

## Bell Schedule Revision, Iteration #3

### Background

The Fairfax County school system has been looking at the issue of school start times for over 20 years. Staff and consultants have examined the issue as have task forces in the late 1980's and again in the late 1990's. Previous reviews concluded that there are benefits to having high school students starting later in the morning but that the cost and other impacts were so great as to suggest FCPS should stay on the current bell schedule.

Recently the School Board asked a consultant to once again examine the bell schedule issue. They concluded that a change in the schedule was possible but were unsure if the costs would be acceptable. Following that (in September 2007) the School Board again undertook a process to look at the bell schedule and created a Transportation Task Force (TTF) that included representatives from the parent community, principals, county agencies (police, parks, recreation), and interested other constituencies. In March 2008 the TTF presented a report to the School Board that included both a Majority and a Minority Report. The Majority Report recommended that the bell schedule be changed so that elementary schools would be on the first bell, high schools on the second bell, and middle schools on the third bell. Both the second and third bells also would include some elementary schools to mitigate costs. The TTF also recommended other changes to current transportation service levels as a means to help mitigate the anticipated cost of making these changes to the bell schedule.

The School Board directed staff to develop an alternative bell schedule based upon the TTF Majority Report. Staff brought back to the School Board on July 14, 2008 Iteration #1 – a potential alternative bell schedule. The School Board asked staff to make certain changes to the Iteration #1 schedule and to bring back a revised potential bell schedule. Staff did this and presented an Iteration #2 schedule to the School Board on September 8, 2008. The School Board asked for further changes which have now been incorporated into this Iteration #3 potential alternative bell schedule.

### Goal

Revise Iteration #2

- To use resources more efficiently using parameters as defined by the TTF.
- To “uncouple” morning and afternoon run bus assignments, where possible.
- To structure schedules and run assignments to further enhance cross serving possibilities within and between offices.

### Process

In order to provide a different perspective on the schedule and run assignments for Iteration #3, more senior staff members were brought in to provide input and oversight. Additional assistance was also used to complete the Special Education (SE) portion of the project, as that is the most complex aspect of run assignments.

FCPS staff continued to adjust the bell times of some schools or programs. Elementary schools were moved from 9:40 to 9:20. Additionally, an effort was made to mirror as many preschools as possible with the elementary school times. To date, this was accomplished for eight schools without creating any negative impacts.

When changes to the bell times and tier assignments were completed, the trips were assembled with a goal of uncoupling runs where possible to further minimize deadhead time and miles. That was accomplished through extensive cross serving both within and between operations offices (areas 1, 2, 3, and special education). These efforts yielded great benefits in increased efficiencies.

### Caveats

To develop the first iteration, transportation froze information in its automated system to keep out ongoing changes in the actual system such as bus stop locations, run times, school bell schedules, etc. This “frozen information” was data that existed in our transportation systems as of March 2007. This same data has been used in subsequent iterations so that we could see the impact of changes in assumptions and services levels that have been made as a part of Iterations 2 and now 3. This means that we are now using data that are almost two years old and many, many changes have occurred during this time period. We cannot say with any certainty if changes during this time period would have an impact on Iteration 3 and if they did, would they increase or decrease the resources required or specific runs for a particular school.

The earliest pickup times and latest drop-off times by school can be for very small numbers of students to include special education students who are dropped off at their homes. Thus, when looking at these times, it should not be assumed that they relate to general education students or that large numbers of students are picked up or dropped off at these times.

### Results

Office	Iteration #3	Iteration #2	Iteration #1	Actual 07-08
A1	259	269	297	261
A2	272	308	307	292
A3	291	317	353	304
SE	306+*	301+*	347*	285
Total	1128*	1195*	1304*	1142

**\*Note:**

Different SE buses are configured differently – with more or fewer seats or wheelchair slots; some have lifts capable of handling extra-large wheelchairs and some do not. Some runs are very long, but some SE students can be on a bus for only a limited time. Some buses have air conditioning and others do not. Each SE student must be assigned to a SE bus based on the space, configuration, equipment, and run time needed. **Estimate is +10%**

When the runs and trips were assembled for these iterations, they were considered generically. The reality is that a significant number would not work and more SE buses than noted would be needed, simply to allow appropriate bus assignments. The actual “final” number of buses would be entirely based on the students and on the destinations to which they must be transported.

Bus stop consolidation as a means of saving sufficient time to compress the schedule was considered by sampling existing runs that were known to have potential for stop consolidation benefits. Sampling, rather than a wholesale attempt at consolidation, was used to determine the potential value in minutes. Any actual stop consolidation requires investigation to assure that student safety is not being compromised

In general, savings in time were 1+ minute saved per one stop eliminated. In some situations, recognized by the routing specialists, stop- plus run-consolidation enhanced efficiency enough to eliminate bus runs. Those situations are limited but will be explored in the future.

School	Route #	From – min	To – min	From – stops	To - stops	Stops Elim	Minutes Saved
Sangster ES	3	41	25	13	10	3	16
	4	26	10	11	7	4	16
	50	22	19	9	7	2	3
Clermont ES	2	13	12	6	5	1	1
Gunston ES	3	19	15	5	5	2 moved	4
Forestdale ES	4	35	35	8	7	1	0
Groveton ES	5	18	16	10	9	1 + 2 moved	2
Lake Braddock SS	3	40	28	9	6	3	12
	4	40	31	7	5	2	9
South County SS	18	26	20	8	5	3	6
Rocky Run MS	58 + 63	Comb	52	Elim 1 run			1 run
	65 + 56	Comb	49	Elim 1 run			1 run
	61 + 64	Comb	49	Elim 1 run			1 run
	52 + 54	Comb	42	Elim 1 run			1 run
Providence ES	1	23	22	6	2	4	1
	5	18	17	7	4	3	1
	6	22	18	7	4	3	4
	8	27	17	5	2	3	10
Virginia Run ES	1 + 2 + 3	Comb		10 stops / 3 runs	5 stops / 2 runs	5	1 run
	4 + 11	Comb		12 stops / 2 runs	7 stops / 1 run	5	1 run
Poplar Tree ES	1	24	24	7	6	1	0
	7	10	6	6	3	3	4
	8	12	11	5	4	1	1
	9	10	6	4	2	2	4
Stone MS	1	35	30	7	5	2	5
	2	18	17	6	4	2	1



## Costs

Estimated additional staffing and operating costs <i>plus cost increases</i>			
Year	Iteration #3	Iteration #2	Iteration #1
1 Includes driver & attendant training for additional buses	---	\$4,672,255	\$14,558,277
2-5	---	\$4,274,072	\$13,316,991

## Implications

Late runs could begin for some buses at 5:00.

Preschool (PS) times – in order to avoid conflicts of PS runs with Monday PM runs, many PSs are still scheduled at the end of the third tier. This will create problems for principals in scheduling their staff.

Field trips –

ES midday trips can now begin at 9:00 to 9:15 and return at 1:30. With a change in the bell schedule relationships and the extended AM start time schedules, the general FT window becomes 10:00 to 2:00 with a net loss of -0-.

PM trips will probably not begin until approximately 5:40 p.m.

## APPENDIX A

RUNS BY LEVEL, BY TIER, BY START TIME							
Iteration #3							
School Times - Earliest Pick Up, Latest Drop, TJ AM Transport Method							
	School		School Hours	Earliest Pickup	Latest Drop	How students are transported to TJ in AM*	* D-Direct S-Shuttle
	Bucknell	E	7:50-2:25	7:25	2:56		
	Fort Belvoir ps*	E	7:50-2:25	7:04	3:03		
	Groveton	E	7:50-2:25	7:27	2:50		
	Hybla Valley	E	7:50-2:25	7:29	2:49		
	Mount Eagle	E	7:50-2:25	6:31	2:47		
	Annandale Terrace	E	7:50-2:30	7:20	2:59		
	Beech Tree	E	7:50-2:30	7:17	2:58		
	Belle View	E	7:50-2:30	6:57	3:33		
	Belvedere	E	7:50-2:30	7:04	2:59		
	Bren Mar Park	E	7:50-2:30	6:46	3:39		
	Bush Hill	E	7:50-2:30	6:36	3:27		
	Camelot	E	7:50-2:30	6:38	3:00		
	Canterbury Woods	E	7:50-2:30	6:45	4:10		
	Cardinal Forest	E	7:50-2:30	7:23	2:55		
	Centre Ridge	E	7:50-2:30	7:06	3:15		
	Centreville Elem	E	7:50-2:30	7:28	2:51		
	Clearview	E	7:50-2:30	7:05	3:14		
	Clermont	E	7:50-2:30	7:21	3:01		
	Colvin Run	E	7:50-2:30	7:05	3:22		
	Crestwood	E	7:50-2:30	7:33	2:48		
	Cub Run	E	7:50-2:30	6:35	3:25		
	Dogwood	E	7:50-2:30	7:26	2:56		
	Floris	E	7:50-2:30	6:43	3:18		
	Forest Edge	E	7:50-2:30	6:53	3:18		
	Forestville	E	7:50-2:30	7:15	3:11		
	Franconia	E	7:50-2:30	7:20	3:04		
	Franklin Sherman	E	7:50-2:30	7:19	3:10		
	Freedom Hill	E	7:50-2:30	6:51	3:38		
	Glen Forest	E	7:50-2:30	7:24	2:57		
	Graham Road	E	7:50-2:30	7:35	2:44		
	Great Falls	E	7:50-2:30	7:13	3:11		
	Greenbriar West	E	7:50-2:30	7:05	3:34		
	Gunston	E	7:50-2:30	7:04	3:22		
	Haycock	E	7:50-2:30	7:02	3:23		
	Hayfield ES	E	7:50-2:30	7:13	3:24		
	Herndon ES	E	7:50-2:30	7:19	3:11		
	Hunt Valley	E	7:50-2:30	6:58	3:26		
	Island Creek	E	7:50-2:30	7:20	3:05		
	Keene Mill	E	7:50-2:30	7:03	3:19		
	Lake Ann	E	7:50-2:30	7:17	3:20		
	Lees Corner	E	7:50-2:30	6:35	3:54		

Lemon Road	E	7:50-2:30	7:17	3:02		
Little Run	E	7:50-2:30	7:31	2:53		
Marshall Road	E	7:50-2:30	6:58	3:24		
McNair	E	7:50-2:30	7:05	3:16		
North Springfield	E	7:50-2:30	6:47	3:01		
Oak Hill	E	7:50-2:30	6:56	3:24		
Olde Creek	E	7:50-2:30	6:44	3:27		
Orange Hunt	E	7:50-2:30	7:28	2:58		
Poplar Tree	E	7:50-2:30	6:36	3:55		
Providence	E	7:50-2:30	6:56	3:26		
Rose Hill	E	7:50-2:30	7:06	3:17		
Sangster	E	7:50-2:30	7:01	3:31		
Saratoga	E	7:50-2:30	7:04	3:23		
Sherveewood	E	7:50-2:30	6:52	3:33		
Silverbrook	E	7:50-2:30	7:19	3:00		
Spring Hill	E	7:50-2:30	7:04	3:13		
Stenwood	E	7:50-2:30	7:13	3:18		
Sunrise Valley	E	7:50-2:30	6:39	3:46		
Terraset	E	7:50-2:30	7:06	3:12		
Timberlane	E	7:50-2:30	7:29	2:54		
Union Mill	E	7:50-2:30	7:08	3:05		
Vienna	E	7:50-2:30	7:08	3:05		
Virginia Run	E	7:50-2:30	7:05	3:15		
Wakefield Forest	E	7:50-2:30	7:03	3:23		
Waples Mill	E	7:50-2:30	7:08	3:11		
West Springfield ES	E	7:50-2:30	7:18	2:47		
White Oaks	E	7:50-2:30	6:55	3:22		
Wolf Trap	E	7:50-2:30	7:03	3:34		
Hutchison	E	7:55-2:30	7:23	3:20		
London Towne	E	7:55-2:30	7:26	2:48		
Pine Spring	E	7:55-2:30	7:29	2:55		
Westlawn	E	7:55-2:30	7:32	2:57		
Braddock	E	8:00-2:40	7:21	3:13		
Colin Powell	E	8:00-2:40	6:50	3:34		
Flint Hill	E	8:00-2:40	7:22	3:23		
Lorton Station	E	8:05-2:45	7:25	3:30		
Washington Mill	E	8:05-2:45	7:17	3:34		
Weyanoke	E	8:05-2:45	7:17	3:27		
Cameron	E	8:10-2:45	7:06	3:49		
Hollin Meadows	E	8:10-2:45	7:21	3:46		
Mount Vernon Woods	E	8:10-2:45	7:32	3:09		
Fort Hunt	E	8:10-2:50	7:48	3:23		
Woodlawn	E	8:15-2:50	7:36	3:34		
Newington Forest	E	8:35-3:15	8:01	3:55		
Parklawn	E	8:35-3:15	8:09	3:40		
Waynewood	E	8:35-3:15	8:09	3:47		
Aldrin	E	8:40-3:20	7:12	4:03		
Armstrong	E	8:40-3:20	7:50	4:15		
Chesterbrook	E	8:40-3:20	8:12	3:52		
Churchhill	E	8:40-3:20	7:51	4:00		
Cunningham Park	E	8:40-3:20	8:15	3:47		

Fairhill	E	8:40-3:20	7:22	3:48	
Fox Mill	E	8:40-3:20	8:03	4:08	
Kent Garden	E	8:40-3:20	8:11	3:50	
Louise Archer	E	8:40-3:20	7:26	4:32	
Navy	E	8:40-3:20	7:53	4:00	
Rolling Valley	E	8:40-3:20	7:45	3:59	
Westbriar	E	8:40-3:20	8:12	3:56	
Westgate	E	8:40-3:20	7:46	4:16	
Baileys	E	9:20-4:00	8:15	5:10	
Bonnie Brae	E	9:20-4:00	8:51	4:26	
Brookfield	E	9:20-4:00	9:01	4:17	
Bull Run	E	9:20-4:00	8:23	5:04	
Cherry Run pac/ps*	E	9:20-4:00	8:18	4:58	
Clifton	E	9:20-4:00	8:38	4:49	
Columbia ps*	E	9:20-4:00	8:31	5:11	
Crossfield	E	9:20-4:00	8:48	4:33	
Daniel Run	E	9:20-4:00	8:39	4:36	
Deer Park pac/ps*	E	9:20-4:00	8:00	5:23	
Dranesville	E	9:20-4:00	8:44	4:55	
Eagle View ps*	E	9:20-4:00	8:15	5:25	
Fairfax Villa ps*	E	9:20-4:00	8:08	5:16	
Fairview	E	9:20-4:00	8:08	5:16	
Forestdale	E	9:20-4:00	8:27	5:02	
Garfield	E	9:20-4:00	8:46	4:33	
Greenbriar East	E	9:20-4:00	8:24	6:14	
Hunter Woods	E	9:20-4:00	8:28	5:02	
Kings Glen	E	9:20-4:00	7:06	5:19	
Kings Park ps/pac*	E	9:20-4:00	8:20	4:43	
Lane	E	9:20-4:00	8:02	5:09	
Laurel Ridge	E	9:20-4:00	8:20	4:57	
Lynbrook pac*	E	9:20-4:00	8:26	5:00	
Mantua	E	9:20-4:00	7:57	4:45	
Mosby Woods	E	9:20-4:00	8:37	4:47	
Oak View	E	9:20-4:00	8:41	4:42	
Oakton Elementary	E	9:20-4:00	8:40	4:49	
Ravensworth	E	9:20-4:00	8:39	5:02	
Sleepy Hollow	E	9:20-4:00	8:47	4:47	
Springfield Estates	E	9:20-4:00	8:38	4:47	
StraTford Landing	E	9:20-4:00	8:29	5:03	
Terra Centre	E	9:20-4:00	8:35	5:15	
Willow Springs	E	9:20-4:00	8:17	5:08	
Woodburn	E	9:20-4:00	9:06	4:28	
Woodley Hills	E	9:20-4:00	8:44	4:39	
Halley pac/ps*	E	9:25-4:00	8:13	5:11	
Riverside	E	9:25-4:05	8:42	4:43	
Davis	C	7:20-2:00	6:07	3:12	
Pulley	C	7:20-2:00	6:12	3:17	
Kilmer Center	C	8:00-2:00	6:19	3:20	
Key Center	C	8:00-2:00	6:38	3:20	
Quander	C	8:30-3:20	7:29	4:46	

Cedar Center	C	8:30-3:20	6:57	5:08	
Falls Church	H	8:30-3:20	7:23	4:40	S
Herndon HS	H	8:30-3:20	7:45	4:07	S
Marshall	H	8:30-3:20	7:36	4:14	S
South Lakes	H	8:30-3:20	7:23	4:29	S
Fairfax	H	8:30-3:20	7:20	4:34	D
Oakton HS	H	8:30-3:20	6:32	4:25	S
Stuart	H	8:30-3:20	7:45	4:00	D
Westfield	H	8:30-3:20	7:23	4:33	D
Annandale	H	8:30-3:20	7:34	4:15	D
Madison	H	8:30-3:20	7:29	4:23	S
Woodson	H	8:30-3:20	7:29	4:28	D
Mount Vernon	H	8:30-3:20	7:22	4:31	D
West Potomac	H	8:30-3:20	7:42	4:50	D
Lee High	H	8:30-3:20	7:37	4:07	D
West Springfield HS	H	8:30-3:20	7:18	4:42	D
Centreville HS	H	8:30-3:20	7:32	4:20	D
Chantilly	H	8:30-3:20	7:22	4:41	D
Jefferson	H	8:30-3:50	6:24	6:02	
Edison	H	8:35-3:25	7:19	4:59	D
South County HS	H	8:35-3:25	7:29	4:30	D
McLean	H	8:45-3:35	7:57	4:14	S
Langley	H	8:55-3:45	7:40	4:48	S
Robinson	S	8:30-3:20	7:27	4:30	D
Hayfield SEC	S	8:35-3:25	7:47	4:14	D
Lake Braddock S	S	8:45-3:35	7:21	5:03	D
Frost	M	8:40-3:25	7:24	4:23	
Glasgow	M	9:20-4:10	8:26	5:06	
Cooper	M	9:40-4:30	8:33	5:45	
Herndon MS	M	9:40-4:30	8:34	5:33	
Longfellow	M	9:40-4:30	8:42	5:31	
Jackson	M	9:40-4:30	8:42	5:25	
Kilmer	M	9:40-4:30	8:20	5:43	
Thoreau	M	9:40-4:30	8:51	5:29	
Holmes	M	9:40-4:30	8:37	5:54	
Poe Middle	M	9:40-4:30	8:30	5:28	
Key MS	M	9:40-4:30	8:43	5:27	
Sandburg	M	9:40-4:30	8:54	5:17	
Twain	M	9:40-4:30	8:40	5:32	
Whitman	M	9:40-4:30	9:05	5:07	
South County MS	M	9:40-4:30	8:31	5:49	
Irving	M	9:40-4:30	8:36	5:37	
Franklin	M	9:40-4:30	8:32	5:32	
Lanier	M	9:40-4:30	8:43	5:34	
Liberty	M	9:40-4:30	8:38	5:36	
Rocky Run	M	9:40-4:30	8:37	5:42	
Carson	M	9:40-4:30	8:48	5:22	
Hughes	M	9:40-4:30	8:44	5:38	
Stone	M	9:40-4:30	9:00	5:40	

Aldrin ES <i>ps/pac</i>	P	9:40-4:20	8:42	5:20		
Belvedere ES <i>ps/pac</i>	P	9:40-4:20	8:45	5:03		
Bucknell ES <i>ps</i>	P	9:40-4:20	8:56	5:27		
Centreville ES <i>pac</i>	P	9:40-4:20	8:54	5:10		
Clearview ES <i>ps/pac</i>	P	9:40-4:20	8:10	5:56		
Colin Powell <i>ps</i>	P	9:40-4:20	8:30	5:34		
Colvin Run ES <i>ps</i>	P	9:40-4:20	9:04	4:40		
Cub Run ES <i>ps/pac</i>	P	9:40-4:20	8:46	5:43		
Forest Edge ES <i>ps</i>	P	9:40-4:20	8:55	5:55		
Fort Belvoir <i>ps</i>	P	9:40-4:20	9:14	4:46		
Franklin Sherman ES <i>ps/pac</i>	P	9:40-4:20	8:56	5:21		
Freedom Hill ES <i>ps</i>	P	9:40-4:20	9:03	5:05		
Island Creek ES <i>ps/pac</i>	P	9:40-4:20	8:31	5:31		
Keene Mill ES <i>ps</i>	P	9:40-4:20	8:54	5:11		
Lemon Road ES <i>ps</i>	P	9:40-4:20	9:25	4:34		
Little Run ES <i>ps/pac</i>	P	9:40-4:20	9:08	5:43		
London Towne ES <i>ps</i>	P	9:40-4:20	8:42	5:19		
McNair <i>ps</i>	P	9:40-4:20	8:56	4:53		
Mount Vernon Woods ES <i>ps</i>	P	9:40-4:20	9:06	5:11		
North Springfield ES <i>ps/pac</i>	P	9:40-4:20	8:50	5:39		
Oak Hill ES <i>ps/pac</i>	P	9:40-4:20	8:49	5:10		
Parklawn ES <i>pac</i>	P	9:40-4:20	8:29	5:32		
Pine Springs ES <i>ps/pac</i>	P	9:40-4:20	8:57	5:17		
Rose Hill ES <i>ps/pac</i>	P	9:40-4:20	8:27	5:22		
Stenwood ES <i>ps</i>	P	9:40-4:20	9:01	5:37		
Timber Lane ES <i>ps</i>	P	9:40-4:20	8:52	5:09		
Vienna ES <i>ps</i>	P	9:40-4:20	8:50	5:05		
Waples Mill ES <i>ps/pac</i>	P	9:40-4:20	8:31	5:50		
West Springfield ES <i>ps</i>	P	9:40-4:20	9:11	5:00		
	E	Elementary				
	H	High				
	S	Secondary				
	M	Middle				
	C	Center				
	P	Preschool				

**Appendix B**

**ROUTES BY LEVEL BY TIER  
 Iteration #3**

Cluster	School		School Hours	Reg AM Runs	Reg PM Runs	SE AM Runs	SE PM Runs	AM ES Runs	AM MS Runs	AM SS Runs	AM HS Runs	AM PS/PAC	PM ES Runs	PM MS Runs	PM SS Runs	PM HS Runs	PM PS/PAC
2	Davis Ctr	H	7:20-2:00	0	0	23	23										
4	Pulley Ctr	H	7:20-2:00	0	0	19	19				42					42	
4	Bucknell ES	E	7:50-2:25	1	1	0	0										
4	Fort Belvoir ES	E	7:50-2:25	24	24	2	3										
4	Groveton ES	E	7:50-2:25	7	7	0	0										
4	Hybla Valley ES	E	7:50-2:25	7	6	1	1										
5	Mount Eagle ES	E	7:50-2:25	1	1	0	0										
3	Annandale Terrace ES	E	7:50-2:30	5	5	1	1										
3	Beech Tree ES	E	7:50-2:30	6	6	2	2										
4	Belle View ES	E	7:50-2:30	5	4	7	6										
3	Belvedere ES	E	7:50-2:30	12	12	0	0										
3	Bren Mar Park ES	E	7:50-2:30	3	3	4	4										
5	Bush Hill ES	E	7:50-2:30	4	4	7	7										
2	Camelot ES	E	7:50-2:30	6	6	17	12										
3	Canterbury Woods ES	E	7:50-2:30	8	8	9	9										
6	Cardinal Forest ES	E	7:50-2:30	5	5	1	1										
7	Centre Ridge ES	E	7:50-2:30	12	12	1	1										
7	Centreville ES	E	7:50-2:30	10	10	0	0										
1	Clearview ES	E	7:50-2:30	6	6	0	0										
5	Clermont ES	E	7:50-2:30	4	4	1	1										
6	Clifton ES	E	7:50-2:30	13	13	0	0										
1	Colvin Run ES	E	7:50-2:30	15	15	0	0										
5	Crestwood ES	E	7:50-2:30	1	1	0	1										
8	Crossfield ES	E	7:50-2:30	14	14	2	2										
8	Cub Run ES	E	7:50-2:30	5	5	1	1										
8	Dogwood ES	E	7:50-2:30	3	3	1	1										
8	Floris ES	E	7:50-2:30	11	11	1	1										
8	Forest Edge ES	E	7:50-2:30	13	13	0	0										

1	Forestville ES	E	7:50-2:30	11	11	0	0										
5	Franconia ES	E	7:50-2:30	7	7	0	0										
1	Franklin Sherman ES	E	7:50-2:30	6	6	0	0										
2	Freedom Hill ES	E	7:50-2:30	7	7	4	3										
2	Glen Forest ES	E	7:50-2:30	14	14	1	1										
2	Graham Road ES	E	7:50-2:30	1	1	0	0										
1	Great Falls ES	E	7:50-2:30	11	11	1	1										
7	Greenbriar West ES	E	7:50-2:30	11	11	1	1										
4	Gunston ES	E	7:50-2:30	10	10	2	2										
1	Haycock ES	E	7:50-2:30	16	16	1	1										
4	Hayfield ES	E	7:50-2:30	8	8	1	0										
1	Herndon ES	E	7:50-2:30	8	8	1	1										
6	Hunt Valley ES	E	7:50-2:30	6	6	2	2										
4	Island Creek ES	E	7:50-2:30	6	6	0	0										
6	Keene Mill ES	E	7:50-2:30	10	10	3	3										
8	Lake Anne ES	E	7:50-2:30	3	3	2	1										
7	Lees Corner ES	E	7:50-2:30	7	7	5	5										
2	Lemon Road ES	E	7:50-2:30	3	3	0	0										
3	Little Run ES	E	7:50-2:30	5	5	0	0										
2	Marshall Road ES	E	7:50-2:30	7	7	7	7										
8	McNair ES	E	7:50-2:30	11	11	0	0										
3	North Springfield ES	E	7:50-2:30	3	3	1	1										
7	Oak Hill ES	E	7:50-2:30	8	8	0	0										
3	Olde Creek ES	E	7:50-2:30	4	4	6	6										
6	Orange Hunt ES	E	7:50-2:30	5	5	0	0										
7	Poplar Tree ES	E	7:50-2:30	10	10	5	5										
7	Providence ES	E	7:50-2:30	10	10	0	0										
5	Rose Hill ES	E	7:50-2:30	6	6	0	0										
6	Sangster ES	E	7:50-2:30	12	12	2	2										
5	Saratoga ES	E	7:50-2:30	10	10	1	1										
2	Shreveewood ES	E	7:50-2:30	6	6	4	4										
5	Silverbrook ES	E	7:50-2:30	16	16	1	2										
1	Spring Hill ES	E	7:50-2:30	11	11	0	0										
2	Stenwood ES	E	7:50-2:30	6	6	0	0										
8	Sunrise Valley ES	E	7:50-2:30	13	13	3	3										
8	Terraset ES	E	7:50-2:30	7	7	1	1										

1	Timber Lane ES	E	7:50-2:30	6	6	0	0										
7	Union Mill ES	E	7:50-2:30	7	7	2	2										
2	Vienna ES	E	7:50-2:30	2	2	2	2										
8	Virginia Run ES	E	7:50-2:30	11	11	1	1										
3	Wakefield Forest ES	E	7:50-2:30	6	6	2	2										
8	Waples Mill ES	E	7:50-2:30	14	14	3	3										
6	West Springfield ES	E	7:50-2:30	3	3	0	0										
6	White Oaks ES	E	7:50-2:30	11	11	0	0										
2	Wolf Trap ES	E	7:50-2:30	6	6	0	1										
1	Hutchison ES	E	7:55-2:30	4	4	1	1										
8	London Towne ES	E	7:55-2:30	5	5	1	0										
2	Pine Springs ES	E	7:55-2:30	4	4	0	0										
2	Westlawn ES	E	7:55-2:30	4	4	0	0										
5	Key Ctr	E	8:00-2:00	0	0	22	22										
2	Kilmer Ctr	E	8:00-2:00	0	0	15	15										
3	Braddock ES	E	8:00-2:40	3	3	0	0										
7	Colin Powell ES	E	8:00-2:40	10	10	1	1										
2	Flint Hill ES	E	8:00-2:40	7	7	1	1										
4	Lorton Station ES	E	8:05-2:45	17	17	0	0										
4	Washington Mill ES	E	8:05-2:45	7	7	4	4										
3	Weyanoke ES	E	8:05-2:45	7	7	2	2										
5	Cameron ES	E	8:10-2:45	7	7	0	0										
4	Hollin Meadows ES	E	8:10-2:45	3	3	3	2										
4	Mount Vernon Woods ES	E	8:10-2:45	2	2	0	0										
4	Woodlawn ES	E	8:10-2:45	6	6	2	2										
4	Fort Hunt ES	E	8:10-2:50	4	4	0	0	827				818					
								827			42		818			42	
3	TJHSST		8:30-3:50	65	64	0	0				65					64	
4	Newington Forest ES	E	8:35-3:15	7	7	0	0										
3	Parklawn ES	E	8:35-3:15	8	8	0	0										
4	Waynewood ES	E	8:35-3:15	4	4	0	0										
1	Aldrin ES	E	8:40-3:20	9	9	0	0										
1	Armstrong ES	E	8:40-3:20	11	11	4	4										
1	Chesterbrook ES	E	8:40-3:20	9	9	0	0										

1	Churchill Road ES	E	8:40-3:20	8	8	2	3										
2	Cunningham Park ES	E	8:40-3:20	1	1	2	2										
2	Fairhill ES/Ctr	E	8:40-3:20	8	8	1	1										
8	Fox Mill ES	E	8:40-3:20	6	6	1	1										
1	Kent Gardens ES	E	8:40-3:20	9	9	0	0										
2	Louise Archer ES	E	8:40-3:20	13	13	0	0										
8	Navy ES	E	8:40-3:20	12	12	1	1										
6	Rolling Valley ES	E	8:40-3:20	7	7	0	0										
2	Westbriar ES	E	8:40-3:20	6	6	0	0										
2	Westgate ES	E	8:40-3:20	2	2	0	0	131						132			
3	Annandale HS	H	8:30-3:20	28	29	5	6										
2	Cedar Lane Ctr	H	8:30-3:20	0	0	14	14										
7	Centreville HS	H	8:30-3:20	22	27	6	6										
7	Chantilly HS	H	8:30-3:20	25	25	11	12										
7	Fairfax HS	H	8:30-3:20	33	34	3	3										
2	Falls Church HS	H	8:30-3:20	17	17	8	8										
1	Herndon HS	H	8:30-3:20	21	21	2	2										
5	Lee HS	H	8:30-3:20	26	26	4	2										
2	Madison HS	H	8:30-3:20	15	15	6	6										
2	Marshall HS	H	8:30-3:20	14	14	0	0										
4	Mount Vernon HS	H	8:30-3:20	31	31	6	6										
8	Oakton HS	H	8:30-3:20	26	26	1	1										
4	Quander Road Ctr	H	8:30-3:20	0	0	12	12										
8	South Lakes HS	H	8:30-3:20	20	20	6	6										
3	Stuart HS	H	8:30-3:20	23	25	1	1										
4	West Potomac HS	H	8:30-3:20	24	24	0	0										
6	West Springfield HS	H	8:30-3:20	17	17	3	3										
8	Westfield HS	H	8:30-3:20	45	45	3	3										
3	Woodson HS	H	8:30-3:20	32	30	33	33										
5	Edison HS	H	8:35-3:25	27	26	1	0										
5	South County HS	H	8:35-3:25	24	24	3	3										
1	McLean HS	H	8:45-3:35	15	15	1	1										
1	Langley HS	H	8:55-3:45	22	22	6	6			642						647	
3	Frost MS	M	8:40-3:25	0	0	0	0	0						0			
6	Robinson SS	S	8:30-3:20	53	53	8	8										
5	Hayfield SS	S	8:35-3:25	38	38	0	0										

6	Lake Braddock SS	S	8:55-3:45	45	45	3	3			147					147	
								131		147	642		132		147	647
3	Baileys ES	E	9:20-4:00	6	6	3	3									
6	Bonnie Brae ES	E	9:20-4:00	11	11	1	1									
7	Brookfield ES	E	9:20-4:00	6	6	0	0									
7	Bull Run ES	E	9:20-4:00	16	16	3	3									
6	Cherry Run ES & ps	E	9:20-4:00	2	2	5	5									
3	Columbia ES & ps	E	9:20-4:00	5	5	2	2									
7	Daniels Run ES	E	9:20-4:00	10	10	1	1									
8	Deer Park ES & ps	E	9:20-4:00	6	6	5	4									
1	Dranesville ES	E	9:20-4:00	7	7	3	3									
7	Eagle View ES & ps	E	9:20-4:00	7	7	6	5									
7	Fairfax Villa ES	E	9:20-4:00	4	4	2	2									
6	Fairview ES	E	9:20-4:00	9	9	5	6									
5	Forestdale ES	E	9:20-4:00	7	7	4	2									
5	Garfield ES	E	9:20-4:00	6	6	0	0									
7	Greenbriar East ES	E	9:20-4:00	6	6	3	3									
8	Hunters Woods ES	E	9:20-4:00	21	21	2	2									
6	Kings Glen ES	E	9:20-4:00	8	9	1	1									
6	Kings Park ES & ps	E	9:20-4:00	10	11	2	2									
4	Lane ES	E	9:20-4:00	8	8	3	3									
6	Laurel Ridge ES	E	9:20-4:00	5	5	7	7									
5	Lynbrook ES & ps	E	9:20-4:00	4	4	8	6									
3	Mantua ES	E	9:20-4:00	12	12	11	11									
8	Mosby Woods ES	E	9:20-4:00	10	10	1	1									
6	Oak View ES	E	9:20-4:00	11	11	0	0									
8	Oakton ES	E	9:20-4:00	9	9	3	3									
3	Ravensworth ES	E	9:20-4:00	5	4	0	0									
3	Sleepy Hollow ES	E	9:20-4:00	7	6	2	2									
5	Springfield Estates ES	E	9:20-4:00	15	15	0	0									
4	Stratford Landing ES	E	9:20-4:00	6	6	4	3									
6	Terra Centre ES	E	9:20-4:00	5	5	5	4									
7	Willow Springs ES	E	9:20-4:00	20	20	2	2									
2	Woodburn ES	E	9:20-4:00	7	7	0	0									
4	Woodley Hills ES	E	9:20-4:00	12	12	0	0									

5	Halley ES	E	9:25-4:00	9	9	5	4										
4	Riverside ES	E	9:25-4:05	11	11	0	0	402					394				
6	Burke Ctr	M	9:20-4:10	0	0	17	17										
3	Glasgow MS	M	9:20-4:10	27	27	0	0										
8	Carson MS	M	9:40-4:30	31	31	0	0										
1	Cooper MS	M	9:40-4:30	20	20	2	2										
7	Franklin MS	M	9:40-4:30	24	24	4	3										
1	Herndon MS	M	9:40-4:30	20	20	3	3										
3	Holmes MS	M	9:40-4:30	16	16	6	6										
8	Hughes MS	M	9:40-4:30	22	22	2	2										
6	Irving MS	M	9:40-4:30	19	19	1	1										
2	Jackson MS	M	9:40-4:30	22	22	0	0										
5	Key MS	M	9:40-4:30	20	20	0	0										
2	Kilmer MS	M	9:40-4:30	27	27	6	6										
7	Lanier MS	M	9:40-4:30	23	23	3	3										
7	Liberty MS	M	9:40-4:30	23	23	4	4										
1	Longfellow MS	M	9:40-4:30	20	20	1	1										
3	Poe MS	M	9:40-4:30	23	23	5	5										
7	Rocky Run MS	M	9:40-4:30	20	20	0	0										
4	Sandburg MS	M	9:40-4:30	22	22	3	3										
5	South County MS	M	9:40-4:30	9	9	1	1										
8	Stone MS	M	9:40-4:30	12	12	1	1										
2	Thoreau MS	M	9:40-4:30	13	13	3	3										
5	Twain MS	M	9:40-4:30	17	17	0	0										
4	Whitman MS	M	9:40-4:30	23	23	0	0	515					514				
1	Aldrin ES <i>ps/pac</i>	P	9:40-4:20			5	4										
3	Belvedere ES <i>ps/pac</i>	P	9:40-4:20			4	4										
4	Bucknell ES <i>ps</i>	P	9:40-4:20			2	2										
7	Centreville ES <i>pac</i>	P	9:40-4:20			2	2										
1	Clearview ES <i>ps/pac</i>	P	9:40-4:20			5	5										
2	Colin Powell <i>ps</i>	P	9:40-4:20			2	2										
1	Colvin Run ES <i>ps</i>	P	9:40-4:20			2	2										
8	Cub Run ES <i>ps/pac</i>	P	9:40-4:20			4	3										
7	Fairfax Villa ES <i>ps</i>	P	9:40-4:20			2	2										
8	Forest Edge ES <i>ps</i>	P	9:40-4:20			2	2										
4	Fort Belvoir ES <i>ps</i>	P	9:40-4:20			1	1										

1	Franklin Sherman ES <i>ps/pac</i>	P	9:40-4:20			3	2											
2	Freedom Hill ES <i>ps</i>	P	9:40-4:20			3	3											
4	Island Creek ES <i>ps/pac</i>	P	9:40-4:20			4	4											
6	Keene Mill ES <i>ps</i>	P	9:40-4:20			3	2											
2	Lemon Road ES <i>ps</i>	P	9:40-4:20			1	1											
3	Little Run ES <i>ps/pac</i>	P	9:40-4:20			3	2											
8	London Towne ES <i>ps</i>	P	9:40-4:20			2	2											
8	McNair ES <i>ps</i>	P	9:40-4:20			2	2											
4	Mount Vernon Woods ES <i>ps</i>	P	9:40-4:20			3	3											
3	North Springfield ES <i>ps/pac</i>	P	9:40-4:20			4	4											
7	Oak Hill ES <i>ps/pac</i>	P	9:40-4:20			1	1											
3	Parklawn ES <i>pac</i>	P	9:40-4:20			3	3											
2	Pine Springs ES <i>ps/pac</i>	P	9:40-4:20			3	2											
3	Ravensworth ES <i>ps</i>	P	9:40-4:20			1	1											
5	Rose Hill ES <i>ps/pac</i>	P	9:40-4:20			5	5											
2	Stenwood ES <i>ps</i>	P	9:40-4:20			1	1											
1	Timber Lane ES <i>ps</i>	P	9:40-4:20			3	3											
2	Vienna ES <i>ps</i>	P	9:40-4:20			2	3											
8	Waples Mill ES <i>ps/pac</i>	P	9:40-4:20			4	5											
6	West Springfield ES <i>ps</i>	P	9:40-4:20			2	2							84				80
						84	80	402	515					84	394	514		80

### Iteration #3 Summary

Number of Runs per Tier by Level						Percentage of Runs per Tier by Level						
AM	Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3	
ES	827		131		402	1360	61%		10%		29%	100%
MS					515	515					100%	100%
SS			147			147			100%			100%
HS	42	65	642			749	5%	9%	86%			100%
PS					84	84					100%	100%
	869	65	920		1001	2855						
PM												
ES	818		132		394	1344	61%		10%		29%	100%
MS					514	514					100%	100%
SS			147			147			100%			100%
HS	42	64	647			753	5%	9%	86%			100%
PS					80	80					100%	100%
	860	64	926		988	2838						
	1729	129	1846		1989	5693						

Number of Schools per Tier by Level						Percentage of Schools per Tier by Level						
AM & PM	Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3	
ES	88		16		35	139	63%		12%		25%	100%
MS			1		23	24				4%	96%	100%
SS			3			3			100%			100%
HS	2	1	23			26	8%	4%	88%			100%
PS					31	31					100%	100%
	90	1	43		89	223						

## Appendix C

Iteration #2 Number of RUNS per Tier by Level							Iteration #2 Percentage of RUNS per Tier by Level						Iteration #1 Percentage of RUNS per Tier by Level					
AM	Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3	
ES	879		169		288	1336	66%		13%		22%	100%	76%		8%		17%	100%
MS				32	515	547				6%	94%	100%			13%	10%	77%	100%
SS			147			147			100%			100%			100%			100%
HS	42	65	642			749		9%	86%			100%		8%	92%			100%
PS					106	106					100%	100%					100%	100%
	921	65	958	32	909	2885												
PM																		
ES	869		170		285	1324	66%		13%		22%	100%	76%		8%		17%	100%
MS				31	514	545				6%	94%	100%			13%		77%	100%
SS			147			147			100%			100%			100%	10%		100%
HS	42	64	647			753		8%	86%			100%		8%	92%			100%
PS					98	98					100%	100%					100%	100%
	911	64	964	31	897	2867												
	1832	129	1922	63	1806	5752												

Iteration #2 Number of SCHOOLS per Tier by Level							Iteration #2 Percentage of SCHOOLS per Tier by Level						Iteration #1 Percentage of SCHOOLS per Tier by Level					
AM & PM	Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3		Tier 1		Tier 2		Tier 3	
ES	92		22		25	139	66%		16%		18%	100%	78%		9%		14%	100%
MS				1	23	24				4%	96%	100%			8%	8%	83%	100%
SS			3			3			100%			100%			100%			100%
HS	2	1	23			26	8%	4%	88%			100%		4%	96%			100%
PS					37	37					100%	100%					100%	100%
	94	1	48	1	85	229												