ATHLETIC FIELDS MASTER PLANNING

Staff Report: Public Hearing

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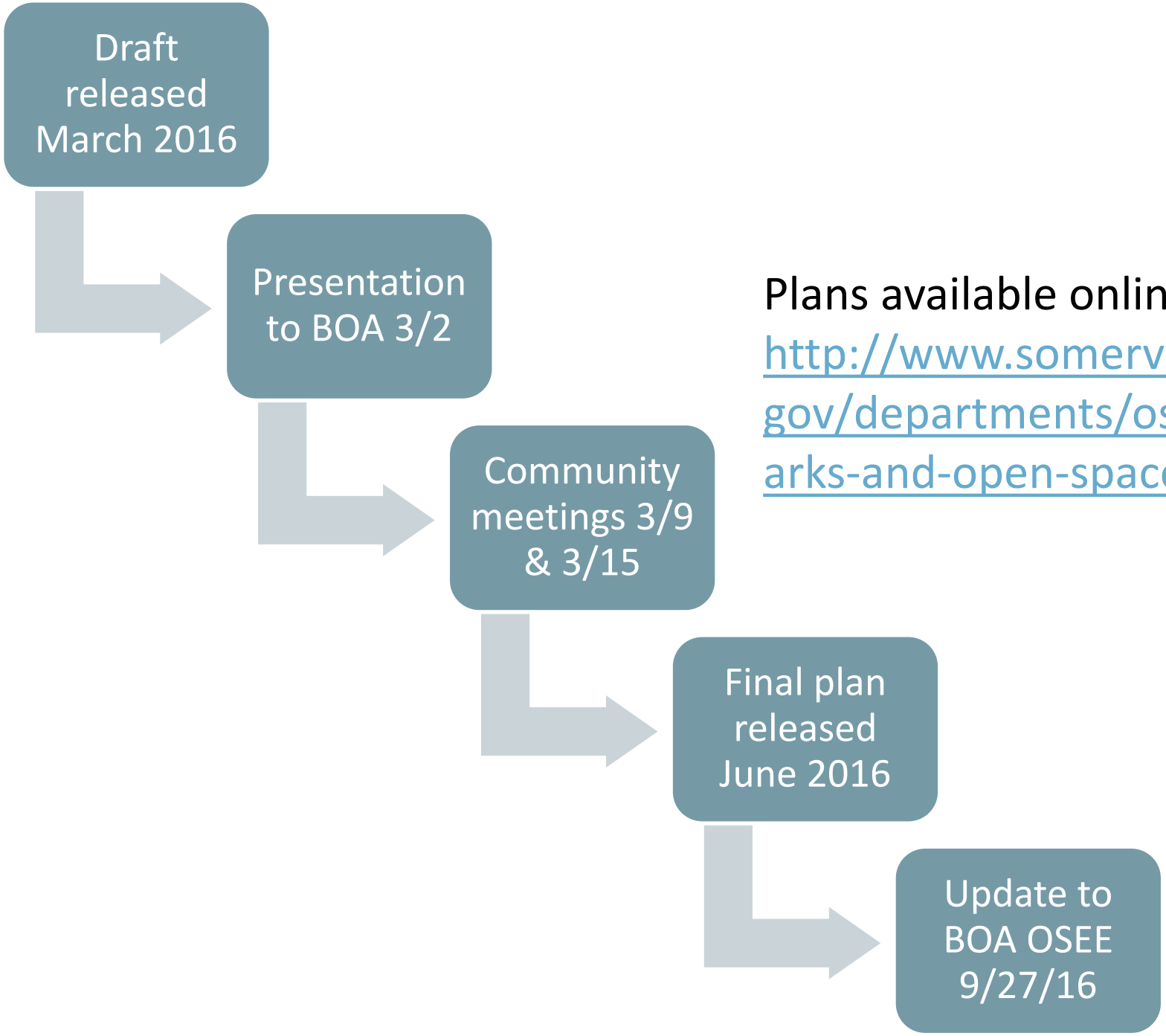
November 15, 2016
Somerville, MA

Agenda

1. Background
2. Data recap
3. The plan
4. Additional information

1. Background

- City staff undertook an Athletic Fields Master Planning effort in late 2015 and early 2016



Plans available online:
http://www.somervillema.gov/departments/ospcd/parks-and-open-space

The bottom line

- Opportunities for physical activity for youth is important, and sports can only be played on fields.

- Expansive, natural open spaces in Somerville for unprogrammed recreation and environmental health is also important.

Balancing these two goals is the crux of the fields conversation in our city.

A guide to field sizes

Type	Size			
	CoS Nomenclature	**Traditional nomenclature**	**Min. width x length (yards)**	**Min. acres**
Rectangle	XL	Football field	53.3 x 120	1.32
	L	U14	50 x 100	1.03
	M	U12	45 x 70	0.65
	S	U10	35 x 45	0.33
	XS	U8 or smaller	20 x 25	0.10
Diamond	L	Baseball		
	M	Softball		
	S	Little league		

Inventory of current fields by size

Type	Size	Number	Fields
Rectangle	XL	1	Dilboy Stadium (1, turf)
	L	3*	Dilboy Aux A (1 shared) Foss (2; 1 shared)
	M	2*	Conway (1 shared) Lincoln (1 under construction)
	S	2	Capuano (1, turf) Nunziato (1)
	XS	1	Triangle (1)
Diamond	L	2*	Foss (1 shared) Trum (1)
	M	4	Foss (2) Lincoln (1) Trum (1)
	S	4*	Conway (2 shared) Dilboy Aux B (1) Hodgkins-Curtin (1)

2. Data recap

1. Vast majority of users are youth & Somerville residents

2. Usage of athletic fields is high & growing

3. The data is nuanced: this is not a simple supply & demand story.
   a. Our biggest need is for large and medium rectangle fields
   b. It’s all about peak hours

We currently accommodate this demand by allowing permitting during all available hours

Nunziato

Lincoln

Conway

Dilboy

This has a clear impact on the quality and SAFETY of our fields.

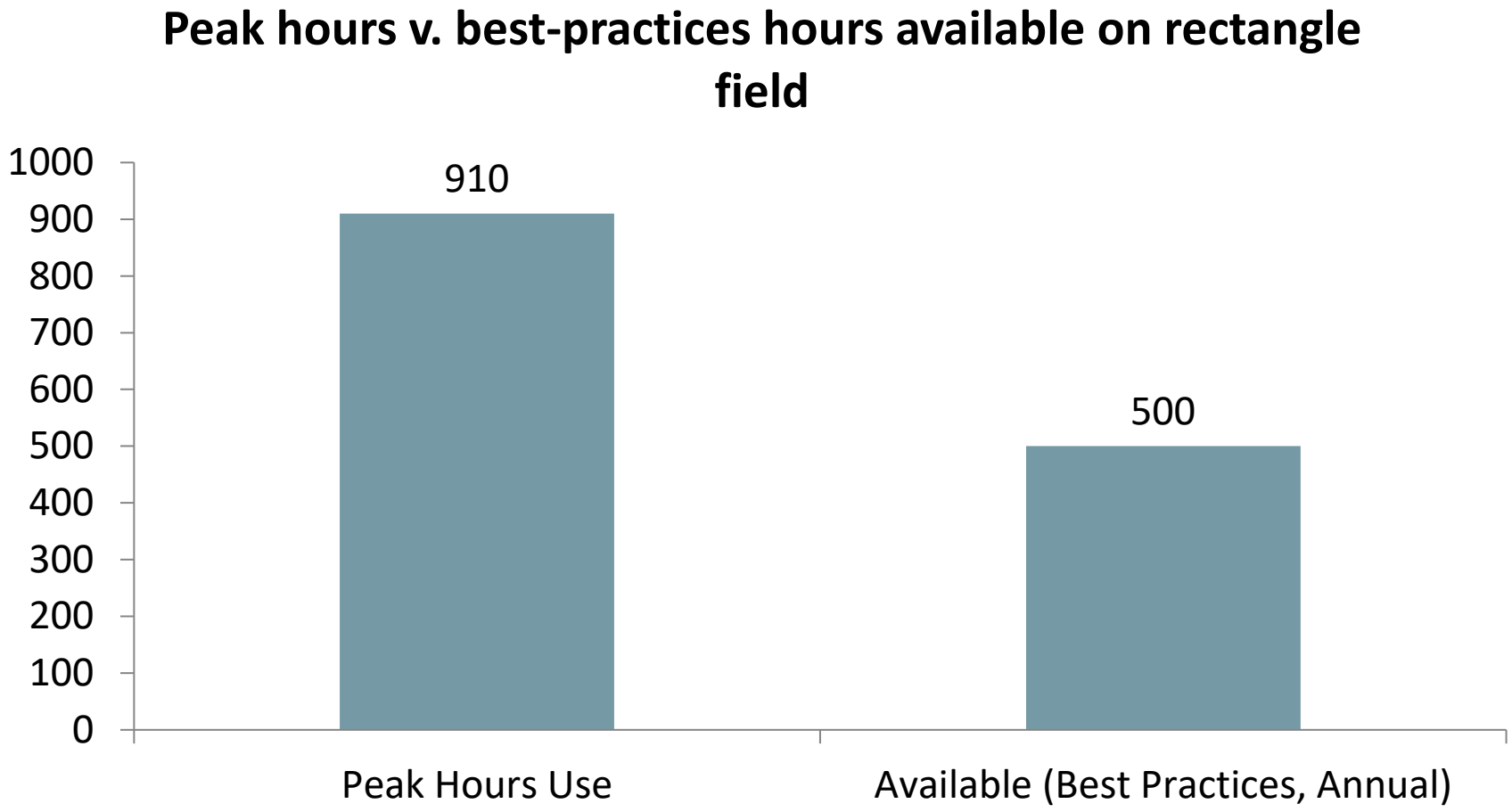
City policy for natural grass fields

When we reconstruct an athletic field with natural grass, we will abide by best practices for hours of use.

500 hours rectangle

800 hours diamond

Adhering to best practices for natural grass



3. The plan

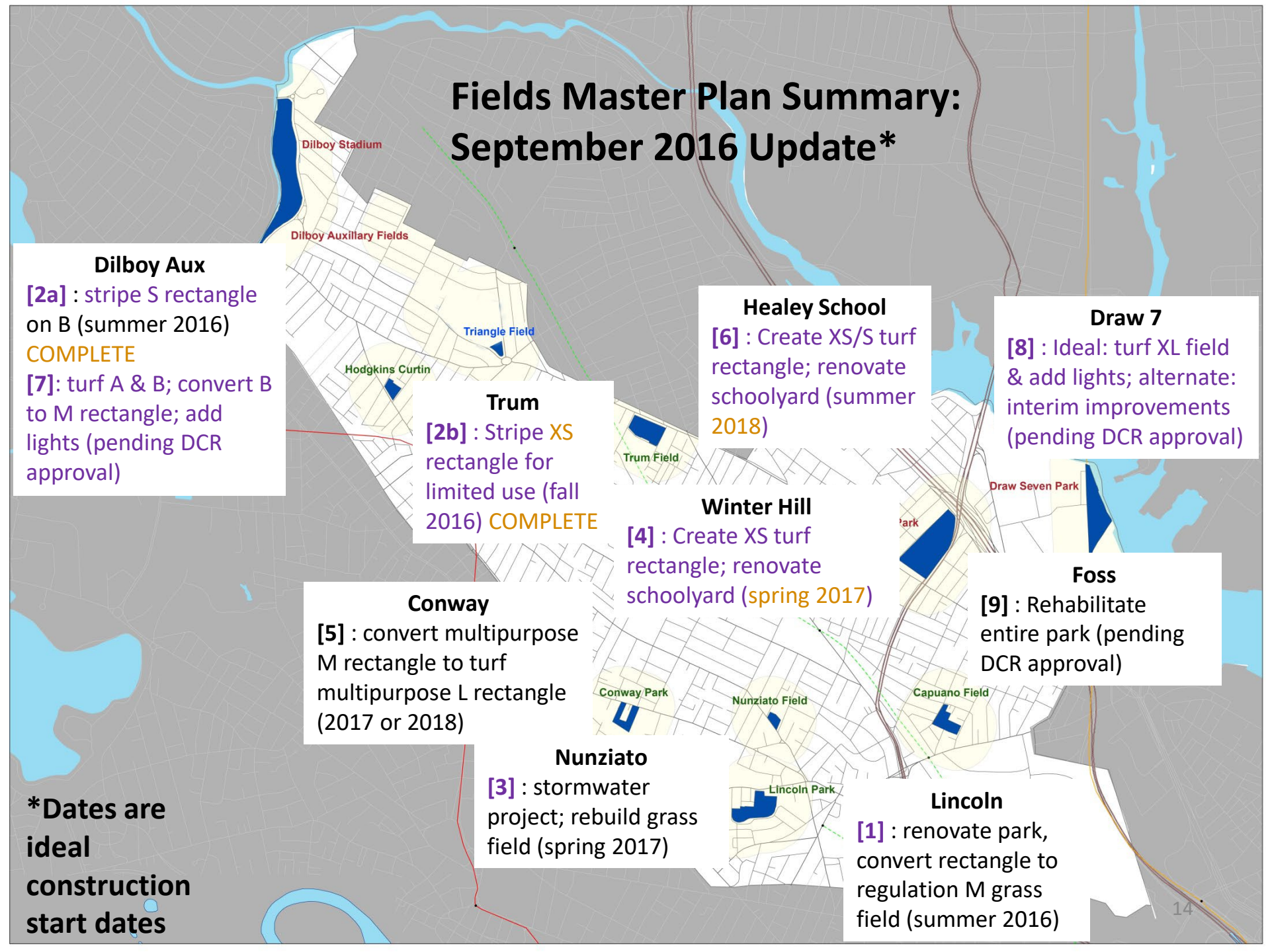
I. Maintenance of natural grass fields

II. Short, medium and long term plan to address shortage of fields

Field maintenance updates

- BOA approved Administrative Order to include Fields Maintenance Division under a new Parks & Recreation Department
- BOA approved Fields Division budget in the FY17 Budget
  - Director of Operations final interviews this week
  - All candidates have background in turf management and science
- City selected Tom Irwin, Inc. for Maintenance Plan consultant
  - Assessment of current conditions due December 2016
  - Maintenance plan due April 2017
  - Staff training spring 2017

Fields Master Plan Summary: September 2016 Update*



Dilboy Aux
[2a] : stripe S rectangle on B (summer 2016) COMPLETE
[7]: turf A & B; convert B to M rectangle; add lights (pending DCR approval)

Trum
[2b] : Stripe XS rectangle for limited use (fall 2016) COMPLETE

Healey School
[6] : Create XS/S turf rectangle; renovate schoolyard (summer 2018)

Draw 7
[8] : Ideal: turf XL field & add lights; alternate: interim improvements (pending DCR approval)

Winter Hill
[4] : Create XS turf rectangle; renovate schoolyard (spring 2017)

Foss
[9] : Rehabilitate entire park (pending DCR approval)

Conway
[5] : convert multipurpose M rectangle to turf multipurpose L rectangle (2017 or 2018)

Nunziato
[3] : stormwater project; rebuild grass field (spring 2017)

Lincoln
[1] : renovate park, convert rectangle to regulation M grass field (summer 2016)

***Dates are ideal construction start dates**

New developments

- With new Somerville High School moving forward, we will add a new medium (U12) artificial turf field in 2023 on top of the parking garage
- In the short term, we're working with community partners to secure additional field time to cover gaps for youth leagues
  - Cambridge
  - Arlington
  - Matignon
  - Tufts

City-owned fields

	Existing		Proposed	
	Grass	**Turf**	**Grass**	**Turf**
Capuano		X		X
Conway	X			X
ESCS		X		X
Healey (new)				X
Hodgkins-Curtin	X		X	
Lincoln diamond	X		X	
Lincoln rectangle	X		X	
Nunziato	X		X	
SHS (new)				X
Trum	X		X	
Winter Hill (new)				X
Total	**6**	**2**	**5**	**6**

Key next steps

1. Winter Hill: issue construction bid for field; seek BOA approval for construction funds (Winter 2016-2017)
2. Nunziato: kickoff meeting on November 21
3. Pursue surveys and geotech analyses at Conway and Healey, pending BOA funding approval. *In process*
4. Incorporate projects into FY17-FY26 CIP. *Ongoing*
5. Continue conversations with DCR re: Draw 7, Dilboy & Foss. *Ongoing*

4. Additional information

- Player safety
- Safety of materials
- Environmental impacts
- Financial analysis

Player safety

- Determined by the quality and maintenance of both natural grass and turf fields

Safety of materials

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Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields

Concerns have been raised by the public about the safety of recycled tire crumb used in playing fields in the United States. Limited studies have not shown an elevated health risk from playing on fields with tire crumb, but the existing studies do not comprehensively evaluate the concerns about health risks from exposure to tire crumb. Because of the need for additional information, the U.S. Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (ATSDR), and the U.S. Consumer Product Safety Commission (CPSC) are launching a multi-agency **Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds** to study key environmental human health questions.

You will need Adobe Reader to view some of the files on this page. See EPA's About PDF page to learn more.

- Federal Research on Tire Crumbs Used on Fields (PDF) (3 pp, 117 K)

Contact Us to ask a question, provide feedback, or report a problem.

Tire Crumb and Synthetic Turf Field Literature and Report List as of Nov. 2015

The views expressed in all these studies and reports do not necessarily reflect the views or policies of the US Environmental Protection Agency. The purpose of this list is to provide the public with a list of studies and reports that have addressed the topic of tire crumb, it may not be fully up-to-date or comprehensive. Links are provided when available.

- Leaching of DOC, DN and Inorganic Constituents from Scrap Tires
  Selbes M., Yilmaz O., Khan A.A., Karanfil T. (2015). Chemosphere. 139:617-23.
- Environmental and Health Impacts of Artificial Turf: A Review
  Cheng H., Hu Y., Reinhard M. (2014). Environ Sci Technol. 48(4):2114-29.
- Environmental Sanitary Risk Analysis Procedure Applied to Artificial Turf Sports Fields
  Ruffino et al. (2013). Environ Sci Pollut Res Int.
- New Approach to the Ecotoxicological Risk Assessment of Artificial Outdoor Sporting Grounds
  Krüger O., Kalbe U., Richter E., Egeler P., Römbke J., Berger W. (2013). Environ Pollut. 175:69-74.
- Artificial Turf Football Fields: Environmental and Mutagenicity Assessment
  Schilirò T., Traversi D., Degan R., Pignata C., Alessandria L., Scozia D., Bono R., Gilli G. (2013). Arch Environ Contam Toxicol. 64(1):1-11.
- Bioaccessibility and Risk Exposure to Metals and SVOCs in Artificial Turf Field Fill Materials and Fibers
  Pavilonis B.T., Weisel C.P., Buckley B., Lioy P.J. (2013). Risk Anal.
- Review of the Human Health & Ecological Safety of Exposure to Recycled Tire Rubber Found at Playgrounds and Synthetic Turf Fields Exit
  Cardno Chem Risk. (2013). Prepared for: Rubber Manufacturers Association, Washington, DC.
- Health Risk Assessment of Lead Ingestion Exposure by Particle Sizes in Crumb Rubber on Artificial Turf Considering Bioavailability
  Kim S., Yan J.Y., Kim H.H., Yeo I.Y., Shin D.C., Lim Y.W. (2012). Environ Health Toxicol. 27:e2012005.
- Zinc Leaching from Tire Crumb Rubber
  Rhodes E.P., Ren Z., Mays D.C. (2012). Environ Sci Technol. 46(23):12856-63.
- Comparison of Batch and Column Tests for the Elution of Artificial Turf System Components
  Krüger O., Kalbe U., Berger W., Nordhauß K., Christoph G., Walzel H.P. (2012). Environ Sci Technol. 46(24):13085-92

Environmental impacts

	Natural Grass	Synthetic Turf
Water usage		✓
Permeability	✓(quality dependent)	
Carbon sink (sequestration)	✓(quality dependent)	
Carbon footprint	✓	
Recycled content		✓ (material dependent)
Maintenance	regime dependent	
Heat	✓	

✓ Indicates which material performs better from an environmental perspective

Financial analysis
15-year lifecycle, U12 field

	STMA (2008) & Millar/Loan (unknown) Low Estimates		STMA (2008) & Millar/Loan (unknown) High Estimates	
	Grass	**Turf**	**Grass**	**Turf**
Construction	$315,000	$292,500	$450,000	$495,000
Maintenance	$112,500	$75,000	$375,000	$75,000
Replacement	$17,500	$270,000	$25,000	$270,000
Disposal	$0	$45,000	$0	$45,000
15-year lifecycle cost	**$445,000**	**$682,500**	**$850,000**	**$885,000**
Usable athletic hours per year	500	1,638	500	1,638
Total usable athletic hours (15 years)	7,500	24,570	7,500	24,570
Cost per hour	**$59.33**	**$27.78**	**$113.33**	**$36.02**
Break-even hours per year*	1,068		1,573	

Source: Sports Turf Management Association (2008) & Millar/Loan (unknown); City calculation of usable athletic hours
Notes: Estimates are for natural grass field with sand and drainage; U12 field size is ~45,000 square feet
*Hours needed on grass field per year to achieve same cost per hour as turf field

Financial analysis
15-year lifecycle, U12 field

	Weston & Sampson (2016)	
	Grass	**Turf**
Construction	$292,500	$517,500
Maintenance	$388,125	$118,125
Replacement	$50,625	$270,000
Disposal	$0	$45,000
15-year lifecycle cost	**$731,250**	**$950,625**
Usable athletic hours per year	500	1,638
Total usable athletic hours (15 years)	7,500	24,570
Cost per hour	**$97.50**	**$38.69**
Break-even hours per year*	1,260	

Source: Weston & Sampson (2016); City calculation of usable athletic hours
Notes: U12 field size is ~45,000 square feet
*Hours needed on grass field per year to achieve same cost per hour as turf field

	Petroleum Based					Sand	Plant Based			Living Grass
Infill Type	Post-Consumer Tire Crumb Rubber (SBR)	Post-Industrial Product Grinds	New Synthetic Crumb Rubber (EPDM)	New Plastic Crumb (TPE) Thermoplas-tic Elastomer	New Acrylic Polymer Coated Sand	Sand (Post-Industrial Application)	Coconut Fiber Over Sand	Coconut Fiber & Cork Mix	Cork	Grass Turf in Soil
Fields in PP&R Permit System	6	2								180
Infill Image										
Management Considerations										
Health										
Chemical Exposure										
Sports Injuries										
Heat Exposure										
Environment										
Carbon Footprint										
Water Consumption										
Reuse / Recyclability										
Recreation Value										
Hours of play available										
Reliable Playability										
Cost										
Installation & Replacement										
Annual Maintenance										
Total Cost Over 20 Years										

Legend

- Area of Concern
- Manageable Concern
- Manageable
- Manageable Benefit
- Area of Benefit

Post Consumer Tire Crumb Rubber

Post industrial Product Grinds

New Synthetic Crumb Rubber (EPDM)

New Plastic Crumb (TPE) Thermoplastic Elastomer

New Acrylic Polymer Coated Sand

Sand

Coconut Fiber over sand

Coconut Fiber & Cork Mix

Cork

Grass Turf in Soil

Comparison of Synthetic Turf Infill Materials

Updated July 2016 This information will be monitored, reevaluated and updated periodically.

PORTLAND PARKS & RECREATION

Healthy Parks, Healthy Portland

Thank you