -- Unless superseded by one of the following three categories, the design documents (as listed in the document list) are the basis of the estimate.
- 2. Agreed Upon Changes -- During the process of preparing the estimate, the Architect/Engineer (A/E) and BMC may have agreed to modifications to the design originally documented in the A/E's documents. For items, which this occurs, BMC estimated quantities and quality levels take precedence over the A/E's documents as a basis for the estimate.
- 3. Allowances -- In cases where the design has not been developed sufficiently to estimate quantities, a stipulated dollar allowance shall be the basis of the estimate.
- 4. BMC Assumptions -- In cases where the design is inadequately defined on the A/E's documents, BMC will make assumptions upon which to base cost. Since scope variances

cannot be determined by comparing future design documents to A/E's documents, BMC's assumed quantities and quality levels, shall take precedence over the A/E documents as a basis of the estimate.

12.0 Inflation / Market Escalation -- The estimate includes inflation and market escalation to account for changes in labor wage rates in the marketplace and material price inflation. Escalation is included at an annual rate of 4% per year from 1/22/14 to the applicable bid due dates.

13.0 Potentially Time and Price-Impacted Materials – As of the date of this estimate, certain markets providing essential materials to the Project are experiencing or are expected to experience significant, industry-wide economic fluctuation during the course of this Project that may impact price, availability and delivery time frames. If during the course of the Project a Potentially Time and Price-Impacted Material Item experiences an increase or decrease in its Baseline Price, BMC may notify the Owner in writing for an equitable adjustment to the estimated price. BMC shall provide appropriate documentation substantiating such adjustment. An Adjustment in the pricing for a Potentially Time and Price-Impacted Material shall not include any amount for BMC overhead and profit. If BMC is delayed at any time in the commencement or progress of the Work due to a delay in the delivery of, or unavailability of, a Potentially Time and Price-Impacted Material, beyond the control of and without the fault of BMC, its Subcontractors and Material Suppliers, BMC shall be entitled to an equitable extension of the Contract Time and an equitable adjustment of the estimated price. The Owner and BMC shall undertake reasonable steps to mitigate the effect of such delays. Notwithstanding any other provision to the contrary, BMC shall not be liable to the Owner for any expenses, losses or damages arising from a delay in the delivery of a Potentially Time and Price-Impacted Material Item not the fault of BMC, its Subcontractors and Material Suppliers.

14.0 Construction Schedule -- The estimate is based on the following construction milestone dates:

1. Construction Start Date..... May 1, 2015
2. Construction Substantial Completion Date June 1, 2016

15.0 Clarifications – The following clarifications are outlined to coincide with the estimate.

General

1. The estimate is based on all work being performed on standard shift time. Overtime and/or shift premiums are not included in the estimate, except for utility change over connections.
2. All services performed by others (inspection, testing, etc.) in support of the work shall be made available without cost to the CM.
3. Pricing is based on the uninterrupted flow of work in accordance with the schedule. Delays due to others is not anticipated or included. Any delay beyond the control of the CM, which affects the critical path, shall be cause for an increase in cost and extension of time.
4. The estimate is based on a (1) year warranty of the work after acceptance or turnover to the Owner (unless exceeded by requirements identified in the specifications).
5. The estimate is based on the use of recycled materials to the extent that utilization of such materials and/or products is not considered a cost or schedule premium.
6. The estimate includes the cost of only those taxes that are presently enacted, as applicable.

Architectural

1. The estimate is based off rough grade to be 105'. Barton Malow believes 105' is optimal to achieve a near balanced site.
2. The estimate assumes existing topsoil can be used as fill material.

Mechanical

None

Electrical

1. Medium voltage power feed from the utility company is included in the estimate.

2. A complete medium voltage distribution system on site is included to provide the required low voltage services to the different building, site lighting and Musco lighting system.
3. Each building is provided, in addition to power and lighting systems, lightning protection, fire alarm system, and tele/data systems.
4. The estimate include the Musco lightning package budget plus all the labor and material required for complete installation and wiring.
5. Included in the estimate is the required raceways to bring telephone and internet services into the site. The telephone and internet services cabling is by the provider and is not included.
6. A complete security system is included with card readers for the three building, security camera distributed on all 12 fields and on the exterior of the Administration building.
7. An internet and WI-FI system is included with access points provided throughout the site.

Document List

1. Hord Copland Macht Report, Dated 1/22/14

PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 250 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST				
DIRECT COST				
Athletic Fields	250 ACRE	\$47,496.40	\$11,874,100	25.39%
Site Improvements	250 ACRE	\$31,087.60	\$7,771,900	16.62%
On-Site Utilities & Infrastructure	250 ACRE	\$32,887.60	\$8,221,900	17.58%
Off-Site Utilities & Infrastructure	250 ACRE	\$7,112.80	\$1,778,200	3.80%
TOTAL DIRECT COST	250 ACRE	\$118,584.40	\$29,646,100	63.38%
INDIRECT COST				
Design Contingency	10.00% OF	\$29,646,100	\$2,964,600	6.34%
Construction Contingency	4.00% OF	\$32,610,700	\$1,304,400	2.79%
Commodity Escalation Contingency	4.00% OF	\$33,915,100	\$1,356,600	2.90%
Subcontractor Bonds (Subguard)	1.25% OF	\$35,271,700	\$440,900	0.94%
CM General Conditions, Insurance, & Fee	12.00% OF	\$35,712,600	\$4,285,500	9.16%
TOTAL INDIRECT COST	250 ACRE	\$41,408.00	\$10,352,000	22.13%
TOTAL HARD CONSTRUCTION COST	250 ACRE	\$159,992	\$39,998,100	85.52%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$39,998,100	\$2,799,900	5.99%
Permitting	1 LPSM	\$750,000	\$750,000	1.60%
Site #1028 Archaeology	1 LPSM	\$125,000	\$125,000	0.27%
Construction Management	1 LPSM	\$300,000	\$300,000	0.64%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$39,998,100	\$800,000	1.71%
Owner Contingency	5% of	\$39,998,100	\$1,999,900	4.28%
TOTAL SOFT OWNER PROJECT COST	250 ACRE	\$27,099.20	\$6,774,800	14.48%
TOTAL COST	250 ACRE	\$187,091.60	\$46,772,900	100.00%



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Athletic Fields

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Athletic Fields		250 ACRE		
Division 13 - Special Construction				
Fabricated Engineered Structures				
Coaches Boxes at Fields	3 EACH	6,500.00	19,500	
Subtotal Fabricated Engineered Structures			\$19,500	\$78
Total Division 13 - Special Construction			\$19,500	\$78
Division 26 - Electrical				
Exterior Lighting				
* MUSCO LIGHTING				
Musco Lighting Allowance	1 LSUM	2,200,000.00	2,200,000	
Musco Lighting Branch Feeders	30,000 LNFT	7.62	228,713	
Install Only Musco Lighting Control Panels	3 LSUM	19,120.00	57,360	
Subtotal Exterior Lighting			\$2,486,100	\$9,944
Miscellaneous Electrical				
Adjustment for Electrical at Athletic Fields	1 LSUM	302,807.00	302,807	
Subtotal Miscellaneous Electrical			\$302,800	\$1,211
Total Division 26 - Electrical			\$2,788,900	\$11,156
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Team Benches at Fields	24 EACH	1,500.00	36,000	
Subtotal Division 32 - Exterior Improvements			\$36,000	\$144
Athletic Surfacing				
Turf Fields, Including Sub base	1,111,587 SQFT	7.50	8,336,903	
Subtotal Athletic Surfacing			\$8,336,900	\$33,348
Fences & Gates				
Vinyl Coated Black Chain Link Fencing at Ends of Fields	4,020 LNFT	16.00	64,320	
Subtotal Fences & Gates			\$64,300	\$257
Landscaping				
Irrigation for Fields, 3 Wells	3 EACH	75,000.00	225,000	
Subtotal Landscaping			\$225,000	\$900
Total Division 32 - Exterior Improvements			\$8,662,200	\$34,649
Division 33 - Utilities				
Storm Drainage Utilities				
Field Drainage Piping, Assumed PVC	13,450 LNFT	30.00	403,500	
Subtotal Storm Drainage Utilities			\$403,500	\$1,614
Total Division 33 - Utilities			\$403,500	\$1,614
Total Athletic Fields			\$11,874,100	\$47,496



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Site Improvements		250 ACRE		
Division 03 - Concrete				
Cast In Place Concrete				
Gradebeams for Admin. Building	23 CUYD	400.00	9,000	
Gradebeams for Maintenance Barn	14 CUYD	400.00	5,400	
Gradebeams for Vending Building	12 CUYD	400.00	4,800	
Footings for Admin. Building	1 LSUM	2,000.00	2,000	
Footings for Vending Building	1 LSUM	1,000.00	1,000	
Footings for Maintenance Barn	1 LSUM	2,000.00	2,000	
Slab on Grade for Admin. Building	3,916 SQFT	6.00	23,496	
Slab on Grade for Vending Building	1,587 SQFT	6.00	9,522	
Slab on Grade for Maintenance Barn	1,719 SQFT	6.00	10,314	
Slab on Grade for Picnic Pavilion	4,740 SQFT	6.00	28,440	
Subtotal Cast In Place Concrete			\$96,000	\$384
Total Division 03 - Concrete			\$96,000	\$384
Division 04 - Masonry				
Unit Masonry				
CMU Exterior Walls for Admin. Building	3,920 SQFT	16.50	64,680	
CMU Exterior Walls for Vending Building	2,240 SQFT	16.50	36,960	
Interior Masonry Partitions at Admin. Building	1,800 SQFT	14.00	25,200	
Interior Masonry Partitions at Vending Building	1,200 SQFT	14.00	16,800	
Subtotal Unit Masonry			\$143,600	\$575
Total Division 04 - Masonry			\$143,600	\$575
Division 05 - Metals				
Metal Fabrications				
Allowance for Miscellaneous Metals at Admin. Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Vending Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Maintenance Barn	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Metals at Picnic Pavilion	1 ALLW	5,000.00	5,000	
Subtotal Metal Fabrications			\$30,000	\$120
Total Division 05 - Metals			\$30,000	\$120
Division 06 - Wood, Plastics & Composites				
Rough Exterior Carpentry				
Rough Carpentry at Admin. Building	1 ALLW	2,000.00	2,000	
Rough Carpentry at Maintenance Barn	1 ALLW	2,000.00	2,000	
Rough Carpentry at Picnic Pavilion	1 ALLW	1,500.00	1,500	
Rough Carpentry at Vending Building	1 ALLW	2,000.00	2,000	
Subtotal Rough Exterior Carpentry			\$7,500	\$30
Wood Framing				
Wood Columns at Picnic Shelters	1 LSUM	25,000.00	25,000	
Subtotal Wood Framing			\$25,000	\$100
Wood Trusses				
Wood Trusses at Admin. Building	1 LSUM	10,000.00	10,000	
Wood Trusses at Picnic Building	1 LSUM	20,000.00	20,000	
Wood Trusses at Vending Building	1 LSUM	10,000.00	10,000	
Subtotal Wood Trusses			\$40,000	\$160
Architectural Woodwork				
Allowance for Cabinets and Counters at Admin. Building	1 ALLW	7,000.00	7,000	
Allowance for Cabinets and Counters at Vending Building	1 ALLW	8,000.00	8,000	
Subtotal Architectural Woodwork			\$15,000	\$60



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Total Division 06 - Wood, Plastics & Composites			\$87,500	\$350
Division 07 - Thermal & Moisture Protection				
Sheetmetal Roofing				
Standing Seam Metal Roof at Admin. Building	3,913 SQFT	32.00	125,216	
Standing Seam Metal Roof at Vending Building	1,554 SQFT	32.00	49,728	
Standing Seam Metal Roof Picnic Pavilions	4,800 SQFT	32.00	153,600	
Subtotal Sheetmetal Roofing			\$328,500	\$1,314
Total Division 07 - Thermal & Moisture Protection			\$328,500	\$1,314
Division 08 - Openings				
Doors and Frames				
Exterior Doors/Frames/Hardware at Admin. Building	4 EACH	1,800.00	7,200	
Exterior Doors/Frames/Hardware at Maintenance Building	4 EACH	1,800.00	7,200	
Exterior Doors/Frames/Hardware at Vending Building	3 EACH	1,800.00	5,400	
Interior Doors/Frames/Hardware at Admin. Building	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Maintenance Barn	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Vending Building	2 EACH	1,800.00	3,600	
Subtotal Doors and Frames			\$30,600	\$122
Coiling Doors and Grilles				
Overhead Coiling Doors at Maintenance	1 LSUM	35,000.00	35,000	
Overhead Coiling Doors at Vending Building	1 LSUM	5,000.00	5,000	
Subtotal Coiling Doors and Grilles			\$40,000	\$160
Windows				
Allowance for Windows at Admin. Building	1 ALLW	8,000.00	8,000	
Allowance for Windows at Maintenance Barn	1 ALLW	7,000.00	7,000	
Allowance for Windows at Vending Building	1 ALLW	5,000.00	5,000	
Subtotal Windows			\$20,000	\$80
Total Division 08 - Openings			\$90,600	\$362
Division 09 - Finishes				
Plaster and Gypsum Board				
Interior Gyp. Board Walls at Admin. Building	1,000 SQFT	9.00	9,000	
Interior Gyp. Board Walls at Maintenance Barn	1,000 SQFT	9.00	9,000	
Subtotal Plaster and Gypsum Board			\$18,000	\$72
Tiling				
Ceramic Floor Tile	1,600 SQFT	14.00	22,400	
Subtotal Tiling			\$22,400	\$90
Flooring				
Sealed Concrete at Admin. Building	3,916 SQFT	0.75	2,937	
Sealed Concrete at Maintenance Barn	1,719 SQFT	0.75	1,289	
Sealed Concrete at Vending Building	1,587 SQFT	0.75	1,190	
Sealed Concrete Picnic Pavilions	4,740 SQFT	0.75	3,555	
Carpet	170 SQYD	40.00	6,800	
Subtotal Flooring			\$15,800	\$63
Painting and Coatings				
Allowance for Painting at Admin Building	1 ALLW	10,000.00	10,000	
Allowance for Painting at Maintenance Barn	1 ALLW	10,000.00	10,000	
Allowance for Painting at Picnic Pavilions	1 ALLW	5,000.00	5,000	
Allowance for Painting at Vending Building	1 ALLW	10,000.00	10,000	
Parking Lot Line Striping	10,019 LNFT	4.50	45,086	
Subtotal Painting and Coatings			\$80,100	\$320
Total Division 09 - Finishes			\$136,300	\$545



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Division 10 - Specialties				
Division 10 - Specialties				
Allowance for Miscellaneous Specialties at Admin Building	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Specialties at Maintenance Barn	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Specialties at Vending Building	1 ALLW	5,000.00	5,000	
Subtotal Division 10 - Specialties			\$20,000	\$80
Signage				
Signage Allowance	1 ALLW	10,000.00	10,000	
Subtotal Signage			\$10,000	\$40
Total Division 10 - Specialties			\$30,000	\$120
Division 11 - Equipment				
Foodservice Equipment				
Allowance for Food Warming Equipment	1 ALLW	10,000.00	10,000	
Subtotal Foodservice Equipment			\$10,000	\$40
Total Division 11 - Equipment			\$10,000	\$40
Division 13 - Special Construction				
Fabricated Engineered Structures				
Pre-Engineered Metal Building	1,620 GSF	35.00	56,700	
Subtotal Fabricated Engineered Structures			\$56,700	\$227
Total Division 13 - Special Construction			\$56,700	\$227
Division 21 - Fire Suppression				
Water-Based Fire-Suppression Systems				
Sprinkler Heads & Piping	81 HEAD	243.97	19,761	
Subtotal Water-Based Fire-Suppression Systems			\$19,800	\$79
Total Division 21 - Fire Suppression			\$19,800	\$79
Division 22 - Plumbing				
Domestic Water Piping Insulation				
Fiberglass Insulation	****			
All Service Jacket, 1" Thick	****			
Pipe, 1/2"	100 LNFT	6.47	647	
Pipe, 3/4"	300 LNFT	6.82	2,046	
Pipe, 1"	180 LNFT	7.15	1,287	
Pipe, 1-1/2"	320 LNFT	7.61	2,435	
Pipe, 2"	40 LNFT	8.05	322	
Fittings and Valves	1 LSUM	287.49	287	
Fittings and Valves	1 LSUM	321.49	321	
Fittings and Valves	1 LSUM	1,077.49	1,077	
Subtotal Domestic Water Piping Insulation			\$8,400	\$34
Domestic Water Piping				
Copper Type L	****			
Pipe, 1/2"	100 LNFT	13.14	1,314	
Pipe, 3/4"	300 LNFT	16.37	4,911	
Pipe, 1"	180 LNFT	21.20	3,816	
Pipe, 1-1/2"	320 LNFT	33.79	10,813	
Pipe, 2"	40 LNFT	48.82	1,953	
Fittings and Valves	1 LSUM	1,348.68	1,349	
Fittings and Valves	1 LSUM	1,465.08	1,465	
Fittings and Valves	1 LSUM	5,212.55	5,213	
Pipe Identification	940 LNFT	0.26	243	
Subtotal Domestic Water Piping			\$31,100	\$124



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Sanitary Waste and Vent System Piping				
Cast Iron Service Weight - Underground	****			
Pipe,3"	160 LNFT	30.51	4,882	
Pipe,4"	260 LNFT	36.28	9,433	
Fittings	1 LSUM	925.48	925	
Fittings	2 LSUM	925.71	1,851	
Excavation & Backfill	420 LNFT	20.00	8,400	
Cast Iron Service Weight No-hub	****			
Pipe,1-1/2"	110 LNFT	29.08	3,199	
Pipe,2"	150 LNFT	30.45	4,567	
Pipe,3"	160 LNFT	35.12	5,619	
Fittings	1 LSUM	394.51	395	
Fittings	1 LSUM	534.28	534	
Fittings	1 LSUM	2,426.50	2,426	
Pipe Identification	420 LNFT	0.26	108	
Subtotal Sanitary Waste and Vent System Piping			\$42,300	\$169
Plumbing Fixtures				
Plumbing Fixt's.- Settings, Rough-In & Final Connection	****			
Water Closet, Floor Mtd Tank Type	6 EACH	1,292.57	7,755	
Lavatory, Wall Hung	6 EACH	1,416.24	8,497	
Service Sink, Floor Mtd, Resin	3 EACH	1,454.25	4,363	
Countertop Sink, Single Compt., SS	5 EACH	1,134.37	5,672	
Floor Drain	16 EACH	319.59	5,113	
Electric Water Heater, 10 Gallon	3 EACH	3,252.49	9,757	
Subtotal Plumbing Fixtures			\$41,200	\$165
Total Division 22 - Plumbing			\$123,000	\$492
Division 23 - HVAC				
Testing, Adjusting, and Balancing for HVAC				
Test & Balance	****			
Total Allowance	1 LSUM	1,500.00	1,500	
Total Allowance	1 LSUM	3,000.00	3,000	
Total Allowance	1 LSUM	7,000.00	7,000	
Subtotal Testing, Adjusting, and Balancing for HVAC			\$11,500	\$46
Duct Insulation				
1 1/2" Thick Duct Insulation	3,380 SQFT	2.56	8,646	
Subtotal Duct Insulation			\$8,600	\$35
HVAC Air Distribution				
Galvanized Ductwork	****			
Total Pounds	4,350 LBS	8.55	37,190	
Supply	****			
Diffuser	32 EACH	122.24	3,912	
Flexible Duct to Diffuser	32 EACH	31.29	1,001	
Spin in Collar	32 EACH	39.18	1,254	
Return / Exhaust	****			
Grille	20 EACH	103.28	2,066	
Subtotal HVAC Air Distribution			\$45,400	\$182
HVAC Fans				
Roof Exhaust Fan	****			
300 Cfm	2 EACH	323.44	647	
600 Cfm	1 EACH	644.45	644	
Ventilation Fan	****			
800 Cfm	1 EACH	687.78	688	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal HVAC Fans			\$2,000	\$8
Air Terminal Units				
Electric Heat Pump w/ Remote Condenser	****			
1 Tons	1 EACH	5,515.98	5,516	
3 Tons	5 EACH	7,918.68	39,593	
Subtotal Air Terminal Units			\$45,100	\$180
Total Division 23 - HVAC			\$112,700	\$451
Division 26 - Electrical				
Medium-Voltage Electrical Distribution				
* Medium Voltage Distribution	****			
* Admin Bldg.	****			
MV Distribution Equipment Only (15kV)	1 EACH			
MV Load Breaks	1 EACH	19,494.00	19,494	
Utility Company Metering	EACH	5,216.42		
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	EACH	30,820.19		
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Vending Bldg	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
Utility Company Metering	EACH	5,216.42		
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	EACH	30,820.19		
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Maintenance Bldg.	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
Utility Company Metering	EACH	5,216.42		
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	EACH	30,820.19		
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	2,000 LNFT	11.38	22,769	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	2,000 LNFT	30.85	61,694	
* Site Electrical	****			
MV Load Breaks	3 EACH	19,494.00	58,482	
Utility Company Metering	1 EACH	5,350.00	5,350	
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	3 EACH	32,490.00	97,470	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	EACH	19,688.11		
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Subtotal Medium-Voltage Electrical Distribution			\$493,000	\$1,972
Secondary Electrical Distribution				
* Secondary Distribution	****			
* Admin Bldg.	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	EACH	13,565.47		
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	EACH	5,349.83		
Feeders - 600 A	LNFT	128.80		
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
Feeders - 70 A	LNFT	18.06		



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
* Vending Bldg.	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	EACH	13,565.47		
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	EACH	5,349.83		
Feeders - 600 A	LNFT	128.80		
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
Feeders - 70 A	LNFT	18.06		
* Maintenance Bldg.	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	EACH	13,565.47		
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	EACH	5,349.83		
Feeders - 600 A	LNFT	128.80		
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
Feeders - 70 A	LNFT	18.06		
* Pavilions	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	EACH	13,565.47		
Panelboard - 225A MCB, 480/277V	EACH	5,499.33		
Transformer - 45kVA	EACH	4,494.23		
Panelboard - 225A MCB, 208/120V	EACH	3,829.52		
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	5 EACH	5,617.00	28,085	
Feeders - 600 A	LNFT	128.80		
Feeders - 225 A	LNFT	45.44		
Feeders - 100 A	LNFT	24.78		
Feeders - 70 A	1,250 LNFT	18.43	23,033	
* Site Electrical	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	3 EACH	14,200.00	42,600	
Load Centers, 15 kVA 480-120/240V (Site Lighting) NEMA 3R	5 EACH	5,617.00	28,085	
Feeders - 600 A	600 LNFT	133.08	79,847	
Feeders - 100 A	400 LNFT	25.37	10,148	
Feeders - 70 A	1,250 LNFT	18.43	23,033	
Subtotal Secondary Electrical Distribution			\$321,600	\$1,286
Branch Wiring				
* Branch Power	****			
* Admin Bldg	****			
Duplex Receptacle	30 EACH	172.49	5,175	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	2 EACH	244.51	489	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	22 EACH	544.14	11,971	
120V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
480V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
* Vending Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	8 EACH	244.51	1,956	
GFI-Duplex Watrproof	2 EACH	299.37	599	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Branch Circuits	15 EACH	544.14	8,162	
120V - Equip Connection (Vending Bldg. Eq)	6 EACH	544.14	3,265	
480V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
* Maintenance Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	10 EACH	244.51	2,445	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	16 EACH	544.14	8,706	
120V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
480V - Equip Connection (Vending Bldg. Eq)	6 EACH	544.14	3,265	
* Pavilions	****			
Duplex Receptacle	EACH	169.24		
Quad Receptacle	EACH	190.77		
GFI-Duplex	EACH	240.11		
GFI-Duplex Watrproof	40 EACH	299.37	11,975	
Branch Circuits	10 EACH	544.14	5,441	
120V - Equip Connection (Vending Bldg. Eq)	EACH	533.99		
480V - Equip Connection (Vending Bldg. Eq)	EACH	533.99		
Subtotal Branch Wiring			\$78,300	\$313
Motor & Equipment Wiring				
* Motor & Equipment Feeds & Connections	****			
* Admin Bldg	****			
Air Terminal Unit - 3 Tons	3 EACH	712.60	2,138	
Air Terminal Unit - 1 Tons	1 EACH	712.60	713	
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Vending Bldg	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Air Terminal Unit - 1 Tons	EACH	701.71		
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Maintenance Bldg.	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Air Terminal Unit - 1 Tons	EACH	701.71		
Exhaust Fans	2 EACH	712.60	1,425	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
Subtotal Motor & Equipment Wiring			\$9,800	\$39
Emergency Power Equipment				
* Emergency Power Systems	****			
None Provided	NOTE			
Subtotal Emergency Power Equipment				
Facility Lightning Protection				
* Lightning Protection	****			
* Admin Bldg	****			
Admin Building	1 EACH	17,780.00	17,780	
* Vending Bldg	****			
Central Vending Building	1 EACH	12,745.00	12,745	
* Maintenance Bldg.	****			
Maintenance Building	1 EACH	12,745.00	12,745	
Subtotal Facility Lightning Protection			\$43,300	\$173
Interior Lighting				
* Interior Lighting	****			



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
* Admin Bldg.	****			
LED Fixtures	130 EACH	466.13	60,596	
Fluorescent Fixtures (Maintenance Bldg.)	EACH	323.63		
Emergency Lights	10 EACH	289.12	2,891	
Exit Lights	10 EACH	289.12	2,891	
Fixtures Supports	150 EACH	11.02	1,652	
Fixture Whips	150 EACH	36.39	5,458	
Fixtures Home Runs	30 EACH	544.14	16,324	
Lighting Switch	10 EACH	251.46	2,515	
Occupancy Sensor	10 EACH	328.47	3,285	
Lighting Controls	1 EACH	3,847.00	3,847	
* Vending Bldg.	****			
LED Fixtures	50 EACH	466.13	23,306	
Fluorescent Fixtures (Maintenance Bldg.)	EACH	323.63		
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	60 EACH	11.02	661	
Fixture Whips	60 EACH	36.39	2,183	
Fixtures Home Runs	15 EACH	544.14	8,162	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Maintenance Bldg.	****			
LED Fixtures	12 EACH	466.13	5,594	
Fluorescent Fixtures (Maintenance Bldg.)	40 EACH	336.32	13,453	
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	62 EACH	11.02	683	
Fixture Whips	62 EACH	36.39	2,256	
Fixtures Home Runs	16 EACH	544.14	8,706	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Pavilions	****			
LED Fixtures	48 EACH	466.13	22,374	
Fluorescent Fixtures (Maintenance Bldg.)	EACH	323.63		
Emergency Lights	20 EACH	289.12	5,782	
Exit Lights	20 EACH	289.12	5,782	
Fixtures Supports	88 EACH	11.02	969	
Fixture Whips	88 EACH	36.39	3,202	
Fixtures Home Runs	22 EACH	544.14	11,971	
Lighting Switch	EACH	246.45		
Occupancy Sensor	EACH	320.46		
Lighting Controls	EACH	3,680.02		
Subtotal Interior Lighting			\$233,800	\$935
Exterior Lighting				
Parking Lots Lighting Poles w/Fixtures Single Head	65 EACH	2,046.88	133,047	
Parking Lots Lighting Poles w/Fixtures Double Head	27 EACH	2,418.56	65,301	
1 C - Site Ltg Ckt	12,000 LNFT	7.27	87,264	
Site Lighting Wiring	39,600 LNFT	3.92	155,372	
Add Parking Lots Lighting Controls to Musco Lighting Controls)	5 LSUM	4,170.00	20,850	
Subtotal Exterior Lighting			\$461,800	\$1,847
Miscellaneous Electrical				
* Miscellaneous Electrical	****			



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Temporary Light and Power	1 LSUM	29,740.00	29,740	
Fire Safe Penetrations	1 LSUM	14,870.00	14,870	
Electrical Testing	1 LSUM	8,970.00	8,970	
Electrical Load Studies	1 LSUM	13,455.00	13,455	
Adjustment for Electrical at Athletic Fields	1 LSUM	-302,807.00	-302,807	
Subtotal Miscellaneous Electrical			-\$235,800	-\$943
Total Division 26 - Electrical			\$1,405,800	\$5,623
Division 27 - Communications				
Common Work Results for Communications				
* Tele/Data/Internet (WI-FI) Systems	****			
* Site Electrical	****			
FO Raceways to Each Musco Pole for WI-FI/Camera (4" C)	15,000 LNFT	9.61	144,215	
FO Raceways to Each Musco Pole - Branch (1" C)	1,000 LNFT	4.44	4,441	
SM FO Cable to WI-FI/Cameras	135,000 EACH	3.86	521,102	
Wireless Access Point (Weather Proof)	50 EACH	3,299.00	164,950	
Wireless Access Point	10 EACH	594.00	5,940	
Telephone/Data Outlet	40 EACH	298.97	11,959	
Racks	1 EACH	1,778.00	1,778	
Management Panels	1 EACH	889.00	889	
Patch panels	1 EACH	889.00	889	
Head-end Equipment	1 LSUM	47,360.00	47,360	
SM FO Cable to Cameras (Included Above)	NOTE			
Subtotal Common Work Results for Communications			\$903,500	\$3,614
Total Division 27 - Communications			\$903,500	\$3,614
Division 28 - Electronic Safety & Security				
Security Access Detection				
* Security Systems	****			
* Site Electrical	****			
Card Reader w/o Key Pad - Waterproof	10 EACH	444.50	4,445	
Security Camera	32 EACH	2,808.50	89,872	
Security Rack	1 EACH	889.00	889	
Security Head-End Equipment	1 LSUM	32,570.00	32,570	
Subtotal Security Access Detection			\$127,800	\$511
Fire Detection and Alarm				
* Fire Detection & Alarm	****			
* Admin Building				
Manual Station	4 EACH	399.30	1,597	
Audible / Visual Device	8 EACH	464.20	3,714	
Visual Device (ADA)	8 EACH	428.80	3,430	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	2 EACH	440.60	881	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
* Vending Bldg				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Site Improvements

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
* Maintenance Bldg.				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
Subtotal Fire Detection and Alarm			\$46,400	\$186
Total Division 28 - Electronic Safety & Security			\$174,200	\$697
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Parking Lots	45,067 SQYD	2.00	90,134	
Fine Grading for Sidewalks	7,449 SQYD	2.00	14,898	
Subtotal Fine Grading			\$105,000	\$420
Total Division 31 - Earthwork			\$105,000	\$420
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Playground Equipment	1 LSUM	70,000.00	70,000	
Playground Safety Surface	3,000 SQFT	11.00	33,000	
Site Amenities (Trash Cans, Benches, Bike Racks)	1 LSUM	150,000.00	150,000	
Adjustment to Site Improvements Per Meeting	1 LSUM	195,119.00	195,119	
Subtotal Division 32 - Exterior Improvements			\$448,100	\$1,792
Asphalt Paving				
Asphalt Paving for Parking Lots	45,067 SQYD	42.00	1,892,814	
Subtotal Asphalt Paving			\$1,892,800	\$7,571
Concrete Sidewalks				
10' Wide Concrete Sidewalks	22,019 SQFT	5.50	121,105	
5' Wide Concrete Sidewalks	45,018 SQFT	5.50	247,599	
Subtotal Concrete Sidewalks			\$368,700	\$1,475
Fences & Gates				
Masonry Monumental Entrance	1 LSUM	35,000.00	35,000	
Road Gate	2 EACH	3,500.00	7,000	
Subtotal Fences & Gates			\$42,000	\$168
Landscaping				
Seeding	203,609 SQYD	0.70	142,526	
Allowance for Plantings	1 ALLW	500,000.00	500,000	
Subtotal Landscaping			\$642,500	\$2,570
Total Division 32 - Exterior Improvements			\$3,394,200	\$13,577
Division 33 - Utilities				
Water Utilities				
Fire Hydrants	8 EACH	8,500.00	68,000	
Subtotal Water Utilities			\$68,000	\$272
Sanitary Sewer Utilities				
Sanitary on Site	4,200 LNFT	95.00	399,000	
Manholes	5 EACH	5,500.00	27,500	
Subtotal Sanitary Sewer Utilities			\$426,500	\$1,706
Storm Drainage Utilities				
Reconstruction of Monitoring Wells	6 EACH	5,000.00	30,000	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
Bowie, Maryland

Project GSF: 250 ACRE
Estimate Type: Concept Estimate, Final
Estimate Date: 1/22/2014

Site Improvements **250 ACRE**

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Storm Drainage Utilities			\$30,000	\$120
Total Division 33 - Utilities			\$524,500	\$2,098
Total Site Improvements			\$7,771,900	\$31,087



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

On-Site Utilities & Infrastructure

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
On-Site Utilities & Infrastructure		250 ACRE		
Division 26 - Electrical				
Exterior Lighting				
* Exterior Lighting	****			
Roadway Lighting Poles	21 EACH	3,398.50	71,369	
Subtotal Exterior Lighting			\$71,400	\$285
Total Division 26 - Electrical			\$71,400	\$285
Division 31 - Earthwork				
Earth Moving				
Site Contractor Mobilization and Demobilization	1 LSUM	40,000.00	40,000	
Clearing and Grubbing	92 ACRE	7,500.00	690,000	
Strip and Stockpile 6" Topsoil	74,342 CUYD	8.50	631,907	
Spread Topsoil, Assume Topsoil Can Be Used as Fill	74,342 CUYD	8.50	631,907	
Rough Grading to 105', Cut to Fill	333,973 CUYD	6.00	2,003,838	
Important Fill to Grade 105'	11,898 CUYD	30.00	356,940	
BioSwales, Excavation, Planting Soil, Stone (Excludes Final Plantings)	124,520 SQFT	8.04	1,001,141	
Allowance for Unsuitable Soils, (Assumed 10% of Total CUYD of Dirt Moved with Unit Rate of \$25 for Haul Off)	1 ALLW	1,002,000.00	1,002,000	
Subtotal Earth Moving			\$6,357,700	\$25,431
Fine Grading				
Fine Grading for Main "Spine" Road	12,027 SQYD	2.00	24,054	
Fine Grading for Emergency Road (Back Entrance)	4,090 SQYD	2.00	8,180	
Subtotal Fine Grading			\$32,200	\$129
Erosion Controls				
Allowances for Erosion Controls	250 ACRE	1,675.00	418,750	
Subtotal Erosion Controls			\$418,800	\$1,675
Total Division 31 - Earthwork			\$6,808,700	\$27,235
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Main Spine Road	12,027 SQYD	48.00	577,296	
Subtotal Asphalt Paving			\$577,300	\$2,309
Total Division 32 - Exterior Improvements			\$577,300	\$2,309
Division 33 - Utilities				
Water Utilities				
Water on Site	4,200 LNFT	96.29	404,433	
Subtotal Water Utilities			\$404,400	\$1,618
Storm Drainage Utilities				
Storm Drain on Site	3,836 LNFT	65.00	249,340	
Drainage Pipe at Haul Road	1,841 LNFT	30.00	55,230	
Inlets	9 EACH	2,500.00	22,500	
Manholes	6 EACH	5,500.00	33,000	
Subtotal Storm Drainage Utilities			\$360,100	\$1,440
Total Division 33 - Utilities			\$764,500	\$3,058
Total On-Site Utilities & Infrastructure			\$8,221,900	\$32,888



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Off-Site Utilities & Infrastructure

250 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Off-Site Utilities & Infrastructure		250 ACRE		
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Access Road	3,811 SQYD	2.00	7,622	
Subtotal Fine Grading			\$7,600	\$30
Total Division 31 - Earthwork			\$7,600	\$30
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Access Road	3,811 SQYD	48.00	182,928	
Asphalt Paving for 24' Wide Road at PH1 Boundary to Rear of Walmart	1,620 SQYD	48.00	77,760	
Asphalt Paving for 24' Wide Road from Mill Branch to Rear of Walmart	3,550 SQYD	48.00	170,400	
20' Wide Haul Road (Back Entrance), 6" Crushed Aggregate Road	1,176 TONS	40.00	47,040	
Adjustment to Off Site Infrastructure per Meeting	1 LSUM	62,419.00	62,419	
Subtotal Asphalt Paving			\$540,500	\$2,162
Total Division 32 - Exterior Improvements			\$540,500	\$2,162
Division 33 - Utilities				
Water Utilities				
Water to Site	4,000 LNFT	110.00	440,000	
Subtotal Water Utilities			\$440,000	\$1,760
Sanitary Sewer Utilities				
Sanitary Sewer to Site	4,000 LNFT	105.00	420,000	
Subtotal Sanitary Sewer Utilities			\$420,000	\$1,680
Electrical Utilities				
* Electrical Site Work	****			
Conduits - 5" PVC - MV Main Feed from Utility Company	4,000 LNFT	11.38	45,539	
Primary Feeders -UG - # 500 kcm, 15kV	4,000 LNFT	52.26	209,047	
Tele/Internet Services Raceway System (3 -4 C)	12,000 EACH	9.63	115,513	
Subtotal Electrical Utilities			\$370,100	\$1,480
Total Division 33 - Utilities			\$1,230,100	\$4,920
Total Off-Site Utilities & Infrastructure			\$1,778,300	\$7,113



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 250 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity		Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST					
DIRECT COST					
Alternate 1 Deduct: Value Engineering Effort #1 (Reduction of Base Scope to 10 Lighted Fields; Reduced Program Elements)					
	250	ACRE	(\$21,441.60)	(\$5,360,400)	65.02%
TOTAL DIRECT COST	250	ACRE	(\$21,441.60)	(\$5,360,400)	65.02%
INDIRECT COST					
Design Contingency	10.00%	OF	(\$5,360,400)	(\$536,000)	6.50%
Construction Contingency	4.00%	OF	(\$5,896,400)	(\$235,900)	2.86%
Commodity Escalation Contingency	4.00%	OF	(\$6,132,300)	(\$245,300)	2.98%
Subcontractor Bonds (Subguard)	1.25%	OF	(\$6,377,600)	(\$79,700)	0.97%
CM General Conditions, Insurance, & Fee	12.00%	OF	(\$6,457,300)	(\$774,876)	9.40%
TOTAL INDIRECT COST	250	ACRE	(\$7,487.10)	(\$1,871,776)	22.70%
TOTAL HARD CONSTRUCTION COST	250	ACRE	(\$28,929)	(\$7,232,176)	87.72%
OWNER SOFT PROJECT COST					
Design (Assume 7% Total Construction Cost)	7%	OF	(\$7,232,176)	(\$506,300)	6.14%
Permitting	1	LPSM	\$750,000	\$0	0.00%
Site #1028 Archaeology	1	LPSM	\$0	\$0	0.00%
Construction Management	1	LPSM	\$0	\$0	0.00%
Soil Boring/Surveys/Other Project Related Costs	2%	OF	(\$7,232,176)	(\$144,600)	1.75%
Owner Contingency	5%	of	(\$7,232,176)	(\$361,600)	4.39%
TOTAL SOFT OWNER PROJECT COST	250	ACRE	(\$4,050.00)	(\$1,012,500)	12.28%
TOTAL DEDUCT	250	ACRE	(\$32,978.70)	(\$8,244,676)	
BASE ESTIMATE	250	ACRE	\$187,091.60	\$46,772,900	
TOTAL ESTIMATE - ALTERNATE 1	250	ACRE	\$154,112.90	\$ 38,528,224	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

VE Effort #1, Eliminate 2 Fields and Reduce Program **250 ACRE**

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
VE Effort #1, Eliminate 2 Fields and Reduce Program		250 ACRE		
Division 26 - Electrical				
Division 26 - Electrical				
Reduce Number of Lighted Fields from 12 to 10	1 LSUM	-464,817.00	-464,817	
Subtotal Division 26 - Electrical			-\$464,800	-\$1,859
Total Division 26 - Electrical			-\$464,800	-\$1,859
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Reduce the Number of Fields from 12 to 10 (includes parking reduction at 100/cars/field)	1 LSUM	-1,873,644.00	-1,873,644	
Delete All Structures Except Admin. Building (Concessions, Barn, Pavilions, Playground, Walking Path, Entrance Monumnet)	1 LSUM	-1,658,212.00	-1,658,212	
Subtotal Division 32 - Exterior Improvements			-\$3,531,900	-\$14,127
Asphalt Paving				
Delete Haul Road Improvements	1 LSUM	-110,200.00	-110,200	
Subtotal Asphalt Paving			-\$110,200	-\$441
Total Division 32 - Exterior Improvements			-\$3,642,100	-\$14,568
Division 33 - Utilities				
Division 33 - Utilities				
Use of Well and Septic in lieu of Public Water and Sanitary	1 LSUM	-1,253,500.00	-1,253,500	
Subtotal Division 33 - Utilities			-\$1,253,500	-\$5,014
Total Division 33 - Utilities			-\$1,253,500	-\$5,014
Total VE Effort #1, Eliminate 2 Fields and Reduce Program			-\$5,360,400	-\$21,441



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 1 EACH
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST				
DIRECT COST				
Alternate 2: Add Championship Field w/ Natural Grass & Lights	1 EACH	\$646,800.00	\$646,800	65.01%
TOTAL DIRECT COST	1 EACH	\$646,800.00	\$646,800	65.01%
INDIRECT COST				
Design Contingency	10.00% OF	\$646,800	\$64,700	6.50%
Construction Contingency	4.00% OF	\$711,500	\$28,500	2.86%
Commodity Escalation Contingency	4.00% OF	\$740,000	\$29,600	2.98%
Subcontractor Bonds (Subguard)	1.25% OF	\$769,600	\$9,600	0.96%
CM General Conditions, Insurance, & Fee	12.00% OF	\$779,200	\$93,504	9.40%
TOTAL INDIRECT COST	1 EACH	\$225,904.00	\$225,904	22.71%
TOTAL HARD CONSTRUCTION COST	1 EACH	\$872,704	\$872,704	87.72%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$872,704	\$61,100	6.14%
Permitting	1 LPSM	\$750,000	\$0	0.00%
Site #1028 Archaeology	1 LPSM	\$0	\$0	0.00%
Construction Management	1 LPSM	\$0	\$0	0.00%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$872,704	\$17,500	1.76%
Owner Contingency	5% of	\$872,704	\$43,600	4.38%
TOTAL SOFT OWNER PROJECT COST	1 EACH	\$122,200.00	\$122,200	12.28%
TOTAL COST	1 EACH	\$994,904.00	\$994,904	100.00%



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Add Championshil Field w/ Natural Grass & Lights

1 EACH

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Add Championshil Field w/ Natural Grass & Lights		1 EACH		
Division 12 - Furnishings				
Stadium and Arena Seating				
1,000 Seat Bleachers	1 LSUM	100,000.00	100,000	
Subtotal Stadium and Arena Seating			\$100,000	\$100,000
Total Division 12 - Furnishings			\$100,000	\$100,000
Division 26 - Electrical				
Division 26 - Electrical				
Field Lighting	1 LSUM	235,000.00	235,000	
Subtotal Division 26 - Electrical			\$235,000	\$235,000
Total Division 26 - Electrical			\$235,000	\$235,000
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Parking Lot	1 LSUM	200,000.00	200,000	
Subtotal Asphalt Paving			\$200,000	\$200,000
Athletic Surfacing				
Grass Field	11,145 SQYD	3.75	41,794	
Subtotal Athletic Surfacing			\$41,800	\$41,794
Total Division 32 - Exterior Improvements			\$241,800	\$241,794
Division 33 - Utilities				
Division 33 - Utilities				
Site Utilties	1 LSUM	70,000.00	70,000	
Subtotal Division 33 - Utilities			\$70,000	\$70,000
Total Division 33 - Utilities			\$70,000	\$70,000
Total Add Championshil Field w/ Natural Grass & Lights			\$646,800	\$646,794



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 1 EACH
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST				
DIRECT COST				
Alternate 2A: Add Championship Field w/ Synthetic Turf	1 EACH	\$1,357,300.00	\$1,357,300	65.02%
TOTAL DIRECT COST	1 EACH	\$1,357,300.00	\$1,357,300	65.02%
INDIRECT COST				
Design Contingency	10.00% OF	\$1,357,300	\$135,700	6.50%
Construction Contingency	4.00% OF	\$1,493,000	\$59,700	2.86%
Commodity Escalation Contingency	4.00% OF	\$1,552,700	\$62,100	2.97%
Subcontractor Bonds (Subguard)	1.25% OF	\$1,614,800	\$20,200	0.97%
CM General Conditions, Insurance, & Fee	12.00% OF	\$1,635,000	\$196,200	9.40%
TOTAL INDIRECT COST	1 EACH	\$473,900.00	\$473,900	22.70%
TOTAL HARD CONSTRUCTION COST	1 EACH	\$1,831,200	\$1,831,200	87.72%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$1,831,200	\$128,200	6.14%
Permitting	1 LPSM	\$750,000	\$0	0.00%
Site #1028 Archaeology	1 LPSM	\$0	\$0	0.00%
Construction Management	1 LPSM	\$0	\$0	0.00%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$1,831,200	\$36,600	1.75%
Owner Contingency	5% of	\$1,831,200	\$91,600	4.39%
TOTAL SOFT OWNER PROJECT COST	1 EACH	\$256,400.00	\$256,400	12.28%
TOTAL COST	1 EACH	\$2,087,600.00	\$2,087,600	100.00%



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Add Championship Field w/ Synthetic Turf

1 EACH

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Add Championship Field w/ Synthetic Turf		1 EACH		
Division 12 - Furnishings				
Stadium and Arena Seating				
1,000 Seat Bleachers	1 LSUM	100,000.00	100,000	
Subtotal Stadium and Arena Seating			\$100,000	\$100,000
Total Division 12 - Furnishings			\$100,000	\$100,000
Division 26 - Electrical				
Division 26 - Electrical				
Field Lighting	1 LSUM	235,000.00	235,000	
Subtotal Division 26 - Electrical			\$235,000	\$235,000
Total Division 26 - Electrical			\$235,000	\$235,000
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Parking Lot	1 LSUM	200,000.00	200,000	
Subtotal Asphalt Paving			\$200,000	\$200,000
Athletic Surfacing				
Turf Field	100,305 SQFT	7.50	752,287	
Subtotal Athletic Surfacing			\$752,300	\$752,287
Total Division 32 - Exterior Improvements			\$952,300	\$952,287
Division 33 - Utilities				
Division 33 - Utilities				
Site Utilities	1 LSUM	70,000.00	70,000	
Subtotal Division 33 - Utilities			\$70,000	\$70,000
Total Division 33 - Utilities			\$70,000	\$70,000
Total Add Championship Field w/ Synthetic Turf			\$1,357,300	\$1,357,288



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 1 EACH
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST				
DIRECT COST				
Alternate 2B: Add Install Bubble Enclosure at Championship Field	1 EACH	\$1,745,000.00	\$1,745,000	65.01%
TOTAL DIRECT COST	1 EACH	\$1,745,000.00	\$1,745,000	65.01%
INDIRECT COST				
Design Contingency	10.00% OF	\$1,745,000	\$174,500	6.50%
Construction Contingency	4.00% OF	\$1,919,500	\$76,800	2.86%
Commodity Escalation Contingency	4.00% OF	\$1,996,300	\$79,900	2.98%
Subcontractor Bonds (Subguard)	1.25% OF	\$2,076,200	\$26,000	0.97%
CM General Conditions, Insurance, & Fee	12.00% OF	\$2,102,200	\$252,264	9.40%
TOTAL INDIRECT COST	1 EACH	\$609,464.00	\$609,464	22.71%
TOTAL HARD CONSTRUCTION COST	1 EACH	\$2,354,464	\$2,354,464	87.72%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$2,354,464	\$164,800	6.14%
Permitting	1 LPSM	\$750,000	\$0	0.00%
Site #1028 Archaeology	1 LPSM	\$0	\$0	0.00%
Construction Management	1 LPSM	\$0	\$0	0.00%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$2,354,464	\$47,100	1.75%
Owner Contingency	5% of	\$2,354,464	\$117,700	4.39%
TOTAL SOFT OWNER PROJECT COST	1 EACH	\$329,600.00	\$329,600	12.28%
TOTAL COST	1 EACH	\$2,684,064.00	\$2,684,064	100.00%



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Add Bubble Enclosure to Championship Field

1 EACH

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Add Bubble Enclosure to Championship Field	1 EACH			
Division 03 - Concrete				
Cast In Place Concrete				
Concrete Curb and Foundations for Bubble	1 LSUM	150,000.00	150,000	
Subtotal Cast In Place Concrete			\$150,000	\$150,000
Total Division 03 - Concrete			\$150,000	\$150,000
Division 13 - Special Construction				
Division 13 - Special Construction				
Bubble Enclosure	111,186 SQFT	14.39	1,599,967	
Subtotal Division 13 - Special Construction			\$1,600,000	\$1,599,967
Total Division 13 - Special Construction			\$1,600,000	\$1,599,967
Total Add Bubble Enclosure to Championship Field			\$1,750,000	\$1,749,967



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Concept Estimate, Final

Estimate Date: 01/22/2014
 14,000 SEAT
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST				
DIRECT COST				
Alternate 3: Professional Lacrosse Stadium	14,000 SEAT	\$4,948.43	\$69,278,000	64.22%
TOTAL DIRECT COST	14,000 SEAT	\$4,948.43	\$69,278,000	64.22%
INDIRECT COST				
Design Contingency	10.00% OF	\$69,278,000	\$6,927,800	6.42%
Construction Contingency	4.00% OF	\$76,205,800	\$3,048,200	2.83%
Commodity Escalation Contingency	4.00% OF	\$79,254,000	\$3,170,200	2.94%
Subcontractor Bonds (Subguard)	1.25% OF	\$82,424,200	\$1,030,300	0.96%
CM General Conditions, Insurance, & Fee	12.00% OF	\$83,454,500	\$10,014,540	9.28%
TOTAL INDIRECT COST	14,000 SEAT	\$1,727.93	\$24,191,040	22.42%
TOTAL HARD CONSTRUCTION COST	14,000 SEAT	\$6,676	\$93,469,040	86.64%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$93,469,040	\$6,542,800	6.06%
Permitting	1 LPSM	\$750,000	\$750,000	0.70%
Site #1028 Archaeology	1 LPSM	\$125,000	\$125,000	0.12%
Construction Management	1 LPSM	\$450,000	\$450,000	0.42%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$93,469,040	\$1,869,400	1.73%
Owner Contingency	5% of	\$93,469,040	\$4,673,500	4.33%
TOTAL SOFT OWNER PROJECT COST	14,000 SEAT	\$1,029.34	\$14,410,700	13.36%
TOTAL COST	14,000 SEAT	\$7,705.70	\$107,879,740	100.00%



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 250 ACRE
 Estimate Type: Concept Estimate, Final
 Estimate Date: 1/22/2014

Professional Lacrosse Stadium

1 EACH

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Professional Lacrosse Stadium		1 EACH		
Division 03 - Concrete				
Cast In Place Concrete				
14K Seat Professional Stadium (Unit Price Per 360 Architects)	14,000 EACH	3,627.00	50,778,000	
Subtotal Cast In Place Concrete			\$50,778,000	\$50,778,000
Total Division 03 - Concrete			\$50,778,000	\$50,778,000
Division 31 - Earthwork				
Earth Moving				
Site Utilities	1 LSUM	2,100,000.00	2,100,000	
Subtotal Earth Moving			\$2,100,000	\$2,100,000
Total Division 31 - Earthwork			\$2,100,000	\$2,100,000
Division 32 - Exterior Improvements				
Asphalt Paving				
Landscaping Allowance	1 ALLW	500,000.00	500,000	
Off Site Utilities	1 LSUM	1,200,000.00	1,200,000	
Subtotal Asphalt Paving			\$1,700,000	\$1,700,000
Landscaping				
Access Roads	1 LSUM	500,000.00	500,000	
Subtotal Landscaping			\$500,000	\$500,000
Total Division 32 - Exterior Improvements			\$2,200,000	\$2,200,000
Division 33 - Utilities				
Division 33 - Utilities				
Asphalt Parking Lot with Lights	3,000 EACH	2,100.00	6,300,000	
Earthwork and Spine Road	1 LSUM	7,900,000.00	7,900,000	
Subtotal Division 33 - Utilities			\$14,200,000	\$14,200,000
Total Division 33 - Utilities			\$14,200,000	\$14,200,000
Total Professional Lacrosse Stadium			\$69,278,000	\$69,278,000



**Sensitivity Analysis for the
Proposed Green Branch Multi-Field Sports Complex
in Prince George's County, Maryland**



Submitted to:

Maryland Stadium Authority

Submitted by:



**Final Report
October 2014**

Sensitivity Analysis

Overview

Subsequent to completion of Phase II of the Green Branch Multi-Field Sports Complex study in January 2014, the Maryland - National Capital Park and Planning Commission (M-NCPPC) requested the Maryland Stadium Authority (MSA) perform the following due diligence on the project:

- 1) Relocating the proposed 12 field program to an alternate parcel of land located on the western portion of the Green Branch site; and
- 2) Reducing the proposed 12 field program to 8 fields on the alternate site.

Based on this request, Hord Coplan Macht, Inc. prepared a preliminary conceptual design for two different options using the 12 field program and the reduced 8 field program on the alternate site and Barton Malow provided a corresponding cost estimate for each option. Both of these reports are included in this study as Attachment 1.

As part of the due diligence effort, Crossroads Consulting developed a sensitivity analysis which compared the estimates of utilization, economic benefits and tax revenues for both programs which is summarized in this report.

General Assumptions

The following provides a description of the general assumptions used in this sensitivity analysis.

- Other than the reduction in the number of lighted, synthetic turf fields from 12 to 8, the other program elements, conceptual site plan attributes, and required infrastructure and amenities to support the facility generally remained the same as in the “base” study.
- No additional direct market research was conducted.
- The proposed new multi-field sports complex is designed specifically to accommodate the unique aspects of the tournament industry as well as local user groups.
- The proposed new multi-field sports complex is owned by the M-NCPPC and managed by personnel that specializes in marketing/management/programming of similar facilities and has established contacts and strong relationships with State/regional/national event promoters/producers from various sports organizations as well as area collegiate/scholastic/recreational sports entities in order to maximize marketability and usage.
- The proposed new multi-field sports complex is aggressively marketed by established tourism and sports marketing agencies in the County and State in addition to facility and team marketing efforts.
- A high level of quality customer service is provided.
- The site is adequate in terms of visibility, ingress/egress, parking, safety and other similar issues.

- Sufficient supporting infrastructure is located nearby to support the multi-field sports complex activities (i.e., hotel rooms, restaurants, retail, entertainment, etc.)
- No other similar competitive/comparable facilities are built in the region.
- Estimates for usage and related economic and fiscal benefits reflect a stabilized year (as defined in the “base” report) which is assumed to occur in the fifth year of operations.
- No major economic fluctuations or acts of nature occur that could adversely impact the project.

Because the information presented in this sensitivity analysis is extracted from the more detailed business/economic analysis presented earlier, it is important for the reader to review the report in its entirety in order to gain a better understanding of the research, methodology and assumptions used.

Estimated Impact to Annual Usage/Event Activity

The economic and fiscal impacts analysis is based on several factors including a hypothetical estimate of utilization that was developed from the research summarized in the full report including input from the client group, market research, industry trends, input from potential users, the proposed building program, information on comparable facilities as well as other research.

As shown in the following table, the reduced 8 field program is estimated to hold between 16 to 18 tournaments annually that produce between 224,000 and 252,000 total attendee days and generate between 44,800 and 50,400 room nights during a stabilized year of operation. This estimated tournament activity is approximately 18% to 20% less than that estimated for the 12 field program on the same site. The total participant days from league activity is estimated to be the same in both scenarios.

Proposed Green Branch Multi-Field Sports Complex - Sensitivity Analysis								
Estimate of Event Activity								
Category	12 Fields Range		8 Fields Range		Difference (\$) Range	Difference (\$) Range		
Season	March 1 - November 30		March 1 - November 30		March 1 - November 30			
Tournament Activity								
Total Events	20	- 22	16	- 18	4	- 4	20%	- 18%
Total Event Days	40	- 44	32	- 36	8	- 8	20%	- 18%
Number of Participants	40,000	- 44,000	32,000	- 36,000	8,000	- 8,000	20%	- 18%
Number of Spectators	100,000	- 110,000	80,000	- 90,000	20,000	- 20,000	20%	- 18%
Average Length of Stay (Days)	2	- 2	2	- 2	0	- 0	0%	- 0%
Total Attendee Days	280,000	- 308,000	224,000	- 252,000	56,000	- 56,000	20%	- 18%
Room Nights	56,000	- 61,600	44,800	- 50,400	11,200	- 11,200	20%	- 18%
League Activity								
Total Participant Days	54,000	- 64,800	54,000	- 64,800	0	- 0	0%	- 0%
Grand Total Attendee Days	334,000	- 372,800	278,000	- 316,800	56,000	- 56,000	17%	- 15%

Notes: 100% of tournament activity and 75% of league activity is estimated to be incremental new to the County.
50% of tournament activity and 0% of league activity is estimated to be incremental new to the State.



Estimated Impact to Annual Incremental New Economic Benefits Associated with On-Going Operations

As noted in the “base” business/economic analysis, one of the primary reasons for developing these types of facilities is the economic activity that they can generate in terms of spending, employment, earnings, as well as tax revenues to local and state governments. Prince George’s County and the State of Maryland would benefit from on-going operations of the proposed new Green Branch Multi-Field Sports Complex from both a quantitative and qualitative perspective.

The table below compares the estimates for annual incremental new spending, jobs and earnings for the two scenarios for a stabilized year of operation. As shown, the reduced 8 field program is estimated to generate between 280 and 310 total jobs, of which 150 to 160 total jobs are estimated to be incremental new to the State.

The incremental new economic benefits related to on-going operations are greater in the County than the State as some events programmed to be held at the proposed new Green Branch Multi-Field Sports Complex are currently occurring elsewhere in the State.

Proposed Green Branch Multi-Field Sports Complex - Sensitivity Analysis								
Estimated Annual Incremental Economic Benefits From On-Going Operations - Prince George's County								
Category	12 Fields Range		8 Fields Range		Difference (\$) Range	Difference (%) Range		
Spending								
Direct Spending	\$19,649,000	- \$21,666,000	\$15,790,000	- \$17,805,000	\$3,859,000	- \$3,861,000	20%	- 18%
Indirect/Induced Spending	\$11,440,000	- \$12,620,000	\$9,199,000	- \$10,378,000	\$2,241,000	- \$2,242,000	20%	- 18%
Total Spending	\$31,089,000	- \$34,286,000	\$24,989,000	- \$28,183,000	\$6,100,000	- \$6,103,000	20%	- 18%
Total Jobs	350	- 380	280	- 310	70	- 70	20%	- 18%
Total Earnings	\$11,127,000	- \$12,269,000	\$8,940,000	- \$10,083,000	\$2,187,000	- \$2,186,000	20%	- 18%
Estimated Annual Incremental Economic Benefits From On-Going Operations - State of Maryland								
Category	12 Fields Range		8 Fields Range		Difference (\$) Range	Difference (%) Range		
Spending								
Direct Spending	\$10,193,000	- \$11,237,000	\$8,191,000	- \$9,231,000	\$2,002,000	- \$2,006,000	20%	- 18%
Indirect/Induced Spending	\$7,423,000	- \$8,185,000	\$5,967,000	- \$6,725,000	\$1,456,000	- \$1,460,000	20%	- 18%
Total Spending	\$17,616,000	- \$19,422,000	\$14,158,000	- \$15,956,000	\$3,458,000	- \$3,466,000	20%	- 18%
Total Jobs	180	- 200	150	- 160	30	- 40	17%	- 20%
Total Earnings	\$6,593,000	- \$7,267,000	\$5,300,000	- \$5,972,000	\$1,293,000	- \$1,295,000	20%	- 18%



Estimated Impact to Annual Incremental New Tax Revenues Associated with On-Going Operations

The annual incremental new tax revenues generated from on-going operations of the reduced 8 field program are estimated to range from \$1.2 million to \$1.3 million in a stabilized year of operation which is approximately 19% less than for the 12 field program. Approximately \$767,000 to \$865,000 of total tax revenues are estimated to occur at the State level compared to between \$390,000 and \$441,000 at the County level for the reduced 8 field program.

Proposed Green Branch Multi-Field Sports Complex - Sensitivity Analysis										
Estimated Incremental Tax Revenues From On-Going Operations										
Category	12 Fields Range		8 Fields Range		Difference (\$) Range		Difference (%) Range			
Prince George's County										
Hotel Occupancy Tax	\$315,000	- \$347,000	\$252,000	- \$284,000	\$63,000	- \$63,000	20%	-	18%	
Local Personal Income Tax	120,000	- 133,000	97,000	- 109,000	23,000	- 24,000	19%	-	18%	
Admissions & Amusement Tax	46,000	- 54,000	41,000	- 48,000	5,000	- 6,000	11%	-	11%	
Total	\$481,000	- \$534,000	\$390,000	- \$441,000	\$91,000	- \$93,000	19%	-	17%	
State of Maryland										
Sales and Use Tax	\$678,000	- \$746,000	\$544,000	- \$613,000	\$134,000	- \$133,000	20%	-	18%	
Personal Income Tax	229,000	- 253,000	184,000	- 208,000	45,000	- 45,000	20%	-	18%	
Corporate Income Tax	49,000	- 54,000	39,000	- 44,000	10,000	- 10,000	20%	-	19%	
Total	\$956,000	- \$1,053,000	\$767,000	- \$865,000	\$189,000	- \$188,000	20%	-	18%	
Grand Total	\$1,437,000	- \$1,587,000	\$1,157,000	- \$1,306,000	\$280,000	- \$281,000	19%	-	18%	



MARYLAND STADIUM AUTHORITY
***Green Branch Multi-Field
Sports Complex***

Alternate Site Concept Estimate

October 2014

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Alternate Site Concept Estimate

Project Summary

Clarifications

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Option 1

Tab 2

Option 1 Alternate: 4 Additional Fields

Tab 3

Option 2

Tab 4

Option 2 Alternate: 4 Additional Fields

PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
Bowie, MD
Alternate Site Concept Estimate

Estimate Date: 10/01/2014
64 ACRE
Construction Start: 05/01/2015
Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost
PROJECT SUMMARY			
TOTAL COST			
1. Option 1 Base: 8 Lighted Synthetic Turf Fields & All Program Elements	64 ACRE	\$485,698	\$31,084,700
2. Option 1 Alternate: Add 4 Lighted Synthetic Turf Fields and 365 Parking Spots	17 ACRE	\$651,988	\$11,083,800
3. Option 1 Base Plus Alternate	81 ACRE	\$520,599	\$42,168,500
4. Option 2 Base: 8 Lighted Synthetic Turf Fields & All Program Elements	64 ACRE	\$504,678	\$32,299,400
5. Option 2 Alternate: Add 4 Lighted Synthetic Turf Fields and 350 Parking Spots	9 ACRE	\$1,132,167	\$10,189,500
6. Option 2 Base Plus Alternate	73 ACRE	\$582,040	\$42,488,900



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Alternate Site Concept Estimate

Estimate Date: 10/01/2014
 64 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST OPTION 1				
DIRECT COST				
Athletic Fields	64 ACRE	\$128,057.81	\$8,195,700	26.37%
Site Improvements	64 ACRE	\$84,570.31	\$5,412,500	17.41%
On-Site Utilities & Infrastructure	64 ACRE	\$69,390.63	\$4,441,000	14.29%
Off-Site Utilities & Infrastructure	64 ACRE	\$23,098.44	\$1,478,300	4.76%
TOTAL DIRECT COST	64 ACRE	\$305,117.19	\$19,527,500	62.82%
INDIRECT COST				
Design Contingency	10.00% OF	\$19,527,500	\$1,952,800	6.28%
Construction Contingency	4.00% OF	\$21,480,300	\$859,200	2.76%
Commodity Escalation Contingency	4.00% OF	\$22,339,500	\$893,600	2.87%
Subcontractor Bonds	1.25% OF	\$23,233,100	\$290,400	0.93%
CM General Conditions, Insurance, & Fee	12.00% OF	\$23,523,500	\$2,822,800	9.08%
TOTAL INDIRECT COST	64 ACRE	\$106,543.75	\$6,818,800	21.94%
TOTAL HARD CONSTRUCTION COST	64 ACRE	\$411,661	\$26,346,300	84.76%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$26,346,300	\$1,844,200	5.93%
Permitting	1 LPSM	\$750,000	\$750,000	2.41%
Construction Management	1 LPSM	\$300,000	\$300,000	0.97%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$26,346,300	\$526,900	1.70%
Owner Contingency	5% of	\$26,346,300	\$1,317,300	4.24%
TOTAL SOFT OWNER PROJECT COST	64 ACRE	\$74,037.50	\$4,738,400	15.24%
TOTAL COST	64 ACRE	\$485,698.44	\$31,084,700	100.00%



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Alternate Site Concept Estimate

Estimate Date: 10/01/2014
 17 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST OPTION 1 WITH 4 ADDITIONAL FIELDS				
DIRECT COST				
Athletic Fields	17 ACRE	\$238,176.47	\$4,049,000	36.53%
Site Improvements	17 ACRE	\$77,141.18	\$1,311,400	11.83%
On-Site Utilities & Infrastructure	17 ACRE	\$68,429.41	\$1,163,300	10.50%
Off-Site Utilities & Infrastructure	17 ACRE	\$0.00	\$0	0.00%
TOTAL DIRECT COST	17 ACRE	\$383,747.06	\$6,523,700	58.86%
INDIRECT COST				
Design Contingency	10.00% OF	\$6,523,700	\$652,400	5.89%
Construction Contingency	4.00% OF	\$7,176,100	\$287,000	2.59%
Commodity Escalation Contingency	4.00% OF	\$7,463,100	\$298,500	2.69%
Subcontractor Bonds	1.25% OF	\$7,761,600	\$97,000	0.88%
CM General Conditions, Insurance, & Fee	12.00% OF	\$7,858,600	\$943,000	8.51%
TOTAL INDIRECT COST	17 ACRE	\$133,994.12	\$2,277,900	20.55%
TOTAL HARD CONSTRUCTION COST	17 ACRE	\$517,741	\$8,801,600	79.41%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$8,801,600	\$616,100	5.56%
Permitting	1 LPSM	\$750,000	\$750,000	6.77%
Construction Management	1 LPSM	\$300,000	\$300,000	2.71%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$8,801,600	\$176,000	1.59%
Owner Contingency	5% of	\$8,801,600	\$440,100	3.97%
TOTAL SOFT OWNER PROJECT COST	17 ACRE	\$134,247.06	\$2,282,200	20.59%
TOTAL COST	17 ACRE	\$651,988.24	\$11,083,800	100.00%



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Alternate Site Concept Estimate

Estimate Date: 10/01/2014
 64 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST OPTION 2				
DIRECT COST				
Athletic Fields	64 ACRE	\$128,118.75	\$8,199,600	25.39%
Site Improvements	64 ACRE	\$85,817.19	\$5,492,300	17.00%
On-Site Utilities & Infrastructure	64 ACRE	\$80,421.88	\$5,147,000	15.94%
Off-Site Utilities & Infrastructure	64 ACRE	\$23,098.44	\$1,478,300	4.58%
TOTAL DIRECT COST	64 ACRE	\$317,456.25	\$20,317,200	62.90%
INDIRECT COST				
Design Contingency	10.00% OF	\$20,317,200	\$2,031,700	6.29%
Construction Contingency	4.00% OF	\$22,348,900	\$894,000	2.77%
Commodity Escalation Contingency	4.00% OF	\$23,242,900	\$929,700	2.88%
Subcontractor Bonds	1.25% OF	\$24,172,600	\$302,200	0.94%
CM General Conditions, Insurance, & Fee	12.00% OF	\$24,474,800	\$2,937,000	9.09%
TOTAL INDIRECT COST	64 ACRE	\$110,853.13	\$7,094,600	21.97%
TOTAL HARD CONSTRUCTION COST	64 ACRE	\$428,309	\$27,411,800	84.87%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$27,411,800	\$1,918,800	5.94%
Permitting	1 LPSM	\$750,000	\$750,000	2.32%
Construction Management	1 LPSM	\$300,000	\$300,000	0.93%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$27,411,800	\$548,200	1.70%
Owner Contingency	5% of	\$27,411,800	\$1,370,600	4.24%
TOTAL SOFT OWNER PROJECT COST	64 ACRE	\$76,368.75	\$4,887,600	15.13%
TOTAL COST	64 ACRE	\$504,678.13	\$32,299,400	100.00%



PROJECT SUMMARY REPORT

Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
 Bowie, MD
 Alternate Site Concept Estimate

Estimate Date: 10/01/2014
 9 ACRE
 Construction Start: 05/01/2015
 Construction Finish: 06/01/2016

Description	Quantity	Cost / Acre	Total Cost	% Of Total
HARD CONSTRUCTION COST OPTION 2 WITH 4 ADDITIONAL FIELDS				
DIRECT COST				
Athletic Fields	9 ACRE	\$449,888.89	\$4,049,000	39.74%
Site Improvements	9 ACRE	\$119,133.33	\$1,072,200	10.52%
On-Site Utilities & Infrastructure	9 ACRE	\$91,211.11	\$820,900	8.06%
Off-Site Utilities & Infrastructure	9 ACRE	\$0.00	\$0	0.00%
TOTAL DIRECT COST	9 ACRE	\$660,233.33	\$5,942,100	58.32%
INDIRECT COST				
Design Contingency	10.00% OF	\$5,942,100	\$594,200	5.83%
Construction Contingency	4.00% OF	\$6,536,300	\$261,500	2.57%
Commodity Escalation Contingency	4.00% OF	\$6,797,800	\$271,900	2.67%
Subcontractor Bonds	1.25% OF	\$7,069,700	\$88,400	0.87%
CM General Conditions, Insurance, & Fee	12.00% OF	\$7,158,100	\$859,000	8.43%
TOTAL INDIRECT COST	9 ACRE	\$230,555.56	\$2,075,000	20.36%
TOTAL HARD CONSTRUCTION COST	9 ACRE	\$890,789	\$8,017,100	78.68%
OWNER SOFT PROJECT COST				
Design (Assume 7% Total Construction Cost)	7% OF	\$8,017,100	\$561,200	5.51%
Permitting	1 LPSM	\$750,000	\$750,000	7.36%
Construction Management	1 LPSM	\$300,000	\$300,000	2.94%
Soil Boring/Surveys/Other Project Related Costs	2% OF	\$8,017,100	\$160,300	1.57%
Owner Contingency	5% of	\$8,017,100	\$400,900	3.93%
TOTAL SOFT OWNER PROJECT COST	9 ACRE	\$241,377.78	\$2,172,400	21.32%
TOTAL COST	9 ACRE	\$1,132,166.67	\$10,189,500	100.00%



**Maryland Stadium Authority
Green Branch Multi-Field Sports Complex
Alternate Site Concept Estimate**

Estimate Clarifications

- 1.0 Purpose** -- The purpose of this document is to serve as a communication tool for the project team by defining the quality and scope of this project. Barton Malow Company (BMC) has evaluated the documents and prepared an estimate based specifically on these documents. The estimate represents construction trade labor, material, equipment and methods anticipated to be utilized on this project. This estimate is not formatted by bid category nor is it our intent to predict low bids by category. This estimate should not be interpreted as a bid. This is a working document that should be reviewed by the project team with necessary revisions duly raised and documented as part of the design process.
- 2.0 Building Gross Area** -- The AIA GSF listed in this document, is based on the American Institute of Architects (AIA) Document D101, Architectural Area and Volume of Buildings, 1995 Edition.

Total AIA Building Gross Area64 ACRE
- 3.0 Design Documents** -- The estimate is based on design documents prepared by Hord Coplan Macht. For a complete listing of documents see attached Document List.
- 4.0 Bonds** -- 100% performance and payment bonds are included for all subcontractor work.
- 5.0 Contingency** -- The estimate excludes all cost associated with Owner, Program, and Design Contingencies. The estimate includes a Construction Contingency to be used at the discretion of BMC for construction related unforeseen conditions and is not intended to serve as an Owner and/or Design Contingency. The Construction Contingency does not provide for A/E errors and omissions and/or Owner requested changes during construction.
- 6.0 Sole Source Exclusion** -- This estimate assumes that the final bid documents will name three or more manufacturers whose product are acceptable under the base bid for each section or work category.
- 7.0 Sales Tax** -- This estimate includes the cost associated with State of Maryland sales tax.
- 8.0 Allowances** -- The following allowances are included in the estimate. Allowances shall cover the total cost of materials, labor, and equipment. This includes material delivery, unloading and handling at the site, installation costs, overhead, profit, and all other expenses contemplated for stated allowance.

A.0 Architectural/Civil/Structural

1. Miscellaneous Metals.....	\$27,000
2. Rough Carpentry.....	\$7,500
3. Cabinets and Countertops	\$15,000
4. Windows.....	\$20,000
5. Painting	\$32,000
6. Miscellaneous Division 10 Items.....	\$20,000
7. Signage	\$10,000
8. Food Warming Equipment	\$10,000
9. Unsuitable Soils for Option 1	\$523,000
10. Unsuitable Soils for Option 2	\$580,700
11. Erosion Controls.....	\$107,200
12. Plantings	\$300,000

M.0 Mechanical

1. Testing and Balancing.....	\$11,500
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E.0 Electrical

- 1. Musco Lighting\$1,500,000

9.0 Exclusions -- The following items are not included in the construction estimate.

G.0 General

- 1. Financing cost
- 2. Furniture, furnishings and equipment
- 3. Land acquisition cost
- 4. Legal fees
- 5. Materials and soils testing
- 6. Owner fees
- 7. Plan review, permit, inspections and tap fees and cost for all city, state and other agency requiring same
- 8. Property and boundary surveying
- 9. Soils and subsurface investigation expenses
- 10. Utility consumption for water, gas, electricity
- 11. Permit and design fees
- 12. Any special permits for work in wetland areas

A.0 Architectural/Civil/Structural

- 1. Rock excavation
- 2. Curb and gutter at roads
- 3. Scoreboards
- 4. Road with bridge to baseball stadium
- 5. Portable bleachers and restrooms
- 6. Lacrosse goals, soccer goals, and other field equipment

M.0 Mechanical

- 1. Any item not specifically listed in the estimate.

E.0 Electrical

- 1. Any item not specifically listed in the estimate.
- 2. Emergency power systems.

10.0 Labor Rates – This estimate is based on local labor wage rates and material packaging of trades by jurisdiction. Estimate is based on the Owner providing a parking lot free of charge for all trade contractors. Trade contractors are responsible for providing their own transportation to construction site.

11.0 Estimate Baseline -- The estimate is based on the following categories of cost. This forms the baseline for monitoring scope changes in the future.

- 1. Design Documents -- Unless superseded by one of the following three categories, the design documents (as listed in the document list) are the basis of the estimate.
- 2. Agreed Upon Changes -- During the process of preparing the estimate, the Architect/Engineer (A/E) and BMC may have agreed to modifications to the design originally documented in the A/E's documents. For items, which this occurs, BMC estimated quantities and quality levels take precedence over the A/E's documents as a basis for the estimate.
- 3. Allowances -- In cases where the design has not been developed sufficiently to estimate quantities, a stipulated dollar allowance shall be the basis of the estimate.
- 4. BMC Assumptions -- In cases where the design is inadequately defined on the A/E's documents, BMC will make assumptions upon which to base cost. Since scope variances cannot be determined by comparing future design documents to A/E's documents, BMC's

assumed quantities and quality levels, shall take precedence over the A/E documents as a basis of the estimate.

12.0 Inflation / Market Escalation -- The estimate includes inflation and market escalation to account for changes in labor wage rates in the marketplace and material price inflation. Escalation is included at an annual rate of 4% per year from 6/10/14 to the applicable bid due dates.

13.0 Potentially Time and Price-Impacted Materials – As of the date of this estimate, certain markets providing essential materials to the Project are experiencing or are expected to experience significant, industry-wide economic fluctuation during the course of this Project that may impact price, availability and delivery time frames. If during the course of the Project a Potentially Time and Price-Impacted Material Item experiences an increase or decrease in its Baseline Price, BMC may notify the Owner in writing for an equitable adjustment to the estimated price. BMC shall provide appropriate documentation substantiating such adjustment. An Adjustment in the pricing for a Potentially Time and Price-Impacted Material shall not include any amount for BMC overhead and profit. If BMC is delayed at any time in the commencement or progress of the Work due to a delay in the delivery of, or unavailability of, a Potentially Time and Price-Impacted Material, beyond the control of and without the fault of BMC, its Subcontractors and Material Suppliers, BMC shall be entitled to an equitable extension of the Contract Time and an equitable adjustment of the estimated price. The Owner and BMC shall undertake reasonable steps to mitigate the effect of such delays. Notwithstanding any other provision to the contrary, BMC shall not be liable to the Owner for any expenses, losses or damages arising from a delay in the delivery of a Potentially Time and Price-Impacted Material Item not the fault of BMC, its Subcontractors and Material Suppliers.

14.0 Construction Schedule -- The estimate is based on the following construction milestone dates:

1. Construction Start Date..... May 1, 2015
2. Construction Substantial Completion Date June 1, 2016

15.0 Clarifications – The following clarifications are outlined to coincide with the estimate.

General

1. The estimate is based on all work being performed on standard shift time. Overtime and/or shift premiums are not included in the estimate, except for utility change over connections.
2. All services performed by others (inspection, testing, etc.) in support of the work shall be made available without cost to the CM.
3. Pricing is based on the uninterrupted flow of work in accordance with the schedule. Delays due to others is not anticipated or included. Any delay beyond the control of the CM, which affects the critical path, shall be cause for an increase in cost and extension of time.
4. The estimate is based on a (1) year warranty of the work after acceptance or turnover to the Owner (unless exceeded by requirements identified in the specifications).
5. The estimate is based on the use of recycled materials to the extent that utilization of such materials and/or products is not considered a cost or schedule premium.
6. The estimate includes the cost of only those taxes that are presently enacted, as applicable.

Architectural

1. The Option 1 estimate is based off rough grade to be 113' and the Option 2 estimate is based off rough grade to be 112.8'. Barton Malow believes these elevations are optimal to achieve a near balanced site.
2. The estimate assumes existing topsoil can be used as fill material.

Mechanical

None

Electrical

1. Medium voltage power feed from the utility company is included in the estimate.

2. A complete medium voltage distribution system on site is included to provide the required low voltage services to the different building, site lighting and Musco lighting system.
3. Each building is provided, in addition to power and lighting systems, lightning protection, fire alarm system, and tele/data systems.
4. The estimate include the Musco lightning package budget plus all the labor and material required for complete installation and wiring.
5. Included in the estimate is the required raceways to bring telephone and internet services into the site. The telephone and internet services cabling is by the provider and is not included.
6. A complete security system is included with card readers for the three building, security camera distributed on all 8 fields and on the exterior of the Administration building.
7. An internet and WI-FI system is included with access points provided throughout the site.

Document List

1. Hord Copland Macht Drawings, Dated 6/6/14

Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 64 ACRE
 Estimate Type: Alternate Site Concept Estimate
 Estimate Date: 10/1/2014

Option 1

64 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Option 1		64 ACRE		
Athletic Fields				
Division 13 - Special Construction				
Fabricated Engineered Structures				
Coaches Boxes at Fields	2 EACH	6,500.00	13,000	
Subtotal Fabricated Engineered Structures			\$13,000	\$203
Subtotal Division 13 - Special Construction			\$13,000	\$203
Division 26 - Electrical				
Exterior Lighting				
* MUSCO LIGHTING				
Musco Lighting Allowance	1 LSUM	1,500,000.00	1,500,000	
Musco Lighting Branch Feeders	1 LSUM	179,994.37	179,994	
Install Only Musco Lighting Control Panels	2 LSUM	19,120.00	38,240	
Subtotal Exterior Lighting			\$1,718,234	\$26,847
Subtotal Division 26 - Electrical			\$1,718,200	\$26,847
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Team Benches at Fields	16 EACH	1,500.00	24,000	
Subtotal Division 32 - Exterior Improvements			\$24,000	\$375
Athletic Surfacing				
Turf Fields, Including Sub base	807,728 SQFT	7.50	6,057,960	
Subtotal Athletic Surfacing			\$6,057,960	\$94,656
Fences & Gates				
Vinyl Coated Black Chain Link Fencing at Ends of Fields	2,680 LNFT	16.00	42,880	
Subtotal Fences & Gates			\$42,880	\$670
Landscaping				
Irrigation for Fields, 2 Wells	2 EACH	75,000.00	150,000	
Subtotal Landscaping			\$150,000	\$2,344
Subtotal Division 32 - Exterior Improvements			\$6,274,800	\$98,044
Division 33 - Utilities				
Storm Drainage Utilities				
Field Drainage Piping, Assumed PVC	6,320 LNFT	30.00	189,600	
Subtotal Storm Drainage Utilities			\$189,600	\$2,963
Subtotal Division 33 - Utilities			\$189,600	\$2,963
Total Athletic Fields			\$8,195,700	\$128,057
Site Improvements				
Division 03 - Concrete				
Cast In Place Concrete				
Gradebeams for Admin. Building	23 CUYD	400.00	9,000	
Gradebeams for Maintenance Barn	14 CUYD	400.00	5,400	
Gradebeams for Vending Building	12 CUYD	400.00	4,800	
Footings for Admin. Building	1 LSUM	2,000.00	2,000	
Footings for Vending Building	1 LSUM	1,000.00	1,000	
Footings for Maintenance Barn	1 LSUM	2,000.00	2,000	
Slab on Grade for Admin. Building	3,916 SQFT	6.00	23,496	
Slab on Grade for Vending Building	1,587 SQFT	6.00	9,522	
Slab on Grade for Maintenance Barn	1,719 SQFT	6.00	10,314	
Slab on Grade for Picnic Pavilion	1,900 SQFT	6.00	11,400	
Subtotal Cast In Place Concrete			\$78,932	\$1,233
Subtotal Division 03 - Concrete			\$78,900	\$1,233



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 64 ACRE
 Estimate Type: Alternate Site Concept Estimate
 Estimate Date: 10/1/2014

Option 1

64 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Division 04 - Masonry				
Unit Masonry				
CMU Exterior Walls for Admin. Building	3,920 SQFT	16.50	64,680	
CMU Exterior Walls for Vending Building	2,240 SQFT	16.50	36,960	
Interior Masonry Partitions at Admin. Building	1,800 SQFT	14.00	25,200	
Interior Masonry Partitions at Vending Building	1,200 SQFT	14.00	16,800	
Subtotal Unit Masonry			\$143,640	\$2,244
Subtotal Division 04 - Masonry			\$143,600	\$2,244
Division 05 - Metals				
Metal Fabrications				
Allowance for Miscellaneous Metals at Admin. Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Vending Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Maintenance Barn	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Metals at Picnic Pavilion	1 ALLW	2,000.00	2,000	
Subtotal Metal Fabrications			\$27,000	\$422
Subtotal Division 05 - Metals			\$27,000	\$422
Division 06 - Wood, Plastics & Composites				
Rough Exterior Carpentry				
Rough Carpentry at Maintenance Barn	1 ALLW	2,000.00	2,000	
Rough Carpentry at Admin. Building	1 ALLW	2,000.00	2,000	
Rough Carpentry at Picnic Pavilion	1 ALLW	1,500.00	1,500	
Rough Carpentry at Vending Building	1 ALLW	2,000.00	2,000	
Subtotal Rough Exterior Carpentry			\$7,500	\$117
Wood Framing				
Wood Columns at Picnic Shelters	1 LSUM	10,000.00	10,000	
Subtotal Wood Framing			\$10,000	\$156
Wood Trusses				
Wood Trusses at Picnic Building	1 LSUM	8,000.00	8,000	
Wood Trusses at Admin. Building	1 LSUM	10,000.00	10,000	
Wood Trusses at Vending Building	1 LSUM	10,000.00	10,000	
Subtotal Wood Trusses			\$28,000	\$438
Architectural Woodwork				
Allowance for Cabinets and Counters at Admin. Building	1 ALLW	7,000.00	7,000	
Allowance for Cabinets and Counters at Vending Building	1 ALLW	8,000.00	8,000	
Subtotal Architectural Woodwork			\$15,000	\$234
Subtotal Division 06 - Wood, Plastics & Composites			\$60,500	\$945
Division 07 - Thermal & Moisture Protection				
Sheetmetal Roofing				
Standing Seam Metal Roof at Admin. Building	3,913 SQFT	32.00	125,216	
Standing Seam Metal Roof Picnic Pavilions	1,920 SQFT	32.00	61,440	
Standing Seam Metal Roof at Vending Building	1,554 SQFT	32.00	49,728	
Subtotal Sheetmetal Roofing			\$236,384	\$3,694
Subtotal Division 07 - Thermal & Moisture Protection			\$236,400	\$3,694
Division 08 - Openings				
Doors and Frames				
Exterior Doors/Frames/Hardware at Admin. Building	4 EACH	1,800.00	7,200	
Exterior Doors/Frames/Hardware at Vending Building	3 EACH	1,800.00	5,400	
Exterior Doors/Frames/Hardware at Maintenance Building	4 EACH	1,800.00	7,200	
Interior Doors/Frames/Hardware at Admin. Building	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Vending Building	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Maintenance Barn	2 EACH	1,800.00	3,600	



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 64 ACRE
 Estimate Type: Alternate Site Concept Estimate
 Estimate Date: 10/1/2014

Option 1

64 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Doors and Frames			\$30,600	\$478
Coiling Doors and Grilles				
Overhead Coiling Doors at Vending Building	1 LSUM	5,000.00	5,000	
Overhead Coiling Doors at Maintenance	1 LSUM	35,000.00	35,000	
Subtotal Coiling Doors and Grilles			\$40,000	\$625
Windows				
Allowance for Windows at Admin. Building	1 ALLW	8,000.00	8,000	
Allowance for Windows at Maintenance Barn	1 ALLW	7,000.00	7,000	
Allowance for Windows at Vending Building	1 ALLW	5,000.00	5,000	
Subtotal Windows			\$20,000	\$313
Subtotal Division 08 - Openings			\$90,600	\$1,416
Division 09 - Finishes				
Plaster and Gypsum Board				
Interior Gyp. Board Walls at Admin. Building	1,000 SQFT	9.00	9,000	
Interior Gyp. Board Walls at Maintenance Barn	1,000 SQFT	9.00	9,000	
Subtotal Plaster and Gypsum Board			\$18,000	\$281
Tiling				
Ceramic Floor Tile	1,600 SQFT	14.00	22,400	
Subtotal Tiling			\$22,400	\$350
Flooring				
Sealed Concrete at Admin. Building	3,916 SQFT	0.75	2,937	
Sealed Concrete at Vending Building	1,587 SQFT	0.75	1,190	
Sealed Concrete at Maintenance Barn	1,719 SQFT	0.75	1,289	
Sealed Concrete Picnic Pavilions	1,900 SQFT	0.75	1,425	
Carpet	170 SQYD	40.00	6,800	
Subtotal Flooring			\$13,642	\$213
Painting and Coatings				
Allowance for Painting at Admin Building	1 ALLW	10,000.00	10,000	
Allowance for Painting at Vending Building	1 ALLW	10,000.00	10,000	
Allowance for Painting at Maintenance Barn	1 ALLW	10,000.00	10,000	
Allowance for Painting at Picnic Pavilions	1 ALLW	2,000.00	2,000	
Parking Lot Line Striping	8,000 LNFT	4.50	36,000	
Subtotal Painting and Coatings			\$68,000	\$1,063
Subtotal Division 09 - Finishes			\$122,000	\$1,907
Division 10 - Specialties				
Division 10 - Specialties				
Allowance for Miscellaneous Specialties at Admin Building	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Specialties at Vending Building	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Specialties at Maintenance Barn	1 ALLW	10,000.00	10,000	
Subtotal Division 10 - Specialties			\$20,000	\$313
Signage				
Signage Allowance	1 ALLW	10,000.00	10,000	
Subtotal Signage			\$10,000	\$156
Subtotal Division 10 - Specialties			\$30,000	\$469
Division 11 - Equipment				
Foodservice Equipment				
Allowance for Food Warming Equipment	1 ALLW	10,000.00	10,000	
Subtotal Foodservice Equipment			\$10,000	\$156
Subtotal Division 11 - Equipment			\$10,000	\$156
Division 13 - Special Construction				
Fabricated Engineered Structures				



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Pre-Engineered Metal Building at Maintenance Barn	1,620 GSF	35.00	56,700	
Subtotal Fabricated Engineered Structures			\$56,700	\$886
Subtotal Division 13 - Special Construction			\$56,700	\$886
Division 21 - Fire Suppression				
Water-Based Fire-Suppression Systems				
Sprinkler Heads & Piping	20 HEAD	243.97	4,879	
Sprinkler Heads & Piping	45 HEAD	243.97	10,978	
Sprinkler Heads & Piping	16 HEAD	243.97	3,903	
Subtotal Water-Based Fire-Suppression Systems			\$19,761	\$309
Subtotal Division 21 - Fire Suppression			\$19,800	\$309
Division 22 - Plumbing				
Domestic Water Piping Insulation				
Fiberglass Insulation	****			
All Service Jacket, 1" Thick	****			
All Service Jacket, 1" Thick	****			
All Service Jacket, 1" Thick	****			
Pipe, 1/2"	20 LNFT	6.47	129	
Pipe, 1/2"	20 LNFT	6.47	129	
Pipe, 1/2"	60 LNFT	6.47	388	
Pipe, 3/4"	40 LNFT	6.82	273	
Pipe, 3/4"	200 LNFT	6.82	1,364	
Pipe, 3/4"	60 LNFT	6.82	409	
Pipe, 1"	40 LNFT	7.15	286	
Pipe, 1"	100 LNFT	7.15	715	
Pipe, 1"	40 LNFT	7.15	286	
Pipe, 1-1/2"	200 LNFT	7.61	1,522	
Pipe, 1-1/2"	60 LNFT	7.61	457	
Pipe, 1-1/2"	60 LNFT	7.61	457	
Pipe, 2"	40 LNFT	8.05	322	
Fittings and Valves	1 LSUM	287.49	287	
Fittings and Valves	1 LSUM	321.49	321	
Fittings and Valves	1 LSUM	1,077.49	1,077	
Subtotal Domestic Water Piping Insulation			\$8,424	\$132
Domestic Water Piping				
Copper Type L	****			
Pipe, 1/2"	100 LNFT	13.14	1,314	
Pipe, 3/4"	300 LNFT	16.37	4,911	
Pipe, 1"	180 LNFT	21.20	3,816	
Pipe, 1-1/2"	320 LNFT	33.79	10,813	
Pipe, 2"	40 LNFT	48.82	1,953	
Fittings and Valves	1 LSUM	8,030.00	8,030	
Pipe Identification	940 LNFT	0.26	243	
Subtotal Domestic Water Piping			\$31,079	\$486
Sanitary Waste and Vent System Piping				
Cast Iron Service Weight - Underground	****			
Pipe, 3"	160 LNFT	30.51	4,882	
Pipe, 4"	260 LNFT	36.28	9,433	
Fittings	3 LSUM	925.71	2,777	
Excavation & Backfill	420 LNFT	20.00	8,400	
Cast Iron Service Weight No-hub	****			
Pipe, 1-1/2"	110 LNFT	29.08	3,199	
Pipe, 2"	150 LNFT	30.45	4,567	
Pipe, 3"	160 LNFT	35.12	5,619	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Fittings	1 LSUM	3,355.00	3,355	
Pipe Identification	420 LNFT	0.26	108	
Subtotal Sanitary Waste and Vent System Piping			\$42,340	\$662
Plumbing Fixtures				
Plumbing Fixt's.- Settings, Rough-In & Final Connection	****			
Water Closet, Floor Mtd Tank Type	6 EACH	1,292.57	7,755	
Lavatory, Wall Hung	6 EACH	1,416.24	8,497	
Service Sink, Floor Mtd, Resin	3 EACH	1,454.25	4,363	
Countertop Sink, Single Compt., SS	5 EACH	1,134.37	5,672	
Floor Drain	16 EACH	319.59	5,113	
Electric Water Heater, 10 Gallon	3 EACH	3,252.49	9,757	
Subtotal Plumbing Fixtures			\$41,158	\$643
Subtotal Division 22 - Plumbing			\$123,000	\$1,922
Division 23 - HVAC				
Testing, Adjusting, and Balancing for HVAC				
Test & Balance	****			
Total Allowance	1 LSUM	11,500.00	11,500	
Subtotal Testing, Adjusting, and Balancing for HVAC			\$11,500	\$180
Duct Insulation				
1 1/2" Thick Duct Insulation	3,380 SQFT	2.56	8,646	
Subtotal Duct Insulation			\$8,646	\$135
HVAC Air Distribution				
Galvanized Ductwork	****			
Total Pounds	4,350 LBS	8.55	37,190	
Supply	****			
Diffuser	32 EACH	122.24	3,912	
Flexible Duct to Diffuser	32 EACH	31.29	1,001	
Spin in Collar	32 EACH	39.18	1,254	
Return / Exhaust	****			
Grille	20 EACH	103.28	2,066	
Subtotal HVAC Air Distribution			\$45,422	\$710
HVAC Fans				
Roof Exhaust Fan	****			
300 Cfm	2 EACH	323.44	647	
600 Cfm	1 EACH	644.45	644	
Ventilation Fan	****			
800 Cfm	1 EACH	687.78	688	
Subtotal HVAC Fans			\$1,979	\$31
Air Terminal Units				
Electric Heat Pump w/ Remote Condenser	****			
3 Tons	5 EACH	7,918.68	39,593	
1 Tons	1 EACH	5,515.98	5,516	
Subtotal Air Terminal Units			\$45,109	\$705
Subtotal Division 23 - HVAC			\$112,700	\$1,760
Division 26 - Electrical				
Medium-Voltage Electrical Distribution				
* Medium Voltage Distribution	****			
* Admin Bldg.	****			
MV Distribution Equipment Only (15kV)	1 EACH			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Vending Bldg	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Maintenance Bldg.	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	2,000 LNFT	11.38	22,769	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	2,000 LNFT	30.85	61,694	
* Site Electrical	****			
MV Load Breaks	2 EACH	19,494.00	38,988	
Utility Company Metering	1 EACH	5,350.00	5,350	
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	2 EACH	32,490.00	64,980	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Subtotal Medium-Voltage Electrical Distribution			\$441,027	\$6,891
Secondary Electrical Distribution				
* Secondary Distribution	****			
* Admin Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
* Vending Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
Feeders - 70 A	LNFT	18.06		
* Maintenance Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
* Pavilions	****			
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	2 EACH	5,617.00	11,234	
Feeders - 70 A	1,250 LNFT	18.43	23,033	
* Site Electrical	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	2 EACH	14,200.00	28,400	
Load Centers, 15 kVA 480-120/240V (Site Lighting) NEMA 3R	2 EACH	5,617.00	11,234	
Feeders - 600 A	600 LNFT	133.08	79,847	
Feeders - 100 A	400 LNFT	25.37	10,148	
Feeders - 70 A	1,250 LNFT	18.43	23,033	
Subtotal Secondary Electrical Distribution			\$273,687	\$4,276
Branch Wiring				
* Branch Power	****			
* Admin Bldg	****			
Duplex Receptacle	30 EACH	172.49	5,175	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	2 EACH	244.51	489	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	22 EACH	544.14	11,971	
* Vending Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	8 EACH	244.51	1,956	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	15 EACH	544.14	8,162	
120V - Equip Connection (Vending Bldg. Eq)	6 EACH	544.14	3,265	
480V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
* Maintenance Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	10 EACH	244.51	2,445	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	16 EACH	544.14	8,706	
* Pavilions	****			
GFI-Duplex Watrproof	16 EACH	299.37	4,790	
Branch Circuits	4 EACH	544.14	2,177	
Subtotal Branch Wiring			\$61,301	\$958
Motor & Equipment Wiring				
* Motor & Equipment Feeds & Connections	****			
* Admin Bldg	****			
Air Terminal Unit - 3 Tons	3 EACH	712.60	2,138	
Air Terminal Unit - 1 Tons	1 EACH	712.60	713	
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Vending Bldg	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Maintenance Bldg.	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Exhaust Fans	2 EACH	712.60	1,425	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
Subtotal Motor & Equipment Wiring			\$9,805	\$153
Emergency Power Equipment				
* Emergency Power Systems	****			
None Provided	NOTE			
Subtotal Emergency Power Equipment				
Facility Lightning Protection				
* Lightning Protection	****			
* Admin Bldg	****			
Admin Building	1 EACH	17,780.00	17,780	
* Vending Bldg	****			
Central Vending Building	1 EACH	12,745.00	12,745	
* Maintenance Bldg.	****			
Maintenance Building	1 EACH	12,745.00	12,745	
Subtotal Facility Lightning Protection			\$43,270	\$676
Interior Lighting				
* Interior Lighting	****			



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
* Admin Bldg.	****			
LED Fixtures	130 EACH	466.13	60,596	
Emergency Lights	10 EACH	289.12	2,891	
Exit Lights	10 EACH	289.12	2,891	
Fixtures Supports	150 EACH	11.02	1,652	
Fixture Whips	150 EACH	36.39	5,458	
Fixtures Home Runs	30 EACH	544.14	16,324	
Lighting Switch	10 EACH	251.46	2,515	
Occupancy Sensor	10 EACH	328.47	3,285	
Lighting Controls	1 EACH	3,847.00	3,847	
* Vending Bldg.	****			
LED Fixtures	50 EACH	466.13	23,306	
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	60 EACH	11.02	661	
Fixture Whips	60 EACH	36.39	2,183	
Fixtures Home Runs	15 EACH	544.14	8,162	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Maintenance Bldg.	****			
LED Fixtures	12 EACH	466.13	5,594	
Fluorescent Fixtures (Maintenance Bldg.)	40 EACH	336.32	13,453	
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	62 EACH	11.02	683	
Fixture Whips	62 EACH	36.39	2,256	
Fixtures Home Runs	16 EACH	544.14	8,706	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Pavilions	****			
LED Fixtures	18 EACH	466.13	8,390	
Emergency Lights	8 EACH	289.12	2,313	
Exit Lights	8 EACH	289.12	2,313	
Fixtures Supports	34 EACH	11.02	375	
Fixture Whips	34 EACH	36.39	1,237	
Fixtures Home Runs	9 EACH	544.14	4,897	
Subtotal Interior Lighting			\$203,265	\$3,176
Exterior Lighting				
Parking Lots Lighting Poles w/Fixtures Single Head	38 EACH	2,046.88	77,781	
Parking Lots Lighting Poles w/Fixtures Double Head	15 EACH	2,418.56	36,278	
1 C - Site Ltg Ckt	6,800 LNFT	7.27	49,450	
Site Lighting Wiring	23,500 LNFT	3.92	92,203	
Add Parking Lots Lighting Controls to Musco Lighting Controls)	1 LSUM	4,170.00	4,170	
Subtotal Exterior Lighting			\$259,883	\$4,061
Miscellaneous Electrical				
* Miscellaneous Electrical	****			
Temporary Light and Power	1 LSUM	29,740.00	29,740	
Fire Safe Penetrations	1 LSUM	14,870.00	14,870	
Electrical Testing	1 LSUM	8,970.00	8,970	
Electrical Load Studies	1 LSUM	13,455.00	13,455	
Subtotal Miscellaneous Electrical			\$67,035	\$1,047



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Division 26 - Electrical			\$1,359,300	\$21,239
Division 27 - Communications				
Common Work Results for Communications				
* Tele/Data/Internet (WI-FI) Systems	****			
* Site Electrical	****			
FO Raceways to Each Musco Pole for WI-FI/Camera (4" C)	9,000 LNFT	9.61	86,529	
FO Raceways to Each Musco Pole - Branch (1" C)	800 LNFT	4.44	3,553	
SM FO Cable to WI-FI/Cameras	90,000 EACH	3.86	347,401	
Wireless Access Point (Weather Proof)	40 EACH	3,299.00	131,960	
Wireless Access Point	8 EACH	594.00	4,752	
Telephone/Data Outlet	30 EACH	298.97	8,969	
Racks	1 EACH	1,778.00	1,778	
Management Panels	1 EACH	889.00	889	
Patch panels	1 EACH	889.00	889	
Head-end Equipment	1 LSUM	47,360.00	47,360	
SM FO Cable to Cameras (Included Above)	NOTE			
Subtotal Common Work Results for Communications			\$634,080	\$9,908
Subtotal Division 27 - Communications			\$634,100	\$9,908
Division 28 - Electronic Safety & Security				
Security Access Detection				
* Security Systems	****			
* Site Electrical	****			
Card Reader w/o Key Pad - Waterproof	10 EACH	444.50	4,445	
Security Camera	25 EACH	2,808.50	70,213	
Security Rack	1 EACH	889.00	889	
Security Head-End Equipment	1 LSUM	32,570.00	32,570	
Subtotal Security Access Detection			\$108,117	\$1,689
Fire Detection and Alarm				
* Fire Detection & Alarm	****			
* Admin Building				
Manual Station	4 EACH	399.30	1,597	
Audible / Visual Device	8 EACH	464.20	3,714	
Visual Device (ADA)	8 EACH	428.80	3,430	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	2 EACH	440.60	881	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
* Vending Bldg				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
* Maintenance Bldg.				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	



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Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
Subtotal Fire Detection and Alarm			\$46,401	\$725
Subtotal Division 28 - Electronic Safety & Security			\$154,500	\$2,414
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Parking Lots	32,238 SQYD	2.00	64,476	
Fine Grading for Sidewalks	1,883 SQYD	2.00	3,766	
Subtotal Fine Grading			\$68,242	\$1,066
Subtotal Division 31 - Earthwork			\$68,200	\$1,066
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Playground Equipment	1 LSUM	70,000.00	70,000	
Playground Safety Surface	3,000 SQFT	11.00	33,000	
Site Amenities (Trash Cans, Benches, Bike Racks)	1 LSUM	100,000.00	100,000	
Subtotal Division 32 - Exterior Improvements			\$203,000	\$3,172
Asphalt Paving				
Asphalt Paving for Parking Lots	31,238 SQYD	42.00	1,311,996	
Subtotal Asphalt Paving			\$1,311,996	\$20,500
Concrete Sidewalks				
10' Wide Concrete Sidewalks	2,139 SQFT	5.50	11,765	
5' Wide Concrete Sidewalks	16,955 SQFT	5.50	93,253	
Subtotal Concrete Sidewalks			\$105,017	\$1,641
Fences & Gates				
Masonry Monumental Entrance	1 LSUM	35,000.00	35,000	
Road Gate	2 EACH	3,500.00	7,000	
Subtotal Fences & Gates			\$42,000	\$656
Landscaping				
Seeding	175,875 SQYD	0.70	123,113	
Allowance for Plantings	1 ALLW	300,000.00	300,000	
Subtotal Landscaping			\$423,113	\$6,611
Subtotal Division 32 - Exterior Improvements			\$2,085,100	\$32,580
Total Site Improvements			\$5,412,500	\$84,570
On-Site Utilities & Infrastructure				
Division 26 - Electrical				
Exterior Lighting				
* Exterior Lighting	****			
Roadway Lighting Poles	8 EACH	3,398.50	27,188	
Subtotal Exterior Lighting			\$27,188	\$425
Subtotal Division 26 - Electrical			\$27,200	\$425
Division 31 - Earthwork				
Earth Moving				
Site Contractor Mobilization and Demobilization	1 LSUM	40,000.00	40,000	
Clearing and Grubbing	64 ACRE	7,500.00	480,000	
Strip and Stockpile 6" Topsoil	29,881 CUYD	8.50	253,989	
Spread Topsoil, Assume Topsoil Can Be Used as Fill	29,881 CUYD	8.50	253,988	
Rough Grading to 113', Cut to Fill	174,443 CUYD	6.00	1,046,658	
Haul Off to Grade 113'	105 CUYD	25.00	2,625	
BioSwales, Excavation, Planting Soil, Stone (Excludes Final Plantings)	82,350 SQFT	8.04	662,094	



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Allowance for Unsuitable Soils (Assumed 10% of Total CUYD of Dirt Moved with unit Rate of \$25 for Haul Off)	1 ALLW	523,000.00	523,000	
Subtotal Earth Moving			\$3,262,354	\$50,974
Fine Grading				
Fine Grading for Main "Spine" Road	5,792 SQYD	2.00	11,584	
Subtotal Fine Grading			\$11,584	\$181
Erosion Controls				
Allowances for Erosion Controls	64 ACRE	1,675.00	107,200	
Subtotal Erosion Controls			\$107,200	\$1,675
Subtotal Division 31 - Earthwork			\$3,381,100	\$52,830
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Main Spine Road	5,792 SQYD	48.00	278,016	
Subtotal Asphalt Paving			\$278,016	\$4,344
Subtotal Division 32 - Exterior Improvements			\$278,000	\$4,344
Division 33 - Utilities				
Water Utilities				
Water on Site	2,780 LNFT	96.29	267,696	
Fire Hydrants	6 EACH	8,500.00	51,000	
Subtotal Water Utilities			\$318,696	\$4,980
Sanitary Sewer Utilities				
Sanitary on Site	2,100 LNFT	95.00	199,500	
Manholes	3 EACH	5,500.00	16,500	
Subtotal Sanitary Sewer Utilities			\$216,000	\$3,375
Storm Drainage Utilities				
Storm Drain on Site	2,900 LNFT	65.00	188,500	
Inlets	6 EACH	2,500.00	15,000	
Manholes	3 EACH	5,500.00	16,500	
Subtotal Storm Drainage Utilities			\$220,000	\$3,438
Subtotal Division 33 - Utilities			\$754,700	\$11,792
Total On-Site Utilities & Infrastructure			\$4,441,000	\$69,391
Off-Site Utilities & Infrastructure				
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Road at PH1 Boundary to Rear of Walmart	1,620 SQYD	48.00	77,760	
Asphalt Paving for 24' Wide Road from Mill Branch to Rear of Walmart	3,550 SQYD	48.00	170,400	
Subtotal Asphalt Paving			\$248,160	\$3,878
Subtotal Division 32 - Exterior Improvements			\$248,200	\$3,878
Division 33 - Utilities				
Water Utilities				
Water to Site	4,000 LNFT	110.00	440,000	
Subtotal Water Utilities			\$440,000	\$6,875
Sanitary Sewer Utilities				
Sanitary Sewer to Site	4,000 LNFT	105.00	420,000	
Subtotal Sanitary Sewer Utilities			\$420,000	\$6,563
Electrical Utilities				
* Electrical Site Work	****			
Conduits - 5" PVC - MV Main Feed from Utility Company	4,000 LNFT	11.38	45,539	
Primary Feeders -UG - # 500 kcm, 15kV	4,000 LNFT	52.26	209,047	
Tele/Internet Services Raceway System (3 -4 C)	12,000 EACH	9.63	115,513	



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Option 1

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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Electrical Utilities			\$370,098	\$5,783
Subtotal Division 33 - Utilities			\$1,230,100	\$19,220
Total Off-Site Utilities & Infrastructure			\$1,478,300	\$23,098
Total Option 1			\$19,527,400	\$305,116



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Option 1 Alternate for 4 Additional Fields

17 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Option 1 Alternate for 4 Additional Fields		17 ACRE		
Athletic Fields				
Division 13 - Special Construction				
Fabricated Engineered Structures				
Coaches Boxes at Fields	1 EACH	6,500.00	6,500	
Subtotal Fabricated Engineered Structures			\$6,500	\$382
Subtotal Division 13 - Special Construction			\$6,500	\$382
Division 26 - Electrical				
Exterior Lighting				
* MUSCO LIGHTING				
Musco Lighting Allowance	1 LSUM	700,000.00	700,000	
Musco Lighting Branch Feeders	1 LSUM	90,000.00	90,000	
Install Only Musco Lighting Control Panels	1 LSUM	19,120.00	19,120	
Subtotal Exterior Lighting			\$809,120	\$47,595
Subtotal Division 26 - Electrical			\$809,100	\$47,595
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Team Benches at Fields	8 EACH	1,500.00	12,000	
Subtotal Division 32 - Exterior Improvements			\$12,000	\$706
Athletic Surfacing				
Turf Fields, Including Sub base	403,864 SQFT	7.50	3,028,980	
Subtotal Athletic Surfacing			\$3,028,980	\$178,175
Fences & Gates				
Vinyl Coated Black Chain Link Fencing at Ends of Fields	1,340 LNFT	16.00	21,440	
Subtotal Fences & Gates			\$21,440	\$1,261
Landscaping				
Irrigation for Fields, 1 Wells	1 EACH	75,000.00	75,000	
Subtotal Landscaping			\$75,000	\$4,412
Subtotal Division 32 - Exterior Improvements			\$3,137,400	\$184,554
Division 33 - Utilities				
Storm Drainage Utilities				
Field Drainage Piping, Assumed PVC	3,200 LNFT	30.00	96,000	
Subtotal Storm Drainage Utilities			\$96,000	\$5,647
Subtotal Division 33 - Utilities			\$96,000	\$5,647
Total Athletic Fields			\$4,049,000	\$238,179
Site Improvements				
Division 09 - Finishes				
Painting and Coatings				
Parking Lot Line Striping	2,920 LNFT	4.50	13,140	
Subtotal Painting and Coatings			\$13,140	\$773
Subtotal Division 09 - Finishes			\$13,100	\$773
Division 10 - Specialties				
Signage				
Signage Allowance	1 ALLW	3,000.00	3,000	
Subtotal Signage			\$3,000	\$176
Subtotal Division 10 - Specialties			\$3,000	\$176
Division 26 - Electrical				
Secondary Electrical Distribution				
* Site Electrical				
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	1 EACH	14,200.00	14,200	



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Option 1 Alternate for 4 Additional Fields

17 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Load Centers, 15 kVA 480-120/240V (Site Lighting) NEMA 3R	1 EACH	5,617.00	5,617	
Feeders - 600 A	200 LNFT	133.08	26,616	
Feeders - 100 A	100 LNFT	25.37	2,537	
Feeders - 70 A	625 LNFT	18.43	11,517	
Subtotal Secondary Electrical Distribution			\$60,486	\$3,558
Exterior Lighting				
Parking Lots Lighting Poles w/Fixtures Single Head	14 EACH	2,046.88	28,656	
Parking Lots Lighting Poles w/Fixtures Double Head	7 EACH	2,418.56	16,930	
1 C - Site Ltg Ckt	3,000 LNFT	7.27	21,816	
Site Lighting Wiring	12,000 LNFT	3.92	47,083	
Add Parking Lots Lighting Controls to Musco Lighting Controls)	1 LSUM	4,170.00	4,170	
Subtotal Exterior Lighting			\$118,655	\$6,980
Subtotal Division 26 - Electrical			\$179,100	\$10,538
Division 27 - Communications				
Common Work Results for Communications				
* Tele/Data/Internet (WI-FI) Systems	****			
* Site Electrical	****			
FO Raceways to Each Musco Pole for WI-FI/Camera (4" C)	4,500 LNFT	9.61	43,264	
FO Raceways to Each Musco Pole - Branch (1" C)	400 LNFT	4.44	1,777	
SM FO Cable to WI-FI/Cameras	45,000 EACH	3.86	173,701	
Wireless Access Point (Weather Proof)	20 EACH	3,299.00	65,980	
Wireless Access Point	4 EACH	594.00	2,376	
Telephone/Data Outlet	15 EACH	298.97	4,485	
Racks	1 EACH	1,778.00	1,778	
Management Panels	1 EACH	889.00	889	
Patch panels	1 EACH	889.00	889	
Head-end Equipment	1 LSUM	47,360.00	47,360	
SM FO Cable to Cameras (Included Above)	NOTE			
Subtotal Common Work Results for Communications			\$342,498	\$20,147
Subtotal Division 27 - Communications			\$342,500	\$20,147
Division 28 - Electronic Safety & Security				
Security Access Detection				
* Security Systems	****			
* Site Electrical	****			
Card Reader w/o Key Pad - Waterproof	2 EACH	444.50	889	
Security Camera	5 EACH	2,808.50	14,043	
Subtotal Security Access Detection			\$14,932	\$878
Subtotal Division 28 - Electronic Safety & Security			\$14,900	\$878
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Parking Lots	13,531 SQYD	2.00	27,062	
Fine Grading for Sidewalks	390 SQYD	2.00	780	
Subtotal Fine Grading			\$27,842	\$1,638
Subtotal Division 31 - Earthwork			\$27,800	\$1,638
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Site Amenities (Trash Cans, Benches, Bike Racks)	1 LSUM	30,000.00	30,000	
Subtotal Division 32 - Exterior Improvements			\$30,000	\$1,765
Asphalt Paving				
Asphalt Paving for Parking Lots	13,531 SQYD	42.00	568,302	
Subtotal Asphalt Paving			\$568,302	\$33,430
Concrete Sidewalks				



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
5' Wide Concrete Sidewalks	3,510 SQFT	5.50	19,305	
Subtotal Concrete Sidewalks			\$19,305	\$1,136
Landscaping				
Seeding	18,900 SQYD	0.70	13,230	
Allowance for Plantings	1 ALLW	100,000.00	100,000	
Subtotal Landscaping			\$113,230	\$6,661
Subtotal Division 32 - Exterior Improvements			\$730,800	\$42,990
Total Site Improvements			\$1,311,400	\$77,141
On-Site Utilities & Infrastructure				
Division 26 - Electrical				
Exterior Lighting				
* Exterior Lighting	****			
Roadway Lighting Poles	4 EACH	3,398.50	13,594	
Subtotal Exterior Lighting			\$13,594	\$800
Subtotal Division 26 - Electrical			\$13,600	\$800
Division 31 - Earthwork				
Earth Moving				
Clearing and Grubbing	17 ACRE	7,500.00	127,500	
Strip and Stockpile 6" Topsoil	13,666 CUYD	8.50	116,161	
Spread Topsoil, Assume Topsoil Can Be Used as Fill	13,666 CUYD	8.50	116,161	
Rough Grading to 105.9', Cut to Fill	47,346 CUYD	6.00	284,076	
Import to Grade 105.9'	67 CUYD	30.00	2,010	
BioSwales, Excavation, Planting Soil, Stone (Excludes Final Plantings)	3,615 SQFT	8.04	29,065	
Allowance for Unsuitable Soils (Assumed 10% of Total CUYD of Dirt Moved with unit Rate of \$25 for Haul Off)	1 ALLW	142,000.00	142,000	
Subtotal Earth Moving			\$816,973	\$48,057
Fine Grading				
Fine Grading for Main "Spine" Road	2,870 SQYD	2.00	5,740	
Subtotal Fine Grading			\$5,740	\$338
Erosion Controls				
Allowances for Erosion Controls	17 ACRE	1,675.00	28,475	
Subtotal Erosion Controls			\$28,475	\$1,675
Subtotal Division 31 - Earthwork			\$851,200	\$50,070
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Main Spine Road	2,870 SQYD	48.00	137,760	
Subtotal Asphalt Paving			\$137,760	\$8,104
Subtotal Division 32 - Exterior Improvements			\$137,800	\$8,104
Division 33 - Utilities				
Water Utilities				
Water on Site	600 LNFT	96.29	57,776	
Fire Hydrants	2 EACH	8,500.00	17,000	
Subtotal Water Utilities			\$74,776	\$4,399
Storm Drainage Utilities				
Storm Drain on Site	1,000 LNFT	65.00	65,000	
Inlets	4 EACH	2,500.00	10,000	
Manholes	2 EACH	5,500.00	11,000	
Subtotal Storm Drainage Utilities			\$86,000	\$5,059
Subtotal Division 33 - Utilities			\$160,800	\$9,457
Total On-Site Utilities & Infrastructure			\$1,163,300	\$68,430



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Option 1 Alternate for 4 Additional Fields

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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Total Option 1 Alternate for 4 Additional Fields			\$6,523,700	\$383,750



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Option 2

64 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Option 2		64 ACRE		
Athletic Fields				
Division 13 - Special Construction				
Fabricated Engineered Structures				
Coaches Boxes at Fields	2 EACH	6,500.00	13,000	
Subtotal Fabricated Engineered Structures			\$13,000	\$203
Subtotal Division 13 - Special Construction			\$13,000	\$203
Division 26 - Electrical				
Exterior Lighting				
* MUSCO LIGHTING				
Musco Lighting Allowance	1 LSUM	1,500,000.00	1,500,000	
Musco Lighting Branch Feeders	1 LSUM	179,994.37	179,994	
Install Only Musco Lighting Control Panels	2 LSUM	19,120.00	38,240	
Subtotal Exterior Lighting			\$1,718,234	\$26,847
Subtotal Division 26 - Electrical			\$1,718,200	\$26,847
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Team Benches at Fields	16 EACH	1,500.00	24,000	
Subtotal Division 32 - Exterior Improvements			\$24,000	\$375
Athletic Surfacing				
Turf Fields, Including Sub base	807,728 SQFT	7.50	6,057,960	
Subtotal Athletic Surfacing			\$6,057,960	\$94,656
Fences & Gates				
Vinyl Coated Black Chain Link Fencing at Ends of Fields	2,680 LNFT	16.00	42,880	
Subtotal Fences & Gates			\$42,880	\$670
Landscaping				
Irrigation for Fields, 2 Wells	2 EACH	75,000.00	150,000	
Subtotal Landscaping			\$150,000	\$2,344
Subtotal Division 32 - Exterior Improvements			\$6,274,800	\$98,044
Division 33 - Utilities				
Storm Drainage Utilities				
Field Drainage Piping, Assumed PVC	6,450 LNFT	30.00	193,500	
Subtotal Storm Drainage Utilities			\$193,500	\$3,023
Subtotal Division 33 - Utilities			\$193,500	\$3,023
Total Athletic Fields			\$8,199,600	\$128,118
Site Improvements				
Division 03 - Concrete				
Cast In Place Concrete				
Gradebeams for Admin. Building	23 CUYD	400.00	9,000	
Gradebeams for Maintenance Barn	14 CUYD	400.00	5,400	
Gradebeams for Vending Building	12 CUYD	400.00	4,800	
Footings for Admin. Building	1 LSUM	2,000.00	2,000	
Footings for Vending Building	1 LSUM	1,000.00	1,000	
Footings for Maintenance Barn	1 LSUM	2,000.00	2,000	
Slab on Grade for Admin. Building	3,916 SQFT	6.00	23,496	
Slab on Grade for Vending Building	1,587 SQFT	6.00	9,522	
Slab on Grade for Maintenance Barn	1,719 SQFT	6.00	10,314	
Slab on Grade for Picnic Pavilion	1,900 SQFT	6.00	11,400	
Subtotal Cast In Place Concrete			\$78,932	\$1,233
Subtotal Division 03 - Concrete			\$78,900	\$1,233



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Division 04 - Masonry				
Unit Masonry				
CMU Exterior Walls for Admin. Building	3,920 SQFT	16.50	64,680	
CMU Exterior Walls for Vending Building	2,240 SQFT	16.50	36,960	
Interior Masonry Partitions at Admin. Building	1,800 SQFT	14.00	25,200	
Interior Masonry Partitions at Vending Building	1,200 SQFT	14.00	16,800	
Subtotal Unit Masonry			\$143,640	\$2,244
Subtotal Division 04 - Masonry			\$143,600	\$2,244
Division 05 - Metals				
Metal Fabrications				
Allowance for Miscellaneous Metals at Admin. Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Vending Building	1 ALLW	10,000.00	10,000	
Allowance for Miscellaneous Metals at Maintenance Barn	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Metals at Picnic Pavilion	1 ALLW	2,000.00	2,000	
Subtotal Metal Fabrications			\$27,000	\$422
Subtotal Division 05 - Metals			\$27,000	\$422
Division 06 - Wood, Plastics & Composites				
Rough Exterior Carpentry				
Rough Carpentry at Maintenance Barn	1 ALLW	2,000.00	2,000	
Rough Carpentry at Admin. Building	1 ALLW	2,000.00	2,000	
Rough Carpentry at Picnic Pavilion	1 ALLW	1,500.00	1,500	
Rough Carpentry at Vending Building	1 ALLW	2,000.00	2,000	
Subtotal Rough Exterior Carpentry			\$7,500	\$117
Wood Framing				
Wood Columns at Picnic Shelters	1 LSUM	10,000.00	10,000	
Subtotal Wood Framing			\$10,000	\$156
Wood Trusses				
Wood Trusses at Picnic Building	1 LSUM	8,000.00	8,000	
Wood Trusses at Admin. Building	1 LSUM	10,000.00	10,000	
Wood Trusses at Vending Building	1 LSUM	10,000.00	10,000	
Subtotal Wood Trusses			\$28,000	\$438
Architectural Woodwork				
Allowance for Cabinets and Counters at Admin. Building	1 ALLW	7,000.00	7,000	
Allowance for Cabinets and Counters at Vending Building	1 ALLW	8,000.00	8,000	
Subtotal Architectural Woodwork			\$15,000	\$234
Subtotal Division 06 - Wood, Plastics & Composites			\$60,500	\$945
Division 07 - Thermal & Moisture Protection				
Sheetmetal Roofing				
Standing Seam Metal Roof at Admin. Building	3,913 SQFT	32.00	125,216	
Standing Seam Metal Roof Picnic Pavilions	1,920 SQFT	32.00	61,440	
Standing Seam Metal Roof at Vending Building	1,554 SQFT	32.00	49,728	
Subtotal Sheetmetal Roofing			\$236,384	\$3,694
Subtotal Division 07 - Thermal & Moisture Protection			\$236,400	\$3,694
Division 08 - Openings				
Doors and Frames				
Exterior Doors/Frames/Hardware at Admin. Building	4 EACH	1,800.00	7,200	
Exterior Doors/Frames/Hardware at Vending Building	3 EACH	1,800.00	5,400	
Exterior Doors/Frames/Hardware at Maintenance Building	4 EACH	1,800.00	7,200	
Interior Doors/Frames/Hardware at Admin. Building	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Vending Building	2 EACH	1,800.00	3,600	
Interior Doors/Frames/Hardware at Maintenance Barn	2 EACH	1,800.00	3,600	



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Subtotal Doors and Frames			\$30,600	\$478
Coiling Doors and Grilles				
Overhead Coiling Doors at Vending Building	1 LSUM	5,000.00	5,000	
Overhead Coiling Doors at Maintenance	1 LSUM	35,000.00	35,000	
Subtotal Coiling Doors and Grilles			\$40,000	\$625
Windows				
Allowance for Windows at Admin. Building	1 ALLW	8,000.00	8,000	
Allowance for Windows at Maintenance Barn	1 ALLW	7,000.00	7,000	
Allowance for Windows at Vending Building	1 ALLW	5,000.00	5,000	
Subtotal Windows			\$20,000	\$313
Subtotal Division 08 - Openings			\$90,600	\$1,416
Division 09 - Finishes				
Plaster and Gypsum Board				
Interior Gyp. Board Walls at Admin. Building	1,000 SQFT	9.00	9,000	
Interior Gyp. Board Walls at Maintenance Barn	1,000 SQFT	9.00	9,000	
Subtotal Plaster and Gypsum Board			\$18,000	\$281
Tiling				
Ceramic Floor Tile	1,600 SQFT	14.00	22,400	
Subtotal Tiling			\$22,400	\$350
Flooring				
Sealed Concrete at Admin. Building	3,916 SQFT	0.75	2,937	
Sealed Concrete at Vending Building	1,587 SQFT	0.75	1,190	
Sealed Concrete at Maintenance Barn	1,719 SQFT	0.75	1,289	
Sealed Concrete Picnic Pavilions	1,900 SQFT	0.75	1,425	
Carpet	170 SQYD	40.00	6,800	
Subtotal Flooring			\$13,642	\$213
Painting and Coatings				
Allowance for Painting at Admin Building	1 ALLW	10,000.00	10,000	
Allowance for Painting at Vending Building	1 ALLW	10,000.00	10,000	
Allowance for Painting at Maintenance Barn	1 ALLW	10,000.00	10,000	
Allowance for Painting at Picnic Pavilions	1 ALLW	2,000.00	2,000	
Parking Lot Line Striping	8,000 LNFT	4.50	36,000	
Subtotal Painting and Coatings			\$68,000	\$1,063
Subtotal Division 09 - Finishes			\$122,000	\$1,907
Division 10 - Specialties				
Division 10 - Specialties				
Allowance for Miscellaneous Specialties at Admin Building	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Specialties at Vending Building	1 ALLW	5,000.00	5,000	
Allowance for Miscellaneous Specialties at Maintenance Barn	1 ALLW	10,000.00	10,000	
Subtotal Division 10 - Specialties			\$20,000	\$313
Signage				
Signage Allowance	1 ALLW	10,000.00	10,000	
Subtotal Signage			\$10,000	\$156
Subtotal Division 10 - Specialties			\$30,000	\$469
Division 11 - Equipment				
Foodservice Equipment				
Allowance for Food Warming Equipment	1 ALLW	10,000.00	10,000	
Subtotal Foodservice Equipment			\$10,000	\$156
Subtotal Division 11 - Equipment			\$10,000	\$156
Division 13 - Special Construction				
Fabricated Engineered Structures				



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Pre-Engineered Metal Building at Maintenance Barn	1,620 GSF	35.00	56,700	
Subtotal Fabricated Engineered Structures			\$56,700	\$886
Subtotal Division 13 - Special Construction			\$56,700	\$886
Division 21 - Fire Suppression				
Water-Based Fire-Suppression Systems				
Sprinkler Heads & Piping	20 HEAD	243.97	4,879	
Sprinkler Heads & Piping	45 HEAD	243.97	10,978	
Sprinkler Heads & Piping	16 HEAD	243.97	3,903	
Subtotal Water-Based Fire-Suppression Systems			\$19,761	\$309
Subtotal Division 21 - Fire Suppression			\$19,800	\$309
Division 22 - Plumbing				
Domestic Water Piping Insulation				
Fiberglass Insulation	****			
All Service Jacket, 1" Thick	****			
All Service Jacket, 1" Thick	****			
All Service Jacket, 1" Thick	****			
Pipe, 1/2"	20 LNFT	6.47	129	
Pipe, 1/2"	20 LNFT	6.47	129	
Pipe, 1/2"	60 LNFT	6.47	388	
Pipe, 3/4"	40 LNFT	6.82	273	
Pipe, 3/4"	200 LNFT	6.82	1,364	
Pipe, 3/4"	60 LNFT	6.82	409	
Pipe, 1"	40 LNFT	7.15	286	
Pipe, 1"	100 LNFT	7.15	715	
Pipe, 1"	40 LNFT	7.15	286	
Pipe, 1-1/2"	200 LNFT	7.61	1,522	
Pipe, 1-1/2"	60 LNFT	7.61	457	
Pipe, 1-1/2"	60 LNFT	7.61	457	
Pipe, 2"	40 LNFT	8.05	322	
Fittings and Valves	1 LSUM	287.49	287	
Fittings and Valves	1 LSUM	321.49	321	
Fittings and Valves	1 LSUM	1,077.49	1,077	
Subtotal Domestic Water Piping Insulation			\$8,424	\$132
Domestic Water Piping				
Copper Type L	****			
Pipe, 1/2"	100 LNFT	13.14	1,314	
Pipe, 3/4"	300 LNFT	16.37	4,911	
Pipe, 1"	180 LNFT	21.20	3,816	
Pipe, 1-1/2"	320 LNFT	33.79	10,813	
Pipe, 2"	40 LNFT	48.82	1,953	
Fittings and Valves	1 LSUM	8,030.00	8,030	
Pipe Identification	940 LNFT	0.26	243	
Subtotal Domestic Water Piping			\$31,079	\$486
Sanitary Waste and Vent System Piping				
Cast Iron Service Weight - Underground	****			
Pipe, 3"	160 LNFT	30.51	4,882	
Pipe, 4"	260 LNFT	36.28	9,433	
Fittings	3 LSUM	925.71	2,777	
Excavation & Backfill	420 LNFT	20.00	8,400	
Cast Iron Service Weight No-hub	****			
Pipe, 1-1/2"	110 LNFT	29.08	3,199	
Pipe, 2"	150 LNFT	30.45	4,567	
Pipe, 3"	160 LNFT	35.12	5,619	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Fittings	1 LSUM	3,355.00	3,355	
Pipe Identification	420 LNFT	0.26	108	
Subtotal Sanitary Waste and Vent System Piping			\$42,340	\$662
Plumbing Fixtures				
Plumbing Fixt's.- Settings, Rough-In & Final Connection	****			
Water Closet, Floor Mtd Tank Type	6 EACH	1,292.57	7,755	
Lavatory, Wall Hung	6 EACH	1,416.24	8,497	
Service Sink, Floor Mtd, Resin	3 EACH	1,454.25	4,363	
Countertop Sink, Single Compt., SS	5 EACH	1,134.37	5,672	
Floor Drain	16 EACH	319.59	5,113	
Electric Water Heater, 10 Gallon	3 EACH	3,252.49	9,757	
Subtotal Plumbing Fixtures			\$41,158	\$643
Subtotal Division 22 - Plumbing			\$123,000	\$1,922
Division 23 - HVAC				
Testing, Adjusting, and Balancing for HVAC				
Test & Balance	****			
Total Allowance	1 LSUM	11,500.00	11,500	
Subtotal Testing, Adjusting, and Balancing for HVAC			\$11,500	\$180
Duct Insulation				
1 1/2" Thick Duct Insulation	3,380 SQFT	2.56	8,646	
Subtotal Duct Insulation			\$8,646	\$135
HVAC Air Distribution				
Galvanized Ductwork	****			
Total Pounds	4,350 LBS	8.55	37,190	
Supply	****			
Diffuser	32 EACH	122.24	3,912	
Flexible Duct to Diffuser	32 EACH	31.29	1,001	
Spin in Collar	32 EACH	39.18	1,254	
Return / Exhaust	****			
Grille	20 EACH	103.28	2,066	
Subtotal HVAC Air Distribution			\$45,422	\$710
HVAC Fans				
Roof Exhaust Fan	****			
300 Cfm	2 EACH	323.44	647	
600 Cfm	1 EACH	644.45	644	
Ventilation Fan	****			
800 Cfm	1 EACH	687.78	688	
Subtotal HVAC Fans			\$1,979	\$31
Air Terminal Units				
Electric Heat Pump w/ Remote Condenser	****			
3 Tons	5 EACH	7,918.68	39,593	
1 Tons	1 EACH	5,515.98	5,516	
Subtotal Air Terminal Units			\$45,109	\$705
Subtotal Division 23 - HVAC			\$112,700	\$1,760
Division 26 - Electrical				
Medium-Voltage Electrical Distribution				
* Medium Voltage Distribution	****			
* Admin Bldg.	****			
MV Distribution Equipment Only (15kV)	1 EACH			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Vending Bldg	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
* Maintenance Bldg.	****			
MV Load Breaks	1 EACH	19,494.00	19,494	
MV Transformer Pad Mounted - 150 kVA (15 kV-480/277V)	1 EACH	20,690.00	20,690	
Conduits - 5" PVC - MV Distribution	2,000 LNFT	11.38	22,769	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	2,000 LNFT	30.85	61,694	
* Site Electrical	****			
MV Load Breaks	2 EACH	19,494.00	38,988	
Utility Company Metering	1 EACH	5,350.00	5,350	
MV Transformer Pad Mounted - 500 kVA (15 kV-480/277V)	2 EACH	32,490.00	64,980	
Primary Feeders -UG - # 4/0 kcm, 15kV Distribution	1,000 LNFT	30.85	30,847	
Conduits - 5" PVC - MV Distribution	1,000 LNFT	11.38	11,385	
Subtotal Medium-Voltage Electrical Distribution			\$441,027	\$6,891
Secondary Electrical Distribution				
* Secondary Distribution	****			
* Admin Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
* Vending Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
Feeders - 70 A	LNFT	18.06		
* Maintenance Bldg.	****			
Panelboard - 225A MCB, 480/277V	1 EACH	5,766.50	5,766	
Transformer - 45kVA	1 EACH	4,728.00	4,728	
Panelboard - 225A MCB, 208/120V	1 EACH	3,996.50	3,997	
Feeders - 225 A	200 LNFT	46.77	9,355	
Feeders - 100 A	200 LNFT	25.37	5,074	
* Pavilions	****			
Load Centers, 15 kVA 480-120/240V (Pavilions & Site Lighting) NEMA 3R	2 EACH	5,617.00	11,234	
Feeders - 70 A	1,250 LNFT	18.43	23,033	
* Site Electrical	****			
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	2 EACH	14,200.00	28,400	
Load Centers, 15 kVA 480-120/240V (Site Lighting) NEMA 3R	2 EACH	5,617.00	11,234	
Feeders - 600 A	600 LNFT	133.08	79,847	
Feeders - 100 A	400 LNFT	25.37	10,148	
Feeders - 70 A	1,250 LNFT	18.43	23,033	
Subtotal Secondary Electrical Distribution			\$273,687	\$4,276
Branch Wiring				
* Branch Power	****			
* Admin Bldg	****			
Duplex Receptacle	30 EACH	172.49	5,175	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	2 EACH	244.51	489	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	22 EACH	544.14	11,971	
* Vending Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	8 EACH	244.51	1,956	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	15 EACH	544.14	8,162	
120V - Equip Connection (Vending Bldg. Eq)	6 EACH	544.14	3,265	
480V - Equip Connection (Vending Bldg. Eq)	2 EACH	544.14	1,088	
* Maintenance Bldg	****			
Duplex Receptacle	10 EACH	172.49	1,725	
Quad Receptacle	10 EACH	194.37	1,944	
GFI-Duplex	10 EACH	244.51	2,445	
GFI-Duplex Watrproof	2 EACH	299.37	599	
Branch Circuits	16 EACH	544.14	8,706	
* Pavilions	****			
GFI-Duplex Watrproof	16 EACH	299.37	4,790	
Branch Circuits	4 EACH	544.14	2,177	
Subtotal Branch Wiring			\$61,301	\$958
Motor & Equipment Wiring				
* Motor & Equipment Feeds & Connections	****			
* Admin Bldg	****			
Air Terminal Unit - 3 Tons	3 EACH	712.60	2,138	
Air Terminal Unit - 1 Tons	1 EACH	712.60	713	
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Vending Bldg	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Exhaust Fans	1 EACH	712.60	713	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
* Maintenance Bldg.	****			
Air Terminal Unit - 3 Tons	1 EACH	712.60	713	
Exhaust Fans	2 EACH	712.60	1,425	
Electric Water Heaters, 10 Gallon	1 EACH	893.00	893	
Subtotal Motor & Equipment Wiring			\$9,805	\$153
Emergency Power Equipment				
* Emergency Power Systems	****			
None Provided	NOTE			
Subtotal Emergency Power Equipment				
Facility Lightning Protection				
* Lightning Protection	****			
* Admin Bldg	****			
Admin Building	1 EACH	17,780.00	17,780	
* Vending Bldg	****			
Central Vending Building	1 EACH	12,745.00	12,745	
* Maintenance Bldg.	****			
Maintenance Building	1 EACH	12,745.00	12,745	
Subtotal Facility Lightning Protection			\$43,270	\$676
Interior Lighting				
* Interior Lighting	****			



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
* Admin Bldg.	****			
LED Fixtures	130 EACH	466.13	60,596	
Emergency Lights	10 EACH	289.12	2,891	
Exit Lights	10 EACH	289.12	2,891	
Fixtures Supports	150 EACH	11.02	1,652	
Fixture Whips	150 EACH	36.39	5,458	
Fixtures Home Runs	30 EACH	544.14	16,324	
Lighting Switch	10 EACH	251.46	2,515	
Occupancy Sensor	10 EACH	328.47	3,285	
Lighting Controls	1 EACH	3,847.00	3,847	
* Vending Bldg.	****			
LED Fixtures	50 EACH	466.13	23,306	
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	60 EACH	11.02	661	
Fixture Whips	60 EACH	36.39	2,183	
Fixtures Home Runs	15 EACH	544.14	8,162	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Maintenance Bldg.	****			
LED Fixtures	12 EACH	466.13	5,594	
Fluorescent Fixtures (Maintenance Bldg.)	40 EACH	336.32	13,453	
Emergency Lights	5 EACH	289.12	1,446	
Exit Lights	5 EACH	289.12	1,446	
Fixtures Supports	62 EACH	11.02	683	
Fixture Whips	62 EACH	36.39	2,256	
Fixtures Home Runs	16 EACH	544.14	8,706	
Lighting Switch	5 EACH	251.46	1,257	
Occupancy Sensor	5 EACH	328.47	1,642	
Lighting Controls	1 EACH	3,847.00	3,847	
* Pavilions	****			
LED Fixtures	18 EACH	466.13	8,390	
Emergency Lights	8 EACH	289.12	2,313	
Exit Lights	8 EACH	289.12	2,313	
Fixtures Supports	34 EACH	11.02	375	
Fixture Whips	34 EACH	36.39	1,237	
Fixtures Home Runs	9 EACH	544.14	4,897	
Subtotal Interior Lighting			\$203,265	\$3,176
Exterior Lighting				
Parking Lots Lighting Poles w/Fixtures Single Head	38 EACH	2,046.88	77,781	
Parking Lots Lighting Poles w/Fixtures Double Head	15 EACH	2,418.56	36,278	
1 C - Site Ltg Ckt	8,000 LNFT	7.27	58,176	
Site Lighting Wiring	28,400 LNFT	3.92	111,429	
Add Parking Lots Lighting Controls to Musco Lighting Controls)	3 LSUM	4,170.00	12,510	
Subtotal Exterior Lighting			\$296,174	\$4,628
Miscellaneous Electrical				
* Miscellaneous Electrical	****			
Temporary Light and Power	1 LSUM	29,740.00	29,740	
Fire Safe Penetrations	1 LSUM	14,870.00	14,870	
Electrical Testing	1 LSUM	8,970.00	8,970	
Electrical Load Studies	1 LSUM	13,455.00	13,455	
Subtotal Miscellaneous Electrical			\$67,035	\$1,047



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Division 26 - Electrical			\$1,395,600	\$21,806
Division 27 - Communications				
Common Work Results for Communications				
* Tele/Data/Internet (WI-FI) Systems	****			
* Site Electrical	****			
FO Raceways to Each Musco Pole for WI-FI/Camera (4" C)	9,000 LNFT	9.61	86,529	
FO Raceways to Each Musco Pole - Branch (1" C)	800 LNFT	4.44	3,553	
SM FO Cable to WI-FI/Cameras	90,000 EACH	3.86	347,401	
Wireless Access Point (Weather Proof)	40 EACH	3,299.00	131,960	
Wireless Access Point	8 EACH	594.00	4,752	
Telephone/Data Outlet	30 EACH	298.97	8,969	
Racks	1 EACH	1,778.00	1,778	
Management Panels	1 EACH	889.00	889	
Patch panels	1 EACH	889.00	889	
Head-end Equipment	1 LSUM	47,360.00	47,360	
SM FO Cable to Cameras (Included Above)	NOTE			
Subtotal Common Work Results for Communications			\$634,080	\$9,908
Subtotal Division 27 - Communications			\$634,100	\$9,908
Division 28 - Electronic Safety & Security				
Security Access Detection				
* Security Systems	****			
* Site Electrical	****			
Card Reader w/o Key Pad - Waterproof	10 EACH	444.50	4,445	
Security Camera	32 EACH	2,808.50	89,872	
Security Rack	1 EACH	889.00	889	
Security Head-End Equipment	1 LSUM	32,570.00	32,570	
Subtotal Security Access Detection			\$127,776	\$1,997
Fire Detection and Alarm				
* Fire Detection & Alarm	****			
* Admin Building				
Manual Station	4 EACH	399.30	1,597	
Audible / Visual Device	8 EACH	464.20	3,714	
Visual Device (ADA)	8 EACH	428.80	3,430	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	2 EACH	440.60	881	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
* Vending Bldg				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	
Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
* Maintenance Bldg.				
Manual Station	2 EACH	399.30	799	
Audible / Visual Device	6 EACH	464.20	2,785	
Visual Device (ADA)	6 EACH	428.80	2,573	
Ceiling Smoke Detectors	6 EACH	464.20	2,785	
Duct Smoke Detectors	1 EACH	979.50	980	



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Door Holders	1 EACH	440.60	441	
Water Flow / Tamper Switch	1 EACH	548.80	549	
Main Equipment Zones	1 EACH	3,548.00	3,548	
Subtotal Fire Detection and Alarm			\$46,401	\$725
Subtotal Division 28 - Electronic Safety & Security			\$174,200	\$2,722
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Parking Lots	31,825 SQYD	2.00	63,650	
Fine Grading for Sidewalks	1,751 SQYD	2.00	3,502	
Subtotal Fine Grading			\$67,152	\$1,049
Subtotal Division 31 - Earthwork			\$67,200	\$1,049
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Playground Equipment	1 LSUM	70,000.00	70,000	
Playground Safety Surface	3,000 SQFT	11.00	33,000	
Site Amenities (Trash Cans, Benches, Bike Racks)	1 LSUM	100,000.00	100,000	
Subtotal Division 32 - Exterior Improvements			\$203,000	\$3,172
Asphalt Paving				
Asphalt Paving for Parking Lots	31,825 SQYD	42.00	1,336,650	
Subtotal Asphalt Paving			\$1,336,650	\$20,885
Concrete Sidewalks				
5' Wide Concrete Sidewalks	20,131 SQFT	5.50	110,721	
Subtotal Concrete Sidewalks			\$110,721	\$1,730
Fences & Gates				
Masonry Monumental Entrance	1 LSUM	35,000.00	35,000	
Road Gate	2 EACH	3,500.00	7,000	
Subtotal Fences & Gates			\$42,000	\$656
Landscaping				
Seeding	168,194 SQYD	0.70	117,736	
Allowance for Plantings	1 ALLW	300,000.00	300,000	
Subtotal Landscaping			\$417,736	\$6,527
Subtotal Division 32 - Exterior Improvements			\$2,110,100	\$32,970
Total Site Improvements			\$5,492,300	\$85,817
On-Site Utilities & Infrastructure				
Division 26 - Electrical				
Exterior Lighting				
* Exterior Lighting	****			
Roadway Lighting Poles	9 EACH	3,398.50	30,587	
Subtotal Exterior Lighting			\$30,587	\$478
Subtotal Division 26 - Electrical			\$30,600	\$478
Division 31 - Earthwork				
Earth Moving				
Site Contractor Mobilization and Demobilization	1 LSUM	40,000.00	40,000	
Clearing and Grubbing	64 ACRE	7,500.00	480,000	
Strip and Stockpile 6" Topsoil	32,014 CUYD	8.50	272,119	
Spread Topsoil, Assume Topsoil Can Be Used as Fill	32,014 CUYD	8.50	272,119	
Rough Grading to 112.8'; Cut to Fill	193,568 CUYD	6.00	1,161,408	
Haul Off to Grade 112.8'	1,144 CUYD	25.00	28,600	
BioSwales, Excavation, Planting Soil, Stone (Excludes Final Plantings)	86,553 SQFT	8.04	695,886	
Allowance for Unsuitable Soils (Assumed 10% of Total CUYD of Dirt Moved with unit Rate of \$25 for Haul Off)	1 ALLW	580,700.00	580,700	



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Earth Moving			\$3,530,832	\$55,169
Fine Grading				
Fine Grading for Main "Spine" Road	10,994 SQYD	2.00	21,988	
Subtotal Fine Grading			\$21,988	\$344
Erosion Controls				
Allowances for Erosion Controls	64 ACRE	1,675.00	107,200	
Subtotal Erosion Controls			\$107,200	\$1,675
Subtotal Division 31 - Earthwork			\$3,660,000	\$57,188
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Main Spine Road	10,994 SQYD	48.00	527,712	
Subtotal Asphalt Paving			\$527,712	\$8,246
Subtotal Division 32 - Exterior Improvements			\$527,700	\$8,246
Division 33 - Utilities				
Water Utilities				
Water on Site	3,450 LNFT	96.29	332,213	
Fire Hydrants	6 EACH	8,500.00	51,000	
Subtotal Water Utilities			\$383,213	\$5,988
Sanitary Sewer Utilities				
Sanitary on Site	2,500 LNFT	95.00	237,500	
Manholes	3 EACH	5,500.00	16,500	
Subtotal Sanitary Sewer Utilities			\$254,000	\$3,969
Storm Drainage Utilities				
Storm Drain on Site	3,800 LNFT	65.00	247,000	
Inlets	9 EACH	2,500.00	22,500	
Manholes	4 EACH	5,500.00	22,000	
Subtotal Storm Drainage Utilities			\$291,500	\$4,555
Subtotal Division 33 - Utilities			\$928,700	\$14,511
Total On-Site Utilities & Infrastructure			\$5,147,000	\$80,422
Off-Site Utilities & Infrastructure				
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for 24' Wide Road at PH1 Boundary to Rear of Walmart	1,620 SQYD	48.00	77,760	
Asphalt Paving for 24' Wide Road from Mill Branch to Rear of Walmart	3,550 SQYD	48.00	170,400	
Subtotal Asphalt Paving			\$248,160	\$3,878
Subtotal Division 32 - Exterior Improvements			\$248,200	\$3,878
Division 33 - Utilities				
Water Utilities				
Water to Site	4,000 LNFT	110.00	440,000	
Subtotal Water Utilities			\$440,000	\$6,875
Sanitary Sewer Utilities				
Sanitary Sewer to Site	4,000 LNFT	105.00	420,000	
Subtotal Sanitary Sewer Utilities			\$420,000	\$6,563
Electrical Utilities				
* Electrical Site Work	****			
Conduits - 5" PVC - MV Main Feed from Utility Company	4,000 LNFT	11.38	45,539	
Primary Feeders -UG - # 500 kcm, 15kV	4,000 LNFT	52.26	209,047	
Tele/Internet Services Raceway System (3 -4 C)	12,000 EACH	9.63	115,513	
Subtotal Electrical Utilities			\$370,098	\$5,783



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Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Subtotal Division 33 - Utilities			\$1,230,100	\$19,220
Total Off-Site Utilities & Infrastructure			\$1,478,300	\$23,098
Total Option 2			\$20,317,200	\$317,456



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Option 2 Alternate for 4 Additional Fields

9 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Option 2 Alternate for 4 Additional Fields		9 ACRE		
Athletic Fields				
Division 13 - Special Construction				
Fabricated Engineered Structures				
Coaches Boxes at Fields	1 EACH	6,500.00	6,500	
Subtotal Fabricated Engineered Structures			\$6,500	\$722
Subtotal Division 13 - Special Construction			\$6,500	\$722
Division 26 - Electrical				
Exterior Lighting				
* MUSCO LIGHTING				
Musco Lighting Allowance	1 LSUM	700,000.00	700,000	
Musco Lighting Branch Feeders	1 LSUM	90,000.00	90,000	
Install Only Musco Lighting Control Panels	1 LSUM	19,120.00	19,120	
Subtotal Exterior Lighting			\$809,120	\$89,902
Subtotal Division 26 - Electrical			\$809,100	\$89,902
Division 32 - Exterior Improvements				
Division 32 - Exterior Improvements				
Team Benches at Fields	8 EACH	1,500.00	12,000	
Subtotal Division 32 - Exterior Improvements			\$12,000	\$1,333
Athletic Surfacing				
Turf Fields, Including Sub base	403,864 SQFT	7.50	3,028,980	
Subtotal Athletic Surfacing			\$3,028,980	\$336,553
Fences & Gates				
Vinyl Coated Black Chain Link Fencing at Ends of Fields	1,340 LNFT	16.00	21,440	
Subtotal Fences & Gates			\$21,440	\$2,382
Landscaping				
Irrigation for Fields, 1 Wells	1 EACH	75,000.00	75,000	
Subtotal Landscaping			\$75,000	\$8,333
Subtotal Division 32 - Exterior Improvements			\$3,137,400	\$348,602
Division 33 - Utilities				
Storm Drainage Utilities				
Field Drainage Piping, Assumed PVC	3,200 LNFT	30.00	96,000	
Subtotal Storm Drainage Utilities			\$96,000	\$10,667
Subtotal Division 33 - Utilities			\$96,000	\$10,667
Total Athletic Fields			\$4,049,000	\$449,893
Site Improvements				
Division 09 - Finishes				
Painting and Coatings				
Parking Lot Line Striping	2,800 LNFT	4.50	12,600	
Subtotal Painting and Coatings			\$12,600	\$1,400
Subtotal Division 09 - Finishes			\$12,600	\$1,400
Division 10 - Specialties				
Signage				
Signage Allowance	1 ALLW	3,000.00	3,000	
Subtotal Signage			\$3,000	\$333
Subtotal Division 10 - Specialties			\$3,000	\$333
Division 26 - Electrical				
Secondary Electrical Distribution				
* Site Electrical *****				
Power Panel for Musco Lighting - 600A MCB, 480/277V NEMA 3R	1 EACH	14,200.00	14,200	



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Option 2 Alternate for 4 Additional Fields

9 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Load Centers, 15 kVA 480-120/240V (Site Lighting) NEMA 3R	1 EACH	5,617.00	5,617	
Feeders - 600 A	200 LNFT	133.08	26,616	
Feeders - 100 A	100 LNFT	25.37	2,537	
Feeders - 70 A	625 LNFT	18.43	11,517	
Subtotal Secondary Electrical Distribution			\$60,486	\$6,721
Exterior Lighting				
Parking Lots Lighting Poles w/Fixtures Single Head	14 EACH	2,046.88	28,656	
Parking Lots Lighting Poles w/Fixtures Double Head	7 EACH	2,418.56	16,930	
1 C - Site Ltg Ckt	3,000 LNFT	7.27	21,816	
Site Lighting Wiring	10,000 LNFT	3.92	39,235	
Add Parking Lots Lighting Controls to Musco Lighting Controls)	1 LSUM	4,170.00	4,170	
Subtotal Exterior Lighting			\$110,808	\$12,312
Subtotal Division 26 - Electrical			\$171,300	\$19,033
Division 27 - Communications				
Common Work Results for Communications				
* Tele/Data/Internet (WI-FI) Systems	****			
* Site Electrical	****			
FO Raceways to Each Musco Pole for WI-FI/Camera (4" C)	4,500 LNFT	9.61	43,264	
FO Raceways to Each Musco Pole - Branch (1" C)	400 LNFT	4.44	1,777	
SM FO Cable to WI-FI/Cameras	45,000 EACH	3.86	173,701	
Wireless Access Point (Weather Proof)	20 EACH	3,299.00	65,980	
Wireless Access Point	4 EACH	594.00	2,376	
Telephone/Data Outlet	15 EACH	298.97	4,485	
Racks	1 EACH	1,778.00	1,778	
Management Panels	1 EACH	889.00	889	
Patch panels	1 EACH	889.00	889	
Head-end Equipment	1 LSUM	47,360.00	47,360	
SM FO Cable to Cameras (Included Above)	NOTE			
Subtotal Common Work Results for Communications			\$342,498	\$38,055
Subtotal Division 27 - Communications			\$342,500	\$38,055
Division 28 - Electronic Safety & Security				
Security Access Detection				
* Security Systems	****			
* Site Electrical	****			
Card Reader w/o Key Pad - Waterproof	2 EACH	444.50	889	
Security Camera	5 EACH	2,808.50	14,043	
Subtotal Security Access Detection			\$14,932	\$1,659
Subtotal Division 28 - Electronic Safety & Security			\$14,900	\$1,659
Division 31 - Earthwork				
Fine Grading				
Fine Grading for Parking Lots	12,190 SQYD	2.00	24,380	
Subtotal Fine Grading			\$24,380	\$2,709
Subtotal Division 31 - Earthwork			\$24,400	\$2,709
Division 32 - Exterior Improvements				
Asphalt Paving				
Asphalt Paving for Parking Lots	12,190 SQYD	42.00	511,980	
Subtotal Asphalt Paving			\$511,980	\$56,887
Landscaping				
Seeding	-12,190 SQYD	0.70	-8,533	
Subtotal Landscaping			-\$8,533	-\$948
Subtotal Division 32 - Exterior Improvements			\$503,400	\$55,939



Maryland Stadium Authority
Green Branch Multi-Sports Field Complex
 Bowie, Maryland

Project GSF: 64 ACRE
 Estimate Type: Alternate Site Concept Estimate
 Estimate Date: 10/1/2014

Option 2 Alternate for 4 Additional Fields

9 ACRE

Description	Quantity	Unit Cost	Total Cos	Dollars / SF
Total Site Improvements			\$1,072,200	\$119,128
On-Site Utilities & Infrastructure				
Division 31 - Earthwork				
Earth Moving				
Clearing and Grubbing	9 ACRE	7,500.00	67,500	
Strip and Stockpile 6" Topsoil	8,183 CUYD	8.50	69,556	
Spread Topsoil, Assume Topsoil Can Be Used as Fill	8,183 CUYD	8.50	69,556	
Rough Grading to 106, Cut to Fill	33,281 CUYD	6.00	199,686	
Import to Grade 106'	7,354 CUYD	30.00	220,620	
BioSwales, Excavation, Planting Soil, Stone (Excludes Final Plantings)	3,976 SQFT	8.04	31,967	
Allowance for Unsuitable Soils (Assumed 10% of Total CUYD of Dirt Moved with unit Rate of \$25 for Haul Off)	1 ALLW	99,900.00	99,900	
Subtotal Earth Moving			\$758,784	\$84,309
Erosion Controls				
Allowances for Erosion Controls	9 ACRE	1,675.00	15,075	
Subtotal Erosion Controls			\$15,075	\$1,675
Subtotal Division 31 - Earthwork			\$773,900	\$85,984
Division 33 - Utilities				
Storm Drainage Utilities				
Storm Drain on Site	400 LNFT	65.00	26,000	
Inlets	4 EACH	2,500.00	10,000	
Manholes	2 EACH	5,500.00	11,000	
Subtotal Storm Drainage Utilities			\$47,000	\$5,222
Subtotal Division 33 - Utilities			\$47,000	\$5,222
Total On-Site Utilities & Infrastructure			\$820,900	\$91,207
Total Option 2 Alternate for 4 Additional Fields			\$5,942,000	\$660,228



Alternative Site Plan Study
Green Branch Multi-Field Sports Complex
Prince George's County



Submitted to the Maryland Stadium Authority

by Hord Coplan Macht

October 2014

ALTERNATIVE SITE PLAN STUDY

Option 1 and Option 2

Upon MSA's completion of the 'base study' for the Conceptual Design Study of the Green Branch Multi-Field Sports Complex Prince George's County, dated January 22, 2014, the M-NCPPC requested the MSA to perform further due diligence by investigating the merits of relocating the proposed 12 field program from the Phase II site to the Phase I park site on the western side of the M-NCPPC Green Branch property.

Hord Coplan Macht developed two additional Options; Option 1 and Option 2 attached, which move the 12 playing field program to the western side of the M-NCPPC Green Branch property. M-NCPPC also requested that the team investigate reducing the proposed 12 playing field program included in Option 1 and Option 2 to 8 fields, which could be expanded to 12 fields in a later phase. Both the Option 1 and Option 2 rendered site plans show the base program to the left of the red dividing line and the future expansion area to the right of that line.

Options 1 and 2 each retain the ideal north-south playing field orientation. The main vehicular access road from the access easement to the west is retained; therefore the traffic feasibility remains the same as the 'base study' where off-site traffic impacts will not require off-site road or intersection improvements. The development of Option 1 and Option 2 will require the demolition of Barn Number 5, but similar to other barns on the Green Branch site, Barn Number 5 is not determined to be eligible for preservation by our architectural history consultant.

Option 1 Summary

This option is based on providing an efficient layout that would potentially save construction costs by consolidating fields and parking into larger combined elements. Option 1 retains the central lawn area concept flanked by 6 playing fields to the west and 2 playing fields to the east. All of the parking for the 8 playing field program is contained within one large central parking lot. The remainder of the overall recreational facility program is retained, including elements such as central administration building, maintenance barn, concession building, food truck vending areas, children's play areas, player warm up areas, tailgating areas and picnic areas. The size and quantity of the player warm up areas and picnic areas is reduced as compared to the 'base study' which locates the 12 field program on the Phase II site. This is due to the limited land area available on the Phase 1 site.

Future expansion of Option 1 to the east is shown as a potential second phase of 4 additional playing fields, a player warm up area, and parking for an additional 375 cars located along the western edge of the Phase II site. The majority of the Phase II site is left undeveloped and could potentially be utilized for even further expansion of the athletic facility program or possibly a more recreationally oriented traditional park program.

Option 2 Summary

This option retains the preferred 4 playing field module exhibited in the 'base study'. This option also retains the central lawn area concept, flanked by 4 playing fields to the west and 4 playing fields to the east. The parking areas are more evenly distributed throughout the site as compared to the large central parking lot shown in Option 1. Option 2 also retains the overall facility program, including the central administration building, maintenance barn, concession building, food truck vending areas, children's play areas, player warm up areas, tailgating areas and picnic areas. Similar to Option 1, the size and quantity of the player warm up areas and picnic areas is reduced as compared to the 'base study' which locates the 12 field program on the Phase II site. This is due to the limited land area available on the Phase 1 site. For the full 12 playing field program, Option 2 uses less land than Option 1 and encroaches less onto the Phase II site.

Future expansion of Option 2 to the east is shown as a potential second phase of 4 additional playing fields, additional player warm up area and parking for an additional 350 cars. The majority of the Phase II site is left undeveloped and could potentially be utilized for even further expansion of the athletic facility program or possibly a more recreationally oriented traditional park program.

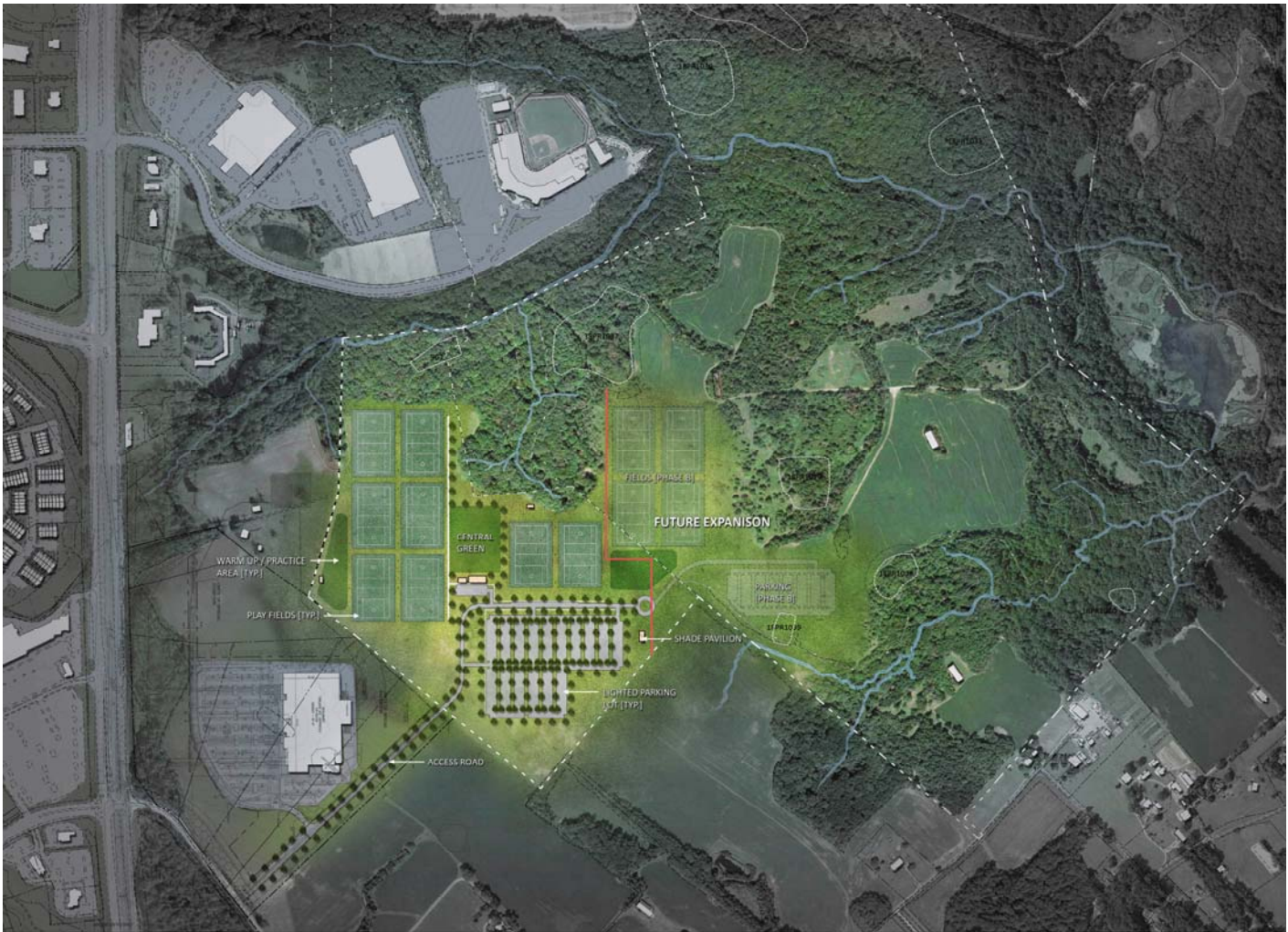
Benefits of Option 1 and Option 2

Cost - Options 1 and 2 are less costly than the 'base study'; however some of the program amenity elements such as player warm up areas and picnic areas with pavilions are reduced in size and quantity.

Archeology – The development of the recreational facility on the Phase 1 park site eliminates potential conflicts with historically significant archeological sites and eliminates the need for potential Phase 2 or Phase 3 archeology work on Archeology Site 1028. This contributes to a portion of the reduction in cost as compared to the ‘base study’ plan configuration.

Unsuitable soils – The development of the recreational facility on the Phase 1 park site results in a reduction of cost by reducing the ‘unsuitable soils’ contingency since the Phase 1 park site was not part of the former WSSC waste entrenchment site. The need to relocate any of the existing WSSC ground water monitoring wells can be avoided, at least in the first phase of construction.

Potential expansion of the recreational facility on the Phase II site – The majority of the Phase II site is left undeveloped and could potentially be utilized for further expansion of the athletic facility program or possibly a more community recreational park program.



OPTION 1
06-06-2014



Alternative Site Plan Study – Option 1



OPTION 2 
06-06-2014

Alternative Site Plan Study – Option 2