

CLARKE COUNTY
Conservation Easement Authority
Friday – 10 March 2023 – 10:00 am
A/B & Main Conference Room, 2nd Floor Government Center

AGENDA

1. Call to Order
2. Approval of Agenda
3. Approval of Minutes of the 10 February 2023 meeting
4. Bank Account balances
5. Campaign for the Authority
6. PEC updates from Hallie Harriman
7. Discussion items
 - a. Photos and framing for meeting room
8. Easement Donation/Purchase
 - a. Bruce & Debbie Anderson
9. Adjournment – The next meeting is scheduled for March 10th at 10:00 am

Clarke County Conservation Easement Authority

Draft - Meeting Minutes

Friday, February 10, 2023 – 10:00 AM

Berryville/Clarke County Government Center – A/B Meeting Room

ATTENDANCE	
Randy Buckley (Chair)	x
Rives Bacon	✓
Bev McKay	✓
Michelle Jones	✓
John Hedlund	✓
George Ohrstrom	✓
Walker Thomas	✓

STAFF PRESENT: Alison Teetor, Brandon Stidham

OTHERS PRESENT: Robin Couch-Cardillo

CALL TO ORDER: George Ohrstrom, Vice-Chair called the meeting to order at 10:00 a.m.

Approval of the Agenda – February 10, 2023:

The Committee voted 6-0-0 to approve the Agenda as presented.

Motion to approve the Agenda:	
Randy Buckley (Chair)	x
Rives Bacon	✓
Bev McKay	✓
Michelle Jones	✓
John Hedlund	✓ (seconded)
George Ohrstrom (Vice-chair)	✓
Walker Thomas (Secretary/Treasurer)	✓ (moved)

Bank Account:

Approval of Meeting Minutes – January 13, 2023:

The Committee voted 6-0-0 to approve the January 13, 2023 meeting minutes as amended with minor changes requested by the Committee.

Motion to approve Meeting minutes for January 13, 2023:	
Randy Buckley (Chair)	x
Rives Bacon	✓
Bev McKay	✓
Michelle Jones	✓ (seconded)
John Hedlund	✓ (moved)
George Ohrstrom (Vice-chair)	✓
Walker Thomas (Secretary/Treasurer)	✓

Bank Account:

Ms. Teetor reviewed the financial spreadsheets. Current fund balances show a total fund balance of \$533,647.68 consisting of \$142,881.93 in the donations account, \$235,070.35 in stewardship/restricted, and \$155,695.40 in local funds. There was a big rollback tax, \$21,725.81, in January that added to the local account. Rollback occurs when properties come out of land use. January expenditures in the donations account were for expenses related to annual award luncheon. January expenditures in Local Funds were attorney fees.

Campaign for the Authority:

Ms. Cardillo stated that donations in January totaled \$1,085 from 10 donations. This is a small amount which is expected this time of year. Mr. Ohrstrom thanked Ms. Cardillo for her excellent work as always. She debriefed members on the luncheon. She asked if anyone had any comments or changes they would like to see for next year. Ms. Jones mentioned that the luncheon seemed smaller than in past years. Members agreed that all Board of Supervisors members could be invited. In addition, most recipients bring family or friends with them which wasn't the case with Ms. Anderson. The winter newsletter is in the works. This one will use our format that includes donor names. Stories will include a summary of the award luncheon, a link to the YouTube video Mr. Feaga prepared from the easement workshop. Mr. Ohrstrom stated that he really thought Mr. Feaga did a great job in his short tenure and suggested a short article on his departure would be good to include. Ms. Cardillo will also include a pug for the summer internship. Mr. Ohrstrom asked if the County needed any temporary GIS help and suggested Ted Snead might be able to help out. He grew up in Clarke County and graduated with a degree in environmental science and GIS. He is currently working in Boulder. Mr. Stidham suggested he apply for the Conservation Planner job.

PEC updates from Hallie Harriman:

Ms. Harriman was not in attendance but provided a summary of the environmental bills currently being considered by the General Assembly. Mr. Hedlund asked what laying a bill on the table means. Mr. Ohrstrom explained that it essentially means that the bill has literally been put down and if nobody picks it up, i.e. has any interest in it, it goes away. Mr. McKay reported on bill he was made aware of that exempts forestry operations from Virginia stormwater management regulations. He said that VACO and PEC are opposed and consider it a pro-development bill. Mr. Stidham explained that in other parts of the Commonwealth developers will purchase a property strip off the timber as part of a Department of Forestry project so they are exempt from the stormwater requirements. Then they come back in couple of years with a subdivision plan. In the meantime the site sits unprotected. Members agreed that any reduction in stormwater requirements was a bad idea. There was some discussion of bills introduced that would eliminate zoning and the ability to regulate accessory dwelling either of which would have a big impact on sliding scale zoning.

Mr. Ohrstrom asked about SJ226 which states "Notwithstanding any other provision of this section, an easement on public property may be granted in perpetuity to a public body, political subdivision, or authority of the Commonwealth or to the United States or any of its departments or agencies. The requirement to advertise and publicly receive bids shall not apply to easements conveyed to any such governmental entity." Ms. Teetor will ask Ms. Harriman to give an update at the March meeting.

Discussion:

a. Photos and framing for meeting room – Ms. Teetor reported that she had met with Keith Dalton, Christy Dunkle, and Chris Boies to discuss the sizes, types and numbers photos for the wall in the A/B meeting room, main room and C room. It was determined that there would be 5 photos roughly 18" x 24" on the A/B wall, one larger photo on each side wall in the main meeting room, and 3 18" x 24" photos on the 2 walls in the C room. The photos will be a mix from the Towns and County. Ms. Teetor will have a cost estimate and photo ideas prior to the next meeting.

b. Annual VaULT conference sponsorship – Ms. Teetor included information about the conference and sponsorship levels in the packet. She stated that the Authority has sponsored the conference at the \$250 Bronze level in the past.

The Committee voted 6-0-0 to approve the sponsorship of the VaULT conference at the \$250 Bronze level.

Motion to approve the VaULT sponsorship:	
Randy Buckley (Chair)	x
Rives Bacon	✓
Bev McKay	✓
Michelle Jones	✓ (seconded)
John Hedlund	✓ (moved)
George Ohrstrom (Vice-chair)	✓
Walker Thomas (Secretary/Treasurer)	✓

c. Update on Conservation Planner/GIS Coordinator position - Mr. Stidham stated most applications are coming from Indeed so we get lots of applicants that aren't qualified. We currently have 3 candidates that we could interview but they are on the young side with little experience but do have environmental/GIS backgrounds. David Carr at Blandy recommended one of his graduate students. Ms. Teetor spoke with the individual and she indicated she was interested in applying. She has extensive experience with GIS and has worked with the Land Trust of Virginia. The first round closes Friday March 3rd. We will repost the ads if the pool is still lacking.

Report on Easement Donations / Purchases

a. Wendy and Michael Gregg - Donation (TM# 24-4-1)

Ms. Teetor stated that Mr. Feaga had emailed the Greggs prior to his departure letting them know he was leaving and what was left to do. Ms. Teetor will follow up next week to see if they have any concerns.

b. Dennis Pippy grant purchase Tax Map 6-A-59

A preliminary appraisal was prepared for Mr. Pippy. The value was above the grant amount by approximately \$10,000 so Mr. Pippy will move forward with the grant purchase. Ms. Teetor stated that the appraisal and preliminary appraisal will cost \$5,500. As reported at the last meeting, PEC has been awarded a grant from National Fish and Wildlife Foundation. The funds can be used to pay for appraisals, up to \$5,000, on easement properties that have water resources in buffers. Mr. Pippy's property qualifies as he has over ½ mile of frontage on the Opequon Creek and a forested buffer. Ms. Teetor asked for approval of the \$500 preliminary appraisal since this is not covered by the grant. The County will still be reimbursed for 1/2 of the \$500 by VDACS as part of the purchase. Ms. Jones asked why landowners aren't required to pay for the appraisal. Ms. Teetor explained that the current purchase agreement states that the County will pay for appraisals. Mr. Ohrstrom opined that it could have been included to provide incentives for landowners to participate in the program. Ms. Teetor stated that for DUR purchases appraisals are the responsibility of the landowner unless they qualify for assistance based on income. Ms. Teetor will provide a summary of the current policy at the March meeting.

The Committee voted 6-0-0 to approve the payment of \$500 for the preliminary appraisal the Dennis Pippy.

Motion to approve the payment of the preliminary appraisal (Pippy):	
Randy Buckley (Chair)	x
Rives Bacon	✓ (moved)
Bev McKay	✓
Michelle Jones	✓
John Hedlund	✓
George Ohrstrom (Vice-chair)	✓
Walker Thomas (Secretary/Treasurer)	✓ (seconded)

Adjournment

There being no further business, the Committee agreed to adjourn the meeting at 11:00 AM. The next Clarke County Easement Authority meeting is scheduled for March 10th, 2023 at 10 AM in the A/B conference room, Government Center, Berryville.

The Committee voted 6-0-0 to adjourn the February 10, 2023 meeting at 11:00AM.

Motion to adjourn the January 13, 2022 meeting at 11:45AM.	
Randy Buckley (Chair)	x
Rives Bacon	✓
Terri Catlett	✓
Michelle Jones	✓ (MOVED)
John Hedlund	✓
George Ohrstrom	✓
Walker Thomas	✓ (SECONDED)

George Ohrstrom, Vice-Chair

Alison Teetor Clerk to the Authority

JAS - E Johnson
AS OF 3/1/23

FY2023

Fund 235 - Conservation Easement Balances

	Total Fund Balance	Donations (128)	Stewardship/Restricted Funds Account (210)	Local Funds (000)
SOY FY22	428,702	131,142	235,018	62,541
Fiscal Year 2023				
July Rev/AR		800	128	51,593
July Exps/AP		0	0	0
Aug Rev/AR		155	195	21,165
Aug Exps/AP		-1,554	-1,314	0
Sept Rev/AR		2,925	200	159
Sept Exps/AP		-3,419	0	-621
Dupuy Easement Purchase				-42,000
Oct Rev/AR		755	249	729
Oct Exps/AP		-2,813	0	-22
Nov Rev/AR		3,504	276	21,135
Nov Exps/AP		-3,136	0	-792
Dec Rev/AR		15,513	318	15,793
Dec Exps/AP		-904	0	-17
Jan Rev/AR		6,154	351	26,280
Jan Exps/AP		-1,870	0	-248
Feb Rev/AR		425	0	0
Feb Exps/AP		-1,364	0	0
Mar Rev/AR		0	0	0
Mar Exps/AP		0	0	0
Apr Rev/AR		0	0	0
Apr Exps/AP		0	0	0
May Rev/AR		0	0	0
May Exps/AP		0	0	0
June Rev/AR		0	0	0
June Exps/AP		0	0	0
YTD Rev/AR	168,802.40	30,231.09	1,717.44	136,853.87
YTD Exps/AP	60,075.38	15,061.55	1,314.29	43,699.54
Adjustments	0		0	
YTD FUND BALANCE (AR & AP)	537,428.74	146,311.73	235,421.61	155,695.40

Emily Johnson:
Rollback taxes
\$51,510.09

Emily Johnson:
Dupuy Supplement

Emily Johnson:
Conservation Easement
refund Hall Monohan
Closing Dupuy

Emily Johnson:
VDACS reimbursement
Dupuy Property

Emily Johnson:
Rollback taxes
\$15,793.08

Emily Johnson:
Rollback taxes
\$21,725.81

ESTIMATED YTD FUND BALANCE 537,429 146,312 235,421.61 155,695

FY23 Expenditure Appropriations	Appropriated	Actual Expenses	Appropriated Balance	
			Remaining	
General Expenses	45,000	18,075	26,925	
E. Dupuy	42,000	42,000	0	
	87,000	60,075		

Clarke County:
includes expenses not specifically
designated to an easement
(including donation, stewardship and
monthly Hall, Monahan expenses).



R O B I N C O U C H C A R D I L L O

February 2, 2023

Clarke County Conservation Easement Authority
Fundraising Report
February 2023 meeting

Donor Statistics

See attached Master Report

- 2023 year-to-date total: \$1,085.00 from 10 donations

Ongoing

-Winter newsletter

- Covering Land Conservation Award and Prue Anderson, year-end review, link to easement workshop on YouTube prepared by Jeff F, plug for interns
- Will use standard format with donor listing on back panel
- Out in February

-Wingate Mackay-Smith Land Conservation Award Luncheon

- Any feedback on this event?
- Throughout the year, look for potential candidates for next year

MEMORANDUM

To: Clarke County Easement Authority
From: Alison Teetor
Subject: Photos for meeting rooms
Date: March 1, 2023

At the February meeting staff updated members on the number and sizes of photos proposed for the Town/County meeting rooms. As discussed there will be 5 20"x16" frames on the rear wall in A/B, 1 24"x36" on each side of the main room, and 6 total – 3 20"x16" frames on the 2 large walls in the C room.

A cost estimate was obtained from Frame-It-Easy, an online framing company. This is recommended if the intention is to match the frame styles in other areas of the building.

Cost estimate:

20"x16" frame with print, matt, and acrylic cover –\$80/photo, 11 photos – total \$880
24"x36" frame with print, matt, and acrylic cover –\$130/photo, 2 photos – total \$260
\$1,140

Attached are examples of Town photos provided by Christy Dunkle and a sample of the Authority's photo contest winners.

The Easement Authority has paid for all of the framed photos in the County wing. It is recommended that the County Administration and Town of Berryville pay for the new photos. Since fewer photos are from the Town perhaps a 75/25 split would be reasonable.

Next steps are to select up to 20 photos for consideration and present the information to the Building Committee for approval.

FIRST:



Curves_6406.jpg

SECOND:



Balloon Festival at Long Branch.jpg

THIRD:

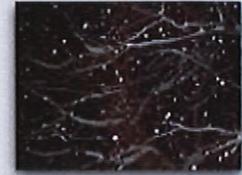


Barn, Sky, Grass, Light.jpg

SPECIAL MENTION:



LockesMill.JPG



Branches.JPG



Views of Farnley2.jpg



jhimage 3.jpg



Morning Commute.jpg



Ginko leaf.jpg



Rainbow on the Shenandoah River.psd



EM2.jpg



Rose Hill Park



Barn of Rose Hill



Barn of Rose Hill II



Barn of Rose Hill III

Lee barns.JPG



Third Episcopal Church



109 North Church



101 North Church



302 North Church



100 North Church



19, 21 North Church



16 North Church



Bank of Clark County extension



2 East Main

Lee brickfest 2003.jpg



Gazebo at Rose Hill Park_201502241101042445.jpg



03 27 20 Bville gazebo.jpg

MEMORANDUM

TO: Conservation Easement Authority
 FROM: Alison Teetor
 DATE: March 2, 2023
 SUBJECT: Bruce & Deborah Anderson - Square footage of Structures

Bruce and Deborah Anderson applied to the easement authority for approval of an easement donation in February 2022. The property consists of two parcels, Tax Map# 30-A-74 consists of 30.76 acres with an existing house and a <600 square foot apartment, and Tax Map# 30-A-74A consisting of 2.0 acres with 1 DUR.

Current structure footprints total 9,172 square feet, with 23,360 square feet of paved parking and an additional 9,711 square feet for the driveway that is approximately 1,082 feet long (686 feet + 396 feet on the two different sections). This is about 9 feet wide. In total this adds up to 42,243 square feet of current impervious surface.

The current permitted impervious surface using the recently adopted policy is 2% for a 32 acre property. The following table details the amounts and types of all impervious surface on the Anderson’s property. The total includes the Anderson’s desire to add an indoor riding arena and an addition to the existing house.

Name	acres of property	sq. ft. limit	% limit	existing sq. ft. structures	existing sq. ft. driveway	existing sq. ft. parking	Current sq ft impervious	proposed sq. ft (new)	total sq ft
Anderson	32.7	28,488	2%	9,172	9,711	23,360	42,243		
	sq. ft. 1,424,412		3%				42,243		
			4.46%					20,400	62,643

A building envelope/impervious surface policy was adopted by the Board of Supervisors at their February 21st regular meeting. Based on the new policy the Andersons would be permitted 28,488 sq. ft. of impervious surface. If only structures and paved parking areas are counted as impervious, there would be a total of 32,532 sq. ft of existing impervious surface, which exceeds the permitted limits.

Throughout the policy document, members emphasized the desire to have a flexible policy that allows for evaluation on a case-by-case basis.

In researching waivers to the impervious surface limits it was found that the Natural Resource Conservation Service (NRCS) allows for impervious surface limits up to 10% easement area based on an Impervious Surface Waiver Determination. NRCS is the funding agency for all of our Federal Grants including Farm & Ranchland Protection Program (FRPP) and the Agricultural Conservation Easement Program (ACEP) Agricultural Land Easement (ALE).

The worksheet requires curve number calculation that is used to determine the Impact to Water Quality. Mr. Feaga ran the calculation on the Anderson property and determined that based on the worksheet they would be allowed up to 3% or 42,443 sq ft.

Worksheet for 2-Percent

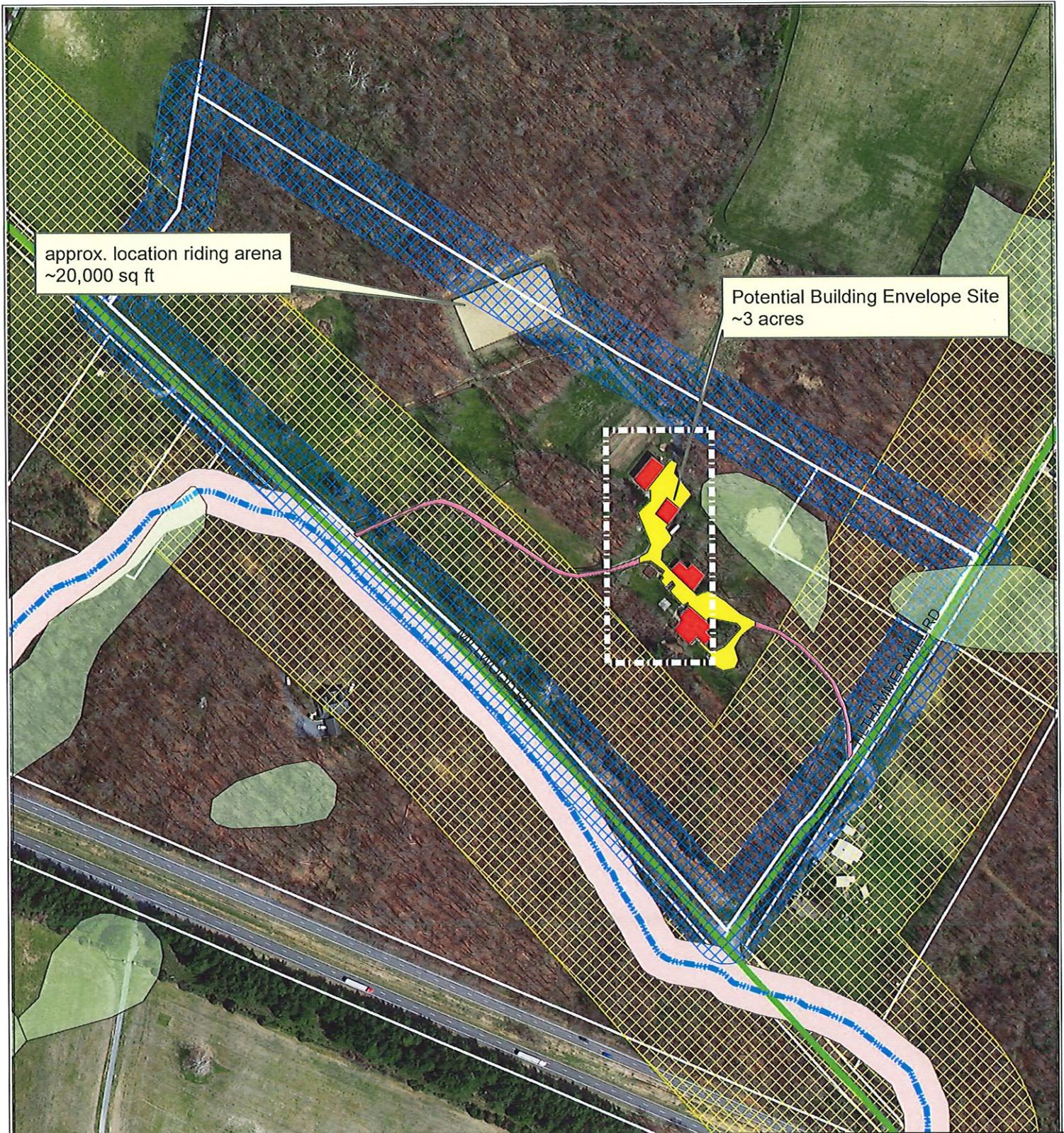
(i) Impervious surfaces will not exceed 2 percent of the FRPP easement area, excluding NRCS-approved conservation practices. The State Conservationist may waive the 2 percent impervious surface limitation on a parcel-by-parcel basis, provided that no more than 10 percent of the easement area is covered by impervious surfaces. Before waiving the 2 percent limitation, the State Conservationist must consider, at a minimum, population density, the ratio of open prime other important farmland versus impervious surfaces on the easement area, the impact to water quality concerns in the area, the type of agricultural operation, and parcel size.

Based on the calculation the indoor riding arena would not be approved.

I met with the Anderson's on Thursday March 2nd to discuss the new building envelope policy and impervious surface limits. After discussion they suggested using dry wells to offset the impervious surface created by an indoor arena. Staff will provide additional information about this concept at the meeting.

Recommendation

Postpone action on the Anderson's easement donation.



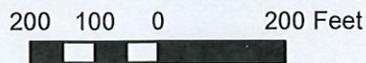
approx. location riding arena
~20,000 sq ft

Potential Building Envelope Site
~3 acres

Anderson Conservation Areas



Date: 3/1/2023
Clarke County GIS



- Farmland of statewide importance
 - Anderson_Property setback 75'
 - NHD_streams_buffer_50
 - scenic_byways_buffer_200
 - Intermittent
 - Perennial
 - Scenic_Byways_2022
- Impervious Surface**
- Driveway
 - Parking
 - Structure

**Agricultural Conservation Easement Program
Agricultural Land Easement
Worksheet for 2-Percent Impervious Surface Waiver Determination**

Landowner: <i>Anderson</i>		
Eligible Entity:		
NEST Agreement #:		
NEST Parcel #:		
Factor	Raw Data	Points
1. Population Density (persons per square mile) (0 points for less than 1,000, 1 point for 1,000-2,000, 2 points for 2,000-3,000, 3 points for 3,000-4,000, 4 points for 4,000-5,000, 5 points for greater than 5,000)	<i>~83 /sm</i>	0
2. Percent Prime, Unique, and Important Farmland Soil (0 points for less than 50%, 1 point for 50-60%, 2 points for 60-70%, 3 points for 70-80%, 4 points for 80-90%, 5 points for greater than 90%)		0
3. Impact to Water Quality as Determined Using NRCS (SCS) Curve Number Method <i>9.4% change see calc</i> (0 points for runoff increase of greater than 25% from impervious surface, 1 point for 20-25%, 2 points for 15-20%, 3 points for 10-15%, 4 points for 5-10%, 5 points for less than 5%)		4
4. Type of Agricultural Operation (0 points for beef farms and cattle ranches, 1 point for cash grain farms and fruit and vegetable operations without retail outlets, 2 points for dairy farms, 3 points for confined swine and poultry operations, 4 points for fruit and vegetable operations with retail outlets, 5 points for greenhouse operations)		0
5. Parcel Size (0 points for greater than 300 acres, 1 point for 250-300 acres, 2 points for 200-250 acres, 3 points for 150-200 acres, 4 points for 100-150 acres, 5 points for less than 100 acres)		5
Total Points		9
Allowable Impervious Surface Limitation as Determined by Total Points: 10% - 24-25 points; 9% - 22-23 points; 8% - 20-21 points; 7% - 18-20 points; 6% - 16-17 points; 5% - 14-15 points; 4% - 12-13 points; 3% - 10-11 points; 2% - <10 points	<i>2%</i>	

Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

Cover type	Hydrologic condition	Curve numbers for hydrologic soil group			
		A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ^{3/}	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 ^{4/}	48	65	73
Woods—grass combination (orchard or tree farm). ^{5/}	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. ^{6/}	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 ^{4/}	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

^{1/} Average runoff condition, and $I_a = 0.2S$.

^{2/} *Poor*: <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

^{3/} *Poor*: <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

^{4/} Actual curve number is less than 30; use CN = 30 for runoff computations.

^{5/} CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

^{6/} *Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed but not burned, and some forest litter covers the soil.

Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Before Arena Assumes 1.01 acres
 OF impervious at onset
 Runoff Curve Number (CN) (yet doesn't really make much difference if imp. well lower as it is just relative to before & after.)

Client: Andersson By: _____ Date: _____
 County: _____ State: _____ Checked: _____ Date: _____
 Practice: _____

Soil name and hydrologic soil group	Cover description (cover type, treatment, and hydrologic condition)	CN (figure 2-7)	Area (acres or %)	Product of CN x Area
26B C	Woods/grass fair	76	1.35	102.6
SSD C	Woods fair	73	2.47	180.31
24 D	Woods/grass fair	82	0.32	26.24
26C C	Woods fair	73	1.60	116.80
26C C	Woods grass fair	76	3.12	237.12
51B B	Woods/grass fair	65	6.77	440.05
2SB C	Woods fair	73	9.73	710.29
26C C	Woods fair	73	0.89	64.97
26B C	woods fair	73	0.67	48.91
24 D	Woods good	77	1.23	94.71
26B C	pasture fair	79	2.33	184.07
Impervious	Parvment / Road	98	1.01	98.98
TOTALS:			31.5	2305.05

$$\text{CN (weighted)} = \frac{\text{Product of CN} \times \text{Area}}{\text{Total Area}} = \frac{2305.05}{31.50} = 73.18$$

USE CN = 73.18

- 2SB = C
- 26B = C
- SSD = C
- 24 = D
- 26C = C
- 51B = B

AFCO Arena

99385212

Runoff Curve Number (CN)

Client: _____ By: _____ Date: _____
 County: _____ State: _____ Checked: _____ Date: _____
 Practice: _____

Soil name and hydrologic soil group	Cover description (cover type, treatment, and hydrologic condition)	CN (figure 2-7)	Area (acres or %)	Product of CN x Area
26B	C	76	1.35	103.6
SSD	C	73	2.47	180.31
24	D	82	0.32	26.24
26C	C	73	1.60	116.80
26C	C	76	2.69	204.44 >
S1B	B	65	6.77	440.05
25B	C	73	9.70	708.10
26C	C	73	0.89	64.97
26B	C	73	0.67	48.91
24	D	77	1.23	94.71
26B	C	79	2.33	184.07
<u>Impervious</u>				
			⁹⁸ TOTALS:	
			31.5	2315.2

$$\text{CN (weighted)} = \frac{\text{Product of CN} \times \text{Area}}{\text{Total Area}} = \frac{2315.2}{73.5} =$$

USE CN = 73.5

Anderson Runoff Scenario

Clarke County



Expected
Flow current conditions assuming
2" of rain fall. Average CN of sub = 73.18

$$S = \left(\frac{1000}{CN} \right) - 10 \quad S = \frac{1000}{73.18} - 10 = 3.665$$

$$Q = \frac{(2 - 0.2(S))^2}{2 + 0.8(S)} = \frac{(2 - 0.2(3.665))^2}{2 + 0.8(3.665)} = \frac{1.605}{4.932} = 0.32 \text{ inches}$$

Expected flow condition in future with 20,000 sf arena
2" rainfall, Average CN 73.5

$$S = \frac{1000}{73.5} - 10 = 3.605$$

$$Q = \frac{(2 - 0.2(3.605))^2}{2 + 0.8(3.605)} = \frac{1.636}{4.884} = 0.35 \text{ inches}$$

$$\% \text{ increase} = \frac{\text{Final} - \text{initial}}{\text{initial}} \times 100 = \frac{0.35 - 0.32}{0.32} \times 100 = 9.38\%$$

Information on Dry Wells

VA Assn of Soil & Water Conservation Districts

A **dry well** or soak well is an underground structure that disposes of unwanted water, most commonly stormwater runoff, by dissipating it into the ground, where it merges with the local groundwater. A dry well may be either a structural chamber and/or an excavated pit filled with gravel.

A dry well is a passive structure. Water flows through it under the influence of gravity. A dry well receives water from one or more entry pipes or channels at its top and discharges the same water through a number of small exit openings distributed over a larger surface area in the side(s) and bottom of the dry well. When a dry well is above the water table, most of its internal volume will contain air. Such a dry well can accept an initial inrush of water very quickly, until the air is displaced. After that, the dry well can only accept water as fast as it can dissipate water. Some dry wells deliberately incorporate a large storage capacity, so that they can accept a large amount of water very quickly and then dissipate it gradually over time, a method that is compatible with the intermittent nature of rainfall. A dry well maintains the connection between its inflow and outflow openings by resisting collapse and resisting clogging.

Simple dry wells consist of a pit filled with gravel, rip rap, rubble, or other debris. Such pits resist collapse, but do not have much storage capacity because their interior volume is mostly filled by stone. A more advanced dry well defines a large interior storage volume by a reinforced concrete cylinder with perforated sides and bottom. These dry wells are usually buried completely, so that they do not take up any land area. The dry wells for a parking lot's storm drains are usually buried below the same parking lot.





Before



-
- During Construction



- During Construction



• drainage inlet



After,



VA Assn of Soil & Water Conservation Districts
7308 Hanover Green Drive, Suite 100
Mechanicsville, Virginia 23111
Kendall Elaine Tyree, Ph.D., Executive Director