

T&E/ED COMM #1  
September 26, 2011  
**Briefing**

**MEMORANDUM**

September 22, 2011

TO: Transportation, Infrastructure, Energy, and Environment Committee  
Education Committee

FROM: Essie McGuire, Senior Legislative Analyst *EMG*

SUBJECT: **Briefing – Report of the Staff Work Group on Artificial Turf**

Today the Transportation, Infrastructure, Energy, and Environment (T&E) and Education Committees will receive a briefing on the staff work group report: “A Review of Benefits and Issues Associated with Natural Grass and Artificial Turf Rectangular Stadium Fields”. Representatives from the staff work group will present the report, and staff from the Maryland SoccerPlex who provided assistance to the work group will attend the meeting. A constituent representative with concerns about artificial turf will also be present for the discussion.

The work group’s report was released on September 14, 2011. The Executive Summary is attached to this packet, as are certain excerpts. Following is a link to the full report: [http://www.montgomerycountymd.gov/cs/ltmpl.asp?url=/content/council/ATworkgroup/AT\\_workgroup.asp](http://www.montgomerycountymd.gov/cs/ltmpl.asp?url=/content/council/ATworkgroup/AT_workgroup.asp)

**BACKGROUND**

The Council has been discussing issues around installation of artificial turf athletic fields for several years, primarily in the context of capital projects for park athletic fields and high school stadium fields. Throughout these discussions, the Council has heard from advocates both for and against artificial turf. Concerns have included both the need for increased use and availability of public playing fields, and concerns about the health and environmental impact of artificial turf in comparison to natural grass.

In July 2010, the T&E Committee met with staff from the Montgomery County Public Schools (MCPS), Montgomery County Department of Parks, Department of Environmental Protection (DEP), and the Department of Health and Human Services (DHHS) to review health and environmental safety issues associated with artificial turf.

**The T&E Committee requested that staff from the represented agencies and departments as well as Council staff analyze the programming, costs, use, and environmental and health impacts of artificial turf and develop a report to the Committee.** This work group was not a formally appointed task force created by law or Council resolution. As an internal staff working group it was required only to conduct the work requested by the Committee and was not subject to the requirements of the open meetings law.

Staff from the work group met with constituents concerned about the health risks of artificial turf during its review process. The work group staff also received information from concerned constituents throughout the process, which staff then reviewed and considered as part of its analysis. The staff work group submitted its draft report for public comment from April 13 through June 7, 2011. **Of the 494 total responses submitted regarding the draft report, 460 (93%) were submitted in support of artificial surface stadium fields and 34 (7%) were either not in support or otherwise expressed concerns.**

## **INVENTORY**

Council staff notes that for the purposes of the inventory of public rectangular fields, the Maryland SoccerPlex is included in the tally of existing and planned public fields because it is on public land. The inventory chart for public fields is attached on circle 8 and the full inventory of indoor and outdoor artificial turf fields including private sites in the County is attached on circle 9.

- **There are currently 7 artificial turf playing fields in outdoor public facilities.** These are: Blair Recreational Park/HS; Fairland Recreational Park; Richard Montgomery HS; and Walter Johnson HS, which each have one turf field. The remaining 3 are at the SoccerPlex.
- **There are 7 synthetic turf fields presently planned in the 6-year Capital Improvements Program (CIP) period.** These include: new turf fields at the future Laytonia Recreational Park and North Potomac Community Recreation Center; and conversions of existing natural grass fields to artificial turf at Paint Branch HS, Gaithersburg HS, Wheaton HS, and 2 at the SoccerPlex.
- The inventory of artificial turf fields in the County on circle 9 shows that of the total 16 locations in the County with outdoor artificial turf, most are at private schools. In addition, two private sports complex facilities have indoor turf fields, as does the SoccerPlex.

## **STAFF WORK GROUP FINDINGS AND RECOMMENDATIONS**

The attached Executive Summary presents findings and recommendations in the 7 key areas of review. The staff work group presentation today will highlight the analysis in each area that supports the findings. Council staff highlights below only a few elements of the report for the Committees' reference.

- ***Use and cost-benefit:*** The report highlights the need for increased availability of playing fields and the higher playability of artificial turf. The report finds that for MCPS, because of the known quantity of use by the schools, artificial turf has a lower cost per hour of use than any grass option. For Parks, the cost-benefit analysis is more complicated due to a range of use assumptions, and could warrant a selective approach to installing Parks fields where higher use potential is demonstrated.
- ***Public and human health concerns:*** The staff conducted an extensive review of the literature on this issue which included analysis by a wide range of governments and non-governmental groups. The report finds that the government studies, including the most recent studies by Connecticut and California in 2010, did not find levels of concern that warrant avoidance of the construction of new artificial turf fields with crumb rubber infill.

The staff report includes a section in its review of the literature on public/human health concerns that references a number of additional studies regarding potential health concerns that were raised in public comments. The report provides links to many of these studies and quotes significant findings or conclusions from several.

Council staff notes that many of the studies cited as reason for concern about health impact relate to the materials within the crumb rubber that are health concerns, but do not examine these materials in the context of artificial turf playing fields.

- ***Additional testing:*** **The report notes that DEP is working with Parks on a monitoring plan for the new Laytonia Park** which is planned to include two rectangular grass fields and one artificial turf field. This park is required to have water quality monitoring due to its location in a Special Protection Area. This monitoring effort will provide a useful opportunity for continuing to gather information on the environmental impact locally. **The Committees may want to hear more from DEP and Parks on this developing effort.**
- ***Alternative infill materials:*** The report discusses the ongoing exploration and development of alternative turf materials. Parks is considering installing indoor artificial turf at the old Wheaton Ice Rink. Parks has indicated that it may review possible alternative infill products in conjunction with this project. **The Committees may be interested in hearing more from Parks about this possibility.** If the project goes forward, Parks' review and evaluation of alternative materials will be useful information to add to this review.

## **COUNCIL STAFF COMMENTS**

As is clear from the extensive literature review in the report, artificial turf playing fields have been the subject of much analysis by a number of State and local governments facing similar concerns as have been raised in Montgomery County. To date, these studies have not found sufficient elevated risks to warrant a moratorium on construction of artificial turf fields.

In Council staff's view, the Council and its Committees have thoroughly reviewed the issues around use and safety of artificial turf over several project reviews in recent years. In addition, the T&E Committee's request for this concerted, multi-agency staff effort has resulted in an extensive analysis of the cost-benefit and health and environmental impacts of turf that supports the County's current approach to installing artificial turf playing fields. There will be two opportunities for additional information as the projects at the Laytonia Recreational Park (environmental monitoring) and Wheaton Ice Rink (alternative infill) are developed.

**Council staff believes that the Council has exercised a high degree of due diligence in these reviews. Council staff endorses the staff work group's findings.**

# **A Review of Benefits and Issues Associated with Natural Grass and Artificial Turf Rectangular Stadium Fields**

Prepared by a Staff Work Group from Montgomery County Public Schools, Montgomery County Department of Parks, Montgomery County Council, Montgomery County Department of Environmental Protection, and Montgomery County Department of Health and Human Services

September 14, 2011

FINAL REPORT

## Introduction:

On July 1, 2010, the Montgomery County Council's Transportation, Infrastructure, Energy, and Environment (T&E) Committee held a meeting with staff from Montgomery County Public Schools (MCPS), Maryland-National Capital Park and Planning Commission (M-NCPPC) Montgomery County Department of Parks (Parks), Montgomery County Department of Environmental Protection (DEP), and the Montgomery County Department of Health and Human Services (DHHS) to discuss health and safety issues associated with artificial turf fields in Montgomery County.

An outcome of the meeting was a T&E Committee request for the formation of a Staff Work Group to prepare a report that would provide guidance to the Committee in the face of concerns raised by some citizens and groups (see Appendices I and J) over the use of artificial turf fields in the County. The Staff Work Group would include staff members from MCPS, Parks, DEP, and DHHS, along with a representative from Council staff. Specifically, the Committee requested the Staff Work Group to further quantify the programming, environmental, cost-benefits, and other impacts of artificial turf vis-à-vis natural grass fields as part of its report. The T&E Committee requested this report by the end of 2010. However, it became evident that additional time was needed to complete research needed for this report.

The Draft Report of *A Review of Benefits and Issues Associated with Natural and Artificial Turf Rectangular Stadium Fields* was submitted for Public Comment on April 13, 2011. Public comments were received through June 7, 2011. A compilation of all public comments received during this comment period is included in Appendix N. Chapter IX, "Discussion of Public Comments to the Draft Report", provides a summary of the comments received, further discussion regarding some of the major points raised in the comments, and references to areas in the Final Report that reflect changes from the Draft Report.

The following Agency staff members were involved in the research and development of this report.

### MCPS

Joe Lavorgna, Consultant to MCPS  
James Song, Director of Facilities Management  
Dr. William (Duke) Beattie, Director of Systemwide Athletics

### M-NCPPC (Parks)

Mike Riley, Deputy Director, Montgomery County Department of Parks, M-NCPPC

### Montgomery County Staff

Clark Beil, Montgomery County Department of Health and Human Services  
Keith Levchenko, Montgomery County Council Staff  
Steve Shofar, Montgomery County Department of Environmental Protection

Staff from the Maryland Soccer Foundation also provided substantial assistance to the group with regard to cost and maintenance assumptions for the natural grass and artificial turf fields they oversee at the

Maryland SoccerPlex in Germantown, Maryland. The SoccerPlex staff also provided information on best practice trends in the sports field management industry.

## **Executive Summary:**

### **Montgomery County Public Rectangular Fields Inventory—Existing and Planned**

Montgomery County currently has 160 existing full-sized public stand-alone natural grass rectangular fields plus seven existing artificial turf fields.<sup>1</sup> In addition, there are 317 public natural grass multi-purpose overlay fields. There are seven planned artificial turf fields in the FY2011-2016 Capital Improvements Program (CIP) period. The most imminent are Laytonia Recreational Park and Paint Branch High School, both planned for construction in 2011. Parks also plans to install artificial turf on the slab of the old Wheaton ice rink, a covered open-air facility, to allow soccer, lacrosse, futsal, and other uses. This project will generate income for the Parks Enterprise Fund.

### **Considerations for Use of Natural and Artificial Turf Fields**

**Need for Additional Fields:** The Department of Parks prepares a park and recreation needs analysis every five years called the Land Preservation, Parks and Recreation Plan (formerly called the Park, Recreation, and Open Space (PROS) Plan). The Plan points to the need for 123 additional athletic fields in the County by the year 2020, of which 73 are full-sized rectangular fields.

**Difficulty of Maintaining High Quality, High Use Natural Grass Fields:** The necessary ingredients to sustain natural grass cover on an athletic field fall into three primary categories—construction, maintenance, and usage. All three must be carefully controlled, or the natural grass surface will likely become unsatisfactory and unsuitable for organized sports play. In order to sustain a high quality stand of natural grass on a field, it must be designed and constructed properly, be maintained regularly by qualified personnel, and have usage controlled and limited. If any one of the three factors is missing, natural grass cover on the field will deteriorate over time.

For Montgomery County Public Schools (MCPS), significant time, effort, and money is expended in trying to maintain safe, adequate playing conditions on high school stadium fields. This expenditure of resources consistently falls short of its goal, primarily because of the intensive wear and tear that result from so many sports and teams sharing natural grass high school stadium fields for competitive contests.

**Finding: MCPS staff has identified the following operational benefits for artificial turf fields compared to existing natural grass high school stadium fields:**

- Provides safer, more consistent, and more competitive surfaces for hundreds of MCPS and community teams.
- Provides safe, on-campus practice areas for MCPS athletic teams.

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<sup>1</sup> Note: Artificial turf fields are also commonly called “synthetic turf” fields. Natural grass fields are also called “natural turf” fields. For clarity this report uses the terms, “artificial turf” and “natural grass” unless quoting other sources.

- A greater degree of MCPS compliance with Title IX. Field hockey contests are not played on the stadium fields at approximately half of the MCPS high schools because of unsuitable field conditions.
- Minimal cancellations for MCPS events. Prevailing weather conditions in the fall and spring force many cancellations, disrupting parents', as well as students', schedules. The only weather conditions that would cause a postponement on artificial turf fields would be lightening or abnormally severe weather.
- Significant savings in maintenance. Savings include not only seed, grass, fertilizer, and water, but also an enormous savings in time and effort by school staff and parent volunteers.
- Physical education classes having access to a safe, all-weather surface for activities during the school day for more than half of the school year.

### **Playability (Hours of Use)**

A primary reason both Parks and MCPS support the construction of artificial turf fields at sites that meet certain criteria<sup>2</sup> is the increased hours of use possible with an artificial turf field compared to a high quality natural grass field. These increased hours of use are achieved without risking degradation of the field. In addition, even under limited hours of use, natural grass fields can suffer major damage from intensive play, especially when play occurs during or immediately after storm events. The increased hours of use provided by artificial turf fields also means that the County can avoid the costs and environmental impacts of building additional natural grass fields to meet ballfield needs. The increased playability also provides more flexibility for scheduling and co-locating events at a single location.

**Finding: The actual hours of use of an artificial turf field (based on actual use of MCPS' artificial turf stadium fields and the artificial turf fields at the Maryland SoccerPlex) range from 1.7 to 7.7 times the use of existing natural grass fields (MCPS stadium fields, Parks fields, and Maryland SoccerPlex fields).**

### **Lifecycle Cost Evaluation**

A key factor in deciding whether to build an artificial turf field or a natural grass field is the comprehensive lifecycle costs (construction, maintenance, revenue, rehabilitation, replacement) including the cost per hour of use. The cost per hour of use is based on the estimated annual hours of use one can expect from the different field types based on the programming expected for the field.

The staff chose four natural grass field types to compare to a typical artificial turf field. The four natural grass field types consist of two different field bases (a ten-inch sand base and a native soil base) and two different grass types (Bermuda grass and Cool Season/Kentucky Bluegrass). The artificial turf field is assumed to be a polypropylene carpet with a crumb rubber infill.

**Finding: The 20-year lifecycle cost analysis found that, despite the higher up-front and future replacement costs, an artificial turf field can provide a substantially lower net cost per hour of use at MCPS stadium fields than any of the natural grass options because of the many more hours of potential use and additional revenue generated from those extra hours of use. For fields that would**

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<sup>2</sup> For Parks, the primary criteria are: the ability of the site to handle intense use without conflicts with adjacent communities, adequate parking, and the existence or future capability of lighting. MCPS supports installing artificial turf at high school stadium fields as part of comprehensive high school modernization projects.

be dedicated for Parks' use (i.e., no MCPS use), the cool season native soil field has the lowest net cost and cost per hour of each of the fields considered (including a Parks artificial turf field). However, this result is highly dependent on hours of use and revenue assumptions. While the natural grass hours of use are assumed to be a maximum, the 1000 hours of use assumed for a Parks artificial turf field are well below the potential hours of use. For instance, the Maryland SoccerPlex operates on a similar schedule to Parks and achieves about 1,800 hours of use out of each of its artificial turf fields.

### **Public/Human Health Concerns**

Due to the distinct physical characteristics of artificial turf systems, concern has been raised over potential adverse health effects related to use of these systems. The potential physical health effects associated with artificial turf systems (carpet and infill) include:

- chemical exposures
- heat-related illnesses
- abrasions/turf burns
- injuries, infections, and allergic reactions

In the absence of either an environmental impact assessment or a health impact assessment on the installation and use of artificial turf fields, the Staff Work Group identified some of the areas of potential human risks that were raised during the compilation of information that forms this report. This is not a complete set of risks. A formal process would be required to identify and examine all the human health risks from all the artificial turf field materials under consideration. Such an analysis was beyond the scope and capacity of the Artificial Turf Staff Work Group.

**Finding:** Parks and MCPS believe that reliance should be placed on the various government studies referenced in this report that have looked at the human health issues associated with artificial turf fields (and crumb rubber infill in particular) and have not found levels of concern that warrant avoidance of the construction of new artificial turf fields with crumb rubber infill.

### **Artificial Turf Heat Issue**

One characteristic of artificial turf fields that has been well documented is the higher field temperatures on artificial turf fields, compared to temperatures on natural grass fields under similar weather conditions. These conditions may vary, depending on the color and other specifications of the artificial turf carpet and the type of the infill material used.

### **Staff Work Group Recommendations:**

- It is evident that surface and ambient temperatures on artificial turf fields can get quite hot. The Staff Work Group believes MCPS should include the artificial turf heat issue in its athletic handbook in order to address circumstances where these fields are being used and/or supervised by MCPS directly during peak heat conditions (for summer and early fall team practices and physical education classes, for instance). This guidance should provide for an assessment of field conditions on a case-by-case basis by the athletic staff at the school (considering ambient and field temperature readings).
- The Staff Work Group believes common permit language and advisory signage for all artificial turf fields managed by MCPS, Parks, and Community Use of Public Facilities (CUPF) should be utilized.
- CUPF should develop specific heat guidelines to govern the leasing of artificial turf fields to outside groups.

### **Environmental Impacts**

The Staff Work Group asked the Montgomery County DEP to provide its perspective on artificial turf, based on its review of the various studies (see Appendix F). DEP staff were asked whether MCPS and Parks should not build any more artificial turf fields pending further environmental study. To date, DEP has not taken a position on this question. DEP has also not provided specific recommendations regarding the construction and use of artificial turf, such as whether water quality should be monitored for existing fields, if specific stormwater management practices should be utilized, or whether particular alternative infill choices should be pursued.

However, DEP is working with Parks on a monitoring plan for the new Laytonia Park, which is planned to include two rectangular natural grass fields and one artificial turf field. The location is in the Rock Creek Special Protection Area (SPA) and therefore, as the property owner, Parks is required to conduct water quality monitoring on proposed Best Management Practices (BMPs) to assure that they are protecting water quality. M-NCPPC is working together with DEP and the Department of Permitting Services (DPS) to develop a monitoring plan that will evaluate the effects of the Laytonia artificial turf field on water quality. The details of that plan are still being developed and are not available for this report. The results of this monitoring effort can help determine whether further monitoring of other artificial turf sites may be warranted.

Since the Staff Work Group did not receive specific recommendations from DEP, the group reviewed a number of studies that focused on environmental issues and which included recommendations by other Environmental Departments.

#### **Connecticut Department of Environmental Protection, July 2010**

The full report is available at:

[http://www.ct.gov/dep/cwp/view.asp?a=2690&Q=463624&depNav\\_GID=1511](http://www.ct.gov/dep/cwp/view.asp?a=2690&Q=463624&depNav_GID=1511), along with reports from other Connecticut agencies looking at various issues of concern regarding artificial turf.

San Francisco Department of the Environment (SFE) (as part of a Synthetic Playfields Task Force Report completed in August 2008)

The full Task Force Report is available at:

[http://www.superfill.net/dl010808/SFParks\\_Playfields\\_8.21.08.pdf](http://www.superfill.net/dl010808/SFParks_Playfields_8.21.08.pdf). The Task Force took a broad look at artificial turf issues and, more relevantly for this section, included SFE findings and recommendations.

**Finding:** While both the Connecticut and San Francisco environmental departments identified potential environmental impacts, neither study determined that these impacts were of sufficient concern to warrant a moratorium on the construction of artificial turf fields with crumb rubber infill. Instead, both departments recommend specific practices to reduce or mitigate these impacts.

**Recommendation:** Parks and MCPS staff should include language in future contracts requiring the recycling of artificial turf fields by the new field installer.

**Recommendation:** Parks and MCPS staff should explore incorporating some of the environmental testing requirements identified in the City of San Francisco artificial turf specification into future specifications for artificial turf fields constructed for Parks and MCPS.

**Recommendation:** Parks and DEP staff should collaborate on the development of a water quality testing regime at the future Laytonia Park.

**Alternative Infill Products**

The artificial turf industry is expanding rapidly. Turf companies and infill manufacturers are attempting to respond to concerns with Styrene-Butadiene-Rubber (SBR) infill materials and are developing new alternatives. Because the industry is rapidly changing, decisions made on new companies and products should be well researched to make sure that the money spent on artificial turf systems is based on sound lifecycle cost information.

**Finding:** Many owners, installers, and suppliers of artificial turf fields believe that crumb rubber is the best infill product on the market because it has been field tested and proven for performance, is readily available, utilizes recycled material, and is cost-effective over a number of years. Alternative infill materials are being marketed primarily to compete with crumb rubber, based on the negative perceptions attributed to SBR. While some of the alternative infills may show promise in terms of durability and performance over time, Parks and MCPS staff believe it is too early to invest in an unproven product until a greater track record is established for many of these materials.

**Recommendation:** Parks and MCPS believe that County agencies should continue to monitor the success or failure of alternative infills before considering a change from SBR infill material.

NOTE: Parks will consider installing and evaluating an alternative infill product if it installs artificial turf at the old Wheaton Ice Rink, due to the relatively small size of the surface as compared to an outdoor field. Parks will only specify an alternative infill if it can determine that the alternative has high potential to deliver equivalent performance to SBR at a reasonable cost without raising equivalent health and environmental concerns.

**Chart I-1. Tabulation of Existing and Proposed Natural and Synthetic Turf Rectangular Fields on M-NCPPC, MCPS, and County Properties (not including private sites and municipalities)**

Public Facilities	Full-Size Stand Alone Rectangular Fields						Existing Natural Turf Rectangular Overlays[1]
	Natural Turf		Artificial Turf		Total		
	Existing[2]	Planned[3]	Existing[4]	Planned[5]	Existing	Planned	
<b>M-NCPPC Parks</b>							
Regional / Recreational	16	6	2	1	18	7	2
Local / Community-Use	92	3	0	0	92	3	55
<b>MC Public Schools</b>							
High School Stadium	22	(3)	2	3	24	0	0
High School Practice	12	0	0	0	12	0	56
Elementary & Middle Schools	1	0	0	0	1	0	199
<b>MC Recreation Department</b>	0	2	0	1	0	3	5
<b>Maryland SoccerPlex</b>	17	2	3	2	20	4	0
<b>Totals</b>	<b>160</b>	<b>10</b>	<b>7</b>	<b>7</b>	<b>167</b>	<b>17</b>	<b>317</b>

[1] Overlays are multi-purpose natural turf areas where baseball / softball diamonds typically overlap rectangular fields. They generally do not support full sized rectangular fields. There are 317 rectangular overlays at park and school sites.

[2] There are 160 existing full-size stand-alone natural turf soccer fields at Park, School, and County sites. At MCPS, the full-size stand-alone fields are at high schools, with one at Tilden Middle School which is a former high school. All other MCPS elementary and middle school fields at schools are considered shared use multipurpose overlays, which are generally permitted by CUPF.

[3] Thirteen new full-size stand-alone natural turf soccer fields are planned over the six-year CIP cycle. They are: Laytonia Recreational Park (2), Northwest Branch Recreational Park (4), East Norbeck LP (1), Greenbriar LP (1), North Four Corners LP (1), Mid-County Community Recreation Center (1), White Oak Community Recreation Center (1), and Maryland SoccerPlex (2). Three existing MCPS stadium fields will be converted to artificial turf fields.

[4] The seven existing synthetic turf fields are at Blair Recreational Park / HS (1), Fairland Recreational Park (1), Richard Montgomery HS (1), Walter Johnson HS (1), and Maryland SoccerPlex (3).

[5] There are seven synthetic turf fields presently planned over the six-year CIP, including new synthetic turf fields at the future Laytonia Recreational Park (1) and North Potomac Community Recreation Center (1), and conversions of existing natural turf soccer fields to synthetic turf at Paint Branch HS (1), Gaithersburg HS (1), Wheaton HS (1), and Maryland SoccerPlex (2).



## **Artificial Turf Fields Information**

In the United States, there are approximately 5,500 artificial turf fields currently installed, according to the Synthetic Turf Council ([www.syntheticurfCouncil.org](http://www.syntheticurfCouncil.org)).

Artificial turf fields consist of an underground drainage system with a compacted gravel base, a polypropylene or nylon fiber carpet, and infill product(s) used to hold the carpet fibers upright and to cushion the surface to mimic the characteristics of natural grass. Different manufacturers vary the carpet fibers and infill materials to distinguish their product.

In Maryland and the Washington metropolitan area, there are 54 artificial turf fields installed at 234 public high schools (as of June 2010, see Appendix A). In Montgomery County, outdoor artificial turf fields have been built at 16 locations, with one in design review by the Montgomery County Department of Permitting Services (DPS), as shown in chart I-2. Of the 16 field locations in Montgomery County, there are seven artificial turf fields at schools or parks (including three at the Maryland SoccerPlex in Germantown). There also are several indoor artificial turf fields in the County.

**Chart I-2**

**Outdoor Artificial Turf Fields\* In Montgomery County**

	<b>Location</b>	<b>Status</b>	<b>Date Opened</b>	<b>Description</b>
1	Bullis School	Constructed	2004	rectangular field
2	Church of the Little Flower	Constructed	2004	playground field
3	Connelly School of the Holy Child	Constructed	2010	rectangular field
4	Fairland Regional Park	Constructed	2010	rectangular field
5	Georgetown Preparatory School	Constructed	2006	rectangular field
6	Good Counsel High School	Constructed	2009	rectangular field
7	Holton Arms School	Constructed	2007	rectangular field
8	Holy Redeemer Church	Constructed	2010	playground field
9	Landon School	Constructed	2007	rectangular field
10	Maryland SoccerPlex	Constructed	2007	3 rectangular fields
11	Mater Dei School	Constructed	2009	rectangular field
12	Montgomery Blair High School	Constructed	2008	rectangular field
13	Our Lady of Lourdes	Constructed	2008	rectangular field
14	Richard Montgomery High School	Constructed	2009	rectangular field
15	St Andrew Episcopal School	Constructed	2008	2 rectangular fields & baseball diamonds
16	Walter Johnson High School	Constructed	2010	rectangular field
17	The German School	In Permitting Process		
<b>Indoor Fields in Montgomery County</b>				
1	Champions Field House	Constructed	2008-2011	5 rectangular fields of varying sizes (1 section rolls up)
2	Maryland Soccerplex	Constructed	2000	2 rectangular roll-out fields (replaced in 2009)
3	Rockville SportsPlex	Constructed	2000	3 rectangular fields (replaced in 2008)

\*all outdoor fields and permanent indoor fields (non-roll-out) utilize crumb rubber infill

