



VEC Presentation to Verona Parks and Recreation Committee: June 2026

1: Environmental Perspective- The best field and playing experience for Verona's athletes: Natural Grass

2: Budgetary overview- Grass vs. Turf

3: Stormwater Requirements – Lynn Drive Water Well

4: Conclusions

Boswell Estimate (not sports field engineers)
No grass field experts have been given an opportunity to weigh in / bid on this project

GRASS CONVERSION ESTIMATE	taken	from	Boswell	Estimate		
Description	Unit	Plan Quantity	If & Where Directed	Total Quantity	Unit Cost	Total Amount
Site Preparation / Clearing Site	L.S.	1		1	\$ 50,000.00	\$ 50,000.00
Soil Erosion and Sediment Control Meas.	L.S.	1		1	\$ 15,000.00	\$ 15,000.00
Synthetic Turf Removal & Disposal	S.F.	95,600		95,600	\$ 0.80	\$ 76,480.00
Excavation, Unclassified	C.Y.	3,540		3,540	\$ 60.00	\$ 212,400.00
Drainage Stone Disposal (Save for future use)	C.Y.	3,540		3,540	\$ 55.00	\$ 194,700.00
Concrete Curb Removal & Disposal	L.F.	1,244		1,244	\$ 25.00	\$ 31,100.00
Borrow Topsoil	C.Y.	4,425		4,425	\$ 70.00	\$ 309,750.00
Irrigation System	L.S.	1		1	\$ 120,000.00	\$ 120,000.00
Sodding	S.Y.	10,625		10,625	\$ 15.00	\$ 159,375.00
Goal Post Removal & Reinstallation	L.S.	1		1	\$ 25,000.00	\$ 25,000.00
Final Cleanup	L.S.	1		1	\$ 20,000.00	\$ 20,000.00
Suggest utilizing stone on other upcoming Verona projects eliminating 195K from budget line					Subtotal	\$ 1,213,805.00
					10% Contingency	\$ 121,380.50
					TOTAL COST	\$ 1,335,185.50

Costs not developed for Grass Field Syst

Routine Maintenance/Field Manager

Water usage

Subtotal	\$ 1,213,805.00
(less stone fees)	\$ (194,700.00)
New Subtotal	\$ 1,019,105.00
10% Contingency	\$ 101,911.00
TOTAL COST	\$ 1,121,016.00

Addressing the Cost Estimates (provided by the Township) Synthetic Turf

- Remove/recycle the existing synthetic turf system with infill
- Laser grade the existing drainage base to ensure proper planarity standards are achieved
- Furnish and install 100 oz. TenCate Pivot with 15mm Max Flo+ shock pad and Pivot Cool cooling additive

Lump Sum **\$836,500.00**

Add alternate for finishing stone(if needed) **\$60.55 per ton**
647 tons maximum

Install 100 Pivot/Pad/Cool Infill	S.F.	95,600	no details			\$ 836,500.00	(includes removal -- and landfill dumping of old turf/infill on the field)				
Finishing Stone 647 tons max (fine)	tons			647	\$ 60.55	\$ 39,175.85	(finishing stone layer)				

\$875,676.00 (no breakdown or specifics given per sq ft.)
--Removal/Disposal current turf *(77K in grass estimate)
--Rebalancing obsolete stormwater drainage piping
--Regrading /adding new crushed stone
--Installation of new padding / synth. turf
--Adding cooling additive

MISSING COSTS FOR PIVOT TURF

Required	SOIL EROSION AND SEDIMENT CONTROL MEAS.	L.S.	1		1	\$ 15,000.00	\$15,000.00
	Install 100 Pivot/Pad/Cool Infill	S.F.	95,600	no details			\$ 836,600.00
	Finishing Stone 647 tons max (fine)	tons			647	\$ 60.55	\$ 39,175.85
Required	STORMWATER MANAGEMENT CONTROLS						???
Required	CLEANUP STORM DRAINS PROTECT STORM DRAINS						???
Not included in costs	END OF USEFUL REMOVAL/"RECYCLING" FEES	S.F.	95,600				???

Other Costs not developed for Pivot System

Yearly savings for future turf replacement

Damage/repair /maintenance costs (Wonky Warranty?)

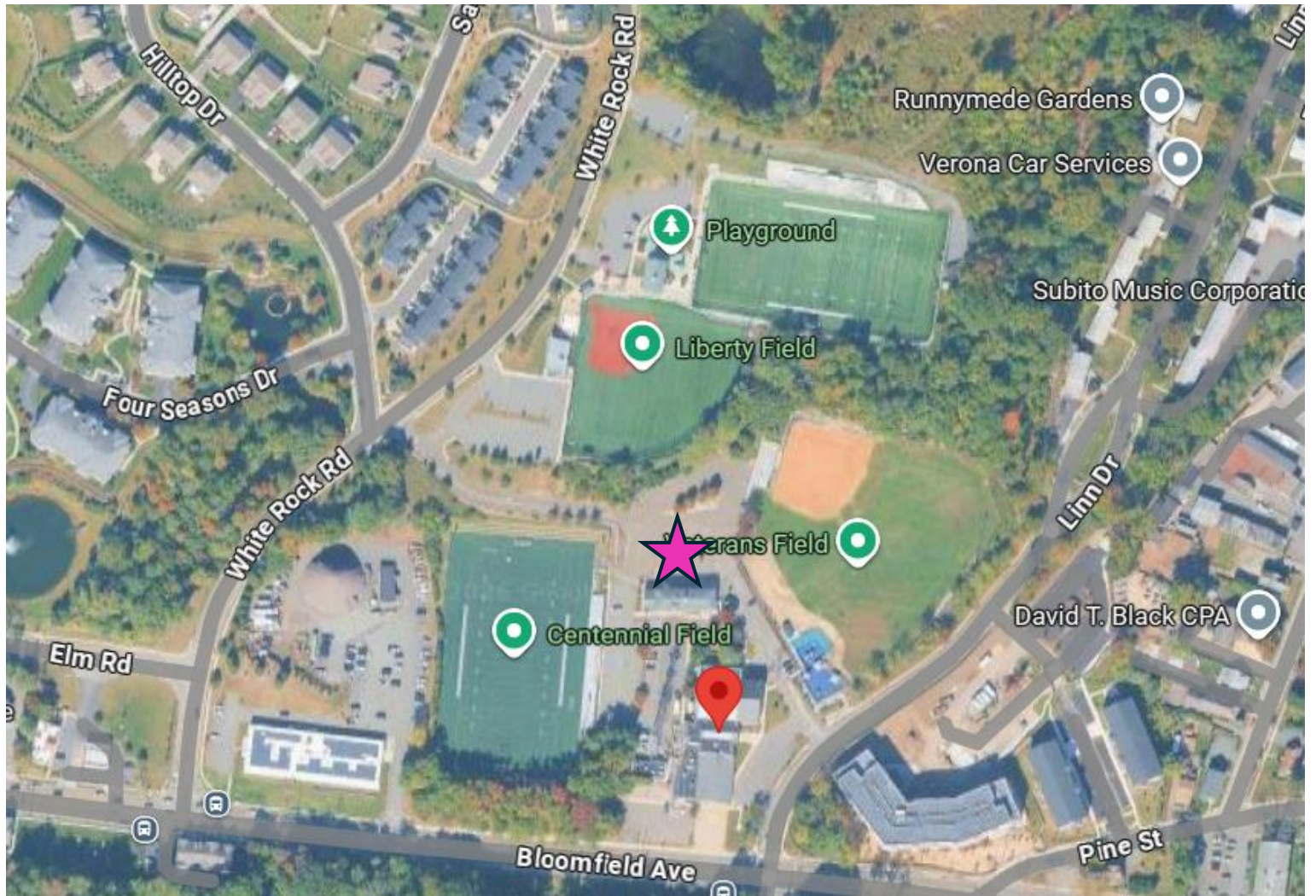
Any potential industrial blower equipment (15-18K)/Grooming brush equipment

Pivot Cool Infill replenishment (Aragonite)- Calcium carbonate- runoff makes water harder and can impact our well machinery.

Field Turf price .55/f² = >\$52K

Verona's Field Location

- Centennial, Liberty, and Freedom Fields were all installed (2007, 2015, & 2016) prior to NJ Stormwater Management Rule Updates (2021 and 2024).
- This is important because these fields were constructed **without** current SWM protections.
- They do not capture, hold (on site), nor treat stormwater runoff or treat waters that may infiltrate through the field. Current underdrains are open systems which simply allow untreated waters to discharge into storm drains, which leads into our local water ways and into permeable areas, which flows into aquifers.



★ Lynn
Drive
Well

Linn Drive Well Station

- Well Design Capacity - 275 gallons per minute (GPM)
- Feeds high service area of system
- Existing treatment and booster station from low service area located inside Community Center
- Treatment includes sodium hypochlorite & pipe loop for disinfection and corrosion inhibitor



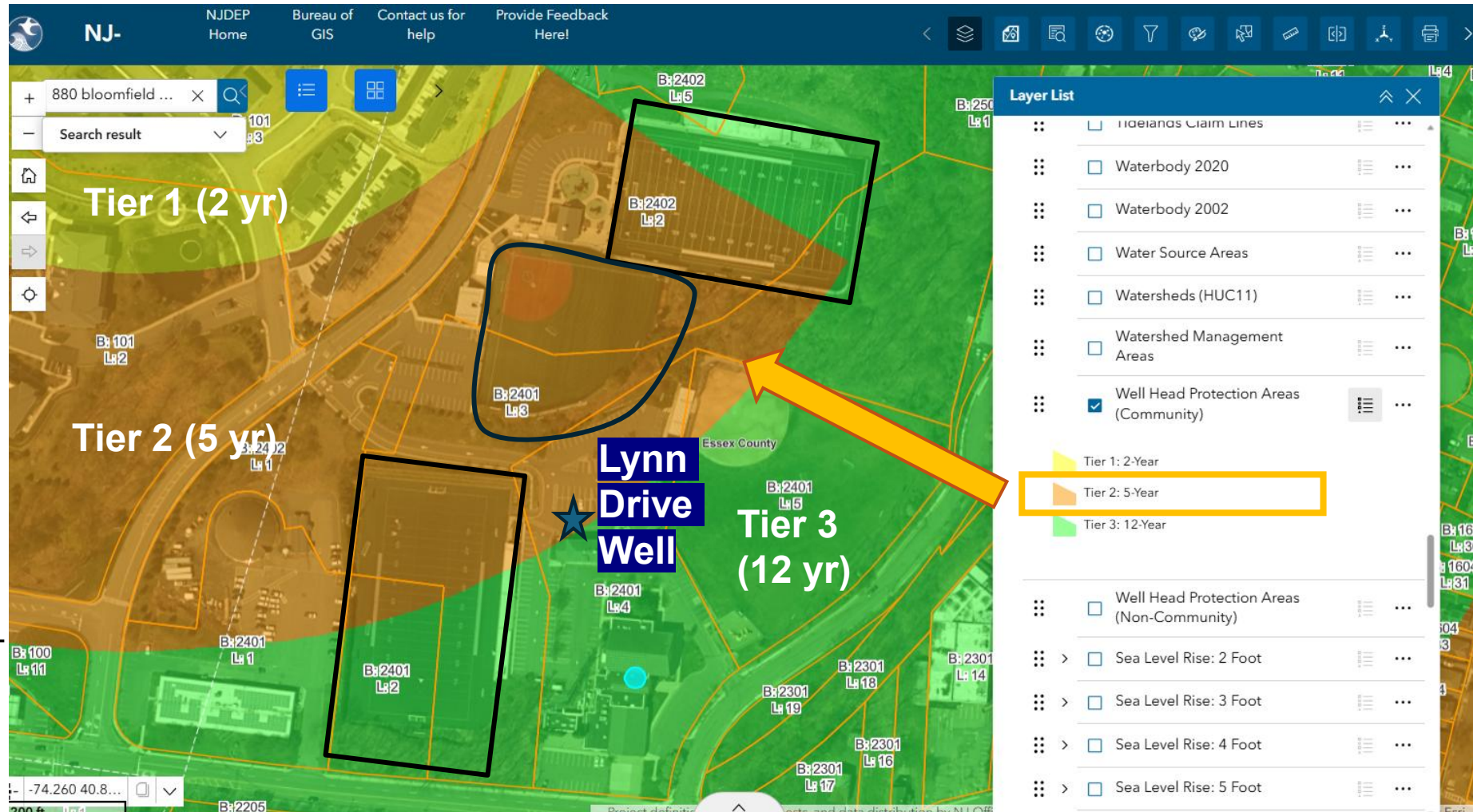
All three fields surround our Lynn Drive Water Well and **exist in a Tier 2 Wellhead Protection Area (WPA)**

A Wellhead Protection Area:

1) Delineates the surface and subsurface land area surrounding a municipal / public drinking water well that contributes groundwater to that well as well as where contaminants are most likely to travel to reach it.

2) Protects public drinking water supplies from contamination by identifying these exact areas of land so communities can manage potential pollutants and enforce land-use regulations.

3) Broken into time-tiered zones (such as 2-year, 5-year, and 12-year travel limits). This helps water managers understand exactly how long they have to intercept a spill or mitigate a threat before it reaches the tap.



Source: NJDEP GIS mapping

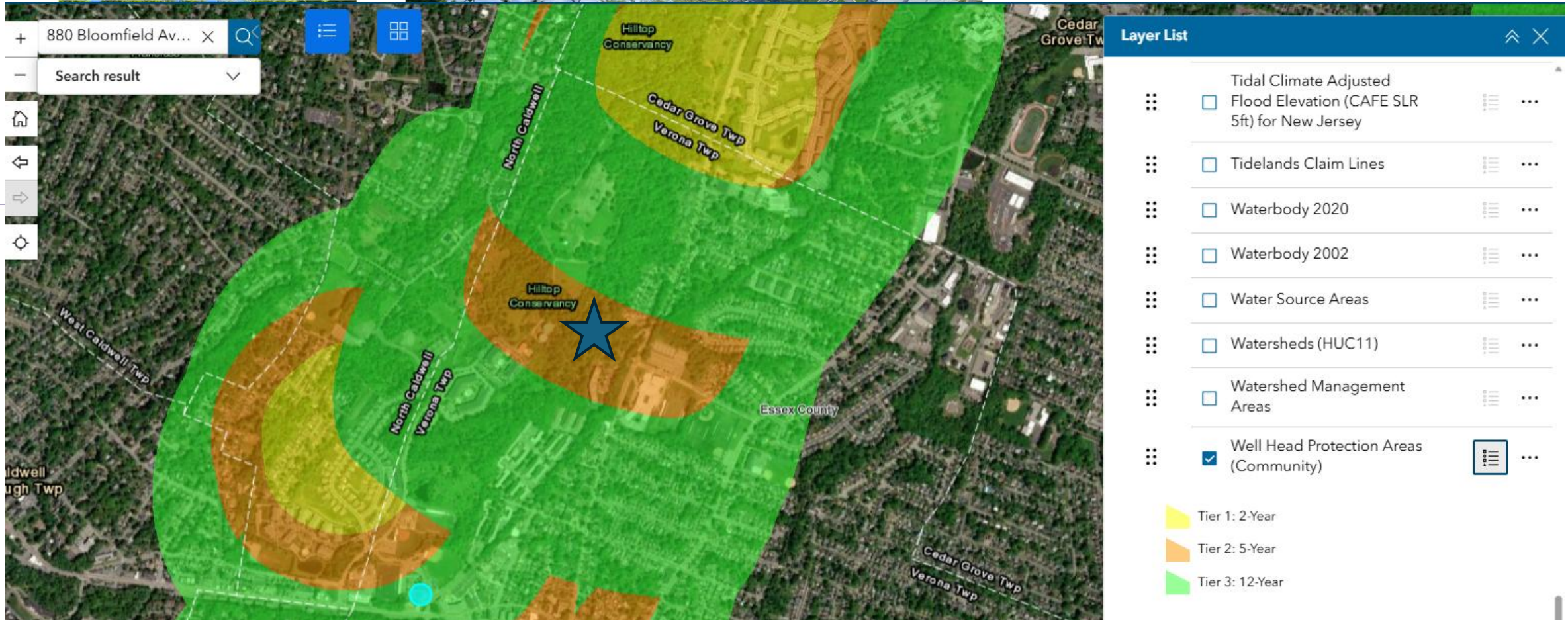
Waters from Tier 1 and Tier 2 flow towards Verona's Lynn Drive Well both above and below ground.

Fairview Ave Well Station

- Well Design Capacity - 500 gallons per minute (GPM)
- Feeds low service area of water system
- Existing treatment includes, air stripper, sodium hypochlorite & clearwell for disinfection and corrosion inhibitor



Fairview Ave Tier 2 Wellhead Protection Area



NJ and Verona Stormwater Definitions

From Verona Chapter 150- Article 25 Stormwater Control Ordinance and NJAC 7:8

Applicability: Stormwater Rule are applicable to all **Major Developments**, minor developments, and **Redevelopment**. Additionally, rules are applicable to projects undertaken by the State, or any political subdivision of the State (Township of Verona).

✓ **Major Development:** defined as

- 1) **Disturbance of ½ acre or more of land (21,780 ft²)** and or, (The space is **over 2 acres @ 95,600 ft²**)
- 2) Creation of 5,000 ft² or more of any regulated impervious surface

✓ **Disturbance:** is defined as

the placement or **reconstruction of impervious surface** or motor vehicle surface, or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation

✓ **Impervious Surface** is defined as:

A surface that has been covered with a layer of material so that it is highly resistant to infiltration by water. Impervious surfaces include and are not limited to roofs and asphalt, concrete, and stone roads, parking lots, drives, sidewalks, porous asphalt or concrete systems, **synthetic turf fields**, pools, and patios.

✓ **Redevelopment:** defined as:

An activity that results in the creation, addition, or **replacement of impervious surface area on an already developed site**. Redevelopment includes: the expansion of a building footprint; addition or replacement of a structure or a portion of a structure regardless of footprint; and replacement of impervious surface area that is not part of a routine maintenance activity. If a project is considered to be a redevelopment project, **all new impervious cover, whether created by adding to or replacing impervious cover that was in existence before the redevelopment occurs, shall be considered in calculating the requirements for stormwater management**.

NJ and Verona Stormwater Definitions

Replacing artificial turf on Centennial Field is both a major development and a redevelopment project.

Environmentally Critical Areas: areas or features which are of significant environmental value, including but not limited to: stream corridors, natural heritage priority sites, habitats of endangered or threatened species, large areas of contiguous open space or upland forest, steep slopes, and wellhead protection and groundwater recharge areas.

What do the Stormwater Rules Require?

- 1) Quantity** Control of Runoff for the for current and projected (year 2100) 2-, 10-, and 100-year storms (Avg storms are developed by the NOAA- National Oceanic and Atmospheric Administration).
 - 2) Quality** Control of Runoff for reduction of Total Suspended Solids (TSS) .
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What are total suspended solids (TSS)?

Total Suspended Solids are solid particles or particulate matter suspended in water that are too large to pass through a standard water filter and can get caught, block, or even damage filters.

They can include silt, clay, plant matter, algae, **industrial waste**.

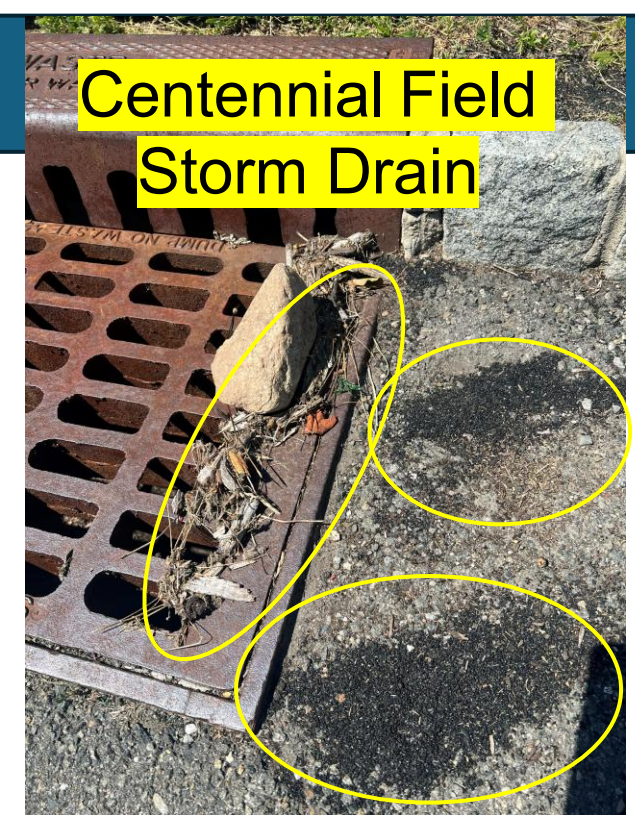
*High TSS reduces the effectiveness of water disinfectants because microorganisms can hide within the solid particles

1) **Turf Shedding / Microplastics/ Crumb Rubber** are forms of total suspended solids formed by:

- a) **UV Radiation**- sunlight degrades the turf.
- b) **Mechanical Stress**/Foot Traffic/Wear and Tear/Grooming/Brushing/Blower Usage, etc.
- c) **Weathering processes**: snow, rain, temperature fluctuations all accelerate breakdown.

2) **How Microplastic Migrates:**

- a) **Stormwater**: Runs off into Verona's storm sewers, soils, permeable surfaces, our waterways, green spaces, and our aquifersdrinking well system.
- b) **Carried by air and wind**; athletes breathe microplastics into their lungs.



PFAS

PFAS is linked to significant health risks, including:

- kidney and testicular, breast, and ovarian cancers,
- hormone disruption,
- decreased fertility,
- increased cholesterol,
- lower infant birth weights,
- reduced immunity,
- altered liver enzymes.

- 1) Unlike drinking water, synthetic turf does not have an accepted regulatory PFAS-safe limit or regulated testing standards.
- 2) There are nearly 15,000 PFAS chemicals, but Turf companies typically test for fewer than a couple dozen of those chemicals. Even slight leaching of PFAs can trigger regulatory /Safety violations for our drinking water.
- 3) If you don't test for it, you probably won't find it. This is how Pivot can advertise that their turf contains "no intentional" and or "no added" PFAS / FT stated that their product has "no detectable" PFAS.
- 4) Pivot's measuring stick is that it meets CA proposed Assembly law: <20 parts per million (ppm) which is a very low bar.
- 5) NJ Drinking water limits for PFAs are measured in parts per trillion (ppt) (not million and not billion), and limits at <14 ppt (<0.000014 ppm).

OTHER LEACHED CHEMICALS

- **Phthalates**- (From Polyurethane adherent to backing) recognized as endocrine disruptors
- **Heavy metals** used for coloration include lead, cadmium, chromium, and zinc
- **Organic Chemical** leaching from microplastics, including **polycyclic aromatic hydrocarbons (PAH's)**
- **Volatile Organic Compounds (VOC's) Also from the polyurethane**
- **Lead**: Pivot advertised as under <100 pp million when our water requirements is <15 pp billion
- ALL OF THIS EFFECTS OUR HEALTH AND THE QUALITY OF DRINKING WATER.
After spending millions of public funds to upgrade wells, we're proposing to cover 2 acres with turf containing the same contaminants.

UNMET REQUIREMENTS

Groundwater from this Tier 2 Wellhead protection location may reach the potable well within 5 years. This makes the site a high-priority area for stormwater control, contamination prevention, and construction review.

- 1) It should be designed to contain, treat, and filter the water before it can be discharged from the fields.
- 2) It should have a **closed drainage system- with basins to capture sheet flow from the surface** as well as entirely new closed piping infrastructure to provide for treatment of all infiltrated water BEFORE it can be discharged off site: **costly and not included in the pricing for turf.**
- 3) Township should price these requirements into the turf price and adhere to the rules to ensure safe drinking water.

Grass Fertilization without Water Degradation

Tuckahoe Farms

We require a **Certified Sports Field Manager** to oversee all applications and grass care at our Grass Fields:

- **Best Management Practices and NJ State Laws**
- Careful storage of materials (preferably off site)
- Slow-Release nitrogen which prevents excess from running off / Matches growth rate of grass (Fertilizer can last weeks to several month)
- No applications prior to heavy rainstorms /Light watering after application to ensure root infiltration
- Avoidance of buffer areas where no applications may occur
- Regular aeration so soils will better receive both water and applications
- Quality compost applications to be woven into the process

Tuckahoe Turf Farms

(Hammington NJ) provides an example of NJ grass fields that endure constant, heavy-duty use, and succeed in providing unfettered play-time.

Fields:

--installed by certified sports field professionals, with proper drainage.

--Managed by certified person(s).

Benefits of Properly managed Natural Grass Fields

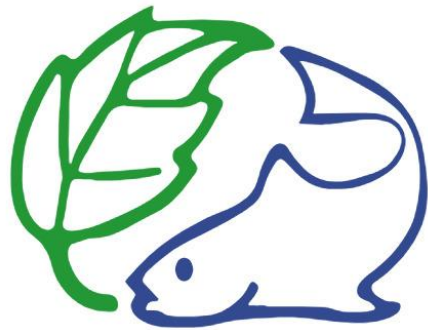


Downsides:

- Water Usage for Irrigation
- Mud stains

- Consistent, steady playtime
- Less Serious /Fewer Injuries
- Far Cooler Playing Surface (<100°)
- More Sure Footing/Better Traction
- Reduced risks for our young athletes
- No End-of-Life Disposal Costs
- No Continual Replacement Costs
- Healthier Drinking Water Quality
- Lower tax burden for Verona's well filtration/maintenance systems
- Abatement of water purchases from Passaic Valley Water Commission
- We need to make better choices that won't put our health at risk.

QUESTIONS



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