COMMUNITY MEETING #2

March 25, 2017

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

Background

Open dialog Maintenance Project

Two Community Meetings

- First Meeting – Saturday, January 28
- Second Meeting – Saturday, March 25

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

Summary of First Meeting (1/28/17)

Informational Meeting - Introduction to the Project

A. Existing Site Conditions

B. Artificial Turf Components, Types of Infill Materials

C. Project Constraints, Project Goal, Funding

D. Community Feedback and Priorities

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

Second Meeting (Today)

A. Next Step

B. Selection Criteria and Process on a the replacement turf components; turf carpet, infill material, and pad

C. Present the representative optimal replacement turf components

D. Community Feedback

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks, Recreation & Waterfront

Existing Conditions

FIRST MEETING SUMMARY

CARPET DAMAGE AND SPOT REPAIRS

CARPET SEAM DAMAGE

TOM BATES REGIONAL SPORTS COMPLEX SYNTHETIC TURF REPLACEMENT
BERKELEY, CALIFORNIA
MARCH 25, 2017
5

SOUTH FIELD

TOM BATES REGIONAL SPORTS COMPLEX SYNTHETIC TURF REPLACEMENT
BERKELEY, CALIFORNIA
MARCH 25, 2017
3

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

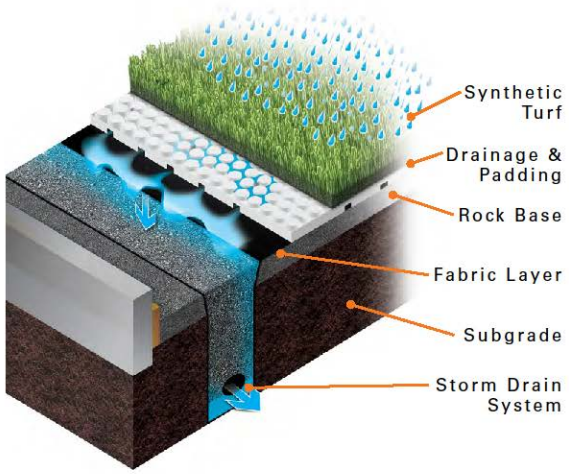
Department of Parks,
Recreation & Waterfront

Turf Components & Infills

FIRST MEETING SUMMARY

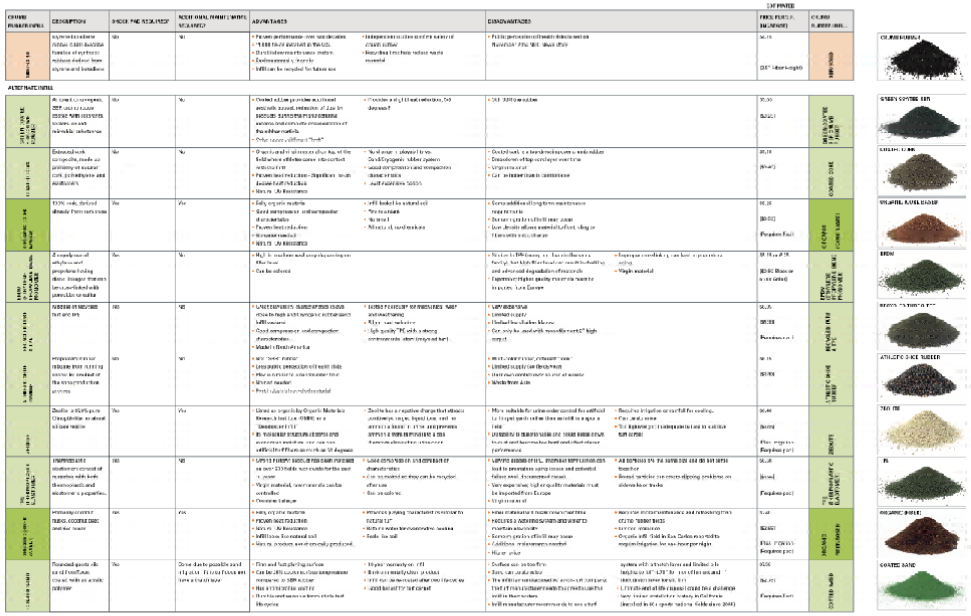
SYNTHETIC TURF COMPONENTS

Synthetic Turf Components



Installed System Example

SYNTHETIC TURF INFILL COMPARISON



Source: This matrix is prepared by Carducci Associates. The information included is based on input from synthetic turf companies and our professional opinion.

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks, Recreation & Waterfront

FIRST MEETING SUMMARY

Key Project Constraints

A. Safety of Users

B. Protection of the Environment

C. Highest Durability

D. Lowest Long Term Maintenance

E. Initial and Long Term Costs

F. Playability

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

Project Goal

FIRST MEETING SUMMARY

Project Constraints

Mitigate Drainage Problems

Address Community Priorities

Accommodate Facility Users

Turf Replacement

On Time & On Budget

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

FIRST MEETING SUMMARY

FUNDING

Joint Powers Agreement

City of Albany
City of Berkeley (Lead)
City of El Cerrito
City of Emeryville
City of Richmond

$15,000 per City per year

Reservation Fees

$75,000 per year

Gilman
Capital Reserve
Account

$1.2 million
(Estimated)
Summer, 2017

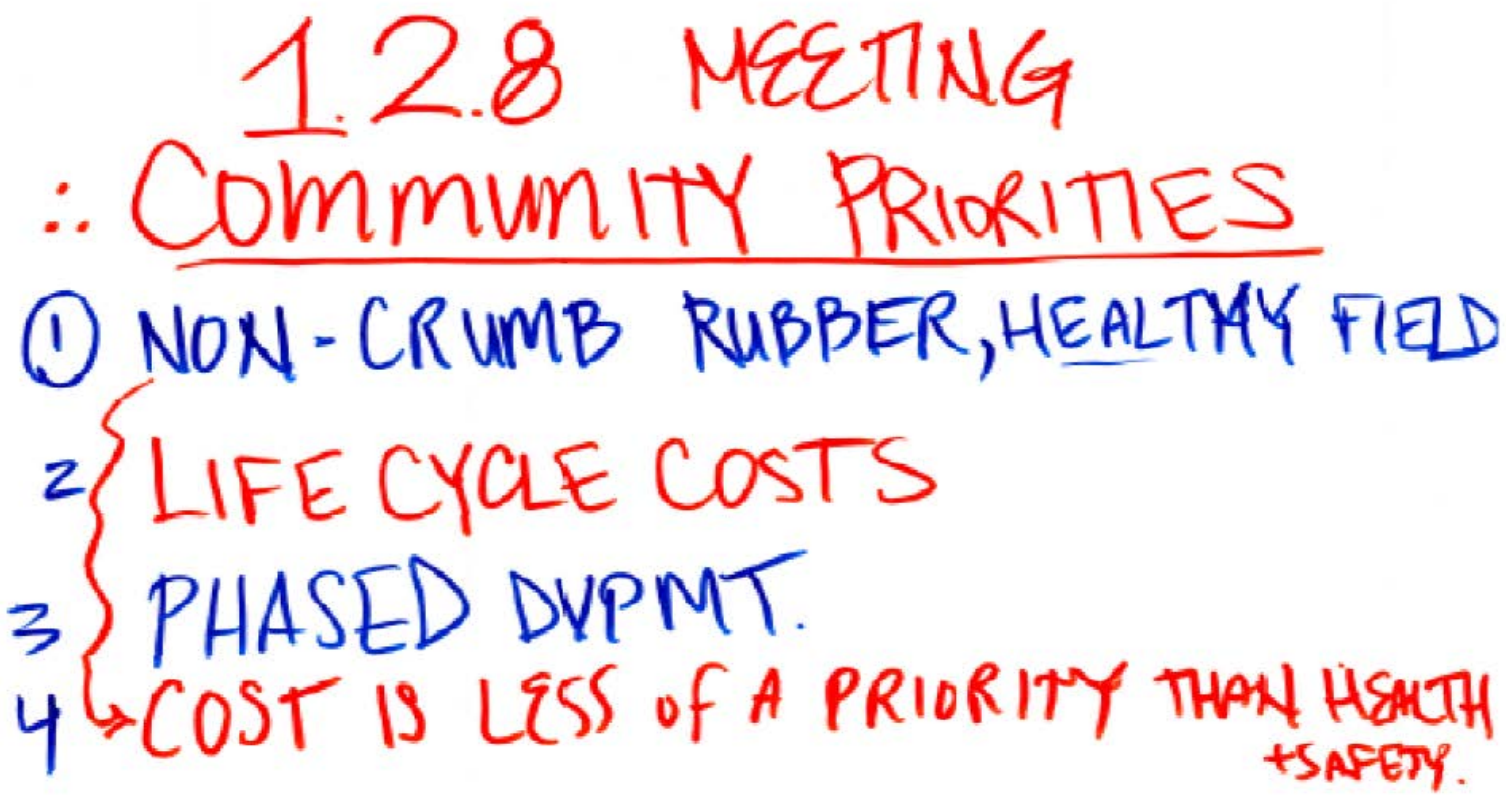
ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

COMMUNITY PRIORITIES

FIRST MEETING SUMMARY



ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

CITY OF BERKELEY

Parks Make Life Better!

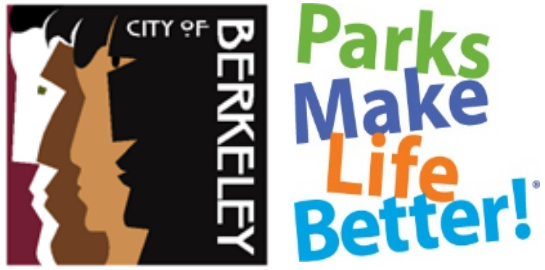
Department of Parks, Recreation & Waterfront

COMMUNITY EMAILS

- CONCERNS REGARDING EXPOSURE TO CRUMB RUBBER
- CONCERNS FOR LAWSUIT POTENTIAL IF CRUMB RUBBER USED
- REQUEST FOR ALTERNATIVE INFILLS INCLUDING CORK-COCONUT

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)



Department of Parks, Recreation & Waterfront

JOINT EXERCISE OF POWERS AGREEMENT

- Albany
- Berkeley
- El Cerrito
- Emeryville
- Richmond

BERKELEY

Berkeley = Lead
(Facilitator)

JPA AGREEMENT LANGUAGE

JPA Cities
- Approve any work over $25K
- Share the Excess Liability over $1M
- All Operating/Maintenance Costs jointly shared

ANY Projects at
Tom Bates Regional
Sports Complex

JPA Cities = Decision Making Body

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

CITY OF BERKELEY

Parks Make Life Better!

Department of Parks,
Recreation & Waterfront

JPA MEETING – March 16, 2017

Berkeley
(Facilitator)

JPA Cities
(Decision Making Body)

ARTIFICAL TURF
REPLACEMENT
PROJECT

- Presented Three Representative Project Options from replacement in-kind to upgraded carpet with cork infill + shock pad

- Discussed costs associated with each of the three representative projects, current industry standard on G-Max rating and the use of shock pad, and long term maintenance and equipment needs for various infill

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

CITY OF BERKELEY

Parks Make Life Better!

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JPA MEETING – March 16, 2017

Berkeley
(Facilitator)

JPA Cities
(Decision Making Body)

ARTIFICAL TURF REPLACEMENT PROJECT

Public Comments

Concerns regarding safety of crumb rubber due to chemical components; concerns that studies lack evidence to indicate a risk due to presence of these chemicals; urged that safest approach is taken; requested that options include cork and coconut blend infill

Concerns regarding longevity and maintenance of alternative infills; user groups who are responsible for larger usage of the facility in support that in-kind replacement is preferred

ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

CITY OF BERKELEY

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Second Meeting (Today)

A. Next Step

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ARTIFICIAL TURF REPLACEMENT

Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks, Recreation & Waterfront

Next Steps

CONSTRUCTION PERIOD: December, 2017 to February, 2018

A. Gather Additional Community Feedback

B. City of Berkeley seeks decision from JPA Cities for a preferred project option

C. **JPA Meeting** to discuss their decisions
Meeting scheduled for **Thursday, April 27 at 5 p.m.**,
Redwood Conference Room, Civic Center Building

D. Berkeley City Council to Award Construction Contract
Tentatively, **Tuesday, June 27th, 2017**

ARTIFICIAL TURF REPLACEMENT

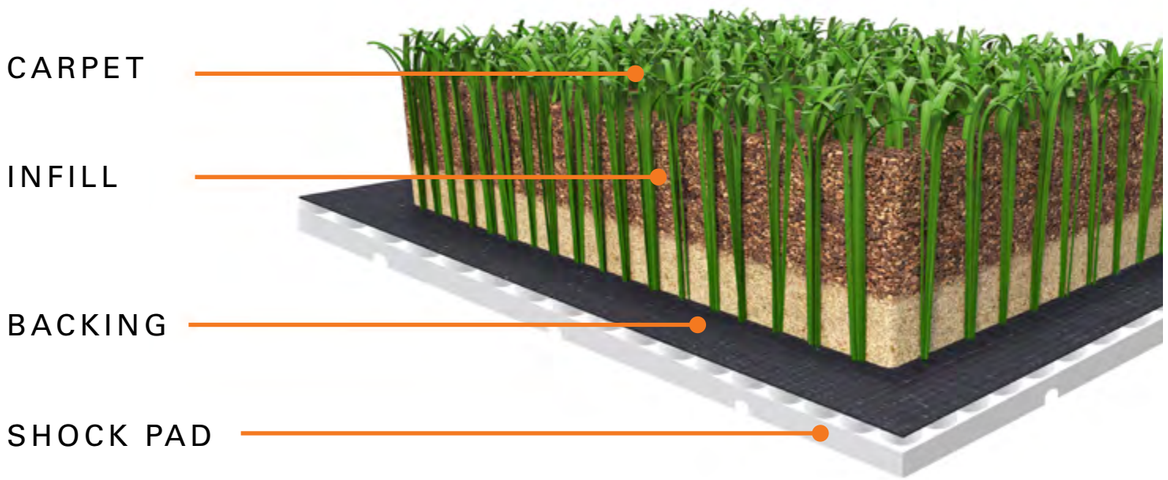
Tom Bates Regional Sports Complex (Gilman Fields)

Department of Parks,
Recreation & Waterfront

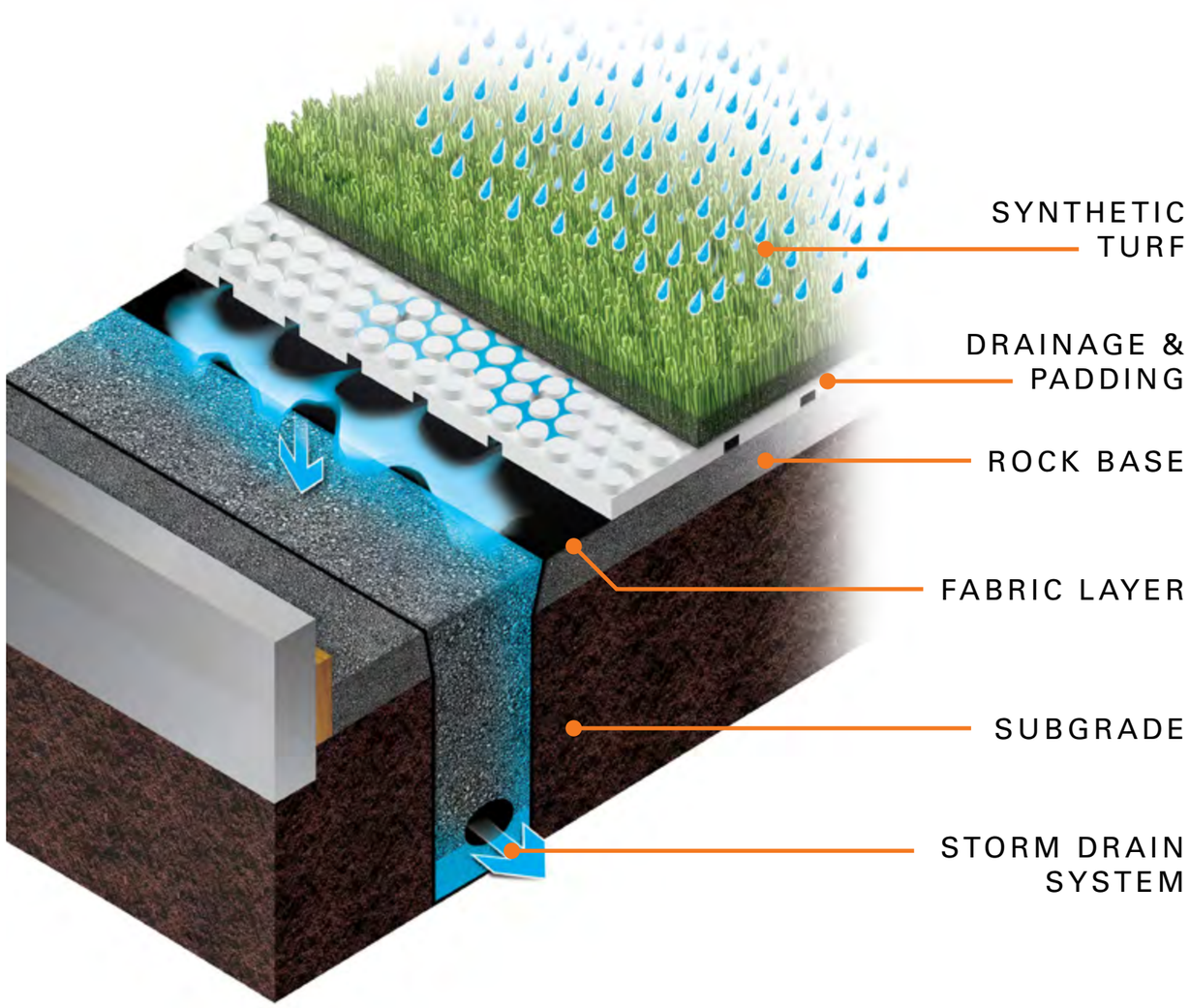
SITE


GILMAN ST
BIO-BASIN
NORTH FIELD
SOUTH FIELD
W FRONTAGE RD
SAN FRANCISCO BAY TRAIL
EASTSHORE FWY (I-80; I-580)
EASTSHORE HIGHWAY

SYNTHETIC TURF COMPONENTS



SYNTHETIC TURF COMPONENTS



INSTALLED SYSTEM EXAMPLE

SELECTION CRITERIA

- Impact Safety (g-max)
- Human Risk Assessment
- Durability
- Playability
- Installation Cost
- Life Cycle Cost
- Warranty

SELECTION CRITERIA

- Impact Safety (g-max)
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- American Society for Testing Materials (ASTM) F1936: 200 g-max
- Sports Turf Industry Recommendation is 165 g-max
- Roughly 31% of concussions in high school soccer players caused by head-to-ground impacts (Consumer Product Safety Commission (CPSC) National Electronic Injury Surveillance System (NEISS) data)
- Approx 3.5% of high school soccer players reported concussions. (CPSC/NEISS)

SHOCK PAD

Recommended Safety System:

"The field is the safety equipment"

- G-max range for natural turf has been measured at 78-115 g's (Thoms, 2015)
- ASTM recommends closing a field at 200g's (ASTM F1936)
- Turf Industry Guideline: less than 165g's (Guidelines for Synthetic Turf Performance ©2011)
- Crumb fields over permeable stone bases found to exceed 165g's
- Organic infill options require a pad; a pad is strongly recommended for crumb rubber fields to maintain low g-max
- Shock pad provides warranty average g-max of 135g's for sixteen years
- Shock pad recommended has been tested and is chemically inert
- Shock pad emulates playability and resiliency closer to that of a natural turf field

SHOCK PADS IN NORTHERN CALIFORNIA

CATEGORY	FIELD NAME	LOCATION	SPORT
Parks & Recreation	Shoreline Park	Mountain View	Soccer
	Beach Chalet Fields	San Francisco	
	Red Morton Park*	Redwood City	
	Depot Park*	Santa Cruz	
	Bernal Park	Pleasanton	
	Mayfield Park	Palo Alto	
	Mather Sports Park	Sacramento	
	Granite Regional Park*	Sacramento	
	Mahany Park	Roseville	
	Foster City Parks	Foster City	
	Contra Loma Park	Antioch	
	San Francisco Parks*	San Francisco	
	Fallon Sports Park	Dublin	
College / Professional	San Francisco 49ers*	Santa Clara	Football
	University California Davis	Davis	Multisport
	Sacramento State University	Sacramento	Football
	Cal State University Maritime	Vallejo	Rugby/ Soccer

*Turf field replacements adding a pad

CATEGORY	FIELD NAME	LOCATION	SPORT
College / Professional (Cont'd)	University San Francisco*	San Francisco	Soccer/ Baseball
	Stanford University*	Palo Alto	Soccer/ Baseball
	San Joaquin Delta	Stockton	Soccer
	Lake Tahoe Community College*	South Lake Tahoe	Soccer
	Sierra College*	Rocklin	Football
	Santa Clara Univesrity	Santa Clara	Soccer
	Chabot College	Hayward	Football
	Evergreen Valley College	San Jose	Multisport
	Los Rios College District	Sacramento	Multi-Sport
	Santa Rosa Jr College	Santa Rosa	Football
High Schools	Jesuit High School	Sacramento	Football
	Gilroy High School	Gilroy	Football/ Soccer
	Twin Rivers Unified School District	Sacramento	Multisport
	San Mateo Unified School District*	San Mateo	Multisport
	Lodi Unified School Disrict	Lodi	Football/ Soccer

SHOCK PADS IN NORTHERN CALIFORNIA

CATEGORY	FIELD NAME	LOCATION	SPORT
High Schools (Cont'd)	Napa Valley Unified School District	Napa	Football/ Soccer
	Bellarmine High School*	San Jose	Football/ Soccer
	Oakland Unified School District	Oakland	Multisport
	Santa Cruz High School	Santa Cruz	Football/ Soccer
	Soquel High School	Soquel	Football/ Soccer
	Cabrillo Unified School District*	Half Moon Bay	Multisport
	Sacramento City Unified School District	Sacramento	Football/ Soccer
	Jefferson Unified School District	Daly City	Football/ Soccer
	Hayward Unified School District	Hayward	Football/ Soccer
	San Francisco Public Schools	San Francisco	Multisport
	Roseville Unified High School District	Roseville	Football/ Soccer
	El Dorado Unified High School District	El Dorado	Football/ Soccer

CATEGORY	FIELD NAME	LOCATION	SPORT
Middle / Elementary Schools	Dover Elementary	San Francisco	Multisport
	Branson School	San Rafael	Soccer
	Miller Creek Middle School	San Rafael	Soccer
	Hillview Middle Schools	Menlo Park	Multisport
	Branciforte Middle School	Santa Cruz	Soccer

*Turf field replacements adding a pad

SELECTION CRITERIA

- Impact Safety (g-max)
- Human Risk Assessment
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- Millennium Consulting Associates Report

PROTECTION OF HUMAN HEALTH - OVERVIEW

Definitions of safe" and "acceptable risk".

What chemicals should we be concerned about?

What is a Human Health Risk Assessment?

What are the risks of playing soccer on crumb rubber infill?

What are the risks of playing soccer on other infills?

What are the relative risks compared to the baseline risk of playing on natural grass/dirt?

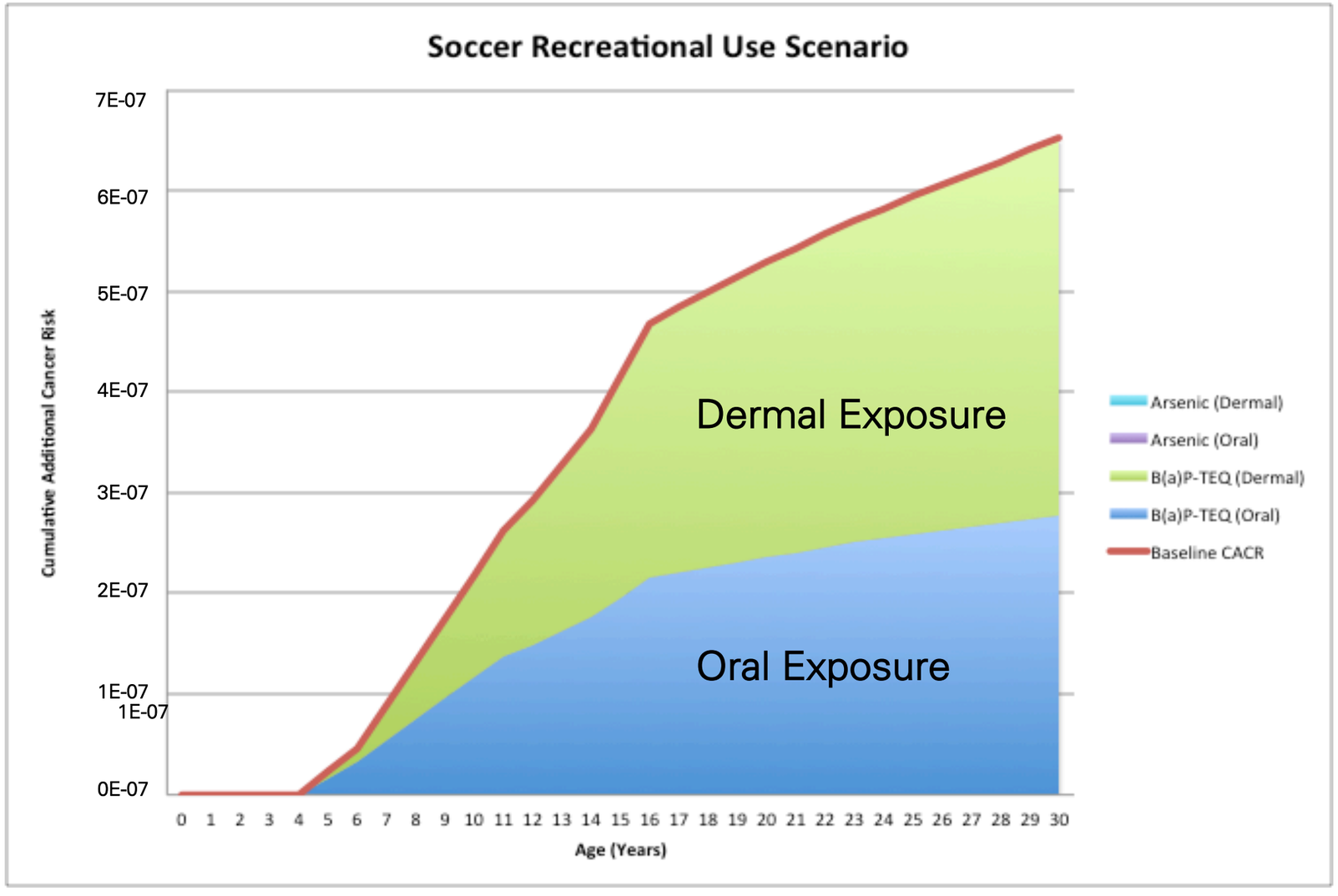
PROTECTION OF HUMAN HEALTH - HHRA

Exposure Factors

- Play from ages 4 to 30.
- Age-dependent exposure using OEHHA survey data.
- Soil ingestion and adherence normalized to time on field.
- Soil adherence factors and body surface areas from US EPA studies developed for soccer players.
- Oral and dermal RAFs developed from best available data.

Risk Assessment Result

ACR = 7E-07 (*de minimis* risk)



PROTECTION OF HUMAN HEALTH - HHRA

Fiber	Infill	Pad	Infill		Additional Cancer Risk		
			B(a)P-TEQ (mg/kg)	Arsenic (mg/kg)	B(a)P-TEQ (mg/kg)	Arsenic (mg/kg)	TOTAL ACR
Monofilament	Crumb Rubber + Sand	No	3.3	0.39	7.0E-07	1.5E-08	7.2E-07
Blended	Crumb Rubber + Sand	Yes	3.3	0.39	7.0E-07	1.5E-08	7.2E-07
Blended	Cork + Sand	Yes	0.03	0.25	6.4E-09	9.9E-09	1.6E-08
Blended	Coconut/Cork + Sand	Yes	0.03	0.25	6.4E-09	9.9E-09	1.6E-08

All four conceptual solutions present a *de minimis* risk to human health.

PROTECTION OF HUMAN HEALTH - HHRA

Fiber	Infill	Pad	Infill		Additional Cancer Risk		
			B(a)P-TEQ (mg/kg)	Arsenic (mg/kg)	B(a)P-TEQ (mg/kg)	Arsenic (mg/kg)	TOTAL ACR
-	Chinese Rubber + Sand	No	391	0.25	8.30E-05	9.90E-09	8.30E-05
Grass	Springfield, MA	No	4.5	9.2	9.60E-07	3.60E-07	1.30E-06
Grass	Boston, MA	No	4.6	5.6	9.80E-07	2.20E-07	1.20E-06
Grass	Chicago, IL	No	2.1	16	4.40E-07	6.20E-07	1.10E-06
Grass	Chattanooga, TN	No	3.0	5.1	6.50E-07	2.00E-07	8.50E-07
Monofilament	Crumb Rubber + Sand	No	3.3	0.39	7.0E-07	1.5E-08	7.2E-07
Blended	Crumb Rubber + Sand	Yes	3.3	0.39	7.0E-07	1.5E-08	7.2E-07
Grass	Terre Haute, IN	No	0.086	8.7	1.8E-08	3.4E-07	3.6E-07
Grass	Seattle, WA	No	0.14	5.6	3.0E-08	2.2E-07	2.3E-07
Blended	Cork + Sand	Yes	0.03	0.25	6.4E-09	9.9E-09	1.6E-08
Blended	Coconut/Cork + Sand	Yes	0.02	0.25	4.3E-09	9.9E-09	1.4E-08

The risk from exposure to domestic crumb rubber is similar to that of dirt.
The amount of PAHs in recycled rubber is changing due to Chinese production.

PROTECTION OF GROUNDWATER

Anti-degradation regulations.

What chemicals should we be concerned about?

Fate and transport of dissolved metals and organic compounds.

Site-specific drainage design.

Degradation of groundwater as a source of municipal drinking water is not an issue at the Tom Bates Regional Sports Complex.

PROTECTION OF AQUATIC HABITAT

Leaching of chemicals from synthetic turf to groundwater or storm water.

Is this a concern?

What are the chemicals of concern?

- Heavy Metals (Zinc)
- SVOCs
- Pesticides

What can be done to mitigate the risk to aquatic habitat?

PROTECTION OF AQUATIC HABITAT

Fiber	Infill	Pad	Chemicals of Concern	Without Bioswale	With Bioswale
Monofilament	Crumb Rubber + Sand	No	Zinc, SVOCs	**NO**	**YES**
Blended	Crumb Rubber + Sand	Yes	Zinc, SVOCs	**NO**	**YES**
Blended	Cork + Sand	Yes	None	**YES**	**YES**
Blended	Coconut/Cork + Sand	Yes	Arsenic, SVOCs	**NO**	**YES**

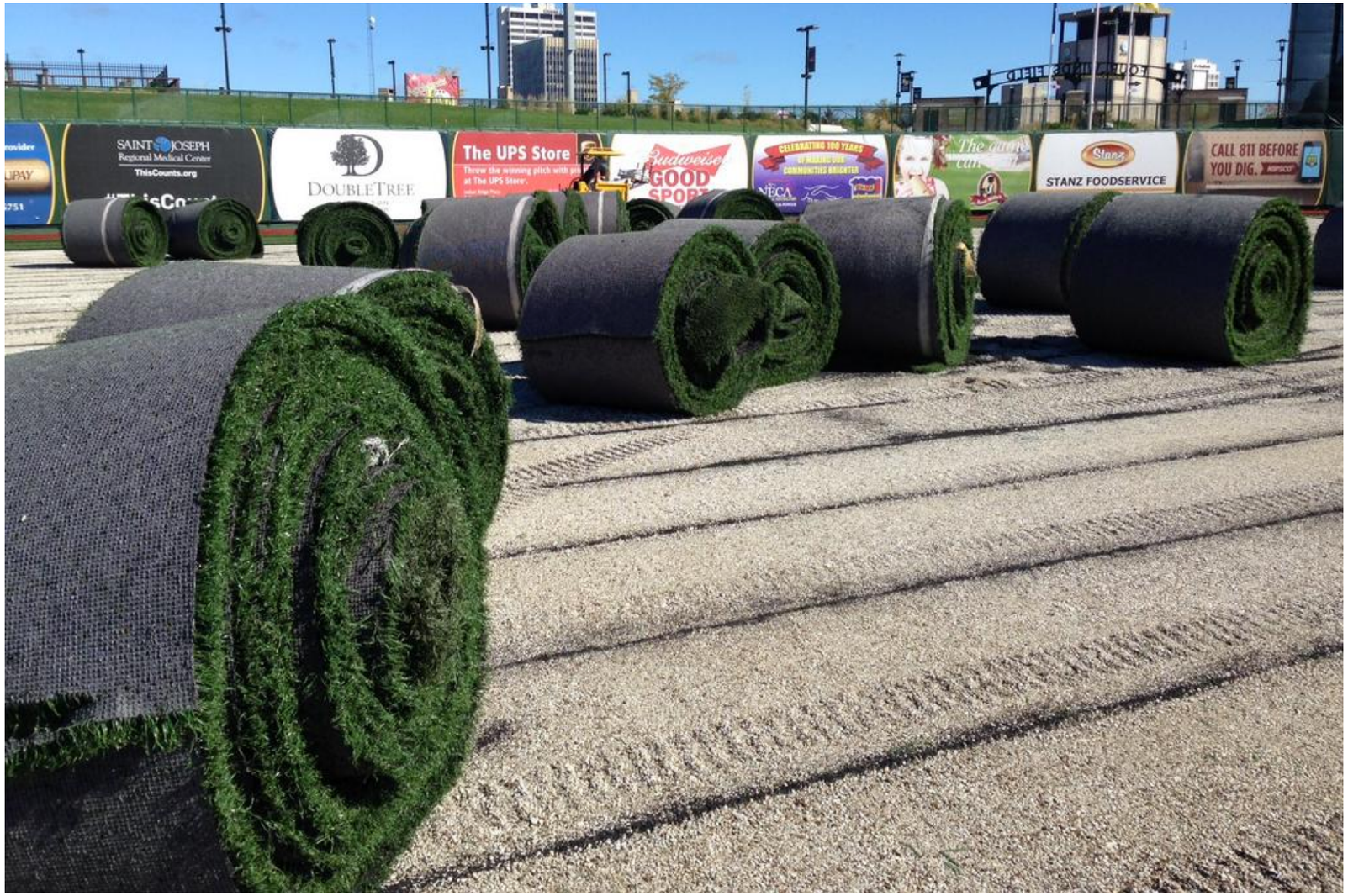
All four conceptual solutions are protective of aquatic habitat at the Tom Bates Regional Sports Complex due to the existing bioswale.

END OF LIFE CONCERNS

What happens to turf at end of life?

What are the options for recycling?

What should we be doing about this?



END OF LIFE CONCERNS

Fiber	Infill	Pad	Chemicals of Concern	Recycling Options	Cost
Monofilament	Crumb Rubber + Sand	No	Zinc, SVOCs	Construction materials	High
Blended	Crumb Rubber + Sand	Yes	Zinc, SVOCs	Construction materials	High
Blended	Cork + Sand	Yes	None	Construction materials, reuse, compost	Low
Blended	Coconut/Cork + Sand	Yes	Arsenic, SVOCs	Construction materials, reuse, compost	Low

Recycling options have improved in the last few years.
Organic+sand infills are far less expensive for reuse/recycling.

SELECTION CRITERIA

- Impact Safety (g-max)
- Human Risk Assessment
- Durability
- Playability
- Installation Cost
- Life Cycle Cost
- Warranty

- Qualitative Terms
- Durability: fiber quality, strength, longevity
- All products under consideration have the same length of warranty
- Playability: ball roll, ball rebound, player foot bite, foot slip, turning characteristics, skin abrasion
- Blended Fiber product is preferred by User Groups for optimal play conditions

SELECTION CRITERIA

- Impact Safety (g-max)
- Human Risk Assessment
- Durability
- Playability
- Installation Cost
- Life Cycle Cost
- Warranty

- Apples-to-apples installation costs (carpet, infill, pad, drainage, etc)
- Disposal costs are equivalent across all infills
- Rubber infill: environmental study costs included
- Higher maintenance costs for organic infills
- Water use and costs for coconut are significantly more than cork
- Turf: 8-year warranty
  Infill: 8- to10-year warranty
  Shock Pad: 16-year warranty

DESIGN OPTIONS UNDER CONSIDERATION

Following JPA Meeting March 16, 2017

Infill

Note: All infills include sand ballast

Cork

- Organic
- 8-10 year warranty
- Virtually no chemical load (lowest option)
- Minimal additional cost (compared to crumb)
- Requires a shock pad
- More maintenance than crumb

Cork & Coconut Blend

- Organic
- 8-10 year warranty
- High heavy metals observed (poor source control)
- Significantly higher cost relative to cork
- Requires irrigation to maintain safety
- Requires a shock pad
- More maintenance than cork

Crumb Rubber

- Programmed Replacement budgeted option
- Chemical load “similar to soil”
- 8 year warranty
- Shock pad is strongly recommended

Carpet

Blended Fiber

- Superior playability
- 8 year warranty
- Approximately 22% more expensive than monofilament
- Preferred replacement option (per User Groups)

Monofilament Fiber

- Durable, affordable fiber
- 8 year warranty
- Programmed Replacement budgeted option

SYNTHETIC TURF SYSTEM COMPARISON

Optimized Options

- All optimized options include costs for a shock pad to meet modern best practices for safety.
- Coconut option includes an irrigation system and water use costs.
- Blended fiber typically, for apples-to-apples comparison.

Programmed Replacement Option

- Does not incorporate the current community process.
- Is based on best practices at the time of the field's original installation, not current best practices.
- Excludes a shock pad.

All Options

Turf, infill, subgrade drainage improvements at the south field, nailer boards, construction testing, permits, contingency costs, design and construction support services, construction management and inspection services, and manufacturer-provided 2x per year maintenance program for the life of the warranty. Rubber infill costs assume a CEQA initial study is required.

Department of Parks, Recreation and Waterfront

Tom Bates Regional Sports Complex

NEXT STEPS

- JPA Cities digest information
- April 27th JPA meeting selects infill and carpet

Send Comments and Input:

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