

RAP Public Comments & Testimony Received

May 13, 2016 – July 8, 2016



SPEAKER SIGN-IN SHEET

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR St. Albans, June 21, 2016 PUBLIC HEARING ON
 REQUIRED AGRICULTURAL PRACTICES RULE FOR THE AGRICULTURAL NONPOINT SOURCE POLLUTION CONTROL PROGRAM.

Please PRINT NAME and also indicate your hometown for identification purposes
 Speakers will be called on a first-come, first-served order, using this sign-in roster.

5 MINUTES / SPEAKER?

98 SIGNED IN

Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
1 RICK BUTTON	HIGHGATE, VT		
2 DARLENE REYNOLDS	ALBURN, VT		
3 DICK LONGNAM	SWANTON, VT		
4 MICHAEL RICHARDS	MILTON, VT		
5 SARA DeSANTIS	RICHMOND, VT		
6 AMANDA ST. PIERRE	BERKSHIRE, VT		
7 BILL ROWELL	SHELDON, VT		
8 KATIE EMERSON	TUNBRIDGE, VT		
9 SCOTT MAGNAN			
ANDY NOAK	DUBOIS & KING		
OPEN INVITATION	TO SPEAK		
Rebecca Weber			
Rita Glan	Seneca		
RONALD MACKIE			
Alex Weinhagen			

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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Haley Pero	Senator Sanders' Office (Burlington)	no	no
Kent Henderson	FNLC - Georgia & 1 Town Council Rd	no	no
Jakky Sanders	UVM Extension	NO	NO
Bob Sanderson	Dairy Farm	yes	no
Leon Adams	St. Albans Coop	yes	no
Anna Hopper	Rantou, VT	✓	no
Josh Schwab	Burlington, VT	yes	no
Jordan Belonged	Williston, VT	yes	no
Lachin Ziegler	Burlington, VT	yes	NO
MARYJO SCOTT	BURLINGTON, VT	YES	no
Cibby Zander	Sheldon	yes	
Kandy Callan	Fair Field	yes	NO
Crea Kintillac	Sheelburne	yes	no
Rep Steve Byers	Highgate	NO	NO
Tess Kennedy	Montpelier	NO	
Tim Magnant	FRANKLIN	yes	?

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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Richard A. Hall	Fairmont Farm Pro. East Montpelier	MFO + LFO	No
Connor Rowley	Rowley Brothers Dairy Milton	MFO	No
Bill Rowell	Green Mtn. Dairy Sheldon	LFO	Yes

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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Rebekah Wilbr	Conservation Law Foundation	No	
Katie Emerson	conservation law foundation, Tunbridge	no	yes

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DON McFeeters	FNLC	No	No
ANDREW BARTENBURG	RURAL VERMONT	No	No
Rep Kathleen Keenan	Legislature - St. Albans City	No	No
Rep Barbara Murphy	Legislature - Fairfax	No	No
MARK NELSON	Sierra Club, VT	No	?
Kurt Magnan	Fairfax VT	Yes	?
RICK BUTTON	HIGHWAY VT	OTHER/CONSULTANT	Yes
Doreen Reynolds	Alburgh, VT	YES	YES
Wayne Fille	FWA FWLC	SFO	No -
Jed Davis	Cabot Creamery	NO	NO
Rep Marianna Gamacho	State Rep	NO	NO
Tom Beaton	St. A. Msgr.	No	No
J Russ Ford	Missisquoi / Trout Brook W102 Snow Cat	No	
SEAN BREEN	SUSCO, FLETCHER, VT	Y-OTHER	No
ANDY HAAR	DUBOIS & KING	NO	?
MIKE HOWRIAN		MFO	No

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Mike Pihany	Vt & Dyer - as Westburg	No	No
Dick Longway	Darryl Farmer Swanton		yes?
Eugene Marie Audet	Blue Spruce Farm	yes	
Leanna Han	HS Howling - & So on	yes	No
Dean Wright	Wright Farm	yes	
Carl Pappas	Running for house seat Georgia	No	No
Richard Michael Pihany	Meadowbrook Acres Farm - Milton	yes	yes
Rep. Carol Ann Branagan	Georgia	No	No
Bob Buerman	So. Hero	yes sfo	No
Norm Fossier	W. Swanton VT	yes	?
Sen. Norm McAllister	Highgate	yes	no
Jan. D. ...	St. Albans area	no	no
LARRY FISHER	STATE REP 50 ST ALBANS ST LEONARD	no	no
Brian Savage	State Rep 17 Linda Ave Swanton	No	No
James Maroney	Lacosta VT	Y	no
Leon Thompson	Lacaster Farming newspaper	NO	NO



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SCOTT MAGWAN	SCOTT MAGWAN'S CUSTOM SERVICE (STALBANS) Richmond Res. d.c.c.e	SFO Custom	NO
CHUCK PEANCE	STATE REP. RICHMOND VT.	no	no
Bob STARR	SENATOR	No	?
Dan Connor	Rep. District 6	NO	?
LARRY CORVAIS	Dairy Farmer FWA Member Enosburg	Yes	
ROSS KIDD	VT Chapter of Sipars Club		no
Mark Parent	Dairy Farmer Sheldon VT	yes	NO
Harold Howrigan Jr	Dairy Farmer Fairfield VT.	yes	
Alex Weinbogen	Town of Hinesburg work. Hinesburg - reside. Essex Jct	no	?
Sira DeSantis	Town of Richmond UVM Farmer Training Progr	yes	yes (?)
John Ogunjipe	UVM Farmer Training Progr	Yes	NO
AMMA	Amanda St Pierre	yes	yes
Ralph	St. Hall	yes	?
forte	Cadillac	yes	Maybe
Ashley Swanbank	Kane's Scenic Five Farm	LFO	No
Haron Kane		LFO	NO

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Madison Monty	NOFA-VT Richmond 14 Pleasant St.	no	no
Pat Horgan	128 Bergeron Rd Sheldon VT. 05483		
Denise Smith	FNLC PO BOX 58, Swanton, VT 05488	no	no
Doug Flach	Rural VT. & Flach Farm 933 7752	yes	maybe
Steph Eiring	NOFA-VT VOF / Butterfield Farmstead Bakersfield	yes	yes
Ronald J Machig	1298 Machig Rd Sheldon	yes	no
Jane R. Tyson	Fairfax VT - AGRICULTURE TECHNOLOGIES	NO	NO
Greg Stebbins	Sheldon	yes	-
Rachel Schattman	BellaFarm Montpelier VT	yes	No
Dennis Nolan	1264 St Armand Rd Highgate Ctr	yes	no
Penny Dubois	Fairfield	no	no
Adrian Rainville	Franklin	yes	
Tom Belfry	Leahy office		NO

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SPEAKER SIGN-IN ORDER

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR Brandon, June 22, 2016 PUBLIC HEARING ON
 REQUIRED AGRICULTURAL PRACTICES RULE FOR THE AGRICULTURAL NONPOINT SOURCE POLLUTION CONTROL PROGRAM.

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47 IN ATTENDANCE

SPEAKERS LIST

	Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
1	Andrea Standler	Rural VT		
2	Elinabeth Franks			
3	Brian Kemp	Sudbury		
4	David Mills			
	Ethan Smith			
5	Cathy Baller	IRA		
6	Mark Boivin	Addison		
7	Eric Severny	Cornwall		
8	Hannah Davidson	Brandon		
9	Rob Litch	New Haven		
10	Briigham	Shrewsbury		
11	Paul Stone	Orwell		
12	Phil Wagner			
13	Doug Warner	Addison City		



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VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

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Petra Felkl	Woody Hill Farm, Bridport, 2695 Rathlin Bridge Rd	SFO	no
Richard Goetze	— " —	— " —	no
Andy Gilmore	Echo mtn Farm LLC Timneath 86 Gilmore Rd 05773	SFO	no
Beatrice Smith	NRCS	-	-
Andrea Stander	Rural Vermont	No	Yes
Elizabeth Frank	Eagle's Flight Farm / ORWELL	yes	yes
Brian Kemp	Mountain Meadows Farm	yes	yes
David Mills	Millbrook Farm	Yes	Yes
Ethan Smith	VT ANR	yes	yes NO
Chris + Larry Carabeau	TINMOUTH, VT	YES	NO
Gene Terry	Widdell Farm	Small farm	NO
Phil Wagner	BRIDPORT VBPA	OTHER	—
Cathy BAKER	IRA VT		yes
MARK A Bowlin	Addison VT	Yes.	yes.
Betsy Maden	Orwell, VT	Yes	NO
Eric Seery	Cornwall, VT	Custom	yes

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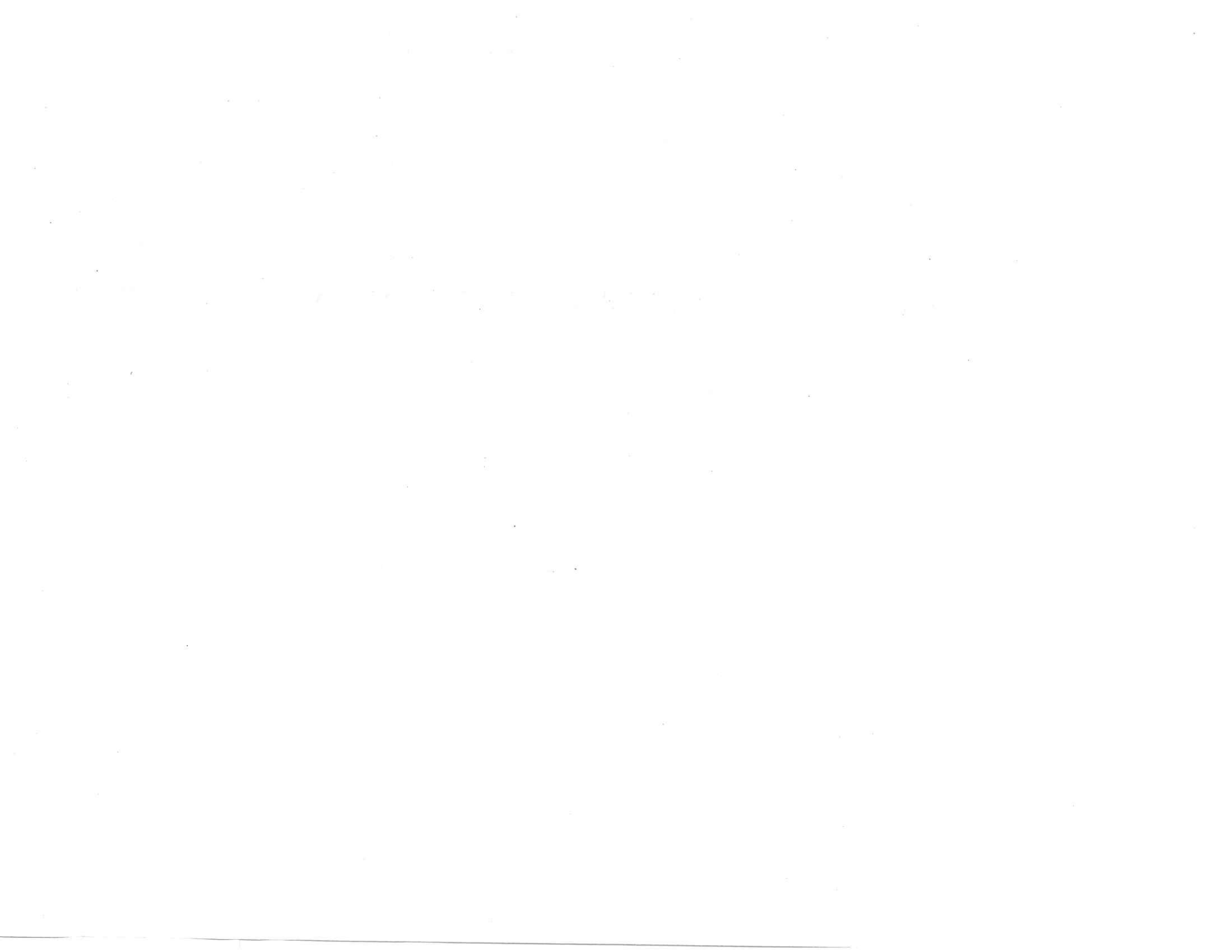


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Tina Williams	Rutland VT FSA	NA	NO
Diane Heleba	Rutland FSA	yes	NO
Alan Gilmore	Tinmouth VT	yes	NO
Michelle Smith	Rutland VT	no	NO
Hannah Davidson	Brandon VT	yes	yes
BRIGHAM	STRAWSBURY VT	YES	YES
Rob Litch	M.F.F. New Haven VT	yes	yes
Lee Kahrs	The Reporter	No	No
Jonathan Ashley	D. Boiz & King, 25 Union St, Brandon, VT	Yes	Maybe
Matthew Bulte	Digested Organics 25 Seminary St, Middlebury	N	N
Note Severy	UVM / CUFC	Y	N
DOUG ZEHNER	ADDISON, VT	N	MAYBE
Randy Quisenel	Salisbury VT	Y	—
Amanda Stone	Benishre	Y	no
HORTON SHAWMONT	Wm. Shawmont Assoc.	Y N	NO
Bill Rowell	Green Mtn. Dairy Highgate	Y	No



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1	Mamie Rasmussen	P.O. Box 138 PITTSFORD VT	Dairy	NO
2	Peter Burton	807 Weybridge Rd Weybridge, VT 05753	Curious	Maybe
3	TED GEMBOWKZ	2375 CREEK RD. N. CLARENDON	SFO	MAYBE
4	Paul Stone+Frances	107 Griswold Ln, Orwell VT 05760	MFO	YES
5	Rico Balzano	UVM Extension - Middlebury	NO	maybe NO
6	Phyllis Terrey	2953 McConnell Rd Brandon VT 05733	No	No
7	Ron Spill	Four-Hills Bristol VT	Dairy LFO	?
8	CRAIG ZANDAG	NEW HAVENS, VT 05472	No	?
9	Todd S Nielsen	Brandon	NO	NO

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1 Cheri L'Esperance	WSA - Montpelier VT	no	NO
2 Charles F. Whiting	Spotted Dog Family Farm		
3 Philip Ackerman-Cost	Up Turbet Farm 780 Turbet Rd Pawlet, VT		
4 Harvey Smith	Smith family farm New Haven	yes	?
5 Julie Danyew	Danz Ahn Farm Orwell	yes (small)	NO
6 Alissa Shethor	Fairy Tale Farm Bndport	yes	no

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VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR South Royalton, June 23, 2016 PUBLIC HEARING ON
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43 SIGN-INS

Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Shelby Girard	Rural Vermont Montpelier VT	NO	NO
Lisa McCarty	Earthwise Farm + Forest, 341 Macintosh Hill 05060	SFO YES	Maybe YES
Ernie Amstutz	Royalton	Maybe	Maybe
Keith Sprague	Brookfield	Yes	NO
Dwight DeFreest	Warren	Yes	NO
Andrea Stander	Rural Vermont	N	Yes
Grakey Rufenacht	Robinson Hill Beet / walking onion, Plainfield VT	Yes SFO	Yes
Richard Hall	Farmout Farm	MFO / LFO	Yes
Ed Small	DUBOIS + wife RANDOLPH VT 1918 WOODRIDGE 05060	N	N
James Maroney	Leicester VT	Y	Y
Jean Paltrey	135 Monarch Hill rd. Tunbridge	Y	Y
MIKE BAWD	4290 VT RTE 14 ROYALTON	N	Y
Mary Childs	White River NRCD		N
Eli Gleason	Northfield	N	N
Paul Dotson	Connecticut River Watershed Farmers Alliance	Y	
AMANDA ST. PIERRE	Berlin VT		N

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

#2

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* GEORGE PRATT	FAIRLEE, VT	SFO	YES
KAY HALL	Braintree, VT.	YES	NO
Diana Dove	Braintree VT	?	?
Rep Carolyn Brannigan	Georgia - Franklin Co.	No.	NO
* Johanna Mirenda	Wilder VT	No	ALL YES
John Maille	Saint Albans, VT	TSP	NO
Kate Emerson	Tunbridge, VT	NO	NO
Davis Deen	Et River Watershed Council	NO	NO
* Peter Burmeister	Burrell Farm Berlin, VT	yes	Yes!
Jean Allen	White River Partnerships, S. Randolph VT	no	no
Brittain Fawcett	Department of Environmental Conservation, Burlington, VT	No	No
Danielle Quincey	VTDEC, Johnsonville, VT	No	No
Kevin Hajja	NRCS (USDA) WRT	sometimes	NO
Jeffrey Townsend	Randolph, Bethel	Yes	NO
Orson St. John	Pomfret	Yes	NO
DAVID SILLOCKY	RANDOLPH CTR VT	"	"

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

#3

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1 Cheri L'Esperance	WSA- Montpelier	no	no
2 Mary Russ	White River Partnership, Royalton	no	no
3 Katherine A. Adams	Tunbridge VT.	yes	7
4 Amy Huyler	Rock Bottom Farm Stratford VT	yes	YES
5 Jason Johnson	Billings Farm	yes SFO	NO
6 Cat Buxton	Crow Mote, Waste Less Sharon VT	no	no
7 Nora Doyle-Purr	Valley News	Non	No
8 Tim Sanford	Luna Glen Farm	Yes	No
9 Amanda Miller	Berkshire VT	yes	no
10 Bill Rowell	Highgate	Y	N
11 Beth Willhite	Royalton Farms Royalton VT	Y Y	N
12 Doug Falkner	171 Westview Meadows, Montpelier	No longer	N
13 * David Bone	Ryegate	Y	Y

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

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1 Ron Charles	Rome, VT		N
2 Jill Arace	VALP	TA org	N
3 Eileen Wheeler	Orange VT.	Farmer	N

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR ^{Report} ~~South Royton~~ ²⁸ June 23, 2016 PUBLIC HEARING ON
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1.	Brady Metcalf	Agri-Mark Irasburg	No	No
2.	Gary Viens	VT HOR	no	no
3.	Dick Lawrence	Legislature	No	No
4.	ANDREW BAHRENBURG	RURAL VERMONT	No	no
5.	Randy Viens	Agri Mark, Inc. Newport	No	no
6.	Justin Richard	VACD	No	NO
7.	Brittany McCarthy	VACD	No	NO
8.	Nicole Jones	2547 VT Rt 14 Craftsbury VT	Yes, SFO	NO
9.	Sevan Damuscel	OCNRCD	NO	NO
10.	Bobby Stier	Senator	No	?
11.	Kerry O'Brien	Caladonia County NRCD	no	no
12.	Louis Boudreau	Irasburg VT	SFO	no
13.	Rep Vicki Strong	Albany, VT	No	NO
14.	Jackie Folsom	Cabot VT	yes / SFO (other)	?
15.	Ted Taft	Charleston	MFO	NO
16.	Maed Farrow	Newport Center	MFO	—

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR ^{NEWPORT} ~~South Royalton~~, June ²⁸ ~~23~~, 2016 PUBLIC HEARING ON

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17.	Reg [unclear]	Chard Family Farms	LFO	Maybe
18.	Cy Nelson	Nelson Farms	LFO/MFO	maybe
19.	Mark Cannella	UVM Extension	N/A	maybe
20.	DEB BUCKNAM	Walden VT	NO	NO
21.	Jim Brown	Deer VT	NO	NO
22.	Richard Nelson	Nelson Farms	LFO	maybe
23, 24	Trevor + Keith Gray	Gray Farms	LFO	Maybe
25	Jenny Nelson	Home Acres Farm Ryegate	SFO	-
26	Jess Kinned	Montpelier VT	NO	NO
27.	Heather Shouldice	Montpelier	NO	NO
28.	Amanda St Pierre	Berkshire	LFO	NO
29.	Brad Maxwell	Coverbury	LFO	NO
30.	Shawn Mead	Newport Ctr.	MFO	YES
31.	PAT SAGUI	CAV		maybe
32.	Daniel Hudson	UVM		maybe
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VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR ^{NEWPORT} ~~South Royalton~~, June 28, 2016 PUBLIC HEARING ON
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SPEAKER LIST

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<u>YES</u>			
NO			
Amanda St. Pierre			
Shawn Mead			
<u>MAYBE</u>			
1. REG CHARVAT	Charvat Family Farm		
2. Cy NELSON	NELSON FARMS		
3. MARK CANELLA	UVM EXTENSION		
4. RICHARD NELSON	NELSON FARM		
5. TREVOR + KATHY GRAY	GRAY FARMS		
6. PAT SAGNI	CAV		
7. DAN HUDSON	UVM		
SET Bobby STARR	SENATON		
2. JACIE FOWEN	CARANT VT		
Justin Misheer			

?

#1

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR Brattleboro, June 29, 2016 PUBLIC HEARING ON
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1 PETER F. BARRETT	Stoneholm Farm	MFO	
2 Chas O'Keefe	VTFR		
3 Barb Clark	Clark Farm LLC	SFO	
4 JEFF McBURNIE	CASELA ORGANICS	NO	NO
5 Kate Bowen	Meadowdale Farm / Windham Cty Farm Bureau	SFO	
6 Marya Merriam	Rural Vermont	no	no
7 Andrea Stander	Rural Vermont	NO	Yes
8 Colene Parrot Fox	WCNRC/D	NO	NO
9 MARIE L. CADUTO	VT DEC	NO	NO
10 Drew Adam	VACD	NO	NO
11 David Deen	CRWC	NO	NO
12 Chuck Armstrong	N/ALS	NO	NO
13 Matt MUISE	FSA	NO	NO
14 Marion Major	Windham Regional Commission	no	no
15 Sam + Mark Rushton	Rushton Farm 1440 Rt 121E Grafton VT	SFO	NO

(15)

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR Brattleboro, June 29, 2016 PUBLIC HEARING ON
REQUIRED AGRICULTURAL PRACTICES RULE FOR THE AGRICULTURAL NONPOINT SOURCE POLLUTION CONTROL PROGRAM.

Please PRINT NAME and also indicate your hometown for identification purposes
Speakers will be called on a first-come, first-served order, using this sign-in roster.

Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
1 Jill Garland	Westminster Farms Westminster VT	LFO	
2 Matt Clark	Clark Farm LLC		
3 Vern Grubinger	Wm Stetson, Danneberg VT	No	Yes
4 Jennifer Garrett	Vermont Land Trust 54 Linden St Brattleboro	No	No
5 Gabe McCarthy	10 HETTON & LEWIS FARM	yes	No

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

SIGN-UP SHEET FOR Manchester Center, June 27, 2016 PUBLIC HEARING ON
 REQUIRED AGRICULTURAL PRACTICES RULE FOR THE AGRICULTURAL NONPOINT SOURCE POLLUTION CONTROL PROGRAM.

Please PRINT NAME and also indicate your hometown for identification purposes
 Speakers will be called on a first-come, first-served order, using this sign-in roster.

SPEAKER LIST

Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
ALAN BAKER			
JESSE McDougall			
KEITH ARMSTRONG			
ANDREA STANIER			
PHILIP MACK			
SCOTT.			
<u>NOT SURE</u>			
HILDA HAINES			
* DAVID TODKEY	Dairyman from Rupert.		
ROB WHEELER			
BROOKE DECKER			
JEN MUNN.			
KYLIE CHITTENDEN.			

VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS

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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/ <u>other</u> /custom applicator	Do you wish to speak today? Yes/ <u>No</u>
1 J. PYLES	DANBY, VT	OTHER	NO
2 Steve Berry	Manchester (STATE REP)		
3 Rep Carolyn Branagan	Georgia - Franklin County	NO	NO
4 Jan Miller	DRAFT - Rufford, VT	NO	?
5 Kylie Chittenden	Whiting VT	Yes	?



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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Hilda Haines	Fisk-Haines Farm Danby	SFO	Maybe
DAVID TODGEY	DALEYMAN RUDERT	SFO	DEPENDS
Ashley Audet	careful Animal numbers	LFO	NO
Karl Pfister	Landgrove VT.	SFO	NO
Betsy Miller	UVM Extension Burlington VT	SFO	NO
Rob Wheeler	Wheeler Farm	SFO	?
Nancy Everhart	VHCB		no
Brooke Decker	Hildene Manchester VT	SFO	?
Cynthia Larson	Larson Farm	SFO	
SCOTT	Someday farm		YES
Kara Waite	Dairy	SFO	NO

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Name	Organization, Town of Residence & Address	Do you farm in Vermont? LFO/MFO/SFO/other /custom applicator	Do you wish to speak today? Yes/No
Sham Riordan	Grateful Morning Dairy, 75 Lawrence Rd Shaftsbury, VT	yes	No
Alan Scott Baker	3111 UTRITA Shaftsbury, VT	No	Yes
Jesse McDougall	Pullman Farm, 957 Trumbull Hill Rd, Shaftsbury VT	yes	Yes
Casey Wing	"	Yes	No
Keith Armstrong	ARMSTRONG FARMS Bennington VT	YES	YES
Tina Williams	Rutland FSA	NA	NO
MARGE STRASTY	Rutland FSA	NA	NO
Arthur Whitman	A+K Agri services Box 866, N. Bennington	No	No
Andrea Stander	Rural VT	No	Yes
Philip Mack	Pawlet VT	yes	yes
TIM HENDERSON	BCRC (Sandgate)	No	No
HEATHER STANDER	WJA	No	NO
Dan Brooks	Wayward Goose Farm West Pawlet	Yes	NO
Rick Brown		yes	NO
Pete Brooks	Conside Bardwell Farm, W. Pawlet	yes	No
Aryn Clark	Bennington VT.	Yes	NO

RAP Public Hearings Testimony

St Albans RAP Public Hearing

Time Start	Time Stop	Speaker Name	Comments
48:46:00	55:52	Rick Button	<p>FWA Member; involved with Water Quality issues, solutions for better part of 10 years. Share with you my job consulting on farms one of the things that I get for input from dairy farms a lot of questions about and around what is it actually costing me to adhere by the RAPs etc. I was on a LFO and it became evident that it would be of value to figure this out. What is actually the cost of complying with these problems. what we did was in talking with dairymen it seemed as though most of their concerns focused around. Again I will be probably small window of all of these projects. Farmer was focused on shortening of the growing season for corn silage, felt that the restrictions put on them from a manure season standpoint and the what was happening in terms of being restricted to when they can spread, but that was dealing some of the planting. on the front end were losing some days. On the back end of the harvest system, this farm was accepting the cover cropping forced to the October deadline to shorten deadline. More buffer strips, losing some cropland and 10% slope, felt they would get less efficient how to go further for same amount of crops. Kurt Ruppel helped developed a spreadsheet for this farm to analyze the actual dollars of sense of what it meant for this farms profitability. looking at it, first looked at planting costs, no difference in planting cost, initial expense not different. Then looked at reduction in yield, what the effect was on yield. particular to shorten growing degree from 106 to 98--reduction of 3-ton corn silage per ever day of corn. on this farm this was a 28% yield drag. 19.8-ton acre average. silage removed and what physically is going to be the change in the silage. Milk production. Typically see less digestibility that is corn in the 90 day. and also see reduction in quality in nutrition quality of the plant. Increase of about 339 per cow per year, \$1.09 per hundred weight, loss of 33,390 per 100 cows, 169,000 loss to a 500 cow farm. 6% gross revenue loss. So again, my reasons for being here today not to question the RAPs. I question when the practices are brought on to the farm, how is it affecting the sustainability of our farms. Running 3 -4\$ under cost of production, in this example, another 1.09 that this farm is being asked to withstand out of this. In bad economic times, \$1.09 is the margin. big stake in this. 2.2billion business. everyone wants to clean up the lake. We done a lot of things to do it, have implemented a lot of money. Concerned about sustainability as they move forward.</p>

Time Start	Time Stop	Speaker Name	Comments
56:05	59:40	Darlene Reynolds	<p>I am here today speaking on behalf of Darlene Reynolds. Concerned how much power these RAPs have given to the Secretary of AG. Uncertainty, not sure what will happen in coming elected change. A small committee should be developed on a case by case basis. Sec. of Ag, someone within agency, someone from Dec, farmer, timely farmer comments back to the e farmer. that would at least put some merit in discussion with what's going on. we are all different, not every farm is exactly the same. leaving these decisions on one individual. too much power to one individual. that will allow us to have a profit, or put us in the hole. in these raps there is no concern for economics. I must say too that publicly we need to always recognize how much has already been done. since 2006, done a lot of stuff since installing a manure pit, huge expense and huge undertaking. I want to let you know that not everyone is going to have the time or resources to implement this. I think you need to heed that every farmer has tried their hardest on their dairy to push it forward. In the past 18 months, your agency has really come across as it needs to be done yesterday. These RAPs need to happen to improve the lake, but at the same time, need to have reasonableness rather than threats.</p>
60:00	1:03:02	Michael Richards	<p>Thanks for your time. My name is Mike Richards. Milton-Georgia town line. I don't think I need Agency of ag to scrutinize us, because our neighbors do all the time. Biggest problem with this I wonder if anyone recognizes that 1/3 of population we had since then. Since 60-70s, seen changes. Will agree that lake is dirty and appreciate agency of Ag's efforts. seems like some of these rules handcuff us. Have an employee he is 29, plan is to sell him the place. Questioning rather the right purchase. It appears to us that there is a lot of handcuffs being brought down on us. I spread manure like anyone else every year. Now it's a major science project. I don't disagree I think it's a cost. Those that know us, that can be respectful, but I'll speak my mind. In closing. Appreciate your efforts, we need to clean up the lake, everyone's responsibility, another thing that comes into my mind. The media it's like we are the scapegoats, it appears to me, maybe I'm biased to my opinion, we are unfairly singled out. I feel the increase in population in greater Burlington area. Thank you for your time.</p>
1:03:15	1:05:55	Sarah DeSantis	<p>Thank you for your time. My major concern with the RAPs. 20ppm with P. Lots of field that have higher than 20ppm. Veggie farms, farms with animals. No in the current draft no distinction between soil type, slope, if in a floodplain if close to water. Obviously that some areas are more likely to run off. That would differentiate between soil types and slope, and critical source areas. Where runoff is not likely to occur. 20ppm. so excessive. when you get up there, will affect so many different farms. Composting is integral, being able to spread manure is important. If we can't spread it, can't spread manure. where is it going to go? Especially with compost law. every organic waste is going to need to be composted, where is it going to go. What this is going to mean. Some farms will need to apply N fertilizers. And those have environmental effects. Costs of mining and peanuts for N production, global outcomes from taking into account. Would like to see critical source areas included in the RAPs.</p>

Time Start	Time Stop	Speaker Name	Comments
1:06:10	1:12:12	Amanda St. Pierre	<p>Operate a dairy farm in Berkshire. We have been part of this process since the very early portion. Steering committee, legislators on act 64. Intent as dairy farmer is to own our part and move our way forward. A key component would be education, training, farm planning when all else failed--enforcement. I can say that the tone of the Agency has changed. Tone of the agency is not what I see or what I expect to see moving forward. If you are going to have us say something, need to have faith will be treated with the same considerations. Farmers in our state have accepted the challenge and are continuing to work towards bitter end to get it right. We will live with it, and live with our streams lakes rivers. Part of the testimony in the fact that as we look at the RAPs. The question I have are 3. 1. What is being required of us going to be effective. will it be effective? 2. Will it be achievable? Farms around the state 3. is it economically viable? and I ask my legislators here today. Intent of the RAPs. And the content. Some things we would like to point out. Will submit. Consistency issues as well. 1.1 persons engaged in farming shall be presumed to not have a discharge of agricultural productions. Investigations based on. 1.1 RAPs shall promote and encourage farmers in prevent ag pollutants from entering ground water. 6.01 and 6.02-- prevent is used in more absolute terms. RAPs provide less flexibility than Act 64 was trying to provide. Comparing to RAPs to what they are now requiring. In further testimony that we need clear definition of terms. Several terms: Concerns on how to measure and evaluate: 6.03--analysis greater than 20ppm to reduce P levels over time in the soil. Testing parameters. Calendar restrictions. Definition of frequently flooded fields. Different restrictions as defined by USDA frequently flooded. Those soil erosion concern is not tied to their definition. One of their concerns is looking at this section. Can get more done in collaboration together. Why I have participated in 3-4 years, feel we are further behind now than a year ago. Ask that the ag secretary key component: promote, educate and assist dairy farmers.</p>
1:12:30	1:19:10	Bill Rowell	<p>Bill Rowell brother and him are trying to farm in Sheldon. Have a pretty nice operation. Going to host the VT breakfast on the farm for VAAFM and UVM 1000 people, vtbreakfastonthefarm.com get your ticket reserved show up and see what a farm today looks like. Implemented practices. Worked with some water groups. Put a digester on the farm 2.75mil. 2 years ago put a dragline on the farm, 300,000. that's a lot of money to spend, but we've spent a lot of money. most farmers on a daily basis put practices on the ground. Would like to see sentiment change with the public. North beach closed, excessive E.coli, seen that happen over the last 40 years. That happened because of as storm event from overflow. Understand that agriculture and forestlands comprise 80 or more % of the land base in Vermont. Agriculture accounts for like 40% of the problem for TMDL for [for LCB] how Montpelier seems have promoted a negative sentiment against the farmers and I don't appreciate that. We've done our part are doing our part and will continue to do our part. That needs to change before more. If you lose these farms, jobs, 6000 or 7000 jobs to agriculture, 2.2 billion out of economy. Farmers aren't making any money right now. And listening to all of this language that is important, farmers want to clean up the lake. Part of our heritage. Not going to happen overnight. Think you have a pretty good job. Tumultuous task to try to pull off, I guess I question why is it such a short period of time. Why not take longer, make sure interpretations are correct? So definitions are in place. For example, can't spread manure if it's raining. But what if its injecting manure and it's a very light rain. No he's out there spreading manure, someone calls agency of ag, with yardstick and bring us in line so to speak. What about on the slope of land. Spreading manure. What if the manure is being injected? Intent of the rule enacted by the legislature when it is interpreted by the agency. Intent of the rule went out the window when got taken over by the agency. A bit disgruntled over these narrow interpretations. Definition of terms. In some places of the documents. Prevent means one thing, and in others, prevent becomes more stringent too strict. if someone complains about the farmer, the response time by the agency is pretty quick. really go see us. if farmer has a problem and needs a quick response, it seems to drag. agricultural pollutants are used throughout the document, do not seem to be defined.</p>

Time Start	Time Stop	Speaker Name	Comments
1:19:20	1:21:35	Katie Emerson	Student at VLS. Masters in Environmental Law and Policy. Livestock exclusion from surface water plus buffers. Livestock exclusion do not feel that it is enough that only prohibited from reaches that are eroded. Should be excluded everywhere. And also deposit nutrient rich manure in the river. Reduces risk to pathogens and E.coli issues. CREP is an option. 15 to 30 years. Farmers are compensated for losses of their land. 2nd point in regard to buffers. I feel that buffers should be larger than 10 or 25 feet. Buffers catch sediment, thus provide additional habitat for wildlife and environment.
1:21:46	1:22:30	Scott Magnon	FWA, FNLC, small farmer, custom applicator a lot of. Section 10 i: new addition: request for farmer who does not have a NMP, notify the VAAF. Why wasn't it in draft 1 or draft 2. My feeling that service providers for point meant for regulation. Won't be a good idea to be point people for this.
1:23:30	1:25:05	Rebekah Weber	Lake Keeper. CLF will be submitting their comments in writing. Wanted to point out that the regulations that are coming out of RAPs, the requirements are coming out of federal are coming out of TMDL, are coming from Missisquoi Bay Basin, the 83% reduction. Add to the record, while I think it is important to hear the concerns as especially that at the end of the day it is about getting to clean water, meeting our legal requirements not a whole lot of requirements. New pollution limits, they are extremely progressive and are stringent and about putting our heads together.
1:25:15	1:27:25	Dick Longway	Dairy farmer Swanton. What some of the costs we are going through. As the agency is aware of, we took care of many issues. But anyway. A million gallons of manure going through this pit. NMP to be certified. Put 2,200 gallons leachate, we had to add 1.5 million gallons of rainwater. Correct the problem. Following these problems, we are creating more problems and I would like to a way that we can correct some of the problems we have create through trying to do the right thing. Through compost pile. Have had a compost pile close to the woods to 4-5 years that people come to get for their garden. Not in compliance to not let it set. To let them have to spread it every 2 years. Where is that rule going to apply to me. Listening to everyone. Trying to transfer the farm. kids probably going to get sued over these new laws.
1:27:50	1:32:30	Harold Harrogian	Dairy farmer Fairfield. Been involved with this process for 2 or 3 years. Seems like longer. Been a lot of good comments. Primarily have 4 areas. 1. 20ppm for P level in my unprofessional level seems to be low to moderate level to raise a red flag to manure spreading etc.; 2. Oct 15 spreading ending date on floodplain really prohibitive to farm that land in the way it needs to be farmed easiest to access because it is dry, sometimes once in a while it floods, and never has been all we have to do is live with them, taking one month off the growing season on a pretty short growing season, kind of like a land grab, don't think dairy industry can move forward with the restrictions. Putting restrictions on marginal land and grow less tons per acre on more marginal land. Moves slowly as it recedes. Lands adjacent to the floodplains. 3. 100' buffers, have some lands in Fairfield and Fletcher, 10% slope on a lot of our land in excess of 10% slope, 100' buffer on some of our fields, won't have much of a field left. Very restrictive. 4. biggest problems is we've always had a social license to farm, sentiment from the public has really turned against us. Need to correct that and will be corrected than the tides that have turned against us. stated here that 40% comes from our 84% of the land. 60% of the load comes from 16% of the land. Think the state has work to do. one more all-in approach from people in the watershed.

Time Start	Time Stop	Speaker Name	Comments
1:32:55	1:43:30	Andy Hoak	<p>DuBois and King. Work with Agency and NRCS on water quality improvements projects throughout the state. Certainly understand the importance of the adoption of the RAPs. As pointed out, RAPs are 1 item in a complete menu of efforts the agency is undertaking to improve water quality. Other items include drainage tile drainage, work through conservation partnership program, environmental stewardship program. The Lake Champlain TMDL has been finalized and in the TMDL they point out several % reductions that are need to meet TMDL allocations, throughout watershed segments, broken down by land use. if find that area, ag production areas are slated for 80% reduction, NPS 83% and 35% in St. Albans Bay, my question or request: could the agency comment on what portion of the percent reduction to they anticipate to be accomplished with the RAPs. One other question: separation zones, for new WSFs, 200' separation will be required for public or private wells. I would recommend that the agency through LCAR process coordinate with DEC and folks in drinking water protection division, know through their permitting process they have different requirements on public water supplies. Possible for almost 100' if up gradient, scenario may be appropriate here. Conversely, that separation zone could be increased, if shallow or dug well it has increased susceptibility to viruses and pathogens, under DEC program, distance would be closer to 500'. Coordinating closely with DEC, align the requirements.</p>
1:37:20	1:41:00	Robert Star	<p>Came to listen today. Throughout the process have heard some comments that are good and some that are disturbing. Section 1.1 of RAPS. States the RAPs shall be designed to protect WQ and shall be practicable and cost effective to implement. In several cases, may be not very cost effective to implement some of the practices that have been presented. other issue that is disturbing, spent most of winter before last working on this piece of legislation, and probably in all the testimony we took, made have spent a few hours at the very most dealing with LFO and MFO permits. And what I have heard here today, most of the complaints have come from the LFO and MFOs in regard to their NMPs. We in the legislature spent very little time if any dealing with either of these 2 groups, mainly set up to try to bring into compliance the small farms. And been through the rules, translated that to what we passed and they seemed to be quite accurate, yet we are getting a lot of negative responses from MFOs and LFOs so I guess my concern is, why are we taking on the LFOs and MFOs at the same time as we're trying to get the Small Farms under compliance. We've been told time and time again in the legislature that the LFOs and the MFOs are doing fine. Yet, I get here today and I hear these dairy folks and I've visited many of their farms and most of these farms are very, very, very good farmers and run a good operation. So I'm questioning the process than the RAPs. think that they track the law fine. there is something wrong in the process and my dad always told me, and I'd get a little you'll catch a lot more bees with honey than you will with vinegar. I hope that the agency would have an attitude of working with these farmers trying to get them into compliance and get them some time to work through this with 15\$ milk there is no extra money on the table to spend. I when we started this 2 years ago, farmers were the first group to the table and we should appreciate that and not come down on them and not come down on them with a heavy hand. Fining or assessing fines for being out of compliance and if are out of compliance, maybe whoever was reviewing these within the agency, I'm sure they've hired. Maybe a little more scrutiny applied on putting those together. thank you</p>
1:44:50	1:46:40	Ron Machie	<p>Dairy farmer in Sheldon. Ask this question: with these new RAPs coming out, where is the scientific proof that these are going to be effective. Another comment 90% of this is all paid on for us. When I go down the street so sign up for this, doesn't rank high enough to get subsidized. So when people think this all gets paid for, that really does not happen. I put a centrifuge in, state wanted not to participate at all. Take the P out of manure, state decided there is no need for it. I don't understand the process.</p>

Time Start	Time Stop	Speaker Name	Comments
1:47:00	1:50:13	Alex Winehagin	<p>Municipal planner. Town of Hinesburg. Been doing community planning for 14 years. Involved in other aspects of cleaning up lake. Municipal wastewater system upgrades, roads and stormwater. Reiterate something: I think that a lot of good work was done, written comments will come in. But these are regulations that lack a funding source. someone has the best of intentions. and what we lack is a funding mechanism to make this possible. Where is the money in the ag sector? Unfortunate that Chuck is not here today. As a leader the Agency and the Secretary need to talk to the folks who drive the funding and bring some dollars to the table to help them get enacted, so not on the backs of the ag community. A lot of unfunded mandates from state and EPA. All best of intentions but unless our legislators have the guts to raise revenues, very difficult to make these RAPs actually happen. Specific comments on rules but I think a lot of comments today key make very little progress.</p>

Brandon RAP Public Hearing

1:05:40	1:11:54	Andrea Stanard	<p>Rural Vermont. Thank you to the agency for all that you've done which I know that is way beyond what you are required to do, the whole round of what you did before I know it has been an enormous amount of work, thank you for that. I always want to acknowledge that there has been significant changes of subsequent changes to the RAPs, that this is a process that matters and that people can participate in and make a different. A couple remarks in the introduction that should be used to set broad goals and broad intent, they will get a framework for what this set of goals is, tremendous opportunity. very valuable in legislation for people to lay that out. And I think that the point that the point you made Secretary Ross the point to move towards culture of clean water, introduction part of the raps is a place to do that. And I think specifically one point I'd like to make, there is a lot of emphasis on waste and how we deal with waste, and I think it would be very useful if turned away from waste to nutrients or excess nutrients, one of the ultimate goal is to keep the nutrients on the farm and prevent them from going where they go or where they don't need to go. move away from term of waste to excess or whatever it is. In section 4.2 which is actually a point where we've spoken with the agency about again. Act 64 gives Secretary authority to exempt people form certification on a case by case basis. This section needs to be more clear. Process and criteria for how that might happen. So that if a farmer is able to come forth to the agency and show that that what I am doing is meeting the requirements, then would be a good way for the agency to hear from farmers who and take them out of circulation and not spend time on those farms. More time on process and criteria of how that would happen. Section 5 addressing the WQ training, we would like to say that there is more need to focus on soil health and how we build soil health, and it is still too vague, and its too focus on mitigation as opposed to how to prevent problem to begin with. Section 6.04: soil health mgmt. and cover crop requirements, still feel this is not strong enough. Shall be considered and implemented as practicable, soil health needs to be raised in terms of it value and importance. soil with lots of organic material is going to hold more water and prevent pollution. Referring to T, still allows to erosion I think our goal should be to stop erosion not have erosion. Cover cropping, need to create a phased in program that will lead to cover cropping everywhere, training, funding incentives so farmers can move towards that. If we can't move in that direction, we're not going to solve the problem.</p>
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Time Start	Time Stop	Speaker Name	Comments
1:12:00	1:17:30	Elizabeth Frank	<p>On lake in Orwell. 54 acres diversified fields. Several questions. 1st. Cover cropping which is super important. Noticed this season adjacent fields that are cover cropped were then spread with pesticides to kill that cover crop after crop had grown in vs. not applying any pesticides and tilling in for a more nutrient dense soil. Where would recommendations and regulations concern pesticides and cover cropping in particular. I also noticed that during the presentation there were 5 or 6 different agencies working on road, transportation, seems that a lot of these issues are connected to each other, wondering if the state has considered a team or a few people who are experienced in cover cropping or at a minimum vegetative design, coordinate with factions a general plan for improving not just water quality but also nutrient dense soil and our quality of life. VT we are supposed to be doing the best of the best. permaculture and regenerative design experts would help add to the conversation; creative solutions to help everybody. One other question I had was regarding land that say for example plan over time have other farmers multipurpose farm with say u have a CSA and another person has fungi and an orchard or something with goats; I as the primary landowner would I be responsible for the RAP regulations that would apply to all of those individual business that would be happening on my farm, or would the onus be on the individual farmers using the land. Not clear how that would function. Should be addressed more clearly. Seems there are a number of situations where land could be shared by land and bunch of new people and it would need to work in a collaborative way, but is also fitting in with over all with raps program. That obviously needs to happen to improve quality of water. Paul Stametz. Brought this up with ANR. Shitake mushrooms one of these crops that is able to sequester toxins and runoff. Expert in the fungi world 'Mycelium Running' is his book. Roots sequester, fruit can still be eaten. Sequester toxic runoff, seems a no brainer this could see along buffer zones. etc. and same thing with buffer zones with perennial plants looking more closely at what is planted there. Permaculture, regenerative design,, lots to refer to, really appreciate the extra time for this sharing. Appreciate this time. Hopefully permaculture.</p>
1:17:40	1:19:05	Brian Kemp	<p>Brian Kemp, in the past have voiced opinion on a few things that I realize the decisions have been made based on animal units is pretty much ironed out. Encourage the agency that if these numbers are going to stick. Farms that will be non-certified that still need to be watched. Lots of still happening with AAPs soon to be RAPs, they will need additional attention. But I encourage you as constituents are out doing inspections that they are also watching the other farms that are not certified. If not, going to lose a lot of integrity in the program as they see these other issues keep happening.</p>
11910	12105	David Mills	<p>David mills, farm over the hill in Pittsford, this what Brian talked about perception. Was at VT league and cities of towns. This document of changes in state regulations was presented. Water quality on small farms. H 829. lots of discussion, probably only farmer out of 150. Struck closely to us. Standards of: act authorizes the Agency of Ag to approve the storage of manure nutrients, in a floodway. So I don't know if this I actually in there. But it is, maybe ought to rethink it. From a personal standpoint. Putting any of that stuff in a floodway doesn't make any sense.</p>
12120	12805	Mark Goodwin	<p>Mark Goodwin, Addison VT. Reformed dairy farmer. Grow corn and soybeans. I have spoken before. Just for recap my other comments: saying that we are looking at the wrong thing because P in the lake is not the problem, P on land is not the problem, water running off the land which is the problem that is what transports the nutrients. What I would like to point out, is a few things in the draft. 1 is section 2.05; buffer zones: it says buffer zones mean an area of perennial vegetation between.... definition: what does that mean. No verb in the last 1/2 of that. I find that totally incomprehensible. similar problem with the 2.12 ditch: ditch means a constructed channel. that is confusing. Section 6.07 buffer zones: definition:.... consistent with all criteria. section b) ditches shall be buffered by 10' of perennial vegetation unless determined to transport significant nutrients--> again, say what. so you are saying that it is consistent with 590 then it is what. one of the comments I</p>

Time Start	Time Stop	Speaker Name	Comments
			had before. buffer area on field ditches will be counterproductive: interrupt flow of water down the slope to divert it at a tangent so it doesn't erode downslope. I am going to lose over 20% of my fields. If I am faced with that choice I will tearing out those ditches. They will be gone and the water will follow the fall line. The purpose of the ditch does 2 things, flows flow of water down the slope. that when water gets caught gets caught it will overload all the buffers that you have. One of the other sessions Ms. DiPietro, said that statute requires that. However, statute does not require that. statute says: sec. shall prohibit 25' of adjacent water of. 10' manure spreading setback. point of order. this agency shall provide a process in rendering decisions opportunity to all interested expressed. That those can be limited. Just earlier today. People can go to other meetings to make their statement. Thank you.
1:28:12	1:30:07	Eric Severy	Custom manure applicator out of Cornwall. Most of our land in Addison county. One suggestion that I have. There is technology out there with minimum till injection and aeration, in parts 6.03d 6.05a,b,f some consideration if a farmer is using these techniques they should be allowed on a 10% slope to get closer to the surface water, or mainly in the floodland [sic] if injecting manure subsurface and not tilling the land up, why no increase risk to runoff from flooding. Will promote farmers to keep doing good things they are doing instead of discouraging them.
1:30:15	1:32:46	Hannah Davidson	Local organic vegetable farmer. 100-acre parcel. Mixed pasture, wetland and acreage In vegetable production. Probably are fall into category where we do not need to certify. Similar concerns from Elizabeth, to keep property appropriately managed, other folks managing parts other land, not clear who bears the burden of certification if one makes it to that category. I do feel that I could be more specific, I feel that as someone more on annual crop production, the language in the entire of the RAPs is really skewed towards mitigating runoff. Does not really address concerns around annual veg farming, not a lot of emphasis on regen. soil management. I feel the size of the farm that it makes much of a difference if have 1 acre or 100 acres, if going towards the goal of improving WQ and reduction erosion, the only 1st 3 categories should held to a standard of implementing permaculture practices. I don't think it should matter so much what. should be more practice based is what I'm trying to say.
1:32:54	1:35:28	Bob Lich	Bob Lich in New Haven VT. Thank you Secretary Ross and team, thank you for that you are listening to our comments. My questions are specific to the definitions. 2.14: farm structure--in section 2.14, exclude dwelling for human habitation; however current use law, habitations are mentioned as farm structure. Definitions should remain the same between all the laws. 2.16: I am confused and clarification: on what is a 'vegetable manure'. Try to find a definition, but could not. Section 2.20: food processing residual: excluding slaughtering and rendering operation. why excluding those. Each of those would meet the definition of a raw agricultural product. If a good reason I would to hear it. 2.32: surface water or waters: I would respectfully request that we become no more intrusive than what the federal government determines what is a surface water of us. I do not think it should include my farm pond.
1:35:35	1:38:00	"Brigham"	Thanks for opportunity to speak. Brigham. From Shrewsbury, represent family that have not been able to be here. Just want to make a short statement: will put other comments on paper. We all support healthy organic agriculture, rather concern ourselves with numbers of acres what we need to be concerned with of the soil and the capacity of the soil a great deal easier to address. Not to knock raps so far. Very important with the raps, important to consider what is in the manure: herbicides, pesticides, something the RAPs need to have in it eventually. Something I thought of while sitting here: Switzerland, rules that are very specific-behoove them to reach out to them to duplicate what they are doing. What I am here to say, let our put our priorities in the right direction, priority is of course clean water: not using toxic things like roundup to kill off the residues of our cover cropping to help health of life in general, thanks so much again.

Time Start	Time Stop	Speaker Name	Comments
1:38:10	1:44:36	Paul Stone	<p>In general, the regulations look pretty good. One important question; are there any grandfathered structures or structures we should look at. On our farm, lagoon takes the runoff from our turkey processing, we have a manure lagoon. Out of practice before we start. Something to look at. Specifically: in 3.2: annual agricultural land; not quite sure what you mean there. What are you getting at, not sure if annual needs to be there? If remove small grains, in this whole document is to reduce erosion, small grains can easily erode land so I think you need to clarify that. Section 2.5; brought up before, what does that mean. Section 2.09, talks about crop and croplands and for that section, need to add: crops grown for fuel, that may be part of our ag practices. 2.11; talks about discharge and injection well; what is an injection well' not the foggiest idea. section 2.12: ditches, on our farm we have 40,000 LF of diversion ditch, designed by NRCS as an exit for the water, we have tile outlets, standing pipes about 3-4 feet high to take the water and take it out to a body of water, these need to be taken into consideration, very important on clay soils, these are ditches that are actually called diversion ditches, follow contour to slow down the water to prevent erosion, so I think they need to be included in definition that in the regulations, that tile outlets that discharge directly into water are in fact not direct discharges. Taking the place in many cases of sod water way, they are more effective in reducing erosion. Also need a definition of a permanent grass water, some discussion in the document, very important as far as prevent erosion. As far as the water ways. In raining pesticide applicators must somehow be trained to know when not to spray with herbicides any grassed waterways. in our case, say go and spray that field and also kills sod in waterway, fault and both applicator and farmer, needs to be cleared up especially in the training. 2.32: questions about this section before, including manure lagoons in that section. Section 6.01: tile outlets, hope that you will include in that section discussion about tile outlets and function they in preventing erosion. These reminders designed. section 11: needs to be removed or radically changed because what it does is give the Secretary power to invoke any regulation whether they are in the regulations or not. that should be sufficient. Needs to be taken out.</p>
1:44:45	1:45:30	Phil Wagner	<p>2.35: thermal pollution: should be stricken, RO water coming from maple syrup production, is too broad and leaves too much for interpretation.</p>
1:45:40	1:48:50	Doug Zainer	<p>Addison county resident. I had submitted a pretty thick document, one thing that bothers me particularly that needs to be raised. If we are serious in Vermont about cleaning up the water in our streams and lakes, I went back and did some calculations based on census data, found out that between fertilizer we buy and livestock we have in the state. Creates more P than we can apply safely and regeneratively in the state. To me, going to have to export P in some fashion, or out of these watersheds, obviously in many cases, be interested in soil test data from extension. But as we build soil P level in soils, reduce that opportunity for it to move with surface water off, between 3T of soil we say is permissible, if really are concerned bout diminishing amount of P, realistically, the question remains are going to be able to cleanup these waters or not. This may be the only option we see. The biggest question to the legislature, do we have technologies we can do this with. Lock it up dep in the soil profile. or export it to areas that need P. Big concern can right regulations, will it have an effect, maybe not. Need to go in with our eyes open, that is that is the objective, that we are up against it with the amount of P that is produced and imported. Thank you.</p>
1:49:15	1:50:35	Paul Stone	<p>I raise 33,000 turkeys. Section 8d. Says that Secretary shall conduct groundwater investigation where secretary has received a complaint in a vicinity of a farm, or that a farm has contaminated. Change has to "may have" -- should not condemn the farmer for something they have may have not said this.</p>
1:50:45	1:57:07	Mark Goodwin	<p>Mr. Stone has said more eloquently than I have said. I would like to second what he has said. My concern is around the buffer around the ditches. Ditches are a water quality structure. What he said about the tile outlets. They are a substitute when you can't put in a grassed water way or a stone waterway, so I appreciate him saying that. The question made about exporting P. Original source of P was human urine. P was made by distilling human urine. A couple comments about</p>

Time Start	Time Stop	Speaker Name	Comments
			<p>pesticides, that all goes into the new technology being developed right now. Cover crops, no-till, strip till, manure injection. These are not separate technologies; they are one part of a system. The rules should not take one side against the other. spraying pesticides on cover crop is how u make it possible to kill them. Looking at the wrong target. I was told that if u want rabbit diner, u shoot at rabbits not cans. What is in the soil is not the problem and after it gets in the water is past the problem. The problem is with stormwater runoff. More rain events being worse and so on. since 1950s have reduced the number of cows by over 1/3, reduced # farms, but water quality continues to get worse. Where I used to swim no one wants to swim anymore. But what has changed we have more runoff events caused by impervious surfaces. Lowers water table. Want to lower it but not too low, that way the rain can be observed and more can absorbed, more runoff events it is the runoff events that cause the issue. First thing 1) when you have rain, u don't have impact erosion and start it moving, slows down water flow down the stream. Purpose of the diversion ditches, moves it laterally in an outlet it in the structures he outlined. Have to look at that system and not put impediments to farmers implementing these. All have investment and have the same goals. Actually have low P and the more I can store on my land, this is what we should be focusing on. Not focusing on itty bitty how many livestock. Concentration of animals is a concern, when too many, difficult to dispose of the manure. When I plant a corn crop, I want to put all the P I can on the corn crop. Used to inject it and then when I rotate to alfalfa I did not add more, if in the soil, not subject to erosion, so when look at this. Don't look at no-till, cover crop, injection if stand in the way of this system problem.</p>
1:57:07	2:00:13	Elizabeth Frank	<p>Eagles foot farm: border a conserved organic land a conventionally farmed land as well at the base of the hill. So think it is 4 or 5 years ago the state put in a new major culvert. Channeled runoff from top of the hill to 30 acres of glen in their property. Since large culvert was installed erosion in the glen has increased dramatically, huge crevasses; can't even walk across. oxen could not even get across the stream again. Subsequently last 2 or 3 years ago when had a large rain event white foam that rose almost to the road level. White foam 5 ' came from that farm, called that neighbor out of farm. Because of the rain, not to worry; try to keep good relations with our neighbors and work together; I am concerned about this runoff. Ditches have been increased, is a solution--Keyline, where you farm on the contours of the land, water is sequestered as it goes; instead of washing down and into a ditch. Again, I bring up possibility for fungi and plants to take up toxic residue. Creative solutions. Thank you</p>

South Royalton RAP Public Hearing

Time Start	Time Stop	Speaker Name	Comments
1:10:45	1:16:30	Peter Burmeister	<p>Barelli farm in Berlin VT, certified organic beef & poultry processing, certified Organic and inspected by the Agency of Agriculture. It is an outrage Mr. Secretary that we are here today at the busiest time of year of the farmer. Demonstrates complete ignorance to of farmers, taking time away from busy scheduled to be here anyways. Board directors and policy committee of Rural Vermont. Organization Rural Vermont postponed to end of the year ample time to study the new draft of the raps to discuss and meeting the fall when harvest is the done, hoped agency of agriculture would heed this, and feel have let us down, have not done that. I feel very strongly put out and disappointed that I have to be here today. Now, that being said I want to address another vital issue which is Sen. Campian s.159 regenerative expected support from the agency of ag, why was it brushed aside. The Agency abandoned it now if you are serious about improving WQ and improving lakes streams of VT, need to have strong advocacy for regenerative agricultural practices continuous growing as continuous silage corn abutting our streams is a major cause of the pollution the raps are intending to address. Unless we begin to adopt crops that increase organic mater in the soil and encourage crop rotation we will have a bunch of rules and regulations that will be without serious efficacy. It will not work. proposed raps cannot and will not make a significant impact on the pollution of our waterways, refuse to address the continual corn and unless we are willing to put in place incentives to replace those harmful practices ewe are going to be fighting the same lonely battle of our waterways decade after decade. What irks me tremendously, that of the proposed buffer zones, dog river, Winooski river struggle with invasive species. Should be encouraging grazing up to into the streams. grazing actually reduces erosion. Need to incentive grazing not exclude livestock from comments. Have to be at the Waterbury farmers market in 1 hr., important income stream for my farm.</p>
1:16:40	1:22:05	Graham Reustehant	<p>Seasonally graze cows on land that rotationally graze. Agroecology design build, tend to have in ecology and cropping fields. Perspective I bring brings these various considerations to bear. Comment on Peter on process agency has invited farmers in, not the right season, many farmers cannot be here. Tough place to be at the end of first cut season. And again did advocate a different date for farmers to have greater participation in the process. On the board of Rural Vermont. To begin with seems like AAPs, best practices and now RAPs, part of me why do we have 3 different things. Best practices are those that would ensure the best practices. Tolerable soil loss, there is no tolerable soil loss, we know practices that do this. Stakeholders more agroecologists agroforestry, those that are in the field of combining traditional conservation ecology, yield of ecological services being . Study in 2016 that grazing in particular was, continuous grazing allowed in waterway in new RAPs, but nothing getting to particular standards that would make it a healthy practice, looking at acreage numbers, not looking at practices. cattle being able to sequester 1/8 of carbon by rotationally grazing. Live in a state and it shows it pollution is coming from specific regions and specific reasons. Practices that are economically and ecologically destructive. challenging ecological and economic situation in the places they are. curious that there are these hot zones that are degenerative, why not focusing on these particular zones, why not focusing on particular practices. differentiating begin spreading liquid manure vs. composted manure, fertilizers prohibited. curious as to how the. why move it up to 50 acres, seems try to summarize some more and get back up here.</p>

Time Start	Time Stop	Speaker Name	Comments
1:22:15	1:27:54	Richard Hall	<p>Richard Hall, thank you for giving me the opportunity to speak on these regulations. Dairy farmer from E. Montpelier, operate Fairmont Farm incorporated, LFO for 20 years. Fairmont dairy in Craftsbury which is a MFO permitted since 2006. We like most dairy farms have participated with the Ag Agency on many water quality projects from bunker silo runoffs to high and low flow systems crop rotations almost 100 % no-till corn and cover cropping just to name a few of the practices. Would like to comment on the tone of the agency, nice job presenting and definitely felt like a good tone, especial the fellow giving the tone. Being a permitted farm, have not felt that for the last couple years much more regulatory tone than the Agency, maybe fellow presenting has not gotten the memo. Some things that have been bothering me, restrictions around spreading on snow covered ground, section 6.04 notes that case by case approval but there is no defined process for getting that approval, or no timetable set for that approval, one example we have had with the Agency handling manure spreading issues we had a late fall corn fall in 2014 with early snow in November which led to manure being spread when snow on the ground. In late November got a request, got denied the request. But I was told we could spread manure in Craftsbury. Little worried about how these new regulations will be handled. A little on alternative setbacks is some setbacks, no timetable set for those. Standards for setbacks is more restrictive if adequately addresses water quality needs based on slope, crop type and over relevant factors, and that is an important that the agency can enact. Other things I am concerned about 6.07 10' buffer on all ditches, think that becomes problematic on dairies farming many small fields, definition of a ditch is debatable and very problematic with the 10% slope and the 100' vegetative buffer. I hope these alternative setbacks are something that will come to fruition. Enforcement of the rules, feels like there is a lot of leaders at the top, feel if it is better if done with a 3 or 4-person group than just ag agency employees. Lastly, unlike NY, NH, whether agency has the ability to be our advocate and also regulate us.</p>
1:37:07	1:37:38	"George"	<p>if every farmer complied 100%, there is more pollution from septic systems than every farmer in the State. Just a small hobby farm, feel like it is a lot of overreach and that it will do a lot of damage.</p>
1:37:45	1:43:35	Mike Bald	<p>My name is mike bald, live here in South Royalton, work in the islands of Lake Champlain to Atlantic Ocean, non-chemical methods. RAPs when I read them thank you for staff for putting work into it. Agriculture is a very broad and interconnected subject, thank you but I feel like the raps are a puzzle piece without a puzzle, does not integrate into the important agricultural things here. Appreciate other people having a though people here. We treat preserve, save do everything but build soil. we don't build soil if we did it would show up in the RAPs, and if we did we would solve climate change thing. But we don't tie it into that. I am favoring organic farming methods. Building soil has to be noticed awarded, rewarded. common buckthorn in my world has 5 economic uses. This is a buckeye stake, rot resistant resource, garden use, stake, brush piles and let it decompose and create soil. But if landowners would stop treating vegetation as garbage, and stop burning it we would have more soil. Not going into the detail of how to build soil, very few people do it and some Organic farms and other people who have caught on. Another invasive species. Which one came from healthy soil. When I am working in healthy sols I get the fields. That is all you get, but I would rather only do it once. rather farming or whatever else doing. High Organic healthy content and is the key to everything we are doing especially water quality, it is the other way around. Water becomes clean with the process of nature. Would live to see the raps tied into sequestration of carbon. Pollinator protection bill will be weak and effective. Stop with the Atrazine. Atrazine and neonicotinoids, they die in committee. They should not be sitting on the desk. these agricultural practices could tie into this public health. 18 goals for cancer reduction took attention as a cancer issue, but atrazine known endocrine disruptor, banned by EU, conclude with saying just saying there is no comprehensive of cumulative effects of everything we're doing to the land, but when you combine acid rain, cumulative effects, what's the effect we need know.</p>

Time Start	Time Stop	Speaker Name	Comments
1:43:45	1:44:50	Johanah Marendia	Wilder VT. Grad student at sustainable. OMRI. Organic regulations already require regulations for manure management cover crops to make sure all of that is complain. Question or encourage, reciprocity for certified organic farmers that are already complaint for this, not overburden farmers who are already certified under organic.
1:44:59	1:50:30	Lisa McCrory	Certified Organic farmer in Bethel VT. Earthwise Farm and Forest. Beef dairy pork, number of pasture and hayland acreage and do some vegetable acreage. Grazing consultant. Organic livestock consultant and on the board for Rural Vermont. Thank the agency for making this process happen, and providing opportunity for feedback. Will concur that timing is pretty bad, would be a lot better if had extended this into fall and winter, a lot more interaction could get a Rule in place that will be functional, this rule has flaws. I am working on current National Organic Program. Will provide point by point in feedback. My focus has been on pesticide and herbicide use, but in my mind is the most critical thing to be address. 1.1 introduction: clearly saying pest and weed control have it mentioned again and again in deliverables for this document. To go on to 3.1 where you are part d) required someone in a non-rap operation just giving them 4 contiguous acres, have all the other different acres, could be someone should be better than nutrient management zone regardless of. Just making less than 2,000 years. Why limit acreage to follow that requirement. 3.2(d) preparation tilling, planting and protection wondering protection of crops. Wide-open word I think what you are talking about is herbicide and pesticide be more overt with that language. Section 4.2 small farm certification and training requirements, as a case by case basis after opportunity for a, not be required to comply, I think this section needs to be fleshed out some more. So many places is on a case by case basis, so many more areas. Would be having less of the case by case are. 5.8, need another section: mechanical application of pesticide and herbicide, would be similar to section 5a4, talk and address clearly pesticides and herbicides.
1:50:46	1:56:45	Amy Huyffer	Thank you for what seems like a sincere effort to get this right. If you get it wrong I feel like there will not be any food back. Section 7, what constitutes erosion. With the stream running through it, very different than what I have on my farm, 52 pastures that cows are in for 12 hours at a time. I need to have pastures that have an area for them to get water, need to have a place to put them. that is a big deal. if presence of erosion is some cow footprints, writing something that very specifically protects, not trying to target my 12 hours of grazing, if a grant program am on board, but that is a big concern for me. Second thing that I wanted to say, when I first heard about these RAPs, kind of freaked out. It's not so bad and there's programs, and then as I've been at these meetings, wait a minute I'm not in an area considered sensitive, not in any of those places, that all of the money for those grant programs was going to areas that have problems, so that's kind of a big deal and the likelihood of us getting support for this, penalizing people who are not contributing to these problems. I'm sure you don't want to shoot all of us in the foot. Kind of a new idea that it is an advocate for farmers. On processing side, agency has been wonderful as a regulator and regulator. On the farm size. And it is kind of an exciting idea. If you are a really advocate for farmers to protect its important role in the economy, economic viability of farming in this state, that is not just here, all the problems seem coming off of arm, it is coming off of these poverty based farming programs, I could set my price where I need it to be. People's expectation is 100 times different than hood and that is not in everyone's mind. If you want to protect viability it has to be on a fair trade livable wage for farmers and it has to be on the real cost of farms. Or china is growing to grow all of our field. Suggestion, if you really want farms on board that would encourage you to look towards efficiency VT, you can call them up and they will do an energy audit for all of the programs, jacket for water heater, and if you went with this program, and someone is there, to help you go through the process, I am totally on board and I think most farmers would be to as much resistance that you hear, not farm that don't not have a florescent lightbulb.
1:56:55	2:00:42	David Bone	I brought with me some water from my stream 7/10 of a mile from my farm, [drinking water from his stream in Mason jar] delicious, been farming on this farm for 115 years, I can drink my water. I don't appreciate when the state starts making me feel like a criminal, when constitution of us and Vermont, and Act 64, I got through, and I am not an attorney, this is a bill of

Time Start	Time Stop	Speaker Name	Comments
			<p>attainder. I'm not against all the RAPs, I'm willing to work with the secretary, your approach has not really, going to regulate my chicken and personal garden, well. Part of the contract process, to be clear, and ascent to this law. Bill of attainder, which don't go along with department of agriculture, have inspectors come to farm, look over this stuff, everything is good to go, doesn't even know Mr. Patch up there. Working at the same agency. tell us how to farm. I'm Here to negotiate my contract, paperwork and that will be for fee, take control of my land. You are going to pay us, because we are not the problem, we are the solution. And that is very clear, and you know that around Lake Champlain. Want to come after me for something use due process of law that is given to me by us constitution and Vermont constitution. Will not be your servant Mr. Secretary. And that is all I have to say.</p>
2:01:50	2:06:40	Andrea Stander	<p>Been working closely with Agency of Agriculture. Strongly that one of the good things that we have happened through this process, is that I believe the folks that work with the agency have a better understanding of the large community of small farmers. And it is extremely diverse it is not hyperbole to say that every farm in Vermont is different, therefore every farm is diverse to create flexibility still more need for that. New need for new ideas for research and methodologies to infuse only way to get regulations that are enforceable and farmers can comply with without putting themselves out of business. Biggest change in ag policy in many many years that will actually work, don't have the chance for them to not work. Raps = specific focus on impact of practices. On outcomes, not on which practices are not doing harm and are actually helping and improving things. And I will support statements of members made of Rural Vermont, been calling people for the last few weeks. And many of them have agreed to submit comments but many people are not able to be here because on small farms 1 or 2 people doing the work, huge blow to have them leave. Made a big sacrifice to be here today. Not hearing from a whole bunch of people, very difficult for a farmer to sit down and 8 or 9 at night and carry a lot of language that is unfamiliar, Brandon a lot of definitions are indecipherable. 1 specific recommendation for final draft, put it in plain language. Have a fighting chance of understanding what it means. Point people to other resources to understand what you're talking about. point people by directing them to that. thank the agency not a lot of people know that this formal process is the only thing that you are required to do.to offer all people. look forward to thank you but we are not done.</p>
2:06:55	2:10:20	Grraham Reustheant	<p>Challenging livelihood of those being a farmer. Empathize with this. Looking at legislation and moving onward. Just accountable food system. Ecological services provided by services. Nutritional advantages and disadvantages and that gives people a livable wage. Would like solidarity. Would make all of our lives easier. One thing I wanted to stress is that scale of farm does not determine how much it is polluting. All want healthy water systems, some make it the firs priority of encourage that some things that does not make it depend on these scale definitions. Water Quality can happen at any scale of farm. I am in total agreement. Justly and fairly look at all farms. Question I have: Do the NMP plans work? Larger farms fall under NMPs, where there is excessive plans, maybe the NMPs are not effective. Curious about how to measure the effectiveness of the NMPs. Lots of little mitigation factors. Also encourage at adaptation and transformation. Adaptation to changing climate to changing social economic systems. What is the right relationship with time and place work with farms to work towards transitioning to achieve actual adaptation. Needs and. That's it thank you.</p>
2:10:44	2:14:00	Jean Paultey	<p>Want to expand on my one message to you folks: cumulative effect of the rules. A lot of these rules we will follow anyways. But there is a lot more that many rules that look at this rule, but you have 100 people that have good ideas, follow our program, cumulative effect can end up shutting the farm down. And get a job as an inspector. That is what I am afraid of. Afraid you will shut down farms. I spread compost. Now I am going to have to go get an 8-hour course, spread organic insecticides. Fees to pa. demand on my time with inspectors. My data collection is going to take much more time. And as somebody said where may be 2 or 3 people, what does that means for us, means that maybe we try to get up an hour early. Work an hour later. Right now we can work until 9 and start at 5, later on we not have as much time. farmers are good at</p>

Time Start	Time Stop	Speaker Name	Comments
			farming. Some farmers are good at following rules and regulations. Personally I will conclude my message with I understand that the scale of farming and pollution can happen at any scale. Practice of sending inspectors of every farm. Cost you so much money and time. And after of that if you just lifted the rules by the amount of rules and acreages that you will concern yourself with. Regulate one chicken. Tired and don't have time for.
2:14:11	2:17:14	Mike Bald	Thank you again. Repeat the message. I would love to see us pay landowners for building healthy soils. King Arthur flower, it's a public and some of the problems in the world and general land use is a public safety use. Can't let my kids bike down the road. Didn't know what to do with the burns. Public health angle on it. Would love to see that pursued as far as funding and support. How did this plant get here and why was it not stopped sooner. Calls this year are coming in from the north. Elmore. Don't know what to do with the Chervil. Bittersweet is going to destroy our trees, and those are not going to matter. Didn't pay attention to bittersweet. I got 1 response. Sue Minter responded. Going to end up like Massachusetts every tree gets ripped down because over saddled with vines. Pay people to grow big healthy soil. RT 14 rebuild. Side that got rebuilt contaminated 6 times over.
2:14:30	2:23:15	Lisa McCrory	Continuing with edits. Do concur with Amy Huyffer. Mimicking what efficiency VT can do to help farmers who want to make things better help them troubleshoot. Someone who can go through the regulations and someone who can make it comprehensive and draw them to grants that can help them make changes. Margin of profit farmers make from food is smaller and smaller and it some places is negative. because bought into a system that they have bought in over the years. always state backpedals. Going to regulate them some more. doing through years and years of research. whoops made a mistake. Got to work with the farmers. They are tapped out. Not enough resources to invest. Section 6: 6.b production areas: shall utilize runoff and leachate collection systems to prevent discharge of ag waste. And pesticide herbicide storage areas. 6.01(b) another area that needs to be documented and tracked. 6.02(i) pg. 13: pesticides shall be used Chapter 87. reference to somewhere else, I hope that you are going to have addendum for where people have to go to look it up on their own, so that it is readily attached to this document. section 6.03(f) following records of manure and waste application shall-- herbicide and pesticide application records need to be a part of that. 6.04 cover crop requirements: do not feel language is strong enough. 6.05 manure and waste applications and restrictions--when manure or other ag wastes cannot be spread from December to April, how will that affect producers who are out wintering their animals, out winter the animals on flat terrain that is far away. is that going to be something that is against the rules. Would like stated that that is a possible practice. Thank you again for having these sessions.
2:23:25	2:26:53	Amy Huyffer	Lisa made me think: Organic standards for livestock and outdoor access, proposed rule that cows have access to direct sunlight through ought the winter. Will be at odds with the RAPS. Guessing that in most cases that state law trumps organic standards, We're going to be caught in the crosshairs here. I realized that a lot of us here are Organic farmers organic back to the rocks. Organic since 1997. But I do not want to see this be an organic vs. conventional, see choices and driving economics, not our reality, unless we want to limit our choices do not want to make enemies. All in this together, like the model of efficiency Vermont you can make us all want to get it right. Paying for it, there is not money to do these things as much as we may want to. May be able to find time and some fencing, it is not in our budget right now. Worried that if cannot farm goes by, if tractor store goes out of business, to keep our agricultural infrastructure alive. In terms of paying for this if both for the programs of people to come help come up with NMPs and to help with applying for grants, hope that the agency would consider would get behind legalization of marijuana, strictly for economic. Boost of for the economy of the state. What it could do for state ag economics that is pretty big.

Time Start	Time Stop	Speaker Name	Comments
2:27:00	2:29:30	[Unidentified individual from audience]	Pg. 9 is different. Act 64 or 10 acres. Clarification on which governs there. Consistency. Legally speaking, a semicolon counts as an and.
2:30:00	2:33:00	[Unidentified individual from audience]	Productive land, how much land will be taken out of. Don't discuss commercial fertilizer. production.; economic impact statement.

Manchester RAP Public Hearing

57:25	1:00:24	Allan Baker	Section 3.1a-g; 4.13a-d; two list of animals that are confusing and apply to all farms, could not make any sense out of that section. Animal numbers and big difference not sure in what they are applying to. Just a question. Not sure where all your data comes from, shows tile drainage or groundwater contamination, plowing cuts way down on pores and decreases number of nutrients moving through water in the soil. I can give you that research data, and I collect farm data for USDA, I travel around a lot. I hear a lot of complaints and 1 of them is, farmer trying to sell his farm, other couple wats to buy it, NRCS wants to throw up roadblocks, big rain events this will cause a problem; soil treatment plants, why going after farmers when sewers are overflowing causing problems than small individual farms. Or can field them after the meeting
1:00:30	1:05:24	Jesse McDougal	I didn't grow up farming, fell in love with a girl who had a farm and I wanted to put on record, put on support for regenerative ag practices in 6.04, and my experience with using those practices, the farm that I am helping to manage was a dairy from 1936 to 1973 and when regulations forced it out of business then because upgrades were too expensive, transitioned to a horse farm 1974-nov last year 36 horses on the farm. 50 acres of hayfields, corn tillage hay rotation, after 40 years of managing, woman who was bedrock of the family passed away of brain cancer, cancer scared us enough to stop spraying everything on the farm, called every farmer we knew organic conventional farm convention how do we manage these fields without chemicals. They all had the same answer if you figure it out let us know. We found regenerative ag practices and after our haystacks plummeted after no fertilizer, we came around to putting livestock on the farm, flock of 100 sheep, 100 turkeys, several hundred chickens, have hogs; and using these regenerative no-till perennial grass managed grazing systems we have bene able to rebound our hay production back up to where it was when we were managing with chemicals, in terms of water quality and raps, after conv. plowing had many that were filling up with water, good for ice skating, bad for hay production, swamp on our farm that has been a swamp for 80 years, and last summer it dried up. water infiltration has gone from in places that hadn't had water, after animals have gone through, takes seconds for water for infiltrate. OM is increasing is a giant 50 acre sheet composting operation, keeps water upstream and out of the waterways coming out of the farm; and economically we've been able to save the expense of chemical synthetic fertilizer, replaced it with revenue of high value pastured meat sales, working out economically for us and very much an experimentation and I hope we are not the generation that loses the farm, on record I feel the RAPs are while I agree and applaud effort my reaction is still suspicious of micromanagement, even though I want to do everything you're doing anyways. Thank you much.

Time Start	Time Stop	Speaker Name	Comments
1:05:30	1:07:15	Keith Armstrong	More of a comment to make, one I have been extremely concerned about socialism, little tiny guy is not going to be affected, trying to make a living making money people think I'm successful bottom line, I don't pay any taxes nothing less, it's a struggle so you get down to the bottom but tiny guy not going to. I'm going to seed down my river flats I'm not going to be able to use 3-4 acres of it. Encouraged to drain the fields, and if one of you came along, I was inseminator for 33 years, inspectors come to the farms and it was farms immaculately clean, rough time every time. Cow shit was 1/2 way up my knees, it is not the way to go I hope we get away from socialism from independent individual having something to say about their own land.
1:07:24	1:09:17	Andrea Stander	Executive Director of Rural Vermont. I want to support the points that Jesse McDougall made that potential reg. ag practices have for addressing many of the challenges with water quality we have in the state. More sub. Shift in RAPs to those ideas. Specifically, numbers of animals, I think the raps need to focus on practices not on acres and animals, because it comes down to what is being done on the land regardless of the size. Have heard testimony from other hearings, even small operations could cause problems, we know you don't have the resources, the staff, likelihood to be everywhere you need to be, would like to see a stronger shift to encouraging shift towards practices that will protect water quality, to use the resources as limited they are to help people make that transition, that will protect the water and save the farms, appreciate the opportunity.
1:09:27	1:11:11	Phillip Mac	Concern is on ditches, brooks that run through the property even u leave the 10' buffer, if muskrat effects the bank, instead of just letting them meander all over your fields. I see no protection of farmland in these bills, just up more buffers, buffers don't work on everything. I have one field, it was rirapped in 1950s, Irene came along, trees there too, rirap stayed, trees didn't fare up so well. And I believe you got to have more stream management with rip rap other than just buffers, gotta' keep your dirt from running to your lakes and plugging up your rivers. Metowee always had fish in it, you don't have the fish that were there 10 years ago. and it's cleaner.
1:11:20	1:16:00	"Scout"	Scout from Sunday Farm, farmed my whole life went to UVM, farmed with my family since 1937, and I've got 6 kids and some of them want to go on and farm after me, 1 of my children raises lots of animals, farm 200+ acres forest fields, pole barns, greenhouses, we're very much respect. dept. ag, but very serious issues with changes of the rules. Very concerned about what we now need to have for new rules. How to pay for these rules, these rules have gotten changed every single year, great inspector, not sure what the rules will be. Affected our income negatively. Rent dairy farm in Dorset, trying to get bridge put in, no cow manure haven't been able to get any funding for that bridge, issue for managing our farm and the Metowee river, have a lagoon and it is put close to the major road, and was fine then, now getting information that the lagoon that we put in for 15,000 is not usable. where we're going to get 15,000 to put in a new lagoon, not sure. getting money for. all about clean water, but need to make \$, other next generation is not going to farm. I think very much so that we need to be proactive not negative, workshop not on what rules are but how to have better cover cropping and better fencing, and how to build good grazing infrastructure we as farmers should get paid to go to meetings like that, I've got 3 people of my farm working so I can go off the farm will need to be compensated for our time. Win-win for all Vermonters will benefit from success of the farmers, maybe through the logging operations, good operations going through the rivers. Let our animals cross the rivers, should be putting bridges in for those animals. Inappropriate for me to drive tractors through the river, absurd that we're not getting moony to build those bridges so we should be given money and expertise to change those bridges, learn about these practices, future of Vermont what our food system will be. We're going to be out of business. Thank you

Time Start	Time Stop	Speaker Name	Comments
1:16:15	1:20:23	Cynthia Larson	Dairy farm in Wells. Trained conventional dairy science in CT. Purchased farm used corn silage for many years, problems with our soil, with constant corn production. 8 children, effects on ourselves, soil, water. When still making 140 cows on land base, stopped planting corn, planted everything to grass and legumes, found it to be more profitable, lowest purchased feed cost of all farmers at the time, relative cost of soy and corn have changed many times, what astonished us was our ability to be more profitable with no corn silage, some corn and soy. point being is the potential profitability of less or vitality of less corn silage in general, with less corn silage and less ground being plowed, chiseled and moldboard, less problems. Another thing I wanted to point out, we were able to support less cows I'm sure, we were importing less P and other problematic elements, on the same # of acres, using less inputs that become problematic in the water. I think that this is a problem and we have to hold us all responsible, we can't keep polluting our waters and soils and haven't addressed chemical problems, I'm glad that I can live in a state where I can be heard, respected and heard and grateful for that. I also appreciate the changes that has been made in the RAPs especially changes in small farm as opposed to medium size, many of us would measure go backwards, but I realize how we would even go about that. This is the way we do need to begin, I guess what I would advocate for, discourage corn silage, encourage sods. oh can only use a few acres, if all turned to grass, would be surprisingly profitable to use grass instead of corn silage.
1:20:35	1:24:22	Kylie Chittenden	Farm with an LFO in Addison county, originally parents, husband brother and sister involved. A few concerns. Red tapes that is associated with access to \$ through NRCS sometimes a concern on the farm that is in 1 area, but have to address all areas, if concerns are huge, the 20% we are responsible for could be hundreds of thousands of dollars. How do we measure if these rules impact water quality, how will we measure that. As a farmer we feel our credibility is questioned an anonymous neighbor has more credibility it seems. Rules are going to leave a legacy beyond each of us, authority that the Secretary of Ag has more responsible if we could form a committee if going to liquidate a farmer's animals when get to that level of enforcement. preventative action, producers judgment vs. regulator who visits for 20 min visit, farmers are there all the time, know where big threats are so I think that may be sometimes clumsy when talking about enforcement on a preventable action. agricultural pollutant, I do not feel there is a clear definition for what is an ag pollutant. We pay our NMP Planners a lot of money each year, is it possible for planners to be given flexibility that is appropriate for our facilities. The other thought I had was, for LFO rules of not spreading during the winter, seems like that seems more of that a fact that a LFO couldn't apply for a variance that is not really in the spirit of water quality and rules, may have bene appropriate to do that in the winter months and make sure when enforce that it is really helping water quality and just not another rule. Appreciate your efforts for a balanced approach when looking at this.
1:24:48	1:29:01	Allan Baker	Shaftsbury VT. Mentioned during your presentation since 1962 no direct discharge was allowed. Seems like agency has dropped the ball, in Bennington county no NRCS, no extension agent, Rutland has a revolving door, come in and just there rules and don't know farms and don't know how to work with them. If we had an adjunct agent to help farmers through these rules, had a NRCS agent who stayed on long enough to get to know the farms and help them through. Talking about all this educational stuff, do not have anyone in Bennington county. Really dropped the ball if enforcing this rule for 50 years, don't know what we're doing about stormwater. Put down hay and grass running down ditch, seems all this is being forced upon the farmer, about several acres drained into neighbors farm and road ditches goes into the farm, can't graze any of that, been grazed for last several hundred years, think some of the NRCS rules for 590 plans, need to step out of that, look at the farms instead of just hiding behind rules, state be able to run sediment into a farmers field, but farmer does something than problems rules for the farmers, if going to force farmers to do this, should force everyone to do the same thing. car wash goes into storm drains and into the rivers. everyone should be treated equally, need the education and need people on the ground people who can help someone, Montpelier, Rutland to Bennington County new one every

Time Start	Time Stop	Speaker Name	Comments
			6 months, not useful. long term plan, would love to see USDA make everything on watersheds not state borders, more in common with Resnseller get rid of geopolitical boundaries and go on watersheds that would be more beneficial. spreading manure all winter, let's all do the same thing. what is a major water issue, that is the route the regs, not defined. And thank you.
1:29:13	1:30:37	Rep. Steve Barry	From Bennington County district 4. I would like to see if scout proft would be willing to explain a little bit more about the regulations she has concerns about for the chickens that she has, if that is permissible, could be asked to speak more on that point. Would be happy to hear about them. Thank you very much
13044	13346	Cynthia Larson	Just thought of a couple things. Farm 320 acres. 120 acres of all grass. 3 things. Continued to be all grass, thanks to between UVM, extension, and NOFA, gone to countless many well done pasture walks to each grazing and have learned to do that and that has further improved our soil quality and that has minimized our soil erosion. Similar experience to Jesse., giant wet spots and as we farmed more regeneratively, wet spots slowly went away, found earthworms again, as we used different farming practices, had improved soil tilth and, become less compacted. I understand people who have issues with NRCS issues with Dept. Ag. Been worked with 2 people, Kevin Kaija and Sylvia Harris have worked with for many years, red tape is ridiculous and takes forever, but they've helped us tremendously. UVM Heather Darby and the whole crew has really supported us as we try to go the regenerative route. Intensively rotating a herd of 25 cows, with a great deal of help, in VHCB viability program, building a creamery to process our own product. Think that is an important part of our farm. With regenerative Ag that is what the public now wants.

Newport RAP Public Hearing

Time Start	Time Stop	Speaker Name	Comments
1:10:11	1:16:52	Amanda St. Pierre	<p>Changing it a little bit, thank you. Um my question is was the intent of the legislature to create an industry that would put us at a disadvantage compared to other states. Credits on page 3. 90% of Vermonters feel that dairy farms are important to this state, important to the VT economy, important to Vermont, important to the quality of life, being in 2016 that those values still remain true. Dairy farms bring in over 13.5 million visitors a year, 2.2 billion economic industry, 6-7000 jobs that rely on us, 365 days a year, number of those farms has decreased, how do we achieve the WQ goals without crippling our dairy industry, been in this for 3 years, been an LFO farm since 2000, very different since 1985 and 1986, every year we improve, question that would like to ask: is will they be effective, will be the economically viable even with c/s support listed. Diligently and raising the bar as a state earlier, continue to be committed to supporting new regulations that can do more as long as they are effective, supported the 'all-in' approach the start of this process, accepted our responsibility in this rule of improving our footprint in the state. Are the RAPs effective are they achievable and are they affordable. We cannot achieve improvements in WQ if our farms are not viable and sustainable. Communication, common sense approaches w/o regard. 1 possible solution I heard was hauling it 42 miles, not sure it is practical or economic, would like to think there are other ways and are better for the state of Vermont and farmers and I know everyone is working diligently on this. We have an opportunity to get this right more than other sector in this process. What the ag agencies plan is for this with timeline. Would like to see more details. Modify alternative setbacks, defined floodable fields and goal of each, not practical not practical achievable affordable. Do not think that is was a clear intent of the legislature to is not a road map an of us can begin to understand, need to be better clarified, and a timeline needs to be developed. Farmers rights needs to be developed what a farmer's right is with regards to visits and so forth. The time that the Ag Agency is allowing for us to get back to us with special conditions as part of presentation, special options. Go to ag agency, what is the turnaround time on that. What is the farmer's rights as that is being developed? Will continue to cooperate, with ag agency and with farmer watershed alliance groups, commitment and take seriously and we will do better and will do better in an economically affordable fashion.</p>
1:17:00	1:18:28	Sean Mead	<p>Sean mead, hate to follow Amanda, Dept. of ag to me I thought was to help the farmers to better the state our agricultural business, becoming more like a police agency and nothing more than coming to tell us we're doing something wrong without helping to overcome this. I don't think any farmer will argue that they don't want to keep water quality. Milk price being the way it is, so my question what is the dept. helping us to do there. If we have more \$ in the milk check, will have more opportunity to implement. Second a lot of what Amanda has to say.</p>
1:18:34	1:21:45	Cy Nelson	<p>Hi just give a brief introduction: own a farm in Cannan VT, NE corner of the state so that has a lot to do with my specific concerns especially with timeline on cover crop and , a lot of our farm is in the floodplain so a lot of those guidelines would impact us. appreciate that some of the dates were pushed back, I think it will still be pretty tight in that part of the state. one concern for me is there is a lot of talk that a lot of cases can be reviewed individually, a lot of different areas that is being left to the discretion of just a few people, good relationship, but I am afraid that going forward that if different people are in with different goals, a lot of authority left at discretion of just a few. MFO with changes and 1500 fee, I have moved farms out of the state and I will change my Cannan farm to a SFO. a 1500 that should not make a decision like that, that does move into the thought process. um. another unique thing that my view would be, so I bought that farm in Canaan in 2012 and being a beginning farmer, took on those challenges, dated manure pit, bunker silos, very dated, very grandfathered at the time, that's a whole 'nother challenge, these rules are going to make it difficult for young farmers to get started. Tough to do finally, a lot to do, some things that should be thought about. I'm all over the board on this.</p>

Time Start	Time Stop	Speaker Name	Comments
1:21:55	1:24:52	Mark Canella	UVM extension. Rep. of Extension is to facilitate education in all directions. Some of the comments that we have been receiving from farmers. 1 thing that is unclear, small grains has been withdrawn from small grain, reference as back as small grains, where do small grains do or do not fall for acres. less on the agronomic side. Majority of comments, administrative due process, maybe a step past agronomic process, how will rules be enforced: to pass on as comment: encourage to share information on processes that farms will be following. Trying to reduce uncertainty, what they need to do for their business. permitting where permits are denied, permit denial will be explanation of why, questions of why permit denial will come with reference for how to come into compliance. Questions about subpoena's or warrants or no request for access. Trying to help farmers figure out how to manage their business. Variances or exemptions, possible provision of records to make those request, what will those record packages look like, have their record keeping stuff in order to prepare for variance or order have information they need to make appropriate decision. and that is it
1:25:04	1:27:51	Richard Nelson	Richard nelson. Thank you for coming up here to a wonderful part of this state. I second what Amanda St. Pierre said. Few questions or comments: paperwork is quite cumbersome for the large farms. Manure records, keeping track of all that is quite cumbersome, why would the soil tests be more accurate as to what's going on to show that things are being done and moving in the right direction as a concern to P. inspections, I don't know if any of the 850 dairy farms that don't get along with their milk inspectors, they work with you find situations that need fixing, have time to make fixes, am concerned about who advocates for us in this process, is it moving to enforcer, who advocates for us. who says this is how we're going to fix it, and if we have a problem, in other states DEC is the enforcement and AG is the advocator. Big banking industry, farms to achieve loans, if come along and fields aren't complaint or things aren't complaint what are the banks going to do, is it going to be harder for us to borrow money for time to time to run our businesses. A big job ahead of us, I think a lot of things have been done in the right direction, a lot of concerns for us still. Thank you
1:28:00	1:32:01	Keith Gray	Few issues on the raps, concerned about the dept. of ag being regulator, judge and jury need to have a panel or something if bank has a concern that there is a regulatory issues on the farm, get rid of 500 cows today would have effect on a lot of parts, dept. of ag a lot of enforcement stuff, other thing is employees, new employees what kind of qualifications you have, credibility you have taken away from farmers been there all their lives, what's what I'm hearing from a lot of people, my phone rings quite often, just wondering if there is a panel of farmers should be set up, but that is one of the concerns. Other thing I want to mention real quick, farmers don't feel like we have any credibility, about us spreading manure in the winter, have satellite pits, moving manure, don't know who they are, and the complaint is because someone has a problem u in town, sending someone out sending someone out to investigate something that's in a plan, hold them credible for the complaints, something of the big farms, many of the farms doing some different stuff. Big concern with what's going on with Ag Dept. seems to be on the enforcement side, our farms worked very well with the Ag Dept. but what you're hearing right now, just the compliance people the ag not doing stuff for us, don't have the Vermont seal, that's the concern with the people out there, so I think that is a big issue now. just wanted to comment on there. Amanda covered a lot of the concerns we have with that type of stuff. Some of the stuff, boy we met with the dept. of ag, bang bang tough on us. we all want clean water. State's done a pretty good job, 26 to 27 good job, how did we get here, did we let MFO and SFOs go... how did we get here, emphasis on LFOs, don't think that's a total problem, watched closely think they're doing a hell of a job
1:32:22	1:34:06	Pat Sagui	Director of composting association of Vermont. Two things, 1 thing along definition of waste and that it be separated between organics and those things that are waste that are not organic inputs, what is the history of that, something we have suggested in previous comments, maybe there is a good explanation. One issue mentioned earlier, loss of cropland for buffers are we missing an opportunity around improving soil function especially around where we're asking a lot of the land on how we channel water, some real opportunities around ditch and buffer management. Put out 3000' of compost filter

Time Start	Time Stop	Speaker Name	Comments
			sock, farmers generously allowed us to go on their land, and tension around giving up land and meeting WQ standards, and a real opportunity there. Talk about some variables that would help address that.
1:35:00	1:36:37	Justin Michaud	VACD. I'd like to echo what people say. Up to the secretary, that's a lot of work for the secretary if that's you. I'd like to make note that when you say to RUSLE2, is that clarification T+1 or hard fast T, NRCS is T+1 that RUSLE2 is an imperfect program, what we design in LTPs and NMPs affects farmer's livelihoods, takes a lot out that it is an imperfect program. T+1 or where it stands. And that is that.

Brattleboro RAP Public Hearing

57:05	1:01:10	Andrea Stander	Executive Director Rural Vermont, based on conversations I've been having based on scheduling, some of the top of mind concerns, on diversified farms, running into confusions onto where the lines cross, we will try to put into our formal comments what we've heard from our constituents, how do they fit into the pictures, because they have a lot going on in their farms, particular around economics how to figure out income what category do they fall into. One other thing we've heard on. Confused on language. Have made a transition to drafts which are went to more legal technical stuff, has led to some confusion, especially language which is more legislatively oriented. Where there are references to other parts of the law--include plain language explanations of what's in the law. Tough to understand; Laura you mentioned whole section that deals with pesticides, Act 64 if you are helpful to point them clearly to where that is and what that is. All of this is all about as accessible as possible to people who are going to have to follow them, to that point; I do believe it would be over helpful to have an expanded introduction to the rules, what the goals are of these rules; there are several pieces in these rules, it is hard to tell based on language used what the ultimate goal might be. Particular around discharge and things that are oriented around mitigation; will put in our formal comments, a preamble that speaks more philosophically that guides people in terms in what to look for; and where possible information has been provided on how to understand what those parts.
1:01:19	1:05:16	Vern Grubinger	And for making changes to previous drafts. Few remaining concerns. Under 2.14; important to add permanent before farm structure, there are a lot of things out there in the land, pastured poultry, little hoop houses, non-permanent structures people are pulling, high tunnels, and under Vermont tax codes, there is language about structures that are not considered taxable; has to do with concrete structures, how it was used before. Caterpillar, putting PVC not permanent. Section 6.03--modified Morgan; 6.04, 30% cover is not clear; crop growing the ground; you now have sufficient cover; exactly what are you trying to accomplish; basically something that is not going to wash away with the water. What is that 30% crop residue, is it stalks poking up; would vote for ground cover and any kind of residue anchored in the ground. 6.09--worry when no lower limits to some of these. less than 1000 yards; other state regs pop in. Put a lower level where you don't need to comply. Fine toothed comb; where phrases will give you flexibility in future, ex: 6.03 or other equivalent standard. Won't be boxed in and have to make a rule change. still has to be approved by the secretary. 6.03 but then manages 590, or other method; to just be clear that mean it the whole way through. Thank you

Time Start	Time Stop	Speaker Name	Comments
1:05:25	1:09:00	Peter Barrett	<p>One of the things we have run into on our farm is the deadline for spreading manure and calling and asking for extensions and getting the obvious no answer with no common sense put into this. State climate temperatures vary from north to south, sometimes at end of December ground is not frozen. Then march then have manure facilities full and when there is snow on the ground can cause quite a problem, common sense at a state level according to weather conditions; going outside of specific dates you have. Required cover crops. USDA had programs get help funding cover crop; I think that has become difficult to get maybe, would be interesting to see if they would reestablish those programs to help farmers establish cover crops after cutting. A lot of your larger farms needs to grow lots of corn and even with planting shorty varieties and sacrificing tonnage; we need to plant the longer day corns, yield better tonnage and can't always meet these established cutoff dates; have found here that we have gained maybe 2 weeks if spring or fall that we start planting vs. northern areas; and by planting longer day corn; harvest a lot in 1st 2 weeks of October, makes it difficult with the acreages that we have, October 10 deadline tough even with harrowing it in lightly. Another is the setbacks and having to sacrifice acres into hayland where the tonnage is much less that you can produce; than you can with a row crop. It may make it tough for some farms that don't have the land bases. Some of the things that we are running into.</p>
1:09:05	1:12:56	Kate Bowen	<p>Meadowvale Farm in Putney; been to 6th rap discussion; appreciate the clarity every time you've done it gotten better and better; millennial farmer; encourage with comm. specialist--an application to report stuff that is simple; don't always get there by midnight; way to do that in the field would be easy. Surface water definition could be more clearly stated. Whether it is a stream that is always flowing or intermittent. would be helpful. main concern in Vermont; municipality; going to be in small farm category, farm in Vermont that can't cut firewood. Authority to change criteria will change. If farmer is willing to follow all RAPs and pay fees and do classes; do opportunity that we can do that that it is less wishy-washy to be demoted to be regulated by the municipality; appreciate the need; some of us are purposely not having a high volume for dairy operation; depending on who is running the municipality, not understanding how small farms work. Monitoring and progress, and moving forward with how water quality is improving hopefully. Hear how we are taking stock of the improvements ag has made to improve the CT river specifically, how monitoring stations will be working. How a public meeting campaign can be run; let the public to know in Vermont and neighboring states that farmers and agricultural community is trying to make to clean our waters up. as a pastured poultry farmer; agree with pervious comments about Vern and temporary structures; we move temporary structures everyday and clarity on that would be very important, temp. chicken houses are not under the same category as a huge barn.</p>
1:13:22	1:15:25	Janet Bailey	<p>Farm in Brattleboro. Diversified farm, very hard to find us on this map. But mostly I second the manure spreading dates; setting those statewide, have very sandy soils and as opposed someone who has the clay soils can be out there much earlier; but mostly we work really hard lots of diversity so we can improve soil health and pasture health; some of the practices that you mentioned are good, but they don't take into account the diversity and building up of soil and all as a way of caring for the land, we use horse power so we avoid compaction that the tractors usually do and our soils absorbs so much more soil water rand manure because of that, those are the issues that are not addressed by setting dates statewide and that kind of thing.</p>

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



Previous watershed models used on Lake Champlain to map input of phosphorus did not include tile drains because when they were developed it was assumed that soluble reactive phosphorus (contributing to algal blooms) does not make it to the tile drains. But the data collected in Ohio after the contamination of Toledo's drinking water indicate otherwise. Scientists at last summer's Great Lakes symposium described the drains as "storm sewers" pumping pollution into Lake Erie.

What are we doing to create a moratorium on the installation of tile drains as a precaution to water pollution in Vermont?
Jan 18, 2018 is too late. There's an explosion of installation of tile drains in Franklin + Addison Counties + these practices are not being managed. How does this accomplish improved water quality?

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name: Crea Lintilhac
Address: 886 Northgate Rd
City: Shelburne State: Vt Zip: 05482
Optional Email Address: Crealint@gmail.com

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



I appreciate the Agency's efforts to develop rules that will ~~will~~ have positive impacts on water quality, and understand the broader factors at play (via EPA, etc.) in improving the state of Lake Champlain. I'm fully supportive of the goals of Act 64 and the RAPs. That said, I would really like to see the Agency take a more creative & somewhat less prescriptive approach to carrying out the intent of Act 64. An approach, for example, that emphasizes education around best practices, incentivizes (financially or otherwise) farmers to adopt practices that may in some ways go beyond the more limited, prescriptive approach of these rules. I think overall, many provisions of the RAPs represent important steps toward improved practices on farms and bring small farms into the regulatory fold in a significant way. However, as many farmers have expressed here today, I do think the tone of the process ~~has~~ has shifted to a more enforcement-focused and less inclusive one. In order for the RAPs to ~~more~~ be finalized in a truly "all-in" spirit, I think we may need a longer timeline (which I realize may not be possible at this point) and a more open-minded, out of the box approach on ~~the~~ the part of the Agency, farmers, environmental groups, and everyone else with a vested interest in the outcome of these rules.

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name	Maddie Monty		
Address	779 Pumpkin Harbor Rd.		
City	State	Zip	
Cambridge Cambridge	VT	05444	
Optional E-mail Address	maddie@nofavt.org		

For more information, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets (VAAFMT) at (802) 828-2431
Public comment on the RAP Proposed Rule can also be submitted to AGR.RAP@vermont.gov

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



1. Spreading on hayland:
Frequent heavy applications, very narrow buffers, no real common sense, certainly no oversight.
Usually manure comes from very large farms many miles away.
Owner of land not involved or unaware.

2. Extreme rain fall events - Common
These wash heavy applications through buffers.
I have had my wetlands & beaver ponds overwhelmed by manure coming through 3 acre 500' swamp forest buffers. Contact: absentee hayland owner, absentee land manager, manure coming from very distant very large farms in huge dump trucks by giant tankers.

3. Disproportionate expenses to state to oversee very small parts of the issues.

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name	Doug Flack		
Address	3971 Pumpkin V. Rd.		
City	State	Zip	
Ernsburg	Vt	05450	
Optional E-mail Address	933 7752		

For more information, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets (VAAFMM) at (802) 828-2431
Public comment on the RAP Proposed Rule can also be submitted to AGR.RAP@vermont.gov

over

We, as a collection of farmers, are tangled in a Gordian Knot.

Dairy economics drive economies of scale.

Grass farming is tiny minority
Loss of dairies has profoundly degraded rural economies and their social structure.

Our rivers ^{& streams} are suffering.

Modern agricultural practices are not producing the foods we need to create human health.

etc. etc. Farmers are not paid fairly.

When will we as a society, state, etc. develop real holistic thinking / action that untangle this terrible knot? RAPS ~~in~~ without such a context seem destined to fail to produce the really big changes needed for water quality to improve.

Will these RAPS address the 83%? No.

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



On the 'Proposed Rule: Farm Size Factsheet' powerpoint slide there were statistics on ~~how~~ what percentage of dairy cows would now be regulated under the new RAPs. The statistic was stated to be 94%. My question is — How many dairy cows fall under the scope of the current regulations? In other words — how many dairy cows or what percentage of dairy cows already are regulated by MFO or LFOs? I have a feeling that a majority of our dairy cows are already regulated as a MFO or LFO and how much reward are we really getting by now regulating more farms? Are the costs of implementing ~~the~~ & enforcing the new regulations justified? I would like to see the Agency define this and use more accurate statistics on fact sheets. Thank you.

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name
Stephanie Eiring
Address
1503 King Road
City State Zip
Bakersfield (Enosburg Falls) VT 05450
Optional E-mail Address
stephanie@nofavt.org

For more information, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets (VAAFMT) at (802) 828-2431
Public comment on the RAP Proposed Rule can also be submitted to AGR.RAP@vermont.gov

Optional Public Comment Form

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section 2.03.

~ Annual Cropland " is confusing (vs. cropland)

↳ could this be defined more clearly?

↳ why are sweet corn + pumpkins included in the most recent draft? It would make much more sense to keep them included in with vegetables. It is surprising to me that new elements were added to the rule with each draft.

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name	Becky Maden		
Address	30 Black Snake Lane		
City	State	Zip	
Orwell	VT.	05760	
Optional E-mail Address	rebecca.maden@gmail.com		

For more information, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets (VAAFAM) at (802) 828-2431
Public comment on the RAP Proposed Rule can also be submitted to AGR.RAP@vermont.gov

Vermont Agency of Agriculture, Food, and Markets
Attn: RAPs
116 State Street
Montpelier, Vt 05620-2901

PROPOSED RAP - PUBLIC COMMENTS

AGR.RAP@vermont.gov

TO: Department of Agriculture, Ag Commissioner

It has been over forty years since the passage of the Clean Water Act in the United States and yet water pollution in many of our waterways and lakes still remains disgraceful. In Vermont, many millions of federal dollars have been dumped into the effort to make Lake Champlain and its tributaries, "swimmable, drinkable and fishable" again - yet we have severe impacts occurring constantly.

In the mid 1970's/ 1980's many studies were conducted by many federal agencies and state partnerships to discover where these impacts were coming from. Phosphorus was identified as one of the major non-point pollution problems. Phosphorus is a "limiting factor" in the balance of aquatic ecosystems in the United States—Great Lakes, Ohio River Basin, Mississippi River Delta, Chesapeake Basin, on and on and of course, Lake Champlain. The lake is suffering major impacts from these additional inputs of phosphorus. Without question from all the research, the largest source of non-point pollution identified – is agricultural runoff from fertilizers, pesticides from cropland and animal waste.

After all this time and effort, there is damn little to show for improvements in the Lake. While the regulatory hammer has fallen on many small towns and communities across the country, we treat the mega-dairy industry in Vermont with kid gloves and try to paint a picture of "Ma and Pa" in the barnyard with a pitchfork one step ahead of the bank foreclosure. Sooo . . . we give them tax shelters on land taxes for "ag purposes", we subsidize most of their crops guaranteeing them a price including on milk, and give them government grants for making "Improvements" on their lands, give them a "pass" destroying rural roads with heavy equipment. Yet - they still spread manure everywhere, dumping manure in fields without necessary soil testing, without incorporation of these wastes into the soil to protect from runoff - and in many cases, have raised soil test levels of phosphorus to such high levels that instead of being tied to soil particles, phosphorus becomes soluble to the point of moving with ground water. These producers are still polluting our water resources, not to mention creating questionable air quality emissions in some cases.

There are a few model farms that have made significant strides to being good neighbors and are managing these products responsibly without polluting our streams and lakes. But the majority of others have a long, long way to go to reach this level of management. ***Without significant penalties to these "bad actors" these clean***

water objectives will never be reached. Even the issue of land application is in question, for the simple fact that with the amount of phosphorus produced by Vermont's livestock and the commercial fertilizer purchased, there is not enough cropland, hayland and pasture land to safely cycle phosphorus without threatening Vermont waterways. Forty years of minor progress in Lake Champlain using only the "carrot" approach has been miserably unsuccessful. Other industries in the US are regulated for water pollution, why then is the agricultural industry exempt?

In an effort to address this tremendous water quality issue, last year, Vermont passed a clean water law – **Act 64** – to cut down on the pollution and erosion that harms our rivers and lakes. As one of the ways to restore our waters, the Agency of Agriculture is updating the statewide Required Agricultural Practices (RAPs) to reduce the impact of farms on lakes and rivers. ***According to an August 2015 report by the U.S. Environmental Protection Agency, agriculture is the largest contributor of phosphorus pollution,*** and the RAPs are critical to protecting Vermont's water resources by reducing phosphorus and nitrogen pollution.

Unfortunately, the draft RAPs proposed by the Agency don't go nearly far enough. They do not apply to everyone raising livestock and crops, only those of a certain size. Further, they permit many activities known to cause phosphorus and nitrogen pollution, such as giving cows direct access to streams, and allowing farmers to apply fertilizer and graze livestock next to riverbanks.

Healthy farms are important to clean waters for Vermont and good farmers will benefit from clear and consistent regulations that address water pollution. Just as other businesses and individuals are accountable for any pollution they create, farms should be held to such standards. **NO MORE GIVEAWAYS AND PROTECTING EXCESSIVE POLLUTERS! FIX THE Required Agricultural Practices (RAPs)!**

- Apply the rule to all farms
- Buffers must function as buffers, not cropland – therefore, no crops or plant material may be allowed to be removed from areas designated as buffers. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.
- No livestock allowed in the streams or waterways of the state. If allowed unrestricted access, even a small amount of livestock can cause a lot of damage through erosion and manure disposal to a headwater and small stream. When we're required expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can not allow cows open access to our waterways.
- Require cropland in the 100 year floodway to plant cover crops helping protect from pollution during storm runoff events
- Immediate incorporation or injection of manure applied to cropland according to manure, soil test and crop needs tests
- New Technology and exporting excess phosphorus from high livestock population area watersheds or a limit to livestock numbers in relation to carrying capacity of the land, must be added to the rule – otherwise, there is no possible

way to adequately minimize impacts of phosphorus into the waterways of Vermont

- Since the rule is based upon (590 –Nutrient Management Code) “soil health” and “allowable erosion” rates in USDA technical standards, no guarantee in water quality improvement should be assumed – this standard is not a stand-alone water quality standard without other practices in many cases.

Without these corrections in the rule, little progress will likely be made concerning the condition of water quality in Vermont at potentially high costs to the public.

Sincerely,

Douglas Zehner

dougzehner1@gmail.com

A Vermonter who cares about Clean Water in Vermont
Water, The most important resource in the World in the 21st Century – Albert Einstein

Cc: Senator Bernie Sanders
Senator Patrick Leahy
Congressman Peter Welch
Robert Kidd, Vermont Chapter of the Sierra Club
Louis Porter, Vermont Fish and Wildlife Commissioner
All Members of the Vermont Legislature

The average dairy herd size in Vermont in 2010 was 125 cows.

Today: 130,000 cows / 850 dairy farms = 150 cows/farm

Today, the average cow is producing more than 18,000 lbs per year with top herds hitting 25,000 lbs of milk per cow per year.

Did you know ...

...that the manure from a dairy milking 200 cows produces as much nitrogen as is in the sewage from a community of 5,000-10,000 people?

The amount and consistency of manures varies with animal type, climate, feed ration, animal age and health, and other factors. To compare manure production between animal types or between animals of the same type, manure production is expressed in terms of 1,000-pound animal units. For reference, a single dairy cow weighs about 1,400 pounds, or 1.4 animal units. A typical steer weighs about 1,000 pounds, or 1 animal unit, and most hogs weigh between 200 and 300 pounds, or 0.2 to 0.3 animal unit. A mature broiler, on the other hand, weighs between 4 and 5 pounds, so it takes as many as 250 birds to make up an animal unit.

How much manure do different types of livestock produce?

Livestock type	Total manure	Nitrogen	Phosphorus
Beef ¹	59.1	0.31	0.11
Dairy²	80.0	0.45	0.07
Hogs and pigs ³	63.1	0.42	0.16
Chickens (layers)	60.5	0.83	0.31
Chickens (broilers)	80.0	1.10	0.34
Turkeys	43.6	0.74	0.28

¹High forage diet. ²Lactating cow. ³Grower.

Source: USDA Natural Resources Conservation Service. Agricultural Waste Management Handbook (1992)

Average Vermont Dairy Farm (150 cows) x 1400 lbs/cow x 0.07 lbs/day/1000lbs AU x 365 days = 53,655 lbs Phosphorus / year in manure /average farm or:

130,000 cows on 850 dairy farms = 46,501,000 pounds of phosphorus/year or 23,250 tons!

To determine the weight of dry soil in an acre furrow slice, multiply 82.99 pounds by 24,394 cubic feet for a total weight of 2,024,458 pounds. Typically, this number is rounded off to 2,000,000 pounds of soil per acre furrow slice – about 7" thick

UVM – Extension Service Recommendations -

(3) Apply maximum and minimum

limits, as follows: Maximum recommended rate = 120 lb P₂O₅/acre. If Available P test = Low, then minimum = 60 lb P₂O₅/acre. If Available P test = Medium, then minimum = 40 lb P₂O₅/acre. The adjustments in Table 10 are based on crop management factors and relative crop needs. For example, more P is recommended for seeding down a perennial forage than for topdressing because the tillage in preparation for establishment gives an opportunity to mix P fertilizer throughout the plow layer. Phosphorus that is tilled in is more efficiently taken up by the plant root system than P top dressed on the surface; it is also less susceptible to loss in surface runoff.

Table 9. Recommended base phosphorus rates for selected available P and AI test values. (Adjust for specific crop based on Table 10.)

Note: Table shows selected values within each category. Recommended P application rates are based on the equation in the text at right.

1 The recommended rate (20 to 30 lb P₂O₅/acre) is best applied as starter/row fertilizer at planting for corn or broadcast as a blend with other nutrients as a topdress on perennial hay forages.

2 A low rate of starter fertilizer (10 to 20 lb P₂O₅/acre) is recommended, especially under conditions of early planting, limited drainage, or conservation tillage.

What is an "acre furrow slice" of soil?

Acre furrow slice is a common means of estimating the volume or weight of the surface 6.7 inches of soil in an acre of land. 6.7 inches is the approximate depth a farm plow blade penetrates the soil. Acre furrow slice volumes and weights are often used by soil test labs as a means of expressing nutrient content per acre of soil.

The typical soil volume used in acre furrow slice calculations is 24,394 cubic feet, and is determined by multiplying the number of square feet in an acre (43,560) by a depth of 0.56 feet (6.7 inches ÷ 12 inches = 0.56 feet).

Determining the weight of soil in an acre furrow slice involves knowing the dry bulk density of the soil in question. Often, a soil bulk density of 1.33 grams/cubic centimeter is used because this approximates the bulk density of a silt loam soil. Keep in mind that bulk densities of soils vary, and are usually higher than 1.33 grams/cubic centimeter for sandy soils and lower for organic soils. By multiplying 1.33 grams/cubic centimeter by a conversion factor of 62.4, you can determine there are 82.99 pounds of dry soil in one cubic foot. To determine the weight of dry soil in an acre furrow slice, multiply 82.99 pounds by 24,394 cubic feet for a total weight of 2,024,458 pounds. Typically, this number is rounded off to 2,000,000 pounds of soil per acre furrow slice.

When concentrations of nutrients are reported in pounds per acre (or pounds per acre furrow slice), think of this value as an index from which to compare future reports from the same area, or reports from other areas. In reality, many labs determine the

concentration of nutrients using a certain volume of soil, and then convert the concentration to parts per million (ppm) using a standard bulk density for all soils (usually 1.33 g/cubic centimeter). Some labs multiply ppm values by 2 to come up with pounds per acre, whereas others simply report results as ppm. Therefore, if your soil test report indicates 60 pounds of plant-available phosphorus/acre, think of this as an estimated value. In fact, it is unlikely that exactly 60 pounds of phosphorus is evenly distributed throughout the acre furrow slice. However, as long as your lab is reporting results and recommendations based on field calibration tests that show consistent plant responses at certain nutrient concentrations, you can be confident that your results and recommendations are sound.

Vermont

Vermont is a state in the northeastern U.S. known for its natural landscape, which is 75% forest. It's also known for being home to over 100 19th-century covered bridges, and as a major producer of maple syrup. Thousands of acres of alpine terrain make it a popular New England winter destination for skiers and snowboarders.

Capital: Montpelier

Statehood granted: March 4, 1791

Nickname: The Green Mountain State

Area: 9,623 mi² = **6,158,720 acres (with water areas)**

38

Vermont:

5.919 million acres

Population: 626,562 (2014)

State bird: Hermit thrush

Motto: Freedom and Unity

Vermont: NRI

Non-Federal Rural Land, by Land Cover/Use In thousands of acres, with margins of error							
Land Cover/Use	1982	1987	1992	1997	2002	2007	2012
Cropland	641.6 ± 55.7	637.0 ± 64.0	621.7 ± 63.6	592.4 ± 62.7	560.2 ± 61.2	545.5 ± 62.2	532.2 ± 63.4
CRP Land	--	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --
Pastureland	442.0 ± 50.5	377.5 ± 48.1	346.5 ± 38.2	337.7 ± 38.3	319.7 ± 41.3	312.8 ± 42.6	320.2 ± 42.1
Rangeland	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --
Forest Land	4,139.0 ± 70.8	4,135.6 ± 71.0	4,130.3 ± 68.3	4,124.7 ± 69.8	4,102.2 ± 71.5	4,072.2 ± 74.3	4,049.9 ± 74.8

Other Rural Land	84.1	81.6	84.2	89.1	93.2	113.1	128.1
	± 16.6	± 15.9	± 18.5	± 21.0	± 20.0	± 26.1	± 32.7
Total Non-Federal Rural Land	5,306.7	5,231.7	5,182.7	5,143.9	5,075.3	5,043.6	5,030.4
	± 33.5	± 33.0	± 34.2	± 34.9	± 29.8	± 31.9	± 33.1

Cropland Use
In thousands of acres, with margins of error

Vermont Cropland

Cropland Use	1982	1987	1992	1997	2002	2007	2012
Irrigated Cultivated Cropland	0.4	0.4	0.4	0.4	0.0	0.0	0.0
	± 1.2	± 1.2	± 1.2	± 1.2	--	--	--
Nonirrigated Cultivated Cropland	160.7	182.1	143.6	137.7	138.5	161.3	145.2
	± 26.4	± 30.9	± 24.2	± 24.2	± 26.9	± 39.4	± 36.9
Total Cultivated Cropland	161.1	182.5	144.0	138.1	138.5	161.3	145.2
	± 26.1	± 30.5	± 23.9	± 23.8	± 26.9	± 39.4	± 36.9
Irrigated Noncultivated Cropland	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	± 3.6	± 3.6	± 3.6	± 3.6	± 7.6	± 7.6	± 7.6
Nonirrigated Noncultivated Cropland	478.8	452.8	476.0	452.6	420.0	382.5	385.3
	± 53.4	± 53.3	± 64.7	± 59.0	± 58.8	± 62.2	± 65.2
Total Noncultivated Cropland	480.5	454.5	477.7	454.3	421.7	384.2	387.0
	± 54.6	± 54.3	± 65.2	± 59.5	± 61.4	± 64.7	± 67.2
Total Cropland	641.6	637.0	621.7	592.4	560.2	545.5	532.2
	± 55.7	± 64.0	± 63.6	± 62.7	± 61.2	± 62.2	± 63.4

**Water (Sheet & Rill) and Wind Erosion on Cropland
with margins of error**

Vermont Soil Erosion

	1982	1987	1992	1997	2002	2007	2012
Annual Tons of Water Erosion in Millions	0.95 ± 0.27	0.97 ± 0.22	0.76 ± 0.14	0.77 ± 0.14	0.78 ± 0.17	0.91 ± 0.24	0.94 ± 0.25
Rate of Water Erosion in Tons Per Acre Per Year	1.48 ± 0.39	1.52 ± 0.35	1.23 ± 0.24	1.30 ± 0.27	1.39 ± 0.33	1.67 ± 0.41	1.77 ± 0.46
Annual Tons of Wind Erosion in Millions	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --
Rate of Wind Erosion in Tons Per Acre Per Year	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --

**Non-Federal Forest Land
In thousands of acres, with margins of error**

Vermont Non-Federal Forest Land

Forest Land Type	1982	1987	1992	1997	2002	2007	2012
Grazed Forest Land	86.3 ± 18.2	75.4 ± 15.2	70.1 ± 15.0	46.6 ± 13.4	23.1 ± 15.7	23.2 ± 20.9	22.5 ± 20.9
Not Grazed Forest Land	4,052.7 ± 75.4	4,060.2 ± 72.0	4,060.2 ± 69.5	4,078.1 ± 74.1	4,079.1 ± 77.9	4,049.0 ± 82.9	4,027.4 ± 83.6
Total Forest Land	4,139.0 ± 70.8	4,135.6 ± 71.0	4,130.3 ± 68.3	4,124.7 ± 69.8	4,102.2 ± 71.5	4,072.2 ± 74.3	4,049.9 ± 74.8

Non-Federal Grazing Land
In thousands of acres, with margins of error

Vermont Non-Federal Grazing Land

Grazing Land	1982	1987	1992	1997	2002	2007	2012
Pastureland	442.0 ± 50.5	377.5 ± 48.1	346.5 ± 38.2	337.7 ± 38.3	319.7 ± 41.3	312.8 ± 42.6	320.2 ± 42.1
Rangeland	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --
Grazed Forest Land	86.3 ± 18.2	75.4 ± 15.2	70.1 ± 15.0	46.6 ± 13.4	23.1 ± 15.7	23.2 ± 20.9	22.5 ± 20.9
Total Grazing Land	528.3 ± 56.7	452.9 ± 51.5	416.6 ± 44.0	384.3 ± 45.3	342.8 ± 49.0	336.0 ± 53.7	342.7 ± 53.8

Wetlands and Deepwater Habitats on Water Areas and Non-Federal Land
In thousands of acres, with margins of error

Vermont Wetlands

Type	1992	1997	2002	2007	2012
Palustrine Wetlands	585.8 ± 51.2	584.3 ± 51.1	560.8 ± 52.5	558.9 ± 52.4	559.2 ± 52.3
Estuarine Wetlands	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --
Total Palustrine and Estuarine Wetlands	585.8 ± 51.2	584.3 ± 51.1	560.8 ± 52.5	558.9 ± 52.4	559.2 ± 52.3
Lacustrine Aquatic Habitat	233.9 ± 3.3	233.6 ± 3.0	233.8 ± 3.1	234.0 ± 3.2	234.2 ± 3.3

Other Aquatic Habitat (*)	27.7	27.7	27.6	27.7	27.7
	± 3.8	± 3.8	± 3.8	± 3.8	± 3.8
Total Aquatic Habitat	261.6	261.3	261.4	261.7	261.9
	± 5.1	± 4.7	± 4.7	± 4.9	± 5.0
Total Wetlands and Aquatic Habitat	847.4	845.6	822.2	820.6	821.1
	± 51.0	± 50.8	± 51.8	± 51.6	± 51.8

Farm Characteristics:

Census of Agriculture	2002	2007	2012
Farms (number)	6,571	6,984	7,338
Approximate total land area (acres)	5,919,718	5,898,698	5,898,679
Farmland (acres)	1,244,909	1,233,313	1,251,713
Farmland in total land area (percent)	21.0	20.9	21.2
Cropland (acres)	567,509	516,924	488,327
Cropland in farmland (percent)	45.6	41.9	39.0
Cropland in pasture (percent)	14.2	9.0	0.1
Cropland irrigated (percent)	0.4	0.4	0.7
Harvested cropland (acres)	454,699	433,074	446,020
Woodland (acres)	523,204	502,823	536,075
Woodland in farmland (percent)	42.0	40.8	42.8
Woodland in pasture (percent)	10.4	8.2	6.9
Pastureland (acres)	89,095	137,165	139,976
Pastureland in farmland (percent)	7.2	11.1	11.2
Land in house lots, ponds, roads, wasteland, etc. (acres)	65,101	76,401	87,335
Land in house lots, ponds, roads, wasteland, etc. in farmland (percent of total farms)	5.2	6.2	7.0
Conservation practices			
Farmland in conservation or wetland reserve program (acres)	1,376	6,752	2,673
Average farm size (acres)	189	177	171

Amounts of fertilizer P₂O₅ purchased by states in individual years 2003, 2005, 2007, 2009 and 2011, and the % change in average amounts purchased per year from 2002–2006 to 2007–2011. Fertilizer information is reported by state fertilizer control offices and excludes livestock manure, liming materials, peat, potting soils, soil amendments, soil additives, and soil conditioners.

State	Fertilizer purchased in 2003 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2005 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2007 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2009 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2011 (1000 kg of P ₂ O ₅)	% change from 2002–2006 to 2007–2011*
Alabama	44,090	55,450	52,253	30,683	39,936	-13%
Alaska	733	733	733	594	754	-3%
Arizona	32,319	46,129	28,318	20,071	20,429	-41%
Arkansas	84,605	74,587	78,079	47,873	66,212	-21%
California	207,920	236,867	250,766	102,797	172,683	-31%
Colorado	42,009	43,197	28,845	32,530	29,378	-25%
Connecticut	3,438	3,592	3,200	2,196	1,642	-35%
Delaware	3,768	3,551	3,409	2,863	3,264	19%
Florida	70,104	64,324	60,847	35,746	43,162	-33%
Georgia	111,193	118,646	118,204	19,808	22,781	-65%
Hawaii	4,265	4,265	4,265	3,583	4,344	-3%
Idaho	97,713	93,261	82,568	65,674	85,963	-9%
Illinois	231,367	278,092	310,134	245,310	298,433	-1%
Indiana	181,756	211,126	185,818	149,008	196,903	0%
Iowa	315,952	332,640	338,698	209,164	458,196	8%
Kansas	178,441	188,468	202,775	146,760	180,621	-3%
Kentucky	89,681	84,179	95,785	56,916	70,386	-20%
Louisiana	45,269	34,797	35,227	24,323	39,165	-5%
Maine	18,270	26,256	32,297	25,967	25,935	19%
Maryland	13,993	15,042	17,622	8,245	18,854	-17%
Massachusetts	4,267	5,222	5,065	3,172	2,744	-28%
Michigan	77,386	74,731	73,583	47,744	50,026	-25%
Minnesota	233,776	270,487	252,859	191,133	299,381	1%
Mississippi	31,027	28,754	35,965	16,570	22,527	-32%
Missouri	170,595	174,269	178,888	91,626	173,988	-14%
Montana	60,173	60,008	73,602	65,801	69,681	12%
Nebraska	210,829	247,184	231,818	274,365	289,017	10%
Nevada	7,862	7,190	6,717	5,004	6,531	-13%
New Hampshire	941	1,291	1,624	1,045	1,129	12%
New Jersey	8,470	8,021	8,712	6,105	4,321	-24%
New Mexico	10,596	8,108	13,288	9,548	10,621	-1%
New York	28,970	29,639	29,224	19,074	25,680	-20%

State	Fertilizer purchased in 2003 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2005 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2007 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2009 (1000 kg of P ₂ O ₅)	Fertilizer purchased in 2011 (1000 kg of P ₂ O ₅)	% change from 2002–2006 to 2007–2011*
North Carolina	88,149	93,565	98,552	69,780	93,672	-10%
North Dakota	186,109	213,397	237,229	132,064	233,412	10%
Ohio	158,348	164,924	146,000	119,679	98,215	-11%
Oklahoma	90,676	81,970	53,160	38,988	57,418	-32%
Oregon	48,587	63,083	58,862	35,023	40,797	-15%
Pennsylvania	28,723	30,573	31,013	27,459	25,616	-17%
Rhode Island	515	756	826	582	460	-19%
South Carolina	25,164	22,059	24,941	6,258	14,642	-36%
South Dakota	178,039	199,819	195,622	166,166	242,449	3%
Tennessee	69,203	77,120	54,433	45,321	37,060	-40%
Texas	194,437	232,830	189,662	136,028	144,209	-24%
Utah	9,052	14,378	13,093	13,546	9,970	1%
Vermont	2,264	3,095	2,616	2,314	1,846	-10%
Virginia	49,641	43,332	40,368	26,259	28,970	-35%
Washington	50,432	52,630	53,608	38,619	42,026	-7%
West Virginia	2,914	1,259	3,429	847	4,125	45%
Wisconsin	64,409	68,040	78,748	54,947	80,269	-1%
Wyoming	21,392	22,098	22,399	19,052	27,799	1%

Note - P₂O₅ is 44% phosphorus. By convention, the amount (or analysis grade) of phosphorus in fertilizers is expressed in this oxide form. Additionally, The Association of American Plant Food Control officials have developed a uniform state fertilizer bill which says that available P₂O₅ must be guaranteed by the manufacturer and so the guaranteed analysis of phosphorus must be expressed in the oxide form.

* Data are the % change in average amounts of fertilizer P₂O₅ purchased per year during years 2007–2011 vs. years 2002–2006.

Source: Commercial Fertilizers annual data, 2002–2011, maintained by the Association of American Plant Food Control Officials for The Fertilizer Institute

1 Kilogram = 2.20462262 Pounds / 1,846 kg x 1,000 x 2.2 = 4,061,200 lbs phosphorus sold in Vermont in 2011 or 2,030 tons of phosphorus –

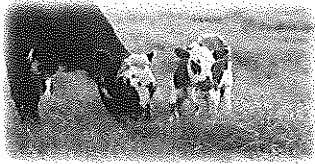
***About 50,000,000 pounds of phosphorus (commercial fertilizer and dairy waste) on ag land and runoff/ year in Vermont**

Or 25,000 tons – produced and used in Vermont per year –

532,000 acrs of cropland and 320,000 acres of pastureland = 852,000 acres = 58.6 pounds of phosphorus per acre of applicable land every year from just commercial fertilizer and just dairy livestock waste/year

Clearly, over application of phosphorus will degrade water quality in Vermont without export of phosphorus. This calculation does not account for other livestock; hogs, chickens, horses, sheep, greenhouses etc. nor does it account for human waste (626,000 population). Beyond healthy ecosystem ability to utilize phosphorus.

Plus “soil health” standard vs “water quality” standard. What does a 3 tons per acre soil loss equate to in terms of water quality impacts?



BURELLI FARM 269 Burelli Farm Drive, Berlin, VT 05602
PASTURED ORGANIC NORMANDE BEEF - PORK - WHOLE CHICKENS

June 23, 2016

It is simply an outrage that these hearings have been scheduled during the busiest season for farming. This hearing schedule demonstrates complete insensitivity to or ignorance of the needs of farmers who, in order to attend and comment, must take off the most productive hours of our workday, while the weather dictates that we should be working outdoors.

I will have to leave the hearing today well before the scheduled time for conclusion in order to meet my commitment to the Waterbury Farmers Market, a major component of my farm income. Traveling to this location this morning in order to attend a pre-meeting with my Rural Vermont colleagues, as well as the hearing itself, has taken me away from outdoor work and has impacted my ability to farm. I'm here because I consider this matter to be of the utmost importance, but it is extremely inconvenient, to say the least.

Rural Vermont strongly advocated asking the Legislature to delay implementation of the Required Agricultural Practices until the end of the year, in order to give the farming community an adequate amount of time, after harvest season, to prepare and deliver our input to the Agency. It is a grave disappointment to us all that the Agency did not agree to argue for this short extension of the comment period. As a result, the input that many of us would have liked to prepare is incomplete.

It should be the duty of the Agency and the Secretary to advocate for farmers. In this instance that advocacy falls far short of what we require and many of us feel that our needs have been ignored.

During the recent Legislative session, Senator Champion introduced bill S.159, an innovative, even revolutionary, proposal that would have implemented certification for Regenerative Agriculture. Unlike the RAP's, regenerative practices and carbon farming would have an enormous positive effect on water quality in Vermont, along with several other very major influences on the environment such as carbon sequestration. Sadly, the Agency reacted to the proposed legislation with indifference and the bill was tabled without further discussion.

The proposed RAP's will not and cannot make a significant impact on the problem of pollution of our waterways. They fail to address harmful practices such as the continual monoculture of silage corn adjacent to our rivers and lakes without crop rotation, undersowing or cover cropping. The RAP's fail to encourage composting as an alternative

to the spreading of raw manure. They do not even mention the vital role of humus in protecting the soil from erosion.

The proposal to require buffer zones between productive fields and waterways will have unintended consequences. In my area our streams are struggling with invasive species such as Japanese knotweed and phragmites. Implementation of buffer zones will provide a haven for these and other plants that are alien to Vermont. It would make more sense to incentivize farmers to graze their animals along the stream banks until the invasives have been destroyed, thereby allowing native vegetation to regrow. The minor impact of an occasional ruminant defecating in the water is miniscule compared to the current widespread practice of spraying liquid manure, emanating from confinement barns, on the same fields year after year.

Instead of enacting minimally effective regulations with their attendant enforcement measures, it would have been far more effective to have incentivized farmers to initiate regenerative practices, including seasonal grazing as an alternative to confinement barns.

In speaking with farmers about the new regulations, I have, without exception, received nothing but totally negative feedback. For some, facing financial pressures and impending old age, they are the final straw leading to the abandonment of farming as a way of life. For others, they represent a serious impediment to the growth of the farming sector in Vermont. The number of farms in the state is increasing, but these regulations will have a serious chilling effect on the entrepreneurial spirit that has brought about that unprecedented development.

One farmer I spoke to said: "the regulations will only be enforced if some flatlander complains." That may or may not be true, but it expresses the widespread feeling that the regulations are foreign to "the Vermont Way."

It is the role of the Agency to represent the interests of the agricultural community in Vermont. Therefore, in conclusion, I implore the Agency to reconsider the urgent timetable for implementation of the RAP's in order to engage in serious dialogue around the concept of regenerative agriculture as a long-term, impactful solution to the issue of agricultural runoff pollution. The current iteration of the RAP's with the attendant penalties for non-compliance, will prove unworkable and futile, while antagonizing the farming community and has already begun to create an "us versus them" mentality that will be more harmful than helpful.

(I would highly recommend as "required reading" for anyone involved in writing, re-writing and evaluating the RAP's, "Cows Save the Planet" by Judith Schwartz.)

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



SMALL FARM CERTIFICATION COVERS LIVESTOCK, ANNUAL CROPLAND AND VEGETABLE PRODUCTION BUT DOESN'T CLEARLY MENTION PERMANENT PRODUCTION (HAY PRODUCERS) HAY PRODUCERS MANAGE AND SPREAD MANURE AS WELL AND SHOULD ALSO BE COVERED IF THEY MANAGE MORE THAN 50 ACRES.

PLEASE ADD TO THE DEFINITION SECTION UNSTABLE BANK WHICH IS SITED IN THE LIVESTOCK EXCLUSION SECTION. LEAVING THE THIS CRITERIA UNREFINED LEAVE A LOT OF AREA FOR INTERPRETATION OF DIFFERENT COMMUNITY MEMBERS INCLUDING FARMERS, CONSERVATION PROFESSIONALS, AND THE AG OF AG.

- I THINK THERE SHOULD BE RAP ED REQUIRES FOR ALL AG SERVICES PROVIDERS WORKING IN THE STATE.

↳ ALSO THERE NEEDS TO BE MORE INTERAGENCY AND REGIONAL CONSERVATION ASSESSMENT TRAININGS AND MEETINGS.

Continue on Reverse

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name		
Address		
City	State	Zip
Optional E-mail Address		

For more information, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets (VAAF) at (802) 828-2431
Public comment on the RAP Proposed Rule can also be submitted to AGR.RAP@vermont.gov

- WE NEED TO HAVE A REGIONAL MILK MARKET FOR VT FARMERS TO SELL IN OUR REGION OUTSIDE THE GLOBAL MILK MARKET!!

Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



Clarity is needed regarding livestock exclusion in non-production pasture areas. If "unstable banks" or erosion are not allowed, but 3" of growth is only required in ^{production} ~~pasture~~ areas ~~only~~, then what qualifies erosion or ^{an} unstable bank. Raw soil? Vehicle or clearing banks? Less than 1" of growth? It seems to me that there could be disagreement on what qualifies without a more specific definition ~~of~~ or description of ^{an} unstable ^{bank} or erosion. And-who makes the determination - ANR? ~~NR~~

Continue on Reverse

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Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name		
Address		
City	State	Zip
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Optional Public Comment Form

In re: Proposed Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program.
Public Comment Deadline: July 7, 2016



The language in Act 64 regarding regenerative practices should be stronger. Regenerative practices should be required. Regenerative practices work. There should not be bare lands in the state of Vermont. Farmers who use regenerative practices should be rewarded*. Creative incentives structures should help more farmers so they can adopt more sustainable practices. Also, have a huge concern about herbicide, chemical fertilizers ruining water quality through run-off, but also harming soil. It is helpful that you conduct hearings. They are very ~~helpful~~ much needed.

^{local} My farmers recommend grass rather than corn silage. Grass works for water quality and soil loss. (Corn silage has a lot of phosphorus.)

* Promoted by the Dept. of Ag as exemplary in promotional material. Plus give money. Compensate farmers to have them take workshops on best practices. Help farmers learn. Offer classes for farmers. Have a Bennington County extension service education rather than ^{continue on reverse} just UVM.

Submit Form by July 7, 2016 to:

Vermont Agency of Agriculture
Attn: RAPs
116 State Street
Montpelier, VT 05620

Name	Steve Berry
Address	P.O. Box 858
City	Manchester, VT
State	VT
Zip	05254
Optional E-mail Address	steve@gmhe.us

Have Dept. of Ag get to know local farmers and work with farmers on the rules.

Farmers need to have a voice and need to have experts help on a regular, long-term basis.

These recommendations will strengthen Act 64 in the rules. But ask the farmers. Dialogue with farmers.

When the Dept. of Ag works with local farmers intensively and regularly everyone is helped in Vermont, But regenerative practices are essential.

Thank you for coming to Manchester. We appreciate your open meeting on RAP's.



Vermont Chapter of the Sierra Club
PO Box 492
Montpelier, VT 05601

July 6, 2016

Agency of Agriculture, Food, & Markets
116 State Street
Montpelier, Vermont 05620-2901
AGR.RAP@vermont.gov

RE: Comments on Draft Required Agricultural Practices

Dear Agency of Agriculture, Food, & Markets:

Thank you for the opportunity to submit these comments on the Draft Required Agricultural Practices (RAPs). We appreciate the outreach that the Agency of Agriculture, Food, & Markets (AAFM) has conducted in sharing prior versions of the draft RAPs, holding stakeholder meetings, and accepting preliminary comments from the public. We also appreciate the time and effort that AAFM staff is putting into this process.

The Vermont Chapter of the Sierra Club is committed to ensuring that Vermont's water quality is restored, maintained, and protected, and we offer the following comments to further those goals. While we appreciate that some positive changes have been made to the RAPs during this process, other changes have made the Draft RAPs less protective of water quality; and the current Draft Required Agricultural Practices are insufficient to protect water quality and ensure consistency with Act 64.

In general, the Draft RAPs should be revised to apply to all farms, bring the definition of "small farm" into compliance with Act 64, provide more strength and specificity as to some requirements, and contain more provisions for education, oversight, and transparency.

We also encourage AAFM to incorporate flexibility into the RAPs to account for farms that engage in organic, biodynamic, regenerative, and/or restorative practices, as long as the farms can demonstrate that their practices are achieving the same level of water quality protection as the RAPs require. AAFM has an important opportunity here to encourage, promote, and require these types of practices, which can lead Vermont toward real long-term solutions for sustainable agriculture and a healthy environment and economy. *See* Sierra Club Vermont Chapter et al., Comments on the Draft Required Agricultural Practices, Appendix A (Dec. 18, 2015). AAFM has the authority to move in this direction because the list of RAP requirements in Act 64 is not an exclusive list, but a "minimum" set of requirements that must be addressed. 6 V.S.A. § 4810a(a).

Finally, we recognize that complying with regulations can be difficult for some farms. While we believe environmental costs should be internalized and that farms must be accountable for the pollution they create, just as other businesses or individuals are, we support outreach and incentive systems that will help farms to be good stewards of the environment.

Thank you again for your consideration.

Section 1: General

- The RAPs must apply to “all farms” as required by Act 64 and as acknowledged in the Draft RAPs. 6 V.S.A. § 4810(b) (“Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State”) (emphasis added); 6 V.S.A. § 4810a(a) (“the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices *on all farms* eliminate adverse impacts to water quality”) (emphasis added); Draft RAPs at § 1.1 (“As defined in 6 V.S.A. Chapter 215, §§ 4810 and 4810a, the Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State.”) (emphasis added).
- We discourage AAFM from including language in the RAPs that, presumptively, compliance with the RAPs equals no discharge. The presumption is problematic for several reasons, most importantly because it is inconsistent with the federal Clean Water Act and Vermont’s Water Pollution Control Law, and could give false assurances to farms regarding their compliance with these water quality laws. Any unpermitted discharge of agricultural pollutants from a point source is an enforceable violation of the Clean Water Act, and Vermont’s Water Pollution Control Law likewise prohibits discharges. 33 U.S.C. § 1311(a); 10 V.S.A. § 1259(a). The statutory presumption in 6 V.S.A. § 4810(b) cannot trump the federal Clean Water Act, and highlighting the presumption in the RAPs could be misleading.

Further, as a practical matter, highlighting a presumption of “no discharge” does not encourage either farms or AAFM to identify and address discharges that *are* actually occurring. Additionally, AAFM has not provided any data or assurances that compliance with the RAPs actually *will* mean “no discharge.”

Section 2: Definitions

- The definition of “farm” is inconsistent with Act 64. *See* Draft RAPs at § 2.13. As explained above, Act 64 requires that the RAPs shall apply to “all farms.” By defining “farm” as requiring that the parcel be devoted primarily to farming, *and* establishing other threshold requirements, the Draft RAPs do not comply with Act 64.

Section 3: Required Agricultural Practices Activities and Applicability

- For the reasons explained above, § 3.1 should not include language that compliance with the RAPs creates a presumption that there is no discharge of agricultural wastes to waters of the State. Draft RAPs at § 3.1.
- Most of Section 3 is unnecessary because, as explained above, Act 64 is clear that the Required Agricultural Practices apply to “all farms.” The Act does not authorize AAFM to exempt categories of farms from the RAPs, whether for concerns about agency

implementation resources or for other reasons. Rather, AAFM should distinguish between those farms that are subject to Small Farm certification, and those that are only subject to the RAPs (which are all remaining farms). 6 V.S.A. § 4810a(a)(1). This would not bring every backyard chicken coop under the realm of the RAPs, because a parcel of land is not a “farm” unless it is “devoted primarily to farming.” Draft RAPs at § 2.13; *see also* 6 V.S.A. § 4802(2) (designating multiple activities that qualify as farming).

Our understanding is that there may be large numbers of farms in Vermont that would not be covered by the RAPs under the criteria in this Section. We have also heard concerns that some RAPs could not be implemented on the smallest farms because, e.g., there would not be enough space for a required buffer. Rather than exempt large numbers of farms that may be significantly contributing to Vermont’s agricultural water pollution problems, a better approach—and one that would be consistent with Act 64—would be to establish a different set of standards for farms that fall under a certain size. *See* 6 V.S.A. § 4810a(11) (authorizing AAFM to allow for “alternative techniques or practices” where site-specific conditions prevent compliance with the RAPs).

Section 4: Small Farm Certification and Training Requirements

- The definition of Certified Small Farm is flatly inconsistent with Act 64 and is a step backwards from AAFM’s original draft RAPs. Under Act 64, a “small farm” must be certified. 6 V.S.A. § 4871(b) (“a person who owns a small farm *shall* . . . certify compliance”). And a “small farm” is “a parcel or parcels of land: (1) on which 10 or more acres are used for farming; (2) that house no more than the number of animals specified under section 4857 of this title; and (3)(A) that house at least the number of mature animals that the Secretary of Agriculture, Food and Markets designates by rule under the required agricultural practices, *or* (B) that are used for the preparation, tilling, fertilization, planting, protection, irrigation, and harvesting of crops for sale.” 6 V.S.A. § 4871(a) (emphasis added).

AAFM does not have the authority to change the definition of small farm and limit it to parcels greater than 50 acres.¹ Under the statute, a small farm includes a parcel(s) of land on which 10 or more acres are used for the preparation, tilling, fertilization, planting, protection, irrigation, and harvesting of crops for sale.

- The RAPs should specify that the requirements for the annual certification form will be subject to public notice and comment. Otherwise, because the Draft RAPs do not include the requirements for the certification form, these requirements will escape public notice and comment. Draft RAPs at § 4.3.

¹ 6 V.S.A. § 4810a(a)(1)(A) is not a license for AAFM to make up its own definition of “small farm.” Rather, it requires the Secretary to specify the farms that must comply with certification requirements because of the farms’ potential impact on water quality, over and above those farms that meet the definition of “small farm.” *See* 6 V.S.A. § 4871(c) (allowing Secretary to require farm to certify based on water quality threat, where farm is not otherwise subject to small farm or other permitting requirements). The statute is very clear about what a “small farm” is, and that all small farms must certify. 6 V.S.A. § 4871(a)-(b).

- While the inspection requirement is an improvement over the initial Draft RAPs, small farms should be inspected more than once every seven years. Draft RAPs at § 4.3(b). Inspections are key to identifying problems, sharing information, and finding solutions. This is especially true where lack of information and education about water quality requirements has been identified as a primary cause of pollution problems on farms. Additionally, without regular, meaningful inspections, the small farm certification program becomes little more than voluntary. Small farms should be inspected, at the very least, once every five years on an ongoing basis.

Section 5: Agricultural Water Quality Training

- Required Farm Operator Training should be required on an annual, or at the most, semi-annual basis. Draft RAPs at § 5(b). As mentioned, education and outreach are essential in helping to prevent pollution problems.

Section 6: Required Agricultural Practices; Conditions, Restrictions, and Operating Standards

- Field stacking of manure should be prohibited in floodplains as well as lands in a floodway or otherwise subject to flooding. Draft RAPs at § 6.02(e)(2).
- Section 6.02(i) should specify that pesticides shall also be applied in accordance with the federal Clean Water Act, with 10 V.S.A. § 1259, and with all regulations promulgated thereunder.
- Section 6.03(d) should require farms to *stop* applying nutrients to fields when the soil analysis shows more than 20 ppm of phosphorus. Simply requiring farms to reduce phosphorus levels “over time” provides no assurance that reduced levels will *ever* occur; and it makes no sense to continue dumping phosphorus on fields that are already saturated and are contributing to the excessive phosphorus levels in Lake Champlain.
- Section 6.03(e) should be more specific and apply not just to “significant” changes. It should require farms to submit documentation of changes to AAFM, along with updates to the NMPs based on the changes, and it should provide a specific timeframe. Otherwise, this provision is little more than a recommendation.
- The records required to be kept in Section 6.03 should be submitted to the Secretary on an annual basis, not just available upon request.
- The provision regarding gully erosion is not meaningful as currently drafted. Draft RAPs § 6.04(c). Though it is mandatory (“shall be managed”), “minimizing” gully erosion and eliminating *or* reducing associated discharges does not actually require farms to prevent either gully erosion or associated discharges.

- In § 6.04(d), cover crops should be required on all annual croplands, with only very limited exceptions. We also recommend adding that cover crops may not be sprayed with harsh pesticides, such as glyphosate, in order to remove them each year. Rather, cover crops should be killed through non-chemical practices such as mow-down and rolling/slicing/crimping techniques.
- We recommend adding language to § 6.05(d) to make it clear that the prohibition on applying wastes when the weather and/or field conditions can be reasonably anticipated to result in flooding, etc., applies regardless of whether a Nutrient Management Plan would otherwise allow waste application. We also recommend adding an example of what “reasonable anticipation” would mean, e.g., the responsibility to check a given weather tracker site. Draft RAPs at 11, § 5.5(d).
- The “Waste Application Standards” in § 6.05 should require all persons who land apply wastes to comply with the same requirements with which custom manure applicators must comply (see Section 10). This will help to ensure that applicators at all farms are fully knowledgeable and aware of best practices for preventing water pollution.
- Harvesting and grazing should *not* be allowed in buffer zones. Draft RAPs at § 6.07. A buffer is no longer a buffer if it is farmed. Further, all buffer zones and waste application setbacks should, at a minimum, be doubled. The guidelines provided in Act 64 are *minimum* distances with the further requirement that buffers must adequately address water quality needs on a site-specific basis. 6 V.S.A. § 4810a(a)(6). We are not aware of any data or studies showing that the buffers in the Draft RAPs are sufficient to protect water quality. Additionally, stream buffers should be comprised of trees and then grasses or other perennial vegetation demonstrated to aid in the filtering of sediment and reduction of erosion.
- We recommend adding a requirement that all farms practice integrated pest management rather than starting with the application of chemical pesticides, through the use of techniques such as crop rotation, the planting of crops that are natural pesticides, identification and removal of pests before they become harmful, and weeding. This will not only help to reduce the use of chemical pesticides and associated pollution of waterways and groundwater, but will encourage ecological health of farms more generally.

Section 7: Exclusion of Livestock from the Waters of the State

- This Section should be revised to require that livestock actually be excluded from surface waters. See 6 V.S.A. 4810a(9) (AAFMs must “[e]stablish standards for the exclusion of livestock from water of the State to prevent erosion and adverse water quality impacts”) (emphasis added). In particular, allowing livestock outside production areas to have access to surface waters unless there are already unstable banks with erosion neither excludes livestock, nor prevents erosion and adverse water quality impacts. Relying on AAFMs to go farm-by-farm to designate all areas where water quality may be impacted by livestock stream access is insufficient; it could encompass every stream in the State. Draft RAPs at § 7(c).



Vermont Chapter of the Sierra Club
PO Box 492
Montpelier, VT 05601

Tile Drains

Subsurface tile drainage is cause for major concern in Vermont, as a direct source of readily available dissolved phosphorus to Lake Champlain and other Vermont waterways. In advance of AAFM's final study on tile drains, AAFM should prohibit the installation of additional tile drains. At the very least, AAFM should include in the current RAPs requirements for mapping and monitoring of existing tile drains, including the locations of all existing drainage systems and outfalls, and regular monitoring data from the outfalls. This is a common-sense way to obtain much-needed information. *See* Letter from Lake Champlain Committee et al. to AAFM re: AAFM Interim Tile Drain Report (Dec. 21, 2015); Letter from Lake Champlain Committee et al. to AAFM re: Comments on Subsurface Tile Drainage Interim Report (Apr. 26, 2016).

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark A Nelson".

Mark A Nelson
Chair
Vermont Chapter of the Sierra Club

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Date: Older									
				Chris Gueret...	Draft RAPs Comments	Fri 7/8/2016 12...	59 KB		✓
					Please see attached with correct title. Thank you. Regards, Chris Guerette <end>				
				Chris Gueret...	Comments on Vermont Regulations for the Collection, Cultivation an...	Fri 7/8/2016 12...	60 KB		✓
					Please see attached. Thank you for your time. Regards, Chris Guerette <end>				
				Maddie Mon...	NOFA-VT Comments on RAPs	Thu 7/7/2016 1...	428 KB		✓
					Please find NOFA-VT's comments on the third draft of the proposed Required Agricultural Practices rule attached. Thank you,				
				Paul Doton	RAP COMMENTS	Thu 7/7/2016 1...	74 KB		✓
				Peter Benev...	Required Agricultural Practices	Thu 7/7/2016 9...	32 KB		✓
					I am the President of the Lake Carmi Campers Assoc., Inc. I represent more than 250 members of the Lake Carmi Community. Lake				
				Peter Benev...	Required Agricultural Principles (RAPs)	Thu 7/7/2016 9...	34 KB		✓
					I am the President of the Lake Carmi Campers Assoc., Inc. I represent more than 250 members of the Lake Carmi Community. Lake				
				Lisa McCrory	RAP Public Comment	Thu 7/7/2016 8...	61 KB		✓
					To go along with my comments (just submitted), I wanted to share an article talking about Glyphosate Herbicide and how it has				
				Lisa McCrory	RAP Public Comment	Thu 7/7/2016 8...	63 KB		✓
					Dear VT Agency of Agriculture, Food & Markets - Thank you for the opportunity to comment on the RAPs. Overall, I am very				
				Peter Benev...	Vermont Needs Strong Required Agricultural Practices	Thu 7/7/2016 8...	32 KB		✓
					Jul 7, 2016 Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
				Andrew Bahr...	Rural Vermont Comments on 3rd Draft RAPs	Thu 7/7/2016 6...	203 KB		✓
					Greetings, Please find attached Rural Vermont's comments on the third draft of the proposed Required Agricultural Practices.				
				Amanda St P...	Comments sent by VDPA	Thu 7/7/2016 5...	61 KB		✓
					Enclosed please find our formal written comments. Vermont Dairy Producers Alliance Amanda St Pierre <end>				
				Kalyn Camp...	Comments on the RAPs	Thu 7/7/2016 4...	30 KB		✓
					Hi, I would like to say a few words about the most recent draft of the RAPs. Thank you to everyone that has worked so hard on				
				Drew Rountr...	Public Comment on RAP Proposal	Thu 7/7/2016 4...	41 KB		✓
					We support the efforts to improve water quality in the state of Vermont, however we have some concerns with the financial impact				
				Eric Goldwarg	We need strong and specific RAPs for clean water	Thu 7/7/2016 3...	33 KB		✓
					Dear Agency of Agriculture of Agriculture, I live in Hanover, NH, but work in Norwich, VT, and frequently fish and boat on Vermont's				
				Marty Illick	Lewis Creek Association Comments on Proposed RAPs	Thu 7/7/2016 3...	103 KB		✓
					LCA comments are attached. Thanks very much.				
				AGR - RAP	RE: Public comment on proposed RAP rule	Thu 7/7/2016 3...	38 KB		✓
					Susan,				
				Anthony Iarr...	Comments of LCI on RAPs	Thu 7/7/2016 3...	2 MB		✓
					Dear Agency of Agriculture, Please find attached the comments of Lake Champlain International on the proposed Required				
	📧			Susan Shea	Public comment on proposed RAP rule	Thu 7/7/2016 3...	33 KB		✓
					Ryan, I hope it is not too late to comment - I have been away the past few weeks. For many years I have lived across from a large				
				Champlain V...	RAP Public Comment	Thu 7/7/2016 3...	191 KB		✓
					Please accept the attached document as our public comment on the RAP proposed rule. Sincerely, Brian Kemp President, CVFC				
				Rhey Plumley	Comments on AAFM's RAPs in response to Act 64 - Clean Water Act	Thu 7/7/2016 3...	32 KB		✓
					Dear Agency of Agriculture of Agriculture, As a resident and outdoors person living in Vermont for over 40 years I strongly agree				
				Jon Groveman	RAP Public Comment	Thu 7/7/2016 2...	376 KB		✓
					To Whom It May Concern: Attached are VNRC and VCV's comments on the proposed Required Agricultural Practices. Please contact				
				Alex Weinha...	RAP comments - Alex Weinhagen - 7/7/16	Thu 7/7/2016 2...	3 MB		✓
					VT Agency of Agriculture, Food and Markets, Please see below for comments on the proposed Required Agricultural Practices (RAP)				
	📧			Sue Brown	Comments...for RAP	Thu 7/7/2016 2...	55 KB		✓
					Please find our comments is the attachment...Thanks for your time Sue Brown Four Hills Farm				
				Sheila Reid	Comment on AAFM's proposed RAPs in response to Act 64	Thu 7/7/2016 2...	31 KB		✓
					Dear Agency of Agriculture of Agriculture, Our State Council of Trout Unlimited crafted a very detailed and thoughtful response to				
				Jane	RAP Public Comment	Thu 7/7/2016 2...	131 KB		✓
					Attached are the comments from Green Mountain Dairy Farmers on the third draft of the RAP's <end>				
				Jesse S. McD...	Public Comment on Vermont RAPs	Thu 7/7/2016 1...	34 KB		✓
					Hello. First I'd like to thank you for taking on the monumental task of addressing the water quality and environmental degradation				
				FWA	Comments to RAP proposed rules	Thu 7/7/2016 1...	234 KB		✓
					Secretary Chuck Ross, Please accept and review the Farmer's Watershed Alliance (FWA) response and comments to the RAP				
				pat sagui	Comments on Final draft RAPs	Thu 7/7/2016 1...	11 MB		✓
					Please find attached 4 documents: Comments from the Composting Association of Vermont Photos PDFs of two NRCS support				

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	Pete Diminico	RAP Comments To: Sec. Of Agriculture	Thu 7/7/2016 1...	63 KB		✓
	Rebekah We...	CLF Comments on the 3rd Draft RAPs Please find our comments attached. Best, Rebekah Weber Lake Champlain Lakekeeper Conservation Law Foundation	Thu 7/7/2016 1...	1 MB		✓
	David Darr	RAP comments Comments for the Required Agricultural Practices (RAPs) Rule for the Agricultural Nonpoint Source Pollution Control Program	Thu 7/7/2016 1...	290 KB		✓
	AGR - RAP	RE: RAP comments attached Hi Mike, We have received your comments. Thank you,	Thu 7/7/2016 1...	36 KB		✓
	Brian Burkho...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Thu 7/7/2016 1...	32 KB		✓
	Corrie Miller	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Thu 7/7/2016 1...	31 KB		✓
	Kathy Ehlers	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Thu 7/7/2016 1...	31 KB		✓
	mike bald	RAP comments attached Please acknowledge, and thanks for your work. Mike	Thu 7/7/2016 1...	67 KB		✓
	Karl Hammer	Comment on RAP Proposed Rule To the writers of the RAP's: The section of the rule pertaining to the feeding of human food residuals to livestock should exempt	Thu 7/7/2016 9...	31 KB		✓
	Paul Stone	Required Ag Praticce VT Agency Ag,	Thu 7/7/2016 9...	51 KB		✓
	ddeen@ctriv...	FW: CRWC comments on the draft RAPs Hi Pasted below and attached are the Connecticut River Watershed Councils comments on the draft RAPs. David July 7, 2016	Thu 7/7/2016 8...	116 KB		✓
	John Cooper	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Thu 7/7/2016 7...	32 KB		✓
	Jeff McBurnie	RAP Public Comment To Whom It May Concern: Attached please find Casella's RAPs comments. Sincerely, Jeff Jeffrey C. McBurnie, P.E. Director of	Thu 7/7/2016 6...	1 MB		✓
	Janie McKen...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	30 KB		✓
	Jean Palthey	"RAPs" draft "RAPs" draft Required Agricultural Practices My name is Jean Palthey and I thank you the opportunity to comment on the RAPs I	Wed 7/6/2016 ...	34 KB		✓
	Raymond G...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, I have spent many days and hours on rivers and streams canoeing and fishing and just	Wed 7/6/2016 ...	33 KB		✓
	Alex MacDo...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	31 KB		✓
	Jared Carpe...	Written Comments by the Vermont Council of Trout Unlimited Good Afternoon, Attached, please find the written comments of the Vermont Council of Trout Unlimited on the final Draft Required	Wed 7/6/2016 ...	207 KB		✓
	Nathaniel Br...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	31 KB		✓
	David Bahre...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	32 KB		✓
	Grey Hagwo...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	30 KB		✓
	Leon Graves	RAP comments on draft #3 Secretary Ross, Please note the attached comments from St. Albans Cooperative relative to draft 3 of the RAP rules. I have also	Wed 7/6/2016 ...	378 KB		✓
	Pete Meijer	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	32 KB		✓
	Crea Lintilhac	Re: Comments on Draft Required Agricultural Practices Mark, I appreciate your comments. We need verification of improved water quality which means that we're focused on outcomes	Wed 7/6/2016 ...	50 KB		✓
	Dana Evans	Is it worth it? Dear Agency of Agriculture of Agriculture, Try and picture what Vermont Rivers looked like a hundred years ago. Clear, cold water	Wed 7/6/2016 ...	32 KB		✓
	Ryan Kinkel	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	31 KB		✓
	Christopher ...	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	32 KB		✓
	Brian Riopelle	We need strong and specific RAPs for clean water Dear Agency of Agriculture of Agriculture, We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to	Wed 7/6/2016 ...	32 KB		✓
	Jay Modry	Required Agricultural Practices Dear Agency of Agriculture of Agriculture, In the spirit of Act 64 I am writing to urge the Agency of Agriculture to implement	Wed 7/6/2016 ...	31 KB		✓

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				Jason Aylward	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Ira Norton	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Michael Colli...	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Steve Stanley	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Brendan Hare	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Reed Kennedy	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Chris Murphy	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Chris Lynch	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				William And...	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				📧 Mark N	Comments on Draft Required Agricultural Practices	Wed 7/6/2016 ...	134 KB		✓
				Dear Agency of Agriculture, Food and Markets:	Attached are comments on the Draft Required Agricultural Practices from the				
				Mr. & Mrs. ...	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Jared Carpe...	We need strong and specific RAPs for clean water	Wed 7/6/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Jeff Dutton	We need strong and specific RAPs for clean water	Tue 7/5/2016 4...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Dick Byrne	We need strong and specific RAPs for clean water	Tue 7/5/2016 3...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				George Plumb	ACT 64 and RAP's	Tue 7/5/2016 8...	35 KB		✓
				I am very concerned about what the confluence of climate change and pollution is doing to the quality of our water. Even in the hills					
				Mike Ware	We need strong and specific RAPs for clean water	Mon 7/4/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				David Ellenb...	RAP's feedback	Mon 7/4/2016 ...	35 KB		✓
				Dear Sir or Madam,	The draft RAPs (Required Agricultural Practices) are, unfortunately, inadequate to address the declining condition				
				Connie Long	RAP - Lake Champlain	Sun 7/3/2016 9...	28 KB		✓
				I would like to comment on the RAP that is up for approval. Having grown up in Vermont and now returning each summer to the St					
				Byron Reed	I want clean water for outdoor recreation and drinking--and farmers ...	Sun 7/3/2016 9...	33 KB		✓
				Dear Agency of Agriculture of Agriculture,	Clearly, agricultural runoff is a large proportion of the problem of phosphorus pollution in				
				Colin Cascad...	We need strong and specific RAPs for clean water	Sat 7/2/2016 9...	33 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Kenneth Hat...	We need strong and specific RAPs for clean water	Sat 7/2/2016 9...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				📧 Tom Juiffre	Fwd:	Sat 7/2/2016 6...	9 MB		✓
				Hello,	My name is Tom Juiffre, property owner on St Albans Bay, Georgia, VT. I'm writing with regards to farming rules and				
				Ray Daigle	We need strong and specific RAPs for clean water	Sat 7/2/2016 5...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 7/1/2016 5...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				Greg Russ	We need strong and specific RAPs for clean water	Fri 7/1/2016 3...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Casper Crou...	We need strong and specific RAPs for clean water	Fri 7/1/2016 2...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				syl stempel	We need strong and specific RAPs for clean water	Fri 7/1/2016 2...	29 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				Jesse Haller	We need strong and specific RAPs for clean water	Fri 7/1/2016 12...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	It has long been my hope that the Green Mountain State would value the resource they				
				Ian Sweet	We need strong and specific RAPs for clean water	Fri 7/1/2016 9...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				

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				KnowWho S...	Strong RAPs are a must for clean water.	Fri 7/1/2016 8:...	33 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 7/1/2016 12:...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Michael Cate...	We need strong and specific RAPs for clean water	Thu 6/30/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Tad Dippel	We need strong and specific RAPs for clean water	Thu 6/30/2016 ...	28 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Liz Royer	RAP comments from VRWA	Thu 6/30/2016 ...	166 KB		✓
					Thank you for giving us the opportunity to provide comments on the Required Agricultural Practices Proposed Rule (5/13/16				✓
				Edward Dom...	We need strong and specific RAPs for clean water	Wed 6/29/201...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Timothy Davis	We need strong and specific RAPs for clean water	Wed 6/29/201...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Aron Merrill	We need strong and specific RAPs for clean water	Wed 6/29/201...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Michael Kelley	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Dan MacAnd...	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Howard Trac...	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				matt stedina	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	28 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				James Schw...	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Robert Kasvi...	Forty years ago NERBC in its Lake Champlain Study pointed out the ...	Tue 6/28/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Erik Schoeffel	strong specific RAPs for clean water	Tue 6/28/2016 ...	29 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Evan Jackson	We need strong and specific RAPs for clean water	Tue 6/28/2016 ...	32 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Robert Collier	We need strong and specific RAPs for clean water	Sun 6/26/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Claire Ayer	RE: Comment on RAP	Sun 6/26/2016 ...	48 KB		✓
				Thank you Barbara. I agree.	Claire Senator Claire Ayer Addison County, Huntington, Buels Gore Assistant Majority Leader Chair,				✓
				barbara felitti	Comment on RAP	Sat 6/25/2016 ...	34 KB		✓
				I am writing to support the proposed Required Agricultural Practices proposed rules.	Since 1991 when I moved to Vermont, there				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/24/2016 9:...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Patch, Ryan	FW: RAP Public Comment	Fri 6/24/2016 1:...	37 KB		✓
				From: Raymond, Faith					✓
				Michael Stor...	RAP Public Comment	Fri 6/24/2016 9:...	369 KB		✓
				Dear Vermont Agency of Agriculture, Food, and Markets,	Please consider the attached comments submitted by the Two				✓
				Gwynn Zakov	RAP Public Comment	Thu 6/23/2016 ...	147 KB		✓
				Dear Secretary Ross:	Please accept public comments from the VLCT on the Draft Required Agricultural Practices (RAPs). Regards,				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/23/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Bob Groff	Act 64	Thu 6/23/2016 ...	34 KB		✓
				Hello,					✓
				Nicholas She...	Vermont Needs Strong Required Agricultural Practices	Thu 6/23/2016 ...	32 KB		✓
				Jun 22, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/22/201...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/22/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Scott Magnan	Section 10(i)	Wed 6/22/201...	31 KB		✓
				To whom it may concern,	In response to section 10(i) Custom Applicator training Certification reading If a Custom applicator has a				✓

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				Alfred Cum...	Strengthen Act 64 RAPs	Wed 6/22/201...	29 KB		✓
				I am writing to express serious concerns that draft Act 64 regulations, in certain critical areas, are excessively weak and ultimately					
				KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/22/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				Laurie Sedlm...	Concerns with RAPs	Wed 6/22/201...	32 KB		✓
				Dear Madam/Sir,	I write to express my concerns about the proposed new RAPs and what I see as serious inadequacies. I hope you				
				LAURIE SMITH	Vermont Needs Strong Required Agricultural Practices	Wed 6/22/201...	32 KB		✓
				Jun 22, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
				Marvin Elliott	We need clean water	Wed 6/22/201...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	I am an active member of the Audubon Society and Trout Unlimited. I also grew up on a				
				David Capen	Stron RAPs for clean water	Tue 6/21/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	I've lived on the shore of Lake Champlain for 20 years and regularly witness irresponsible				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				Violet Gaute...	Vermont Needs Strong Required Agricultural Practices	Tue 6/21/2016 ...	32 KB		✓
				Jun 21, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				Kristine Win...	Vermont Needs Strong Required Agricultural Practices	Tue 6/21/2016 ...	31 KB		✓
				Jun 21, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				Evan Jackson	We need strong and specific RAPs for clean water	Tue 6/21/2016 ...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
				KnowWho S...	Strong RAPs are a must for clean water.	Tue 6/21/2016 ...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	32 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	It is time to set and enforce strong Required Agricultural Practices	Mon 6/20/201...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				

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				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	28 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Mon 6/20/201...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Michael Kelley	We need strong and specific RAPs for clean water	Mon 6/20/201...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Sun 6/19/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Chris lynch	We need strong and specific RAPs for clean water	Sun 6/19/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Edward Dom...	We need strong and specific RAPs for clean water	Sat 6/18/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Ray Gonda	We need strong and specific RAPs for clean water	Sat 6/18/2016 ...	31 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				John Young, Jr	We need strong and specific RAPs for clean water	Sat 6/18/2016 ...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Greg Mikkels...	Vermont Needs Strong Required Agricultural Practices	Sat 6/18/2016 ...	32 KB		✓
				Jun 18, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				✓
				Fred Kamerli...	We need strong and specific RAPs for clean water	Fri 6/17/2016 9...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Taylor Gabriel	We need strong and specific RAPs for clean water	Fri 6/17/2016 9...	29 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				syl stempel	We need strong and specific RAPs for clean water	Fri 6/17/2016 4...	28 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				Doug Zehner	RAP - My Personal Comments	Fri 6/17/2016 2...	45 KB		✓
				Vermont Agency of Agriculture, Food, and Markets					✓
				Mr. & Mrs. J...	We need strong and specific Required Agricultural Practicess for clea...	Fri 6/17/2016 2...	30 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/17/2016 1...	27 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Bob Ackland	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	28 KB		✓
				Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				✓

   	FROM	SUBJECT	RECEIVED	SIZE	CATEGORIES	
	Aron Merrill	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	30 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/17/2016 1...	28 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	Chris Chiquo...	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	31 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	Bartlett, Stev...	Comment on RAP Proposed Rule	Fri 6/17/2016 1...	44 KB		
	Please do all you can to enforce these regulations once they are agreed upon. I urge stronger restrictions on buffers and riparian					
	Steve Bartlett	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	29 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	Tom Warhol	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	31 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	Stephen Oster	We need strong and specific RAPs for clean water	Fri 6/17/2016 1...	31 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	Bruce Jager, ...	We need strong and specific RAPs for clean water	Fri 6/17/2016 9...	30 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	Clark Amadon	We need strong and specific RAPs for clean water	Fri 6/17/2016 9...	30 KB		
	Dear Agency of Agriculture of Agriculture,	As a preamble before the main points I'd like to share this observation make while driving				
	Ron Rhodes	We need stronger and more specific RAPs for clean water	Fri 6/17/2016 9...	29 KB		
	Dear Agency of Agriculture of Agriculture,	Dear VT Ag - Vermonters need clean water. We need your help to ensure it happens. .				
	Howie McCa...	We need strong and specific RAPs for clean water	Fri 6/17/2016 9...	32 KB		
	Dear Agency of Agriculture of Agriculture,	We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to				
	KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/17/2016 8...	31 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/17/2016 7...	30 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	Seth Browns...	Vermont Needs Strong Required Agricultural Practices	Fri 6/17/2016 5...	32 KB		
	Jun 17, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	30 KB		
	Dear Food and Markets,	As a member of the Calais Conservation Commission and the Calais Lakes and Streams Committee, I have				
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	29 KB		
	Dear Food and Markets,	As a member of the Calais Conservation Commission and the Calais Lakes and Streams Committee, I have				
	Donald Morr...	Vermont Needs Strong Required Agricultural Practices	Thu 6/16/2016 ...	32 KB		
	Jun 16, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	31 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	30 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	Cassandra C...	Vermont Needs Strong Required Agricultural Practices	Thu 6/16/2016 ...	30 KB		
	Jun 16, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	Novella Ado...	Vermont Needs Strong Required Agricultural Practices	Thu 6/16/2016 ...	32 KB		
	Jun 16, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	Lance Polya	Vermont Needs Strong Required Agricultural Practices	Thu 6/16/2016 ...	31 KB		
	Jun 16, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	Robb Kidd	Vermont Needs Strong Required Agricultural Practices	Thu 6/16/2016 ...	31 KB		
	Jun 16, 2016 Vermont AGR Vermont Agency of Agriculture	Dear Vermont AGR of Agriculture, Agriculture is one of the largest				
	Katharine Hi...	RAP public comment and Meeting Reminder: Public Hearings for the...	Thu 6/16/2016 ...	42 KB		
	Dear AGR -					
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	30 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				
	Dan	Re: RAP Proposed Rules	Thu 6/16/2016 ...	36 KB		
	Thank you...					
	AGR - RAP	RE: RAP Proposed Rules	Thu 6/16/2016 ...	37 KB		
	Hi Dan,	Yes, I have dropped a copy of the RAP Proposed Rule in the mail for this afternoon's mail. Thanks,				
	Dan	RAP Proposed Rules	Thu 6/16/2016 ...	31 KB		
	Hello,					
	KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/16/2016 ...	31 KB		
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				

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				KnowWho S...	Strong RAPs are a must for clean water.	Sat 6/11/2016 ...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 9...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 7...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 4...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Violet Gaut...	Vermont Needs Strong Required Agricultural Practices	Fri 6/10/2016 3...	32 KB		✓
				Jun 10, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 3...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 1...	31 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				Mary Harbau...	Vermont Needs Strong Required Agricultural Practices	Fri 6/10/2016 1...	32 KB		✓
				Jun 10, 2016	Vermont AGR Vermont Agency of Agriculture Dear Vermont AGR of Agriculture, Agriculture is one of the largest				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 1...	29 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 8...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Fri 6/10/2016 8...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 9...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 9...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 6...	29 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 6...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 6...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	29 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	We allow toxic algae blooms in Lake Champlain because ... why? Protect clean-water standards! Protect				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	29 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
				KnowWho S...	Strong RAPs are a must for clean water.	Thu 6/9/2016 1...	30 KB		✓
				Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓

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	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	30 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	KnowWho S...	Strong RAPs are a must for clean water.	Wed 6/8/2016 ...	29 KB		✓
	Dear Food and Markets,	Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our				✓
	first-born86	STRONG RAPS ARE A MUST PLEASE support strong RAPS SAN LAKE-ALBUQUERQUE <end>	Wed 6/8/2016 ...	28 KB		✓
	Gibson, Laur...	wording confusion	Fri 6/3/2016 2:...	51 KB		✓
	In Section 7 (b) (2)	the phrasing of exactly where the 3 inches of vegetative growth must be maintained is confusing. It says "in the 25				✓
	Ransomsha...	Lake shoreline is white	Thu 6/2/2016 1...	27 KB		✓
	Pleased be advised	that action is required to protect the recreational and aesthetic value of the Vermont/NYS Lake Champlain				✓
	barbara wyn...	Regulations on waters and streams	Thu 6/2/2016 1...	27 KB		✓
	I'm concerned	that regulations on keeping cows out of streams need to be stated more clearly and regulations on buffers for bodies				✓
	Bill Magnus	Re: RAP Public Comment	Fri 5/20/2016 9...	38 KB		✓
	Ryan,	Thanks for your response. I will read the document you sent but for now you must have a gut feeling. I see farmers scrambling				✓
	AGR - RAP	RE: RAP Public Comment	Fri 5/20/2016 9...	34 KB		✓
	Mr. Magnus,	Thank you for your comments. In response to your comment regarding Agricultural Subsurface Tile Drainage, the				✓
📧	Bill Magnus	RAP Public Comment	Wed 5/18/201...	30 KB		✓
	In 6.05 (d)	my suggestion is we not allow farming of any kind in areas the are deemed potential flood areas. Rather than spending the				✓
	John Parizeau	RAP Public Comment - Submit Public Comment on RAP Proposed R...	Wed 5/18/201...	40 KB		✓
	Dear sir,					✓

Comments by:

Christopher M. Guerette
Manager, Member
Waits River Farms, LLC
50 Randolph Avenue
Randolph, Vermont 05060
Chris.guerette@waitsriver.com

Introduction

Very humbly and as I shake my head to think of it, I imagine our company may be the fastest growing farming company in the state. With the help of friends and family, we think we might be able to create a new industry in Vermont to complement logging and sugaring. Our company sustainably cultivates ginseng.

Our company works with beef farmers, vegetable farmers, timber growers, sugarmakers of course, farmers of hay and of corn as well as ardently conservation minded landowners. Our company has been very fortunate and it is thanks in many parts to the farmers with whom we work with who are as passionate as we are about preserving the forest and fields and having a clean environment. We lease thousands of acres across the state from some of the largest landowners in the state and maybe some of the smallest too. We pay a crop share to landowners to create an economic alignment of interest between us and the, and in the process monetize the existence value of biodiversity and forests. We've had the privilege of working with these folks and interacting with hundreds of farmers at this point. We are also ardent and passionate voices for conservation, the preservation of biodiversity and the working landscape as is evidenced by our work. Preserving the environment and our ecosystem is literally why our Company exists. We want clean water in Vermont just as much as anyone else commenting on the Draft RAPs. With that in mind, thank you for your time.

Summary

From my understanding the most detrimental variable affecting Vermont's current and future water bodies is:

1) Pollutant production on Vermont farms

So I respectfully ask the Agency to create a comprehensive water quality program for farmers that 1) complies with state and federal mandates and 2) permanently solves the water quality problem in Vermont.

My understanding is that the second most detrimental variable affecting Vermont's current and future water bodies is:

2) Pollutant transfer to Vermont water bodies.

I respectfully ask the Agency to enact rules that largely prevent pollutants from reaching Vermont's water bodies.

Below are some background and context to the comments below on the draft required agricultural rules

My understanding is that:

- Water is polluted if pollutants are in the water.
 - Unacceptable levels of pollutants in the water may be a result of unacceptable levels of pollutants making their way into the water. I.e. the water is not naturally polluted.
 - Animal farmers may be unable to lower the amount of excrement their animals produce.
 - Total Vermont farm animal excrement is likely to remain the same or increase in years to come.
 - Field applied materials to benefit corn, hay and other crops can be pollutants.
 - Animal excrement and field applied nutrients make up a substantial amount of pollutants in Vermont waters.
 - Clean water bodies in Vermont, containing capped levels of nutrients is required by law.
 - Over the last 30 years water quality in Vermont has worsened.
 - Absent action, water quality in Vermont will continue to worsen.
 - Over the last 30 years farm viability in Vermont has worsened.
 - Absent action, the entire farming industry in Vermont will continue to worsen.
 - Having read 100% of the publicly available comments posted on the website it appears there is a "push-pull" argument for more vs. less water quality control measures.
 - It seems many comments posit that the rules should either: Option A: Make cleaner water, Option B: Make farms more viable or Option C: some combination of both
1. I respectfully request the Agency create rules governing farm commerce to make it so that A) The more farms there are and B) the more profitable farms are then C) the cleaner Vermont's water bodies become. In short, I request the Agency create an economic alignment of interest between the prosperity and dynamism of Vermont's farming community and environmental well-being.

2. As such, below are comments and include, very respectfully, the adjustment of the rules to a set of rules which governs a market based system similar to carbon credits and the creation of a permit to the Draft Required Agricultural Rules which in theory may help to:
 - Reduce the probability of a failure to meet required nutrient levels;
 - Rapidly clean all of Vermont's water bodies and potentially bring them to federally and state mandated nutrient levels within a shorter time frame.
 - Dramatically help Vermont farms across the spectrum.
 - The new RAPs would revolve around:

1. Nutrient Production Permits (NPP)

Nutrient Production Permits (NPP) should be valid for 1 year. An NPP would be required for every "farm" in Vermont to produce farm sourced pollutants. Anytime any farmer in the state either applied nutrients or even owned farm animals of any kind, they would be required to purchase NPPs as a function of the farm in question's "total pollutant output". All Vermont farms would purchase these NPPs from other farmers who would be issued NPPs from the Agency for complying with mandatory widened buffer strips on their land. From my research, which has been substantial, Lake Champlain's water quality is unlikely to reach acceptable levels without exponentially greater buffers between (filters of) pollutants and the sources of the Lake's water. These permits would be issued by the Agency on a discretionary basis, but potentially dependent on how much buffer a landowner created between waterways and cultivated land and the productivity of the land lost to buffers. The Agency would mandate much larger buffers for all farmers, with proportionally more buffer based on the significance of the water body on the land the farmer farms. Farmers would create these buffers by ceasing haying, corn cultivation, etc. The Agency would then issue NPPs to each farmer who created an Agency mandated buffer. The NPP would then be sold to other farmers who are not issued NPPs by the Agency but would be required by the rules to purchase a number of NPPs as required as determined by the Agency (or the NRCS, etc.) to compensate for having either X units of activities which potentially exposes water supplies to pollutants. Obviously various detailed written descriptions including i) written evidence of the amounts of potential pollutants issued by the farm ii) inspections of various farms, etc. could be appropriate to ensure compliance and fair play.

Under the new rules, 100% of the state's waters would have significantly expanded buffer zones. The minimum buffer needed to adequately filter water flowing into lakes and rivers may need to be exponentially increased depending on soil types, drainage, slope, etc. at the discretion of the Agency in order to completely filter 100% of the water flowing into Lake Champlain in order to bring nutrient levels down to appropriate levels within the legally mandated or other reasonable time frame.

An example of this would be as follows: Farmer A in “Farmville, Vermont” would be mandated under the new RAPs to convert 10 acres of bottomland pasture or cornfields into “buffer” with the area to be brush hogged every 5-10 years to maintain biomass levels to achieve desired levels of nutrient filtering. The buffer would be created by simply discontinuing farming in the buffer zone and allowing wild vegetation to grow. In exchange for converting 10 acres of private land into a water filtration buffer, the farmer would be issued X amount of NPPs per acre by the Agency (with X being a function of the productivity of the soils). The farmer would then be permitted by the Agency to resell these NPPs to other Vermont farmers who would be mandated by the Agency to purchase them in exchange for having any farm business that creates any kind of pollutant that can physically get into the water system. This entire system would be monitored and enforced by the Agency, with various oversight measures and periods of reporting requirements to demonstrate compliance with the program.

In theory, under the new RAPs, farmers would either earn or save money as a function of their ability to either filter pollutants or produce less pollutants. The end result may be a statewide evolution of incentives for farmers that leads to clean water. Clean water would, in effect, lead to more profitable farming and a host of other potential downstream benefits.

Patch, Ryan

From: Chris Guerette <chris.guerette@waitsriver.com>
Sent: Friday, July 8, 2016 12:02 AM
To: AGR - RAP
Cc: Patch, Ryan
Subject: Draft RAPs Comments
Attachments: Draft RAPs Comments.docx

Please see attached with correct title. Thank you. Regards,

Chris Guerette

Comments by:

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Manager, Member
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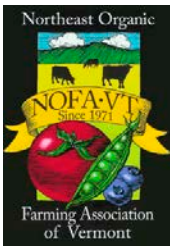
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Patch, Ryan

From: Chris Guerette <chris.guerette@waitsriver.com>
Sent: Friday, July 8, 2016 12:00 AM
To: AGR - RAP
Cc: Patch, Ryan
Subject: Comments on Vermont Regulations for the Collection, Cultivation and Sale of American Ginseng (2)
Attachments: Comments on Vermont Regulations for the Collection, Cultivation and Sale of American Ginseng (2).docx

Please see attached. Thank you for your time. Regards,

Chris Guerette



Northeast Organic Farming Association of Vermont

*Growing local farms, healthy food, and strong communities in
Vermont since 1971.*



July 7, 2016

Chuck Ross
Secretary
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620

Submitted electronically

Re: NOFA-VT Comments on the Required Agricultural Practices (3rd draft)

Dear Secretary Ross,

NOFA-VT submits the following comments on the third draft of the Proposed Required Agricultural Practices rule. We appreciate the time and effort Agency staff has put into developing these rules, as well as the extensive public outreach VAAFV has conducted throughout the process.

For over forty years, NOFA-VT has worked with and for many of our state's small and mid-sized farms, assisting them in transitioning to management practices that we believe will improve their economic outcomes while reducing environmental impacts on our working landscape. While Vermont's certified organic farmers have long implemented practices that protect and improve water quality, these rules nonetheless represent a significant new regulatory frontier for our organization's certified farmers and members. As such, it is critical to us that the Agency adopts final rules that lead to real, positive impacts on water quality while also:

1. Taking steps to provide farmers with educational and technical assistance resources to meet or exceed minimum standards;
2. Incentivizing innovative practices that go above and beyond what the RAPs require;
3. Reflecting common sense, flexibility, and knowledge of farming realities in improving water quality outcomes; and
4. Directly addressing additional farm-based sources of pollution including persistent pesticides, herbicides, and chemical fertilizers.

Sincerely,

Maddie Monty
Policy Advisor

General Comments

Recognizing that the RAPs make some important improvements over the Accepted Agricultural Practices (AAPs), these rules maintain an overall approach that holds farmers to a prescribed minimum standard without incentivizing those who go beyond that minimum. Whereas section 1.1 states “The RAPs shall include, as well as promote and encourage, practices for farmers in preventing agricultural pollutants from entering the groundwater or waters of the State...” (emphasis added), the rules as written primarily *require*, and largely fail to encourage or promote additional practices that could substantially improve water quality outcomes. For example, organic farms utilize crop rotation plans to manage weed and pest populations, while improving soil fertility and minimizing or altogether avoiding the use of chemical inputs that adversely impact water quality.

The Agency should explicitly integrate and incentivize practices such as crop rotation, cover cropping, rotational grazing, agroforestry, and reduced tillage within the RAPs. In so doing, the Agency can move beyond setting minimum expectations and begin a sorely needed transition from an agricultural economy that adversely impacts water quality to one that improves it. By failing to provide incentives in the RAPs (including technical, educational, and financial resources where possible) for farmers to invest in long-term soil health and water quality solutions, the Agency risks effectively set both a floor and a ceiling rather than establishing a continuum of ever-improving farm stewardship practices.

In addition to providing incentives, the RAPs can serve as one of many opportunities to educate farmers about innovative and evolving best management practices. In particular, section 5 specifies the types of information to be provided to producers every five years through agricultural water quality training. We believe this requirement, if carried out thoughtfully, could become a meaningful opportunity for continuing education for the farming community. In that spirit, we recommend the inclusion of additional subjects for water quality training, such as methods to increase organic matter (thereby improving soil’s moisture-holding capacity) and to properly manage livestock in riparian buffers and streams. It is also important to recognize that farm and land stewardship practices should be constantly evolving in ways that continuously improve economic and environmental outcomes. Farmer training requirements under section 5 should reflect this objective and allow flexibility in subject matter.

We strongly support the inclusion of the language in section 4.2, as it provides an opportunity to truly incentivize the use of aforementioned practices, such as crop rotation, cover cropping, rotational grazing, reduced tillage and others, as determined by the Secretary, that go above and beyond the RAPs’ minimum requirements. The Secretary should establish clear, consistent, meaningful standards allowing certification requirements to be waived for small farms demonstrating they do not pose a water quality threat, and to ensure that those in need of regulatory oversight remain under the Agency’s purview.

Finally, we are concerned about the relative silence of the RAPs on the subject of agricultural pollutants aside from animal wastes, such as pesticides, herbicides, and chemical fertilizers. Understanding that such substances are subject to other regulations, they fall squarely under the category of agricultural waste as defined in section 2.35 and therefore should be actively addressed throughout the RAPs. Section 1.2 states, “The RAPs are farm and land management practices that will control and reduce agricultural nonpoint source pollution...to surface and ground waters of the State.” Agricultural nonpoint source pollution consists of pesticides, herbicides, and chemical fertilizers as much as it does manure, and it is critical that the Agency directly address the use and storage of such substances in the RAPs.

Additional Detailed Comments by Section

2.08(b): This portion of the definition of cover crop should include cropland, in addition to annual cropland. Cover crops are used to enhance soil health in both annual and other cropland, as defined in section 2.09.

2.28: The definition of Principally Produced is unnecessarily confusing. It should be amended to read "...more than 50% (either by weight or volume) of raw agricultural products that are stored, prepared, or sold at the farm are also grown or produced on the farm."

2.30: The definition of River Corridor is poorly worded. It should be amended to read "...and that is necessary for the natural maintenance of a dynamic equilibrium" rather than "...for the natural maintenance of natural restoration of a dynamic equilibrium..."

3.1(b): What is the timeframe for determining an "average" year for the purpose of this section? The minimum \$2000 annual gross income threshold should be based on an average over the past 2-3 years, or some other specified time period.

4.1(a)(3)(J-M): The numbers provided here for laying hens/broilers and ducks - based on the presence or absence of a liquid manure handling system - don't make sense. Why is a producer allowed to have *significantly* more laying hens or ducks *without* a liquid manure handling system in order to reach the minimum threshold for compliance? This should be clarified and/or reversed.

6.07: NOFA-VT strongly supports the language allowing for grazing and harvesting of buffer zones, and for the use of fertilizer or compost for the purposes of establishing and maintaining buffers.

7: We strongly support the flexibility provided in section 7 regarding livestock exclusion from waterways, and encourage the Agency to maintain the livestock exclusion exemption for approved grazing plans. Well-managed grazing in riparian buffer zones and along streams can have a number of benefits, including controlling invasive plant species, preserving biodiversity, and improving wildlife habitat.

Patch, Ryan

From: Maddie Monty <maddie@nofavt.org>
Sent: Thursday, July 7, 2016 11:07 PM
To: AGR - RAP
Subject: NOFA-VT Comments on RAPs
Attachments: NOFA-VT RAPs Comments 070716.docx

Please find NOFA-VT's comments on the third draft of the proposed Required Agricultural Practices rule attached.

Thank you,

Maddie Monty

--

Maddie Monty
Office Manager & Policy Advisor
NOFA-VT
(802) 434-4122
www.nofavt.org

CONNECTICUT RIVER WATERSHED FARMERS ALLIANCE

10 Benning St. #245, W. Lebanon, N.H. 03784-3402 Paul Doton, chair



July 7, 2016

Secretary Chuck Ross
Vermont Secretary of Agriculture, Food and Markets
116 State Street
Montpelier, Vermont 05620-2901

RE: Comments on Draft Vermont Required Agricultural Practices (RAP's)

Secretary Ross:

The following comments are being submitted on behalf of the Connecticut River Watershed Farmers Alliance. The CRWFA appreciates the effort you and your staff have devoted to this process but recognize the following areas for improvement:

SECTION 6.04(d)

Strictness on the timetable for harvesting of the annual crop and planting a cover crop will be a problem. Flexibility is needed because of unusual soil or weather conditions as well as different conditions in different parts of the state.

SECTION 6.05(f)

This section needs to have some flexibility for the actual site.

GENERAL

- The 20 ppm phosphorus rule needs to be less arbitrary.
- Need communications to be in writing, not oral.

Thank you for your consideration.

Paul Doton, Board Chair
Connecticut River Watershed Farmers Alliance

Patch, Ryan

From: Paul Doton <pdoton@gmail.com>
Sent: Thursday, July 7, 2016 10:14 PM
To: AGR - RAP
Subject: RAP COMMENTS
Attachments: CRWFA-RAP-SubmittedComments-20160707.docx

Patch, Ryan

From: Andrew Bahrenburg <andrew@ruralvermont.org>
Sent: Thursday, July 7, 2016 6:03 PM
To: AGR - RAP
Subject: Rural Vermont Comments on 3rd Draft RAPs
Attachments: Rural Vermont Comments on 3rd Draft RAPs, 7-7-16.pdf

Greetings,

Please find attached Rural Vermont's comments on the third draft of the proposed Required Agricultural Practices.

Thanks,
Andrew

--

Andrew Bahrenburg
Organizer & Advocate
Rural Vermont
[\(802\) 223-7222](tel:(802)223-7222)
15 Barre St., Suite 2, Montpelier VT 05602
www.ruralvermont.org



July 7, 2016

Secretary Chuck Ross
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620

Re: Rural Vermont's Comments on the Proposed Required Agricultural Practices Rule

Dear Secretary Ross:

On behalf of our Board of Directors and members throughout the State, Rural Vermont submits the following comments on the Agency's third draft of the Proposed Required Agricultural Practices (RAPs) Rule.

As an advocacy organization with over 30 years of experience representing the interests of Vermont's community of family farmers and the citizens who support them, Rural Vermont is deeply invested in the future of Vermont's agricultural economy and its impacts on the State's water quality. For this reason, Rural Vermont and its members have played an active role in shaping policies that improve the management of Vermont's working landscape and its lakes, rivers, and streams.

The enclosed comments reflect feedback Rural Vermont has received from its Board of Directors, member farmers, and concerned citizens. We appreciate the Agency's public outreach throughout the drafting process, and its openness for dialogue. We will continue to engage with the Agency and other policymakers to ensure that the final RAPs work for *all* Vermont farmers, and help put Vermont agriculture on a path toward ecological and economic sustainability.

Sincerely,

A handwritten signature in black ink that reads "Andrea Stander".

Andrea Stander
Director

A handwritten signature in black ink that reads "Andrew Bahrenburg".

Andrew Bahrenburg
Organizer/Advocate

Throughout the drafting process of both *Act 64* and the Required Agricultural Practices, Rural Vermont has maintained a consistent message: farming practices matter. Vermont agriculture—which currently accounts for an estimated 40 percent of phosphorous runoff into Lake Champlain—can either be a threat to water quality, or it can be a solution. The difference is how our working landscape is managed, how our food is grown, and how our state measures economic & environmental success in agriculture.

On June 17, the Environmental Protection Agency released its 2016 ‘Phosphorous TMDLs for Vermont Segments of Lake Champlain,’ which requires that our state reduce agricultural runoff of phosphorous by more than half, and by over 80 percent in the most impaired parts of the lake. This is a monumental task, and one that surely cannot be achieved by mitigation alone. It must be met by adapting and transforming our state’s agricultural economy, and beginning a just transition toward long-term sustainability by truly encouraging and incentivizing farmers to use regenerative practices, and moving away from degenerative, industrialized agricultural systems that have helped to create the water quality problems we face.

Many farmers in Vermont, and within our organization, already use regenerative farming practices that reduce erosion, minimize tillage, maximize the water holding and filtration potential of their soil, and actually improve water quality. The State should—and must—endeavor to empower more of these farmers, and swiftly put more acres into these production methods. We should reward those farmers already employing these practices, and create incentive structures that help more farmers transition to these methods. The benefits would not be limited to water quality. A statewide transition toward regenerative agriculture would make our working landscape more productive per acre, the food produced on those acres more nutrient-dense, our communities healthier and more resilient in the face of climate change, and our economies more local and less reliant on out-of-state inputs, all while promoting the very type of agriculture that tourists come to Vermont every year to see.

Rural Vermont recognizes that the new Required Agricultural Practices are not the only instrument to begin Vermont’s transition toward a truly sustainable food system, but as the most significant regulatory change in the State’s agricultural policy in over a decade, they represent a key opportunity. If the RAPs are the baseline and minimum standard for persons engaged in farming in Vermont, then the Agency should say so clearly in the document itself. Rural Vermont strongly recommends that the RAPs include a preamble or expanded introduction, which puts these new regulations into the context of its long-term vision for Vermont agriculture, and emphasizes that the best outcomes for water quality will come from the adoption of regenerative practices including: reduced tillage, avoiding mechanical activities on saturated soils, addition of organic matter using manure, green manures and compost, sod and legume rotations, the use of cover crops, multi-paddock rotational grazing, silvopasture, agroforestry, and, where appropriate, transition from annual cropland to permanent sod and hay.

To meet the demands of Vermont’s serious water quality problems, the Agency will need to marshal its limited resources where the threat of nutrient runoff is most acute, while also providing incentives for farmers to go *beyond* the minimum requirements of the RAPs. To that end, Rural Vermont is encouraged by the inclusion of Section 4.2, which would allow the Secretary to waive certification requirements for certain small farms after determining that a farm does not pose a threat of discharge. We strongly encourage the Secretary to establish clear, transparent, and rigorous standards for farmers to prove that, based on their practices and measurable outcomes, they do not require additional oversight from the state. This would free up critical regulatory



resources, while sending a clear signal about which farming practices and systems yield the best results for water quality.

Equally important as the promoting and incentivizing of regenerative practices to tackling Vermont's water quality problems, is providing flexibility for those farmers already using them.

Rural Vermont strongly encourages the Agency to ensure flexibility for livestock farmers in Section 7 of the RAPs. Maintaining adequate riparian buffers and preventing erosion of river and stream banks is critical to improving Vermont's water quality and watershed ecology, and intensive rotational grazing, when properly managed, can have significant benefits. Well-managed grazing can help farmers control invasive plants, increase plant diversity, and improve wildlife habitat in riparian buffers and streams¹, while minimizing the cost to farmers of establishing and maintaining buffers. We strongly encourage the Agency to maintain the livestock exclusion exemption for approved grazing plans.

Rural Vermont strongly supports an approach to water quality regulations that focuses on practices and outcomes. We, therefore, question the adequacy of the Agency's heavy reliance on Nutrient Management Plans (NMPs) to achieve the necessary agricultural phosphorous reductions. While there is no doubt that requiring farmers to consider and account for the nutrients they apply to their fields could have some effect, NMPs are not an end in themselves. Studies have indicated that the existence of NMPs on farms does not necessarily lead to the elimination of excess nutrient applications.² Furthermore, a study of Vermont dairy farms conducted by Dr. Heather Darby of the University of Vermont Extension found that less than a quarter of farms with NMPs actually applied the plans' recommendations to all of their acreage. Dr. Darby also observed that "agricultural service providers and farmers alike have realized that the process of developing a prescriptive NMP can intensively consume time and financial resources."³ Rural Vermont has serious concerns about the burden placed on both small farmers and currently available technical support staff and resources as the RAPs require an estimated 1,500 new farms to create and implement NMPs. This is of particular concern before the Agency has conducted its own review of the effectiveness and compliance rates of permitted LFO and MFO operations that already have NMPs. If the tool is ineffective, requiring more farmers to use it is unlikely to solve the problem.

The accumulation, management, and use of manure on livestock farms is a serious and urgent issue facing Vermont's rivers and lakes that must be addressed immediately, but it is not the only one. Rural Vermont finds the RAPs to be sorely lacking guidelines and clarity over the use of pesticides, herbicides, and chemical fertilizers on farms. According to data provided by the Agency, Vermont's corn fields alone received over 182,000 pounds of active ingredient pesticides in 2012,⁴ including substances that are probable or suspected carcinogens or endocrine disruptors. That same year, Vermont farmers applied more than 16.5 million pounds of nitrogen fertilizer on their fields.⁵ We further note that Section 1.1 of the RAPs states that these standards "shall address activities which have a potential for causing agricultural pollutants to enter the groundwater and waters of the

¹ J. Lyons, B. M. Weigel, L. K. Paine, and D. J. Undersander. "Influence of intensive rotational grazing on bank erosion, fish habitat quality, and fish communities in southwestern Wisconsin trout streams." *Journal of Soil and Water Conservation* (2000)

² Shepard, R. "Nutrient Management Planning: Is it the answer to better management?" *Journal of Soil and Water Conservation* (2005).

³ Darby, H., Halteman, P., and D. Heleba. "Effectiveness of Nutrient Management Plans on Vermont Dairy Farms." *Journal of Extension* (2015)

⁴ "Commercial Applicator Pesticide Usage Host Group Summary, Pounds of Active Ingredient Statewide, Reporting Year: 2012." Vermont Agency of Agriculture, Food, and Markets

⁵ "Annual Vermont Fertilizer Tonnage Reports, Farm Use, 2002-12," Vermont Agency of Agriculture, Food, and Markets. (2014)

State.” To meet this requirement, the RAPs must include guidelines for *all* agricultural pollutants, even those that may be regulated by other rules, laws, and regulations (this is particularly true when considering that the State’s pesticide regulations have not been comprehensively updated since 1991). Farmers need accessible and comprehensive guidance for water quality, and must be able to find that guidance in the RAPs, and Vermont’s waterways require full accountability for all possible pollutants. This is particularly important because the RAPs apply to *all* farms in Vermont, not only those large enough to trigger certification, training, and NMP requirements.

Just as the Agency has conducted extensive outreach to farmers and stakeholders throughout the drafting process of the RAPs, it must also do so during the anticipated implementation phase. As Rural Vermont has heard from many farmers, and as many farmers have testified at the public hearings on the proposed RAPs, there remains far too much confusion over definitions, requirements, and expectations in the RAPs, particularly as they might apply to each individual farmer, farm, and field. Rural Vermont strongly encourages the Agency to create companion documents and appendices to the RAPs, including explanations, illustrations, case studies, and plain language explanations of any laws referenced in the rule. Particularly as the Agency’s lack of personnel, resources, and the lack of statewide funding for implementation of the RAPs will limit the Agency’s ability to interact and work with the thousands of farmers newly under state oversight, farmers must be able to understand and use this document on their own.

Rural Vermont remains similarly concerned about the lack of guidance issued to local and municipal governments—which, as the RAPs are currently drafted, may now have sole authority to regulate so-called “Non-RAP Operations (NROs)”. Many operators of micro-farms and homesteads, as well as local officials, have expressed to Rural Vermont their anxiety and confusion over this new category. The Agency must conduct significant outreach, education, and provide clear standards to local authorities that will increase continuity between towns, or risk creating a town-by-town patchwork of regulations for Vermonters wishing to grow food and start small farm businesses.

Finally, we are encouraged by the addition of Section 1.5 of the current draft, which indicates the Agency’s willingness to evaluate the “effectiveness of the [RAPs], the implantation of additional best management practices, and the current water quality condition of waters of the State.” Though we strongly encourage the Agency to consider the recommendations reflected in these comments, we will continue to advocate for improvements and amendments long after the initial RAPs are implemented. To ensure the best outcomes and increase acceptance and compliance by farmers, we recommend the Agency conduct a thorough, inclusive, and transparent process for evaluating the effectiveness of the RAPs and their impacts on all farmers prior to amending the rule for subsurface tile drainage on or before January 15, 2018.

At the time of submission of these written comments, a total of five recreational sites on Lake Champlain are on alert for blue-green algae blooms, according to the Vermont Department of Health’s Blue Green Algae Tracker. Regardless of which indicator one chooses, however—the EPA’s TMDL targets, the increasing tonnage of pesticides, herbicides, and synthetic fertilizer applied to farmland each year, the falling price of commodity milk, the number of toxic algae blooms in the lake, the estimated 40 percent of phosphorous runoff into the lake that Vermont agriculture accounts for—it is clear that the status quo of Vermont’s dominant sector of agriculture is not sustainable. Although we applaud the Agency’s efforts to improve the RAPs with each successive draft, these rules, and the law that guided them, unfortunately cement and codify that status quo because they do not recognize the real issue: farming practices.

Far more important than the number of animals or acres on a farm, is how those animals and acres are managed. With proper management, backed by progressive regulations, incentives, and Agency support, farmers could actually *improve* Vermont’s water quality while building healthy soil, increasing their yields, improving the health



of their animals and the nutrient-density of the food they produce, reducing their reliance on off-farm and out-of-state inputs, and making their farms more resilient in facing a changing climate. To use one example, the USDA's Natural Resources Conservation Service estimates that a one-percent increase in soil organic matter can increase the water holding capacity of the land by 16,500 gallons *per acre*.⁶ That's 16,500 gallons per acre of nutrient-dense water that could pollute our rivers and lakes, but instead stays on the farm. That is regeneration and remediation, and not simply mitigation.

Rural Vermont remains committed to working with Agency staff, legislators, farmers, and concerned citizens to ensure that regulations work for *all* of Vermont's diverse farming community. Though there must be rules to ensure that all farms are held to a minimum standard, we also believe that the RAPs are a rare opportunity for the State to begin to advocate for a new vision. The results are in from decades of incentivized mono-cropping, tilling, chemical spraying and animal confinement, and they are not good. That system has left many farmers behind, weakened our rural communities, and wreaked havoc on Vermont's ecological systems.

Many of Vermont's innovative farmers have shown us a different path, and we look forward to working with the Agency to find more ways to support them and reward the crucial ecosystem services they provide.

⁶ "The Value of Soil Health." U.S. Department of Agriculture Natural Resources Conservation Service. (2013)
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Vermont Dairy Producers Alliance
P.O Box 1531
Montpelier, Vermont 05601

The Vermont Dairy Producers Alliance (VDPA) was formed to increase the voice of dairy farming both within the Legislative and Regulatory arenas. The Alliance members are from farms of all sizes working in conjunction with industry members to ensure a sustainable dairy sector in Vermont.

Dairy farming has become increasingly more difficult both financially and agriculturally. Milk pricing reflects a supply / demand balance of markets, both domestic and global, which at times fall below the cost of doing business, at the same time Vermont farmers have been working to improve farm practices for cost efficiencies, productivity and concerns pertaining to environmental quality.

Under Act 64 (2014); Clean Water Act, the Agency of Agriculture was tasked with finalizing rules for Required Agricultural Practices (RAPs). The Agency held 6 hearings around Vermont during the month of June, of which, the Alliance attended all six to fully understand and participate in the development of these new regulations that will affect our dairy industry for generations to come. It is crucial to our future that we create regulations which are effective, achievable and economically viable for our industry to uphold.

It should be noted that more than 90% of Vermonters believe dairy farms are important to the:

- Overall image of the State of Vermont
- Vermont economy
- Beauty of Vermont
- Quality of life
- Vermont's future and history

Vermont agriculture provides thousands of local jobs and contributes more than \$281 million to Vermont's Gross Domestic Product every year. Dairy farming alone contributes \$2.2 billion in economic activity, brings in 13.5 million visitors every year and accounts for more than 6000 jobs in Vermont communities. Additionally, the dairy industry creates \$3 million dollars in circulating cash, every day, as part of the Vermont economy.

The Alliance believes that water quality is highly important and that Act 64 was well intended. The challenge now before us is to determine how Vermont achieves the water quality goals necessary without crippling the economic viability of our dairy industry.

In 2014, the Environmental Protection Agency (EPA) challenged the Vermont General Assembly to address water quality in Vermont within 20 years. Vermont has taken that challenge through the passage of Act 64 (Clean Water Act) which heads us toward that goal. However, we are increasingly concerned that the Agency of Agriculture has put Vermont on a more stringent time line which will not be measurable in any productive way. The cost to Vermonters, the potential loss of farms, the loss of jobs and loss of the Vermont brand are all of too high and importance to throw a dart at the wall and hope for the best.

Through the six public hearings there were common themes in testimony offered:

- Will the proposed Required Agricultural Practices (RAP's) be effective?
- Will they be achievable?
- Are they affordable and economically viable for dairy farms to implement even with the "cost share supports"?

How will we measure success?

How will this be articulated to Vermonters in a transparent and beneficial way?

We need the Ag Agency to reflect on the proposed draft rules and modify the Alternative Setbacks, Calendar Restrictions, and defined Frequently Flooded Fields as indicated below.

- **Alternative Setbacks**

- **✦ While Appendix A does provide a defined process for alternative setbacks, there is no timetable for the department's response. The standards for granting an alternative setback are also much more restrictive than Act 64's language which would allow an alternative setback if it "adequately addresses water quality needs based on consideration of soil type, slope, crop type, proximity to water, and other relevant factors."**

- **For example, in Section 6.07, a 10 foot vegetative buffer zone is required for all ditches. This setback may significantly reduce available acres on many farms. There should be a streamlined process in place for a farm to either get an alternative setback or approval to relocate a ditch when doing so would not have adverse water quality impacts.**

- **Similar concerns exist with the requirement that manure may not be applied to fields where the average field slope exceeds 10% unless a permanent vegetated buffer zone of 100 feet has been established. More flexibility is necessary to determine the need and alternatives for increased buffer zones.**

Calendar Restrictions

- **Section 6.04(d) notes case-by-case approvals for alternative cover crop planting dates, but no defined process for applying for the alternatives and a timetable for the department's approval.**

- **The same problem exists with the manure application restrictions. Without a significant administrative burden, producers should be able to receive a variance to apply manure on fields considered frequently flooded after the October 15 th deadline and up to the winter spreading ban of December 15th.**

Frequently Flooded Fields

- **The RAPs include additional restrictions on frequently flooded fields as determined by a field's**

USDA Soil Survey Flood Frequency Class. Those soil classifications are not intended to indicate soil erosion potential and the restrictions will end up applying to fields with no erosion concern.

We would ask that the Ag Agency clearly answer the standard or scientific studies that has put in the limitation and plan regarding the 20 ppm of Phosphorus and validate that measurement and scientific proof of priority as this affects small farms of both dairy and vegetable growers.

The blanket approach is not practical and does not qualify under the three questions, effective, achievable, and affordable.

We are requesting that the proposed rules provide the following:

- 1) Farmers rights should be included in the proposed RAP's with clearly defined parameters on the Ag Agency's visits to a farmer, timeline for information to be provided to the farmer and time table for improvements required on the farm. An example of forms to be used should be included and developed prior to the RAP's being adapted.**
- 2) Specify the time allowed for the Ag Agency, to provide direction on special conditions in regards to cover crop exemptions, manure management and other special options that are determined by the Ag Agency and Secretary and mentioned throughout the proposed draft of the RAP's. Specifically, how does the Ag Agency expect to provide answers to small farms who have not developed their NMP plan and custom operators are required**

Vermont Dairy Producers Alliance
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to get permission and direction from the Ag Agency on where to spread and the rate. We do not feel that there is a standard for this requirement but if it is being included we would ask that the time line laid out to the farming community prior to the RAP's being finalized. We as an industry need to make decisions in real time and would ask that there be a standard within the agency as well.

- 3) Include a plan on how to separate the Enforcement Division from the promotion/education division which was the intent of the Agency and overlooked as part of ACT 64.
- 4) We respectfully request that the proposed rule repeal the overarching authority given to the "Secretary" throughout the proposed rule. This provides too much ambiguity, uncertainty and subjectivity. We propose a "review board" and a culture change of working together. We would ask the Ag Agency to show their intent with examples and a board formation if so adopted.
- 5) Model the format of our "milk inspectors" who visit every farm, leave a checklist to complete and a timeline to do it prior to violations and enforcement actions being taken. This is a model dairy farmers understand and it has been effective for many years. Why recreate something that is already in place and working?

Successful dairy producers set realistic goals and use a systemic process for decision making. They know their cost of production and keep good record keeping for evaluating alternatives and monitoring the outcome of decisions. Each day on the farm a new challenge arises and Vermont dairy farmers address them. We ask the Agency to do the same so we can work together. We are in this together.

The Alliance members and dairy industry in general have worked diligently over the past 10 years improving our standards and raising the bar on our farm practices and farm infrastructure.

We have acknowledged and accepted that we need to continue to implement effective measures that protect the waters of our state. Each year millions of dollars are spent on those improvements. We as an industry are better today than in previous years and we continue to be committed to supporting new regulations that are crafted in a way that is measurable, effective, achievable, and affordable.

*About the Vermont Dairy Producers Alliance: VDPA is comprised of dairy farmers and partners of the farming industry. The Alliance supports and encourages the growth and viability of agriculture in Vermont while being mindful of the environmental impacts to Vermont's working landscape and waterways.

Patch, Ryan

From: Amanda St Pierre <dfwt06@yahoo.com>
Sent: Thursday, July 7, 2016 5:16 PM
To: AGR - RAP
Subject: Comments sent by VDPA
Attachments: Revised Proposed Letter for VDPA.docx

Enclosed please find our formal written comments.
Vermont Dairy Producers Alliance

Amanda St Pierre

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Peter Benevento <e-info@clf.org>
Sent: Thursday, July 7, 2016 8:47 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jul 7, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mr. Peter Benevento
PO Box 114
421 Patton Shore Rd.
Franklin, VT 05457-0114
peterben@charter.net

Patch, Ryan

From: Lisa McCrory <lmccrory560@gmail.com>
Sent: Thursday, July 7, 2016 8:53 PM
To: AGR - RAP
Subject: RAP Public Comment

Dear VT Agency of Agriculture, Food & Markets -

Thank you for the opportunity to comment on the RAPs.

Overall, I am very disappointed with the style/tenor in which this document is written. Rules to be enforced/followed brings with it an assumption that producers are doing something wrong and should be controlled. Conversely, one could have taken an approach of education, outreach and assistance to grants/funding to help farmers make changes that are needed and to learn about exciting concepts around regenerative agriculture that can increase production and profit on the farm while protecting our natural resources.

I also want to express my frustration with the fact that you are looking for feedback in the midst of the growing season. Though I was able to attend two public hearings and 2 personal meetings with Rural VT Board Members and the VAA staff, this was not nearly enough time to fully address the weaknesses within this rule - and I do not believe the the Agency of Agriculture has had enough time to adequately address the weaknesses and are clearly at a point where they are just going to 'get it done' knowing that the assignment would probably get a 'D' if graded.

I am not convinced that this rule is going to offer any positive changes to our waterways and natural resources, but will be a lot of paper shuffling.

What is lacking throughout the document is the promotion of practices that can 'turn this ship around' and reduce erosion, capture carbon, build organic matter, reduce the levels of fertilizer, manure and pesticides going into our waterways. That being said, I have comments on the most recent draft and they are below.

Thank you again for this opportunity to provide my input,

Lisa McCrory
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Comments for the Required Agricultural Practices Rule – Numbered

1) Section 1. General

- This section needs a **Preamble** stating clearing the intentions of this Rule and the outcome that the VAA hopes to see over the next ___ years as a result of these new regulations. Some powerful language could be in this including Regenerative Agricultural practices, building sod and storing carbon through cover cropping and establishment of perennial crops, and Management Intensive Grazing.
- It is also important to note that in the introduction, the RAP's includes the following sentence: “The RAPs shall include, as well as promote and encourage, practices for farmers in preventing agricultural pollutants from entering the groundwater and waters of the State when engaged in animal waste management and disposal, soil amendment applications, plant fertilization, and **pest and weed control.**”
 - Though the management, use and documentation of pesticide applications in the state is handled through the *Vermont Regulations for the Control of Pesticides (last updated in 1991)*, I feel that the RAPs should clearly explain that, so that there is an explanation why there is not more rigorous oversight of these toxins within this rule. Neglecting to share this information will leave a glaring hole within the rule.
 - There should be language within the rule discussing monitoring (soil and water samples), management, and storage of pesticides in all relevant sections of this document. We must make sure we are not overlooking the important fact that pesticide use has a direct correlation to phosphorous loads in our soils, lakes and streams. (See attached article titled: *Glyphosate Herbicides Cause Tragic Phosphorus Poisoning of Lake Erie*)

2) Section 3.1 (d) – ‘is raising, feeding or managing at least the following number of adult livestock on a farm that is no less than 4.0 contiguous acres’ - For a NRO with 4 acres or more but less than all the other criteria, they should still be considered a NRO.

3) Section 3.2 (d) ‘the preparation, tilling fertilization, planting, protection, irrigation, and harvesting of crops;’ - the word protection is not clear. I believe you are talking about pesticide application. Please just say that.

4) Section 4.3 (c) ‘A person who ownd or leases a Certified Small Farm shall notify the Secretary of a change of ownership or change of lessee of a certified Small Farm within 30 days of the change...’ – I feel that this needs to be at least 60 days

- 5) Section 5 (a) (5)** ‘*weather and soil conditions that increase the risk of runoff or manure or nutrients or pesticides to waters of the State...*’ – **please add pesticides**
- 6) Section 5 (a)** – **recommend creating a NEW subcategory #7 relating to the documentation of the mechanical application of pesticides**
- 7) Section 5 (c)** ... ‘*All requests for training approval shall be provided to the Secretary at least 30 days prior to the scheduled training dates...*’ – **this could be challenging as some classes/workshops are made known no more than 2 weeks ahead of time. This area needs to be more allowing of last minute opportunities.**
- 8) Section 6.01 (b)** – ‘*Production areas, barnyards, animal holding or feedlot areas, manure storage areas, feed storage areas and pesticide/seed storage areas shall utilize...*’
- 9) Section 6.02 (i)** – ‘*Pesticides shall be used and stored in accordance...*’ – **It would be nice to expand on how one can find 6 V.S.A. Chapter 87 – especially those who are not savvy with computers and may need to ask for this information in hard copy.**
- 10) Section 6.03(f)** – ‘*The following records of manure, fertilizers, pesticides or other waste application...*’ – **First off... why call it waste? These are nutrients that are needing to be managed. Records of the pesticides and chemical fertilizers and manures applied need to be maintained by the farmer – even if they hire someone else to apply it.**
- 11) Section 6.04 (d)** - ... ‘*If annual crops cannot be harvested prior to October 15, then 30% crop residue, growing directing in the soil and over the whole field must remain in order to limit soil loss.*’
- 12) Section 10 (a)** ... ‘*Custom applicators of manure, pesticides...*’
- 13) Section 10(b)** ... ‘*including manure, pesticides, or other.....*’

Patch, Ryan

From: Lisa McCrory <lmccrory560@gmail.com>
Sent: Thursday, July 7, 2016 8:56 PM
To: AGR - RAP
Subject: RAP Public Comment

To go along with my comments (just submitted), I wanted to share an article talking about Glyphosate Herbicide and how it has caused phosphorous poisoning in Lake Erie. For this reason and others, I feel that we need to be closely monitoring agricultural pesticides within this new rule regardless of the fact that pesticides are managed and overseen by a different department.

Glyphosate Herbicides Cause Tragic Phosphorus Poisoning of Lake Erie

Posted on Jul 4 2016 - 1:03am *by* Sustainable Pulse

<http://sustainablepulse.com/2016/07/04/glyphosate-herbicides-cause-tragic-phosphorus-poisoning-of-lake-erie/#.V3rXaleXjzL>

A new study by experts from Ohio Northern University in the U.S. has shown that glyphosate herbicides are a main cause of the tragic phosphorus poisoning of Lake Erie.

The study follows a joint agreement by the U.S. and Canadian governments earlier in 2016 to [seek a 40% reduction](#) in phosphorus runoff into sections of Lake Erie plagued by harmful algae blooms that foul drinking water and kill fish.

Scientists: Glyphosate Contributes to Phosphorus Runoff in Lake Erie

Source: www.no-tillfarmer.com By Laura Barrera

Low soil pH and certain metals are causing glyphosate to release phosphorus from the soil, which is responsible for about 25% of dissolved reactive phosphorus runoff in the Maumee watershed.

Scientists now know that the increase in dissolved reactive phosphorus (DRP) runoff that's been plaguing the western Lake Erie basin is mostly coming from farms located in the Maumee watershed.

But the question they're still trying to answer is — why?

Christopher Spiese, a chemist at Ohio Northern University, says a combination of factors is causing the problem. But at the Conservation Tillage and Technology Conference held earlier this year in Ada, Ohio, he focused in on one specific practice that's changed over the last few decades — the use of glyphosate.

Coincidence or Causation?

Lake Erie's troubles with phosphorus (P) aren't new. In fact, the U.S. and Canada have been trying to clean up the amount of P in the lake for more than 40 years now, as the two governments created the Great Lakes Water Quality agreement in 1972 to focus on reducing the amount of P in the Great Lakes.

Since then, total P in Lake Erie has decreased significantly, Spiese says. DRP loads were also coming down, but started increasing in the mid 1990s.

At that same time, glyphosate use took off with the advent of herbicide-tolerant crops. As of 2014, Spiese says, more than 95% of soybeans and over half of corn in the U.S. are Roundup Ready, and those percentages probably haven't changed over the last 2 years.

"These crops that are able to grow in the presence of glyphosate have really kind of started to take over, to the point where we're washed in Roundup," he says.

So Spiese and his team at Ohio Northern University decided to see if the correlation between the increased use of glyphosate (Roundup) and increased DRP loads in Lake Erie were related.

Roundup's Role

To determine if glyphosate is a contributor to DRP runoff, Spiese says three things have to be true:

- 1 The amount of DRP is related to the amount of herbicide-tolerant crop acres in the Maumee watershed.
- 2 Glyphosate is able to release P by a plausible mechanism.
- 3 The quantity of P released must be a substantial portion of the P increase.

Spiese looked at the first statement and found there is a significant correlation between DRP loads and the number of acres growing herbicide-tolerant crops, counting for about 30% variability in the DRP loading.

"For every acre of Roundup Ready soybeans and corn that you plant, it works out to be about one-third of a pound of P coming down the Maumee," he says.

Next, he looked at whether glyphosate — which contains P and has a similar chemical structure to phosphate — can release P from the soil. He clarifies he was looking at desorption of P, not whether the P in the glyphosate was contributing to the DRP loads.

"The P in glyphosate is what we call phosphonate, a phosphorus-carbon bond," he explains. "A phosphorus-carbon bond is extraordinarily stable. It's very difficult to break. We don't expect this to contribute one bit to the DRP."

Through his own and others' research, Spiese found that depending on the types of metal in the soil, glyphosate does release P. For example, when glyphosate is applied to soil containing iron oxide-hydroxide, P is immediately released. But almost nothing is removed when it's an iron oxide material.

Finally, Spiese took soil samples all over the Maumee watershed, applied P to them and then sprayed glyphosate to see how much P was released vs. soil that wasn't sprayed with glyphosate after 24 hours. He saw desorption occurred all over the watershed, but certain areas were higher than others, specifically in the southeastern corner.

Based on the average two glyphosate applications growers make every year, Spiese estimates that overall, 20-25% of the DRP runoff is caused by glyphosate. But depending on the location within the watershed, that percentage could be much lower or much greater.

“Some of those sites, it’s less than a percent. Other sites it’s almost 100%,” he says.

Spiese and his team are now trying to determine why the southeastern corner and other ‘hot spots’ are seeing P detach from the soil because of glyphosate.

Soil pH appears to be one component. Spiese says the pH levels in the Maumee watershed ranged from about 5.5-8, and they found as the pH increased, less P was released.

A higher presence of iron and calcium were also leading factors, and soil P test levels also appear to have an influence, Spiese says.

No-Till Influence

It’s not been determined yet, but no-till may play a role in this situation.

“We know that the longer a field is in no-till, the more you can mobilize some of the metals,” Spiese says. “We’re still kind of feeling our way along with that to figure out, is that going to increase or decrease our desorption ratio?”

Another consideration is the residue that’s left on the soil surface that may have glyphosate still attached to it. Spiese says he recently read about a study out of France that looked at glyphosate applied to the top of plants vs. bare soil.

“That appears to do a couple of things,” he says. “No. 1, after the farmer harvests, with no-till you leave the residue in place. That’s effectively a second application of glyphosate. Anything that’s stuck to the plant leaves doesn’t get incorporated with the soil, and that does things like prevent mineralization of the glyphosate.”

That means the half-life of glyphosate goes up significantly, Spiese says. But that may not make a difference, depending on the no-tiller’s soils.

“If your soil is one of those where you’ve got a relatively basic pH, relatively metal poor, I don’t think it’s going to make one difference if you spray glyphosate or not,” he says. “If you’re in an acidic soil with a lot of iron, I would be hesitant to tell you to spray glyphosate, just because of the risk. It’s a very geographic problem.”

More to Learn

The one thing no-tillers should take away from all of this, Spiese says, is to keep an open mind about possible changes scientists recommend based on these findings and future research.

“We follow where the data tells us,” he says. “So we may come out with these recommendations, and those recommendations may change. Be willing to make adjustments.”

He adds that some of the best advice he heard came from USDA-Agricultural Research Service ag engineer Kevin King, who recommends growers experiment with P and glyphosate applications on their farm.

“Skip laying down P for a couple rows and see what happens to your yields,” Spiese says. “Stop spraying glyphosate. Change your cover crop. There are a lot of different things that can be done. It’s just a matter of taking a little bit of risk and seeing what happens.”

Lisa McCrory
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Patch, Ryan

From: Peter Benevento <peterrben@gmail.com>
Sent: Thursday, July 7, 2016 9:20 PM
To: AGR - RAP
Subject: Required Agricultural Principles (RAPs)

I am the President of the Lake Carmi Campers Assoc., Inc. I represent more than 250 members of the Lake Carmi Community. Lake Carmi has been designated an impaired lake for more than a decade and has had an approved TMDL since 4-8-09. Ideally, nothing short of **the Best Agricultural Practices** should be mandatory in the watershed of an impaired lake.

In reference to the subject at hand we strongly endorse the **Required Agricultural Principles** and make the following recommendations.

- The RAPs should apply to all Farm Operators. Livestock quotas should not be used to determine who is subject to the RAPs.
- Livestock should not have direct access to waterways.
- A buffer should actually be a buffer. Fertilizer should not be applied to buffers and livestock should not be allowed to graze in buffers.
- All buffers to waterways, ditches and culverts in the watershed of an impaired lake should be a minimum of 35 feet.
- Farm inspections should be conducted annually not once every six years. Annual farm inspections should be mandatory in the watershed of an impaired lake.
- Training should be conducted annually not 4 hours in 5 years or 8 hours in 5 years as written. Certified training should also be mandatory for new operators applying manure.
- **All** manure application operators, not just Custom Applicators, should be certified and demonstrate a knowledge of the RAPs.
- Soil samples should be collected annually, especially in the watershed of an impaired lake. One sample within 6 years is not sufficient.
- The soil test phosphorous limit that prohibits the spread of manure should be lower than > 20 parts per million, especially in the watershed of an impaired lake.
- The proposed perennial vegetated buffers of 25 feet for surface water and 10 feet for water conveyances should be doubled, especially for the watershed of an impaired lake.
- The consideration of using an **injection manure process** should be included in the RAPs. It should be mandatory in the watershed of an impaired lake.
- **Cover Cropping** should be mandatory for all croplands in the watershed of an impaired lake, not just those subject to flooding from adjacent surface waters.
- Increase in the tillable land and the number of livestock in the watershed of an impaired lake should be subject to the approval of the Secretary.

Local funding should be provided to assist Farm Operators in complying with the RAPs when and where applicable.

Thank you for the opportunity to provide comments on the RAPs. If there are any questions please feel free to contact me at peterrben@gmail.com.
Peter Benevento, President

Lake Carmi Campers Assoc., Inc.

Patch, Ryan

From: Peter Benevento <peterrben@gmail.com>
Sent: Thursday, July 7, 2016 9:53 PM
To: AGR - RAP
Subject: Required Agricultural Practices

I am the President of the Lake Carmi Campers Assoc., Inc. I represent more than 250 members of the Lake Carmi Community. Lake Carmi has been designated an impaired lake for more than a decade and has had an approved TMDL since 4-8-09. Ideally, nothing short of **the Best Agricultural Practices** should be mandatory in the watershed of an impaired lake.

In reference to the subject at hand we strongly endorse the **Required Agricultural Practices** and make the following recommendations.

- The RAPs should apply to all Farm Operators. Livestock quotas should not be used to determine who is subject to the RAPs.
- Livestock should not have direct access to waterways.
- A buffer should actually be a buffer. Fertilizer should not be applied to buffers and livestock should not be allowed to graze in buffers.
- All buffers to waterways, ditches and culverts in the watershed of an impaired lake should be a minimum of 35 feet.
- Farm inspections should be conducted annually not once every six years. Annual farm inspections should be mandatory in the watershed of an impaired lake.
- Training should be conducted annually not 4 hours in 5 years or 8 hours in 5 years as written. Certified training should also be mandatory for new operators applying manure.
- **All** manure application operators, not just Custom Applicators, should be certified and demonstrate a knowledge of the RAPs.
- Soil samples should be collected annually, especially in the watershed of an impaired lake. One sample within 6 years is not sufficient.
- The soil test phosphorous limit that prohibits the spread of manure should be lower than > 20 parts per million, especially in the watershed of an impaired lake.
- The proposed perennial vegetated buffers of 25 feet for surface water and 10 feet for water conveyances should be doubled, especially for the watershed of an impaired lake.
- The consideration of using an **injection manure process** should be included in the RAPs. It should be mandatory in the watershed of an impaired lake.
- **Cover Cropping** should be mandatory for all croplands in the watershed of an impaired lake, not just those subject to flooding from adjacent surface waters.
- Increase in the tillable land and the number of livestock in the watershed of an impaired lake should be subject to the approval of the Secretary.

Local funding should be provided to assist Farm Operators in complying with the RAPs when and where applicable.

Thank you for the opportunity to provide comments on the RAPs. If there are any questions please feel free to contact me at peterrben@gmail.com.

Peter Benevento, President
Lake Carmi Campers Assoc., Inc.

Patch, Ryan

From: Kalyn Campbell <kalyncamp@gmail.com>
Sent: Thursday, July 7, 2016 4:29 PM
To: AGR - RAP
Subject: Comments on the RAPs

Hi,

I would like to say a few words about the most recent draft of the RAPs. Thank you to everyone that has worked so hard on creating and revising this document. Thanks for taking so much comment and public input. Personally, I would like to see more incentives for regenerative and sustainable agriculture practices in this document. We should be emphasizing how important well managed grazing can be for a landscape. We should be encouraging farms to graze their animals instead of buying grain from the mid-west. This will help some with the phosphorus issues. Farmers who are doing this should be encourage. It is important to discourage major tilling of the soil. I think this can be done with a higher crop residue requirement. 30% coverage is not that high. If it was closer to 50% than it might encourage more cover cropping and maybe a shift to perennial crops.

It is also concerning that pesticides are not mentioned more in this document. I understand that they have their own document, but pesticides on fields heading into the Lake are a huge problem and should probably be addressed in this document to some extent as well. It might be confusing to farmers if they have to go search for another document to find out about pesticides.

Thanks for listening to me.

Kalyn

Patch, Ryan

From: Drew Rountree <Drew_Rountree@cargill.com>
Sent: Thursday, July 7, 2016 4:26 PM
To: AGR - RAP
Subject: Public Comment on RAP Proposal

We support the efforts to improve water quality in the state of Vermont, however we have some concerns with the financial impact mandating some of the regulations will have on Vermont dairy farms. As you are aware Vermont is built on agriculture and generates many jobs and opportunities for our citizens. By implementing severe policies and restrictions, we are concerned there will be a marginalization our of industry as a whole. Specifically our concerns are:

- Lost acreage due to buffer strips and slope regulations.
- Increased cost associated with planting cover crops (seed, planting of crop, cover crop loss due to inability to harvest)
- The reduced profitability of planting shorter day corn on land subject to frequent flooding.

These changes represent a significant amount of money that will come direct out of the dairy farmer's pocket. Is there any financial support available to assist farmers in implementing these practices? We cannot reach a point that farmers can no longer afford to farm in the state of Vermont. This is who we are.

Drew L Rountree
Plant Manager
Cargill Feed & Nutrition- Swanton, VT
Cargill
150 years of helping the world thrive
Direct: 802-868-3234 Ext. 230
Cell: 207-240-1727



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Patch, Ryan

From: Eric Goldwarg <goldwarg@gmail.com>
Sent: Thursday, July 7, 2016 3:47 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

I live in Hanover, NH, but work in Norwich, VT, and frequently fish and boat on Vermont's waters, including the Connecticut River which, as you know, is part of NH but drains much of Vermont. As a fisherman, I am writing concerning Act 64 and the agency's proposed RAPs which, I believe, do not adequately protect our rivers and lakes.

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Eric Goldwarg
75 Lebanon St
Hanover, NH 03755
goldwarg@gmail.com

Patch, Ryan

From: Marty Illick <marty.illick@gmail.com>
Sent: Thursday, July 7, 2016 3:49 PM
To: AGR - RAP; Ross, Chuck
Subject: Lewis Creek Association Comments on Proposed RAPs
Attachments: 7-7-16 Comments on Draft RAPs, LCA memo.pdf

LCA comments are attached.
Thanks very much.

--

Marty Illick
Executive Director

Lewis Creek Association
442 Lewis Creek Road
Charlotte, VT 05445

802-425-2002

www.lewiscreek.org

[Follow LCA on Facebook](#)



July 7, 2016

Sent via electronic mail

To: Secretary Ross, Agency of Agriculture, Food and Markets, 116 State Street, Montpelier, Vermont 05620

From: Martha Illick, Lewis Creek Association, 442 Lewis Creek Rd, Charlotte, Vermont 05445

Re: Request to Strengthen RAP Stream Corridor Buffer and Water Quality Regulations

This memo requests improvements to agriculture management regulations relating to river corridors and water quality. In accordance with Act 64 and the federal Clean Water Act, Vermont's new RAPs must provide reasonable assurances that Vermont's water resource qualities will be measurably improved in an agreed upon time frame. To ensure reasonable assurances, a science based justification approach must be employed. AAFM has yet to provide us with their science based justification approach to developing new RAPs. Until a sound and justifiable buffer determination method is included, agreed upon, and aligns with Vermont State ANR procedures and policies; AAFM's proposed buffers are at best arbitrary and do not meet the intent of the law. Vermont river corridors are documented as largely unstable, and, for reasons of water quality and riparian habitat quality, VT streams must be allowed to regain and maintain equilibrium conditions across the state. Further, to demonstrate that new proposed regulations are not arbitrary, AAFM must put into the public record how their determination of surface water buffers consider both over land flow capacity, soil qualities and stream stability needs.

Proposed agriculture regulations appear not in keeping with state and federal law until

1. Reach scale river corridor geomorphology conditions are included and addressed.
2. Key property owners assume the burden for verifying improved water quality conditions over time.
3. Science based buffer delineations are utilized to ensure the "elimination" of adverse impacts to water quality from river corridors as well as over land runoff.
4. Natural vegetative cover in buffer areas persists over time in a natural state.
5. Sediment and P from agriculture fields along with adjacent associated loading from river corridor lands are fully addressed in RAPs and agriculture nutrient and sediment reduction plans.

Preliminary research from U Mass Amherst supports our Vermont River Management's guidance at VTDEC. They suggest that 60 feet minimums may be needed for reducing overland sediment and nutrient flows and loading (not including consideration of the stream morphology condition needs). Additionally, stream buffers should be comprised of woody vegetation with deep roots first, wherever possible, and then grasses or other perennial vegetation widths demonstrated to provide filtering of sediment, avoidance of erosion/soil mobilization and water infiltration.

Patch, Ryan

From: AGR - RAP
Sent: Thursday, July 7, 2016 3:34 PM
To: Susan Shea; AGR - RAP
Cc: Patch, Ryan
Subject: RE: Public comment on proposed RAP rule

Susan,

Your comment has been received in advance of the public comment deadline and will be considered. The deadline to submit public comment is today: July 7, 2016.

Thank you,
-Ryan

Ryan Patch
Sr. Ag Development Coordinator
Vermont Agency of Agriculture, Food and Markets
116 State St. Montpelier, VT 05620
Cell: (802) 272-0323
Fax: (802) 282-1410
ryan.patch@vermont.gov
<http://agriculture.vermont.gov/>

From: Susan Shea [mailto:sshea28@gmail.com]
Sent: Thursday, July 7, 2016 3:23 PM
To: AGR - RAP
Subject: Public comment on proposed RAP rule

Ryan,

I hope it is not too late to comment - I have been away the past few weeks.

For many years I have lived across from a large dairy farm in Brookfield that milks at least 500 cows and have observed the impact of the farm on the water quality of several tributaries to the White River. These are issues are typical throughout the state.

After manure spreading (within a few feet of the top of the bank) and a heavy rain, the streams here are cloudy and brownish. Grass which is hayed and grazed is the only vegetative buffer along the streams which flow through the farmer's fields and pastures. Although the proposed rules require a larger buffer for manure-spreading, there needs to be a **vegetative buffer** which is **not mown or grazed** and is **allowed to grow up into shrubs and trees** to better filter the nutrients from manure. Also I don't know how you will enforce the manure-spreading buffer, whereas a vegetative buffer of shrubs and trees would be obvious at all times.

The cows and heifers in our valley are moved from pasture to pasture during the spring, summer and fall. They cross the stream to get to other pastures and drink from the streams. They also stand in the streams and defecate

there. The streams are cloudy with silt after the cows walk through. In some pastures, there are extensive reaches of stream which are unfenced. The proposed **RAP's fencing provisions do nothing to address these problems**, which could be solved with additional fencing and the use of watering troughs.

Unless the above provisions are changed, I don't believe water quality in the White River watershed and other areas of Vermont will improve. I hope the final rules will be much stronger. Thank you for the opportunity to comment.

- Susan Shea
162 Eagle Peak Road, West Brookfield, VT 05060

Patch, Ryan

From: Anthony Iarrapino <anthony@ilovt.net>
Sent: Thursday, July 7, 2016 3:31 PM
To: AGR - RAP
Subject: Comments of LCI on RAPs
Attachments: LCI Comments on Proposed RAPs 7.7.16.pdf; CLF, CRWC et al Comments on 2nd Draft RAPs.pdf; LCI.CLF.CRWC Pre Rulemaking RAP Comments Final.pdf

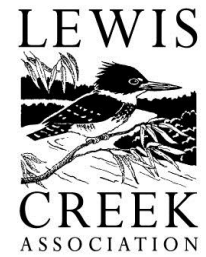
Dear Agency of Agriculture,

Please find attached the comments of Lake Champlain International on the proposed Required Agricultural Practices Rules, along with attachments.

Sincerely,

Anthony N.L. Iarrapino, Esq.
Iarrapino Law Office, PLLC
16 State St. #2
Montpelier, VT 05602
802.522.2802

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March 21, 2016

Secretary Chuck Ross
VT Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, Vermont 05620

Sent via electronic mail

Re: Comments on the Second Draft Required Agricultural Practices

Dear Secretary Ross:

Conservation Law Foundation, Connecticut River Watershed Council, Lewis Creek Association, Vermont Council of Trout Unlimited, Lintilhac Foundation, Vermont Conservation Voters, Vermont Natural Resources Council, Vermont Chapter of the Sierra Club, Lake Champlain International, and Lake Champlain Committee submit the following comments to the Vermont Agency of Agriculture, Food and Markets (AAFM) on the second draft Required Agricultural Practices (2nd Draft RAPs).

Promulgating forward-thinking agricultural regulations is imperative to meeting state and federal legal mandates as well as promoting economic stability and environmental health. Vermont's agricultural regulators are tasked with preventing and controlling activities on all farms harmful to water, improving water quality, and attaining unprecedented phosphorus reductions within the Lake Champlain watershed, which accounts for half of Vermont's land area. Vermont Act No. 64 (2015) § 1(b)(1), (5), and (6). Reducing phosphorus runoff from farmland is particularly important considering agriculture – at 41 percent of the aggregate pollutant load – represents the single largest contributor of phosphorous pollution to Lake Champlain.¹

The RAPs play a crucial role in protecting Vermont's substantial investment in clean water, including its tourism and real estate industries, and strengthening Vermont's resilience to the mounting challenges of climate change. Restoring our water resources is as much a legal and ecological mandate as it is about economic vitality, public health, and buttressing our natural defenses to extreme weather events.

Though we encourage AAFM to incorporate provisions into the RAPs to account for farms that engage in practices that protect water quality, such as regenerative, integrated, and organic agriculture, the 2nd Draft RAPs do not reflect this nuanced approach. Instead, they exempt large numbers of farms and relax requirements for all farms. Again, we encourage AAFM to include provisions in the RAPs that truly foster practices leading to long-term sustainability and clean water. We also reiterate our support for outreach and incentive systems that will help farms be good stewards of the environment. Vermont is fortunate to have many diversified farms leading the way with environmentally friendly and economically profitable models, and AAFM should encourage and promote these models through the RAPs not only for the health of Vermont's waters, but for the long term vitality of agriculture in the State.

Unfortunately, the 2nd Draft RAPs fail on several counts. They conflict with the legislative intent of Act 64 – Vermont's clean water law; they are in several respects unenforceable; and they are inadequate to meet Vermont's water quality standards.

¹ Phosphorus TMDLs for Vermont Segments of Lake Champlain ("Draft 2015 TMDL") (August 14, 2015), pg. 47 fig. 7.

The 2nd Draft RAPs conflict with the legislative intent of Act 64 by exempting a category of farmers from the RAPs.

The 2nd Draft RAPs section 3.1, which defines the applicability of the Required Agricultural Practices, violates the plain language of Act 64 because it fails to include all farms under the purview of the RAPs. Under the Act, “Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State.” 6 V.S.A. § 4810(b) (emphasis added). The Act further mandates that “the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices on *all farms* eliminate adverse impacts to water quality.” 6 V.S.A. § 4810a(a) (emphasis added). Under Act 64, “farming” means cultivating the land for food or fiber, raising animals or bees, producing maple syrup, operating greenhouses, and managing agricultural or fuel products from the farm. 6 V.S.A. §4802(2) (incorporating farming definition from 10 V.S.A. § 6001(22)). The *only* size limitation in the statutory definition of farming relates to horses (four or more equines).

The Act does not authorize AAFM to exempt categories of farms from the RAPs, whether for concerns about agency resources or for other reasons. AAFM may distinguish between farms that are subject to the small farm certification and those that are only subject to the RAPs (which are all remaining farms). 6 V.S.A. § 4810(a)(1). This would not bring every backyard chicken coop under the realm of the RAPs because a parcel of land is not a “farm” unless it is “devoted primarily to farming.” 2nd Draft RAPs at 2 § 2.12; *see also* 10 V.S.A § 6001(22) (designating multiple activities that qualify as farming), and would lawfully address AAFM’s concerns about having sufficient resources to administer the RAPs.

AAFM has committed to regulating all farming operations under the RAPs within the Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan (Phase I Plan) and in the Revised Secretary’s Decision from Conservation Law Foundation’s petition to require mandatory pollution controls in Missisquoi Bay basin. “The Phase I Plan commits to ... increasing the base regulatory standards in the RAPs (formerly called Accepted Agricultural Practices (AAPs prior to Act 64 of 2015), which are applicable to all farming operations regardless of size or type.”²

Further, as some farmers in the State have pointed out, leaving regulation of smaller farms to municipal bodies is an invitation for inconsistent regulation and unfairness across the State, where some small farms may be subject to meaningful water quality requirements and others remain exempt. This would also be an abdication of authority by AAFM, the agency charged with implementing the RAPs under Act 64, and could impose substantial burdens on municipal governments that may lack the resources and expertise to develop agricultural regulatory systems where AAFM has failed to.

We are extremely concerned that despite the continued decline of Lake Champlain, the 2nd Draft RAPs limit AAFM’s authority to regulate farms. Currently, the “Accepted Agricultural

² Revised Secretary’s Decision, In re: CLF Petition to Require Mandatory Pollution Control Best Management Practices for Agricultural Non-Point Sources Identified in the Missisquoi Bay Basin, AAFM Docket #: 2014-6-04 ARM, pg. 10.

Practices are basic practices that *all farm operators* must follow as a part of their normal operations.” AAPs at 2 § i. General (emphasis added). Relaxing agricultural regulations beyond the current standards causes us to question AAFM’s commitment to improving water quality and implementing the mandates of Act 64.

The 2nd Draft RAPs conflict with the legislative intent of Act 64 by authorizing livestock access to waters of the State.

Act 64 compels AAFM to establish livestock exclusion standards that *prevent* erosion and adverse water quality impacts. 6 V.S.A. § 4810a(a)(9). The use of the word “prevent” rather than “reduce” or “minimize” is significant because it sets a zero tolerance standard for additional erosion and adverse water quality impacts from livestock. Studies have shown that livestock with access to streams cause phosphorus, sediment, and pathogen pollution by depositing manure in the water and by trampling and destabilizing stream banks.³ Therefore, any regulation that grants livestock access to waters of the State violates the plain language and intent of Act 64.

The 2nd Draft RAPs allow livestock to access streams outside of production areas that do not contain unstable banks or where erosion is present. 2nd Draft RAPs at 20 § 7(c)(1). This provision is inconsistent with Act 64 and will result in the degradation of stable stream banks by directing livestock toward areas that are not currently eroded. In addition, the 2nd Draft RAPs permit livestock in water crossings and watering areas, neither of which is limited in size or clearly defined in the regulation, causing any intended restriction to be meaningless.

The approach of section 7(c)(2), which provides the Secretary the authority to revoke livestock access to areas that have “actual or potential threat to water quality as a result of livestock access,” is illogical. It is well recognized that livestock *always* have the potential to threaten water quality. Moreover, placing the burden on AAFM to hear complaints and determine restricted areas is an inefficient use of limited state resources and fiscally unsound. Preventing erosion is cost effective compared to mitigating its effects. Instead, livestock should be restricted from all waters of the State except in areas designated by the Secretary. Off-stream water sources must be established and, where absolutely necessary, livestock should only have access to streams with access ramps.

Key provisions of the 2nd Draft RAPs are practically unenforceable.

AAFM includes language in the 2nd Draft RAPs that is ambiguous, rendering much of the rules unenforceable. In several provisions, AAFM unnecessarily concedes authority to regulate the farming community. Please find a list below of the specific sections that should be revised to ensure enforceability.

- Under 6.03(d), AAFM allows a drawdown approach to manure application when soils are saturated with phosphorus. The phrase “implement practices to reduce

³ Water Quality Remediation, Implementation and Funding Report (“Act 38 Report”) (January 14, 2013) pg. 14 § 1.5.

phosphorus levels over time” should be changed to “immediately implement practices to reduce phosphorus.” To allow farmers to continue to apply manure despite soil analyses demonstrating 20 ppm phosphorus levels will directly lead to increased phosphorus loading into Vermont’s waterways. In addition, the wording “eliminating or reducing” is in conflict. AAFM should require farmers to eliminate manure application once soils are saturated with phosphorus, as indicated by a 20 ppm soil test.

- Section 6.03(f) should require a standard form for record keeping on all farms. These records should be provided to the Secretary on an annual basis – not just “upon request” – so that records are incorporated into the public domain. For Medium and Large Farm Operations, AAFM should establish and implement an IT system designed to track the transport and application of manure and other agricultural wastes, similar to the electronic manifest system developed for hazardous waste. Once developed, users of the system would be able to create manifests electronically and transmit them through the system.
- Under 6.04(a), AAFM should establish specific standards for each of the mentioned conservation practices, as mandated by Act 64. *See* 6 V.S.A. § 4810a(10) (stating that AAFM shall “[e]stablish standards for soil conservation practices”). The wording “considered and implemented as practicable” should be changed to “implemented as practicable.” That is, the sentence should read: Conservation practices, including reduced tillage, conservation tillage, avoiding mechanical activities on saturated soils, addition of organic matter using manure, green manures and compost, sod and legume rotations, and the use of cover crops shall be implemented as practicable). The inclusion of the word “considered” unnecessarily weakens AAFM’s position; qualifying implementation with “as practicable” ensures AAFM’s ability to require actual action where practicable, as opposed to mere consideration.
- Under 6.04(c), the word “minimize” should be changed to “prevent” and the wording “reduce or eliminate” should be changed to “eliminate.” Gully erosion is a severe form of soil erosion caused by water moving in rills, which concentrate to form larger and more persistent erosion channels.⁴ Gully erosion is, by definition, problematic for healthy soils and waterways – regardless of whether discharges to waters are apparent. Grassed waterways should be strongly encouraged to mitigate gully erosion.
- Under 6.04(d), the first sentence should be revised to read: “annual croplands shall be required to be planted to cover crops.” Extreme weather conditions should be the only reason for allowing an exemption. Qualifying the cover crop requirement by including the phrase, “as soil, weather conditions, and generally accepted agronomic practices allow” puts too much discretion in the hands of the regulated community to determine whether conditions may or may not allow for cover cropping. In

⁴ Environmental Protection Agency, *National Management Measures to Control Nonpoint Pollution from Agriculture* (July 2003), <http://www.epa.gov/sites/production/files/2015-10/documents/chap4c.pdf>.

addition, cover crops are an important practice for maintaining soil health and should be encouraged throughout the state, and not only on land subject to frequent flooding.

Furthermore, cover crops should not be sprayed with harsh pesticides, such as glyphosate and atrazine, in order to remove them each year. This would only add to Vermont's ever-increasing use of chemical pesticides and associated environmental and public health concerns. Rather, cover crops should be killed through non-chemical practices such as mow-down and rolling, slicing, and crimping techniques.

The 2nd Draft RAPs are inadequate to meet water quality standards.

Under the federal Clean Water Act, Vermont must ensure that Lake Champlain meets water quality standards. 33 U.S.C. § 1313(d)(1)(C). The lake is currently impaired by phosphorus, which regularly causes toxic algal blooms, impaired aquatic life, and reduced recreational use.⁵ The amount of phosphorus currently discharging into Lake Champlain is 33.7 percent above the legally compliant level,⁶ and to achieve attainment, the agriculture sector must reduce phosphorus loading by 51.5 percent.⁷ The 2nd Draft RAPs are inadequate to sufficiently reduce phosphorus discharges and reach water quality standards.

Certification Applicability for Small Farm Operations is Unreasonably High

The 2nd Draft RAPs raise the threshold for small farm certification by 150 percent compared to the first draft RAPs. This represents a significant increase that exempts many more farmers from needing to certify as a Small Farm Operation and comply with the associated requirements. We are troubled that AAFM is continuing to relax regulations despite strict water quality mandates.

The Soil Loss Tolerance Tool is Inappropriate to Manage Water Quality

The 2nd Draft RAPs require cropland to be cultivated in a manner that results in an average soil loss less than or equal to the soil loss tolerance (T). 2nd Draft RAPs at 14 § 6.04(b). This means that managing to T, which is not tied to water quality protection, would equate to some accepted annual loss of soil and associated nutrients at the farm. However, loss of soil through erosion is a major contributor to nutrient loading. Moreover, the average annual acre of cropland in the United States is already eroding at an alarming rate of seven tons per year.⁸

AAFM should develop and implement alternatives to management based on soil loss tolerance such as management based on a Phosphorus Index. In the meantime, the 2nd Draft RAPs should require management to half T, considering that seven tons of annual

⁵ Draft 2015 TMDL pg. 12.

⁶ Draft 2015 TMDL pg. 18 tbl. 3; pg. 43 tbl. 7.

⁷ Draft 2015 TMDL pg. 44 tbl. 8.

⁸ Act 38 Report pg. 15.

erosion (or soil loss at T) is equivalent to 1.3 large dump trucks per acre per year.⁹ Agricultural regulations should not defend such obvious and significant phosphorus discharges into Lake Champlain.

Buffers Zones are Inappropriately Defined

Under Vermont statute, a buffer is defined as an “undisturbed area consisting of trees, shrubs, ground cover plants, duff layer, and generally uneven ground surface....” 10 V.S.A. § 1422(10). Undisturbed, vegetated buffers are critical for providing wildlife habitat, infiltrating pollutants, mitigating flood and erosion hazards, and serving as water temperature controls. The 2nd Draft RAPs’ list of authorized activities in buffer zones, including grazing, fertilizer application, and harvesting completely warps the definition and purpose of a buffer. *See* 2nd Draft RAPs at 17 § 6.07(d), (e), and (g). The result is that agricultural buffers will serve as phosphorus sources rather than sinks and lead to water quality degradation.

In addition, adjacent surface waters, including tributaries and intermittent streams should be buffered from croplands and other agricultural land uses by a minimum of 50 feet and from ditches by 20 feet to reflect best available science. The Vermont Department of Environmental Conservation river corridor procedures must inform land use guidance, similar to all other land use sectors in Vermont. The guidelines provided in Act 64 are *minimum* distances with the further requirement that buffers must “adequately address water quality needs” on a site-specific basis. 6 V.S.A. § 4810a(a)(6)(B). We are not aware of any data or studies showing that the proposed buffers in the 2nd draft RAPs are sufficient to protect water quality and reduce sediment loss. Moreover, stream buffers should be comprised of woody vegetation with deep roots, whenever possible, and then grasses or other perennial vegetation demonstrated to aid sediment filtering and erosion reduction.

AAFM Should Take Action Now to Address Tile Drains

The State lacks much-needed information on tile drains specific to Vermont. We do not know the extent of existing tile drainage systems, but estimates range upwards of 50 percent of agricultural fields in some watersheds. In addition, tile drains are being installed at an extremely high rate in the Lake Champlain Basin, particularly Franklin County, yet there are not practices in place to ensure that the systems do not result in the discharge of more phosphorus into the lake. Existing research demonstrates there is significant cause for concern.^{10,11}

Until research is completed that demonstrates tile drains can be utilized in Vermont without causing unacceptable contributions of phosphorus pollution, continuing to allow

⁹ Sullivan, P., *Appropriate Technology Transfer for Rural Areas, Sustainable Soil Management*,

<http://soilandhealth.org/wp-content/uploads/01aglibrary/010117atrasoilmanual/010117attra.html>

¹⁰ King, K.W., Williams, M.R., and N.R. Fausey. 2015. Contributions of Systematic Tile Drainage to Watershed-Scale Phosphorus Transport. *J. of Environ. Qual.* 44: 486-494.

¹¹ Kleinman, P.J., Smith, D.R., Bolster, C.H., and Z.M. Easton. 2015. Phosphorus Fate, Management, and Modeling in Artificially Drained Systems. *J. of Environ. Qual.* 44: 460-466.

tile drains to be installed is in conflict with water quality standards and our State's legal obligations to clean up Lake Champlain. While the Vermont General Assembly extended AAFM's deadline for rulemaking on tile drains to 2018, we strongly urge AAFM to address the issue now.

Accordingly, we recommend that until AAFM promulgates rules governing the use of tile drains, AAFM impose a moratorium on the installation of any new tile drainage systems using its existing authority to protect water quality.

AAFM should include in this version of the proposed RAPs requirements for mapping and monitoring of existing tile drains, including the locations of all existing drainage systems and outfalls, and regular monitoring data from the outfalls. Longer-term actions to regulate tile drains should, at a minimum, include a baseline of practices for reducing phosphorus pollution from tile drains.

Conclusion

We believe the 2nd Draft RAPs conflict with the legislative intent of Act 64, lack enforceability, and are not adequate to meet water quality standards. We urge AAFM to incorporate and address our comments before engaging in the formal rulemaking process.

Thank you for your consideration.

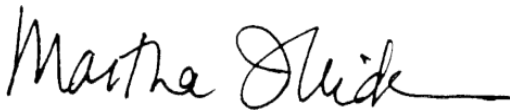
Sincerely,



Rebekah Weber
Lake Champlain Lakekeeper
Conservation Law Foundation



David Deen
Upper Valley River Steward
Connecticut River Watershed Council



Marty Illick
Executive Director
Lewis Creek Association



Clark Amadon
Chair
Vermont Council of Trout Unlimited



Crea Lintilhac
Director
Lintilhac Foundation



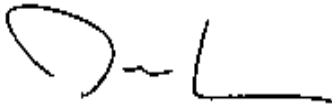
Lauren Hierl
Political Director
Vermont Conservation Voters



Jon Groveman
Policy and Water Program Director
Vermont Natural Resources Council



Mark Nelson
Chair
Vermont Chapter of the Sierra Club



James Ehlers
Executive Director
Lake Champlain International



Lori Fisher
Executive Director
Lake Champlain Committee

cc: House Committee on Fish, Wildlife and Water Resources, House Committee on Agriculture and Forest Products, Senate Committee on Natural Resources and Energy, and Senate Committee on Agriculture



Lake Champlain International

Clean Water. Healthy Fish. Happy People.

July 7, 2016

Vermont Agency of Agriculture, Food, and Markets
Attn: RAPs
116 State Street
Montpelier, Vt 05620-2901

Sent via email to: AGR.RAP@vermont.gov

Dear Agency of Agriculture, Food, and Markets:

After two rounds of “pre-rulemaking” and multiple public hearings, the proposed Required Agricultural Practices (RAPs) rules still remain inadequate to the urgent task of achieving dramatic and unprecedented reductions in pollution from agricultural sources needed to meet the load allocations of the recently-issued EPA Phosphorus TMDLs for Lake Champlain and, ultimately, Vermont Water Quality standards. As proposed, the rules are inconsistent with the express language and legislative intent of Act 64 and will not live up to expectations justifying their inclusion as a “reasonable assurance” in the TMDLs. To achieve the environmental, public health, and economic imperative of growing our food without poisoning our water, the final Required Agricultural Practices rule must be strengthened.

On its own behalf and in partnership with other like-minded organizations, Lake Champlain International has already submitted two sets of written comments on prior versions of the proposed RAPs. Unfortunately, many of the serious concerns stated in those comments remain pertinent to the current version of the proposed rules. LCI is resubmitting those prior comments here as attachments and incorporating them by reference even though, based on the track record of this process to-date, AAF&M has given LCI and other water quality advocates little reason to hope that the agency will strengthen the rules as needed.

In its first set of comments, LCI pointed out the lengthy process that has preceded the long-overdue and as-yet unfinished transition from AAPs to RAPs. Since LCI and partners organizations raised that concern, the process lengthened as AAF&M sought and received a legislative extension to the rulemaking deadline, thereby guaranteeing that another active growing season would go by under the status quo regulations that have failed to protect our waters from agricultural pollution. As the process has dragged on, citizens concerned about clean water have watched as the only meaningful changes made to the proposed RAPs are those responding to issues raised by agricultural interests. This once again highlights the inherent conflict facing AAF&M as both a booster for the agricultural sector and a regulator charged with dealing with that sector’s serious, ongoing water pollution problem.

... because a swimmable, drinkable, fishable Lake Champlain is the only acceptable option

Though LCI and its partners have raised many of the following comments on previous drafts, they bear repeating once again. LCI hopes that AAF&M will finally make much-needed changes in response to these comments and thereby conform the RAPs to the legislative intent of Act 64 and the expectations of all stakeholders that the RAPs will be more effective than the now-discredited AAPs.

1. Livestock Should Not Be Allowed to Discharge Waste Directly into Our Waters

Act 64 reflects the time-tested adage that “an ounce of prevention is worth a pound of cure.” Thus, in setting forth minimum standards to guide AAF&M in development of the RAPs, the law states that livestock exclusions requirements shall be established “to prevent erosion and adverse water quality impacts.” 6 V.S.A. § 4810a(a)(9)(Emphasis added).¹ Excluding animals whose feces is laden with bacteria and nutrients from the streams in which we swim and fish and that feed many of our drinking water sources is essential to preventing erosion and adverse water quality impacts. Livestock exclusions must be a universal, unqualified required agricultural practice in Vermont. It is unlawful for farmers to dump manure they have collected and stored directly into streams; it stands to reason then that it should also be unlawful for farmers to allow their animals discharge their waste directly to streams as they wallow. As currently drafted, Section 7 of the RAPs contains too many exemptions and qualifications that fail to establish the prevention-based approach called for in the law.

Section 7(a) purports to set forth vegetative cover requirements “protect banks of surface waters from excessive erosion.” (Emphasis added). Streambanks adjacent to agricultural lands contain some of highest concentrations of soil P. At this point in the degradation of Lake Champlain and its many tributary streams,² all preventable erosion is “excessive.” The Lake and its tributaries are well-over capacity. This word choice belies AAF&M’s ongoing unwillingness to acknowledge the significant extent to which changes in currently-allowed farming practices must be made to achieve the dramatic reductions in sediment and nutrient pollution required to return waters of the state to healthy conditions. The qualifying term “excessive” should be stricken from the final rule.

Similarly, Section 7(b) of the draft RAPs broadly allow livestock access to streams outside the production area except in areas where banks already show signs of erosion or instability. LCI and others have previously pointed out that this broad allowance essentially insures that, in the best case scenario, the bank erosion and instability already wrought by livestock trampling at existing access points will simply be transferred to as-yet untrammelled areas. The provision in Section

¹ The intent of the Legislature is most clearly expressed in the words it chooses in the statutes it passes. Accordingly, deviation from this clearly expressed intent that the RAPs be grounded in a prevention-based approach is a basis upon which the Legislative Committee on Administrative Rules may object to the validity of rules drafted by executive branch agencies. 3 V.S.A. § 842(b)(2).

² In addition to agricultural pollution’s contribution to the well-known phosphorous impairments plaguing multiple segments of Lake Champlain and other post-TMDL waters like Lake Carmi, the latest version of Vermont’s EPA-approved 303(D) List of Impaired Waters Part A - Impaired Surface Waters in Need of TMDL includes nineteen additional impaired stream segments that indicate “agricultural runoff” as the sole or contributing “surface water quality problem” leading to impairment.

7(b)(1) authorizing the Secretary to theoretically limit this broad allowance in “areas designated by the Secretary as having actual or potential threat to water quality as a result of livestock access” provides little reassurance. There is no guarantee that the Agency has the resources or the will to exercise this discretion and places too much burden on the state to police a land use practice whose limited benefits outweigh its burdens on the shared public resource of our waters.

2. Vermont Policy Should Focus on Building Healthy Soils Rather Than Tolerating an Unacceptable Level of Annual Soil Loss

Despite repeated comments from LCI and others on the inappropriate leniency of proposed erosion prevention standards, the draft RAPs continue to set forth a management approach to tolerates ongoing annual soil loss at unacceptable levels. AAF&M has previously co-authored a report to the Legislature that candidly acknowledges the fact that “Managing to T... is not tied to water quality protection” and “would equate to some accepted annual loss of soil and associated nutrients at the farm.” *Water Quality Remediation, Implementation, and Funding Report, Part I* at 13 (Jan. 2013(hereinafter Act 138 report)). If AAF&M persists in resting such a critical provision of its water quality protection rules on a regulatory standard that is, by its own admission, “not tied to water quality protection” and that does allow for an acceptable level of human-caused erosion, then the RAPs should include a more stringent application of this standard. Under Act 64, AAF&M has the discretion to require farmers to cultivate their lands “in a manner that results in an average soil loss of less than or equal to” T. 6 V.S.A. § 4810a(a)5 (Emphasis added). Section 6.4 of the RAPs should require cultivation standards that will result in soil loss that is significantly less than T.

Similarly, AAF&M has also set an inappropriately-lenient standard that tolerates gully erosion. Section 6.04(c) states that “Croplands shall be managed to minimize gully erosion and reduce or eliminate associated sediment discharges.” (Emphasis added). Again, given that the loss of nutrient-laden soils from farm fields chokes habitat and seeds toxic cyanobacteria blooms, discharges associated with preventable, highly visible gully erosion should be eliminated rather than simply reduced.

3. Vegetative Buffers Must Be Designed to Truly Protect Waters From the Pollution Causing Activities in Upland Fields

A standard dictionary definition of the term buffer is “something that serves as a protective barrier.”³ In this case, the obvious intent of Act 64’s command that the RAPs set forth minimum vegetative buffer zone requirements was to create a protective barrier between waters of the state and annual croplands from which so much agricultural pollution originates. As LCI and others previously pointed out, the common understanding of a vegetative buffer zone reflected elsewhere in state law is that such zones are “undisturbed area consisting of trees, shrubs, ground cover plants, duff layer, and generally uneven ground surface....” 10 V.S.A. § 1422(10). By contrast, the draft RAPs at Section 7(d), (f), (g), and (i) allow far too much disturbance in the form of activities such as grazing, fertilizing, harvesting, and, in some cases tillage the buffer zone. These activities entail a risk of adding to pollutant loading to surface waters rather than allowing

³ <http://www.merriam-webster.com/dictionary/buffer>

undisturbed buffers to serve as a protective barrier from such pollutant loading. AAF&M should revise the RAP to establish undisturbed buffer areas.

Moreover, AAF&M has chosen to require the bare minimum buffer zone width requirements. As LCI and others have previously pointed out, these minimum widths will not be adequate in all cases. While the draft RAPs include a provision for farmers to request “exceptions to the required vegetative buffer zone widths” when site specific conditions may allegedly justify smaller buffers, there is no concomitant provision for the Secretary to require expanded buffers when site specific conditions indicate their necessity.

Conclusion

The dramatic and unprecedented extent of P nonpoint source pollution reductions needed to achieve the load allocations to the agricultural sector are well known as are the related reductions in sediment pollution needed to deal with aquatic life support impairments of many smaller streams in agricultural areas. The draft RAPs may move us incrementally closer to achieving these reductions than the failed Accepted Agricultural Practices rules, assuming that they are effectively enforced. But for the reasons set forth above and in LCI’s previous comments, the current draft RAPs still fall far short of what is truly required to maximize the value of the State’s multi-faceted clean water efforts. We hope that repetition of our core concerns herein will result in AAF&M taking stronger action to finalize the RAPs.

Very truly yours,



Anthony Iarrapino, Esq.
Iarrapino Law Office, PLLC
Counsel for Lake Champlain International



James Ehlers
Lake Champlain International
Executive Director



Lake Champlain
International
Clean Water. Healthy Fish. Happy People.



December 18, 2015

Vermont Agency of Agriculture, Food, and Markets
Attn: RAPs
116 State Street
Montpelier, Vt 05620-2901

Sent via email to: AGR.RAP@vermont.gov

Dear Agency of Agriculture, Food, and Markets:

These comments on the State of Vermont Agency of Agriculture Food & Markets “Draft Required Agricultural Practices”¹ are offered on behalf of the citizen members of the undersigned organizations. Consistent with the federal Clean Water Act, Vermont’s Water Quality Standards, and Vermont’s Water Pollution Control law—as recently amended by Act 64—we recognize that a swimmable, fishable, and drinkable Lake Champlain is the only option.² Vermont must lead the way toward policies that ensure that the process of growing our food does not end up poisoning our water. This isn’t just an ecological and legal imperative; it is also an economic necessity that includes a financially healthy and sustainable agricultural sector.³ We have a long way to go and we are not moving nearly fast enough.

AAF&M Must Not Continue to Unnecessarily Delay Adoption of Long-Overdue Enhancements to Agricultural Pollution Control

Overhaul of the Accepted Agricultural Practices is a welcome, important, and overdue step. By opting for two lengthy, unnecessary rounds of pre-rulemaking comment on the Draft RAPs, AAF&M is inexcusably delaying the adoption and implementation of badly-needed pollution control measures. Because it could have and should have adopted these changes years ago, AAF&M must now move swiftly to strengthen, finalize, and enforce more effective regulations. The following chronology underscores our concern.

In January 2013, pursuant to the mandate of 2012’s Act 138, the Vermont Department of Conservation delivered a “Water Quality Remediation, Implementation, and Funding Report, Part I” to the Vermont legislature (the “Act 138 Report”). In the report’s introduction, Vermont Agency of Agriculture Food and Markets staffer Laura DiPietro is credited with being a “principal author” and the Agency as a whole is credited for providing “technical input.” The Act 138 Report is notable because it recognizes that the AAPs fall short of living up to their pollution control potential and

¹ Hereinafter referred to as “Draft RAPs.”

² See 33 U.S.C. § 1251(a)(2) (establishing national goal that “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983.”); 2015 No. 64 § 1(a)(3) (“The federal Clean Water Act and the Vermont Water Quality Standards require that waters in the State shall not be degraded”)

³ For a more complete discussion of this issue, please see “Building a Clean Water Economy”

<http://www.rutlandherald.com/article/20151213/OPINION06/151219836/1018/OPINION>

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proposes several specific enhancements that are now—nearly three years later—contained in the “pre-rulemaking” Draft RAPs. These include:

- Livestock exclusion from streams
- Cover crop and buffer requirements
- Nutrient management planning for small farms
- Mandatory farm self-certification of compliance
- Mandatory continuing education classes for farmers

Most tellingly, the report recommends that AAF&M “[m]odify the AAPs to reflect new knowledge, technology, and provide better guidance in an effort to achieve a higher level of compliance.”⁴

In November 2013, “to ultimately achieve a clean Lake Champlain and to provide reasonable assurances in the new Lake Champlain TMDL, the Vermont Agencies of Natural Resources and Agriculture, Food, and Markets” proposed a “set of policy commitments for consideration.”⁵ Like the multi-faceted Act 138 report, the comprehensive “Proposal” commitments included detailed recommendations for improvements to the clearly-inadequate AAPs. As the excerpt below demonstrates, these closely track the Agency’s latest draft-for-discussion proposals:

Vermont recognizes that further reductions of agricultural nonpoint source pollution will necessitate the following actions pertaining to the AAPs to reduce water pollution and achieve a more consistent and equitable regulatory environment for all farms:

1. Modify the AAPs Rule and Implementation Strategies to:

a. Conduct whole farm inspections of small farm to improve overall AAP compliance;

b. Initiate an AAP compliance certification process for all small farms;

c. Include additional and improved farming management practices on lands planted to annual crops, such as a minimum 25 foot vegetated buffers (in grass or trees) along all perennial streams and 10-foot vegetated buffers (in grass or trees) along field ditches;

d. Include a requirement for all farms to complete a nutrient management plan (NMP) matrix, which will direct farms that meet a specific threshold to develop and implement a 590 NRCS standard NMP;

e. Include a requirement to stabilize field gully erosion caused by site-specific agricultural management practices;

f. Explicitly exclude livestock from perennial streams where erosion is prevalent and in all production areas (see livestock exclusion program below);

g. Improve soil quality, further reduce soil loss, and decrease the impacts of soil erosion on water quality by: adopting a standard less than or equal to an average soil loss tolerance of “T,” as defined by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), for the prevalent soil type and applied to all farm fields in annual crop production;⁶

The Vermont Proposal for a Clean Lake Champlain goes on to spell out details of each of the foregoing “actions pertaining to the AAPs” and those details largely reflect the substance of the Draft RAPs. The Proposal indicates that the agencies “expect that these proposed policies will be discussed and refined during the coming months.” More than

⁴ Act 138 Report at 16.

⁵ State of Vermont Proposal for a Clean Lake Champlain, Draft for Discussion at 3, hereinafter “Proposal” (Nov. 20, 2013).

⁶ Proposal at 6-7.

twenty-four months have passed, there has been plenty of discussion but not much in the way of evident refinement has occurred, and the Agency still has not committed to a formal proposal for rulemaking.

Finally, in May 2014, Vermont submitted its “Lake Champlain Phosphorus TMDL Phase 1 Implementation Plan.” It also includes several pages of discussion of proposed measures that are nearly identical to those included in the Draft RAPs. Furthermore, it indicates that “[t]he following actions related to the AAPs will require rulemaking, a process which will take approximately 12 months, and would be initiated in the fall of 2014 with an expected implementation date of winter 2015-16.”⁷

We appreciate the Agency’s commitment to public input. Our staff and members have taken advantage of the many chances to comment on long overdue improvements to existing water pollution control regulations. In fact, since the proposals reflected in the Draft RAPs were first put forth in the Act 138 Report, then fleshed out further in the “Proposal for a Clean Lake Champlain” more than two years ago and again in the 2014 Phase I Implementation Plan, the public has had no fewer than 37 opportunities to attend meetings and provide comment (14 on the Act 138 report⁸ and 23 more since the 2013 draft Proposal⁹). This number does not include the numerous hearings focused specifically on AAP reform during last year’s Act 64 debate in the legislature or the additional 10 meetings on the pre-rulemaking Draft RAPs themselves.

At a certain point public process can morph into counterproductive delay. We have now reached that point and, rather than continue in the legal limbo land of pre-rulemaking, AAF&M must act. In light of the foregoing history, there is no argument that the RAPs are not ripe for finalization through formal rulemaking which already includes mandatory opportunities for public comment and allows the agency to make changes to its proposed rule in response.¹⁰ We, therefore, formally call for AAF&M to abandon its plan for a second pre-rulemaking comment period and to accelerate the initiation and completion of formal rulemaking so that enhanced pollution control measures are being implemented and enforced without further delay.

Vermont Policy Should Focus on Building Healthy Soils Rather Than Tolerating an Unacceptable Level of Annual Soil Loss

The loss of nutrient-laden soils from farm fields chokes habitat and seeds toxic cyanobacteria blooms. This erosion is a substantial part of Vermont’s water pollution problem. Fortunately, preventing soil loss is one of many ways in which what is best for clean water (and climate change reduction efforts) is also best for the farm economy in the long term.

For these reasons, we strongly support the AAFM’s proposal to lower the 2T standard of acceptable average annual soil loss allowed by the AAPs.¹¹ Unfortunately, the proposal in RAP § 5.4(b), to require that farmers cultivate cropland to achieve “less than or equal to the soil loss tolerance (T),” may not go far enough.¹² The Act 138 Report, authored by Agency of Natural Resources and AAF&M personnel, explains that “Managing to T... is not tied to water quality protection” and “would equate to some accepted annual loss of soil and associated nutrients at the farm.”¹³ Given the dire condition of Lake Champlain and the dramatic and unprecedented reductions needed from farms, we cannot afford to continue accepting loss of soil and nutrients from Vermont farms year in and year out.

In fact, the Act 138 Report recognizes further that nutrient management planning based on NRCS standards, such as those required for Certified Small Farm Operations under RAP § 5.4(a), “is an agronomic tool, originally designed to

⁷ State of Vermont Lake Champlain Phosphorus TMDL Phase 1 Implementation Plan, hereinafter “Phase I Plan” at 71 (Emphasis added). <http://www.watershedmanagement.vt.gov/erp/champlain/docs/LCTMDLphase1plan.pdf#zoom=100>

⁸ See Table “UPDATED Consultation Meetings to Prepare the Vermont Statewide Water Quality Trust Fund Report, 2012” at <http://www.watershedmanagement.vt.gov/erp/htm/annualreports.htm>

⁹ <http://www.watershedmanagement.vt.gov/erp/champlain/docs/2015-09-25-Updated-Timeline.pdf>

¹⁰ 3 V.S.A. § 840 (setting forth robust requirements for public notice and comment during formal rulemaking process)

¹¹ Vermont Agency of Agriculture Food & Markets, Accepted Agricultural Practices § 4.04 *Soil Cultivation* (2006)

¹² Emphasis added.

¹³ Act 138 report at 15

optimize nutrient application and utilization as part of a cropping system. It was not explicitly intended to be a water quality tool.”¹⁴ For that reason, the Act 138 Report recommends that:

Vermont should investigate water quality-based alternative nutrient management planning approaches that could be tied into the state’s agricultural regulations (Medium Farm Operations (MFO), Large Farm Operations (LFO),²⁷ and AAF&Ms), such as alternatives to management based on soil loss tolerance, T. Further justification for an alternative approach is the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS)’s movement towards new soil loss tolerance factors for the Universal Soil Loss Equation. The anticipated change in these factors may result in changes in land use practices on highly erodible soils that increase the potential for erosion.¹⁵

It seems unwise, therefore, to peg state erosion and nutrient pollution prevention measures to an approach that is not designed to protect water quality and a standard controlled by a federal agency that has recently considered weakening it.

Draft RAP Section 5.4 recognizes states that “[s]oil management activities that increase organic matter, reduce compaction, promote biological activity, reduce erosion and maintain nutrient levels are recommended in order to provide long term sustainability of agricultural soils.” It includes examples of several such practices. The “R” in RAPs stands for required, not “recommended.” Given AAF&Ms acknowledgment of the benefits flowing from these practices, especially in accomplishing key pollution prevention objectives of reducing erosion and maintaining nutrient levels, the final RAPs should require rather than simply recommend these practices.

The RAPs Should Provide Clearer, Stronger, More Easily-Enforceable Waste Management Requirements

Preventing “agricultural wastes including chemicals, petroleum products, containers, and carcasses” from impacting surface of groundwater is a common-sense, bare minimum requirement. Section 5.2(b) establishes this requirement by calling for “proper” storage, handling, and disposal. Unfortunately, it provides no further guidance as to what is “proper” as regards each of these different categories of waste. The RAPs should provide clearer, waste-specific guidance to ensure that farmers understand their obligations clearly and that regulatory personnel have a clearer standard for enforcement purposes.

A stronger preventative approach to manure and other waste storage is also called for. Draft RAP § 5.2(c) requires maintenance of at least 1 foot of freeboard in waste storage facilities at all times. New York takes a more precautionary approach that Vermont should follow. Specifically: “The NYS DEC requires a depth marker or staff gauge marking the maximum fill mark in a manure storage; with an appropriate freeboard of 1 foot plus the amount of precipitation from a 25-year, 24 hour storm event. The freeboard provides extra storage capacity in the event of a large rainfall event or other emergency situations.”¹⁶ Vermont requirements on this aspect waste storage should mirror the more conservative New York Standard, especially in light of the increasing risk of extreme precipitation events resulting from ongoing climate change.

The RAPs should require tracking of cropland and fields subject to flooding.

We support the Draft RAPs’ requirement of cover crops in “annual croplands subject to flooding from adjacent surface waters.” This is a proven method for reducing erosion and nutrient loss from flooding. Similarly, we support Draft RAP § 5.5(c)’s prohibition on spreading manure on flood-prone fields during times of high flood risk. Given the small number of enforcement personnel relative to the large number of farms subject to the RAPs, AAF&M should require farmers, under penalty of perjury, to identify those fields within the ambit of 5.4(c) and 5.5(c) as part of the certification process established under Section 4. AAF&M can then use this data to create maps that its inspectors and members of the public can use to more easily monitor compliance with the cover cropping and spreading ban requirements.

¹⁴ Act 138 report at 15

¹⁵ Id. (Emphasis added)

¹⁶ New York State Department of Agriculture and Markets, Agricultural Environmental Management Information Sheet: Fertilizer and Manure Storage <http://www.nys-soilandwater.org/aem/forms/AEMInfoManFertStorage.pdf>

The RAPs should Set Forth Stronger Buffer Definition for Manure Spreading Restrictions

Section 5.5(e)(2) fails to define what type of permanently vegetated buffer must be present to allow spreading on fields with slopes exceeding 10%. If AAF&M intends this to include forested buffers, rather than grassed buffers, then 100 feet is an inadequate buffer size on a heavily sloped field. Many forested areas consist of bare dirt at the surface level, providing little to slow or absorb surface flow of manure from upslope fields. Moreover forested areas also typically lack canopy during early spring and late fall—times of the year coinciding with intensive manure spreading. In these instances, the RAPs should therefore require either a grass buffer separating the field and the forest or a forested buffer of at least 250 feet.

Conclusion

There is near-universal agreement that the status quo of agricultural water quality regulation is not working. We urge AAF&M to weigh, expeditiously, all of the comments expressed or incorporated by reference here, to dispense with yet another unnecessary round of informal process, and to move forward as soon as possible with a stronger proposal in formal rulemaking.¹⁷

Thank you for considering these comments.

Sincerely,



Anthony Iarrapino, Esq.
Michelsen Iarrapino PC
Counsel for Lake Champlain International



Rebekah Webber
Conservation Law Foundation
Lake Champlain Lakekeeper



James Ehlers
Lake Champlain International
Executive Director



David Deen
Connecticut River Watershed Council
Upper Valley River Steward

¹⁷ In addition to the joint comments set forth above, LCI herein expresses its support for the separate technical comments contained in the letter submitted by the Conservation Law Foundation and the Connecticut River Watershed Council. LCI especially appreciates and underscores the concerns of those partner organizations regarding the Draft RAPs unlawful attempts to limit the universe of farms to which they apply and to create a presumption of no discharge for farms complying with the as-yet unproven pre-rulemaking, discussion-draft RAPs. Similarly, LCI supports concerns about the limited frequency of planned inspections, the inadequacy of buffer distances for all fields, and the failure of the Draft RAPs to provide for effective livestock exclusion from surface waters as envisioned by Act 64.

Patch, Ryan

From: Susan Shea <sshea28@gmail.com>
Sent: Thursday, July 7, 2016 3:23 PM
To: AGR - RAP
Subject: Public comment on proposed RAP rule

Ryan,

I hope it is not too late to comment - I have been away the past few weeks.

For many years I have lived across from a large dairy farm in Brookfield that milks at least 500 cows and have observed the impact of the farm on the water quality of several tributaries to the White River. These are issues are typical throughout the state.

After manure spreading (within a few feet of the top of the bank) and a heavy rain, the streams here are cloudy and brownish. Grass which is hayed and grazed is the only vegetative buffer along the streams which flow through the farmer's fields and pastures. Although the proposed rules require a larger buffer for manure-spreading, there needs to be a **vegetative buffer** which is **not mown or grazed** and is **allowed to grow up into shrubs and trees** to better filter the nutrients from manure. Also I don't know how you will enforce the manure-spreading buffer, whereas a vegetative buffer of shrubs and trees would be obvious at all times.

The cows and heifers in our valley are moved from pasture to pasture during the spring, summer and fall. They cross the stream to get to other pastures and drink from the streams. They also stand in the streams and defecate there. The streams are cloudy with silt after the cows walk through. In some pastures, there are extensive reaches of stream which are unfenced. The proposed **RAP's fencing provisions do nothing to address these problems**, which could be solved with additional fencing and the use of watering troughs.

Unless the above provisions are changed, I don't believe water quality in the White River watershed and other areas of Vermont will improve. I hope the final rules will be much stronger. Thank you for the opportunity to comment.

- Susan Shea
162 Eagle Peak Road, West Brookfield, VT 05060

Patch, Ryan

From: Champlain Valley Farmer Coalition <info@champlainvalleyfarmercoalition.com>
Sent: Thursday, July 7, 2016 3:06 PM
To: AGR - RAP
Subject: RAP Public Comment
Attachments: RAP Comments_ProposedRule_July2016.pdf

Please accept the attached document as our public comment on the RAP proposed rule.

Sincerely,
Brian Kemp
President, CVFC



Champlain Valley Farmer Coalition Inc.

Farmers Working Together for a Clean Lake Champlain & Thriving Agriculture in Vermont

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FARMER COALITION INC.

Champlain Valley Farmer Coalition, Inc.

*Farmers working together for a clean Lake Champlain
and thriving agriculture in Vermont.*

Secretary Chuck Ross
Vermont Agency of Agriculture, Food & Markets
116 State Street
Montpelier, VT 05620-2901

July 5, 2016

RE: Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program

Secretary Ross,

Thank you for the time and effort you have taken to meet personally with stakeholders, including CVFC, in the crafting of these very important rules affecting farming and water quality in the state of Vermont. As you know, our organization is committed to practical solutions that enable all farms to protect water quality, soil health and a vibrant farming landscape.

Please accept our formal comments on the latest draft of the proposed rules. We have focused on all in for clean water and healthy farms, flexibility, communication, and clarifications.

All In for Clean Water and Healthy Farms

Consistent standards across all types and sizes of farming operations are crucial if we are to make significant strides towards a solution for Lake Champlain and water quality across Vermont. We feel it is vital that all farms understand their impact and are held to the same standard of best management, regardless of size or type. We recognize the difficulties in regulating more farms, but we also feel it is paramount that we all get the same message that water quality is important and should be part of our daily management decisions.

Some examples where we felt this rule has fallen short in this area are:

- The definition of Annual Cropland should include all annual crops.
- *6.03(d) Greater than 20 ppm phosphorus soil tests.* Excluding 'cropland' from this paragraph does not require growers of crops other than corn, soybeans and hay (eg. vegetables or small grains) to implement phosphorus reduction strategies when soil tests show excessive phosphorus levels.
- *6.04(d) Cover cropping.* This section excludes land used for vegetable and small grain production from the cover cropping requirement. With the allowance/exemption for late harvested crops and leaving sufficient crop residue, we see no reason to exclude one type of cultivated land from this requirement.
- *6.05(b) and (f) Extended manure spreading ban and increased buffers.* Again excluding vegetable and small grain production from the increased manure spreading restrictions in floodplains and increased buffer requirements on sloped land goes against the 'all in' approach.
- *7 (c) Livestock Exclusion from surface water outside of production areas.* Allowing animals to directly access surface water seems contradictory to the intent of Act 64. It would make sense to exclude livestock from surface water and allow exemptions only with a proper management plan. This would mirror the manure spreading restrictions and related exemption requests to accommodate site specific circumstances with proper measures to reduce/eliminate impacts on water quality. With newer tools to get water to livestock from these streams and more affordable (and often temporary) methods of fencing coupled with the resources available to assist landowners, it seems this could be a workable plan.

Flexibility

We still feel that to make these standards reachable and attainable, we need to use common sense approaches that allow farmers to make the best risk management decisions on a farm by farm (and field by field) basis, while still allowing the Agency to ensure farms are meeting these standards. For example in 6.03(d) and 6.05(f), 20 ppm soil test phosphorus and 100-foot buffers on slopes exceeding 10%, we propose adding language allowing flexibility when additional practices are implemented (manure injection/aeration/incorporation, reduced tillage, cover cropping, etc.).

While these rules allow for some flexibility now, we believe the ability for farmers to understand and utilize this flexibility would be greatly enhanced if a clear and concise explanation of how to address these exemptions is included in these rules. In Section 6.06 (b), (c), and (d) Seasonal Manure Spreading Exemptions, this is laid out very clearly. In our conversations with you and your staff, we suggested including these exemptions as well as other areas of flexibility (like cover cropping, etc.) in a farm's Nutrient Management Plan. If the plan is approved by the Agency, it would be assumed that the proposed exemptions would be allowable and a farm would not need to apply for individual exemptions at each point in the season when practices are being implemented. This could be written into the rule broadly or individually by section where exemptions are allowed.

Communication

Communication is going to be paramount to successful implementation of the RAPs. As we have expressed, clear and timely communication between farmers and Agency staff is critical. Written documentation of information will also be important, so that farmers can address issues and concerns that may arise on their farms in a timely and efficient manner as well as provide farmers with a reasonable assurance that information and decisions specific to our operations will be consistent over time and across individual regulators. Identifying who will be responsible for interpreting farm-specific designations, like what is a ditch versus a stream, will be important to know. Will it be Agency staff, the farmer, a nutrient management planner? Having a 'point person' for each farm could be an important way to streamline good communication and ensure consistent transfer of information.

Clarifications

During our conversations with you and your staff, we clarified a few points regarding details and wanted to summarize what we understood here.

- In Section 6.04(d) Cover Cropping, it currently reads, "if annual crops cannot be harvested prior to October 15, then 30% crop residue, *growing directly in the soil*, must remain in order to limit soil loss." VAAFAM staff clarified that the residue has to have been growing in the field at some point but could be residue in the form of stubble or harvested crop residue that is no longer actively growing, as opposed to mulch or other material brought into the field.
- It was our understanding that if a farm were to include exemptions to rules like the increased manure spreading exemptions on fields that are mapped as frequently flooded, they could include those in their Nutrient Management Plan and that permission would be allowable for the life of the farm's permit (as long as the NMP was accepted/approved by VAAFAM).
- An approved 'seasonal' exemption to any of the rules will not be the start of an enforcement action.

Again, we appreciate the opportunity to have input in this process and appreciate your consideration. We look forward to staying actively engaged.

Sincerely,



Brian Kemp, President
Champlain Valley Farmer Coalition, Inc.

Patch, Ryan

From: Rhey Plumley <rheyplumley@comcast.net>
Sent: Thursday, July 7, 2016 2:58 PM
To: AGR - RAP
Subject: Comments on AAFM's RAPs in response to Act 64 - Clean Water Act

Dear Agency of Agriculture of Agriculture,

As a resident and outdoors person living in Vermont for over 40 years I strongly agree that we need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. According to AAFM the vast majority of farms in Vermont are considered 'small' farms and so called 'hobby' farms . Even the smallest farms together can cause cumulative harm to our waters. A greater portion of State and Federal financial assistance must be directed towards farm programs, and efforts need to be made to educate farmers of these funding recourses and assist them in how to access these funds.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harm. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water. Buffers need to include woody material such as trees and bushes to prevent erosion and warming of the waters.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Thank for the opportunity to comment,

Sincerely,

Rhey Plumley
22 Victory Dr
South Burlington, VT 05403
rheyplumley@comcast.net

Patch, Ryan

From: Jon Groveman <jgroveman@vnrc.org>
Sent: Thursday, July 7, 2016 2:53 PM
To: AGR - RAP
Cc: Lauren Hierl
Subject: RAP Public Comment
Attachments: VNRC & VCV RAP Comments July 7 2016.pdf

To Whom It May Concern:

Attached are VNRC and VCV's comments on the proposed Required Agricultural Practices. Please contact me with any questions.

Jon Groveman
VNRC Policy and Water Program Director
802-249-7736 (Mobile)
802-223-2328 x-111 (Office)



July 7, 2016

Agency of Agriculture, Food & Markets
116 State Street
Montpelier, Vermont 05620-2901
AGR.RAP@vermont.gov

Re: VNRC Comments on Proposed Required Agricultural Practices

Dear Agency of Agriculture, Food & Markets:

Introduction

The Vermont Natural Resources Council (VNRC) has been advocating for clean water and sustainable communities that include vibrant village, town and city centers surrounded by working lands since we were founded in 1963. VNRC – and VNRC's partner organization Vermont Conservation Voters (VCV) – understands that the state must advance policies that allow for a healthy agricultural sector to thrive in order to realize this vision. A key part of achieving this vision is ensuring that farming occurs in a manner that minimizes water pollution.

Vermont is truly at a crossroads. As a state we have been aware for decades that Lake Champlain is polluted with excess amounts of nutrients. The Total Maximum Daily Load (TMDL) clean-up plan adopted by the Environmental Protection Agency (EPA) in 2002 did little to restore water quality in Lake Champlain. In 2011, as a result of a lawsuit filed by Conservation Law Foundation (CLF), EPA disapproved the 2002 TMDL, and ordered that a new clean up plan be put in place.

Several weeks ago, EPA finally issued the revised TMDL for Lake Champlain. The TMDL states that:

“Overall, the largest source of phosphorus is the agricultural sector.” “The major sources of phosphorus within each sector also vary by lake segment, but some general trends are clear from the modeling work completed by Tetra Tech (2015b and 2015c). Within the agricultural sector, cropland is by far the largest phosphorus source, followed by pasture and farmsteads.”

If Vermont is going to meet the requirements of the revised TMDL, and achieve clean water in the Lake, we are going to have to use every tool available to address the largest source of phosphorous pollution – agriculture. The RAPs are a vital tool towards achieving the goal of a clean Lake Champlain.

VNRC has reviewed the proposed RAPs. While the RAPs are an improvement over the current Accepted Agricultural Practices (AAPs), they fall well short in several key areas of what is necessary to remediate phosphorous pollution in the Lake as required by the TMDL. VNRC urges the Agency of Agriculture, Food & Markets (AAFM) to address these shortcomings prior to adopting the final RAPs.

Specific Comments

Sections 1 and 3 - Applicability

The RAPs as proposed apply only to farms required to obtain a certification from AAFM and to farms that meet the requirements in section 4.1 (d). Section 4.1 (d) allows the Secretary of AAFM to designate a farm that does not meet the threshold for certification as needing to comply with RAPs based on certain practices occurring on the farm and the farm’s “actual or potential water quality impacts.”

While it is a step forward to require smaller farms – as defined by AAFM – to become certified and comply with the RAPs, VNRC and VCV are concerned that smaller farms with the potential for significant water quality impacts will not be covered by the RAPs. The intent of Act 64 of 2015, which requires AAFM to adopt RAPs, is that “all persons engaged in farming” shall follow the RAPs. 6 V.S.A. § 4810 (b). AAFM’s decision to limit the applicability of the RAPs seems inconsistent with 6 V.S.A. § 4810 (b), legislative intent, and is insufficient to achieve the nutrient reductions from the agricultural sector required by the TMDL. We request that AAFM provide the legal and policy rationale for not applying the RAPs to “all persons engaged in farming.”

VNRC and VCV understand that section 4.1 can serve as a catchall that allows AAFM to require additional farms to become certified. However, the criteria for designating a farm for certification are broad, totally within the discretion of AAFM and dependent on AAFM having the resources to pursue these designations. We recommend that AAFM better define the

criteria for making these designations, allow outside parties to petition for these designations to be made, clarify that the decision not to certify a farm is an appealable decision, and provide a specific role for the Agency of Natural Resources (ANR) in the designation process.

For example, the RAPs could set thresholds or triggers for when smaller farms must be certified that are clear and unambiguous. In addition, the RAPs could authorize ANR to recommend that AAFM make such a designation, require AAFM to consult with ANR when a designation is proposed, or allow ANR to pursue the designation on its own. As the agency responsible for ensuring compliance with the Vermont Water Quality Standards (VWQS), ANR must have a more significant and better-defined role in this process.

Section 6.07 - Riparian Buffer Zones

Establishing and maintaining riparian buffer zones is one of the most effective methods of protecting water quality, reducing erosion and discharges of pollutants, including phosphorous. ANR's "Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers (Guidance)," recommends that to be effective riparian buffers from streams be a minimum of 50 feet from top of bank. The Guidance recommends that riparian buffers from rivers, lakes and ponds be a minimum of 100 feet. Importantly, the Guidance is clear that for these riparian areas to be effective, they must be "undisturbed." The Guidance defines undisturbed as "no construction; no earth-moving activities; no storage of materials; no tree, shrub, or groundcover removal; and no mowing." Guidance at 6.

The riparian areas proposed in the RAPs fall well short of ANR's minimum recommendations. The RAPs require "a vegetative buffer zone of perennial vegetation" and a required width of 25 feet. Moreover the RAPs allow the harvesting and maintenance of the buffer as a crop, and allow farms to use fertilizer or compost in the buffer areas.

To be effective, the RAPs must be amended to provide for wider vegetative riparian areas from streams, rivers, lakes and ponds consistent with the Guidance. VNRC recommends that riparian areas be a minimum of 50 feet from the top of bank of streams, and 100 feet from the top of bank of rivers, lakes and ponds. In addition, as set forth in the Guidance, the science is clear that these areas must be undisturbed to be effective in filtering sediment and nutrients before runoff reaches receiving waters. Similar to ANR's Guidance, AAFM can allow for deviations from these minimum riparian areas under very specific limited circumstances.

VNRC and VCV understand the concerns regarding the economic impact of farms if riparian areas are to be wider, and if disturbance in these areas is prohibited. However, these, at a minimum, are the measures that are necessary to address nutrient loading from farms. VNRC believes there is a way to have a healthy agricultural sector in Vermont that properly

addresses water pollution.

Section 6.04 Cover Cropping

The cover cropping provisions also must be strengthened. The RAPs require that annual croplands subject to frequent flooding from adjacent surface waters must be planted to cover crops. This section should be revised to require cover crops on all annual croplands.

We are also concerned about the application of pesticides to cover crops and urge AAFM to prohibit the use of pesticides on cover crops.

Section 6.04 (a) of the proposed RAPs requires farmers to increase organic matter in soil, reduce soil compaction, promote biological activity in soil, and reduce erosion when "practicable." VNRC and VCV request that AAFM define when it is "practicable" for farmers to engage in these activities. Absent specificity, it will be impossible to provide know when farmers must take these steps that will reduce water pollution.

Section 7 - Livestock Exclusion

The proposed RAPs allow livestock outside production areas to have access to surface waters unless there are already unstable banks with erosion. This practice neither excludes livestock, nor prevents erosion and adverse water quality impacts. Again, this provision is inadequate to achieve clean water. AAFM should not allow livestock to access stream banks, riverbanks, and the water itself. Livestock must be clearly prohibited from accessing these areas. Fencing or other control of livestock to prevent access to waterways must be required. These are minimum steps necessary if Vermont is going to meet the aggressive targets in the Lake Champlain TMDL for reductions in nutrient loading from farms.

Tile Drains

Act 64 requires that AAFM include provisions in the RAPs that address the use and impacts of tile drains. AAFM has issued an interim report, as required by Act 64 that acknowledges the harmful impact that tile drains have on water quality. In light of the knowledge that tile drains cause or contribute to water nutrient pollution, and in the absence of an existing framework or program for monitoring or controlling tile drain impacts in Vermont, AAFM should place a moratorium on future tile drainage installation in the proposed RAP's. The moratorium on new tile drain installations should remain in place until existing tile drain systems are located and mapped, and a satisfactory program and controls are adopted to ensure that any new tile drains will not increase water pollution.

Conclusion

In addition to the comments above, VNRC recommends that the RAPs incorporate a timeline and process for revisiting and assessing whether the RAPs are actually achieving the water quality goals set out in the Lake Champlain TMDL and Act 64. A check in provision is required to ensure that Vermont is meeting the aggressive pollution reduction requirements for agriculture in the Lake Champlain TMDL, and to enable AAFM to adjust the RAP's if necessary.

Thank you for this opportunity to comment

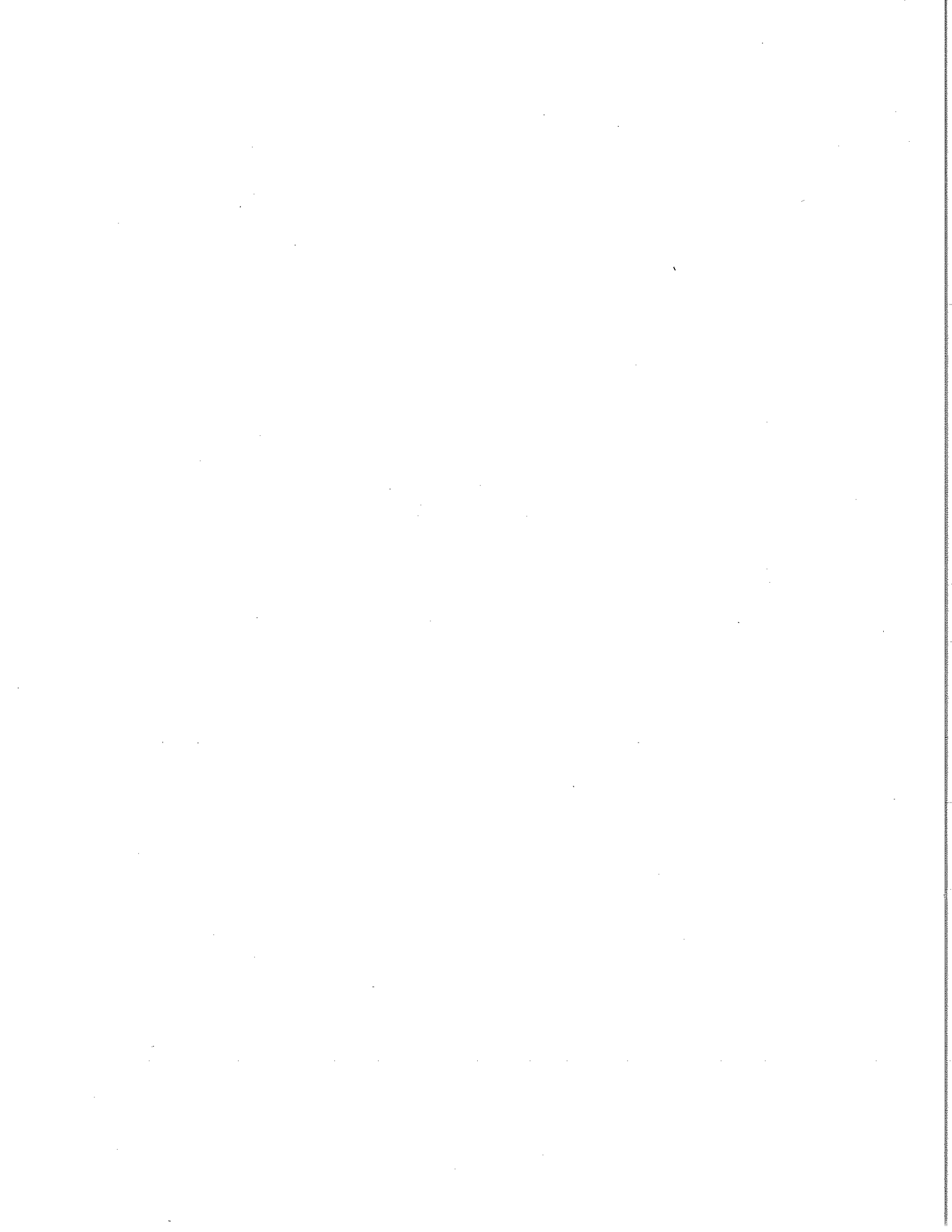
Sincerely,

A handwritten signature in black ink, appearing to read "Jon Groveman", with a long horizontal flourish extending to the right.

Jon Groveman
Vermont Natural Resources Council, Policy and Water Program Director

A handwritten signature in black ink, appearing to read "Lauren Hierl", with a long horizontal flourish extending to the right.

Lauren Hierl
Political Director, Vermont Conservation Voters



Patch, Ryan

From: Alex Weinhagen <hinesburgplanning@gmavt.net>
Sent: Thursday, July 7, 2016 2:50 PM
To: AGR - RAP
Subject: RAP comments - Alex Weinhagen - 7/7/16
Attachments: floodhaz_rivercorridor_protection_procedure_120514.pdf; RiparianBuffers_techpapers_2005.pdf; ANR_act250_riparian_buffer_guidance_120905.pdf

VT Agency of Agriculture, Food and Markets,

Please see below for comments on the proposed Required Agricultural Practices (RAP) rules. These are my comments as a professional planner with 14 years of municipal service here in Hinesburg. I am not speaking on behalf of the Town of Hinesburg.

Overall - I think the proposed RAP are positive, and will help address some of the water quality issues related to Vermont's agricultural sector. Based in part on the discussion at the Agency's public hearing in St. Albans on June 21, 2016, it's clear to me that many farmers have been and continue to be implementing practices and technologies to address water quality issues. The farmers that spoke at that hearing acknowledged the need for further action, while also expressing concerns about the cost of implementation, type and demeanor of enforcement actions, and the level of assistance (both technical and financial). Clearly there needs to be compromise and collaboration. With that said, water quality practices still have to be effective, otherwise we will fail to clean up our waterways, and we will lose the trust and confidence of the community, including those making sacrifices to comply with new regulations. As detailed below, I'm concerned that the stream buffer provisions of the RAP are not scientifically sound, and will not be effective.

Section 6.07 – Surface Water Buffer - The proposed 25' surface water buffer zone is inadequate and inconsistent with the riparian buffer recommendations from the VT Agency of Natural Resources. As such, the proposed buffer zones are unlikely to be effective at mitigating pollutants from agricultural runoff, and will not be sufficient to minimize streambank erosion adjacent to agricultural operations. Based on the science and the research literature, VT ANR's river corridor program recommends minimum riparian buffers of 50' and 100' depending on the surface water in question. In fact, the recommended buffer area can be even wider depending on how the river/stream meanders and the associated meander belt width necessary for the river/stream channel to reach equilibrium. Furthermore, the buffer in the proposed RAP allows for harvesting of perennial vegetation as well as grazing of livestock. Such practices also run counter to the science and VT Agency of Natural Resources recommendations that call for woody vegetation in stream buffer areas to promote streambank stabilization, improved nutrient mitigation, wildlife habitat, and improved in-stream habitat for fish, amphibians, invertebrates, etc.

I understand Act 64 requires that "at a minimum", manure shall not be applied within 25' of streams. However, this is simply a statutory minimum – not a prescription for the RAP. The RAP can and should reflect a larger stream buffer area where manure spreading is prohibited – one that is based on river corridor and water quality science. Stream buffer areas should be based on what is necessary to accomplish the goals of Act 64, not bare minimums. Nearly every section of the proposed RAP provides the opportunity for exceptions to be approved by the Secretary upon request. As such, the ability to deal with site specific constraints and exceptions exists. I recommend the following revisions to section 6.07:

- **6.07 (a) – Increase the surface water vegetative buffer from 25' to 50'.**
- **6.07 (d) – Revise the first sentence to strike the word "Mechanical". Revise the second sentence to prohibit grazing of livestock in buffer zones unless approved by the Secretary pursuant to section 6.07 (i).**
- **6.07 (g) – Revise to prohibit harvesting of non-woody perennial crops in buffer zones.**

I've attached the following VT Agency of Natural Resources publications for reference:

- Flood Hazard Area And River Corridor Protection Procedure (12/5/2014) – See pages 12, 28-29.
- Guidance For Agency Act 250 And Section 248 Comments Regarding Riparian Buffers (12/9/2005)
- Riparian Buffers And Corridors (2005)

Section 6.05 (f) – Surface Water Buffer & Manure Spreading on Slopes Over 10% - Requiring a larger surface water buffer zone of 100' adjacent to steeply sloped fields makes sense. However, as worded this requirement only would apply to fields with annual croplands. It should also apply to fields with perennial grass land or hay land. Increased runoff from steeper slopes happens regardless of whether a field is vegetated – especially during heavy rainstorms in the summer manure spreading season. I recommend the following revision:

- **6.05 (f) - Add “perennial grass land or hay land” after “annual croplands” in the first sentence.**

Funding – Please refer to my comments at the June 21, 2016 public hearing for perspective on funding. I hope the leadership in the Agency of Agriculture delivers the final version of the RAP with a message to the Legislature that substantially more funding is needed for implementation – to help farmers meet the RAP, to meet the goals of Act 64, and for follow through on the Lake Champlain TMDL. For example, relative to my comments above, taking sensitive stream buffer areas out of agricultural production has a real cost to farmers. The State should help facilitate this with more funding in addition to more robust rules on agricultural practices.

 Alex Weinhagen
 Director of Planning & Zoning, Town of Hinesburg
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VERMONT

AGENCY OF NATURAL RESOURCES

**GUIDANCE FOR AGENCY ACT 250 AND SECTION 248
COMMENTS REGARDING RIPARIAN BUFFERS**

DECEMBER 9, 2005

ADOPTED:

Thomas W. Torti

GUIDANCE FOR AGENCY ACT 250 AND SECTION 248 COMMENTS REGARDING RIPARIAN BUFFERS

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VERMONT AGENCY OF NATURAL RESOURCES
GUIDANCE FOR AGENCY ACT 250 AND SECTION 248 COMMENTS
REGARDING RIPARIAN BUFFERS

Section I: Introduction and Summary

Riparian corridors, including streambanks and lakeshores, serve vital functions that have significant environmental, economic, and social value. A summary of technical information on the functions and values of riparian corridors is included as Appendix A and more detailed information is found in a series of technical papers developed and published separately by the Agency as *Riparian Buffers and Corridors Technical Papers*. The Agency seeks to sustain and enhance the functions and values of the State's waters and natural ecosystems by recommending maintenance and restoration of riparian buffer zones through its role in the Act 250 and Section 248 processes [10 V.S.A. § 6084 and 30 V.S.A. § 248(a)(4)(E)], as summarized in Appendix B.

The primary purpose of this Guidance is to direct Agency staff in developing buffer recommendations for Act 250 jurisdictional projects and other processes that use the applicable Act 250 criteria, including the Section 248 process before the Public Service Board. The companion *Technical Papers* are intended to assist others (private, municipal, regional, state, and federal entities) in understanding the functions and values of riparian buffers, the importance of sustaining and enhancing buffers, and in developing appropriate science-based guidelines or policies. This Guidance is not intended as a substitute for guidelines or policies that will meet a specific entity's individual needs.

As described in this Guidance, the minimum riparian buffer zone widths that the Agency will recommend in Act 250 and Section 248 applications are: 100 feet for lakes, and 50 or 100 feet for streams. Sections III.B.1 and III.B.2 summarize site attributes that influence the recommended width; these are discussed in more detail in Appendix C. In all cases, Agency recommendations will be based on the buffer width needed to maintain or enhance the functions and values of the riparian area at the project site. Section III.C of this Guidance describes low-impact activities that the Agency believes are acceptable in riparian buffer zones because the activities will not significantly impair the buffer's function.

A riparian management plan may be proposed by the applicant or requested by the Agency as an alternative to establishing recommended buffer widths using the qualitative assessment techniques described in Sections III.B.1 and III.B.2 of this Guidance. Riparian management plans are appropriate in: large and complex projects, including master plan applications for residential subdivisions and large-scale transportation corridor projects; in densely developed downtowns or town centers; and, in areas that have previously been developed along riparian areas. The objectives of riparian management plans may include preventing erosion; addressing special resources, such as threatened and endangered species; defining allowed activities during site disturbance and post-construction; restoring buffer vegetation; and documenting the boundaries of the buffer area.

This Guidance supercedes the ANR Riparian Buffer Guidance (adopted January 20, 2005).

Section II: Use of the Guidance

This Guidance will be used in the following:

1. Establishing Agency recommendations and testimony in the Act 250 process and in Section 248 proceedings;
2. Targeting consistency and predictability in intra-agency review and recommendations for Act 250/Section 248-regulated projects statewide; and
3. Assisting applicants in designing Act 250/Section 248-regulated projects that incorporate appropriate buffer zone widths for protecting riparian functions.

Under Act 250, the Act 250 District Environmental Commissions are responsible for making the final determination of the appropriate riparian buffer width that will be incorporated into the Act 250 permit. This decision is based on the Commissions' consideration of the project design, the resources involved, and when available, Agency recommendations. Act 250 Commissions often rely heavily on Agency recommendations for technical natural resources issues; the same is true for the Public Service Board in Section 248 proceedings.

For projects not under Act 250 or Section 248 jurisdiction, this Guidance does not replace existing practices and procedures. For example, this Guidance does not supersede any presumption of compliance created by the following: Accepted Agriculture Practices, adopted pursuant to 10 V.S.A. §1259(I); Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont, adopted pursuant to 10 V.S.A. § 2622; or, the Vermont Wetland Rules. Also, this Guidance does not replace use of the ANR Floodway Procedure to support Act 250 decisions under Criterion 1(D).

Under the Vermont Wetland Rules, buffer widths of 100 feet and 50 feet are required for Class I and II wetlands, respectively. Where Class I and II wetlands are contiguous to a waterbody, buffer widths of greater than 100 feet and 50 feet may be recommended based on case-specific application of this Guidance. This Guidance will also be used to recommend buffers for Class III wetlands contiguous to waterbodies for projects under Act 250, as necessary to maintain the functions and values of the riparian area.

Section III: How to Apply the Guidance

A. Measuring Riparian Buffer Zone Widths

Buffers are measured horizontally from the mean water level for lakes and from top of bank or top of slope for streams, depending on site characteristics as described below, to the edge of allowed project activity. In areas where a wetland (Class I, II, or III) is contiguous to a waterbody, buffers are measured from the upland edge of the delineated wetland.

1. Lakes

Riparian buffer zones on lakes are measured inland perpendicular to the shoreline beginning at the mean water level. Records of mean water levels for many lakes are kept in the Water Quality Division's Lakes and Ponds Encroachment Program (802-241-3777). In cases where no mean water level is on record, Agency staff can conduct a site visit to determine the mean water level.

2. Streams

Riparian buffer zones on streams are measured inland perpendicular from either top of bank or top of slope, depending on the physical stream channel characteristics. The most common scenarios are:

- Channels where the break in bank slope represents the stage at which annual average high water (bankfull flow) accesses a relatively flat and wide floodplain; buffers are measured from the **top of bank** if no contiguous wetlands are present, or from the **upland edge of the wetland** if contiguous wetlands are present.
- Channels contained in a narrow V-shaped valley that has steep side slopes and little or no floodplain; buffers are measured from the **top of slope**.
- Channels that have an accessible floodplain on one side of the channel but run adjacent to the steep side slope of a valley or high terrace on the other; buffers are measured from the **top of slope** where the channel runs adjacent to the valley wall or high terrace and the **top of bank** where the channel has access to the floodplain.
- Channels that have recently abandoned their floodplain as a result of a lowering of the streambed, and are creating a new floodplain at a lower elevation; buffers are measured from the **top of slope**, defined as the edge of the most recently abandoned floodplain.

More information on determining the location of top of bank and top of slope is provided in Appendix C.

B. Buffer Zone Width Recommendations for Regulated Projects

Regulated projects or activities are those under review in the Act 250 process and in Section 248 proceedings. Although this Guidance may apply within any of the criteria on which the Agency comments in Act 250, the Agency will typically provide comments under criteria 1, 4, 8, and 9 when proposing buffers to protect riparian functions (see Appendix D). The process for establishing riparian buffer width recommendations is generally focused on ecological functions; in most cases, this approach will result in buffers sufficient to protect the social and economic values of the riparian area as well.

This section presents two equivalent alternatives for establishing recommended buffer widths: a default values approach involving a qualitative assessment of site attributes described in Sections III.B.1 and III.B.2; or, a site-specific approach involving Agency consultation and development of a riparian management plan, described in Section III.B.4. In all cases, the actual buffer width recommended by the Agency in its comments to the District Commission will be based on what will maintain or enhance the functions and values of the riparian area at the project site.

1. Lakes

In general, the buffer zone width recommended for regulated projects on lakes will be 100 feet, measured from mean water level. The Agency may recommend buffers greater than 100 feet at lakeshore sites with rare, threatened, endangered or sensitive species; sensitive significant natural communities; or necessary habitats. In addition, when site conditions warrant (e.g. significant risk of erosion and/or potential for overland flow of pollutants) the Agency may recommend that the buffer extend to top of slope even if this results in a buffer wider than 100 feet. Buffers narrower than 100 feet are generally not recommended due to the important role naturally

vegetated shores play in lake ecology, the sensitivity to pollution and the limited extent of remaining natural lakeshores in Vermont. However, buffers narrower than 100 feet are possible in limited circumstances, where permanent changes to the shoreline have eliminated the role vegetated shores play in overall lake ecology (see Appendix C).

2. Streams

The minimum buffer zone width recommended for regulated projects on streams is dependent on several site- and project-specific factors, including:

- Physical characteristics of the site and the watercourse and its banks and floodplain;
- Aquatic and terrestrial populations and communities dependent on the watercourse and riparian corridor; and,
- Nature and extent of the proposed development and existing encroachments, including the potential for erosion and overland flow of pollutants.

Detailed descriptions of these features and the associated functions of riparian buffers are included in Appendix C of this Guidance. Further, the Agency’s *Riparian Buffers and Corridors Technical Papers* summarize and provide reference to the scientific studies that provide the foundation for recommendations contained in this Guidance.

While it is difficult to offer generalizations encompassing the wide range of stream conditions and resource needs found throughout Vermont, the Agency will generally make recommendations of either a 50-foot or 100-foot buffer for regulated project on streams based on evaluation of the site attributes summarized below.

Summary of Key Stream Riparian Buffer Functions and Typical Recommended Widths

Function	50-foot Buffer Recommendation	100-foot Buffer Recommendation
Protection of channel and floodplain stability	Small to moderate sized streams that are at low risk for lateral or vertical channel adjustment and have small floodplain requirements.	Small to moderate sized streams with the potential for significant lateral or vertical channel adjustment. Streams with large belt width and floodplain requirements (includes most large rivers).
Protection of aquatic and terrestrial wildlife habitats	Aquatic populations dependent upon stream habitat and/or water quality either directly associated with or in close proximity to the project site. Project sites without significant wildlife travel corridor and/or riparian dependent species and/or significant natural communities identified on or in close proximity to the project site.	Sites with significant wildlife travel corridor and/or identified riparian dependent species (e.g., riparian breeding birds), and/or significant natural communities either directly associated with or in close proximity to the project site.
Protection of water quality	Site soils and slope indicate low risk of erosion; proximity of project to receiving water and amount of resulting impervious cover indicate low potential for overland flow of pollutants.	Site characteristics indicate increased risk of erosion and/or potential for overland flow of pollutants.

3. Agency Recommendation for Wider or Narrower Buffers

As previously stated, recommended buffers for regulated projects will generally be 100 feet on lakes and either 50 feet or 100 feet on streams. There are some lake and stream sites, however, where recommended buffers may be wider than these minimums. These include areas where:

- Rare, threatened, endangered, or sensitive species, *sensitive* significant natural communities, and/or necessary habitats (as defined in Appendix C) are either directly associated with or in close proximity to the project site; and
- Actively adjusting channels are undergoing channel lengthening and floodplain development. In determining the floodway area needed to protect channel stability the Agency may also apply the *Procedure on ANR Floodway Determination in Act 250*.

Similarly, there are certain types of lake and stream sites where narrower buffers may be acceptable. These include areas where:

- Riparian functions and values will be adequately protected by a narrower buffer, such as sites adjacent to small, stable intermittent streams; or
- The location and extent of existing encroachments severely limits the ecological benefits that would be derived from a wider buffer.

4. Agency Consultation

Multi-faceted resource issues that involve numerous Agency programs are too complex to be summarized in a brief guidance such as this, and will be best served by Agency consultation, potentially involving staff from several technical areas. There are four project types where site-specific consultation with Agency staff should occur as part of the process for establishing recommended buffer widths. Consultations will occur for project sites where:

- Applicants are proposing large and complex development projects.
- Habitat and/or geomorphic features described in Section III.B.3, above, are present.
- Applicants are seeking an Agency recommendation for a buffer narrower than that recommended by this Guidance.
- The proposed project is adjacent to Class A(1) waters or a waterbody that provides exceptional value for public recreation and aesthetics, including waterbodies designated as Outstanding Resource Waters for natural, scenic, or recreational values.

Often, the end result of the Agency consultation process will be a riparian management plan that identifies buffer functions and values, establishes appropriate buffer widths, and details allowed uses in the buffer that are inconsistent with undisturbed, naturally-vegetated conditions. A riparian management plan may be proposed by the applicant or requested by the Agency and should document a systematic approach for describing site characteristics and assessing buffer functions and values, including measures to:

- Minimize the potential for hydrologic change within the subwatershed;
- Ensure the integrity of steep slopes;
- Assess the role of riparian Class III wetlands in maintaining the functions and values of the watercourse; and
- Limit to maximum extent practicable any encroachments into buffers.

The objectives of a riparian management plan may include preventing erosion; addressing special resources, such as threatened and endangered species; defining allowed activities during site disturbance and post-construction; restoring buffer vegetation; and documenting the boundaries of the buffer area. As appropriate, allowed or restricted activities and boundaries should be contained in covenants of subdivisions and land management agreements.

A riparian management plan also affords applicants an opportunity to propose non-standard buffer protection measures in order to accommodate unique features of a particular site. These could include:

- Identifying areas where enhanced plantings might be used to ensure buffer integrity.
- Identifying areas where conservation easements could be provided to ensure the long-term viability of the riparian area.

There are locations where it will be challenging to provide the buffer width recommended by this Guidance, most commonly in projects involving development, or redevelopment, in areas adjacent to existing encroachments. The Agency encourages applicants in areas with existing encroachments to apply the Guidance and give full consideration to the recommended buffers. In the end, if the applicant feels that buffer recommendation yielded by this Guidance is impractical, the Agency encourages the applicant to seek Agency consultation as would be expected for any project where the applicant wishes to propose a narrower buffer.

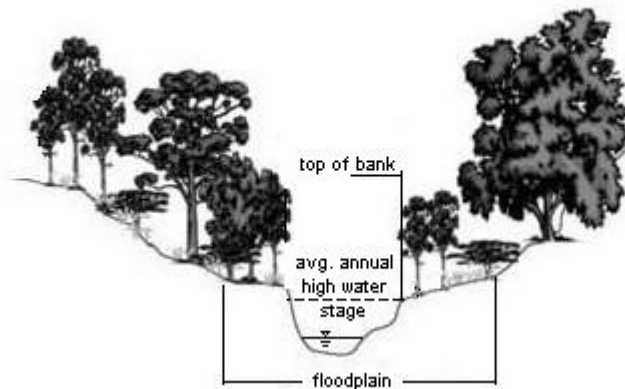
C. Acceptable Activities within Buffer Zone Areas

The definition of a *riparian buffer zone* as provided in this Guidance includes the description “undisturbed.” Generally, “undisturbed” means no construction; no earth-moving activities; no storage of materials; no tree, shrub, or groundcover removal; and no mowing. The Agency recognizes that not every application begins with a site that is currently “undisturbed.” Agency review will give due consideration to existing site conditions. Whenever the “undisturbed” condition is not consistent with a project plan, Agency staff will make a case-by-case evaluation of the proposed activities within the buffer, and, if necessary, consult with the applicant. Agency review will consider relevant riparian corridor functions and values, site features and type of project proposed in determining the activities that the Agency believes are compatible with buffer functions. As appropriate, allowed or restricted activities should be contained in covenants of subdivisions and land management agreements. In addition, when a parcel is subject to Act 250 and also has concurrent, unrelated forestry activities, the AMPs supersede this guidance, as described in Section II.

GUIDANCE DEFINITIONS

Average Annual High Water Stage: The stage or elevation at which the average annual high water begins to spill out of the active channel into the adjacent floodplains; also called the “channel-forming” or “bankfull” flow (see Figure 1).

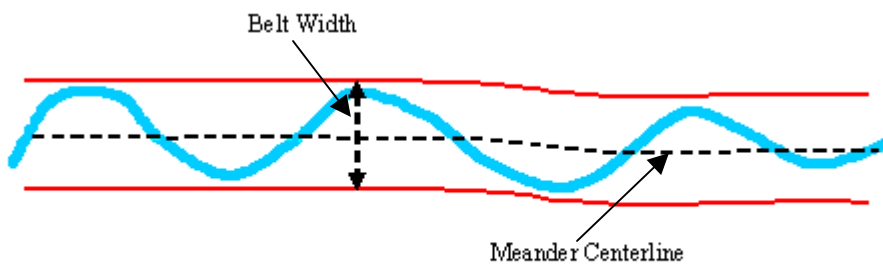
Figure 1: Schematic of a Generic Riparian Area



Adapted from: National Academies Press, 2002

Belt Width: The horizontal distance which extends laterally across the stream valley, from outside meander bend to outside meander bend, thereby encompassing the natural planform variability of the channel necessary to accommodate the slope requirements of the stream (see Figure 2).

Figure 2: Determining Belt Width for a Geomorphically Stable Stream



Contiguous Wetland: Wetlands that share a boundary with an adjacent waterbody, including situations where the water level of the wetland is directly influenced by the water level of the adjacent waterbody and where a man-made structure (e.g. roadway) divides a wetland, if surface water is able to flow over, under, or through that structure.

Floodplain: Land adjoining a waterbody that is covered by water during flows or water levels at or exceeding the average annual high water stage (see Figure 1).

Floodway: As defined by Act 250, the channel of a watercourse which is expected to flood an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse. Act 250 case law has established that the Act 250 Floodway includes land areas adjacent to the watercourse endangered by fluvial erosion hazards, as determined by the ANR Secretary.

Lake: A body of standing water, including bodies named lake, pond, and reservoir, that may have natural or artificial water level control. For the purpose of this guidance, off-stream reservoirs specifically constructed for the following purposes, are not considered lakes: snowmaking water storage; golf course irrigation; stormwater management; and, fire suppression. Exceptions include constructed reservoirs discharging to natural waterbodies where attendant thermal impacts are of concern.

Mean Water Level: The normal summer (June 1 - September 15) water level (measured in feet above sea level) of lakes as determined by an average of water level readings available over time or as established by the Vermont Natural Resources Board under *Rules Determining Mean Water Levels* (November 14, 1972).

Regulated Project or Activity: Those projects or activities which fall under the jurisdiction of Act 250 or are part of a Section 248 proceeding.

Riparian Buffer Zone: The width of land adjacent to lakes or streams between the top of the bank or top of slope or mean water level and the edge of other land uses. Riparian buffer zones are typically undisturbed areas, consisting of trees, shrubs, groundcover plants, duff layer, and a naturally vegetated uneven ground surface, that protect the waterbody and the adjacent riparian corridor ecosystem from the impact of these land uses.

Riparian Corridor: The waterbody and the width of adjacent land that supports a distinct ecosystem with abundant and diverse plant and animal communities (as compared with upland communities). For streams, this includes the belt width required for channel stability.

Stream: The full length and width, including the bed and banks, of any watercourse, including, but not limited to, bodies named creek, brook, river, branch, and kill. A stream has a channel that periodically or continuously contains moving water, has a defined bed, and has banks that serve to confine water at low to moderate flows. Streams include intermittent streams that have a defined channel and evidence of sediment transport, even if such streams does not have surface water flow throughout the year and/or throughout the channel. For the purpose of this guidance, constructed drainageways including water bars, swales, and roadside ditches, are not considered streams.

Streambanks: Physiographic features that normally contain streams within a channel. The bank is distinct from the streambed, which is normally wetted and provides a substrate that supports aquatic organisms.

Top of bank: The point along a streambank where an abrupt change in slope is evident, and where the stream is generally able to overflow the banks and enter the adjacent floodplain during flows at or exceeding the average annual high water stage (see Figure 1).

Top of slope: A break in slopes adjacent to steep-banked streams that have little or no floodplain; or a break in slope where the side slopes adjacent to an incised, or deeply cut, channel meet floodplains that have been abandoned or are undergoing abandonment.

Waterbody: A lake or stream.

Wetlands: Lands that are inundated or saturated by surface water or groundwater with a frequency sufficient to support significant vegetation or aquatic life that depend on saturated or seasonally saturated soil conditions for growth and reproduction. Such areas include but are not limited to: marshes, swamps, sloughs, potholes, river and lake overflows, mud flats, fens, bogs, and ponds. References to wetlands in this Guidance are those adjacent to streams or lakes.

APPENDIX A. Functions and Values of Riparian Ecosystems

Riparian corridors provide both ecological functions and social and economic values. The specific characteristics of a particular riparian corridor are important in determining the width of the buffer zone necessary to protect these functions and values. This appendix summarizes the functions and values of riparian buffers. More detailed descriptions are provided in a series of technical papers developed by the Agency, entitled *Riparian Buffers and Corridors Technical Papers*.

1. Functions of Riparian Corridors and Buffer Zones

A. Protection of water quality

- i. Water temperature and light control: Shading maintains cool summer water temperatures and moderates harsh winter temperatures; also, lower light levels inhibit algal growth. Both factors maximize dissolved oxygen content in the water.
- ii. Filtration of sediments, nutrients, pathogens and toxics in runoff: Vegetated buffer zones slow overland runoff, allowing the buffer to filter out pollutants originating from upland areas.
- iii. Infiltration and maintenance of streamflow: Vegetated buffer zones slow overland runoff allowing for infiltration of surface water that helps to maintain base flow in streams.
- iv. Lakeshore, channel and floodplain stability: Vegetated buffer zones minimize lakeshore erosion, instream scour, bank erosion, and sedimentation associated with channel instability, reducing sediment loads to receiving waterbodies.

B. Protection of aquatic habitat

- i. Water quality: The water quality functions described above are important in the protection of aquatic habitat and aquatic biota. Moderating water temperatures in both summer and winter and maintaining sufficient dissolved oxygen levels are essential to aquatic biota. Removal of pollutants from runoff helps to ensure clean water and oxygen for aquatic organisms, and maintaining stream flows ensures flowing water even during the driest months. Reducing the amount of sediment entering a waterbody protects the eggs and young of fish, amphibians, aquatic insects and other aquatic invertebrates from suffocation and helps maintain the interstitial spaces in stream substrates, which provide important habitat for aquatic biota.
- ii. Food supply: Organic material (leaves, twigs, and other detritus) derived from riparian areas is the origin of the energy that drives aquatic food chains in most streams and lakes.
- iii. Woody debris: Large woody debris (LWD) is recruited from the riparian corridor by trees falling into the stream channel or lake, or delivered to the waterbody via floodwaters. LWD provides velocity refuge and overhead cover for fish, substrate and food for aquatic invertebrates, and substrate for plants. LWD influences the formation of pools, backwaters, and shallow slack water, increasing the complexity of aquatic habitat and influencing the storage and transport of aquatic food sources. It also traps sediments and retards scouring of the channel bed and banks during high flows and reduces the effects of wave action on lakeshores, maintaining habitat for aquatic biota.
- iv. Lakeshore, channel and floodplain stability: Dissipating floodwater is as important for aquatic biota as it is for the channel or lakeshore itself. Floodwaters that are not allowed

to dissipate horizontally over a floodplain build up energy within the channel, often causing excessive scour of the channel bed that can cause direct mortality of fish and amphibians due to mobilization of large substrates in the channel bed. Riparian vegetation stabilizes both streambanks and lakeshores preventing the collapse of undercut banks that provide cover and cool water refuge for fish, reptiles and amphibians.

C. Protection of terrestrial habitat

- i. Natural communities: Streambanks, lakshores, and floodplain forests are ecologically associated with 26 of the 80 natural community types recognized in Vermont. Shorelines and floodplains provide very specialized ecological conditions for 18 natural community types that are considered rare and uncommon in the state.
- ii. Habitat for wildlife and vegetation: A large part of the life cycles of amphibians and reptiles occur in riparian corridors. The same is true for many aquatic insects, which use riparian vegetation as reproductive swarming site, nymph emergence sites, and food. In addition, the majority of Vermont's birds and mammals are dependent on riparian areas for a portion of their life cycle. Many species of plants can survive only in areas near water.
- iii. Maintenance of aquatic food webs as they relate to terrestrial food webs: Vegetation, such as fallen leaves and branches, are important in providing food and cover for aquatic insects and fish. These insects and small fish, in turn, provide food for many mammals and birds.
- iv. Habitat for rare, threatened and endangered species: Many of Vermont's rare species of plants and animals are dependent on riparian areas for at least a part of their life cycle. Many species occur only in wet areas.
- v. Preventing the spread of exotic or invasive species: Non-native invasive or exotic species can easily establish in disturbed riparian areas and then significantly disrupt natural communities. Maintaining and restoring riparian corridors is a key component in controlling the spread of these species.
- vi. Travel corridors for migration and dispersal: Many wildlife species in Vermont are dependent on riparian corridors as connective habitat through otherwise uninhabitable regions during periods of food shortage, for seasonal or diurnal movements within their home ranges, and as dispersal routes for juveniles.
- vii. Breeding habitat: Many wildlife species, especially waterfowl, shore birds, many songbirds and most amphibians and reptiles, require riparian habitat conditions for breeding and for raising their young.
- viii. Genetic interchange: Vegetative buffer zones around waterbodies may provide important dispersal routes for juveniles and breeding adults of some wildlife species, thereby assisting in genetic interchange with other local populations.

D. Protection of channel, lakeshore, and floodplain stability

- i. Flood attenuation: Buffer zones provide space for channel meanders and floodwaters to spread out horizontally, dissipating stream energy and protecting channel stability and lakeshores during floods.
- ii. Reduced effects of storm events: Vegetated buffer zones can slow the speed and reduce the volume of surface runoff from upland areas, protecting lakeshores and stream channel beds and banks from "flashy" powerful flows that can scour and erode the channel.

- iii. Ice damage control: Forested buffer zones trap ice slabs during spring break-up, reducing the potential of jamming at downstream constrictions. Jamming can result in backwater and flooding upstream, which can lead to channel instability. Vegetated lakeshore buffer zones are able to absorb the pressures of mid-winter ice push, protecting upland development from ice damage.
- iv. Bank and shoreline stabilization: Vegetation binds soil increasing the strength of the soil matrix and thereby increasing streambank and lakeshore stability. Bank and shoreline stability are important for reducing soil and property loss from the bank or shore, reducing sediment input to the waterbody, and maintaining overall channel stability. Riparian vegetation also protects lakeshores from wave action.
- v. Maintenance of sediment transport and channel morphology: Buffer zones help maintain channel width-to-depth ratios and meander geometry (belt width) resulting in a channel slope that ensures consistent movement of sediments and water through stream systems.

E. Maintenance of wetlands

Wetlands in riparian buffer zone areas provide many significant functions and values as part of riverine and lacustrine systems. Among these functions and values are:

- Surface and groundwater protection;
- Erosion control for streambank and shoreline stability;
- Wildlife habitat;
- Fisheries habitat;
- Rare, endangered and threatened species habitat;
- Significant natural communities;
- Water storage for flood water and storm runoff;
- Open space and aesthetics;
- Recreational and economic value; and
- Educational and research value.

2. Social and Economic Values of Riparian Corridors and Buffer Zones

- A. Flood control that protects human land use and investments from hazards associated with stream dynamics and shore erosion;
- B. Ice damage control that protects human land use and investments from ice damage on the near shore/bank and from effects of ice jamming and subsequent upstream flooding;
- C. Maintenance of optimal water quality for drinking water and recreation, such as boating, swimming, fishing, and wildlife viewing;
- D. Maintenance of wastewater assimilation capacity of streams for reducing wastewater treatment costs. Riparian buffer zones lower water temperature thereby increasing dissolved oxygen; this increases the waterbody's capacity to assimilate organic wastes, such as from wastewater treatment plants;
- E. Aesthetics: Clear, clean waters and naturally vegetated riparian areas enhance the sensory and recreational qualities of the waterbody, the watershed, communities, and individual properties. Aesthetic values often have economic benefits and contribute to a sense of pride and well-being for communities and property owners; and
- F. Intrinsic values such as the preservation of natural functioning ecosystems and biological diversity.

APPENDIX B. Agency's Legal Authority for Protecting Riparian Buffers

As noted in Section I, the Agency seeks to protect riparian buffers through various permitting and planning processes in which the Agency is a participant. The Agency's legal authority to make recommendations regarding riparian buffers is derived from a number of statutes including, but not limited to:

- 10 V.S.A. Chapter 151 (State Land Use and Development Plan) § 6084 - This provision provides the Agency with statutory party status in Act 250 proceedings. The Agency exercises its party status to comment on Act 250 criteria that relate to the protection of riparian corridors. These criteria include, but are not limited to, 10 V.S.A. § 6086(a)(1), 1(A), 1(B), 1(D), 1(E), 1(F), 1(G), 4, 8, 8(A), and 9(K).
- 30 V.S.A. § 248 (a)(4)(E) - The Agency is a party to proceedings held under § 248 and provides evidence and recommendations under subdivision (b)(5), which requires that a facility not have an undue adverse effect on esthetics, historic sites, air and water purity, the natural environment and the public health and safety, with due consideration having been given to the criteria specified in 10 V.S.A. § 1424a(d) and § 6086(a)(1) through (8) and (9)(K).
- 10 V.S.A. Chapter 37 (Water Resources Management) § 901 - This provision mandates the protection of the state's water resources. As noted herein, maintaining riparian corridors is essential to the protection of the water resources of the state.
- 10 V.S.A. Chapter 37 (Water Resources Management) § 905(b) - This provision mandates that the Department of Environmental Conservation protect and manage the water resources of the state. As noted herein, maintaining riparian corridors is essential to the management of water resources of the state for a variety of uses.
- 10 V.S.A. Chapter 41 (Regulation of Streamflow) – Through regulating stream alteration and dams, provide increased property and infrastructure protection and maintain or restore rivers' ecological functions and social and economic values.
- 10 V.S.A. Chapter 47 (Water Pollution Control) § 1250 (1) and (4) - These provisions make it the policy of the state to protect and enhance the quality, character, and usefulness of its surface waters and to assure the maintenance of water quality to sustain existing aquatic communities. As noted herein, maintaining riparian corridors is essential to fulfilling this policy.
- 10 V.S.A. Chapter 47 (Water Pollution Control) § 1272 - This provision authorizes the Agency to issue an order for the control of activities determined to be violating Title 10, Chapter 47. Requiring restoration and/or maintenance of riparian corridors is one method of controlling such activities.
- 10 V.S.A. Chapter 49 (Protection of Navigable Waters and Shorelands) § 1421 - Relative to the protection of navigable waters and shorelands, this provision authorizes the

Agency as trustee of its navigable waters and declares it to be in the public interest to establish procedures for the efficient use, conservation, development, and protection of the state's water resources.

- Section 401 of the Federal Clean Water Act (Water Quality Certification) – This section stipulates that any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, that any such discharge will comply with applicable effluent limits and not cause or contribute to a violation of water quality standards.
- The Vermont Water Quality Standards, currently effective version, adopted pursuant to 10 V.S.A. Chapter 37 (Water Resources Management) § 905 – Water quality standards are developed to be protective of the existing and designated uses in a particular waterbody, including but not limited to: aquatic biota, wildlife, and aquatic habitat; aesthetics; swimming and other primary contact recreation; boating, fishing, and other recreational uses.

APPENDIX C. Site-Specific Considerations in Determining Riparian Buffer Zone Width

In developing this Guidance the Agency consulted available literature to ensure that the recommendations for minimum buffer widths were based on sound science. This Appendix provides additional detail on site-specific considerations in determining buffer zone width, and includes citations for a number of key references. In addition, the series of technical papers developed by the Agency – *Riparian Buffers and Corridors Technical Papers* – includes a more extensive list of technical references.

Specifically, this Appendix includes a more detailed discussion on whether to measure stream buffers from top of bank or top of slope. It also discusses the sensitive nature of lake sites that necessitates a minimum buffer of 100-feet, and site functions that should be evaluated in making a qualitative assessment of the appropriate stream buffer width. For each site characteristic listed, an explanation of how the characteristic influences buffer function is provided with a summary of current research.

1. Measuring Stream Buffers from Top of Bank and Top of Slope

When establishing riparian buffers on streams it is important to consider the point from which buffers should be measured – from the **top of bank** or **top of slope**, depending on the physical channel characteristics.

Measuring from top of bank Figure C.1 represents a stream channel with a relatively flat and wide floodplain, which the stream accesses during flows at or exceeding the average annual high water stage. When these channel characteristics are present riparian buffers and corridors can be measured from the top of bank, perpendicular to the channel. When contiguous wetlands are present in the floodplain, however, the Agency recommends that buffer measurement begin at the upland edge of the wetland.

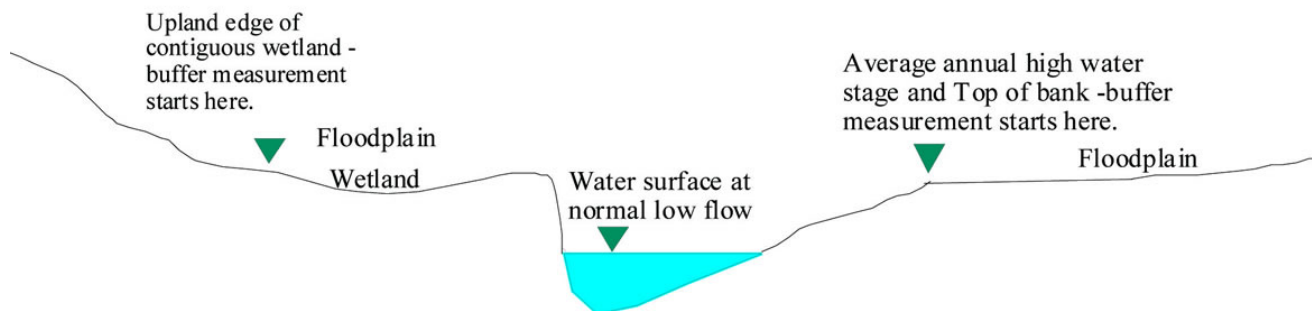


Figure C.1. Top of bank typical of streams with flat, wide floodplains that the stream accesses during flows exceeding average annual high water. Upland edge of wetland typical of contiguous wetlands sometimes present in the floodplain.

Measuring from top of slope There are at least three scenarios when riparian buffers should be measured from the top of slope.

Scenario 1: When a channel is contained in a narrow V-shaped valley that has steep side slopes riparian buffer zone measurement should begin at the top of slope (Figure C.2). There is often little or no floodplain in this scenario, which increases the threat of slope toe erosion and slope failure, especially during storm and flood events.

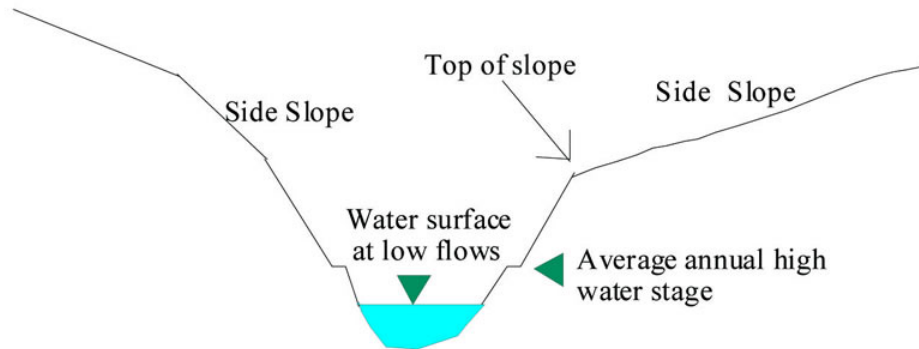


Figure C.2. Top of slope typical of steep streams in narrow V-shaped valleys with little or no floodplain.

Scenario 2: When a channel has adequate floodplain on one side but borders a steep valley side slope or high terrace on the other, riparian buffer zone measurement should begin at the top of slope on the valley wall or terrace side and the top of bank on the floodplain side (Figure C.3). The absence of a floodplain in areas where the channel runs adjacent to the steep valley side slope or high terrace increases the threat of slope toe erosion and slope failure.

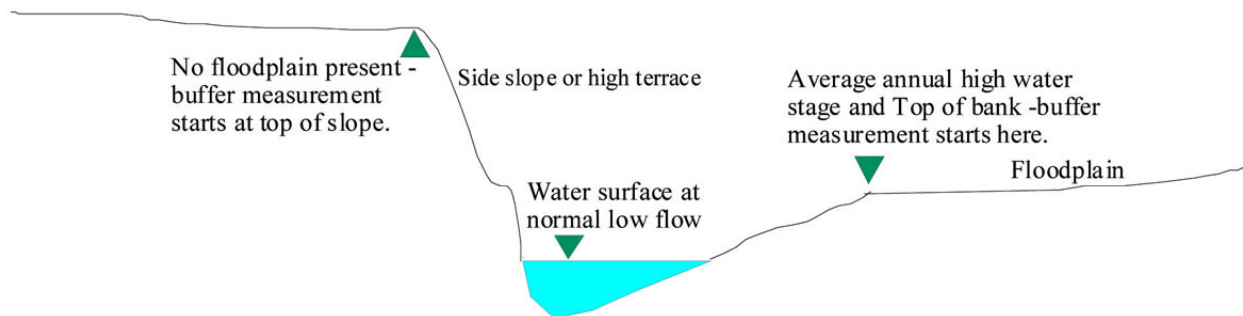


Figure C.3. Top of slope typical of streams that run adjacent to steep slopes or high terraces on one side of the valley but have adequate floodplain on the opposite side of the valley.

Scenario 3: Where streams that once had access to floodplains have since steepened and incised, the top of slope is found at the edge of the floodplain undergoing abandonment (Figure C.4). These streams are undergoing a channel evolution process, often taking decades to erode their banks and reestablish meanders, creating new floodplains at lower elevations. This often involves the cutting away of the toe of the steep slope, leading to slope failure. To ensure that streamside slopes are not compromised during this channel evolution process, riparian buffers should be established from the top of slope.

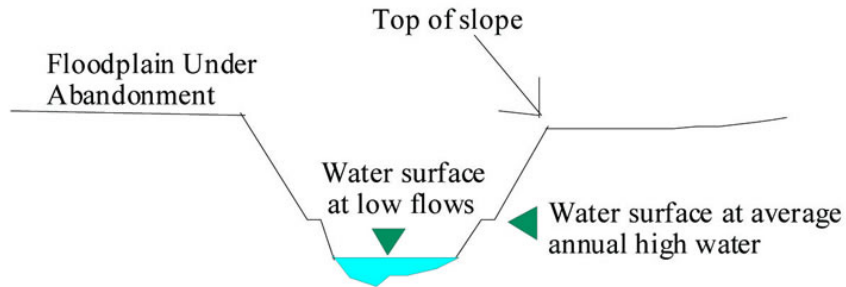


Figure C.4. Top of slope typical of incised streams that have little or no access to their floodplains and have yet to establish a new floodplain.

After a stream has incised and widened, it develops a new floodplain at a lower elevation. Often these floodplains are contained in narrow valleys and are flanked by steep slopes. In the case of narrow floodplains, where the slope and depth of the stream is maintained by the stream's ability to meander across the full width of the floodplain, riparian buffer zones should be established from top of slope to protect the stability of the stream as well as the stability of the adjacent slopes (Figures C.5 and C.6).

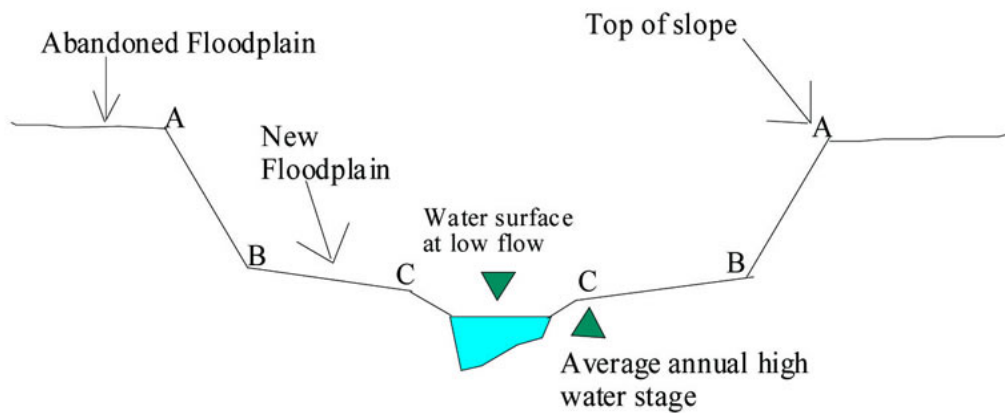


Figure C.5. Top of slope typical of streams that were once incised and have since reestablished a new floodplain at a lower elevation.

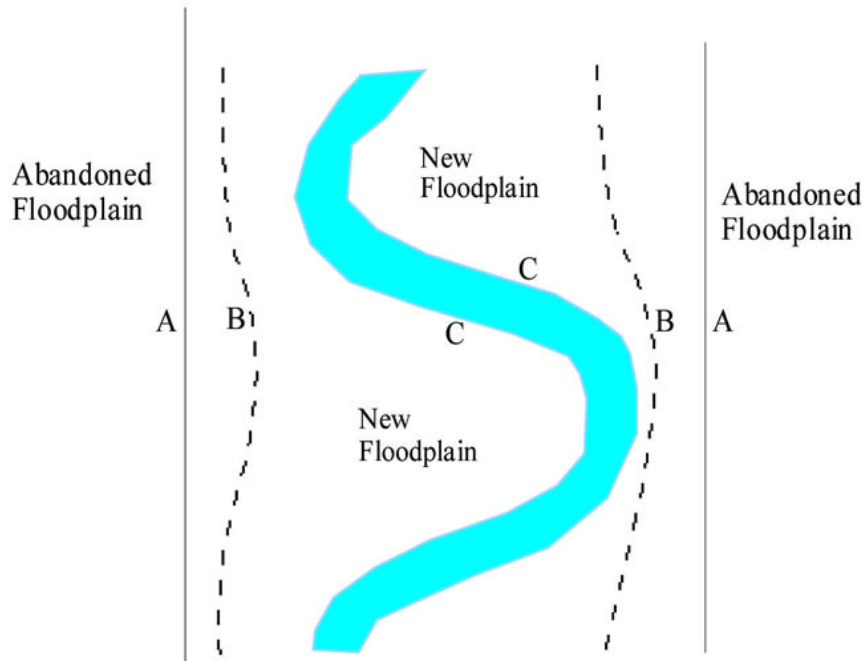


Figure C.6. Bird's eye view of stream in Figure C.5.
A=top of slope, B=outer edge of floodplain, C=top of bank.

2. Attributes of Lake Sites that Necessitate a 100-foot Buffer

Naturally-vegetated lakeshores are a critical element of overall lake ecology, providing the functions and values described in Appendix A. A large part of the life cycles of amphibians, reptiles, and many aquatic insects occurs in lakeshore areas. The majority of Vermont's birds and mammals are dependent on such areas for a portion of their life cycle, and many species of plants can survive only in areas near water. As Vermont's lakeshores have been developed, these plants and animals have become concentrated in the remaining natural areas on the shores. The very existence of these species as part of each lake's ecology is dependent on the protection of the remaining undisturbed lakeshore areas.

Lakeshores are a limited resource in Vermont and are under significant development pressure. An inventory of the undeveloped lakeshores of northern Vermont, conducted by the Northeastern Vermont Development Association from 1990-1992, found that less than half the lakeshore surrounding lakes greater than 20 acres in size in the study area (140 lakes) was in "undeveloped tracts." An undeveloped tract was defined as having a minimum of 1,000 feet of shore frontage and a depth of 250 horizontal feet with no human structures or 2-wheel drive roads. Most lakes that had undeveloped tracts had only one such tract on the lake.

Also, it is the nature of lakes to accumulate pollutants over time. A buffer width of 100 feet will in most cases provide adequate treatment of stormwater runoff from developed upland areas, preventing excessive accumulation of pollutants (specifically phosphorus and sediments) in the lake.

3. Site Functions to be Evaluated in Determining Stream Buffer Width

Protection of Channel and Floodplain Stability

A stream is considered geomorphically unstable when it is undergoing bed erosion (downcutting) or aggradation (buildup) due to an imbalance between watershed inputs (the quantity of flow and the efficient transport of the size and quantity of sediment produced in the watershed) and the channel's existing dimension, meander pattern, or slope (Lane 1955; Leopold 1994). Stream bed and bank erosion still occur in balanced, or stable, channels but at a lesser rate in comparison to unstable channels. A typical unstable channel scenario in Vermont is where the stream is straightened and has incised (down cut) to a depth where the average annual high water stage no longer has access to the floodplain. When floods occur in an incised channel, tremendous forces are constrained in the channel, and bank erosion and channel widening are accelerated. Channel widening and lengthening will continue until channel slope is moderated and there is sufficient aggradation of sediment in the channel to form a new floodplain. When the erosive force of a flood is spread out across the new belt width and floodplain and into the riparian area, the energy in the channel is reduced, resulting in a more stable stream system (Schumm 1984). Wooded riparian buffers are essential components of the channel boundary resistance and wider buffers are necessary where encroachments would limit the stream's ability to achieve equilibrium conditions.

A channel stability determination will be dependent on parameters such as rate of lateral migration or vertical profile adjustment, channel boundary resistance, and/or significant energy/channel slope imbalances. Indicators of significant rates of channel migration or vertical adjustment may be provided by the VT ANR Stream Geomorphic Assessment Database, comparison of channel location shown on successive aerial photo flights, in-field observation of headcuts, active bank erosion, substantial unvegetated depositional features, recently abandoned and/or incipient or developing flood plains, etc. More information is available on the DEC River Management Program web page: <http://www.anr.state.vt.us/dec/waterq/rivers.htm>

Protection of Aquatic and Terrestrial Wildlife Habitats

Aquatic Habitat and Species

The protection of aquatic habitat is dependent upon several riparian features and functions. Forested riparian areas are particularly important in providing floodplain area for attenuation and storage of floodwaters during high water events. This in turn protects channel stability and instream aquatic habitat. In general, larger rivers require large belt widths and floodplains to maintain channel stability and aquatic habitat functions, while smaller streams may have narrower belt width and floodplain requirements to maintain natural channel functions. Therefore, all other site factors being equal, larger buffers are typically recommended for large rivers in comparison to small streams. Forested riparian buffers also benefit aquatic habitat by improving the quality of nearby waters through shading, filtering pollutants from overland runoff, and providing leaf matter and woody debris to feed the aquatic food web and provide physical habitat structure.

Terrestrial Habitat and Species

The distinctive terrestrial habitat provided by riparian areas is home to a number of plant and animal species rarely found outside riparian areas (Verry 2000; CRJC 2000). Many species that are dependent on aquatic habitat, such as salamanders, frogs, turtles, mink, beaver, otter, and numerous species of birds also use terrestrial riparian habitats. For instance, wood turtles, which are considered a rare species in Vermont, are closely associated with riparian areas (Kaufman 1992; Parren 2005). These animals overwinter in rivers and streams and then move into the adjacent riparian areas in the spring and summer to forage, breed, and nest.

A variety of migratory songbirds also rely specifically on riparian areas for successful nesting, including Northern oriole and Yellow warbler. Often the diversity of bird species present in a riparian area is a function of the width of the vegetation along the river, stream, lake or pond. Larger areas provide a greater variety of habitat types and food sources. In a study of selected third-order streams in Vermont, a vegetated riparian area of 150-175 meters (roughly 490- 575 feet) from the high water mark was required to protect 95% of the bird species present (Spackman 1992). Some riparian dependent bird species, such as bald eagle, great blue heron, and wood duck, may require buffers 600 feet or greater in width to meet their nesting and roosting habitat needs (Roderick and Miller 1991).

Continuous stretches of riparian buffer may, in some instances, serve as wildlife travel corridors (Chase 1995; DeGraff and Rudis 1986). A Vermont study shows use of riparian corridors to be important for black bear movement, particularly in providing travel corridors at road crossings (Hammond 2002).

A review of scientific literature describing the range of buffer habitat needs for riparian-associated wildlife and information on species-specific riparian habitat requirements is included in the series of technical papers developed by the Agency, *Riparian Buffers and Corridors Technical Papers*.

Sensitive, Rare, Threatened and Endangered Species: Sensitive species are those easily disturbed by human activities and include primarily wetland dependent species, such as wading birds. A rare species is one that has only a few populations in the state and that faces threats to its continued existence. The Vermont Fish and Wildlife Department uses a ranking system that describes the degree of rarity of a species in Vermont. Threatened and endangered species are defined by both state and federal law, and includes those species on both the state and federal threatened and endangered species lists. In general, the continued existence of these species is in immediate jeopardy.

Necessary Wildlife Habitat: For the purposes of this Guidance, necessary wildlife habitat is as defined in Act 250 (10 V.S.A. Chapter 151 6001). These habitats are critical to the survival of the species that rely on them. The Vermont Department of Fish and Wildlife Department has developed and made available habitat guidelines for many species' necessary habitats, also termed significant habitats (e.g. deer winter habitat, significant wetlands, heron rookeries, bear feeding habitat).

Sensitive and Significant Natural Communities: A natural community is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them. The same natural community type can be found repeating across the landscape wherever similar environmental conditions occur. These environmental conditions include climate, soil type, nutrient availability, the amount of water or the lack of water, and the type of natural disturbance (such as wind, fire, and flooding). It is possible to describe and classify natural community types since they repeat in similar environmental settings.

The Vermont Fish and Wildlife Department determines the state significance of a specific natural community by evaluating the quality of that particular community and the rarity of its community type. Some natural communities, in addition to being state significant, may also be sensitive, meaning they are easily disturbed by human activities. For example, calcareous riverside seeps rely on groundwater discharge surfacing over calcareous bedrock as well as frequent scour from flooding and ice. A change to any one of these environmental factors, such as redirecting groundwater discharge or reducing flood scour processes, could result in loss or degradation of the natural community. While most significant natural communities occurring in riparian areas will be protected by 100 foot wide buffers, sensitive communities may require buffers greater than 100 feet.

There are a wide variety of natural community types that occur along the shores of Vermont lakes and streams, including sparsely vegetated open shores (e.g. Cobble Beach), marshes (e.g. Wild Rice Marsh), shrub swamps (e.g. Alluvial Shrub Swamp), and floodplain forests (e.g. Silver Maple-Ostrich Fern Riverine Floodplain Forest). More information on Vermont's natural communities can be found in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson and Sorenson 2000). Detailed information about the significance and sensitivity of a particular natural community can be obtained by consulting the Nongame and Natural Heritage Program of the Vermont Fish and Wildlife Department.

More information on aquatic and terrestrial wildlife habitats and natural communities is available on the Department of Fish and Wildlife website at <http://www.vtfishandwildlife.com/>

Protection of Water Quality

Riparian buffers filter stormwater runoff that flows through them as sheetflow. Buffer vegetation catches sediment and absorbs some of the nutrients and other pollutants contained in the runoff. Pollutant removal depends on the pollutant load and type, the composition and slope of the buffer, and the amount of runoff (Chase et al 1995). In general, to provide the same level of pollutant capture, buffers in steep slope areas will need to be wider as flows are typically faster moving and more concentrated.

The physical and chemical properties of the soil and surficial geologic materials, including particle size, structure, and cohesion determine the potential for erosion within the riparian area. Soil erodibility may be obtained from soils surveys and the Top 20 soils tables available through the Natural Resources Conservation Service (NRCS). One technique for quantifying soil

erodibility is the NRCS index (K) which quantifies the susceptibility of soil to water erosion. Areas with K-values > 0.24 are susceptible to erosion and may require additional protective measures (Baltimore County 2004). More information on K-values can found on-line at <http://soils.usda.gov/> or http://www.vt.nrcs.usda.gov/soils/so_stat.html. The *Vermont ANR Stream Geomorphic Assessment Handbook* also provides information on the erodibility of surficial geologic materials.

It is important to keep in mind that riparian buffers alone are not enough to mitigate the effects of stormwater runoff from otherwise uncontrolled upland activities (Binford and Buchenau 1993). Appropriate on-site stormwater controls work in concert with riparian buffers to ensure that potential impacts on adjacent waterbodies from both construction and post-construction site activities are minimized.

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APPENDIX D. Summary of Applicable Act 250 and Section 248 Criteria and Other Statutory References Relevant to Riparian Functions

Act 250 and Section 248 Criteria

(1) Will not result in undue water or air pollution.

(A) **Headwaters.** A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria, the development or subdivision will meet any applicable health and environmental conservation department regulation regarding reduction of the quality of the ground or surface waters flowing through or upon lands which are not devoted to intensive development, and which lands are:

- (i) headwaters of watersheds characterized by steep slopes and shallow soils; or
- (ii) drainage areas of 20 square miles or less; or
- (iii) above 1,500 feet elevation; or
- (iv) watersheds of public water supplies designated by the Vermont department of health; or
- (v) areas supplying significant amounts of recharge waters to aquifers

(B) **Waste disposal.** A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria, the development or subdivision will meet any applicable health and environmental conservation department regulations regarding the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into ground water or wells.

(D) **Floodways.** A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria:

- (i) the development or subdivision of lands within a floodway will not restrict or divert the flow of flood waters, and endanger the health, safety and welfare of the public or of riparian owners during flooding; and
- (ii) the development or subdivision of lands within a floodway fringe will not significantly increase the peak discharge of the river or stream within or downstream from the area of development and endanger the health, safety, or welfare of the public or riparian owners during flooding.

(E) **Streams.** A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria, the development or subdivision of lands on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream, and will not endanger the health, safety, or welfare of the public or of adjoining landowners.

(F) **Shorelines.** A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other criteria, the development or subdivision of shorelines must of necessity be located on a shoreline in order to fulfill the purpose of the development or subdivision, and the development or subdivision will, insofar as possible and reasonable in light of its purpose:

- (i) retain the shoreline and the waters in their natural condition,
- (ii) allow continued access to the waters and the recreational opportunities provided by the waters,
- (iii) retain or provide vegetation which will screen the development or subdivision from the waters, and
- (iv) stabilize the bank from erosion, as necessary, with vegetation cover.

(G) **Wetlands.** A permit will be granted whenever it is demonstrated by the applicant, in addition to other criteria, that the development or subdivision will not violate the rules of the water resources board, as adopted under section 905(9) of this title, relating to significant wetlands.

(4) Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.

(8) Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas.

(A) **Necessary wildlife habitat and endangered species.** A permit will not be granted if it is demonstrated by any party opposing the applicant that a development or subdivision will destroy or significantly imperil necessary wildlife habitat or any endangered species, and

- (i) the economic, social, cultural, recreational, or other benefit to the public from the development or subdivision will not outweigh the economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat or species, or
- (ii) all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the habitat or species have not been or will not continue to be applied, or
- (iii) a reasonable acceptable alternative site is owned or controlled by the applicant which would allow the development or subdivision to fulfill its intended purpose.

(9) Is in conformance with a duly adopted capability and development plan, and land use plan when adopted.

(K) **Development affecting public investments.** A permit will be granted for the development or subdivision of lands adjacent to governmental and public utility facilities, services, and lands, including, but not limited to, highways, airports, waste disposal facilities, office and maintenance buildings, fire and police stations, universities, schools, hospitals, prisons, jails, electric generating and transmission facilities, oil and gas pipe lines, parks, hiking trails and forest and game lands, when it is demonstrated that, in addition to all other applicable criteria, the development or subdivision will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facility, service, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to the facility, service, or lands.

Other Statutory References

10 V.S.A. § 6088. Burden of proof.

(a) The burden shall be on the applicant with respect to subdivisions (1), (2), (3), (4), (9) and (10) of section 6086(a) of this title.

(b) The burden shall be on any party opposing the applicant with respect to subdivisions (5) through (8) of section 6086(a) of this title to show an unreasonable or adverse effect. --1969, No. 250 (Adj. Sess.), § 13, eff. April 4, 1970.

30 V.S.A. § 248(b)(5). Agency role in Section 248 process.

(b)(5) with respect to an in-state facility, will not have an undue adverse effect on esthetics, historic sites, air and water purity, the natural environment and the public health and safety, with due consideration having been given to the criteria specified in 10 V.S.A. § 1424a(d) and § 6086(a)(1) through (8) and (9)(K).



DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**FLOOD HAZARD AREA AND RIVER CORRIDOR
PROTECTION PROCEDURE**

DECEMBER 5, 2014



**DEC Flood Hazard Area and River Corridor Protection Procedure
December 5, 2014**

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1.0 PURPOSE

- (a) The purpose of this Procedure is to provide how the Department of Environmental Conservation (DEC or Department):
- (1) defines and maps flood hazard areas and river corridors for the purposes of Act 250 (10 V.S.A. § 6001 *et seq.*), Section 248 (30 V.S.A. §§ 248 and 248a), administering the state Flood Hazard Area and River Corridor Rule (adopted October 24, 2014), and the regulation of berming (10 V.S.A. § 1021);
 - (2) shall involve municipalities, the Regional Planning Commissions, Act 250 District Commissions, affected parties, and the general public in the amendment and revision of flood hazard area maps under the National Flood Insurance Program (NFIP) and the update and administrative revision of river corridor maps through the DEC River Corridor Mapping Program.
 - (3) determines what constitutes an “Act 250 floodway”¹ as applied in the review of Act 250 and Section 248 applications under Criterion 1(D);
 - (4) makes recommendations to Act 250 District Commissions, the Natural Resources Board, the Public Service Board, municipalities, and other jurisdictions on the regulatory measures necessary to avoid the endangerment of the health, safety, and welfare of the public and of riparian owners during flooding²;
 - (5) makes recommendations to other programs, departments, and agencies of state government regarding activities proposed in flood hazard areas and river corridors; and
 - (6) has established floodplain and river corridor best management practices, including the provision of model flood hazard area and river corridor protection bylaws and ordinances for adoption by municipalities and regional planning commissions.
- (b) This Procedure replaces and supersedes the 2003 *Procedure on ANR Floodway Determinations in Act 250 Proceedings* and the 2009 *ANR Technical Guidance for Determining Floodway Limits Pursuant to Act 250 Criterion 1(D)*.
- (c) This Procedure may be amended by the Agency of Natural Resources (ANR or Agency) on its own motion or based upon input received from members of the public, municipalities and other governmental entities, and other affected persons.

¹ For Act 250 proceedings, the Secretary of Natural Resources determines what constitutes the floodway under Criterion 1(D) in consideration of inundation and erosion hazards. The state definition differs from the NFIP definition. See “Act 250 floodway” in the definitions section.

² Regulatory recommendations made according to this Procedure shall be consistent with the state Flood Hazard Area & River Corridor Rule adopted by the Agency of Natural Resources (ANR or Agency) to regulate activities exempt from municipal regulation.

2.0 STATUTORY AUTHORITY

Between 2010 and 2014, the Vermont General Assembly passed four separate Acts (110 (2010), 138 (2012), 16 (2013), and 107 (2014)) containing various sections directing the Agency to establish a *River Corridor and Floodplain Management Program* and to promote and encourage the identification and protection of flood hazard areas and river corridors to reduce flood and fluvial erosion hazards.

ANR has charged DEC with the responsibility to carry out this Procedure. DEC will work in cooperation with municipalities, the Regional Planning Commissions, and other state agencies to map flood hazard areas and river corridors to ensure compliance with NFIP and state law, and to meet the policy objectives of protecting the health, safety, and welfare of the general public from flood and fluvial erosion hazards (10 V.S.A. §§ 753, 1023, 1427, and 1428).

Specifically, the Procedure shall be applied to the following areas of Department authority:

- (1) **Stream Alteration Rule and Flood Hazard Area & River Corridor Rule.** The State must regulate the construction of berms in flood hazard areas and river corridors (10 V.S.A. § 1021(a)). Additionally, the State must regulate “activities exempt from municipal regulation” located within flood hazard areas or river corridors (10 V.S.A. § 754). To aid in meeting these statutory requirements, this Procedure defines the mapping methods used by the Federal Emergency Management Agency (FEMA) and DEC to delineate flood hazard areas and river corridors. The Procedure also details the process used to publically notice, amend, update, and revise such maps as required by 10 V.S.A. §§ 1422, 1427, and 1428.
- (2) **Act 250 Land Use and Section 248 Facilities.** Criterion 1(D) of Act 250 provides that:

A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria: (i) the development or subdivision of lands within a floodway will not restrict or divert the flow of flood waters, and endanger the health, safety and welfare of the public or of riparian owners during flooding; and (ii) the development or subdivision of lands within a floodway fringe will not significantly increase the peak discharge of the river or stream within or downstream from the area of development and endanger the health, safety, or welfare of the public or riparian owners during flooding. 10 V.S.A. § 6086(a)(1)(D).

Act 250 authorizes the Secretary of Natural Resources³ to make case-by-case determinations on what constitutes the Act 250 floodway and floodway fringe⁴ (10 V.S.A. § 6001(6) and (7)). The Vermont Supreme Court affirmed the Secretary’s authority to make floodway and floodway fringe determinations, without adopting an administrative rule, based on the plain language of the statute, which authorizes the Secretary to make such determinations (In re Woodford Packers, Inc., 2003 VT 60, ¶¶ 12-13, 175 Vt. 579, 830 A.2d 100).

Section 248 requires the Public Service Board to give “due consideration” to Criterion 1(D) of

³ The Secretary has delegated this authority to the Commissioner of the Department of Environmental Conservation.

⁴ Act 250 floodway fringe areas, by statute, are determined in consideration of upstream impoundments and flood control projects. Since watershed hydrology has not been modelled statewide to consider the hydrologic factors, including impoundments, which may influence flood elevations, the regulatory flood fringe areas as mapped by FEMA are used by DEC in lieu of a separately mapped Act 250 floodway fringe.

Act 250 (30 V.S.A. §§ 248(b)(5) and 248a(c)(1)).

This Procedure shall be used by DEC to make Act 250 floodway determinations and to make recommendations to the Natural Resources Board and Public Service Board concerning restrictions necessary to avoid the endangerment of the health, safety, and welfare of the public and riparian owners during flooding.

- (3) **Municipal Land Use Regulation.** The municipal and regional planning and development statutes mandate that if a municipality has adopted flood or other hazard area bylaws, no permit for new construction or substantial improvement⁵ shall be granted for work in a flood or other hazard area until the application is submitted to the Agency of Natural Resources or its designee⁶ 24 V.S.A. § 4424(a)(2)(D). This Procedure shall be used by DEC to provide advice on the delineation of flood hazard areas and river corridors protected in municipal bylaws, make recommendations to ensure development complies with the local bylaws, and promote the protection of floodplains and river corridors (24 V.S.A. § 4424(a)(2)(D); 10 V.S.A §§ 751 and 1421).
- (4) **Additional Authorities for the Procedure.** The Secretary shall develop and adopt best management practices for upland, river, and riparian activities conducted in river corridors, floodplains, and buffers (10 V.S.A. § 1427) as they relate to the management of flood and fluvial erosion hazards. The Secretary must assist regional planning (24 V.S.A. § 4348a(a)(11)) and municipal planning (24 V.S.A. § 4382(a)(12)) with the development of flood resiliency plans. The Secretary must also create and make available to municipalities model flood hazard and river corridor protection area bylaws and ordinances for potential adoption by municipalities pursuant to 10 V.S.A. §§ 755, 1427, and 1428; 24 V.S.A. chapter 117; and 24 V.S.A. § 2291. The best management practices section of this Procedure (Section 8.0) references model bylaw and ordinance provisions that exceed the minimum requirements for compliance with the NFIP to further minimize the risk of harm to life, property, and infrastructure from flooding as required by 10 V.S.A. §§ 755 and 1428.

3.0 INTRODUCTION

The Vermont State Hazard Mitigation Plan (2013) identifies flooding as the most common natural hazard event in Vermont and the damages from flooding are due to inundation and fluvial erosion. Flooding, exacerbated by debris and ice jams, historic channelization practice, or the plugging and failure of stream crossing structures can threaten public safety, stress emergency services, cause widespread damage and property loss, bring about socio-economic disruption, and result in significant recovery costs for property owners, municipalities, the State, and the federal government. Nationally, flooding accounts for more losses in lives and damages to property and crops than any other natural disaster.⁷

Inundation, or overbank flooding, occurs when a stream channel or waterbody receives a significant amount of rain or snow melt from its watershed, or when the stream channel is blocked by a debris or ice jam. The excess water spills out onto or inundates the floodplain. Fluvial (river-related) erosion occurs when stream power, due to the increased velocities and height of floodwaters, act on the bed and banks of a stream channel. The magnitude or rate of fluvial erosion is highly variable, ranging from a

⁵ The repairs to a substantially damaged structure as defined in 24 V.S.A. § 4303(8)(F).

⁶ The Agency has 30 days following notification to provide technical comments on a proposed permit for new construction or substantial improvement in a flood hazard area.

⁷ <http://vem.vermont.gov/sites/vem/files/HazMit%20Plan%202013.pdf>

gradual and continual process to an episodic or catastrophic event.

This Procedure establishes how DEC will make Act 250 and Section 248 Criterion 1(D) floodway determinations in consideration of inundation and fluvial erosion hazards for the protection of the health, safety, and welfare of the public. This Procedure is sufficiently detailed and includes references to technical documents throughout so that project designers may conduct inundation and erosion hazard analyses and factor Act 250 floodways into project planning, proposals, and design. Reference is made throughout to “*DEC technical guidance*,” which includes documents available on the Watershed Management Division web pages⁸ that have been produced to further detail the map production and update processes used to implement this Procedure and the state Flood Hazard Area & River Corridor Rule governing development exempt from municipal regulation.

DEC reviews the NFIP maps and flood insurance studies in the evaluation of proposed projects for inundation-related hazards. DEC’s evaluation of erosion hazards relies on the DEC river corridor maps and river sensitivity data based on fluvial geomorphic (or physical) assessment protocols, which are contained within the Phase I-III *Vermont Stream Geomorphic Assessment (SGA) Handbooks* (Handbooks, VT DEC, 2009). The *Handbooks* are available from the DEC Watershed Management Division.⁹

While NFIP and state river corridor maps are largely technical in nature, being based on hydraulic, hydrologic, and fluvial geomorphic processes, there is and must be recognition that these physical processes engender change. Therefore, map amendment, revision, and update sections of the Procedure describe how new data and emerging information may be used to refine or modify maps as site specific information becomes available. The Procedure outlines the FEMA map amendment and revision processes and offers specific opportunities to participate in the update and administrative revision of DEC’s river corridor maps with technical studies and municipal planning in conformance with a river corridor performance standard.

This Procedure describes opportunities to incorporate NFIP and DEC hazard area mapping and regulatory policy in local flood hazard bylaws and ordinances. Pursuant to 24 V.S.A. § 4382(a)(12), communities with town plans must incorporate local flood resiliency elements into their town plans. This Procedure helps to promote local flood resilience planning by providing consistent best management practices and land use regulations across jurisdictions consistent with state and municipal hazard mitigation goals.

Finally, in acknowledgement that floodplain and river corridor science and hazard mitigation policy have evolved at a fast pace, a set of terms are defined in Section 9.0 of this Procedure.

4.0 DEFINING AND MAPPING FLOOD HAZARD AREAS AND RIVER CORRIDORS

- (a) **Background.** Flood hazard areas and river corridors are defined and mapped to serve the vital function of dissipating hydraulic energy and providing storage or attenuation of water, sediment, and debris during flooding (consistent with the National Flood Insurance Act of 1968¹⁰). Incremental land use changes adjacent to stream channels can result in unintended deleterious consequences such as increases in the magnitude and volume of the effective discharge and channelization practices that heighten channel instability (Ward, 2002).

⁸ <http://www.watershedmanagement.vt.gov/rivers.htm>

⁹ Contact ANR at 802-828-1535 or visit http://www.watershedmanagement.vt.gov/rivers/htm/rv_geoassess.htm

¹⁰ 42 U.S.C. § 4001 *et seq.*

- (1) **Flood Hazard Areas.** Flood hazard areas are those areas of the floodplain that may be inundated by a range of flood frequencies up to and including the one percent annual chance flood (i.e. base flood). Flood hazard areas as referred to in this Procedure are shown on the most current, FEMA-published Flood Insurance Rate Maps (FIRM)¹¹ on which the NFIP is based. Where FEMA has conducted detailed engineering studies, the flood hazard area is subdivided into two distinct zones, the FEMA-designated floodway and flood fringe.

FEMA has published extensive information regarding the mapping of flood hazard areas. The FEMA Map Service Center¹² is the primary online repository of flood hazard area data and provides educational information and technical assistance.

Flood insurance studies and flood hazard area maps are on file in the municipal offices of communities participating in the NFIP. In addition, DEC maintains digital copies of the maps and studies and publishes the maps on the ANR Natural Resources Atlas (for those areas where FEMA has produced digital flood hazard area map layers).

Flood insurance study technical information detailing the engineering, scientific, and mapping specifications is available from the Regional Planning Commissions and on FEMA's webpage entitled *Guidelines and Standards for Flood Risk Analysis and Mapping*.¹³

- (2) **River Corridors.** River corridors encompass an area around and adjacent to the present channel where fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. River corridor widths are calculated to represent the narrowest band of valley bottom and riparian land necessary to accommodate the least erosive channel and floodplain geometry (i.e. equilibrium conditions) that would be created and maintained naturally within a given valley setting. This Procedure also outlines a process for recognizing certain rivers as highly managed or constrained by human structures and describes how a river corridor may be delineated to reflect the existence of modified streams, which are human constrained but exhibit vertical stability.

Concerns about channel stability and erosion hazards require a geomorphic (or physical) evaluation to characterize a stream's type, size, existing condition, and sensitivity to erosion hazards. A geomorphic evaluation recognizes the dynamic nature of streams¹⁴. Streams are constantly adjusting their form and configuration due to the influence of and variation in geology, climate, drainage area; the direction and gradient of flow in relation to a given valley slope; turbulence associated with curved flow; roughness of the bed and banks; erosion, transport, and deposition of sediment; the influx of debris; and the degree of floodplain access (Leopold, 1994, Thorne et al., 1997).

A river is considered stable, or in a state of "dynamic equilibrium," if it can adjust its channel geometry (width, depth, and slope) to efficiently discharge, transport, and store water, sedi-

¹¹ How to Read a FIRM Tutorial: <http://www.fema.gov/media-library/assets/documents/7984>

¹² FEMA Map Service Center: <https://msc.fema.gov/>, 877-336-2627

¹³ <http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping>

¹⁴ Commonly, the term "stream" refers to a smaller flowage, and the term "river" refers to a relatively larger flowage. There is no recognized size breakpoint in Vermont as to when a stream becomes a river. Vermont has chosen to use the term "river corridor" as a label for the corridors delineated around both streams and rivers. Throughout this Procedure the term "stream" is often used in describing the physical features and fluvial processes associated with river corridor management.

ment, and debris without significant aggradation or degradation (i.e., vertical instability) of its bed (Leopold, 1994, Rosgen, 1996). A river requires a sufficient corridor to accommodate equilibrium conditions and the channel adjustments that occur when channel geometry is changing vertically and laterally to achieve equilibrium (Brierley and Fryirs, 2005). Failure to provide a sufficient corridor will constrain the river from achieving the equilibrium condition. Thus, managing a river corridor to accommodate equilibrium and associated channel adjustment processes will serve to reduce damages to existing structures and property, avoid new damages, protect public safety, achieve the general health of the river system, and avoid the high cost to install and maintain channelization practices (Piegay, 2005). Precluding the use of channelization practices, in turn, will avoid the unintended consequences of transferring bank erosion and other damaging effects from concentrated flow and vertical channel adjustments to other locations along the river (Brookes, 1988; Huggett, 2003; Brierley and Fryirs, 2005).

Minimizing vertical channel instability is particularly crucial to maintaining or restoring equilibrium stream conditions and minimizing erosion during floods. Vertical channel instability may be initiated by an increase in scour of the stream bed and banks and subsequent sediment transport due to: (A) increasing runoff volume; (B) confining and/or shortening the stream channel thereby increasing its slope; or (C) restricting stream access to the floodplain. Therefore, consistent with the Performance Standards established in the State Stream Alteration Rule¹⁵, this Procedure seeks to provide an adequate floodplain area to accommodate channel adjustment processes necessary to achieve and maintain vertical stability in the longitudinal profile over time. The meander belt represents, on average, the minimum amount of floodplain necessary to accomplish vertical stability (Ward et al., 2002, Ward, 2007). The river corridor includes space for both the meander belt and a riparian buffer.

Over 1,500 miles of Vermont streams have undergone detailed, field-based study through completed stream geomorphic assessments (SGA). Based on an analysis of this data, the Agency has divided the vast network of Vermont's perennial rivers and streams¹⁶ into those streams which warrant geomorphic-based river corridor delineations, and those streams which, because of their low sensitivity, small watershed size, steeper valley slope, and/or valley confinement, may attain their least erosive form within an area delineated as a simple setback from the top of each streambank.

- (3) **Meander Belt Component of the River Corridor.** The rationale for defining and managing river corridors is the strong association between stable, sustainable fluvial processes and minimal conflicts with human investments with an unconstrained river corridor which provides a meander belt width dimension (Thorne et al., 1997, Thorne, 1998). For streams in unconfined alluvial valley settings, the average meander belt width is approximately six channel widths wide (Williams, 1986; Vermont SGA data¹⁷). The meander belt extends laterally across the river valley from outside meander bend to outside meander bend, thereby encompassing the natural plan form variability of the stream channel (Figure 1), which maintains the equilibrium slope and minimizes vertical channel instability over time along the extent of

¹⁵ The Equilibrium and Connectivity Performance Standards are found in §27-402 of the State Stream Alteration Rule and further described in the Standard River Management Principles and Practices. Both documents are available at <http://www.watershedmanagement.vt.gov/rivers.htm>.

¹⁶ Based on the Vermont Hydrography Dataset (1:5000).

¹⁷ See Vermont data in the *DEC technical guidance*.

the stream reach (Riley, 1998). Ideally, the meander belt can be achieved by three channel widths either side of a meander centerline.

The meander centerline consists of a line drawn connecting the cross-over points between the meander bendways, or in a straight channel, points along the center of the channel spaced every seven to ten channel widths. Where feasible, the channel width used in calculating the meander belt width should be that associated with equilibrium conditions (i.e., the **reference channel**) for the reach in question. The reference channel condition, however, may differ from the **existing channel** condition.¹⁸ If a significant departure from equilibrium is known or is indeterminate, the reference channel width, as calculated using the Vermont Hydraulic Geometry Curves¹⁹, is used. Otherwise, DEC uses the existing channel width. Channel width is equal to the bankfull width as referred to in the *Phase I-III Vermont Stream Geomorphic Assessment Handbooks*.

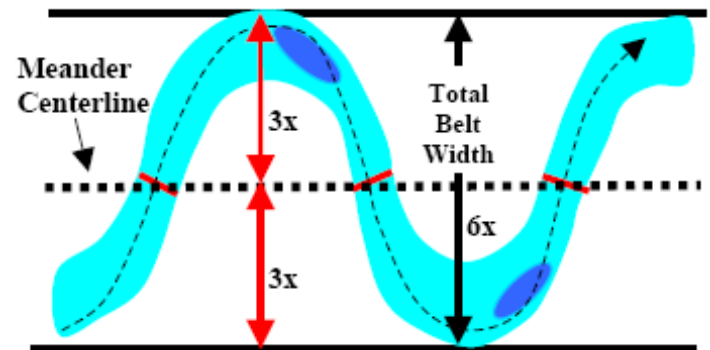


Figure 1. Depiction of Meander Centerline and Belt Width

Valley topography or other constraints (e.g., bedrock and exposed ledge) may prohibit channel plan form adjustment, such that the full six channel widths can only be achieved by providing more width on one side of the stream than the other.²⁰ Also, note that many of Vermont's streams have been straightened, channelized, or have become incised (deepened), losing access to their historic floodplains. The lateral extent of present-day meanders in this case may be narrower than they would be under equilibrium conditions. These streams are undergoing channel evolution or the processes of erosion and deposition to adjust and re-establish a stable channel slope.²¹ Any river corridor which considers erosion hazards should accommodate both existing meanders and the meander belt width associated with equilibrium in order to support these fluvial processes (Ward, 2007).

- (4) **Riparian Buffer Component of the River Corridor.** River corridors are defined and mapped with an additional 50 foot setback on either side of the meander belt to allow space for the establishment and maintenance of a vegetated buffer when the equilibrium slope and planform are achieved. The literature makes reference to appropriate buffer widths necessary to serve the different riparian functions important to society. The buffer component in this Procedure is established for the functions of bank stability and slowing flood water velocities in the near-bank region²². The Vermont General Assembly specifically called for the inclu-

¹⁸ Refer to the Stream Geomorphic Assessment, *Program Introduction*, pg. 7 for a more detailed discussion of reference and existing stream types; see footnote 5 above for a link to the ANR website.

¹⁹ See Hydraulic Geometry Curves at: http://www.watershedmanagement.vt.gov/rivers/htm/rv_geoassess.htm.

²⁰ For more discussion of the delineation of the meander centerline and the belt width, refer to Appendix E of the *Phase I-III Vermont Stream Geomorphic Assessment Handbooks* and other DEC technical guidance.

²¹ Refer to the State Rivers Program's website to examine fluvial geomorphic data stored on the Data Management System or via Map Viewer: <http://www.watershedmanagement.vt.gov/rivers.htm>

²² Woody vegetation plays a critical role in binding and stabilizing streambank soils and providing roughness to moderated flood flow velocities. The widths of vegetated buffer that effectively minimize streambank instability are reported between 10 and 30 meters or roughly between 30 and 100 feet (Fisher, R.A., and Fischenich, J.C., 2000; Wenger, S., 1999; PADEP, 2010; Brierley, G.J., and K.A. Fryirs, 2005; Castelle, A.J., et al., 1994;

sion of buffers within the river corridor (10 V.S.A. § 1422(12)). Vegetated buffers are a least cost, self-maintaining practice to provide natural boundary conditions and stream bank resistance against erosion and moderate lateral channel migration. Providing space for these functions is consistent with the goal of achieving and maintaining least-erosive, equilibrium conditions, thereby minimizing the risk of harm to life, property, and infrastructure from flooding.

- (b) **Procedure for Delineating the Meander Belt and Buffer Components of the River Corridor.** The following steps describe how the meander belt width and other valley characteristics shall be used to ascertain the meander belt and buffer components of a river corridor. Variables include: the inherent stability of the stream channel; its sensitivity to erosion hazards; the presence of natural or significant human-created confining features; the evidence or likelihood of valley side slope failure; and the presence of hydrologically-connected features within the river valley.
- (1) **Streams with a Drainage of Less than or Equal to Two Square Miles.** On the base layer of the Statewide River Corridor Map Layer, small streams shall be assigned a simple setback of at least 50 feet on either side of the stream, measured horizontally and perpendicularly from the top of each streambank. A corridor may be delimited for a small stream during a map update, if field data verifies a moderate to high sensitivity;
 - (2) **Very Low and Low Sensitivity Streams.** The meander belt width shall be equal to the existing channel width, if the stream is a bedrock or boulder substrate reference stream type (very low to low sensitivity). For mapping purposes, the meander belt shall be delimited at the top of the stream bank of the existing channel or a minimum of a half channel width on either side of the meander centerline, whichever provides the greater lateral extension on either side of the meander belt;
 - (3) **Moderately Sensitive Streams (with a drainage greater than 2 square miles).** The meander belt width shall be equal to a minimum of four channel widths, if the stream (i.e., at the reach scale) is a steep to moderate gradient (greater than 2 percent gradient) reference stream type, and the existing stream type does not represent a stream type departure. The meander belt is delineated with a minimum of two channel widths on either side of the meander centerline; or,
 - (4) **Highly and Extremely Sensitive Streams (with a drainage greater than 2 square miles).** The meander belt width shall be equal to a minimum of six channel widths, if the stream is a gentle gradient or braided reference stream type or if the stream is in a moderate gradient valley setting, but the existing stream type represents a stream type departure.²³ For stream types that are in either very low gradient settings or very high deposition areas, the meander belt width multiplier may be increased up to eight times the channel width. The meander belt is delineated with a minimum of three to four channel widths on either side of the meander centerline. Within zones of extremely high and active deposition (e.g., active alluvial fans), the river corridor shall be delineated to include all recent channels and the entire zone of active depositional process; and,

Langendoen, E.J. et al, 2006 and 2012; Mitchell, E.R. et al., 2004; and Rosgen, D. 2006).

²³ A stream type departure may be represented by a shift of stream type or a **major** vertical stream adjustment (degradation and/or aggradation); see Steps 2.14 (pp. 34-37) in the *Stream Geomorphic Assessment Handbooks*, Phase 2: http://watershedmanagement.vt.gov/rivers/docs/assessmenthandbooks/rv_weblinkpgphase2.pdf

- (5) **Natural or Human-Imposed Confining Features.** Where the meander belt extends a certain distance beyond the toe of the valley wall (including bedrock outcrops or ledge that limit river movement), the corridor is truncated at the valley toe, and that truncated distance is used to extend the meander belt laterally on the opposite side, to provide a total belt width as described in Sections 4(b)(2)-(4) above (Figure 3). This extension may, in some cases, be limited by the valley wall on the opposite side of the stream as well; in which case the meander belt extends from the toe of one valley wall to the toe of the other and will be narrower than the multiple of channel widths prescribed above.

If the initial meander belt delineation extends beyond an engineered levee, railroad, or federal aid highway²⁴, the full river corridor shall be measured from the embankment toe of that infrastructure and extend laterally on the opposite side. This shift of the river corridor acknowledges the alignment of the road has been structurally maintained over time in those locations. The river corridor is shifted to optimize attainment of equilibrium conditions and the reduction of flood velocities and erosion potential within the stream reach. Adjustment of the river corridor for road infrastructure does not imply that adjacent road infrastructure is outside of an area subject to fluvial erosion hazards; on the contrary, infrastructure or other improvements directly abutting the boundaries of a river meander belt may be as, or more, vulnerable to fluvial erosion as infrastructure within the corridor²⁵.

The Secretary may designate a “modified stream” where existing developments have modified the watershed, channel, valley, and/or floodplain and effectively constrained stream adjustments that would establish a more natural equilibrium condition. To make such a designation the Secretary shall determine that the river segment or reach has become vertically stable (i.e., the stream bed is not actively aggrading or degrading) and shall alter the meander belt delineation according to the existing, modified sensitivity.

- (6) **Streams Subject to Bank or Slope Failure.** Erosion hazards outside the meander belt may also exist. If field evidence indicates bank erosion and/or large, mass wasting failures along the valley wall exist or would exist concurrent with the edge of the calculated meander belt, an additional setback to the top of the immediately adjacent erodible side-slope²⁶ (that has a toe that is less than one channel width from the top of the stream bank as depicted in Figure 3) or slope stability allowance, as determined by a geo-technical analysis, shall be added to the meander belt to accommodate stable bank slopes (see River Corridor Map Amendment described in Section 5(c)(4)(D)(iv) below);

²⁴ Federal aid highways are a subset of the Vermont roads for which the Vermont Agency of Transportation uses federal aid and include any roads with a functional class designation of 1, 2, 4, 6, 7, 11, 12, 14, 16, or 17.

²⁵ The corridor is shifted to achieve the stabilizing effect of full or partial expression of meanders away from the road. Over time, this will reduce erosion hazard to both the road and downstream properties. Alternatively, if the corridor was not shifted and new development was placed opposite the highway, the river would become pinched between the highway and the new structures and become even more hazardous. The fact that ANR has placed river corridors at the edge of state highways does not change the State’s commitment to transportation corridor planning that will examine erosion hazards where roads and rivers meet. Alternatives, including the possible movement of a state highway, will be examined based on the benefits and costs and the opportunity to mitigate hazards system-wide within a watershed. If and when a state highway is moved, ANR will review and, where possible, realign the meander belt consistent with Section 4(a)(3) above. Importantly, this same planning process is available to municipalities who may wish to shift corridors off certain town highways or other public infrastructure important to the community as part of the corridor map revision process.

²⁶ In this context, an adjacent side slope is a non-bedrock terrace or hillside slope, as described in the ANR Stream Geomorphic Assessment Phase 2 Protocols (Step 1.4).

- (7) **Natural or Manmade Depressions Adjacent to Streams.** If field evidence indicates features such as natural or human-created depressions and old channels adjacent to the stream are deeper than the stage of the annual flood, the meander belt may extend laterally to encompass those features in recognition of their potential to be captured by the river or contribute to a channel avulsion (relocation) during a flood;
- (8) **The Riparian Buffer Component.** All river corridors, except small streams with a drainage of less than or equal to two square miles, shall include a 50 foot setback as an extension on either side of the meander belt. For small streams, the 50 foot setback from each bank described in Section 4(b)(1) above is to serve both meander and riparian buffer functions. The buffer components may extend past the mapped line of a naturally confining feature (e.g., the toe of the natural valley wall), but shall not go beyond the boundary of an engineered levee, railroad, or federal aid highway (see Figure 2).

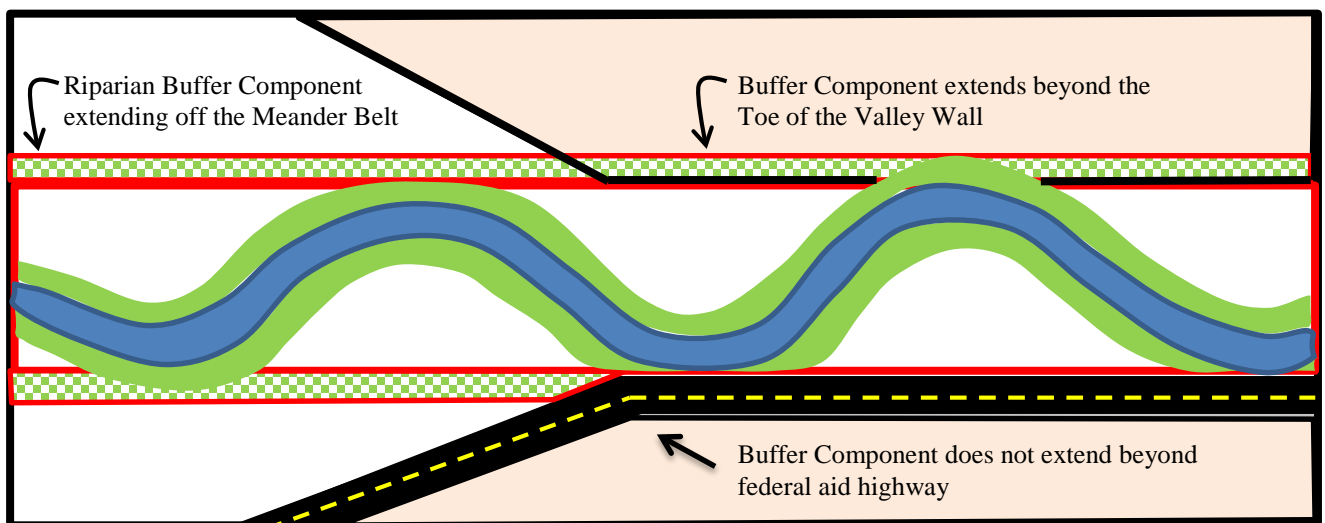


Figure 2. Showing the (green cross-hatched) riparian buffer component of the river corridor, as an extension off the meander belt, to accommodate the actual buffers (green bands) when the stream meanders are at their equilibrium amplitude. Buffer components are drawn beyond natural confining features such as the valley wall but not beyond engineered levees, railroads, or federal aid highways.

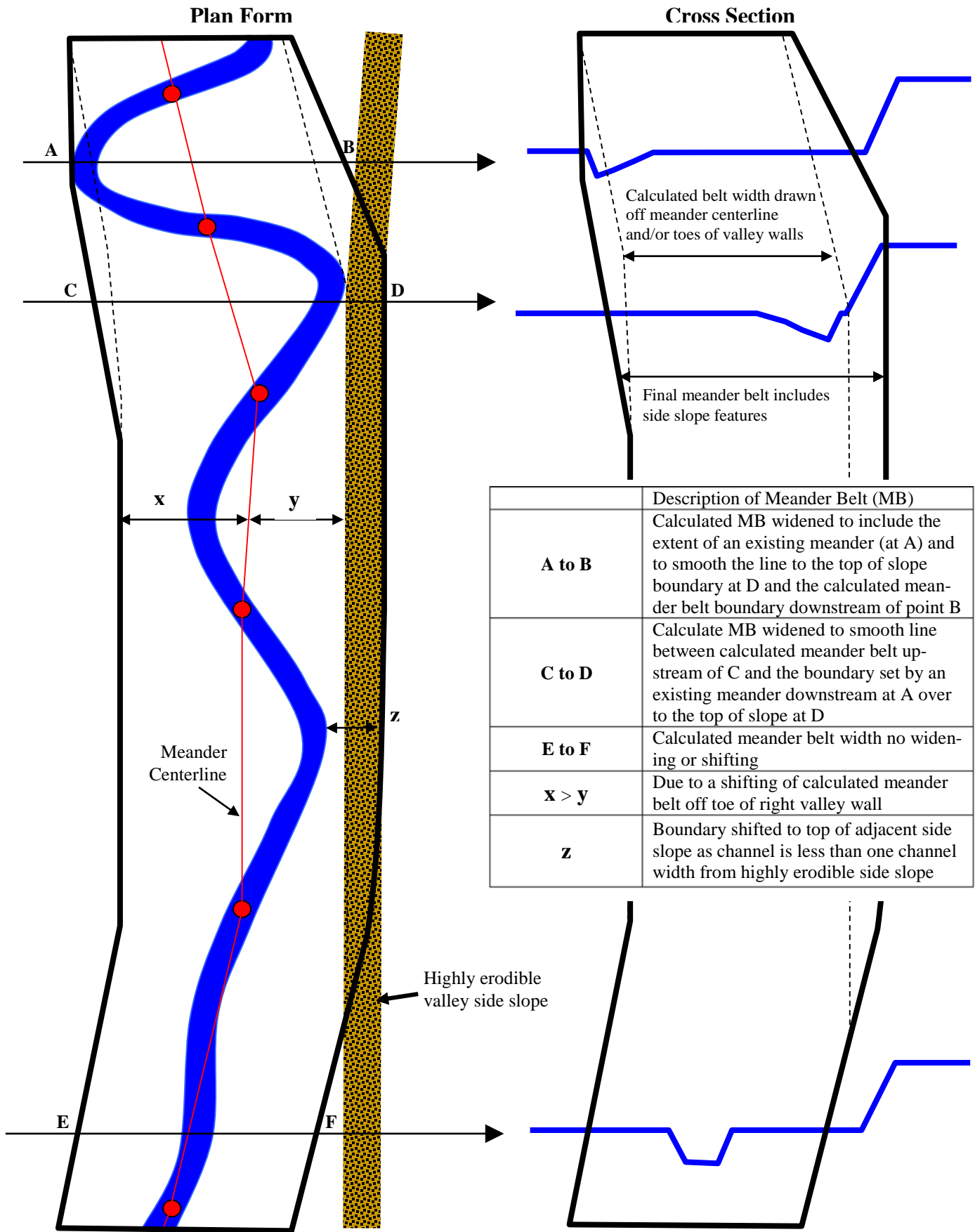


Figure 3. Planform and cross-sectional views of the meander belts used in constructing River Corridors and River Corridor Protection Areas (RCPA) based on a highly sensitive river type adjacent to a highly erodible valley side slope.

(c) **Procedure for the Statewide River Corridor Map Layer.**

- (1) Rivers and streams, with a drainage area greater than two square miles, shall have drawn corridors based on the criteria for stream sensitivity, riparian buffer setbacks, and confining features established in Section 4(b).
- (2) A Statewide River Corridor Map Layer shall depict or indicate the following map categories:
 - (A) simple top-of-bank setbacks indicated for streams with a drainage area of less than or equal to two square miles;
 - (B) river corridors drawn using hydrographic and topographic data and human-imposed confining features as defined in Section 4(b)(7) above (hereafter referred to as the *base layer or base map*); and
 - (C) river corridors drawn as updates or administrative revisions to the base layer based on new data, detailed field studies, or municipal planning at the reach scale or the watershed scale.
- (3) The river corridor base layer shall be ArcGIS derived from analysis of topographic data to calculate valley geometry (slope and width) and an analysis of hydrographic data to calculate hydraulic geometry and meander belt widths. Human-imposed confining features, including railroads and federal aid highways, were established as artificial valley walls and used to delineate the location of the meander belt on the base layer. As needed, the base layer may be field-verified using the principles of fluvial geomorphology as documented in the *DEC technical guidance*.

5.0 APPLICABILITY, AMENDMENT, UPDATE, AND REVISION OF MAPS

- (a) **Introduction.** Flood hazard area maps are developed under the auspices of the NFIP as administered by FEMA. By contrast, river corridor maps are developed by the DEC River Corridor and Floodplain Management Program. The following sections describe how the two map types become applicable in this Department Procedure and how they may be revised, amended, and updated. As a program unique to the state of Vermont, this Procedure is necessarily more detailed with respect to river corridors.

(b) **Flood Hazard Area Maps.**

(1) **Applicable Maps.**

The applicable flood hazard area maps shall be those delineated in a manner consistent with the federal definition of “*area of special flood hazard*” (44 C.F.R § 59.1), in other words, that land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year (10 V.S.A. § 752(3)).

(2) **Revision.**

(A) Requests for revisions to flood hazard area maps must be made through FEMA’s Letter of Map Revision (LOMR) process. A LOMR is FEMA’s modification to an effective

NFIP flood hazard area map.²⁷

- (B) All requests for changes to effective maps, other than those initiated by FEMA, must be made to FEMA in writing by the chief executive officer (CEO) of the community or an official designated by the CEO. Pursuant to 44 C.F.R. Part 65, LOMRs must be noted on the community's master flood map and filed by panel number in an accessible location. All LOMR requirements are found at 44 C.F.R. Part 65- *Identification and Mapping of Special Flood Hazard Areas*.
- (C) While DEC may provide information and technical assistance on LOMR requirements, application must be made directly to FEMA. More information on the revision process is available by contacting the FEMA Map Information Exchange (FMIX) at 1-877-336-2627.

(3) **Amendment.**

- (A) Amendment to flood hazard areas must be made through FEMA's Letter of Map Amendment (LOMA) process. A LOMA is an official amendment, by letter, to an effective NFIP flood hazard area map. A LOMA establishes a property's location in relation to the flood hazard area. FEMA typically issues LOMAs when a property has been inadvertently mapped as being in the flood hazard area and, in actuality, is located on natural high ground above the base flood elevation.
- (B) Pursuant to 44 C.F.R. Part 70, LOMAs must be noted on the community's master flood map and filed by panel number in an accessible location. All LOMA requirements are found in 44 C.F.R. Part 70 – *Procedure for Map Correction*.
- (C) While DEC may provide information and technical assistance on LOMA requirements, application must be made directly to FEMA. More information on the amendment process is available by contacting the FEMA Map Information Exchange (FMIX) at 1-877-336-2627.

(c) **River Corridor Maps.**

(1) **Applicable Maps.**

- (A) The Statewide River Corridor Map Layer and best available stream geomorphic data not yet incorporated into the Statewide Layer, developed pursuant to Sections 4(b) and (c) above, shall be the applicable ANR river corridor maps for purpose of implementing this Procedure.
- (B) The State shall publish and maintain the Statewide River Corridor Map Layer on the ANR Natural Resource Atlas.

²⁷ LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing FEMA-designated floodway, the effective base flood elevations (BFEs), or the flood hazard area. The LOMR officially revises the flood hazard area, and sometimes the flood insurance study (FIS) report, and when appropriate, includes a description of the modifications. The LOMR is generally accompanied by an annotated copy of the affected portions of the flood hazard area map or FIS report.

(2) **Map Updates.**

(A) “Updates” are technical changes which fall into the categories of “minor updates” and “major updates.” “Major updates” involve the collection of data and analysis to reevaluate stream sensitivity type on which to derive specific meander belt or buffer widths. “Minor updates” include the correction of remnants from the mapping process, computer mapping errors, and single adjustments to factor in stream geomorphic features documented with data (e.g., unmapped bedrock outcrop) unavailable when the base layer was developed. Multiple “updates” (minor and/or major) may occur when new reach- or watershed-scale data becomes available.

(B) Major updates may involve the analysis of:

- (1) Watershed Hydrologic Modifications including those natural processes and human activities or facilities which result in a significant **decrease** in peak discharges (e.g., flood control facilities); or significant watershed hydrologic modifications associated with, for example, land use conversion which raises peak discharges, as these activities serve to **increase** stream power, the level of erosion hazard, and stream sensitivity.
- (2) Slope Modifications Related to Sediment Transport and Sediment Regime Changes. Meander belt modelling captures a range of watershed factors and natural channel conditions and enables the State to cost-effectively implement this Procedure statewide. However, project proponents and their consultants may propose a stream-specific equilibrium slope assessment for a geomorphically-defined stream reach which, if approved, could be conducted and provide data to calculate a stream reach-specific meander belt width. Updates delimiting vertically stable “modified streams” (designated as moderate to low sensitivity) would fall into this category. A river corridor map amendment in consideration of a modified stream shall be limited to situations where the physical human constraints are so pervasive as to effectively preclude any expectation of re-establishing natural equilibrium conditions, and where active erosion hazards (vertical channel adjustments), upstream and downstream of the human-constrained reach, are low or have been mitigated.
- (3) Boundary Conditions. The resistance of the channel boundary materials to the erosive power of the stream as influenced by local conditions such as material type, size, and gradation; cohesiveness; and vegetation, or lack thereof, may significantly influence the anticipated range of channel adjustment and may therefore increase or decrease the level of erosion hazard, channel sensitivity, and river corridor extent. The role of human constructed channel stabilization treatments (such as rock rip rap) with respect to constraining channel adjustments, particularly in the absence of other improvements, will not be considered, because the typical long-term response to human-placed bank revetments is a higher rate of channel adjustment and an increased erosion hazard.
- (4) Bank and Valley Side-Slope Failure / River-Associated Landslide Hazard. There are stream bank, landslide, and other erosion hazards that may exist at or beyond the boundaries of the meander belt. The river corridor may be extended beyond the top of the banks, slopes, or meander belt if there is evidence of active toe erosion or historic mass wasting failures. Determining an acceptable setback allowance to mitigate a slope or landslide hazard by evaluating the erosion rate of an exposed and actively

eroding terrace or high bank does not capture the degree to which erosion could occur (Rapp, 2003). A Slope Stability Allowance (SSA) is an additional setback distance from the top-of-bank or top-of-adjacent side slope which may be added to the meander belt to mitigate damages and public safety concerns with respect to potential slope failure or landslide hazard (Table 1). The SSA is principally a function of the local soils and geologic materials present on the slope adjacent to the stream where the proposed development is to occur as well as any aggravating factors that could contribute to slope failure such as the incised or entrenched stream conditions, existing and proposed hydrologic conditions from groundwater, or stormwater runoff (Simon, 2003).

Table 1. Slope Stability Allowance (SSA)

Condition	Local Conditions of Side Slope	Options
1	Bedrock present in the floodprone area of the side slope (to an elevation 2X maximum channel depth).	Toe of the side slope represents the boundary of the River Corridor
2	Normal surficial materials present ²⁸	Calculate SSA as 2:1 slope measured from the toe of the slope ²⁹ or conduct a geotechnical analysis
3	Champlain lowland clayey surficial materials present ³⁰	Calculate SSA as 3:1 slope measured from the toe of the slope or conduct a geotechnical analysis

Note that a slope stability analysis must demonstrate that the proposed development will not require channelization practices, such as rock armoring, to maintain a stable slope.

(3) **Assisting Municipalities and Regional Planning Commissions with Administrative Revisions, Map Updates, and the Local Adoption Process.**

- (A) The Agency, after notifying and seeking coordination with the Regional Planning Commission, shall assist any municipality expressing an interest in flood resiliency planning and the adoption of river corridor or river corridor protection area bylaws and maps. During the local planning process, the Agency will present the Statewide River Corridor Map Layer and any other available assessment data and explain the opportunities for administrative revisions and updates to the Statewide River Corridor Map Layer.
- (B) DEC shall, upon request, provide municipalities with maps depicting “river corridor protection areas” (10 V.S.A. §1422(19)) comprised only of the meander belt, without the 50 foot riparian buffer component. All streams on a “protection area” map shall be indicated or depicted with a corridor that is at least as wide as the small stream setback described in Section 4(b)(1).
- (C) **Administrative Revisions.** Administrative revisions are river corridor delineation adjustments made at the request of the municipal legislative body to facilitate infill and redevelopment away from undeveloped river corridors and protect public infrastructure. The

²⁸ “Normal surficial materials” include alluvium, ice-contact deposits, and glacio-lacustrine materials. See Appendix F in *SGA Handbooks* for more information and sources of geologic information in Vermont.

²⁹ Measure the setback, horizontally from the toe of the slope, at a distance two times the vertical height of the slope.

³⁰ Champlain lowland clayey materials include locations where glacio-marine deposits exist.

Agency shall make those administrative revisions to the river corridor or river corridor protection area on the Statewide River Corridor Map Layer that are consistent with this Procedure prior to municipal adoption. Examples of administrative revisions consistent with this Procedure include:

- (i) adjusting the river corridor within all or a portion of a designated center where there is a concentration of existing encroachments and, wherever possible, away from known repetitive loss areas, and high to extremely sensitive and actively adjusting river reaches; and
 - (ii) shifting the river corridor to the side of adjacent transportation or other public infrastructure critical to the community to achieve a significantly greater river meander belt width and reduce erosion hazards over time, acknowledging structures immediately adjacent to a meander belt are as, or more, vulnerable to fluvial erosion than infrastructure within the corridor.
- (C) During the municipal planning and map review process, DEC and other parties may also bring forth any minor or major map updates that may be applicable, for example, adding known flood prone or erosion hazard areas, such as landslides or alluvial fans.
- (D) When a municipal legislative body seeks administrative revisions and updates to the river corridor or river corridor protection area, consistent with this Procedure, the Agency shall update the Statewide River Corridor Map Layer following the public notice process in Section 5(c)(4)(D) above. Necessary administrative revisions must be finalized on the Statewide River Corridor Map Layer at the time of an Act 250 project application for DEC to consider them during Act 250 project reviews.
- (E) Where a municipality elects to adopt an administratively revised or updated river corridor protection area, DEC shall assist the municipality and Regional Planning Commission in maintaining these locally adopted maps, particularly when further updates are made to the Statewide River Corridor Map Layer.
- (F) While the Agency will promote river corridor mapping and bylaw adoption to achieve consistency between local, regional, and state objectives for fluvial erosion hazard reduction, the Agency does not have the authority to mandate municipal adoption of river corridor or river corridor protection area bylaws and maps or limit municipal adoption of administrative revisions to those outlined in this Procedure.

(4) **Map Update Process.**

- (A) The Agency may incorporate minor and major updates and administrative revisions on all or portions of the Statewide River Corridor Map Layer as needed (e.g., following major floods or when new field studies are available) and on a published schedule to incorporate those updates and administrative revisions consistent with this Procedure and as submitted by municipalities and other interested parties.
- (B) The Department shall file all minor and major updates and administrative revisions by stream reach and verify receipt of each map update and revision request along with information as to when and how the DEC will review the map update or revision.

- (C) Updates addressing reach-scale technical adjustments, such as meander centerline and valley wall adjustments, or remnants of the ArcGIS mapping process will be made at the discretion of the DEC River Scientists and posted on the Statewide River Corridor Map Layer with notification to the affected municipalities, the Regional Planning Commissions, and the Act 250 District Commissions.
- (D) Major updates and administrative revisions shall be noticed on the DEC web pages for public review and comment for a 30-day period. The Agency shall provide maps to and solicit comments from the affected municipalities, the Regional Planning Commissions, the Act 250 District Commissions, and other interested parties and shall provide a response summary and notify these jurisdictions when the State has applied updates and revisions to the Statewide River Corridor Map Layer.
- (E) Applications for Major Project-Related Map Updates.
 - i. Applications for major project-related map updates involving meander belt delineation based on sediment transport modelling and technical evaluations of stream reach sensitivity must be accompanied by a qualified consultant's rationale using qualified data such as those assessments outlined in the Agency's Phase 2 and Phase 3 geomorphic assessment (SGA) protocols. Applications for major updates must document stream sensitivity type, and may be required to ascertain the equilibrium channel slope associated with an even distribution of stream power, sediment continuity, and vertical channel stability. Assessments must be based on methods outlined in *DEC technical guidance* or another prior-approved methodology.
 - ii. The applicant shall be responsible for conducting the additional assessment and submitting proposed major map updates, with applicable fees, to DEC, with certification that copies were provided to the local governing body, the Regional Planning Commission(s), and the Act 250 District Commissions.

6.0 ACT 250/SECTION 248 FLOODWAY DETERMINATIONS

- (a) The goal of Act 250 Criterion 1(D) is to promote the health, safety, and welfare of the public. 10 V.S.A. § 6086(a)(1)(D). The Secretary has determined that the Act 250 floodway includes areas associated with both flood inundation and fluvial erosion hazards. The Act 250 floodway limit is determined by considering the inundation hazards as delineated by the NFIP inundation maps (Flood Insurance Rate Maps, or FIRMs) **and** fluvial erosion hazards as delineated in river corridor maps.
- (b) For the purpose of determining the Act 250 floodway under 10 V.S.A. § 6001(6), and the impacts of a project proposed to be built in an Act 250 floodway under Criterion 1(D), DEC shall use the applicable maps defined in Section 5 of this Procedure for the:
 - (1) Flood hazard area as the Act 250 inundation floodway; and
 - (2) River corridor as the Act 250 erosion hazard floodway.
- (c) For the purposes of determining the Act 250 floodway fringe under 10 V.S.A. § 6001(7), DEC shall use the mapped FEMA-designated flood fringe.

- (d) The flood hazard area includes the regulatory floodway and the flood fringe as mapped by the FEMA. River corridors are distinct from the NFIP inundation-based flood hazard areas mapped on the FIRMs and may apply to lands that lie outside of the regulatory inundation floodplain. Upon comparison of the two determinations (NFIP and DEC river corridors) the Act 250 floodway limit shall be whichever laterally extends farther from the stream.
- (e) Where available, base flood elevations and FEMA-designated floodway limits provided by the NFIP and in the most current flood insurance studies and accompanying maps shall be used to administer this Procedure. Where an approximate flood hazard area has been delineated on rivers for which base flood elevations and FEMA-designated floodway limits *have not* been provided by the NFIP, or on lakes for which base flood elevations have not been provided by NFIP, it shall be the applicant's responsibility to develop the necessary data. Where available, the applicant shall use data provided by FEMA or state or federal agencies.
- (f) For proposals along rivers and streams with watershed areas greater than two square miles, and where a flood hazard area has not been mapped, the Secretary has the discretion to require base flood elevation and floodway data if documented flood damages or flood history exists indicating the risk of inundation hazards outside of the river corridor.
- (g) If a project satisfies this Procedure and Act 250 Criterion 1(D), it must still meet all the other Act 250 criteria, including Criterion 1(E) that may, for example, require the protection of riparian buffers³¹ greater than 50 feet.
- (h) In making Act 250 and Section 248 Criterion 1(D) floodway determinations and recommendations and under the State Flood Hazard Area and River Corridor Rule, the Secretary shall include the riparian buffer component as an extension to the meander belt component, that is revised and updated on the Statewide River Corridor Map Layer to match a municipally adopted river corridor protection area, if such a buffer component is not precluded by other existing human constraints.
- (i) The Secretary shall apply this section when making recommendations to the Public Service Board regarding projects requiring permits under 30 V.S.A. §§ 248 or 248a.

7.0 DEC REGULATORY RECOMMENDATIONS

DEC shall make recommendations to the Act 250 District Commissions, the Natural Resources Board, the Public Service Board, municipalities, and other state regulatory programs according to the following standards.

- (a) **Projects Requiring an Act 250 Permit or Section 248 Certificate of Public Good.** If a project requiring Act 250/Section 248 review is proposed within the flood hazard area or river corridor (i.e. the Act 250 floodway), DEC shall recommend that the project meet the No Adverse Impact Standard to avoid restricting or diverting the flow of flood waters, and endangering the health, safety, and welfare of the public or of riparian owners during flooding.

³¹ For the purposes of Act 250 and Section 248, the Agency will make an explicit floodway determination and a separate vegetated buffer recommendation in accordance with the ANR Riparian Buffer Guidance (2005).

(1) **No Adverse Impact Standard.**

- (A) Except as provided in Section 7(a)(2), projects shall not include new fill, new structures, substantial excavations, and other improvements within the river corridor;
- (B) A development shall not be located in the FEMA-designated floodway unless:
- (i) Hydrologic and hydraulic analyses are performed in accordance with standard engineering practice, by a registered professional engineer, certifying that the proposed development will not increase base flood elevations or velocities. The Secretary has determined that hydrologic and hydraulic analyses conducted in accordance with FEMA's *Guidelines and Standards for Risk Analysis and Mapping* are standard engineering practices, or
 - (ii) Concurrence and approval are received from FEMA through the Conditional Letter of Map Revision review process confirming that the proposal meets the requirements of NFIP in 44 C.F.R. § 60.3(d)(3) or (4). Proposals receiving FEMA approval for encroachment in the FEMA-designated floodway shall meet the requirements of Section 7(a)(3).
- (C) Except as provided in Section 7(a)(2)(A), a development shall not decrease flood fringe storage capacity. New development that displaces floodwater storage in the flood hazard area must provide compensatory storage to offset the impacts of the proposal, when in the judgment of the Secretary, said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows up to and including the base flood discharge. No Adverse Impact volumetric analysis and supporting data must be provided by the applicant and certified by a registered professional engineer.
- (E) For a proposed development representing a particular risk to adjacent landowners, as determined by the Secretary, the Secretary may recommend a hydraulic analysis to verify that the proposal will not increase flood elevations or velocities for adjacent landowners. Hydraulic analyses and supporting data must be provided by the applicant and certified by a registered professional engineer.

(2) **No Adverse Impact – Exceptions.**

- (A) Exceptions to the No Adverse Impact compensatory storage requirement within the flood fringe:
- (i) Proposals determined by ANR to have no more than a minimal effect on floodwater storage and do not divert floodwaters onto adjacent property. Examples of designs that have a minimal effect on floodwater storage include open foundation designs, utility work that is largely below grade, and minor above ground improvements such as fences or poles that minimally displace or divert floodwaters.
 - (ii) Replacement structures provided that there is no increase in the structure's footprint.

- (iii) Replacement structures relocated to a location less proximal to the river within the river corridor or to a less hazardous location within the flood fringe provided that there is no increase in the structure's footprint.

(B) Exceptions to the No Adverse Impact requirement within the river corridor:

- (i) Redevelopment and infill development in designated centers provided that the distance between the redevelopment or infill development and the river or stream is no less than the shortest distance between immediately adjacent existing above ground development and such river or stream³² or if the Secretary determines that the proposed development within the designated center will not cause or contribute to fluvial erosion hazards as determined in (iv)(a) of this subsection.
- (ii) Bridges, culverts, utility crossings, and associated transportation and utility networks; dams; and functionally dependent uses that must be placed in or over rivers and streams. "Associated transportation and utility networks" means those transportation and utility networks connected to a bridge, culvert, or utility for the purpose of crossing a river or stream and do not include transportation or utility networks within the river corridor that merely run parallel to a river or stream.
- (iii) The replacement of improvements within a comparable footprint of an existing improvement or immediately adjacent to an existing improvement, provided that the replacement improvement is no closer to the river than the improvement that is being removed and meets the River Corridor Performance Standard outlined in (iv) below.
- (iv)(a) In addition to the specific exceptions outlined in subdivisions (i) through (iii) above, development shall be allowed within the river corridor if the Secretary determines that, because of other existing and adjacent development within the corridor, the proposed development will not cause or contribute to fluvial erosion hazards. To make this determination the Secretary shall apply the following River Corridor Performance Standard. The Secretary must find that a proposed development will:
 - (1) not cause the river reach to depart from or further depart from the channel width, depth, meander pattern, and slope associated with natural stream processes and equilibrium conditions; and
 - (2) not result in an immediate need or anticipated future need for stream channelization, solely as a result of the proposed development, that would increase flood elevations and velocities or alter the sediment regime triggering channel adjustments and erosion in adjacent and downstream locations.
- (b) Development that meets the requirements of Appendix A or Appendix B of this Procedure satisfies the River Corridor Performance Standard outlined in this subdivision (Section 7(a)(2)(B)(iv)(a)).

³² ANR will not consider administrative revision to the applicable river corridor map during an Act 250 project review.

(3) **Floodplain Management Standards.**

If the No Adverse Impact standard has been met, Agency technical staff shall, consistent with the requirements of 44 C.F.R. § 60.3, recommend that development be made reasonably safe from flooding and comply with all applicable floodplain management criteria of the NFIP. Technical staff shall make the following recommendations, unless the municipality in which the project is located has more stringent bylaws or ordinances, in which case, technical staff shall make recommendations consistent with those requirements. 24 V.S.A. § 4413(c).

- (i) Residential structures shall be elevated such that the lowest floor is at least two feet above the base flood elevation³³;
- (ii) Non-residential structures shall be elevated such that the lowest floor is at least two feet above the base flood elevation, or shall be dry-floodproofed and certified in accordance with FEMA floodproofing guidance to at least two feet above the base flood elevation;
- (iii) Critical facilities³⁴ shall have the lowest floor elevated or floodproofed to at least the 500-year flood elevation or two feet above the base flood elevation, whichever is greater;
- (iv) Development shall be designed, operated, maintained, modified, and adequately anchored to prevent flotation, collapse, or lateral movement of the structure during the occurrence of the base flood;
- (v) Development shall be constructed with materials resistant to flood damage;³⁵
- (vi) Development shall be constructed by methods and practices that minimize flood damage;
- (vii) Development shall be constructed with waterproofed systems, such that electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities are designed and/or located so as to prevent water from entering or accumulating within the design components during flooding.
- (viii) Development must be constructed with adequate drainage to reduce exposure to flood hazards; and
- (ix) Fuel storage tanks (as needed to serve buildings in the flood hazard area) must be located a minimum of one foot above the base flood elevation and be securely anchored to prevent flotation, and protected from flood forces and debris; or storage tanks may be placed above or below ground, if securely anchored and certified by a qualified professional that the design is watertight and will resist buoyancy, scour and uplift forces, and that the fuel storage tank vent is located at least one foot above the base flood elevation.

³³ Residential Structures shall not have fully enclosed areas that are below grade on all sides (including below grade crawlspaces and basements)

³⁴ For Act 250 proceedings, ANR routinely recommends that critical facilities not be located in flood hazard areas unless there is no practicable alternative.

³⁵ Refer to FEMA Technical Bulletin 2-93: Flood-Resistant Materials Requirements.

(b) **Projects subject to Municipal Hazard Area Regulations and submitted for DEC review.**

- (1) Municipalities that have adopted flood hazard area or river corridor bylaws are required to submit permit applications for flood hazard area and river corridor development to DEC, or DEC's designee, for review and comment pursuant to 24 V.S.A. § 4424(a)(2)(D). DEC shall review applications for completeness in accordance with the Development Review Checklist.³⁶ Incomplete applications will be returned to municipalities within 10 business days with the information deficiency noted.
- (2) **Flood Hazard Areas.** Upon receipt of a complete application, DEC shall review the development proposal against the effective Flood Insurance Study and flood hazard area map, in conjunction with the standards contained in the flood or other hazard area bylaw adopted by the municipality. DEC shall provide written comments with regard to any aspect of the proposal not in compliance with the municipal bylaw and the NFIP and provide recommended permit conditions to ensure the development complies with the adopted regulations. If during the application review the Agency sees opportunities to increase public safety, changes to local bylaws may be recommended.
- (3) **River Corridors and River Corridor Protection Areas.** Upon receipt of a complete application, DEC shall review the application against the effective municipally-adopted river corridor or river corridor protection area map, in conjunction with the standards contained in the river corridor, river corridor protection area, or fluvial erosion hazard area bylaw adopted by the municipality. DEC shall provide written comments with regard to any aspect of the proposal not in compliance with the municipal bylaw and provide recommended permit conditions to ensure the development complies with the adopted regulations. If during the application review the Agency sees opportunities to increase public safety, changes to local bylaws may be recommended.

(c) **Recommendations to Other State and Federal Programs and Interested Parties.** Other non-municipal programs regulate development located within flood hazard areas and river corridors and may seek technical and regulatory assistance to minimize flood and fluvial erosion hazard. The DEC River Corridor and Floodplain Management Program shall provide technical assistance to other programs consistent with the No Adverse Impact Standard as outline in Sections 7(a)(1-3) above and the following performance standards:

- (i) **Compensatory Storage Performance Standard.** Proposed development must provide for a volume of storage that ensures no increased risk to public safety by increasing the horizontal and vertical extent of floodwaters or increasing flood velocities. A positive finding may require the rule or regulation to include a requirement that a hydraulic analysis be submitted to the DEC River Corridor and Floodplain Management Program to verify that a proposed development will not increase flood elevations or velocities on floodwaters that would materially impact adjacent landowners.
- (ii) **River Corridor Performance Standard.** Proposed development must provide for a meander belt and riparian buffer component that ensures no increase in fluvial erosion hazards by causing the river reach to depart from or further depart from the channel width, depth, meander pattern, and slope associated with natural stream processes and equilibrium con-

³⁶

http://watershedmanagement.vt.gov/rivers/docs/nfip/rv_4424_checklist_final.pdf

ditions. Proposed development shall not be approved if, as a result of the development, there is an immediate need or anticipated future need for stream channelization that would increase flood elevations and velocities or alter the sediment regime triggering channel adjustments and erosion in adjacent and downstream locations.

8.0 BEST MANAGEMENT PRACTICES IN FLOODPLAINS AND RIVER CORRIDORS

- (a) **Introduction.** This section of the Procedure includes best management practices for managing Vermont streams and rivers toward a dynamic equilibrium, i.e., geomorphic forms and fluvial processes which result in functioning floodplains and least erosive stream channels. Maximizing the use of these best management practices, with respect to stream and floodplain equilibrium, is in the interest of landowners, the communities of a watershed, and the State as a whole. In addition to the benefit of reducing flood damages associated with inundation and fluvial erosion, streams and floodplains in equilibrium store fine sediments and nutrients that may degrade Vermont waters, and provide for complex aquatic, wetland, and riparian habitats that support the most highly diverse communities of native plants and animals in this eco-region.

While this Section does not attempt to cover a complete set of best management practices for achieving the State's water quality objectives and the highest ecological integrity of Vermont river systems, the Department has published the State Surface Water Management Strategy for this purpose³⁷.

DEC provides technical assistance and works with partner agencies and organizations to complete river corridor plans and stormwater master plans which engender the technical analyses for identifying site-specific opportunities to implement the following best management practices. Municipalities and regional planning commissions are encouraged to consider both general and site-specific best practices in preparing local hazard mitigation plans and the resiliency elements of town plans. The State is directed by statute to provide incentives for local planning and implementation of local projects and practices to address flood and fluvial erosion hazards.

The following sub-sections outline and reference other best practice sources for achieving stream equilibrium, including those for managing runoff, floodplain encroachments, river channels, and riparian buffers. Detailed descriptions of these practices are, in many cases, provided in separate best practice documents published by other state programs, including *technical guidance* documents (e.g., the State Surface Water Management Strategy) published on the Watershed Management Division web pages. Presenting this set of references is intended to knit together these programs and practices into a single framework for managing floodplains and river corridors.

(b) **Best Management Practices.**

- (1) **Slowing, Spreading, and Infiltrating Runoff.** Stream and floodplain geometry are a function of watershed hydrology. Natural runoff characteristics are altered by ditching, wetland loss, and changes in land use and land cover. When runoff is quickened and peak discharges are increased, flood water depths and erosive power are increased. A stream receiving runoff from ditched lands or a watershed with impervious cover exceeding 5% may become energized, erosive, enlarged, and unstable (Fitzgerald, 2007; Doyle et al., 2000). Best practices to minimize the stream disequilibrium associated with altered upland hydrology involve slowing, spreading, and infiltrating runoff from urban, farm, and working forest lands and

³⁷ The State Surface Water Management Strategy may be found at <http://www.watershedmanagement.vt.gov/swms.html>.

transportation networks. *DEC technical guidance* for stormwater management, low impact (LID) development, green infrastructure (GI) planning, and ecosystem restoration lists and describes current programs outlining the best management practices for watershed hydrology. In general, natural systems such as vegetative cover, organic soils, land forms (e.g., wetlands and floodplains) that store and more slowly release runoff are the preferred, least cost and self-maintaining systems for stormwater treatment.

See: <http://www.watershedmanagement.vt.gov/stormwater.htm>

- (2) **Avoiding and Removing Encroachments.** Investments placed within flood hazard areas and river corridors inevitably result in human-imposed structural constraints on flood waters and stream channel adjustments to protect those investments and address associated threats to public safety. Typically, the constraint of flooding and channel adjustments in one location results in a transfer of flood water, stream sediments, and erosive energy to another location. Structural flood works to protect encroachments can increase flood elevations and velocities and trigger a sequence of channel adjustments and erosion in adjacent and downstream locations, especially when placed in and adjacent to sensitive (i.e., high-bed load, alluvial) stream types. Avoiding new development and removing existing structures within and abutting floodplains and river corridors will begin to mitigate these impacts. The following are examples of actions that would be included in an “avoidance” best practice:

- (A) **Land use planning and regulation.** Best management practices for planning developments exempt from municipal regulation or those subject to Act 250/Section 248 are guided by the “No Adverse Impact” standard for flood hazard areas and river corridors as established in this Procedure and the Flood Hazard Area and River Corridor Rule. The adoption of local land use plans and regulations are also critical best management practices. Municipalities are compliant with the provisions of the NFIP by adopting minimum regulatory standards as set by FEMA. This Procedure, however, recommends the best practice of adopting land use bylaws with development standards which exceed the minimum requirements of the NFIP. The Department highly recommends that municipalities submit proposed bylaw language to their Regional Planning Commission and the River Corridor and Floodplain Protection Program for review and comment. The Program has published model bylaws for municipal regulation of development in flood hazard areas, river corridors, and river corridor protection areas on its web pages.

See: http://www.watershedmanagement.vt.gov/rivers/htm/rv_floodhazard.htm

- (B) **Land conservation.** River corridor and floodplain protection, in the form of an easement or fee purchase, often represents a feasible alternative to channelization practices. The DEC has designed river corridor easements to augment municipal bylaws. Zoning may avoid future encroachment and minimize fluvial erosion hazards, but does not restrict channel straightening and armoring practices that transfer flood-related erosion to downstream locations.

Obtaining an easement to protect rather than stop the erosion process and allow floodplains to reestablish in selected locations is a best management practice to protect soils, property, and infrastructure at the location of the easement and at properties lower in the watershed. Wherever feasible, the capture and storage of water, sediment, and debris in natural floodplain features will reduce flood hazards and promote the ecological health of our rivers (*ANR Guide to River Corridor Easements 2010*).

Securing a river corridor easement may be the most viable river management alternative if: (i) the sediment deposition process is dominating and/or is critical to the development and maintenance of equilibrium channel forms (i.e., stable meanders, river beds and banks); (ii) channel and corridor constraints do not currently limit meander and channel slope adjustments; (iii) existing and future proposed activities have been identified that would constrain or otherwise threaten the attainment of equilibrium conditions; and (iv) protecting the erosion/deposition process in the easement area may help minimize the erosion hazards to downstream areas.

See: http://www.watershedmanagement.vt.gov/rivers/docs/rv_RiverCorridorEasementGuide.pdf

- (C) **Removal of structures.** Each year, whether from flood damage, disuse, or disrepair, determinations are made that certain structures require major investments to restore the function for which they were originally built. In these situations, best practice involves an alternatives analysis to determine the feasibility of moving or deconstructing an encroachment within or abutting the river corridor or floodplain. For instance, there is typically a high benefit-cost ratio for removing a repetitive-damage structure. State and federal agencies have maintained buy-out and restoration programs and typically require the long-term protection of the site upon removal of the structure.

Planning programs which identify and target derelict and vulnerable structures for removal, based on documented flood and fluvial erosion hazard mitigation objectives, will be most successful in obtaining funding assistance for the removal of structures.

In addition to home buy-outs, there may be road setbacks that are worthy of consideration, including those roads abutting the meander belt which may be as or more vulnerable than infrastructure within the meander belt of a river. Systemic restoration of floodplain function may also be achieved through the removal of derelict dams and under-sized stream crossings, which often restores the sediment transport functions critical to stream bed elevations and floodplain connectivity. Berm and levee removals have perhaps the highest benefit-cost ratio. Some levees are still protecting residences and infrastructure, but many others, particularly old berms, protect very little in comparison with the increased risk they create from increasing flood heights and velocities.

(3) **River and Riparian Management.**

- (A) **River management meeting equilibrium and connectivity standards.** DEC has prepared a compendium of *Standard River Management Principles and Practices* to support more effective flood recovery implementation; improve the practice of river management; and codify best river management practices in Vermont. The document compiles the most current river management practices based on the best available science and engineering methods to create consistent practice and language for risk reduction while maintaining river and floodplain function. Best practices are established to address common flood damages, including:

- (i) Erosion of banks adjacent to houses and infrastructure;
- (ii) Erosion of road embankments;
- (iii) Channel movement across the river corridor;

- (iv) River bed down-cutting that destabilizes banks, undermines structure foundations, exposes utility crossings, and vertically disconnects rivers from adjacent floodplains;
- (v) River bed sediment build-up that can increase flood depths, initiate channel movement and avulsion, and lead to bank erosion;
- (vi) River bed filling with large woody debris that can increase flood depths, initiate channel movement and avulsion, and lead to bank erosion; and
- (vii) Bridge and culvert failure.

See: http://www.watershedmanagement.vt.gov/permits/htm/pm_streamcrossing.htm

In addition to the standard river management practices, the *Principles and Practices* document includes a site screening and problem identification process as well as methods for conducting an alternatives analysis. Other best practices for restoring stream channels and floodplains toward equilibrium conditions are identified in River Corridor Plans completed using Phase 1 and Phase 2 Stream Geomorphic Assessment data. The ANR River Corridor Planning Guide offers methods for creating best practices around:

- (i) Actively restoring and protecting floodplain functions and features;
- (ii) Removing constraints to the natural sediment and hydrological regimes (e.g., berms, derelict dams, or undersized culverts)
- (iii) Maintaining those stream dimensions, pattern, and slope presently in equilibrium condition; and
- (iv) Reconstructing the channel dimensions, pattern, and slope associated with equilibrium conditions.

River corridor plans identify reach-specific restoration projects, including: stabilizing streambanks (i.e., on a laterally-adjusting, equilibrium stream); arresting head-cuts and nick-points; removing berms and other constraints to flood and sediment load attenuation; removing/replacing structures (e.g. undersized culverts, constrictions, low dams); restoring incised reaches; and restoring aggraded reaches. Where feasible, river corridor best management practices include the removal of structures and modification of landforms that constrain or obstruct fluvial processes to restore and maintain vertical connectivity between a channel and adjacent floodplains. Opportunities to couple active restoration with river corridor protection are a recommended best practice.

See: http://www.watershedmanagement.vt.gov/rivers/docs/rv_rivercorridorguide.pdf

- (B) **Restoring and maintaining riparian buffers.** This Procedure: (i) defines a 50 foot setback extension on either side of the meander belt component of a river corridor to provide space for buffers adjacent to the stream when meanders have reached an equilibrium slope and planform, and (ii) recommends the maintenance of a 50 foot vegetated buffer as measured from the top of bank or top of slope, consistent with the Agency's Riparian Buffer Guidance (2005).

The 50 foot distance was chosen as the minimum ANR recommended vegetated buffer distance within the river corridor to give resistance to flood water velocities in the near-bank region and increase the stream bank stability necessary to achieve and maintain equilibrium conditions. Other buffer functions and distances are spelled out in the Guidance and supported in the ANR Riparian Buffers and Corridors Technical Papers (2005). The Agency may recommend vegetated buffers larger than 50 feet on existing channels

to ensure that other buffer functions are maintained and protected.

The State encourages and promotes buffers adjacent to streams and rivers (10 V.S.A. § 1421) and defines a “buffer” as an undisturbed area consisting of trees, shrubs, ground cover plants, duff layer, and generally uneven ground surface that extends a specified distance horizontally across the surface of the land from the top of the bank of an adjacent river or stream (10 V.S.A. § 1422(10)). The Agency encourages landowners and municipalities to consider and utilize the broader compendium of best practices for managing, protecting, and restoring buffers as contained and referenced in the Agency’s Riparian Buffer Guidance and Technical Papers.

This Procedure points to the best practices for encouraging and promoting stream bed and bank stability and reducing flood flow velocities, including the near complete avoidance of earth-moving activities; the storage of materials; the removal of trees, shrubs, or groundcover; and mowing. Stream channelization to protect riparian vegetation from erosion is not a best practice. If a mature tree canopy and larger, non-hazardous deadfall and windblown trees in the stream and riparian area are retained, then the removal of lower limbs (i.e., to facilitate river viewing) and other vegetation management may have negligible effects on the equilibrium functions of a riparian buffer.

See: <http://www.anr.state.vt.us/site/html/buff/anrbuffer2005.htm>.

9.0 DEFINITIONS

“Accessory structure” means a structure which is: (1) detached from and clearly incidental and subordinate to the principal use of or structure on a lot, (2) located on the same lot as the principal structure or use, and (3) clearly and customarily related to the principal structure or use.

“Act 250 floodway” means a hazard area with inundation and fluvial erosion components. The inundation component is the special flood hazard area as mapped by the FEMA and includes the FEMA-designated floodway and flood fringe. The fluvial erosion component is the river corridor as mapped by the Agency.

“Act 250 floodway fringe” means an area which is outside a floodway and is flooded with an average frequency of once or more in each 100 years as determined by the Secretary of Natural Resources with full consideration given to upstream impoundments and flood control projects. The “Act 250 floodway fringe” is synonymous with the FEMA-designated flood fringe for the purposes of this Procedure.

“Agency” or “ANR” means the Vermont Agency of Natural Resources.

“Annual flood” means a discharge (Q) or flood flow event that occurs at a high frequency, i.e., there is greater than a 50% chance of a flood stage ($<Q_2$) of at least this level occurring in any given year.

“Base Flood” means the flood having a one percent chance of being equaled or exceeded in any given year (commonly referred to as the “100-year flood”).

“Base Flood Elevation” (BFE) means the elevation of the water surface elevation resulting from a flood that has a one percent chance of equaling or exceeding that level in any given year. On the Flood Insurance Rate Map the elevation is usually in feet, in relation to the National Geodetic Vertical Datum of 1929, the North American Vertical Datum of 1988, or other datum referenced in the Flood Insurance Study report, or the average depth of the base flood, usually in feet, above the ground surface.

“Basement” means any area of the building having its floor elevation below ground level on all sides including crawlspaces.

“Base Layer/Base Map” means the river corridors derived from an ArcGIS analysis of topographic data to calculate valley geometry (slope and width) and an analysis of hydrographic data to calculate hydraulic geometry and meander belt widths. Human-imposed confining features, including railroads and federal aid highways were established as artificial valley walls and used to delineate the location of the meander belt on the base layer. .

“BFE” see Base Flood Elevation.

“Below Ground Improvement” means a private, functioning potable water or wastewater system providing service to a habitable structure or an underground public utility that is functioning and providing a public service.

“Buffer” means an undisturbed area consisting of trees, shrubs, ground cover plants, duff layer, and generally uneven ground surface that extends a specified distance horizontally across the surface of the land from the mean water level of an adjacent lake or from the top of the bank of an adjacent river or stream, as determined by the Secretary of Natural Resources (10 V.S.A. § 1422(10)).

“Channel” means an area that contains continuously or periodic flowing water that is confined by banks and a streambed.

“Channel Slope” means longitudinal stream bed profile or the vertical drop of the stream bed from upstream to downstream in relationship to adjacent floodplain features.

“Channelization” practices conducted in a stream channel and/or the floodplain, including straightening, berming, dredging, and/or armoring, which alter flow depths, slope, and velocities and the sediment regime of the stream.

“Compensatory storage” means a volume not previously used for flood storage and which shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the base flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways such compensatory volume shall be provided within the same reach of the river, stream, or creek.

“Critical facilities” means facilities that provide services or functions related to public health and safety during emergency response and recovery and facilities that must be protected to a higher standard to protect public health and safety.

“Designated center” means a downtown, village center, new town center, growth center, or neighborhood development area designated pursuant to 24 V.S.A. Chapter 76A.

“Development” means any human-made change to improved or unimproved real estate including buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

“Equilibrium conditions” means the width, depth, meander pattern, and longitudinal slope of a stream channel that occurs when water flow, sediment, and woody debris are transported by the stream in such a manner that it generally maintains dimensions, pattern, and slope without unnaturally aggrading or degrading the channel bed elevation.

“FEMA” means the Federal Emergency Management Agency.

“Fill” means any placed material that changes the natural grade, increases the elevation, or diminishes the flood storage capacity at a site. Temporary storage of material is not considered fill.

“FIRM” see Flood Insurance Rate Map.

“Flood” means (1) a general and temporary condition of partial or complete inundation of normally dry land areas from: (A) the overflow of inland or tidal waters; (B) the unusual and rapid accumulation or runoff of surface waters from any source; or (C) mudslides which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current; or (2) the collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding.

“Floodplain” means any land area susceptible to being inundated by water from any source (see definition of **“Flood”**).

“Flood fringe” means the area that is outside of the regulatory FEMA-designated floodway but still inundated by the designated base flood (the flood having a one percent chance of being equaled or exceeded in any given year).

“Flood hazard” means those hazards related to inundation damages.

“Flood hazard area” means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. The term has the same meaning as “area of special flood hazard” under 44 C.F.R. § 59.1.

“Flood Insurance Rate Map” (FIRM) means an official map of a community on which the Federal Insurance Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

“Flood insurance study” means an examination, evaluation, and determination of flood hazards and, if appropriate, the corresponding water surface elevations or an examination, evaluation, and determination of mudslide (i.e., mudflow) and/or flood related erosion hazards.

“Flood proofing” means any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

“FEMA--designated floodway” or “regulatory floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point as depicted on Flood Insurance Rate Maps published by FEMA. Flood hazard areas and floodways may be shown on separate map panels.

“Fluvial erosion hazards” means those hazards related to the erosion or scouring of riverbeds and banks during high flow conditions of a river.

“Functionally dependent use” means a use which cannot perform its intended purpose unless it is located or carried out in close *proximity to water* (e.g., bridges and public accesses to the water).

“Habitable Structure” means any enclosed roofed structure; residential, commercial, or industrial; public or private, that is fit for people to enter and utilize.

“Handbooks” mean the Phase I-III Vermont Stream Geomorphic Assessment (SGA) Handbooks DEC, 2009)

“Historic Structure” means any structure that is: (1) listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (2) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (3) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (4) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either: (A) by an approved state program as determined by the Secretary of the Interior or (B) directly by the Secretary of the Interior in states without approved programs.

“Improvement” means a habitable structure, accessory structure, public utility, public transportation infrastructure, or a private road, bridge, culvert, or utility (i.e., potable water well or waste water system) providing for the use of or primary access to residential and/or commercial property. For the purpose of this Procedure, “existing improvements” are those in existence as of the date this Procedure was adopted.

“Infill development” means construction, installation, modification, renovation, or rehabilitation of land, interests in land, buildings, structures, facilities or other improvements in an area that was not previously developed but it surrounded by existing development.

“Letter of Map Amendment” (LOMA) is a letter issued by FEMA officially removing a structure or lot from the flood hazard area based on information provided by a certified engineer or surveyor. This is used where structures or lots are located above the base flood elevation and have been inadvertently included in the mapped special flood hazard area.

“Lowest floor” means the lowest floor of the lowest enclosed area of a building, including the basement, except an above grade unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building’s lowest floor provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 44 C.F.R. § 60.3.

“Meander belt” means the land area on either side of a watercourse extending laterally across the river valley which represents a minimal corridor for the lateral meander extension and migration necessary to maintain an equilibrium slope and minimize vertical channel instability and erosion over time.

“New construction” means structures for which the *start of construction* commenced on or after the effective date of the floodplain management regulation adopted by the community and includes any subsequent improvements to such structures.

“NFIP” means the National Flood Insurance Program.

“Redevelopment” means construction, installation, modification, renovation, or rehabilitation of land, interests in land, buildings, structures, facilities, or other improvements in a previously developed area. The term includes substantial improvements and repairs to substantially damaged buildings.

“Replacement structure” means a new building placed in the same location, footprint, and orientation as the pre-existing building.

“River corridor” means the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition and for minimization of fluvial erosion hazards, as delineated by the Agency in accordance with the ANR River Corridor Protection Procedures.³⁸ 10 V.S.A. § 1422(12).

“River corridor protection area” means the area within a delineated river corridor subject to fluvial erosion that may occur as a river establishes and maintains the dimensions, pattern, and profile associated with its dynamic equilibrium condition and that would represent a hazard to life, property, and infrastructure placed within the area. The river corridor protection area is the meander belt portion of the river corridor without an additional allowance for riparian buffers.

“Secretary” means the Secretary of Natural Resources or his or her authorized representative.

“Sediment regime” means the size, quantity, sorting, and distribution of sediments, which may differ between stream types due to their proximity to different sediment sources, their hydrologic regime, their stream, riparian and floodplain connectivity, and valley and stream morphology.

“Special flood hazard area” is synonymous with “flood hazard area” and “area of special flood hazard” (44 C.F.R. § 59.1) and is the floodplain within a community subject to a one percent or greater chance of flooding in any given year. This area is usually labeled Zone A, AO, AH, AE, or A1-30 in the most current flood insurance studies and on the maps published by FEMA. Base flood elevations have not been determined in Zone A where the flood risk has been mapped by approximate methods. Base flood elevations are shown at selected intervals on maps of special flood hazard areas that are determined by detailed methods. Please note, where floodways have been determined they may be shown on separate map panels from the Flood Insurance Rate Maps.

“Start of construction” includes substantial improvements, and means the date the building permit was issued provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footing, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, regardless of whether that alteration affects the external dimensions of the building.

³⁸ These Procedures incorporate the river corridor delineation process defined in the ANR Flood Hazard Area and River Corridor Technical Guide available at:

http://www.watershedmanagement.vt.gov/rivers/htm/rv_restoration.htm

“**Structure**” means a walled and roofed building, as well as a manufactured home, including gas or liquid storage tanks.

“**Substantial damage**” means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

“**Substantial improvement**” means any reconstruction, rehabilitation, addition, replacement, or other improvement of a structure for which a building permit is issued after the date of adoption of this Procedure, the cost of which, over five years, cumulatively equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. The term does not, however, include either: (1) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specification which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) any alteration of a “historic structure”, provided that the alteration will not preclude the structure’s continued designation as a “historic structure”.

“**Utility network**” means above or below ground linear facilities subject to 30 V.S.A. § 248 or 248a.

“**Watercourse**” means any perennial stream and shall not include ditches or other constructed channels primarily associated with land drainage or water conveyance through or around private or public infrastructure.

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Dated this 9th day of December 2014 at Montpelier, Vermont.

David K. Mears, Commissioner
Department of Environmental Conservation

Appendix A

Exception to the River Corridor No Adverse Impact Standard for Improvements Between Existing Improvements (See Section 7(a)(2)(B)(iv)(b))

- (a) **Background.** In situations where existing improvements within the river corridor are in close proximity to one-another, there may be constraints (i.e., river channel management) on the extent of lateral river channel migration. Improvements between existing improvements in close proximity to one another are not expected to increase the existing risk of fluvial erosion hazards because the new improvements, while potentially at risk themselves, will not result in further channelization practice.
- (b) **Standard.** Improvements may be admissible between existing improvements, but must not: (i) increase the existing level of fluvial erosion hazard or (ii) result in an increase in the length of channel management or bank stabilization measures that may be sought to protect the existing improvements in the future (in the event such property is threatened by fluvial erosion). To meet these performance standards, improvements may be permitted within the river corridor under the following conditions:
- (1) Improvements must be located no closer to the river than a line as drawn between the two points nearest to the top of the bank (as measured horizontally) of the two existing, adjacent, above ground improvements, and
 - (2) Improvements must be located between or behind existing above ground improvements, which are no further than 300 ft. from one-another (Figure 4). The area behind existing above ground improvements shall be determined by finding the most upstream point and the most downstream point of the two improvements and then drawing a line from each of those two points away from and perpendicular to the river.

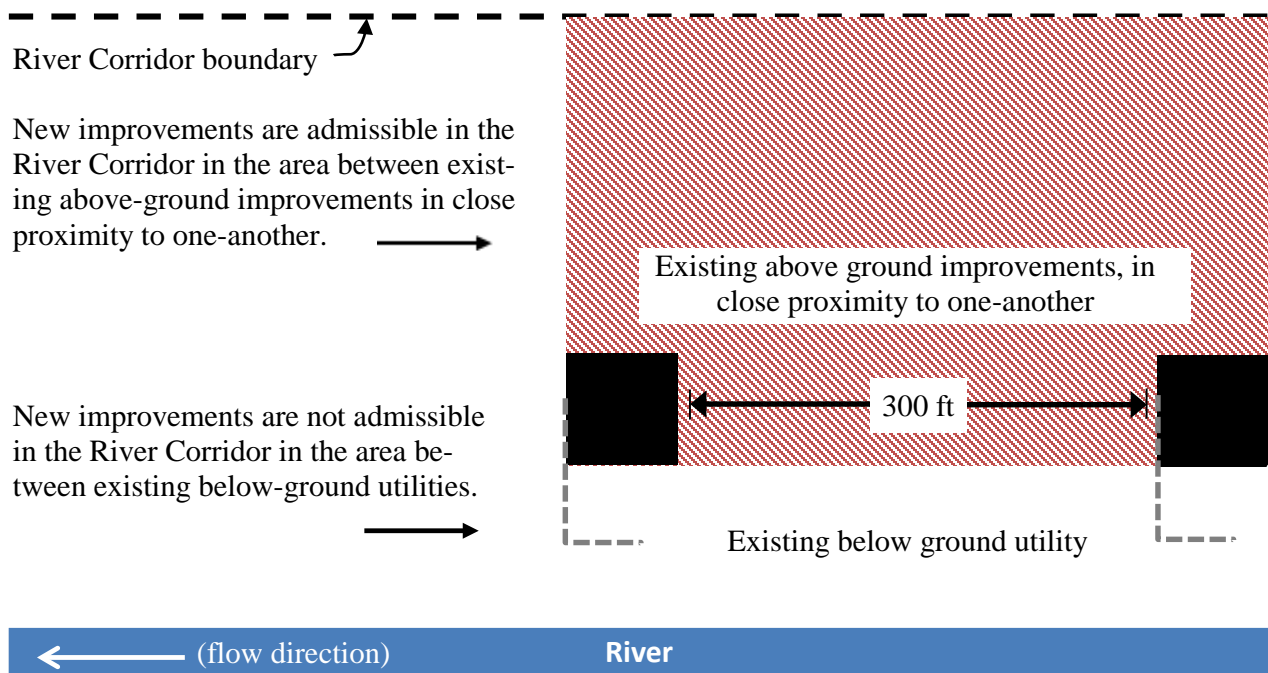


Figure 4. Red cross-hatched are showing where new improvements may be permitted between two existing above ground improvements no more than 300 feet apart. This area for acceptable improvement may be considered in tandem with the shadow areas defined in Appendix B.

Appendix B

Exception to the River Corridor No Adverse Impact Standard for Improvements in the Down-River Shadow of an Existing Improvement (See Section 7(a)(2)(B)(iv)(b))

- (a) **Background.** In situations where there is an existing improvement within the river corridor, isolated from other improvements, there may be constraints on the extent of lateral river channel migration. Limited improvements in the shadow of existing improvements, while potentially at risk themselves, are not expected to increase the level of fluvial erosion hazard.
- (b) **Standard.** Improvements must not: (i) increase the existing level of fluvial erosion hazard, or (ii) result in an increase in the length of channel management or bank stabilization measures that may be sought to protect existing improvements in the future (in the event such property is threatened by fluvial erosion).
- (1) To meet these performance standards, proposed improvement limited to accessory structures, additions to existing habitable structures, or utilities may be permitted within the river corridor under the following conditions:
- (A) Limited improvements must be located no closer to the river than any existing above ground improvement as measured horizontally from the above ground point of the improvement nearest to the top of bank, and
 - (B) Limited improvements must be located behind the existing above ground improvement or may extend down valley from the existing above ground improvement up to 50 ft. from the most river-proximal, down-valley corner of the existing above ground improvement (Figure 5). The area behind an existing above ground improvement shall be determined by finding the most upstream point of the existing improvement and the point 50 ft. from the most river-proximal, down valley corner of the existing improvement and then drawing a line from each of those two points away from and perpendicular to the river.
- (2) To meet these performance standards, existing below ground improvements may be considered in defining a shadow area for new and replacement below ground improvements (Figure 5). New and replacement below ground improvements that meet (b)(1) above or the following conditions may be admissible within the river corridor:
- (A) Any below ground improvement must be located no closer to the river than any existing below ground utility as measured horizontally from the below ground point of the existing utility nearest to the top of bank;
 - (B) Any below ground improvement must be located behind the existing above ground improvement or may extend down valley from the existing below ground utility up to 50 ft. from the most river-proximal, down-valley corner of the existing below ground improvement (Figure 4). The area behind an existing below ground improvement shall be determined by finding the most upstream point of the existing improvement and the point 50 ft. from the most river-proximal, down valley corner of the existing improvement and then drawing a line from each of those two points away from and perpendicular to the river.

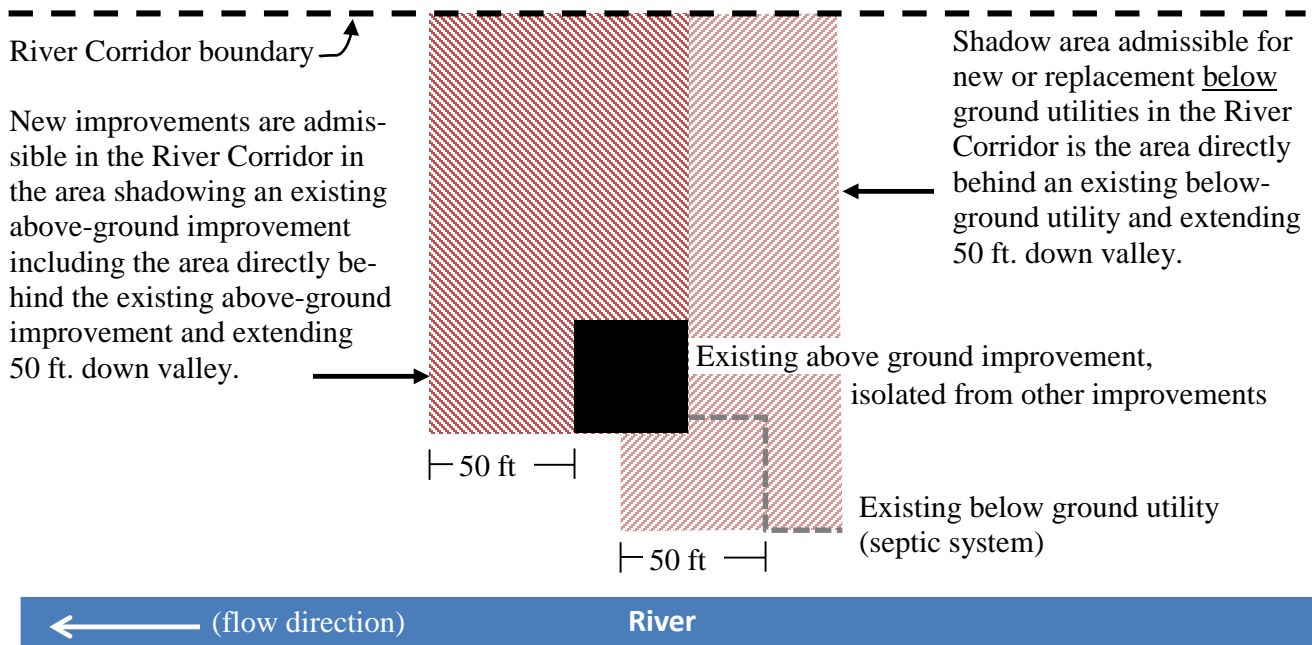


Figure 5. Red cross-hatched areas where new above and below ground improvements may be permitted within 50 feet of the most downstream, river-proximal edge of an existing improvement. The 50 foot shadow area is measured in the down valley direction from the furthest downstream edge of the existing improvements. Shadow areas do not extend in the upstream direction.



RIPARIAN BUFFERS and CORRIDORS

TECHNICAL PAPERS

INTRODUCTION

1: WATER QUALITY

Temperature

Sediment

Nutrients and Other Contaminants

2: HABITATS and NATURAL COMMUNITIES

Aquatic Habitat

Terrestrial Habitat

Natural Communities

3: CHANNEL STABILITY

4: SUMMARY TABLES of BUFFER WIDTHS RELATIVE to RIPARIAN FUNCTIONS

5: EDUCATIONAL RESOURCES

6: CONTROL OF EXOTIC SPECIES

GLOSSARY

LITERATURE CITED

Riparian Buffers and Corridors
Technical Papers

Vermont Agency of Natural Resources
Waterbury, Vermont
2005

INTRODUCTION

The word “riparian” means of or pertaining to the bank of a river or lake. Riparian areas are ecosystems comprised of streams, rivers, lakes, wetlands, and floodplains that form a complex and interrelated hydrologic system. They extend up and down streams and along lakeshores from the bottom of the water table to the top of the vegetation canopy, and include all land that is directly affected by surface water (Verry 2000). Riparian areas are unique in their high biological diversity. They are “characterized by frequent disturbances related to inundation, transport of sediments, and the abrasive and erosive forces of water and ice movement that, in turn, create habitat complexity and variability...resulting in ecologically diverse communities” (Verry 2000).

Because of the dynamic nature of riparian areas, they support a wide variety of plant and animal communities. These communities form an interconnected food web that ranges from tiny microorganisms to bears and humans. This web also includes insects, reptiles, amphibians, fish, plants, waterfowl, songbirds, bats, mink, and otter. Healthy riparian areas support species that inhabit them as well as species that use the lakes and streams near them, including those species that use the water only at certain times during their life cycles, such as during breeding or migration.



Riparian areas are not only important plant and animal habitat, but also contribute to the health of the waters near them. The downed wood, leaves, and other organic material that riparian areas contribute to aquatic systems are important components of the food base and habitat structure in Vermont’s waterbodies. Mature trees in riparian areas also shade aquatic habitats, reducing water temperatures, and filter overland runoff, protecting water quality. Riparian vegetation also stabilizes lakeshores and streambanks, preventing excessive erosion and sediment buildup in aquatic habitats.

Riparian areas protect water quality for drinking and recreation, protect investments from flood and ice flow damage, and provide for recreation, education, and sense of place.

Conserving riparian ecosystems allows them to carry out their many functions, which include:

- Protecting water quality and aquatic habitats;
- Providing habitats for terrestrial wildlife, including travel and dispersal corridors;
- Supporting significant natural communities and adjacent wetlands; and
- Protecting channel-forming processes and channel stability.

Despite the numerous functions and values of riparian areas, an estimated 70% to 90% of natural riparian vegetation nationwide has already been lost or degraded due to human activities (Doppelt 1993). In Vermont, the riparian areas of many rivers, streams, lakes, and wetlands by 200 years of intensive human use of the land. Therefore, it is imperative to plan for and implement strategies that will conserve or provide long-term stewardship for this vital habitat.



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Riparian areas function as both **buffers** and **corridors**. A riparian area that is unmowed, undisturbed, and naturally vegetated buffers the waterbody and riparian ecosystem from the impacts of adjacent land uses. Buffer functions include protecting water quality and providing for aquatic and terrestrial habitats. As corridors, riparian areas provide travel and dispersal routes for wildlife and plants and sustain long-term river and stream channel functions, such as lateral channel migration and floodwater dissipation. These corridor functions help to maintain habitat connectivity and stream function longitudinally throughout the landscape. When planning for and implementing riparian conservation and restoration strategies, it is important to consider both the buffer and corridor functions of riparian areas.

The benefits forested riparian areas provide for the landscape have been known for well over a hundred years, and yet maintaining forested riparian areas remains one of the most challenging land use issues. The designation of riparian areas involves difficult land use decisions and compromises, as well as sorting through a myriad of information on the subject. These technical papers are summaries of recent scientific literature on effective riparian buffer and corridor widths for maintaining and/or restoring riparian functions. They also explain how riparian areas function. This document does not provide “the answer” to establishing riparian area widths, however, the information provided will help individuals and communities make sound decisions about how to effectively maintain and restore functioning riparian areas within the landscape.



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1: WATER QUALITY

Riparian areas are instrumental in protecting the water quality of surface waters. Forested riparian areas regulate water temperatures through shading of surface waters and infiltration of overland runoff, increasing dissolved oxygen levels in the water. Storing overland runoff also moderates stream flows, reducing peak flows and maintaining base flows during the drier months. Naturally vegetated riparian areas are effective in trapping sediments in overland runoff, reducing inputs of sediment to waterbodies, as well as reducing the load of nutrients and other contaminants bound to those sediments. The deep roots of riparian vegetation also bind together streambank and lakeshore soils, minimizing erosion and again reducing sediment loads to surface waters.

Temperature

Forest canopies influence surface water temperatures by decreasing the amount of direct solar radiation on the waterbody and insulating the water from dramatic air temperature changes, which is especially important in abating cold winter winds. Tree canopies, overhanging bank vegetation, and undercut banks shade surface waters, keeping them cool during the summer months. Colder water holds more oxygen than warmer water, and well-oxygenated water is essential for aquatic life.

Additionally lower water temperatures ameliorate adverse effects from organic and industrial pollutants by decreasing biological activity and chemical reactions that demand oxygen, thus diminishing the potential for “deoxygenation” of the waterbody.



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The shading and insulating functions of riparian areas are critically important in smaller streams, which have smaller water volumes (Wenger 1999). Riparian forest canopy is more effective at shading narrower streams than wide rivers because the canopy shades a greater portion of the water surface. Shading smaller streams is important in maintaining cool water temperatures in both the small streams and the larger rivers into which they feed (USACE 1991). In general, maintaining vegetation on small headwater streams achieves the greatest temperature reduction per unit length of riparian shade (Collier 1995)

Forested riparian areas also reduce the temperature of groundwater entering surface waters (Wenger 1999). This may be particularly important in mitigating temperature effects in urban areas, where pavement and similar impervious surfaces can cause air and ground temperatures to be 10° to 12° F warmer than in forested areas (METRO 1997). In areas where the groundwater runs close to the ground surface it is particularly important to maintain vegetative cover to prevent substantial increases in groundwater temperature. Woodall (1985) suggested that in some cases, upland land use needs to be managed to protect groundwater sources close to the

“It is a well known fact that the best fishing is where a forest is near the shore, and best of all where the limbs overhang the water. Not only do the trees afford shelter, furnish food and prevent evaporation, but at the same time they keep the water clear and cool in the summer. In the winter the forests afford protection by lessening the severity of the winter frosts, and in all forest regions the changes of temperature are not so severe as in treeless countries and on the open plain: and the effect upon the water is even greater....But the forests not only regulate the flow of water, as above stated, but they purify the water.”

- **Frank H. Carleton, from the Fifteenth Biennial Report of the Commissioners of Fish and Game of the State of Vermont, 1899-1900.**

surface (< 4 meters deep) by maintaining vegetative cover, even outside of the immediate riparian area, in order to ensure cool water temperatures in the stream channel.

Sediment

Erosion of the landscape and the resulting addition of sediment to streams, rivers, and lakes is a naturally occurring process. Over time, stream and river channels form to effectively transport the sediment load produced by a watershed through its network of surface waters. However, when sediment loads are substantially increased in volume and/or frequency of loading, degradation of water quality, aquatic habitat, and channel stability are likely to occur. Chronic or excessive sediment loading often occurs as a result of land clearing and direct stream channel alterations associated with development, logging, and agriculture. Excessive sedimentation can reduce aquatic habitat quality and complexity, as well as impact water quality values such as



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aesthetics and drinking water supplies (Chase 1995). A detailed explanation of the effects of sediment on aquatic organisms and their habitat is provided in Section 2.

Maintaining forested riparian buffers adjacent to surface waters is one of the most effective ways to prevent sediment and associated pollutants from reaching waterbodies. Unmowed, undisturbed, naturally



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vegetated riparian buffers can effectively trap sediment by slowing overland runoff, allowing for absorption and retention of sediments in the riparian area. The leaf litter, duff layer, and vegetation of riparian buffers obstructs overland runoff, slowing it down and thereby allowing water to infiltrate into the soil, depositing sediment on top of the ground instead of in the waterbody. The amount of sediment and associated pollutants that is filtered out of overland runoff by riparian buffers is dependent on the slope of the land, soil type, type and density of vegetation, upland land uses, and width of the area vegetated.

Riparian buffers typically need to be wider on steep slope to achieve infiltration and sediment retention in the buffer, as flows typically move faster and are more concentrated on steep slopes. Slopes greater than 10% are considered “steep” and may require additional protective measures (Baltimore County 2004). In Vermont, headwater streams are usually bordered by steep valley side slopes, and thus, are particularly sensitive to sedimentation associated with development and other land clearing activities. This is one reason for the specific regulation of development

above 2,500 feet elevation under Vermont's Land Use Law (Act 250), for many of Vermont's steepest landforms occur above 2500 feet.

In addition to trapping sediments from overland runoff, riparian vegetation decreases sedimentation into waterbodies by stabilizing streambanks and lakeshores. Streambank and lakeshore vegetation dissipates stream energy and wave action such that channel and shoreline scour is reduced. Soils bound together by roots have greater tensile strength than unvegetated soils, and thus have greater resistance to the erosional forces of moving water (Fischer and Fischenich 2000). Further discussion of the role of riparian vegetation in maintaining streambank stability is provided in Section 3. Riparian vegetation also traps and stores fine sediments in the floodplain during high flow events, reducing the overall volume of sediments deposited in the channel as floodwaters recede.

Studies on the impacts of logging with and without forested buffer strips on low order streams indicated that aquatic invertebrate community structure was not significantly disturbed when riparian buffers were at least 100 feet wide (Waters 1995). Another logging study suggests buffer widths of 25 to 165 feet (slope dependent) and 50 to 330 feet (slope dependent, for municipal water supplies) are needed to effectively prevent excessive sediment from entering the stream channel (Chase 1995). Similarly, Hartung and Kress (1977) recommended riparian buffer widths ranging from 25 to 450 feet (slope dependent with the widest buffers designed for municipal water supplies) to protect against excessive sediment input to a stream channel. In a watershed dominated by agricultural land use, Peterjohn and Correll (1984) found that 164 feet of riparian buffer trapped 94% of the suspended sediment that entered the riparian area. Numerous other studies on sediment removal indicate that vegetated riparian buffers widths ranging from 30 to 100 feet will prevent 75-92% of sediment in surface runoff from entering a waterbody (Fischer and Fischenich 2000).

Nutrients and Other Contaminants

Excess nutrients, like phosphorous and nitrogen, can cause eutrophication in surface waters (i.e., nutrient enrichment that stimulates aquatic plant growth). Plants need nutrients to survive; phosphorous, nitrogen, potassium, and minerals are essential ingredients to plant health. These elements in excess quantity, however, can cause rapid and excessive algal and plant growth in waterbodies. Algae are short-lived, and when they die they sink to the bottom of the waterbody where their decomposition consumes oxygen. The resulting decrease in dissolved oxygen levels in the water threatens aquatic organisms. Phosphorus is generally the limiting nutrient, meaning it is the one most likely to restrict aquatic plant growth because of its naturally low levels in the environment.



Thus, even small increases in phosphorus loads to a waterbody can cause large algal blooms. Although not common, nitrogen loading can also cause algal blooms. Sources of nutrients include lawn and agricultural fertilizers, and human and animal waste.

Nutrients are almost always adsorbed to soil particles and transported by the movement of sediment. Reducing the amount of sediment entering a waterbody will therefore also decrease the amount of nutrients. Riparian buffers retain sediments and allow the terrestrial vegetation to take up nutrients in overland runoff before it reaches surface waters. The effectiveness of this buffer function depends on sedimentation rates, surface and subsurface drainage characteristics, soil and riparian vegetation characteristics, and the quantity of nutrients in relation to the size of the riparian area (USACE 1991).

Buffer widths sufficient to remove sediment from overland runoff should also trap phosphorous, since most phosphorous entering the buffer is attached to sediment (Peterjohn and Correll 1984). Forested riparian buffers 62 feet wide removed as much as 80% of excess phosphorous and 89% of excess nitrogen (Fischer and Fischenich 2000). Mander (1997) found total phosphorous trapping efficiencies of 81% for riparian buffers widths of 92 feet. Woodard and Rock (1991) found a 50-foot buffer of undisturbed hardwood forest reduced phosphorous concentrations in runoff from housing lots. At a minimum, riparian areas wide enough to prevent sediment input into the waterbody should provide short-term control of sediment-bound nutrients and other contaminants (Wenger 1999).

Human and animal waste impairs water quality in ways other than nutrient contamination. The waste includes pathogenic microorganisms as well as organic matter which, when broken down by aerobic bacteria in the water, rapidly consumes oxygen, leaving less for aquatic organisms. Sources of organic matter and biological contaminants include leaking sewer pipes, improperly functioning septic systems, wildlife and pet waste, animal waste sprayed onto fields, and waste lagoons.

Pesticides, which include insecticides, herbicides, and fungicides, can reach surface waters via runoff from roads, agricultural lands, lawns, and golf courses. Riparian areas are very important in keeping pesticide application away from streams, rivers, and lakes, preventing direct contamination of the waterbody and reducing the danger of drift (the movement of the pesticide at time of application away from the application target to the surrounding environment). Many pesticides are broken down within the soils of these vegetated buffers. Greater buffer widths increase the retention time for chemicals, allowing more opportunity for contaminants to decompose before reaching the waterbody. Asmussen (1977) found that a 78-foot grassed buffer reduced pesticide levels in surface runoff by about 70%. Studies by Hatfield (1995) and Lowrance (1997) suggest that significantly wider buffers may be required.

2: HABITATS and NATURAL COMMUNITIES

Aquatic Habitats

Aquatic habitat includes all physical, chemical, and biological components of the waterbody. In this discussion, the definition of “habitat” is narrowed to describe the instream and riparian areas that influence the structure and function of the aquatic community in a stream. Much of this discussion also applies to the littoral (or shoreline) areas of lakes.

Many of the riparian buffer functions already described in Section 1 (Water Quality) are important to maintaining high quality aquatic habitat. Riparian areas moderate water temperatures and improve water quality by reducing sediment, nutrient and pollutant loads. In addition, riparian areas provide several other functions that are essential in providing for and protecting aquatic habitat. Snags derived from riparian areas provide important habitat for fish, reptiles, amphibians and aquatic invertebrates; and leaves, twigs and similar organic matter provide the energy basis for many aquatic food webs. Deep-rooted bank vegetation strengthens channel boundary conditions, which maintain the width, depth, and slope of the channel, thereby providing for the stream hydraulics important to creating and maintaining aquatic habitats. Riparian areas also play a role in maintaining stream flow during low flow periods and minimizing streambed and bank erosion associated with flood events.



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In brief, the riparian buffer functions essential to maintaining high quality aquatic habitat are:

- protecting water quality and quantity
- providing food supply
- providing woody debris
- maintaining lakeshore, stream channel and floodplain stability; and
- maintaining adjacent wetlands.

Water Quality: Temperature

Maintaining water temperature is essential to aquatic biota, especially for species adapted to cold-water environments. As discussed in Section 1, forested riparian areas are important for both summer and winter water temperature regulation. In the summer, maintaining cool water temperatures in Vermont rivers and streams is necessary to maintain high dissolved oxygen levels for aquatic organisms and to minimize thermal stress on these organisms. A difference of even a few degrees in temperature can determine which species are present. Forested riparian areas help reduce daily water temperature fluctuations, minimizing thermal stress on aquatic organisms. Streams and rivers that maintain cool summer water temperatures with minimal daily temperature fluctuations and moderate (40°F plus) winter water temperatures offer more desirable



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habitat for cold-water fish, stream-dwelling salamanders, and other temperature-sensitive aquatic organisms (Chase 1995).

Forested watersheds and riparian areas infiltrate surface runoff more so than unforested areas, which aids in groundwater recharge. This in turn helps moderate stream temperatures and flow fluctuations. In the Northeast, the discharge of groundwater into stream and river channels is essential to maintain stream flows, especially during the winter and late summer when precipitation is less (or frozen and unavailable to the waterbody) and stream flows naturally decrease. Maintaining groundwater inputs into surface waters helps to ensure that in most years both the volume and temperature of water in a channel will stay within a range to which the species present in that waterbody are adapted. Point sources of groundwater have been identified as refuge areas for trout from winter hazards such as ice buildup (Cunjak 1996). Brook trout are also known to spawn in areas where groundwater discharges into a stream (Webster and Eiriksdottir 1975; Witzel and MacCrimmon 1983; Curry and Noakes 1995; Waters 1995) and have been observed to overwinter in pools in proximity to groundwater discharges (Cunjak and Power 1986). Baird and Kruger (2003) noted that groundwater discharges within pools provided important thermal refuge for brook trout and rainbow trout in an Adirondack stream.

In Vermont, small forested headwater streams naturally have low biological production due to cold water temperatures and low light conditions. These conditions limit algal growth (the food base for many aquatic invertebrates) and often slow down the growth rates of fish, insects, and other aquatic organisms. In these areas, removal of a portion of riparian vegetation will increase light availability and water temperatures which may generate increased aquatic production (Allan 1995); however, excessive removal of riparian vegetation can result in elevated temperature conditions that are lethal to organisms adapted to cold water, like brook trout and slimy sculpin. Thus, any increase in food production resulting from increased light and water temperature may provide little benefit to the stream ecosystem if the organisms higher in the food chain cannot survive the increase in water temperature (Meehan 1991).

Many aquatic organisms can only survive within a relative narrow temperature range (Allan 1995). When temperatures deviate from a species preferred range, production or reproductive success of that species will decline (Verry 2000). In extreme cases, direct mortality may result. For example, adult brook trout typically cannot survive in waters above 24° C and below 0° C; they are most fit in temperatures ranging from 14° to 16° C (Meehan 1991).

Water Quality: Sediment Effects

Sediment can negatively affect aquatic biota primarily in two ways: suspended sediment, comprised of fine silts that float in the water column, making the water turbid (or muddy); and by embedded sediment, comprised of silts, sands, and small gravel that are “packed in” around larger substrates, like cobbles and boulders, in the channel bed. Waters (1995) provides a thorough discussion and review of literature regarding sediment effects on aquatic organisms in Sediment in Streams: Sources, Biological Effects and Control.

Suspended sediment can affect aquatic biota that breathe with gills (such as fish, larval salamanders, and many aquatic insects). Gills can be coated with sediment or physically eroded by sediment, both resulting in a reduction of oxygen uptake from the water. Gill damage can seriously impair an organism’s health, or in severe cases, cause death. Turbidity, caused by sediment suspended in the water, can also decrease detrital decomposition and algal production (Verry 2000), both important processes that provide food for aquatic invertebrates. It can also reduce feeding efficiency in fish species, such as trout, that locate their prey by sight (Berg 1982).

Embedded substrate reduces the available habitat for fish, amphibians, and aquatic invertebrates by filling in interstitial spaces between the gravel and cobble on the channel bed. Interstitial spaces provide winter

refuge, summer cover, spawning, and foraging habitat for fish, amphibians, and invertebrates. When interstitial spaces become embedded with sediment, critical refuge and cover habitat for young fish, amphibians, and aquatic insects are lost. Sedimentation can result in the suffocation of eggs and newly hatched fish and amphibians due to lack of water circulation, which carries oxygen through the gravel. Where stream bottoms are severely embedded, spawning fish may be unable to penetrate the stream bed to prepare nests. Moring (1982) found that at least a 100-foot wide riparian buffer was needed to buffer spawning areas from sediment inputs from upland clear-cutting to allow for normal egg development of trout and salmon.

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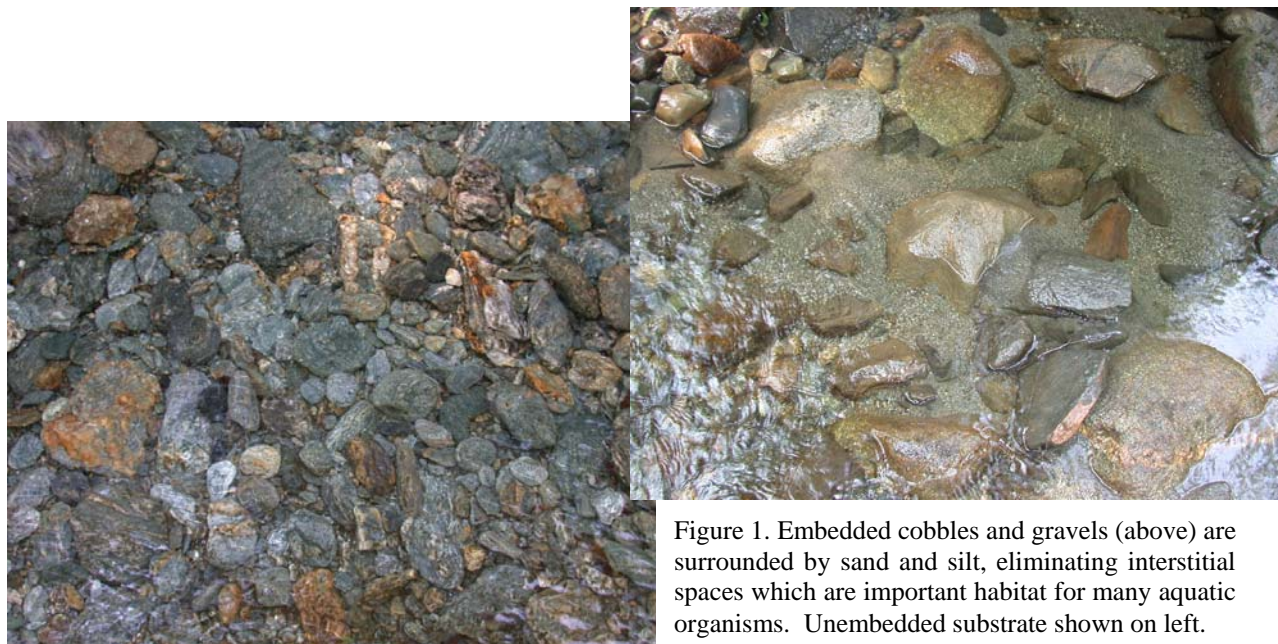


Figure 1. Embedded cobbles and gravels (above) are surrounded by sand and silt, eliminating interstitial spaces which are important habitat for many aquatic organisms. Unembedded substrate shown on left.

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Water Quality: Nutrients and Other Contaminants

Excess nutrients in surface waters promote rapid algal and other aquatic plant growth, which reduces the level of dissolved oxygen in the water. The resulting low oxygen can cause fish kills and decreases in aquatic insect populations, as well as disrupt the normal food web and water chemistry balance. Buffer widths sufficient to remove sediment from runoff may also trap phosphorous, since most phosphorous entering the buffer is attached to sediment (Peterjohn and Correll 1984). See Section 1: Water Quality for a complete discussion of buffers and nutrient removal.

Human and animal waste contributes to aquatic habitat degradation in ways other than nutrient contamination. This waste contains organic matter which, when broken down by aerobic bacteria in the water, rapidly consumes oxygen, leaving less for aquatic organisms. Sources of waste-related organic matter include leaking sewer pipes, improperly functioning septic systems, animal waste sprayed onto fields and waste lagoons.

Pesticides can enter rivers via surface runoff from roads, agricultural lands, lawns, and golf courses. Many of these substances can kill aquatic organisms directly as well as enter the food chain. Many toxins accumulate in the food chain, ultimately harming higher predators that feed on aquatic organisms and making fish unsafe for human consumption. Riparian areas are very important in keeping pesticide application away from streams, rivers, and lakes, preventing direct contamination of the waterbody and

reducing the danger of drift. See Section 1:Water Quality for a complete discussion of buffers and pesticide removal.

At a minimum, riparian areas wide enough to prevent sediment input into the waterbody should provide short-term control of sediment-bound nutrients and other contaminants (Wenger 1999).

Food Supply

Organic material derived from riparian areas is the ultimate energy source for aquatic food webs in most small to medium-sized streams (USACE 1991). This is also true for many ponds and lakes.

Riparian vegetation provides leaves and other detritus that feed aquatic invertebrates; including aquatic insects such as stoneflies, mayflies, caddis flies, midges, and beetles, as well as crayfish, worms, clams (mussels) and snails. Aquatic invertebrates are important components of the stream system, and, because they are in the middle of the food chain, are excellent indicators of stream health. In streams, the dominant food for fish and most amphibians is invertebrates. Almost all fish species seek



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invertebrates from streambed substrates or other surfaces in the stream or actively forage on invertebrates suspended in the water column (Verry 2000). Additionally, most aquatic invertebrates emerge from the stream as adults and use the riparian zone vegetation for reproductive cover (Wenger 1999).



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Small streams in forested regions rely on heavily wooded stream banks for abundant inputs of plant litter and other detritus, while at the same time algal growth is reduced by the shade of the forest canopy. Leaves are of principal importance, but twigs, fruits, terrestrial insects, and wood are also used by stream biota. Even logs meet the nutritional needs of some invertebrates. The breakdown of autumn-shed leaves is an important source of coarse particulate organic matter to small woodland streams. The leaves provide substrate to insects that graze algae and fungi from their surfaces, and are food to insects that eat the leaves themselves. Coarse, fine and dissolved organic matter comprises a diverse array of potential food sources for consumers in water ecosystems. Invertebrates collect, gather and filter fine particulate organic matter as a food source. These organic contributions are of greatest importance where the opportunities for photosynthesis are least, such as small woodland streams and

large turbid rivers. Because most leaves falling into streams may be retained within several hundred meters of their entry point (Cummins 1989), a nearly continuous strip of riparian vegetation along stream channels may be essential to maintain riparian based aquatic food chains (USACE 1991). Few trees

further than 50 feet (15 meters) from the stream bank are likely to contribute significant leaf fall to streams (USACE 1991).

Woody Debris

Large woody debris (LWD) is an important component of both lotic (flowing) and lentic (standing) waterbodies. It provides overhead cover for fishes, substrate for aquatic invertebrates, and velocity refuge in lotic waters. Additionally woody debris can be an important source of particulate organic matter adding to primary productivity of a stream. In naturally forested areas, LWD is a critical structural component of stream ecosystems. In headwater streams of forested areas 25-50% of the streambed is wood and wood-created habitat. It is also very important in lowland rivers where 70% or more of the bed is composed of sand, and wood provides the only stable substrate (Allan 1995). LWD captures food items transported in the water column by both accumulating detrital material (leaves, twigs) and providing surfaces for algal growth (Allan 1995). Thus, it is critical in helping to maintain the food supply of a lotic or lentic ecosystem.



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The importance of LWD for fish habitat also has been well documented (Meehan 1991). LWD influences stream flow, often creating pools, backwaters, shallow slack water, and variable flow velocities, adding to the overall complexity of aquatic habitat. LWD also traps sediments and retards scouring of the channel bed and banks during high flows, maintaining channel stability, which is also important for aquatic habitat (USACE 1991). Many of Vermont's headwater streams became wider and shallower when they were cleared of wood during the period of deforestation (1850-1950) and are still undergoing vertical and lateral channel adjustments due to the lack of sediment retention.

Large woody debris, such as snags, logs, and rootwads, are recruited from riparian areas into nearby waterbodies by means of natural aging and falling, wind throw, flood, and landslide. During high flows, forested floodplains next to large rivers are a primary source of woody debris (Hauer 1996), as are trees falling directly from the bank and riparian area into the channel. Studies have demonstrated that 99 percent of woody debris originates within 100 feet (30 meters) of the stream or river channel (USACE 1991). Of all the ecological functions of riparian areas, the process of woody debris loading into channels, lakes and floodplains requires the longest time for recovery after harvest (Wenger 1991).

Channel Stability

A geomorphically stable stream will transport the water and sediment produced in its watershed without aggrading or degrading (see Section 3 for a more detailed explanation). While most streams naturally undergo some rate of lateral bank erosion, the vertical stability of a stream is dependent on the fluvial processes that maintain the overall dimension (width and depth), pattern, and profile (or slope) of the channel. Fluvial processes, including floodplain connectivity, hydrology, and sediment and wood regimes, are critical to the formation of aquatic habitat and are moderated by the extent and vegetative characteristics of riparian buffers.

For low gradient streams in unconfined valleys, the movement of materials (water, sediment, and organic material) between the stream channel and its floodplain is as important for aquatic biota as it is for the channel itself. The floodplain is that area where the stream “spills its banks” and enters a generally flat area adjacent to the stream. Floodwaters that are not allowed to dissipate horizontally over a floodplain build up energy within the channel, often causing excessive scour of the channel bed and banks. During a flood event, the mobilization of large substrates in the channel bed can cause direct mortality of fish, amphibians, and other aquatic biota (USACE 1991). If floodwaters are able to spread out across the floodplain, reducing the energy in the channel, larger substrates that provide refuge for fish and amphibians during flood events will remain in place. Excessive or repeated bed scour can also lead to long-term vertical channel instability, which often results in a loss of habitat complexity through scour and sedimentation of bed forms such as riffles and pools. Riparian buffers provide space for the maintenance or re-establishment of floodplains, and riparian vegetation stabilizes stream banks, reducing sediment inputs to the channel and supporting undercut banks, which provide cover and cool water refuge for fish, reptiles, and amphibians.

Bed forms—whether boulder “steps” and plunge pools in steep mountain streams or pools and riffles in low gradient meandering streams—provide feeding, resting, cover and reproductive habitat for aquatic organisms. Bed form development relies on the magnitude, duration, and frequency of different flows and the size, quantity, and distribution of different sediments. Riparian buffers and their vegetative characteristics have both direct and indirect influence on the hydrologic and sediment regime characteristics of a stream. Riparian areas and vegetation play a direct role in maintaining watershed storage functions, moderating the flow of water, sediment and debris during runoff events. Indirectly, riparian buffers play a role in maintaining habitat by providing the space a stream needs to create and maintain a stable geometry. For instance, an alluvium-based channel denied the space to create meanders or the deep-rooted vegetation to maintain bank stability and channel dimensions will become a wide, shallow, featureless stream with little or no habitat value for species that require depth and large cover substrates to survive. Streams reaches where riparian vegetation has been restored have been found to narrow and deepen, creating more complex stream channels, and to increase in LWD accumulation and shading (Opperman and Merenlender 2004).

Maintenance of Adjacent Wetlands

Wetlands in the riparian corridor play critical roles in flood attenuation and the protection of water quality, both of which are critical for aquatic habitat. Wetlands adjacent to streams and rivers also provide nursery habitats for juveniles of many fish species, as well as spawning habitat for fish such as northern pike, largemouth bass, and brown bullhead.

Terrestrial Habitat

The distinctive terrestrial habitat provided by riparian areas is home to a number of plant and animal species rarely found outside riparian areas (Verry 2000). In Vermont, several species listed as state threatened or endangered are associated with riparian areas. Many species that are dependent on aquatic habitat, such as salamanders, frogs, turtles, mink, beaver, otter, and numerous bird species also use terrestrial riparian habitats. In some instances, continuous stretches of riparian buffer serve as wildlife travel corridors (Chase 1995; DeGraff and Rudis 1986).

Amphibians

Frogs and most salamanders require water for part of their life cycle, and are particularly abundant in riparian areas. Breeding habitats of amphibians are diverse; including intermittent and permanent streams, rivers, ponds, lakes, vernal pools, and wetlands. Once adult amphibians have laid their eggs, most travel

into adjacent upland habitats, such as forests, meadows or wetlands for food and shelter. These animals will move within the terrestrial habitat distances as great as 1000 feet or more from breeding water (Semlitsch 1998; Calhoun and Klemens 2002). Juveniles of these species also move out of the nursery areas and into this terrestrial habitat later in the year. Most amphibians spend the winters in hibernation in places that provide protection from freezing, either underwater or on land under rocks and logs or in rodent burrows. Many amphibians spend the greater part of their life cycle in riparian and upland areas adjacent to water. Forested riparian buffers can also provide habitat connectivity between waterbodies used for egg-laying, allowing for dispersal of juveniles and genetic interchange with other local populations.



Figure 2. Blue-spotted salamander.

Reptiles

Nine out of Vermont's nineteen reptile species are dependent on lakes, streams, and wetlands to fulfill their life requirements. Two snake species rely heavily on waterbodies, mainly for foraging on fish and amphibians. Eastern ribbon snakes occupy shallow water habitats including pools, wetlands and small streams. In winter, they may travel several hundred meters from water to upland hibernation sites in rocky outcrops. Northern water snakes occupy a wide range of habitats from pools and swamps to lakes and spillways. There are also seven turtle species dependent on water for survival. Turtles use streams, wetlands, lakes and surrounding uplands for foraging, breeding, nesting and over-wintering. The wood turtle and spotted turtle use upland habitat of old fields and woodlands for foraging and nesting. Wood turtles, which are considered a rare species in Vermont, are closely associated with riparian areas (Kaufman 1992; Parren 2005). These animals overwinter in rivers and streams and then move into the

Figure 3. Wood turtle.



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adjacent riparian areas in the spring and summer to forage, breed, and nest. The other turtle species, snapping turtle, painted turtle, map turtle, stinkpot, and spiny softshell, are aquatic feeders, but move onto the upland to dig nests in well-drained substrates. In Vermont most turtle species are either threatened or are species of special concern due to declining populations. Some turtle species are known to nest up to 1000 feet away from the aquatic habitat. Turtles hibernate primarily on the bottoms of streams, lakes and wetlands. As with amphibians, it is necessary to conserve both the aquatic and upland habitats of reptiles to maintain viable populations of these animals in Vermont.

Birds

Riparian areas support a wide variety of bird species from resident songbirds and neotropical migrants to waterfowl and birds of prey. The available food sources and habitats determine which bird species are present in an area. Insects are plentiful in riparian areas, as are berry and seed-producing plants. Nesting habitat may include erosional bluffs (for species such as belted kingfishers and bank swallows), wetlands (for wading ducks), cavity trees (for mergansers and wood ducks), large forested tracts and grassland habitat.

Often the diversity of bird species present in a riparian area is a function of the width of the vegetation. Larger areas will provide a greater variety of habitat types and food sources. In a study of selected third-order streams in Vermont, a vegetated riparian area of 150 to 175 meters (490 to 575 feet) from the high water mark was required to protect 95% of the bird species present (Spackman 1992). Narrow strips of vegetation provide habitat for edge species, like song sparrow, Northern cardinal, and common grackle (Keller 1993). Edge habitat provides an open area for foraging located directly adjacent to forested areas for nesting and cover. While edge habitat may offer benefits to some species it puts birds at greater risk from increased nest predation, nest parasitism from the brown-headed cowbird, and competition with the exotic European starling for nesting cavities. Many neotropical migrants require forest interior habitat for nesting, such as the Acadian flycatcher, wood thrush and certain warblers. In Keller's study (1993) these species were only found in riparian areas 300 to 800 meters (985 to 2625 feet) wide. Waterfowl also need large areas for nesting, since they are vulnerable to human disturbance. A study in Florida determined that areas greater than 100 meters are required to protect waterfowl from human disturbances, including hiking, boating, driving automobiles and ATVs (Rodgers 1997).

Most species of waterfowl in Vermont are dependent on wetlands for both nesting and foraging; though some forage in wetlands and nest on adjacent uplands. Birds of prey most commonly associated with riparian areas are osprey and bald eagle. These birds forage for fish in the water, and nest on adjacent uplands. Areas required to protect birds of prey will depend on the species, its particular habitat requirements, and sensitivity to human activity. Some riparian dependent bird species, such as bald eagle, great blue heron, and wood duck, may require buffers 600 feet or greater in width to meet their nesting and roosting habitat needs (Roderick and Miller 1991).

Mammals

Vermont is home to fifty-eight species of mammals, many of which spend a large portion of their lives on or near surface waters. Many species, including beaver, otter, muskrat, star-nosed moles, and water shrews, spend their entire lives within riparian areas. Some large mammals are not only dependent on these areas, but also play a role in determining the structure of the streams and riparian zones (Naiman and Rogers 1997). For example, beavers create wetlands in areas where they might otherwise not exist, increasing the overall diversity of the aquatic community in those regions (Snodgrass and Meffe 1998).

Other large mammals use riparian areas for cooling, foraging, travel corridors, and as connecting habitat through otherwise uninhabitable regions. Few studies have explicitly addressed how wide riparian areas need to be to support these functions. Research on beaver have shown that the forested upland within about 500 feet of their ponds is important as an area for them to forage for food and construction material (Saunders 1988). Moose and bear require extensive woodlands heavily interspersed with aquatic habitat. Each animal will use several different wetlands and waterbodies in the course of their travels. Upland habitats that provide food and cover are important, especially when they serve as travel routes extending to neighboring wetlands and aquatic habitats. A Vermont study shows use of riparian corridors to be important for black bear movement, particularly in providing travel corridors at road crossings (Hammond 2002). Many small mammal species are dependent on riparian areas as well. Mink travel and forage along aquatic habitats and construct their maternal dens up to 600 feet from water. Most other species of furbearers spend most of their lives within 300 feet of streams, rivers, and wetlands (Chase

1995). Smaller mammals generally require smaller riparian buffers. In Oregon, riparian buffers ranging from 9-20 meters (30 to 65 feet) at one site to 67 meters (220 feet) at a second site were required for a variety of small mammal communities (Cross 1985).

Several species of bats commonly hunt over water in Vermont, including the silver-haired bat, eastern pipistrelle, and little brown myotis. They are especially dependent on forested riparian areas that provide foraging and roosting habitat. Older stands of trees, which tend to include more large dead and diseased trees than younger stands, have features such as cavities and loose bark that provide roosting sites for many bats. Large dead and dying trees are very important for many other wildlife species for shelter and as a source of wood boring insects eaten by many birds and mammals (Chase 1995). Timber harvesting within established riparian buffers should be discouraged so as to maximize the number of old and dead trees available to wildlife.

Threatened and Endangered Species

Rare species of plants and animals at risk of becoming extirpated in Vermont are given a state status of threatened or endangered. This status gives species protection under the Vermont Endangered Species Law (10 V.S.A. Chapter 123). The law requires the State of Vermont to provide protection necessary to maintain and recover populations of threatened and endangered species. It also prohibits taking by collection, hunting or harassing of state listed species without an Endangered Species Permit. Species listed as endangered are in immediate danger of becoming extirpated in the state, while threatened species are believed to have a high possibility of becoming endangered in the near future. Many of the Vermont's threatened and endangered species use riparian habitats for some of their life cycle. Aquatic animals listed as threatened or endangered include six species of fish and ten species of mussels. Aquatic species are especially sensitive to water quality problems, particularly sedimentation. Changes in river or lake hydrology and morphology threaten their habitat. There are also two riparian-associated beetle species listed as state threatened. The cobblestone tiger beetle spends its life along the cobble shores of large rivers. The rough-necked tiger beetle is found on lake sand beaches on Lake Champlain.

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Current lists of threatened and endangered animals and plants are available from the Vermont Fish and Wildlife Department's Nongame and Natural Heritage Program. Threatened and endangered bird species associated with riparian habitat include common loon, osprey, bald eagle, common tern, and black tern. These species use aquatic habitats for feeding, while nesting in adjacent forests or wetlands. Protection of these bird species requires the conservation of critical nesting and foraging areas, and preventing human disturbance of these areas. State listed reptiles include spotted turtle and spiny softshell turtle. The spotted turtle's habitat is typically swamps adjacent to streams, while the spiny softshell turtle is found in Lake Champlain and its drainage basins. All habitats used by the spotted and spiny softshell turtles during their life cycle need to be protected in order to maintain these species. Two bats, the Indiana bat (myotis) and eastern small-footed myotis, which are endangered and threatened, respectively, in Vermont, use riparian areas for foraging because of the large quantities of insects present in riparian areas.



There are also several state-threatened and endangered plant species associated with riparian areas, such as great St. John's-wort and Garber's sedge. A number of these species are found at the aquatic terrestrial interface and the riparian area acts as a buffer to protect their habitat. Plant species are at risk from loss of habitat by human alteration or changes in riparian functions, as some plant species are dependent upon riparian functions such as scouring, flooding, and deposition of materials. For example, Jesup's mild-vetch is found on ice scoured rocks along the Connecticut River.

Natural Communities

There are a wide variety of natural community types that occur along the shores of Vermont streams, rivers and lakes, including sparsely vegetated open shores, marshes, shrub swamps, and floodplain forests. The diversity of shoreline community types reflects the dynamic and stressful nature of this environment – floods, ice scour, wave action, and deposition and erosion of sediments by flowing water are all natural processes that affect shoreline communities. Shorelines are hot spots for rare natural communities and associated rare plants. These communities also provide a diversity of specific habitats for wildlife species as well as wildlife movement corridors. Shoreline natural communities provide buffers to streams, rivers, and lakes, but in some cases the shoreline communities themselves need upland buffers in order to ensure their protection.

A natural community is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them. The same natural community can be found repeating across the landscape wherever similar environmental conditions occur. These environmental conditions include climate, soil type, nutrient availability, the amount of water or lack thereof, and the type of natural disturbance (such as wind, fire, and flooding). It is possible to describe and classify natural community types since they do repeat in similar environmental settings. This natural community concept helps explain some of the complexity in nature, including how plants and animals are distributed across the land. It also provides a strong tool for planning land management and conservation.

Natural community types may be considered rare because of the unique combination of environmental conditions that form them, or because there are few remaining examples of a particular type. For example, Calcareous Riverside Seeps are only found where calcareous groundwater surfaces over bedrock in rivershore areas scoured by flooding and ice. This combination of environmental conditions is rare and consequently the community type is also rare. Floodplain forests, however, are uncommon because of extensive land-use within the floodplains of Vermont's major rivers and lakes – floodplain soils are highly productive and most have been converted to agricultural land. To illustrate the small percentage of remaining riverine floodplain forests, a comparison was made between floodplain soils and existing floodplain forests in Franklin County. Of the 14,653 acres of floodplain soils present, only 1,652 acres were forested (Sorenson 1998).

Groups of natural communities commonly associated with riparian ecosystems include open upland shores, open wet shores, marshes and sedge meadows, shrub swamps and floodplain forests and swamps (Table 1).



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Open upland shores and open wet shores differ in the duration and frequency of flooding or soil saturation. The plant species present reflect these differences. Open upland shore communities are influenced by flooding, ice scour, and water movement, but do not remain wet, and are therefore colonized by many upland plant species. For example, Riverside Outcrops are maintained by regular flooding events and ice scour, which keep the rocky outcrop open and allow for specialized upland herbs to colonize it. Open wet shores, such as Lakeshore Grassland, are dominated by wetland plant species since these natural communities are closer to the water and are inundated more often. Most woody plants are also excluded from this community by frequent flooding and ice scouring.

Marshes and sedge meadows are flooded for extended periods of time or may remain permanently saturated, and are found on shallow organic or mineral soils. For example, Deep Bulrush Marshes occur in permanent standing water along the shores of lakes that are exposed to larger waves, while Shallow Emergent Marshes are only flooded or saturated at some time during the growing season and occur in a variety of sheltered shoreline and basin settings. Shrub swamps are flooded less frequently than marshes and sedge meadows, allowing shrubs to dominate; but they are flooded frequently enough to exclude large trees.

Floodplain forests and swamps vary depending on the flooding regime and the texture of the sediments carried by the floodwaters. Floodplain Forests are divided into four types, which are distinguished by the different plant species that occupy them. The soil texture in floodplain forests is directly related to the gradient and energy of the adjacent river or stream, with high gradient streams carrying coarser-textured sediments. The soil type and the duration and frequency of flooding in turn, determine which plants will be present and which type of natural community will form. There is little sediment carried and deposited in floodplain swamps and these swamps typically develop deep organic soil layers due to more permanent saturation of the soils. Although natural communities can be classified into specific groups or types, they often form community mosaics where various types are present and grade into one another.

Table 1: Natural community types associated with rivers and lakes.

Open Upland Shores	Open Wet Shores	Marshes and Sedge Meadows	Shrub Swamps	Floodplain Forests and Swamps
Riverside Outcrop	Outwash Plain Pondshore	Shallow Emergent Marsh	Alluvial Shrub Swamp	Lakeside Floodplain Forest
Erosional River Bluff	River Mud Shore	Sedge Meadow	Sweet Gale Shoreline Swamp	Red or Silver Maple-Green Ash Swamp
Lake Shale or Cobble Beach	River Sand or Gravel Shore	Cattail Marsh		Red Maple-Northern White Cedar Swamp
Lake Sand Beach	River Cobble Shore	Deep Broadleaf Marsh		Silver Maple-Ostrich Fern Riverine Floodplain Forest
Sand Dune	Calcareous Riverside Seep	Wild Rice Marsh		Silver Maple-Sensitive Fern Riverine Floodplain Forest
	Rivershore Grassland	Deep Bulrush Marsh		Sugar Maple-Ostrich Fern Riverine Floodplain Forest
	Lakeshore Grassland			

More information on Vermont’s natural communities can be found in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson and Sorenson 2000).

3: CHANNEL STABILITY

Naturally vegetated riparian corridors are critical to maintaining functioning stream channels. Riparian areas disperse and reduce floodwaters and the effects of storm events on stream channels, stabilize streambanks, reduce ice damage, and maintain sediment transport and channel morphology. To fully understand these riparian functions it is important to also understand how streams naturally evolve in their landscapes over time, and how this determines effective riparian corridor widths for maintaining stream stability. Stream stability may be defined as: the ability of a stream channel, over time and in the present climate, to transport the flow, sediment, and debris of its watershed in such a manner that it maintains its dimension, pattern, and profile without aggrading or degrading its bed.

Riparian areas provide for channel stability in the following ways:

- flood attenuation
- reduced effects of storm events
- bank and shoreline stabilization
- ice damage control; and
- maintenance of sediment transport and channel morphology.

Channel Evolution Process

Streams are dynamic systems that change constantly over time. Streams may change slowly over decades or suddenly in one flood event. Recent advances in the study of channel fluvial geomorphology have shown that stream channels undergo physical changes in a systematic process, usually triggered by a change in the channel's sediment load or hydrology. This series of channel adjustments is referred to as the channel evolution process (Schumm 1984).

Streambank erosion is one obvious sign of channel change that can be seen throughout Vermont's watersheds. Streambank erosion is a natural process and plays an important role in contributing rock and woody material to a stream system; however, many streams in Vermont have lateral instability, where they are moving back and forth across their valleys at rates more rapid than that of a stable stream. This lateral instability is primarily due to lack of deep-rooted and dense vegetation on streambanks. These streams have access to their floodplains, so they typically do not experience bed erosion during floods, but they would exhibit considerably less streambank erosion if they had vegetation holding their banks together. See discussion below under Streambank Stabilization.

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Other streams have eroded their channel beds and have become incised. These streams have lost access to their floodplains during the annual flood and their streambanks bear considerable stress during high water. Due to this increased stress on the streambanks the channel begins to erode outward, or laterally, and to widen. As the channel over-widens, it fills with sediment. Over time a new narrow channel forms again and new floodplains develop to either side of the new channel at a lower elevation in the landscape. The cumulative effects of streambank and bed erosion and the resulting channel adjustments cause loss of



Figure 4. Incised stream channel creating a new floodplain at a lower elevation. Recently abandoned floodplain visible on right at top of slope.

property, loss of aquatic and wildlife habitat, decreased water quality, and greater risk of flood-related damage.

The stability of a stream channel is based on maintaining a certain flow of water, shape and slope of the channel, and sediment load. When any of these change significantly, the river channel must change, typically resulting in erosion of the stream bed or banks. Between the 1700's and the 1800's, the building of roads and railroads within the floodplains, deforestation, and moving streams to accommodate agricultural fields and villages resulted in unstable river channels. Even in recent decades, large-scale channelization practices have been employed to reclaim damaged lands after large flood events. The 1970's and 1980's were also a period of extensive gravel mining in many Vermont streams. Post-flood channel straightening and gravel mining of point bars have the effect of steepening stream channels.

A steep channel in a relatively flat valley may initiate a bed degradation, or downcutting, process referred to as "headcutting." Once a stream begins to headcut, it will typically erode its way through the five-stage channel evolution process depicted in Figure 1 until it has created a new floodplain at a lower elevation in the landscape.

The bed erosion that occurs when a meandering river is straightened in its valley is a problem that translates to other sections of the stream. Headcuts will travel upstream and into tributaries eroding sediments from otherwise stable streambeds. These bed sediments will move into and clog reaches downstream leading to lateral scour and erosion of the streambanks. Channel evolution processes may take decades to play out. Even landowners that have maintained wooded areas along their stream and riverbanks may have experienced eroding banks as stream channel slopes adjust to match the valley slopes.

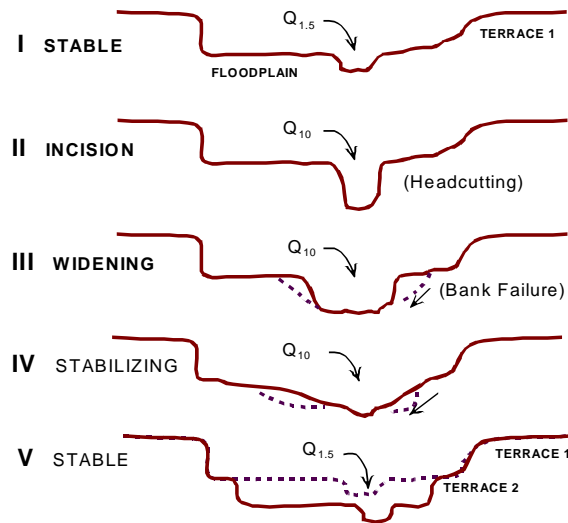


Figure 5. Five stages of channel evolution showing head cutting that leads to bed lowering (incision) and floodplain redevelopment.



Figure 6. A head cut is a steep drop in the channel bed that migrates upstream.

It is difficult for streams to attain a new equilibrium where the placement of roads and other infrastructure has resulted in little or no valley space for the stream to access or to create a floodplain. Landowners and government agencies have repeatedly armored and bermed reaches of Vermont's rivers to contain floodwaters in channels. These efforts have proven to be temporary fixes at best, and in some cases have lead to disastrous property losses and natural resource degradation. A more effective solution is to limit encroachments within the riparian corridor and maintain a buffer of woody vegetation between the stream and adjacent land uses. Maintaining vegetated riparian corridors and offsetting development limits the conflict between property investments and the natural processes of flooding and channel migration that occurs gradually over time. Given room, a channel can adjust its shape and slope to changes in flow and sediment load. In general, the space provided by an established riparian corridor allows the river or stream system to be more resilient to watershed changes, thereby protecting the fish, wildlife, and humans that depend on Vermont's rivers and streams.

Channel Evolution and Riparian Buffer and Corridor Widths

When establishing riparian buffers and corridors it is important to consider the point from which buffers should be measured - from the **top of bank** or **top of slope**, depending on the physical channel characteristics.

Measuring from top of bank: Figure 7 represents a stream channel with a relatively flat and wide floodplain, which the stream accesses during flows at or exceeding the average annual high water stage. When these channel characteristics are present riparian buffers and corridors can be measured from the top of bank, perpendicular to the channel. When contiguous wetlands are present in the floodplain, buffer measurement should begin at the upland edge of the wetland.

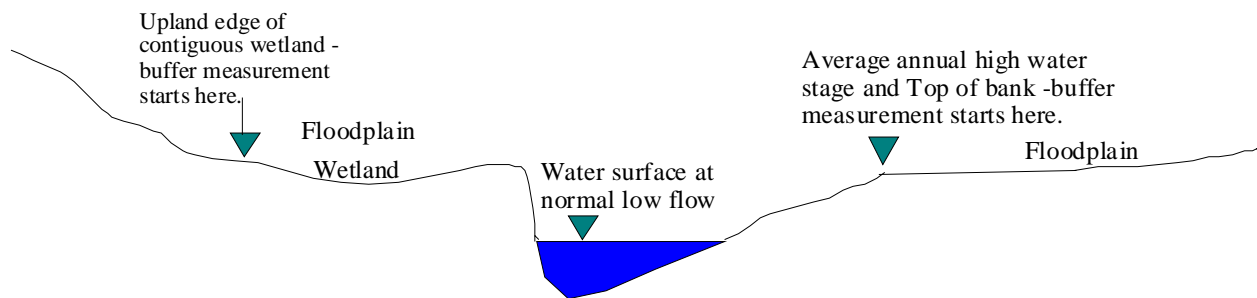


Figure 7. Top of bank typical of streams with flat, wide floodplains that the stream accesses during flows exceeding average annual high water. Upland edge of wetland typical of contiguous wetlands sometimes present in the floodplain.

Measuring from top of slope There are at least three scenarios when riparian buffers should be measured from the top of slope.

Scenario 1: When a channel is contained in a narrow V-shaped valley that has steep side slopes riparian buffer zone measurement should begin at the top of slope (Figure 8). There is often little or no floodplain in this scenario, which increases the threat of slope toe erosion and slope failure, especially during storm and flood events.

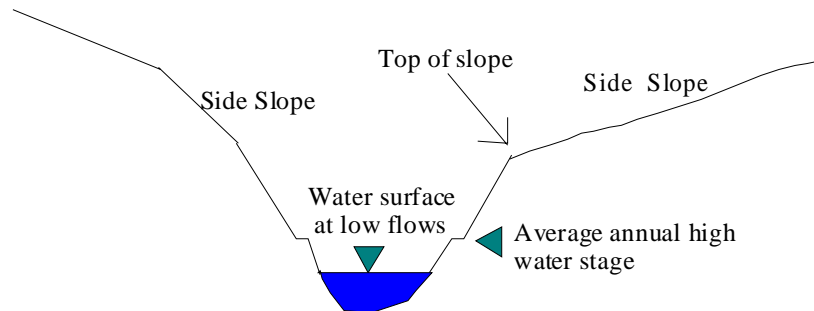


Figure 8. Top of slope typical of steep streams in narrow V-shaped valleys with little or no floodplain.

Scenario 2: When a channel has adequate floodplain on one side but borders a steep valley side slope or high terrace on the other, riparian buffer zone measurement should begin at the top of slope on the valley wall or terrace side and the top of bank on the floodplain side (Figure 9). The absence of a floodplain in areas where the channel runs adjacent to the steep valley side slope or high terrace increases the threat of slope toe erosion and slope failure.

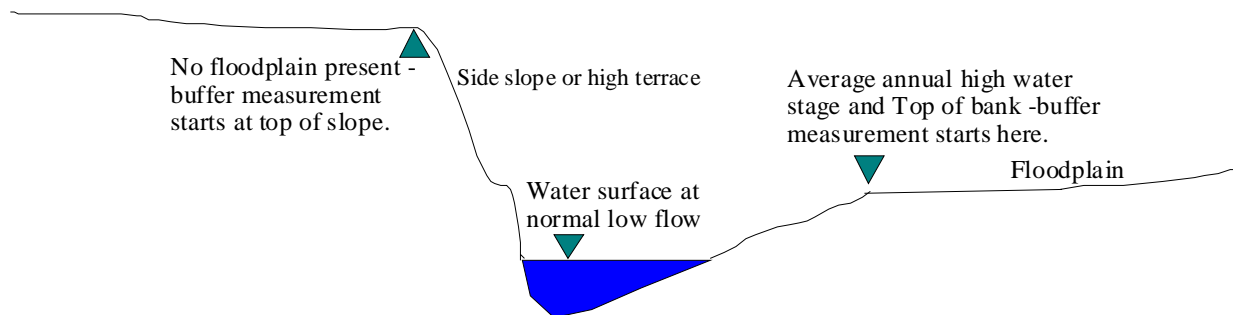


Figure 9. Top of slope typical of streams that run adjacent to steep slopes or high terraces on one side of the valley but have adequate floodplain on the opposite side of the valley.

Scenario 3: Where streams that once had access to floodplains have since steepened and incised, the top of slope is found at the edge of the floodplain undergoing abandonment (Figure 10). These streams are undergoing a channel evolution process, often taking decades to erode their banks and reestablish meanders, creating new floodplains at lower elevations. This often involves the cutting away of the toe of the steep slope, leading to slope failure. To ensure that streamside slopes are not compromised during this channel evolution process, riparian buffers should be established from the top of slope.

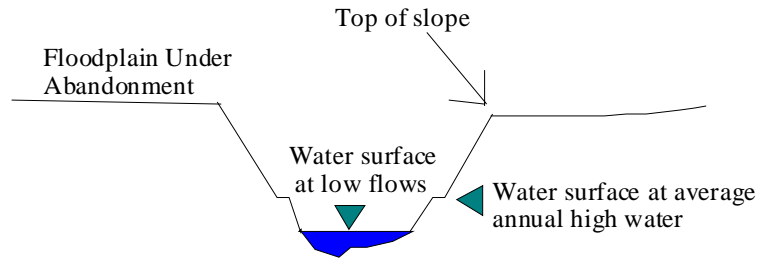


Figure 10. Top of slope typical of incised streams that have little or no access to their floodplains and have yet to establish a new floodplain.

After a stream has incised and widened, it develops a new floodplain at a lower elevation. Often these floodplains are contained in narrow valleys and are flanked by steep slopes. In the case of narrow floodplains, where the slope and depth of the stream is maintained by the stream's ability to meander across the full width of the floodplain, riparian buffer zones should be established from top of slope to protect the stability of the stream as well as the stability of the adjacent slopes (Figures 11 and 12).

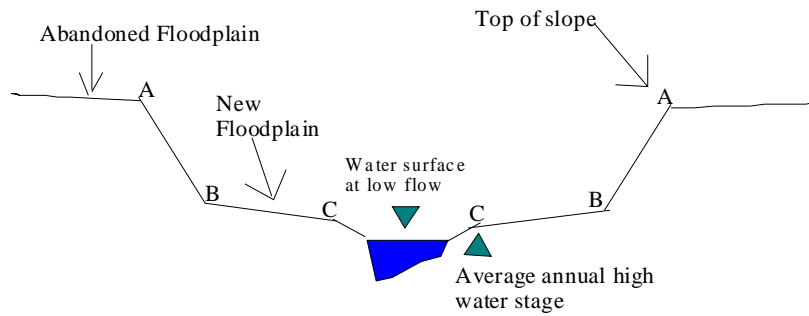
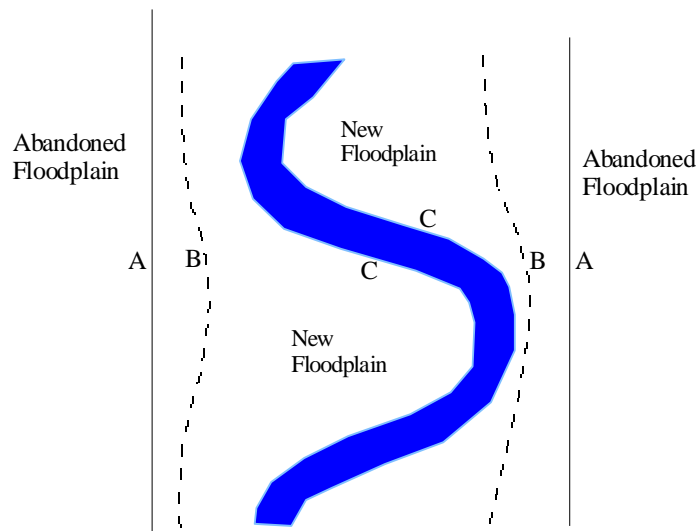


Figure 11. Top of slope typical of streams that were once incised and have since reestablished a new floodplain at a lower elevation.



**Figure 12. Bird's eye view of stream in Figure 11.
A=top of slope, B=outer edge of floodplain, C=top of bank.**

Flood Attenuation

Flooding is a natural process essential to the ecological health of riparian and river systems. Human encroachment into the floodplain in many areas has drastically increased the potential economic impacts of flood events. Maintaining vegetated riparian buffers and corridors can help restore natural channel processes while simultaneously protecting human investments within and adjacent to the floodplain. During flood events, riparian areas allow floodwaters to spread out horizontally over the land, thereby reducing the force with which the floodwaters move downstream. This reduction in stream power is important not only for the protection of the human investments in and around the floodplain, but also for the protection of the channel itself. Soils and vegetation in the riparian zone obstruct and slow down floodwaters, and reduce floodwater volume through absorption. In addition, wetlands within the riparian zone can store floodwaters, thereby reducing the amount of water entering the channel over time, and thus reducing flood peaks.

Reduced Effects of Storm Events

Riparian vegetation and soil obstruct surface runoff, slowing it down and allowing it to infiltrate into the ground. This reduces the volume and rate at which surface runoff enters stream channels. In turn, this reduces the energy applied to the stream bed and banks, reducing the scouring ability of the high flow event. During a high flow event in a stable system, stream channels scour and subsequently fill with sediments; however, excessive stream power (caused by a change in the hydrology or sediment load of the stream system) can result in long-term channel instability. Over time the channel will re-stabilize, but this process may take decades or even centuries. Meanwhile, as the system recovers, aquatic life, human investments, water quality, recreation, and other functions and values of the riparian area will be at risk.

Consideration of riparian corridors throughout a watershed is important in managing effects of storm events. A well-buffered low valley river is likely to still be heavily impacted by storm events if the tributaries that feed that river are not buffered with riparian vegetation.



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“Before the country was cleared, the whole surface of the ground was deeply covered with leaves, limbs, and logs, and the channels of all the smaller streams were much obstructed by the same. The consequence was that, when the snows dissolved in the spring, or the rains fell in the summer, the waters were retained among the leaves, or retarded by the other obstructions, so as to pass off slowly, and the streams were kept up, nearly uniform as to the size during the whole year. But since the country has become settled, and the obstructions, which retarded the water, removed by freshets, when the snow melts or the rains fall, the waters run off from the surface of the ground quickly, the streams are raised suddenly, run rapidly, and soon subside. In consequence of the water being thus carried off more rapidly, the streams would be smaller than formerly during a considerable part of the year, even though the quantity of water be the same. It is a well known fact that the freshets in Vermont are more sudden and violent than when the country was new.”

Zadock Thompson, Natural History of Vermont, 1853

Streambank and Shoreline Stabilization

Streambank and lakeshore stability is important in preventing excessive sediment from entering a waterbody, maintaining channel form, conserving soils, and protecting property values. Vegetation in riparian areas stabilizes streambanks and lakeshores, reducing erosion caused by downstream flow of water and wave action. Though some erosion is natural and the gradual migration of stream channels within the riparian corridor and floodplain is to be expected, root mass from riparian vegetation helps to moderate erosion processes. Stream channels lacking natural riparian vegetation are generally wider and shallower than channels that have naturally vegetated riparian areas (Gunderson 1968; Platts 1981). The change in channel dimensions may become significant as to alter the fluvial processes (see discussion below). Soils bound together by roots have greater tensile strength than unvegetated soils, and thus have greater resistance to erosional forces (Fischer and Fischenich 2000).

Unvegetated banks have been found to be 30 times more likely to erode than vegetated banks during high flows (Wenger 1999). Whipple (1981) observed that substantial bank erosion almost always occurred in riparian areas less than 50 feet wide, while riparian areas 50 feet wide or greater rarely experienced such erosion. In low order northern California streams 100-foot wide (30 meter) buffers were adequate to maintain streambank stability (USACE 1991). A relatively narrow buffer may maintain short-term streambank stability; however, maintaining a wider vegetated riparian corridor will be more effective in the long-term due to the possibility that a channel will naturally migrate out of a narrower buffer area (Wenger 1999).



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Ice Damage Control

During spring ice-breakup, forested riparian corridors trap ice slabs and other floating debris, reducing the potential for ice jamming at downstream constrictions. Jamming can result in backwater and flooding upstream, which can lead to channel instability, as well as property damage. Riparian vegetation also reduces the potential of ice slabs damaging infrastructure by obstructing the flow of ice into the outer floodplain during high spring flows and by absorbing the pressures of mid-winter ice push on lakeshores. Riparian vegetation serves a similar role during flood events, trapping floating debris and thereby reducing the potential of log and debris jams in the channel and reducing the potential of debris reaching the outer floodplain.

Streambank erosion due to ice scour is reduced by streambank vegetation, which is often more resistant to ice scour than the soils in the streambank. Indeed, some plant species are specifically adapted to the scour and depositional forces that occur in riparian areas during flooding and snow melt events.

Maintaining Sediment Transport and Channel Morphology

Two basic functions of stream systems are the movement of water and sediment through the landscape. Stream systems receive water and sediment from their watersheds that determine the size and shape of the channel. If there are no substantial changes in the watershed that alter the amount of water and sediment a given channel regularly moves, that channel will maintain its ability to move its water and sediment load. Studies in fluvial geomorphology have shown that across the landscape stream channels in similar geographical locations with similar drainage areas have similar channel characteristics, such as the ratio of channel width to channel depth and meander belt width (Williams 1986). Maintaining these physical characteristics of the channel (or channel morphology) is essential for the channel to be able to transport its water and sediment load. Vegetated riparian corridors play a critical role in maintaining channel morphology through bank stabilization, flood attenuation, and providing the space necessary for the expression of meander geometry and the maintenance of channel slope. As discussed above, riparian vegetation increases streambank stability, which in turn influences channel width. The width of the channel determines how deep and at what velocity water flows through the channel, and together, depth and velocity, determine the channel's stream power. Stream power is the ultimate channel characteristic that determines sediment transport. Thus, a stream that loses its riparian vegetation is likely to widen due to bank instability and ultimately transport less sediment. (See discussion under Channel Evolution Process)

The natural extent of river meanders, referred to as the meander belt width, is governed by valley landforms, surficial geology, and the length and slope requirements of the river channel. Encroachments within a river corridor and riparian area, and subsequent channelization practices made to protect investments, often result in a shorter, steeper channel that no longer serves to attenuate the sediment storage requirements of the watershed. River corridors, defined through ANR Stream Geomorphic Assessments (2004), provide landowners, land use

planners, and river managers with meander belt width determinations that accommodate the meanders and slope of a balanced channel. When conserved, the river corridor serves to maximize channel stability and minimize fluvial erosion hazards.

More information about the ANR Stream Geomorphic Assessment Program and fact sheets pertaining to channel stability and river corridor function are available through the DEC River Management Program web page: <http://www.anr.state.vt.us/dec/waterq/rivers.htm>.

4: SUMMARY of LITERATURE on BUFFER WIDTHS RELATIVE to RIPARIAN FUNCTIONS

The following tables provide reference to studies detailing specific riparian area functions and the observed buffer widths needed to achieve those functions.

Table 2. Recommended Buffer Widths for Riparian Functions. From Chase 1995, p. 67.

Author	Functions Protected	Range of Buffer Widths Recommended	Average of Range
Rogers, Golden & Halpbern, 1988	Water Quality - Nontidal Wetlands - Intermediate	25'-50'	37'
Budd et al., 1987	Water quality, temperature control, wildlife habitat, stream corridors	25'-50'	37'
Swift, 1986	Water quality (sediment) Filter strips for logging, with brush barrier	32'-64'	48'
Palmstrom, 1991	Water quality (subsurface)	50'	50'
Brown & Brazier, 1972 (in Palfrey & Bradley, 1981b)	Stream temperature	55'-80'	67'
Castelle et al., 1994	Water Quality, Temperature control Review of other literature	49'-98'	74'
Trimble, 1957	Water Quality (Sediment) Filter strip for logging, general situation, slope dependent	25'-165'	95'
Swift, 1986	Water quality (sediment) Filter strips for logging, without brush barrier	43'-154'	99'
Pinay	Water quality (nitrate removal) Winter Conditions	100'	100'
Stauffer & Best, 1980	Wildlife (breeding birds)	11'-200'	106'
Rogers, Golden & Halpbern, 1988	Water quality	75'-150'	113'
Welch, 1992	Water quality Riparian Forest Buffer	95'-150'	123'
Erman et al. 1977 (in Palfrey & Bradley, 1981b)	Water quality (sediment)	150'	150'
Wong and McCuen, 1981	Water quality (sediment)	150'	150'
Phillips 1989 (Nonpoint source....)	Water quality control along a coastal plain river, uses model	49'-260'	155'
Palmstrom, 1991	Water quality (sediment)	25'-300'	163'
Roman & Good, 1985	General	50'-300'	175'
Nieswand et al., 1990	Water quality	45'-300'	183'
Trimble, 1957	Water Quality (sediment) Filter strip for logging, municipal watershed, slope dependent	50'-330'	190'
Brady and Buchsbaum, 1989	Scenic value of resource Harvard School of Design	200'	200'
Brown et al., 1990	Water quality (sediment)	75'-375'	225'
Clark, 1977 (in Palfrey & Bradley, 1981b)	Nutrient removal	150'-300'	225'

Table 3. Recommended minimum riparian buffer widths for wildlife. From Chase 1995, p. 28.

Buffer Width	Wildlife Species	Reference
10-330 ft	amphibians, forest interior wetland birds, upland dependent reptiles and birds	Eddleman and Husban, unpublished manuscript
20 ft	small mammal habitat (riparian woods)	Cross 1985
30-70 ft	control temperature in small streams (important for wildlife)	Burton and Likens 1973
100-330 ft	amphibians and reptiles	Rudolph and Dickson 1990
100 ft	stream macroinvertebrates	Newbold et al. 1980
100-200 ft	belted kingfisher roosting sites	White 1953
100 ft	to protect invertebrates in steep mountain streams from siltation	Erman et al. 1977
100 ft	salmon breeding habitat (gravel streambeds)	Moring 1982
150 ft	endangered or threatened spp., or trout production areas	Golet et al. 1993
165 ft	pileated woodpecker nest sites; will nest up to 500 ft away from water	Schroeder 1983
180 ft	squirrel habitat	Dickson and Huntley 1987
200 ft	forest interior birds nesting habitat	Tassone 1981
200 ft	boreal forest birds	Darveau et al. 1995
200 ft	interior forest birds	Tassone 1981
200 ft	marten (riparian habitat)	Spencer 1981
200-300 ft	retain plant structure within this distance for wetland dependent wildlife	Castelle et al. 1992
250 ft	forest birds	Small and Johnson 1985; Johnson 1986
300 ft	waterfowl nesting	Foster et al. 1984
300-330 ft	beaver, mink, dabbling ducks	Roderick and Miller 1991
330 ft	furbearers: coyote, bobcat, red fox, fisher, marten, beaver, otter, mink, muskrat	Dibello 1984
330 ft	beaver feeding habitat	Hall 1970
330 ft	mink den sites and habitat for most activity; use habitat up to 600 ft from water	Mequist 1981, Linn and Birks 1981
330 ft	area-sensitive forest birds	Keller et al. 1993
330 ft	forest interior birds, small mammals, reptiles, amphibians	Golet et a. 1993
450 ft	common loon (nesting), pileated woodpecker	Roderick and Miller 1991
575 ft	breeding bird communities in uplands adjacent to streams	Hooper (unpubl. manuscr.)
660 ft	songbird community	Scheuler 1987
660 ft	breeding bird communities	Stauffer and Best 1980
660 ft	travel corridors for all wildlife but black bears	Forman 1983
600 ft	bald eagle (nesting, roosting, perching); cavity nesting ducks (wood duck, bufflehead, goldeneye, hooded merganser), heron rookery	Roderick and Miller 1991
600 ft	wood duck - most nests within this distance from water	Grice and Rogers 1965
840 ft	average distance of blue-winged teal nests from water	Duebbert and Lokemoen 1976

Table 4. Wildlife habitat provided by a 100-foot riparian buffer. From Chase 1995, p. 26-27.

Wildlife Species	What 100 feet provides	What 100 feet does not provide
Stream Invertebrates and fish	shading, bank stability, organic debris, prevention of siltation and nutrient input	adequate floodwater abatement
Eastern newt	maintain water quality of wetlands and surface waters	habitat for terrestrial juveniles (efts)-travel for 2-7 year olds
Four-toed salamander	habitat for breeding (lay eggs within 4.3 in of water) and most activity	dispersal routes to neighboring wetlands beyond 100 ft
Northern dusky salamander	habitat for breeding (lay eggs within 19.5 in of stream edge) and most activity	dispersal habitat
Northern two-lined salamander	habitat for breeding and most activity	foraging area - adults may wander 330 ft on rainy nights; dispersal of juveniles (only 25% return to natal streams)
Green frog	usually stay within 65 ft of water	dispersal habitat
Wood frog	breeding habitat, if buffer area protects ephemeral woodland pools	habitat for most of terrestrial lifestyle, often well away from water
Spotted turtle	shading, large organic debris, streambank stability, protective cover, invertebrate and small vertebrate prey, winter hibernating habitat	habitat for most terrestrial activity - will travel up to ½ mile (2640 ft) from water to find temporary food sources.
Wood turtle	see above for spotted turtle; basking habitat in early spring (within 65 ft of water)	habitat for most activities; spend most of their time within 1000 ft of water, but will travel up to 1 mile away to search for food; nest up to 330 ft away; hatchlings stay within 130 ft of water
Northern water snake	habitat for most aquatic activities	habitat for dispersal and hibernation
Eastern ribbon snake	foraging habitat	may travel several hundred meters from water to mate; hibernate in upland sites
Bats	foraging habitat - commonly hunt over open water	roosting sites - prefer to roost within 1300 ft of water
Beaver	habitat for aquatic activity, lodge site, some foraging habitat	enough foraging habitat - most foraging is within 330 ft, dispersal routes
Mink	most foraging habitat and den sites	mink hunt up to 600 ft from water, den sites may be up to 330 ft from water
Black bear	foraging habitat, cover, travel corridors	den sites; enough area for travel - adult male black bears require up to 19 sq. miles depending on habitat and food sources
Bald eagle	foraging, perching, and roosting sites	nest sites - most eagle needs are within 1300 ft of shorelines; protection from human disturbance
Red-shouldered hawk	foraging habitat	nesting sites - this species is found only where buffers are 330 ft or more
Area-sensitive forest birds	some foraging and nesting habitat; problems characteristic of edge habitat (increased predation and nest parasitism)	sufficient breeding habitat for species that need riparian zones wider than 330 ft.

5: EDUCATION

The Agency of Natural Resources is an informational and educational resource for Vermonters on a wide variety of natural resource issues, including the functions and values of riparian buffers and corridors. Information on the protection and enhancement of naturally vegetated riparian areas along rivers, streams, lakes and ponds is provided through the following means:

1. Education for school children.

The Department of Environmental Conservation is the Vermont sponsor of Project WET, a national teacher-training program on water resource issues. Contact: Amy Picotte, 802-241-3789

Water Quality Division Educational Tools Listing. 2000. A compilation of the division's audio-visual and educational materials. 6 pages. Contact: 802-241-3770 or 3777.

2. Review of town and regional plans and town zoning regulations

The Water Quality Division of the Department of Environmental Conservation and the Fish and Wildlife Department review draft town and regional plans and town zoning to provide input on river, stream, lake, pond and wetland protection strategies. Providing for the conservation of naturally vegetated riparian buffers and corridors is a primary recommendation.

3. Information for municipalities and local groups.

The Agency of Natural Resources provides educational materials to municipal planning commissions, conservation commissions, and select boards, and to watershed, lake, and river associations on how to conserve natural resources through town planning, zoning, and other locally-initiated mechanisms. The following publications provide information for communities on protecting riparian areas as well as other natural resource conservation strategies:

Agency of Natural Resources Publications - Many of these publications are available on-line at the Water Quality Division website (www.vtwaterquality.org).

Buffer Strips for Riparian Zone Management: A Literature Review. January 1991 U.S. Army Corps of Engineers for the State of Vermont, Water Quality Division.

Buying Lakeshore Property in Vermont, January 1991. 12 pages.

Citizens Lake and Watershed Survey, 1993. 25 pages.

Conservation of Lake and River Shorelands: What's in it for us?, 1993. 4 pages.

Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity. 2004. Vermont Fish and Wildlife Department. 135 pages.

Controlling Nonpoint Source Pollution in Vermont: Resolutions Regarding Practices, Programs and Needs, August 1988. Vermont NPS Task Force. 34 pages.

For Your Lake's Sake, 1991, pamphlet.

Get the Facts. A series of fact sheets concerning specific non-point pollution sources. Topic include: septic systems, construction sites, developed areas, sand & gravel pits, chemical & petroleum storage, and hazardous waste storage. September 1995.

Lake and River Shoreland Conservation Conference Summary, 1993. 10 pages.

Lake Protection Through Town Planning, A Suggested Process, January 1991. 10 pages.

Local Planning and Zoning Options for Water Quality Protection, October 1999. 31 pages.

Local Planning and Zoning Options for Wetland Protection, 1997. 27 pages.

Native Vegetation for Lakeshores, Streamsides and Wetland Buffers, 1994. 43 pages.

Nonpoint Source Pollution. Lake Champlain Basin Program. Fact Sheet Number 2.
On-line at: <http://www.lcbp.org/fs.htm>

"*Out of the Blue*," Lakes and Ponds Unit bi-annual newsletter, Water Quality Division.

Planning for Lake Water Quality Protection, A Manual for Vermont Communities, August 1990. 113 pages.

Recreation Path and Trail Planning to Protect and Enhance Lakes and Rivers: Values and Considerations for Water Quality and Aquatic Habitat, October 1994. 9 pages.

Re-establishing a Lakeshore Buffer Strip, 1992. 4 pages.

The Streamside Sentinel, 2001. 12 pages.

When Rivers Become Unstable: How Streamside Woodlands Can Help Protect Land, 2001. Video, 23 minutes.

Other Publications

Chase, V., L. Demming, and F. Latawiec. 1995. *Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Municipalities*. 80 pages. Audubon Society of New Hampshire

Wenger, Seth. 1999. *A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation*. Institute of Ecology, University of Georgia.

6: CONTROL OF EXOTIC SPECIES

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There are many non-native plants species that have been intentionally or accidentally introduced in Vermont, some of which have aggressive growth habits that have resulted in their spread throughout natural communities. Once established, these invasive exotic plants can substantially disrupt habitats. The exotics often lack the predators that keep them in check in their own native regions. As a result the plants can run rampant, out-competing native plants for space, sunlight, and nutrients. Native plants help keep an ecosystem healthy and stable and are more beneficial to native wildlife populations. (Vermont Agency of Natural Resources and The Nature Conservancy of Vermont 1998).

Transportation corridors (i.e., roads and railroads) have long been a major means by which some invasive plants spread to new areas. Reasons for this include: fill used to build and maintain roadways is contaminated with exotic plant seeds or root fragments; and native vegetation and soils along transportation corridors is often disturbed, creating an ideal habitat for exotic plant species that are adapted to disturbed soils. Since many riparian areas in Vermont are in close proximity to transportation corridors, riparian areas are vulnerable to invasive plant spread. In addition, streambanks are naturally disturbed during flood events and thus are ideal habitat for invasive exotics adapted to disturbed soils, such as Japanese knotweed (also called Northern bamboo).

Japanese knotweed (*Polygonum cuspidatum*) and other invasive plants are also spread when root fragments and seeds are transported downstream by surface water. Riparian areas also usually have moist soil conditions, which is ideal habitat for exotic species such as yellow flag iris (*Iris pseudacorus*), purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*).

Many of these exotic species need full-sun or nearly full-sun to thrive, thus maintaining forested riparian areas is one way to limit their spread along Vermont's waterways. When established riparian buffers are disturbed, vulnerability to these exotic invasive species is dramatically increased. Eradication is expensive, frustrating, and presents special challenges, since it is necessary to ensure that the control methods themselves (such as herbicides) do not further degrade the environment.

The *Vermont Invasive Exotic Plant Fact Sheet Series* was developed by the Agency of Natural Resources and The Nature Conservancy to increase awareness of existing and potential invasive exotic plant problems in Vermont, and to promote cooperative efforts to address these problems.

Following is a list of exotic plant species that are highly invasive in Vermont and are currently displacing native plants either on a localized or widespread scale.

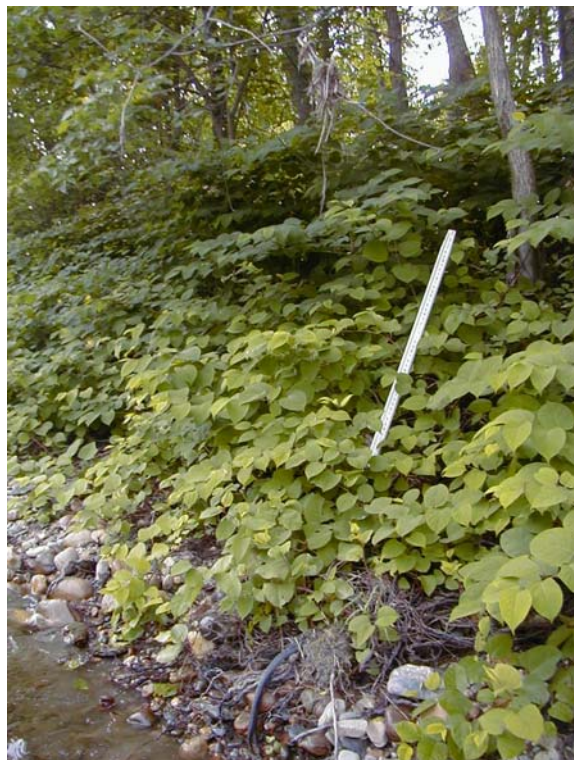


Figure 13. Japanese knotweed, an invasive exotic plant, dominates the riparian areas of many Vermont streams.

Invasive Exotic Plants of Vermont: A List of the State's Most Troublesome Weeds

Goutweed - *Aegopodium podagraria* (u,w)
Garlic mustard - *Alliaria petiolata* (u,w)
Flowering rush - *Butomus umbellatus* (w)
Yellow flag iris - *Iris pseudacorus* (w)
Morrow honeysuckle - *Lonicera morrowii* (u)
Tartarian honeysuckle - *Lonicera tatarica* (u)
Purple loosestrife - *Lythrum salicaria* (w)
Eurasian watermilfoil - *Myriophyllum spicatum* (a)
Common reed - *Phragmites australis* (u,w)
Japanese knotweed - *Polygonum cuspidatum* (u,w)
Common buckthorn - *Rhamnus cathartica* (u)
Glossy buckthorn - *Rhamnus frangula* (u,w)
Water chestnut - *Trapa natans* (a)

Key: a - aquatic, w - wetland, u- upland

For more information please contact:

The Nature Conservancy of Vermont, 27 State Street, Montpelier, VT 05602
Tel: 802-229-4425
<http://nature.org/wherewework/northamerica/states/vermont/>

Vermont Department of Environmental Conservation, 103 South Main Street, Building 10 North
Waterbury, VT 05671-0408
Tel: 802-241-3777 (for aquatic plants);
Tel: 802-241-3770 (for plants in wetland or riparian areas)
<http://www.vtwaterquality.org>

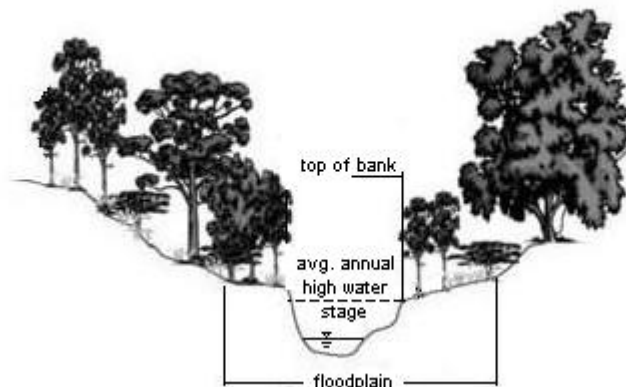
Vermont Fish and Wildlife Department
Nongame and Natural Heritage Program, 103 South Main Street, Building 10 South
Waterbury, VT 05671-0501
Tel: 802-241-3715
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GLOSSARY

Aquatic Habitat: A specific type of area with environmental (i.e., biological, chemical, or physical) characteristics needed and used by an aquatic organism, population, or community.

Average Annual High Water Stage: The stage or elevation at which the average annual high water begins to spill out of the active channel into the adjacent floodplains; also called the “channel-forming” or “bankfull” flow (see Figure 1).

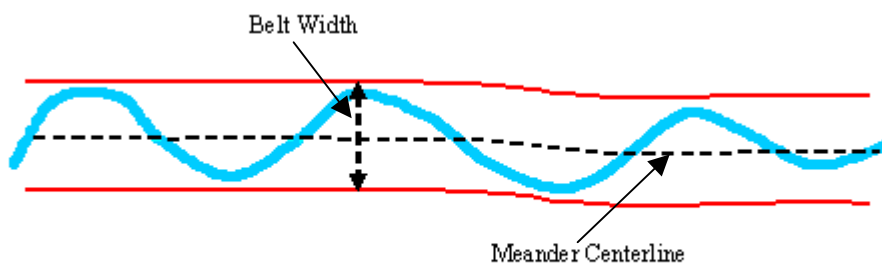
Figure 1: Schematic of a Generic Riparian Area



Adapted from: National Academies Press, 2002.

Belt Width: The horizontal distance which extends laterally across the stream valley, from outside meander bend to outside meander bend, thereby encompassing the natural planform variability of the channel necessary to accommodate the slope requirements of the stream (see Figure 2).

Figure 2: Determining Belt Width for a Geomorphically Stable Stream



Channel Stability: A measure of the resistance and resilience of a stream to changes in its unique form, channel dimensions, and patterns that determines how well it adjusts to and recovers from these morphological changes and the change to the quantities of flow or sediment.

Dissolved Oxygen: Concentration (mg/L) of oxygen dissolved in water, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

Embedded Substrate: The surrounding of the mineral material that forms the bottom of a waterbody by fine sediment.

Endangered Species: Species in immediate danger of becoming extirpated.

Eutrophication: Natural and human-influenced process of enrichment with nutrients, especially phosphorus and nitrogen, leading to an increased production of organic matter.

Floodplain: Land adjoining a waterbody that is covered by water during flows or water levels at or exceeding the average annual high water stage (see Figure 1).

Fluvial: Pertaining to or living in streams or rivers, or produced by the action of flowing water.

Headcutting: A stream bed erosion process where an over-steepened area of the stream bed erodes in a headward or upstream direction resulting in an incised channel

Headwater Stream: A stream that has few or no tributaries, and typically has a steep, incised channel that is often associated with active erosion, seeps, or springs. Headwater streams are referred to as first order streams.

Incised Channel: A stream that has eroded its channel through rapid down-cutting into the channel bed substrate to a lower base level than existed previously or than is consistent with the current hydrology.

Large Woody Debris (LWD): Large organic debris (e.g., logs and trees). Also referred to as coarse woody debris.

Lateral Bank Erosion: Stream bank erosion that results in the lateral or sideways movement of the channel.

Lotic Waters: Rapidly flowing waters such as brooks, stream, or rivers, where the net flow of water is unidirectional from the headwaters to the mouth.

Natural Community: An interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them.

Organic Matter: Materials resulting from vegetative growth, decay, and accumulation that range in size from fine particulate matter to large trees.

Pesticide Drift: The movement of pesticide droplets or particles at the time of application away from the application target to the surrounding environment.

Primary Productivity: The total rate of photosynthesis including the organic matter used in respiration.

Riparian Area: Of, pertaining to, situated, or dwelling on the margin of a river, stream, lake, pond, or other waterbody.

Riparian Buffer Zone: The width of land adjacent to lakes or streams between the top of the bank or top of slope or mean water level and the edge of other land uses. Riparian buffer zones are typically undisturbed areas, consisting of trees, shrubs, groundcover plants, duff layer, and a naturally vegetated uneven ground surface, that protect the waterbody and the adjacent riparian corridor ecosystem from the impact of these land uses.

Riparian Corridor: The waterbody and the width of adjacent land that supports a distinct ecosystem with abundant and diverse plant and animal communities (as compared with upland communities). For streams, this includes the belt width required for channel stability.

Sediment Load: General term that refers to sediment moved by a stream in suspension (suspended load) or at the bottom of the channel (bed load).

Stream Power: Energy or ability of a stream to move substrates and scour streambanks; based on gravity, slope, discharge, and water velocity.

Threatened Species: Species believed to have a high possibility of becoming endangered in the near future.

Top of bank: The point along a streambank where an abrupt change in slope is evident, and where the stream is generally able to overflow the banks and enter the adjacent floodplain during flows at or exceeding the average annual high water stage (see Figure 1).

Top of slope: A break in slopes adjacent to steep-banked streams that have little or no floodplain; or a break in slope where the side slopes adjacent to an incised, or deeply cut, channel meet floodplains that have been abandoned or are undergoing abandonment.

Turbidity: Measure of the extent to which light penetration in water is reduced by suspended materials present in the water column.

Wetlands: Lands that are inundated or saturated by surface water or groundwater with a frequency sufficient to support significant vegetation or aquatic life that depend on saturated or seasonally saturated soil conditions for growth and reproduction. Such areas include but are not limited to: marshes, swamps, sloughs, potholes, river and lake overflows, mud flats, fens, bogs, and ponds. References to wetlands in this Guidance are those adjacent to streams or lakes.

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Patch, Ryan

From: Sue Brown <lylehaven1@aol.com>
Sent: Thursday, July 7, 2016 2:47 PM
To: AGR - RAP
Subject: Comments...for RAP
Attachments: Ron Hill ...RAPS.wps

Please find our comments in the attachment...Thanks for your time

Sue Brown
Four Hills Farm
722 Burpee Rd
Bristol, VT 05443
802-249-8197 (cell)

Patch, Ryan

From: Sheila Reid <sheila.reid@comcast.net>
Sent: Thursday, July 7, 2016 2:26 PM
To: AGR - RAP
Subject: Comment on AAFM's proposed RAPs in response to Act 64

Dear Agency of Agriculture of Agriculture,

Our State Council of Trout Unlimited crafted a very detailed and thoughtful response to the latest draft RAPs for clean water.

As a member of TU, a person who enjoys spending time out of doors and a resident of Vermont, I would like to state my support for the Council's recommendations.

In short, we need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. According to the Agency's own website, there are ~ 5500 small farms in Vermont. Even if only half of them are not subject to the RAPs, the cumulative effect on our waterways is substantial.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. As with the previous issue, the cumulative effect of many small groups of cattle can cause a lot of damage through erosion and manure to a headwater and small stream. Giving cows open access to our waterways seems ludicrous when we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution.

- A riparian buffer must be a buffer - both in width and content. A narrow buffer does little to mitigate run off and a "buffer" that can be harvested or fertilized is not a true buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I understand that cost is a major concern for owners of many small farms. As stated in the Council's letter, there are funds and they should be directed appropriately. And if we are talking money, what do ongoing blue green algae blooms in our lake do to help tourism (not to mention use of the lake by Vermonters)?

Act 64 is a good start to cleaning up Vermont's waterways. Please ensure that the RAPs are strong but fair so that we can protect headwaters, streams, and rivers.

Some may state that we can't afford to follow the suggestions outlined by the TU Council. I would respond that we can't afford NOT to.

Sincerely,

Sincerely,

Sheila Reid
22 Victory Dr
South Burlington, VT 05403

sheila.reid@comcast.net

Patch, Ryan

From: Jane <ejclifford@comcast.net>
Sent: Thursday, July 7, 2016 2:00 PM
To: AGR - RAP
Subject: RAP Public Comment
Attachments: RAP letter 7-7-16.docx; ATT00001.htm

Attached are the comments from Green Mountain Dairy Farmers on the third draft of the RAP's

Secretary Chuck Ross
Vermont Agency of Agriculture, Food and Markets
116 State Street
Montpelier, Vermont 05620-2901

July 7, 2016
Comments on RAP's

Secretary Ross,

On behalf of the board of directors of Green Mountain Dairy Farmers, I am submitting the following comments in response to the third draft of the RAP's. Green Mountain Dairy Farmers recognize and appreciate the time and energy you and your staff have committed to this process. We hope that our comments and suggestions will be helpful in your deliberations going forward.

SECTION 1.1

"Agricultural pollutants" this is used throughout the document and needs to be defined. (agricultural pollutants are only pollutants if they are not managed. For most of the time they are resources that need to be managed or repurposed. The assumption here is that they must be bad which misses the point that they are beneficial properly managed.)

Adding a definition of agricultural pollutants to Section 2 would provide clarity.

SECTION 2.02

"Annual Cropland"

Change language for "annual cropland" to be consistent with the definition of "farming" to include phosphorus contributions from all sources (ex. vegetables or small grains)

SECTION 2.05

Buffer zone definition uses other defined terms (surface water and ditch) in manner that conflicts with other definitions

Please add clarity to the definition of a buffer

SECTION 2.12

Suggest review of the entire definition for "ditch".

Definition should track NRCS standards 607 and 608 with respect to ditch-related features.

SECTION 2.17, 2.18, 2.19

Different definitions are used in Sections 6.05 b and c. 6.06 (b)(9) use USDA Soil Flooding Frequency Class soil types.

SECTION 6.03

6.03(d) Greater than 20 ppm phosphorus soil tests

The phrase "over time" is vague; a reference to how this is determined is needed.

Vague terms such as "significant" and "timely manner" are undefined.

It is very important to have consistency within this section, excluding vegetables and grains from this requirement does not meet the "all in" message.

SECTION 6.04

Strictness of the timeline fails to allow for the planting and harvesting flexibility needed in dealing with changing weather/climate conditions.

SECTION 6.05

The requirement of 100' buffers and spreading requirements on land with a slope in excess of 10% will greatly reduce field sizes.

The practices suggested or required must be considered as to their effect on water quality and not be superseded on what is easy from a regulatory perspective.

GENERAL COMMENTS

While these rules allow for some flexibility now, we believe the ability for farmers to understand and utilize this flexibility would be greatly enhanced if a clear and concise explanation of how to address these exemptions is included in these rules.

If a farm's Nutrient Management Plan is approved by the Agency, is it assumed that the proposed exemptions would be allowable and a farm would

not need to apply for individual exemptions at each point in the season when practices are being implemented? If that is true could that be written into the rule broadly or individually by section where exemptions are allowed.

“All in”

It is vital that all farms understand their impact and are held to the same standard of best management, regardless of size or type. We recognize the difficulties in regulating more farms, but we also feel it is paramount that we all get the same message that water quality is important and should be part of our daily management decisions.

It is not about who is in and who is out, but how we can ALL improve given the means to be able to improve i.e. technology, dollars, education, etc.

Green Mountain Dairy Farmers’ appreciates the opportunity to provide these comments and look forward to our continued support of this process.

Sincerely,

Jane Clifford

Jane Clifford

Executive Director/ Green Mountain Dairy Farmers

Agri-Mark, DFA and St. Albans Cooperative Creamery

Patch, Ryan

From: Jesse S. McDougall <jesse@studiohill.farm>
Sent: Thursday, July 7, 2016 1:48 PM
To: AGR - RAP
Cc: Andrew Bahrenburg; Brian Campion; Andrea Stander
Subject: Public Comment on Vermont RAPs

Hello.

First I'd like to thank you for taking on the monumental task of addressing the water quality and environmental degradation issues facing Vermont. As a farmer, this issue is of paramount importance to me, my business, and the future of our state. If we stand idly by and allow the land and waterways we hold dear to be slowly (and not-so-slowly) degraded by widespread and short-sighted agricultural practices, we further impair our children's ability to make lives here in Vermont.

You are not standing idly by, and for that, I thank you.

For the record, I would like to submit the following recommendations for improving the Agency's efforts to clean Vermont's waterways through the Required Agricultural Practices.

1. Manure is not the problem. Manure is the answer.

The RAPs villainize manure. In reading the RAP documents and attending the Agency's RAP presentation, it is made perfectly clear that the Agency of Agriculture views manure—and the livestock that produce it—as the leading contributor to Vermont's water quality problems. This is not the case.

The RAPs, as you know, define how and when manure must be spread, how it is stored, how livestock must be fenced, and so on. The RAPs focus so heavily on the management of manure, they distract us from—and downplay the far greater importance of—the real problem: the heavy and repeated spreading of synthetic NPK fertilizers on degraded soils. This is the larger issue that the RAPs fail to address adequately—or even mention by name.

Buffers, riparian areas, ditches and so forth are simply attempts to contain the problem. They are not attempts to solve the problem. The RAPs should focus solely on increasing the organic matter in the soils of Vermont's agricultural production areas. This is done with proper livestock management, manure, compost, green manures, cover cropping, and other regenerative practices. For example, if one farmer was able to increase the organic matter in one 1-acre field by 1%, that field would retain 16,000 gallons more water—keeping it, and all the agricultural “wastes” it contains, out of the state's waterways. The Agency can solve Vermont's water quality problems quickly and cheaply by convincing, enticing, or requiring Vermont's farmers to increase the organic matter in their fields.

And, of course, poor management of high concentrations of manure is damaging to the environment and needs to be addressed state-wide. Manure should not be contained in piles, or lagoon, or pits. It should be spread on the soil as widely and as quickly as possible—preferably, of course, by the livestock creating it. But, by focusing on manure management and missing the larger issue created by synthetic fertilizers, the RAPs are doing nothing more than blowing out the dinner candles while the house is burning down.

2. Focus on Practices, Not on Numbers

The RAPs are built on two fatal assumptions: first, that every farm farms the same way; and second that livestock are inherently damaging to land.

Both are incorrect assumptions. The number of livestock, the size of the farm, and the types of animals are all insignificant. The only factor that matters is management.

Any number of animals contained within any amount of space will—given enough time—overgraze the forage and degrade the soil. However, any number of animals contained within any amount of space will—if limited to the biologically-appropriate amount of time—restore and rejuvenate the soil. Animals must move.

We are using sheep, chickens, and turkeys to rejuvenate the soils on our farm one quarter-acre at a time. We're building topsoil, restoring biodiversity, improving the health of our forage, improving our crop yields, retaining more water in the ground, and effortlessly incorporating our soil into the ground. Yet, a farm of similar size, with similar numbers and types of animals, using conventional management practices of set stocking and manure storage could be an ecological disaster—degrading soils, water, and plant health. The RAPs make no distinction between these two types of farms.

The RAPs should not define farms by their size, but by their practices.

3. Rewarded Agricultural Practices

Farmers have no incentive to abide by the RAPs other than out of fear of legal action. This is a horrible motivator, particularly for stubborn, protective, proud, and suspicious populations of people...like us farmers.

These new RAPs make farmers' lives harder. They make their businesses less profitable. They threaten a farmer's ability to feed his or her family. Therefore, we find these new rules terrifying. The RAPs cement a combative relationship between the Agency of Agriculture and the farmers over which it hopes to govern.

If the Agency wishes to create, instead, a receptive population of farmers, it should consider changing Required Agricultural Practices to Rewarded Agricultural Practices. If the Agency was in the business of making the lives of farmers in Vermont easier, more sustainable, less stressful, then it should make clear the benefits farmers would see from alternative—regenerative—farming methods: more resilient fields, higher yields, fewer inputs, and so on.

Also, the Agency should take its RAP enforcement budget (if it has one) and use it to create new opportunities for Vermont farmers to sell their products. These new markets, grants, or programs would be eligible to farmers who adopted the rules set out in the RAPs. Environmental stewardship would be rewarded and make the job of any farmer willing to put in the extra work to maintain and improve Vermont's ecosystem a little bit easier.

Thank you for accepting public comment. I would like to invite you all down to our 4th-generation family farm in Shaftsbury, Vermont where we are using livestock to regenerate soils that have been degraded by 40 years of plowing, tilling, spraying, and fertilizing. I'd be happy to give you all the farm tour—which ends with frosty beverages and food on the grill.

Respectfully Submitted,
Jesse S. McDougall
Studio Hill, LLC
Pullman Farm
802-379-9070
<http://studiohill.farm>

Patch, Ryan

From: FWA <farmerswatershedalliancenw@gmail.com>
Sent: Thursday, July 7, 2016 1:42 PM
To: AGR - RAP
Cc: Darlene Reynolds; Jeff Sanders; Heather Darby
Subject: Comments to RAP proposed rules
Attachments: FWAResponseRAPsFinalDraft_070716.pdf

Secretary Chuck Ross,

Please accept and review the Farmer's Watershed Alliance (FWA) response and comments to the RAP proposed rules that are attached.

Thank you very much,

FWA Board



P.O. Box 298, St. Albans, VT 05478
802-752-5156
farmerswatershedalliancenw@gmail.com

Secretary Chuck Ross
Vermont Agency of Agriculture, Food & Markets
116 State Street
Montpelier, VT 05620-2901

July 7, 2016

RE: Proposed Rule for the Required Agricultural Practices Regulations for the Agricultural Non-point Source Pollution Control Program

Secretary Ross,

On behalf of the Farmer's Watershed Alliance (FWA), we want to thank you for the opportunity to review and comment on the proposed rule for the Required Agricultural Practices (RAPs). The FWA is committed to working with the Vermont Agency of Agriculture Foods and Markets (VAAFMM) to develop and implement water quality regulations and programs that work towards improving the quality of our water while protecting the viability of our farms. Our membership has met multiple times to review, discuss and comment on the rules and the following document outlines our collective discussion. We are happy to provide further details or information on the document if needed.

Farmer's Watershed Alliance comments on the proposed rule for the RAPs.

Introduction

This phrase: "...RAPs shall be designed to protect water quality and shall be practical and cost-effective to implement ..." consider changing to "*...RAPs shall be designed to protect water quality while maintaining the viability of farming in the state of Vermont and shall be practical and cost-effective....*"

Section 2: Definitions

- **Compost:** Likely best to use the USDA National Organic Program definition.

- **Cover Crop:** As presented in this document and implemented under the standards of the RAPs will not significantly add organic matter to annual cropland. The enhancing of soil health under the definition used is not by adding organic matter to the soil in annual cropland but by the enhancement of environment by which microbial activity may be stimulated.
- **Residue Management:** This term should be added due to our proposed changes in the Section 5.3c.
- **Agricultural Wastes:** This definition is very broad and where used in other parts of this document places undo burden on producers which may, depending on interpretation, eliminate the ability to farm on the Vermont landscape. See Section 6.01 as it pertains to ditches and pipes.

Section 3: Required Agricultural Practices Activities and Applicability - No comments.

Section 4: Small Farm Certification and Training Requirements

In general, this section needs to be made clearer to the farming community. There is considerable confusion around what requires a farm to become certified.

The FWA would like an explanation of how a 7 year cycle of inspection on smaller operations will have any significant positive effect on water quality. It seems that a 3 year cycle would be more reasonable.

Section 5: Agricultural Water Quality Training - No Comments

Section 6: Required Agricultural Practices; conditions, restrictions, and operating standards.

6.01 Discharges

a. Is a tile outlet considered a pipe? Please clarify.

e) **Field stacking of manure on unimproved sites.**

4. Current law is 100 feet and this should be kept. It is unclear as to the water quality basis for changing this law to 200 feet.

6.03 Nutrient Management Planning

b. *“Recommended rates may be adjusted based on manure or other waste analysis and/or leaf analysis.”* Suggest changing to *“Recommended rates may be adjusted based on manure or other*

waste analysis and/or nutrient testing procedures". Many farmers test for nitrogen levels at sidedress for corn using a PSNT test which is a soil nitrogen test NOT leaf analysis.

d. The 20 ppm soil phosphorus test level is a low excessive level. Other states in the region typically use higher soil test phosphorus levels to determine that a soil has excessive amount of phosphorus. We would like this changed to "University recommended excessive soil test level recommendations". This would allow some flexibility in the future as science evolves to move this number up or down as current research findings indicate what is excessive and not excessive.

6.04 Soil Health Management Recommendations

a) SUGGESTION – this does not belong here as it is not a rule, but a description of soil health. This could be moved to the definition section. Who determines whether the implementations of these soil management activities are practicable? Farmer or Secretary?

b) If you are a certified farm, you are working with someone who can calculate T for your fields but if not certified how will the farmer be able to do this themselves? You are following T if you are meeting the 590 standard. *SUGGESTION: Include language if farm follows an NMP (590 standard) that they have to follow T; and consider options for other farm types not following a 590 NMP.*

c) Farmers feel that this section should be changed to: *Annual croplands subject to flooding from adjacent surface waters are required to maintain at least 50% residue coverage on the soil by December 1st of each year.* A definition will need to be added for residue management as noted in Definitions Section II. Farmers felt that some cropping systems such as grain corn provide residue sometimes greater than a cover crop and should be allowed. There are many options for seeding, establishing, and maintaining residue coverage on a field. Farmers should be allowed to decide how they will meet this standard instead of being dictated to implement one practice with predefined agronomics.

The requirement that "...30% crop residue, growing directly in the soil, must remain ..." is very unclear. Does that mean actively growing? What is considered residue? This should be rewritten to indicate that the land must be managed in such a way that limits soil loss to flooding on these soils.

6.05 Manure and Waste Application Standards

b) Farmers suggest changing this section to *Manure and other wastes shall not be spread between December 15 and April 1.* Farmers felt that an undefined ban date would make it extremely difficult to work with custom operators to schedule spreading. It would be impossible to know how late an applicator could come if there was always uncertainty about the ban dates being shifted around.

e) Farmers felt that if a farm has developed a NMP that meets the 590 NRCS standard that these regulations need not apply as they are already addressed in the 590 standard. Farmers develop plans to minimize potential manure, nutrient and soil loss based on a nationally recognized standard that includes indices such as RUSLE2, the P-index, and N-index that minimizes with best practices (cover crops, rotations, buffers) the potential for manure, soil, and nutrient loss.

The suggestion for this section is to state that all farms should manage manure applications as outlined in their 590 NMP and if they do not possess a 590 NMP they shall otherwise not apply manure to fields that are.....

6.06 Winter Manure Spreading Exemptions

No comments.

6.07 Buffer Zones and Setbacks

No comments.

6.08 Animal Mortality Management Requirements

No comments.

6.10 Stabilization of Banks of Surface Waters

a) This language should be changed to reflect the need to stabilize and reduce erosion from many of the river/stream banks in the state of Vermont. Farmers should be encouraged to work with local, state, and federal entities to stabilize streambanks. Leaving them in their “natural state” places an undue burden on other sectors of our society to compensate for the erosion and pollution being contributed from this critical source. This section should include language to assist farmers with the identification and remediation of the contribution to the degradation of water quality caused by streambank erosion on their farms.

Section 7. Exclusion of Livestock from the Waters of the State

No comments.

Section 8. Ground Water Quality and Groundwater Quality Investigations

No comments.

Section 9. Construction of Farm Structures

We understand the setbacks for new waste storage facilities to be unreasonable. Given the rigorous oversight and engineering of any new facility the need for these excessive restrictions of siting a new facility seems unwarranted.

Section 10. Custom Applicator Certification

- i. The requirement of the custom operator to notify the Agency and request permission to proceed is unreasonable and threatens the viability of the entire sector of the farming economy. Since the custom applicators will have training and will be working with farms with NMPs, applying manure in a similar way on farms without NMPs should be satisfactory. In reality, the Secretary will be unable to handle these

requests in a timely manner. This will place an undo burden on the farm operator and the custom operator. This section should be struck from the rule.

Section 11. Site Specific On-Farm Conservation Practices

This section conflicts with the introduction which states that farmers following the Rule will be presumed to be compliant and not polluting. This section should be changed at the very least to insure that the remedy for eliminating the “potential” threat to water quality does not put an undue burden on the farmer. If the Secretary requires the person to implement additional practices but they do NOT prevent agricultural pollutants from entering the waters of the State they only reduce the potential, may the person contest the proposed solution?

We greatly appreciate the opportunity to provide input on the RAPs. We look forward to continue working with the VTAAF on this process.

Darlene Reynolds, President

Farmers Watershed Alliance

Patch, Ryan

From: pat sagui <sagui@pat@gmail.com>
Sent: Thursday, July 7, 2016 1:38 PM
To: AGR - RAP
Subject: Comments on Final draft RAPs
Attachments: NRCSCompost Filter Sock.pdf; ATT00001.htm; NRCScompost blanket specs.pdf; ATT00002.htm; photo documenttation RAPs comments- CAV.pdf; ATT00003.htm; 070716 Comments on Draft RAPS.pdf; ATT00004.htm

Pleased find attached 4 documents:

Comments from the Composting Association of Vermont
Photos
PDFs of two NRCS support guidance documents

Thank you,

Pat Sagui
Director
Composting Association of Vermont
802-744-2345
compostingvermont.org



Composting Association of Vermont
www.compostingvermont.org

Reclaiming Organics For Good

July 7, 2016

Comments on *final draft* Required Agricultural Practices (RAPs)

The Composting Association of Vermont appreciates the opportunity to submit comments on the final draft Required Agricultural Practices. Thank you for considering our concerns and recommendations.

Specific recommendations are limited to Section 6.07.

We are concerned that ditch networks will continue to transport unacceptable levels of nutrients and pesticides to surface waters under the proposed RAPs. More broadly, but of equal concern, is the absence of agronomic practices that will help farmers weather the looming uncertainties as finite mined phosphorous supplies dwindle. With China, Saudi Arabia, and Morocco the most likely to control future markets, mined phosphorous will inevitably become an international relations bargaining chip in a resource constrained world.

RAPs that support regenerative agricultural practices can help buffer farmers from the vagaries of worldwide supply and demand. These same practices contribute to a soil matrix that stores P and makes it and other nutrients more bioavailable to plants. Research on the economics of these practices in Vermont is growing, and the RAPs can advance the most promising practices.

The practice of funneling water to points of exit from fields are challenging nutrient management scenarios when soils are pushed to their adaptive limit. We know healthy soils with optimum physical, biological and chemical properties are more able to withstand the stress of these flows, and absorb them; however, this kind of regenerative field practice can take years to develop. In the meantime soil and nutrients continue to exit farm fields unfiltered. CAV's experience installing 2,000 feet of compost filter sock in agricultural ditch networks informs our concern (see photos attached). CAV recommends that the rule for buffers and ditches be more explicit, and offer guidance by including the following:

- Stone check dams: capture sediment fines (where most of the P is attached) before runoff enters the check dam (use compost filter sock, and/or divert to infiltration area).
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1048852.pdf (PDF attached)
- Reinforce chronic breaches of buffers. Acceptable practices include: widening the buffer in the area of the breach; improving soil structure; increasing organic matter in the area of breach; using temporary compost filter sock to trap sediment and nutrients, and slow/spread flow until a more durable buffer is established.
- Reduce flow: Divert field runoff to more locations.
- Amend cropland adjacent to buffer areas subject to breaching. Improve soil function (eg. resistance to erosion, infiltration capacity) for a width of 10' – 25'.

Ditch and Gully Management:

- Ditches and gullies will be maintained in such a way that eroded soils are trapped before they can reach surface waters.
- Ditch side slope shall not exceed X:X (consult with NRCS) without an approved, alternative runoff management/infiltration plan
- Recently cleaned or new ditches will be top dressed with two inches of compost blanket material or some specified combination of top soil/amendments and seeded.

https://efotg.sc.egov.usda.gov/references/public/TN/TN-AgronomyNo8_CompostBlanketsforRunoffandErosionControl_Jan2014.pdf (PDF attached)

Note: Upcoming rule changes to the Vermont Stormwater Management Manual include a recommendation to amend all disturbed soil to 5% organic matter.

Thank you,

A handwritten signature in cursive script that reads "Pat Sagui".

Pat Sagui
Director



**United States
Department of
Agriculture**

January 2014

Agronomy Technical Note No. 8

Compost Blankets for Runoff and Erosion Control



Natural Resources Conservation Service

January 2014

This technical note was developed by **Ray Archuleta**, Conservation Agronomist, National Soil Health and Sustainability Team, East National Technology Support Center, Natural Resources Conservation Service, Greensboro, North Carolina; and **Britt Faucette**, Director, Research and Technical Services, Filtrexx Foundation, Grafton, Ohio.

Cover photo: Vegetated compost blanket used to stabilize slopes of a landfill in North Carolina. Photo courtesy of EcoExpress.

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Compost Blankets for Runoff and Erosion Control

Purpose

This technical note supports the application of NRCS Conservation Practice Standard Code 342, Critical Area Planting. It provides an alternative method to stabilize and revegetate a disturbed area.

Introduction

According to a national water quality assessment, 35 percent of streams in the United States are severely impaired and 75 percent of the population lives within 10 miles of an impaired water body (U.S. Environmental Protection Agency (EPA) 2000). Stormwater runoff is a leading pollutant of surface waters in the United States (EPA 1997), and commonly contains chemicals, nutrients, pathogens, metals, and fine sediment.

In natural watersheds, average runoff is 10 percent of the total precipitation volume. In urban areas with 10 to 20 percent impervious surface area (parking lots, roadways, and rooftops), average runoff increases to 20 percent; at 35 to 50 percent, impervious surface area average runoff increases to 30 percent; and at greater than 75 percent impervious surface area, average runoff increases to 55 percent (Tourbier and Westmacott 1981). Watersheds with greater than 10 percent impervious surface area have been directly correlated to impaired stream water quality (Schueler, 1995; Schueler, 2003), and watersheds with greater than 25 percent impervious surface have been correlated to long-term stream water quality impairment. This is because impervious surfaces in a watershed or site generate runoff more quickly, generate greater runoff volume, and carry more pollutants in runoff to receiving water bodies (Faucette 2008).

Construction and development projects where topsoil is disturbed or cleared of vegetation are particularly subject to erosion problems. Water-induced soil loss rates from construction sites can be 10 to 20 times that of agricultural lands (EPA

2000). Due to the loss of soil, nutrients, water, and reduced plant yields, it has been estimated that the onsite cost of soil erosion in the United States is more than \$27 billion per year, while the annual offsite cost due to sedimentation of eroded soil is more than \$17 billion per year, bringing the total cost of erosion and sedimentation to more than \$44 billion per year (Brady and Weil 1996).

Figure 1 is an aerial photo (taken in 2008) of turbid water in Tom-A-Lex Lake after a rainfall-runoff event. This lake is located 7 to 14 miles southwest of Thomasville and High Point, North Carolina (combined population of 122,000). Soil erosion, sedimentation, and surface water turbidity can be increased by soil disturbance from agricultural tillage, construction, and urbanization. These human activities are leading contributors to sedimentation in our Nation's waters.

The major functions of organic matter in soil ecosystems include absorption and infiltration of rainfall, protection and stabilization of soil, structure, and nutrition for plant communities,

Figure 1 Sediment contributing to high turbidity in Tom-A-Lex Lake after storm event



Photo courtesy of Ray Archuleta, USDA NRCS

and habitat and food for soil organisms. When managed correctly at broad spatial scales, organic matter can influence local hydrologic patterns, thereby reducing stormwater and its associated pollutants; help stabilize erodible soils and slopes, reducing soil erosion; and help establish and sustain plant and soil biology, thereby helping to create a landscape and ecosystem that is more functional and resilient.

Compost blankets are one of the simplest methods to apply organic matter to a landscape or soil surface. Locally available, biobased management practices used for stormwater pollution prevention should be designed to reduce pollutant transport and loading to the Nation’s surface waters in order to protect and preserve these valuable natural resources.

This technical note illustrates the effectiveness of compost blankets as a stormwater reduction and soil erosion control practice and provides guidance on proper utilization.

Description

A compost blanket is a 1- to 2-inch-thick layer of loose compost applied directly to the soil surface and is used for the purpose of runoff reduction, erosion control, and vegetation establishment (EPA 2012). It is commonly applied on hill slopes, bare soils, within degraded landscapes, and watershed drainage areas in both land-disturbing and post-development applications. Seed is typically blended with the compost prior to or during application, and the compost used should meet specific guidelines (table 1). Compost blankets protect the soil from splash erosion, absorb large amounts of rain water and sheet-flow runoff, reduce peak runoff flow rates, and provide an excellent medium for vegetation establishment and sustainability. It is a multifunctional stormwater management tool capable of holding large volumes of water. Spread across the land surface, compost blankets increase infiltration and reduce evaporation and help restore natural landscape and watershed hydrological patterns and cycles within treated areas. By increasing land surface roughness, compost blankets slow the rate of overland sheet runoff, allowing water to more readily infiltrate the soil surface. Through stable organic matter and

humus additions, long-term soil biology, structure, aggregate stability, pH, and water-holding capacity essential to plant growth and sustainability are enhanced. Surface-applied compost blankets have advantages over soil incorporation with compost, including no tillage required, no soil disturbance during application, no additional soil stabilization or erosion control measures required after application, can easily be applied to steeper slopes, and are often more cost effective (fig. 2). Currently, more than 40 State environmental protection agencies and departments of transportation, as well as the EPA and U.S. Army Corps of Engineers, have approved and published specifications for compost blanket use in these applications.

Table 1 Compost quality guidelines

Parameter	Unit of Measure	Compost
pH	pH units	6.0 – 7.5
Soluble salt concentration (electrical conductivity)	dS/m (mmhos/cm)	Maximum 5
Moisture content	%, wet weight basis	30 – 60
Organic matter content	%, dry weight basis	25 – 65
Particle size	% passing a selected mesh size, dry weight basis	2 in. (50 mm), 100% passing; 1/2 in. (12.5 mm), 60% passing
Biological stability	mg CO ₂ -C per gram of organic matter per day	<8
Carbon dioxide evolution rate		
Physical contaminants (human-made inerts)	%, dry weight basis	<1

Source: EPA 2012

Applications

Compost blankets can be used in a variety of erosion control and stormwater management applications. Recommended applications include—

- Slope stabilization, temporary, or permanent erosion control.
- Plant establishment and long-term sustainability and health.
- Reduction of pollutant transport in storm runoff.
- Reduction in the size of stormwater collection or bioretention ponds.
- Soil quality improvement.
- Above and below ground ecosystem enhancement.

Limitations

Although compost blankets are quite versatile, this management practice does have limitations. If compost quality is substandard, particularly for biological stability and particle size distribution, performance may be severely diminished. Compost blankets should not be placed in areas of concentrated flow. Heavy equipment moving over the compost blanket will lead to compaction and may greatly diminish field performance and capacity. Compost blankets should not be used on slopes greater than 2:1 (H:V) without additional

stabilization practices, such as erosion control netting. Finally, if installation guidelines are not followed or maintenance is not conducted, the compost blanket may not perform at an optimum level.

Effectiveness

Compost blankets have been extensively researched and evaluated at land grant university research institutions. Research literature has shown that this management practice can reduce soil erosion, stormwater and pollutant loads, and increase soil quality and plant cover.

A university study conducted in Georgia evaluated the stormwater and water quality effects of 2-inch-thick compost blankets and conventional erosion control and vegetation establishment practices in field research plots 15-feet long by 3-feet wide for a 1-year period. On sandy clay loam soils, on a 10-percent slope, exposed to 3 inches of total rainfall in 1 hour, compost blankets, relative to hydromulch, reduced runoff volume by 50 percent, peak runoff rate by 36 percent, total sediment loads by 80 percent, nitrate-nitrogen loads by 88 percent, and total and soluble phosphorus loads by 83 percent (Faucette et al. 2005). A similar study conducted in Iowa by Persyn et al. (2004) examining 2-inch compost blankets relative to a loamy sand topsoil on a 3:1 slope, under 4 inches per hour of rainfall for a 2-hour duration, found that, under these site-specific conditions, runoff volume was reduced by 90 percent, peak runoff rates were reduced by 79 percent, total sediment by 96 percent, and total nitrogen, total phosphorus, and soluble phosphorus were reduced by 99 percent.

Figure 2 Slope application of compost blanket



Photo courtesy of Filtrexx International

On disturbed soils, similar to construction sites, vegetative growth (percent cover and biomass of weeds and seeded grasses) and soil quality characteristics were evaluated over 18 months. Results showed compost blankets provided nearly three-times-greater vegetative cover than conventional seeding applications and approximately five-times-less weed biomass (Faucette et al. 2006). Compost blankets increased underlying soil organic matter between 0.02 and 1.10 grams per kilogram (g/kg) of soil, while conventionally seeded field plots showed a reduction in soil organic matter (-0.04 to -0.1 g/mg) 18 months after application (Faucette et al. 2006). Faucette et al. (2006) reported that the increase in organic matter from compost blankets was likely due to natural incorporation from microbial migration. With conventionally seeded plots,

organic matter degraded faster than the natural replacement rate leading to a temporary decline in soil quality. Faucette et al. also reported that microbial carbon in the soil (as extractable organic carbon) was 60 percent greater under the compost blankets than conventionally seeded soils (Faucette et al. 2006). Soil microbes are responsible for cycling nutrients and making those nutrients available for plants, increasing soil aggregates that reduce erosion, and are the foundation of a healthy soil and plant ecosystem that provides the functionality, stability, and resiliency for long-term stormwater management.

A similar study, conducted on construction site soils, reported that once exposed to 4 inches of cumulative rainfall in a 1-hour period, compost blankets absorbed 80 percent of the simulated rainfall, reduced cumulative storm runoff volume by 60 percent, and reduced average peak runoff flow rate by 43 percent compared to bare soils. Relative to seeded straw blankets, compost blankets reduced total sediment loads by 81 percent, total suspended solids load by 90 percent, total nitrogen by 92 percent, and total phosphorus by 97 percent (Faucette et al. 2007). A study conducted in Texas evaluating compost blankets relative to seed and fertilizer for erosion control reported that compost blankets reduced total sediment by 99 percent, total nitrogen by 88 percent, nitrate-nitrogen by 45 percent, total phosphorus and soluble phosphorus by 87 percent, and total runoff between 35 percent and 67 percent (Mukhtar et al. 2004). A study conducted for the Federal Highway Administration found that 3-inch compost blankets applied to a disturbed, bare clay soil on a 3:1 slope reduced peak runoff rates tenfold under a 3.45 inches per hour simulated rainstorm for a 3-hour duration (Kirchhoff, Malina, and Barrett 2003).

A study conducted in California evaluated 14 different erosion control practices in a lab-based 30 square meter tilting soil bed on a 2:1 slope under rainfall intensities of 2 inches per hour, 4 inches per hour, and 6 inches per hour for 1-hour duration. The compost blanket reduced runoff between 29 and 94 percent and soil erosion between 67 and 99 percent, generating less runoff and erosion than any stand-alone management practice evaluated, including a variety of rolled erosion control products, tackifiers, and polyacrylamides (Faucette et al. 2009).

Compost Quality

Compost quality is extremely important for the function and performance of compost blankets. Adherence to parameters presented in table 1 on page 2 of this technical note will ensure compost material used for compost blanket applications will meet associated design criteria and the advantages attributed to this management practice. It is recommended that compost is analyzed for these parameters utilizing the Test Methods for the Examination of Composting and Compost (TMECC) guidelines, test methods uniquely designed for evaluating compost quality. Furthermore, compost that has the U.S. Composting Council (USCC) Seal of Testing Assurance (STA) label or third-party testing and certification is preferred.

All compost should be odor free and have no recognizable original feedstock materials. Composts should adhere to 40 CFR Part 503, which ensures safe standards for pathogen reduction and heavy metals contents.

Siting and Design

Planning

Compost blankets are most effective when part of a well-planned site design. Avoid running over compost blankets with vehicles and heavy equipment, as this will reduce effectiveness and contribute to soil compaction, which may increase runoff and erosion and reduce vegetation establishment. Successful planning for any vegetation establishment project should consider climate, prevailing weather, temperature, sun exposure, available moisture and irrigation requirements, topography, soil type, soil pH, soil amendments, nutrient requirements, drought tolerance, site preparation and coordination with construction phases, time to establishment and coordination with construction phases, protection from erosion and sedimentation, and seed mix and plant selection (Fifield 2001).

Temporary vegetation is typically designed for disturbed soils that will undergo future disturbance, such as cut-and-fill slopes under construction, soil storage areas and stockpiles, permanent vegetation establishment that requires a nurse crop, stabilization of temporary runoff diversion devices, dikes, and sediment containment systems (Fifield 2001). Quick-establishing annual grasses and legumes are normally specified for

these applications. Permanent vegetation is usually specified for slopes where erosion control blankets are required, drainage ditches and channels, and areas that have undergone final clearing and grading and require soil stabilization. Perennial grasses are typically specified, and, if possible, native grasses should be utilized (Fifield 2001).

In regions or seasons prone to high-velocity wind conditions (such as arid and mountainous regions, and regions with distinct hurricane seasons), it is recommended that erosion control netting be installed on top of the compost blanket to prevent wind erosion and movement of the compost blanket.

Function

Compost blankets cover 100 percent of the soil surface and therefore provide the beneficial effects characteristic to mulches, including reduced raindrop impact and splash erosion, reduced runoff energy and sheet erosion, buffered soil temperature for plants, decreased moisture evaporation, increased moisture-holding capacity at the soil surface, reduced runoff volume and velocity, increased infiltration, and suppression of weed establishment.

Compost blankets also amend the soil, which can provide the following functional benefits: increased soil structure, increased soil aggregates, increased soil aeration, increased infiltration and percolation, increased moisture-holding capacity, increased activity of beneficial microbes, increased availability of nutrients, decreased runoff volume and velocity, decreased erosion, and increased plant health and long-term sustainability (fig. 3).

Compost blankets provide nutrients that are slow release, provide plant micronutrients, and are less likely to be transported in storm runoff to receiving waters. Compost blankets can release less than 1/10 of the nutrient load compared to conventional seeding and fertilization practices, thereby preventing pollution and protecting waterways (Faucette et al. 2005). In one university study, invasive weed growth had a stronger positive correlation with mineral fertilizers than with organic fertility practices (Faucette et al. 2006).

Runoff Conditions

Compost blankets should not be used in areas where concentrated flow exists or where runoff velocities (distance/time) will damage

or undermine vegetation. For most grasses, a maximum velocity of 4 feet per second (1.2 meters per second) or a maximum hydraulic shear stress of 2 pounds per square foot (10 kg per square meter) is recommended before additional reinforcement measures are recommended (*Maryland Stormwater Design Manual* 2000).

Compost blankets are designed to absorb water and reduce site runoff. Compost blankets typically hold approximately 40 gallons (0.15 cubic meters) of water per cubic yard (0.76 cubic meter) of compost or 5,400 gallons (722 cubic feet, 20 cubic meters) of water per acre inch (0.01 ha meter, 103 cubic meter) of compost applied.

Compost blankets have been used in drainage and watershed area design applications when estimating site runoff volume for stormwater ponds and containment systems, bioretention systems, or achieving low-impact development (LID), hydrological, or stormwater reduction goals or local ordinances. Runoff curve numbers are typically used for these applications, a standard runoff curve number for a vegetated compost blanket is 55 (Faucette et al. 2006). Compost blankets can be used with the rational formula ($Q = CIA$), used to predict peak flow rates typically for open channel, swale, and ditch-design applications. The runoff coefficient for compost blankets is 0.30 (Faucette et al. 2005).

Figure 3 Establishing vegetation in a compost blanket



Photo courtesy of Filtrexx International

Compost blankets can also be used to predict soil loss from agricultural or construction sites with the Revised Universal Soil Loss Equation version 2.

Installation

- Following installation guidelines is essential for proper field function and optimum performance of compost blankets.
- Land or soil surface must be roughened prior to application of compost blankets, preferably by light scarifying parallel to the surface contours.
- Compost blankets must be applied to 100 percent of the land surface area where stormwater reduction, erosion control, or permanent vegetation is required. No native soil may be visible in or through the compost blanket.
- Compost blankets must be applied at a depth of 1 to 2 inches (25 to 50 mm) or at a rate of 135 to 270 cubic yards per acre (257 to 513 cubic meters per ha) depending on slope steepness and 24-hour rainfall accumulation (table 2).
- Seed must be thoroughly mixed with the compost prior to application or surface applied to the compost at time of application to ensure

grass seed can easily establish through depth of compost blanket.

- Compost blankets must not be installed in areas of concentrated storm runoff flow, including channels and ditches.
- Compost blankets must be installed at least 10 feet (3 meters) over and beyond the shoulder of a slope or into existing vegetation to ensure runoff does not undercut the blanket.
- Compost blankets installed on slopes 4:1 or steeper must be tracked; steeper than 2:1 must use additional slope stabilization practices, such as erosion control netting.
- Slope interruption devices may be installed on slopes 2:1 or steeper to reduce runoff velocity. Reducing runoff velocity can reduce seed wash prior to and during germination and reduce stress on young plants during the establishment phase.
- Irrigation may be required to ensure successful vegetation establishment. In arid and semiarid regions or during hot and dry weather, regular irrigation may be required.
- Generally, no additional fertilizer or lime is needed for vegetation establishment and growth in compost blankets.

Table 2 Recommended thickness for compost blanket based on slope angle and 24-hour rainfall event

Slope Angle (≤)	Compost Blanket Thickness 24-Hour Rainfall Total			
	1 inch (25 mm)	2 inch (50 mm)	3 inch (75 mm)	4 inch (100 mm)
4:1 (H:V)	1.0	1.0	2.0	2.0
3:1	1.0	1.0	2.0	2.0
2:1	1.0	2.0	2.0	2.0
1:1	1.0	2.0	2.0	2.0

Note: Compost blankets were evaluated at rainfall intensities of 2 in/hr, 4 in/hr, and 6 in/hr, according to ASTM Standard D-6459, in the development of this table (Faucette et al. 2009).

Maintenance

Compost blankets should be inspected regularly after runoff events to ensure proper function and performance and should be maintained until a minimum 70-percent uniform vegetated cover of the applied area has been achieved or as required by the jurisdictional agency. Compost blankets may need to be irrigated during hot and dry weather or in arid and semiarid climates to ensure vegetation establishment. Where the compost blanket fails, rills appear, or vegetation does not establish, it should be repaired or reapplied immediately. If gullies form in the compost blanket, the area should be regraded prior to reinstallation. If the practice is damaged by stormwater runoff, runoff diversion devices installed above the compost blanket may protect against further or future damage. No fertilizer or lime amendments are required for vegetation establishment and maintenance.

Conclusion

Organic matter is perhaps the key component to nature's high-performance stormwater management system. This natural material absorbs rainfall and runoff, increases infiltration and percolation, slows sheet-flow runoff, provides habitat for soil organisms, is the foundation of a healthy soil ecosystem, and provides structure and nutrients for establishing and sustaining vegetation systems.

Proper planning and the utilization of low-impact development will limit soil disturbance and reduce transport of nonpoint source pollutants to surface waters. *The Sustainable Site: Design Manual for Green Infrastructure and Low Impact Development*, provides preventative guidelines, methods, and practices for building soils and reducing nonpoint source pollutants (Tyler, Marks, and Faucette 2010).

Compost blankets should be applied as part of a comprehensive systems approach to site stormwater management. Although no single management practice can mitigate the impacts of urbanization or soil disturbance, the compost blanket is an excellent tool to prevent and control site stormwater, runoff pollutants, and soil erosion and improve soil ecosystems, plant health, and water quality.

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January 2011

Utilization of Compost Filter Socks



Issued January 2011

This technical note was prepared by **Ray Archuleta**, National Manure Management Technology Development Team, East National Technology Support Center, Natural Resources Conservation Service, Greensboro, North Carolina, and **Britt Faucette**, Ph.D CPESC, LEED-AP, Director of Research and Technical Services, Filtrexx Foundation, Grafton, Ohio.

For further information, contact the East National Technology Support Center at (336) 370-3331.

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Utilization of Compost Filter Socks

Introduction

According to a national water quality assessment, 35 percent of the United States streams are severely impaired and 75 percent of the population lives within 10 miles of an impaired water body (U.S. Environmental Protection Agency 2007). Sediment from stormwater runoff is the leading pollutant of surface waters in the United States; however, under stable soil conditions nearly 80 percent of stormwater pollutants can be in soluble or dissolved forms (Berg and Carter 1980). Typical stormwater runoff pollutants include sediment, nutrients, harmful bacteria, heavy metals, and petroleum hydrocarbons. Since 1995, nutrients, pathogens, and heavy metals have accounted for more than 21,000 cases of water quality impairment (U.S. Environmental Protection Agency 2007). Figure 1 is an aerial photo (taken in 2008) of high turbidity in Tom-A-Lex Lake after a rainfall-runoff event. This lake is located 7 to 14 miles southwest of Thomasville and High Point, North Carolina (combined population of 122,000). Soil erosion, sedimentation, and surface water turbidity are increased by soil disturbance from agricultural tillage and urbanization. These human activities are the leading contributors to sedimentation in our Nation's waters.

Figure 1 Sediment contributing to high turbidity in Tom-A-Lex Lake after storm event (Photo by Ray Archuleta, NRCS, 2008)



A major function of soil organic matter is filtration of pollutants introduced through natural infiltration and subsurface hydrologic flow patterns, prior to ground and surface water recharge.

Organic matter in compost has been shown to provide stormwater filtration benefits in overland sheet and concentrated flow situations (Faucette et al. 2009a; Keener, Faucette, and Klingman 2007). Bio-based management practices used for stormwater pollution prevention should be designed to reduce runoff sediment and soluble pollutants to protect and preserve natural ecosystems and the valuable services provided.

This technical note illustrates the effectiveness of compost filter socks as a stormwater filtration practice and provides guidance on proper use.

Compost filter socks

The compost filter sock is a tubular mesh sleeve that contains compost of a particular specification suitable for stormwater filtration applications. The compost filter sock is a linear, land-based treatment that removes stormwater pollutants through filtration of soluble pollutants and sediments and by deposition of suspended solids (fig. 2). The compost filter sock is typically available in 8-inch (200 mm), 12-inch (300 mm), 18-inch (450 mm), and 24-inch (600 mm) diameters.

Applications

Compost filter socks can be used in a variety of stormwater management applications. Recommended applications include the following:

- perimeter sediment control
- as a check dam to reduce soil erosion in swales, ditches, channels, and gullies
- storm drain and curb storm inlet protection
- reduction of fecal coliform, E. coli., nitrogen, phosphorus, heavy metals, and petroleum hydrocarbons from stormwater
- reduction of suspended solids and turbidity in effluents

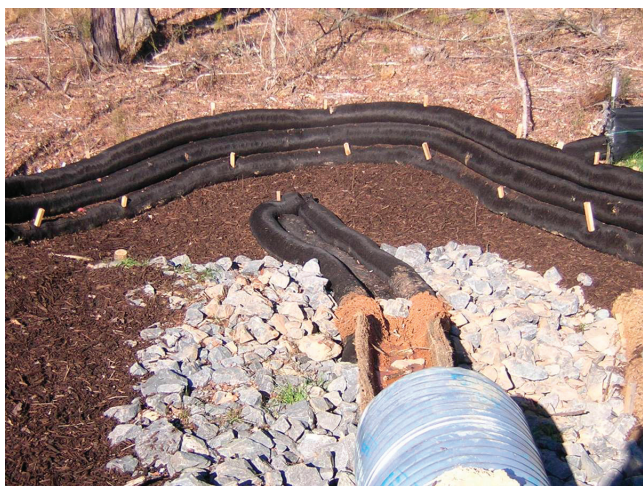
- slope interruption practice used to reduce sheet flow velocities and prevent rill and gully erosion
 - energy dissipation of sheet and concentrated stormwater flow, thereby reducing soil erosion and habitat destruction
 - use on paved, compacted, frozen, or tree-rooted areas where trenching is not possible or is undesirable
 - treatment of polluted effluents, pump water, wash water, sediment dredge, lagoon water, pond water, manures, and slurries
 - *in-situ* biofiltration and bioremediation of stormwater pollutants
 - capture irrigation-induced sediment from flood and sprinkler irrigation systems
 - use RUSLE 2 for design applications
 - use in low impact development (LID), green infrastructure, and green building programs
 - protection of sensitive wildlife habitat, wetlands, water bodies, and ecosystems
- Compost filter socks are made from bio-based, recycled, and locally available materials.
 - Typically composed of plant materials indigenous to the bioregion (native or adapted) in which it will be used, these compost materials enrich the biological production process of soils, thereby increasing the stability and services of the soil ecosystem.
 - Filter socks can be spread or incorporated into existing soil, increasing soil organic matter, improving soil quality, and reducing waste and disposal costs.
 - Sediment, nutrients, harmful bacteria, heavy metals, and petroleum hydrocarbons are reduced in stormwater runoff.
 - Soil erosion on hill slopes, slows flow velocity in swales and ditches are reduced, and energy of sheet and concentrated flows are reduced.
 - Filter socks are easily designed and customized for a variety of land-based filtration and pollutant removal applications.
 - Compost filter socks can be used for biofiltration, as a LID integrated management practice, and in green building programs such as the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™.
 - Microorganisms in compost materials can naturally bioremediate trapped pollutants *in-situ*.
 - Compost filter socks may be seeded at the time of installation to increase pollution filtration, wildlife habitat, and ecosystem restoration attributes.

Advantages

Compost filter socks provide many benefits when used as a stormwater management practice. Advantages include:

- No trenching is required, thereby no soil, plant, or root disturbance; and can be installed on severely compacted or frozen soils and paved surfaces.

Figure 2 Compost filter socks used for capturing sediment



Limitations

Although compost filter socks are quite versatile, this management practice does have limitations. If the compost quality is not maintained, particularly for biological stability and particle size distribution, performance may be severely diminished. If the land surface is not prepared correctly, the compost filter sock may not make sufficient ground contact. This condition may allow untreated stormwater to flow under the treatment. Compost filter socks should not be placed in perennial waterways or streams. Heavy equipment moving over compost filter socks may damage or greatly diminish their field performance and capacity. Although not required, compost filter socks

should be used in conjunction with other integrated stormwater management practices. Finally, if installation guidelines are not followed or maintenance is not conducted, the compost filter sock may not perform at an optimum level.

Effectiveness

Compost filter socks have been extensively researched and evaluated at the USDA Agricultural Research Service (ARS) and universities. Research literature has shown that this management practice can physically filter fine and coarse sediment and chemically filter soluble pollutants from stormwater. A USDA ARS study showed that compost filter socks can remove 65 percent of clay and 66 percent of silt particulates; 74 percent of total coliform bacteria and 75 percent of *E. coli*; 37 percent to 72 percent of Cd, Cr, Cu, Ni, Pb, and Zn; 99 percent of diesel fuel; 84 percent of motor oil; 43 percent of gasoline; 17 percent of ammonium-N; and 11 percent of nitrate-N from stormwater runoff (Faucette et al. 2009a).

Another USDA ARS study reported that compost filter socks removed 59 percent to 65 percent of total P, 14 percent to 27 percent of soluble P, 62 percent to 90 percent of total suspended solids (TSS), and 53 percent to 78 percent of turbidity in stormwater runoff (Faucette et al. 2008). A study published in the *Journal of Soil and Water Conservation*, conducted at the University of Georgia, compared the performance of compost filter socks, straw bales, and mulch berms, on field test plots. Compost filter socks reduced runoff TSS and turbidity by 76 percent and 29 percent, straw bales by 54 percent and 12 percent, and mulch berms by 51 percent and 8 percent, respectively (Faucette et al. 2009a).

An Ohio State University study evaluated the hydraulic flow-through rate for compost filter socks and silt fence. It was determined that compost filter socks have a 50 percent greater flow-through rate than silt fence without a reduction in sediment removal efficiency performance (Keener, Faucette, and Klingman 2007). Field evaluation of compost filter socks by the City of Chattanooga Water Quality Program reported that use of this management practice reduced parking lot stormwater TSS by 99 percent, chemical oxygen demand (COD) by 92 percent, and oil/grease by 74 percent (Faucette, Minkara, and Cardoso 2009).

Compost quality

Compost quality is extremely important for the function and performance of compost filter socks. Adherence to parameter range limits presented in table 1 will ensure compost material used for compost filter sock applications will meet associated design criteria and the unique advantages attributed to this management practice. It is recommended that compost is analyzed for these parameters using Test Methods for the Examination of Composting and Compost (TMECC) guidelines, test methods uniquely designed for evaluating compost quality. Furthermore, compost that has the U.S. Composting Council Seal of Testing Assurance (STA) label or third party testing and certification is preferred.

All compost should be odor free and have no recognizable original feedstock materials. Composts should adhere to Title 40 Code of Federal Regulations (CFR) Part 503, which ensures safe standards for pathogen reduction and heavy metals contents (table 1).

Table 1 Compost quality guidelines

Parameters	Units of measure	Compost
pH	pH units	6.0–8.0
Soluble salt concentration (electrical conductivity)	dS/m (mmhos/cm)	Maximum 5
Moisture content	percent, wet weight basis	30–60
Organic matter content	percent, dry weight basis	25–65
Particle size	percent passing a selected mesh size, dry weight basis	2 in (51 mm), 100% passing –0.375 in (10 mm), 10% –30% passing
Biological stability	mg CO ₂ -C per gram of organic matter per day	<8
Carbon dioxide evolution rate		
Physical contaminants (human-made inerts)	percent, dry weight basis	<1

Source: U.S. Environmental Protection Agency (2006)

Siting and design

Compost filter socks should be placed on contours, perpendicular to stormwater flow, and on prepared ground surfaces.

Compost filter socks, used as a sediment control barrier, should be placed 5 feet (1.5 m) beyond the toe of the slope to allow runoff accumulation, sediment deposition, and maximum sediment storage. The ends of the compost filter socks should be pointed upslope to prevent untreated stormwater flow around the treatment. See table 2 for recommended spacing and diameter requirements of compost filter socks for a range of slopes (Keener, Faucette, and Klingman 2007).

When used as a slope interruption management practice, compost filter socks should be placed horizontally on slopes with the ends of the compost filter sock pointing upslope. This practice will reduce sheet flow velocity, dissipate sheet flow energy, and reduce soil erosion. Slope interruption practices can be used to reduce slope lengths for LS factors when predicting site soil loss with RUSLE 2.

Compost filter socks, used as a check dam (fig. 3) management practice, in swales, channels, and ditches, should have the center of the check dam at least 6 inches (150 mm) lower than the banks. Spacing check dams closer together will reduce flow velocity and bed

erosion and increase pollutant removal. Compost filter socks used as check dams may be placed in a straight line across the channel, in a V formation or an inverted V formation, as determined by the designer.

When used as a drain inlet protection practice, the compost filter sock should be placed entirely in the sump, fully envelop the drain, and be placed on level ground to allow maximum runoff and sediment storage capacity. When used for curb inlet protection, the compost filter sock should not exceed the height of the intake opening or curb (fig. 4).

If used as a biofiltration enclosure (fig. 5), cell, or ring, the compost filter sock should be placed on level ground and should not be filled beyond 50 percent of its volumetric capacity. Compost filter socks may be stacked to increase volumetric design capacity.

Table 2 Recommended spacing and diameter requirements

Slope %	Maximum slope length above compost filter sock in ft (m)			
	Diameter of compost filter sock required			
	8-inch (200-mm)	12-inch (300-mm)	18-inch (450-mm)	24-inch (600-mm)
2 (or less)	300 (90)	375 (110)	500 (150)	650 (200)
5	200 (60)	250 (75)	275 (85)	325 (100)
10	100 (30)	125 (35)	150 (45)	200 (60)
15	70 (20)	85 (25)	100 (30)	160 (50)
20	50 (15)	65 (20)	70 (20)	130 (40)
25	40 (12)	50 (15)	55 (16)	100 (30)
30	30 (9)	40 (12)	45 (13)	65 (20)
35	30 (9)	40 (12)	45 (13)	55 (18)
40	30 (9)	40 (12)	45 (13)	50 (15)
45	20 (6)	25 (8)	30 (9)	40 (12)
50	20 (6)	25 (8)	30 (9)	35 (10)

Figure 3 Compost filter sock check dam



Figure 4 Compost filter sock curb inlet



Compost filter socks may be seeded at the time of manufacture and installation if used for permanent applications, such as biofiltration, LID, or green infrastructure projects. Seed is easily blended with the compost media prior to filling the mesh net sleeve. Seed selection and rate should be determined based on local climate and site conditions and vegetation requirements. Native vegetation should be selected when possible (fig. 6).

Figure 5 Compost filter sock biofiltration system



Figure 6 Vegetated compost filter socks



Installation

Following installation guidelines is essential for proper field function and optimum performance of compost filter socks. No trenching is required. Compost filter socks may be placed on bare soil, grass, erosion control blankets, or paved surfaces.

- Land surface should be prepared by mowing grass or making soil or paved surfaces smooth.
- Compost filter socks shall be placed perpendicular to stormwater flow, across the slope, swale, ditch, or channel.
- Compost filter socks shall be placed on contours.
- On soil and vegetated surfaces, under sheet flow conditions, compost filter socks shall be staked on 10-foot (3 m) centers. Under concentrated flow conditions compost filter socks shall be staked on 5-foot (1.5 m) centers.
- Stakes shall be driven through the center of the compost filter sock and installed a minimum of 8 inches (200 mm) into the existing soil, leaving a minimum stake height of 2 inches (50 mm) above of the compost filter sock.
- Stakes shall be 2 inches (50 mm) by 2 inches (50 mm) hardwood stakes; for severe runoff or sedimentation conditions or loose soil conditions, such as fill slopes, metal stakes can be used.
- Loose compost may be used to backfill the compost filter sock to connect the ground and compost filter sock interface.
- Edges of the compost filter socks shall be turned upslope to prevent flow around the ends of the compost filter socks.
- Compost filter socks may be installed on top of any erosion control blanket.
- If used as a check dam, the center of the compost filter sock shall be a minimum of 6 inches (150 mm) below the bank of the swale or channel.
- If used as a drain inlet protector, compost filter socks shall fully enclose the drain.
- If used as a curb inlet protector, compost filter socks shall not be higher than the height of the curb.
- If used as a solids separator or dewatering device, the compost filter socks shall be placed in a ring and fully enclose polluted effluent or manure slurry.
- Compost filter socks may be seeded for permanent, LID, and *in situ* biofiltration applications.

Maintenance

Compost filter socks should be inspected regularly after runoff events to ensure proper function and performance. If hydraulic flow-through becomes restricted, an additional compost filter sock can be placed on top of the original to prevent over topping. Sediment should be removed once it reaches half the height of the compost filter sock. An additional compost filter sock may be installed on top of the original to increase sediment storage capacity or to prevent sediment disturbance.

If a compost filter sock becomes dislodged or is damaged, it should be repaired or replaced immediately. If the compost filter sock is used for a temporary application, the compost material may be spread over the landscape or incorporated into the soil at the end of the project, thereby increasing soil quality and reducing waste. The sock mesh should be properly disposed unless a biodegradable material is used.

Conclusion

Soil organic matter is one of nature's natural storm water filtration systems. This natural material allows water to pass through while trapping and removing harmful substances that degrade water quality. The compost filter sock with organic matter in the tube harnesses the natural filtration process to mitigate organic and inorganic pollutants created by human activity.

Proper planning and the use of low-impact development will limit soil disturbance and reduce transport of nonpoint source pollutants to surface waters.

The Soils for Salmon (2010) urban stormwater program provides preventative guidelines, methods, and practices for building soils and reducing nonpoint source pollutants.

Compost filter socks should be applied as part of a comprehensive system approach to site stormwater management. Although no single management practice can mitigate the impacts of urbanization or soil disturbance, the compost filter sock is an excellent tool for filtering and reducing nonpoint source pollutants.

Table 3 is a list of applications in accordance with U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) National Conservation Practice Standards (CPS) where compost filter socks may be used.

Table 3 NRCS Conservation Practices where compost filter socks may be used (<http://www.nrcs.usda.gov/technical/Standards/nhcp.html>)

NRCS Conservation Practice Standard	Code
Critical Area Planting	(342)
Channel Stabilization	(584)
Diversion	(362)
Grade Stabilization Structure	(410)
Land Reclamation	(453, 455, 543)
Lined Waterway or Outlet	(468)
Recreation Area Improvement	(562)
Recreation Trail and Walkway	(568)
Runoff Management System	(570)
Streambank and Shoreline Protection	(580)
Vegetative Barrier	(601)

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Compost Filter Sock installed above check dam. Adjacent field area seeded and covered with mulch hay.



Filter Sock used at buffer breach to trap nutrients and sediment before they reach ditch. Slow flow in ditch to aid infiltration and reduce erosion.



Ditch side walls are steep. Could stabilize this slope with compost blanket and seeding, with temporary filter sock to slow flow until grass is established.



Even with well-vegetated buffer there is erosion in low spot where water funnels on its way to Rock River



Compost Filter Sock can be used to reduce municipal ditch maintenance costs when the town's ditches abut cropland buffers with breaches. These breaches will become more of an issue with new regulations for towns under Act 64.



Ditch walls too steep with unstable, eroding soil. Slow flow to aid infiltration

Patch, Ryan

From: Pete Diminico <diminico@gmavt.net>
Sent: Thursday, July 7, 2016 1:14 PM
To: AGR - RAP
Cc: pat berry; megan osterhout brakeley; peter burton; wes butler; cameron mackugler; heath butler; john espositio; doug zehner; paul scaramucci; alex macdonald; davis lawton; gerry nugent; paul urband; david crowne; brian cadoret; Jared Carpenter; clark Amadon; Clark Amadon
Subject: RAP Comments
Attachments: RAP comments.doc

To: Sec. Of Agriculture

From: Peter Diminico 1311 Meehan Road, Bristol, Vermont 05443

New Haven River Watch founder(1993), Board member ACRW

cofounder Bristol Conservation Commission

Past pres. (14) New Haven River Anglers,inaugural 3 years conservation plate grants review committee

coordinator for the Univ. Fish. Platform @ Eagle Park on the NHRiver. Middlebury River Task Force(re: post Irene restorative work)

Please find the attached document with comments regarding RAPS encompassing the second review and public comments.

My anecdotal comments regarding farms in the New Haven River drainage basing have been mixed over the years. The New Having River Anglers Association have often opened a dialogue with farms in a proactive way. The NHRAA have often repaired cattle crossing fences to mitigate impacts to water quality. Farmers often appreciated the cooperative efforts. Over the years I realized these fences almost required monthly fixes, simply put, once the repaired fence was compromised again, farmers paid very little attention to the "fix again" and thus cattle crossings seemed to go unbridled. As founder of New Haven River Watch(a citizens monitoring group) we understand the the extreme importance to engineered buffer systems. The 25' mandated Buffer system is woefully undersized and a minimum of 50' is the accepted standard requirement in many states. Farmers view them as hinderance, loss of cropland & \$\$ without compensation. Compromising any buffer system with "relief cutting" etc.may help to create even a more woefully undersized buffer strip. Finally as an advocate for water quality for 30 years it is my experience the enforcement division is undermanned(7 EEO officers) and is mostly "complainant driven". RAPS must be set to the higher standard to offset the lack of resources DEC has for enforcement.

6.01 Discharges

Please reconsider sec. B below to eliminate “shall” with “**are required to**”, RAP are rules and not wish lists, stronger wording will result in better compliance.

b) Production areas, barnyards, animal holding or feedlot areas, manure storage areas, and feed storage areas **shall** utilize runoff and leachate collections systems, diversion, or other management strategies in order to prevent the discharge of agricultural wastes to surface water or groundwater.

RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont’s waterways. Even the smallest farms together can cause cumulative harm.

- **Livestock must be excluded from our headwaters, streams and rivers to minimize harms.** If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we’re required expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can’t afford to give cows open access to our waterways.
- **A riparian buffer must be a buffer.** The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That’s not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

Waste storage a **1 year requirement** instead of 2 years

Manure Stacking “site specific variances” may include special situations to allow manure stacking. Please consider site specifics to include **no stacking allowed agricultural land with a gradient of 5% or greater unless approved State engineer and or inspector.**

If cattle crossings are allowed into surface waters(streams) in production areas and production pasture areas, **a requirement must be in place not to only have a fence but a dedicated gated fencing system to mandate crossings at specified times** and not allowing cattle to come and go anytime.

Tile drainage, after legislative review some RAPS will be potentially implemented by 11/17 and tile drainage is not included as a permitted requirement until “sometime 2018”. This loophole allows farmers to implement

their own tile drainage with out a approved site plan and permit. My view farmers will take advantage of this loophole to implement "quick & dirty" tile drainage system. **Please consider closing this loophole or creating some**

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Patch, Ryan

From: Rebekah Weber <rweber@clf.org>
Sent: Thursday, July 7, 2016 1:05 PM
To: AGR - RAP
Cc: Elena Mihaly
Subject: CLF Comments on the 3rd Draft RAPs
Attachments: CLF Comments on 3rd RAPs.pdf; Appendix A.pdf; Appendix B.pdf

Please find our comments attached.

Best,
Rebekah

Rebekah Weber

Lake Champlain Lakekeeper
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July 7, 2016

Chuck Ross
Secretary
VT Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, Vermont 05620

Sent via electronic mail

Re: Comments on the Third Draft Required Agricultural Practices

Dear Secretary Ross:

Conservation Law Foundation submits the following comments to the Vermont Agency of Agriculture, Food, and Markets (AAFM) on the third draft Required Agricultural Practices (3rd draft RAPs).

Recognizing the critical role the RAPs play in restoring Vermont's water quality, we appreciate the time and effort AAFM staff has committed to their development. Managing our land to protect water is as much a legal mandate as it is about economic vitality, public health, and buttressing our natural defenses to the extreme weather events associated with a changing climate.

While we continue to hold all of the concerns raised in our prior comment letters from December 2015 (Appendix A) and March 2016 (Appendix B), we want to specifically highlight the disconnect between the 3rd draft RAPs and the legal mandates set forth by the Phosphorus TMDLs for Vermont Segments of Lake Champlain.¹

The 2016 TMDL requires the agriculture sector reduce its nonpoint contribution of phosphorus to the Lake Champlain basin by 53.6 percent.² In Missisquoi Bay this requirement surges to 82.8 percent and in South Lake A and B to 62.9 percent.³ It is our

¹ Phosphorus TMDLs for Vermont Segments of Lake Champlain (June 17, 2016). (hereinafter 2016 TMDL).

² 2016 TMDL pg. 45 tbl. 8.

³ *Id.*

understanding that such tremendous reduction requirements are unprecedented nationwide, and will demand a drastic plan of implementation.

The Environmental Protection Agency (EPA) has provided one scenario to reach the TMDL requirements. While AAFM is not limited to following this one scenario, it provides an important frame of reference. The scenario tool published alongside the Draft 2015 TMDL⁴ indicates the need for widespread application of 11 best management practices (BMP) – ranging from 41 percent crop rotation to 57 percent conversion from crop to hay and 100 percent application of reduced phosphorus manure (Table 1).

Table 1. EPA’s Scenario Tool Application of Best Management Practices⁵

BMP	Definition⁶	Total Area (ha)	Applied Area (ha)	Percent Cover (%)
Barnyard Management	Exclusion of clean water runoff from the barnyard and heavy-use area, and management of the remaining runoff in a way that minimizes its pollution.	3,876.54	3,488.89	90
Change in Crop Rotation	Introducing feasible changes in crop rotation. Currently, standard rotations consist of corn (2 years)/hay (4 years) and corn (1 year)/soybean (1 year). Example changes in crop rotation could be to change the corn-hay rotation to corn (2 years) followed by hay (6 years).	17,029.19	6,973.54	41
Conservation Tillage	Any tillage and planting system that leaves a minimum of 30 percent of the soil surface covered with plant residue after the tillage or planting operation (e.g., reduced till, no-till). For silage corn, this could involve required application of a cover crop or use of zip-till, zone-till, or minimum tillage equipment.	62,491.41	47,154.74	75
Cover Crop	Establishing a seasonal cover crop on annual cropland for soil erosion reduction and conservation purposes. Seasonal cover consists of a crop of winter rye or other	62,491.41	47,154.74	75

⁴ See Phosphorus TMDLs for Vermont Segments of Lake Champlain (August 14, 2015) (hereinafter Draft 2015 TMDL) (While the Environmental Protection Agency released a revised scenario with the 2016 TMDL, this letter relies on the scenario released alongside the Draft 2015 TMDL because this is the scenario relied on by AAFM while drafting the RAPs)

⁵ CLF created this chart using the scenario tool released alongside the Draft 2015 TMDL. It uses data from the columns “area,” “BMP type,” and “applied area” within the tool. Note that the “applied area” within the tool is different from the “applied area column within Table 1. Table 1 represents the accumulated applied area values across basin and land use types.

⁶ Lake Champlain BMP Scenario Tool Requirements and Design (November 2013 draft) pg. 22 tbl. 10.

	herbaceous plants seeded at a minimum rate of 100 lb/ac or at the highest recommended rate to provide effective soil coverage. Planting dates are addressed in the modeling assumptions.			
Crop to Hay	Permanent conversion of cropland use to hay.	22,672.44	12,831.84	57
Ditch Buffer	Grassed strips along the drainage ditches that filter out pollutants from the adjacent land runoff.	59,452.32	39,119.88	66
Fencing/Livestock Exclusion	Exclusion of livestock from waterways and stream banks by installing fence.	14,472.48	12,221.89	84
Grassed Waterways	Stabilizing areas prone to field gully erosion by establishing grass-lined swales.	79,489.87	54,122.12	68
Manure Injection	Applying liquid manure below the soil surface.	35,208.03	30,172.73	86
Reduced P Manure	A 20 percent reduction of the total P content applied to fields, through either manure or fertilizer. This can be accomplished by reducing the amount of manure/fertilizer applied or by altering livestock feed formulation or treating manure prior to application, although specifying the "how" is not necessary at this time.	10,431.69	10,431.69	100
Riparian Buffer	Areas of grasses or shrubs (which may include trees) located adjacent to ponds, lakes and streams that filter out pollutants from runoff.	171,442.15	124,474.99	73

Given the necessary extent of BMP application across the landscape, we have serious concerns with the sufficiency of the 3rd draft RAPs. While the 3rd draft RAPs include standards for barnyard management, cover crop, buffers, and livestock exclusion many of the BMPs outlined in Table 1 are *anticipated* through the requirement of a nutrient management plan for certified small farm operations with a weaker nutrient planning requirement for even smaller farms.

Nutrient management plans (NMP) offer field-specific land treatment and nutrient application guidelines. While certain BMPs may be included in a NMP, both the extent to which these BMPs will be implemented and the degree to which phosphorus reductions will actually occur is largely unknown.

NMPs are heavily relied upon by AAFM to meet our phosphorus reduction obligations, however the effectiveness of these plans to reduce phosphorus is uncertain. A University of Vermont Extension study found that "... by implementing NMPs, farmers reduced fertilizer use, especially phosphorus applications. However, a shift away from purchased fertilizer may represent a stronger reliance on manure, and, therefore, it is unclear whether NMPs

actually encourage lower nutrient application rates or eliminate excess nutrients in the soil.”⁷

CLF has additional concerns with the shortage of technical staff able to create or sign off on NMPs, as well as follow up with farmers. This is particularly troubling given the importance of education to ensure farmers follow their NMPs. Currently; most farms do not fully implement their NMP recommendations.⁸

It is equally unclear how the BMP standards outlined in the 3rd draft RAPs will meet the TMDL targets. We request AAFM provide its analysis of the phosphorus load reductions anticipated from the 3rd draft RAPs and the expected applied area and percent coverage of each BMP.

- Under section 6.04(c), grassed waterways and filter strips should be the required management strategy to prevent gully erosion. The scenario tool demonstrates application of grassed waterways on 54,122 ha of land, which represents nearly 70 percent coverage of this BMP. This degree of application assumes the implementation of grassed waterways wherever gully erosion is present.⁹ To reflect this, AAFM should modify section 6.04(c) so that the word “minimize” is changed to “prevent” and the wording “reduce or eliminate” is changed to “eliminate.” Gully erosion is a severe form of soil erosion caused by water moving in rills, which concentrate to form larger and more persistent erosion channels.¹⁰ Gully erosion is, by definition, problematic for healthy soils and waterways – regardless of whether discharges to waters are apparent.
- Under section 6.07, the standards for riparian and ditch buffers should reflect the language of the scenario tool. The 3rd draft RAPs’ list of authorized activities in buffers, including grazing, fertilizer application, and harvesting undermines the effectiveness of buffers as a BMP and deviates from the definition used in the scenario tool, which does not specify these uses. While the scenario tool analyzes phosphorus load reductions based on 10 and 25-foot buffers, requiring a wider buffer could compensate for the overall relatively weak BMP standards as compared to the TMDL reduction requirements. Studies show that the “basic bare-bones buffer

⁷ Darby, H, Halteman, P., and D. Heleba. “Effectiveness of Nutrient Management Plans on Vermont Dairy Farms.” *Journal of Extension* 53.2 (2015).

⁸ *See Id.* (“The results suggested that most farms (60.6%) implemented the NMP recommendations on at least 75% of their acreage. Less than one quarter (22.8%) of farms implemented the recommendations on all of their acreage...”).

⁹ Personal interview with Eric Perkins, EPA Region 1, April 19, 2016.

¹⁰ Environmental Protection Agency, *National Management Measures to Control Nonpoint Pollution from Agriculture* (July 2003), <http://www.epa.gov/sites/production/files/2015-10/documents/chap4c.pdf>.

is 50-feet from the top of the bank.”¹¹ As a highly effective tool to protect Vermont’s water resources,¹² riparian buffers are critical in addressing the 35.2 percent phosphorus load contributed by cropland.¹³

- Under section 7(c), livestock exclusion should not be qualified. The 3rd draft RAPs allow livestock to access streams outside of production areas that do not contain unstable banks or where erosion is present. This is inconsistent with Act 64¹⁴ and will result in the degradation of stable stream banks by directing livestock toward areas that are not currently eroded. The phosphorus load associated with livestock results not only from trampling and erosion, but from direct manure deposits in waterways as well. Therefore, focusing on unstable banks is insufficient to address phosphorus contributions from livestock. While the Secretary is authorized to designate additional livestock exclusion areas, AAFM’s limited resources calls into question its ability to adequately and effectively invoke this authority.¹⁵ The scenario tool assumes livestock exclusion on 12,222 ha of land, or 84 percent coverage. This widespread application is necessary to address both erosion and direct manure deposits associated with livestock.

We recognize the RAPs are not the only mechanism for achieving phosphorus reductions from the agriculture sector.¹⁶ However, they are the only regulatory tool that applies to the entire Vermont portion of the Lake Champlain basin and will impact on-the-ground

¹¹ Connecticut River Joint Commissions, *Introduction to Riparian Buffers*, <http://www.cric.org/buffers/Introduction.pdf>. Also see Yale School of Forestry and Environmental Studies, *Riparian Buffer Zones: Functions and Recommended Widths*, http://eightmileriver.org/resources/digital_library/appendicies/09c3_Riparian%20Buffer%20Science_YALE.pdf pg. 4. (“... in most cases, a 49-foot natural, undisturbed buffer was effective at removing a majority of the nutrient from surface runoff.”).

¹² *Id.*

¹³ See Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan (draft August 2015) pg. 75. (“Prioritizing these [eroding banks for livestock exclusion] targeted areas will also provide the opportunity to focus remaining resources on addressing the cropland loadings which are estimated to be 35.2% of the total Lake loading.” AAFM is committed to focusing on phosphorus reductions from cropland, which are best achieved with 50-foot, no-touch riparian buffers.)

¹⁴ See 6 V.S.A. § 4810a(a)(9). (Act 64 compels AAFM to establish livestock exclusion standards that “prevent” erosion and adverse water quality impacts. The use of the word “prevent” rather than “reduce” or “minimize” is significant because it sets a zero tolerance standard for additional erosion and adverse water quality impacts from livestock.)

¹⁵ See 3rd draft RAPs at 11 § 4.3(b). (AAFM anticipates inspecting Certified Small Farms at least once every seven years. Should there be an area with livestock access that threatens water quality, what guarantee is there that the Secretary will require livestock exclusion before seven years pass?)

¹⁶ Vermont Agency of Agriculture, Food, and Markets, *Current Water Quality Initiatives*, http://agriculture.vermont.gov/sites/ag/files/pdf/water_quality/RAP/VAAF-M-WQ-Initiative-Factsheet.pdf.

activities in the upcoming year. For these reasons, the RAPs are the most significant strategy for meeting the TMDL mandates for agriculture.

The RAPs are also referenced in the 2016 TMDL as part of the demonstration of “reasonable assurance” that relied-upon nonpoint source reductions will occur.¹⁷ One of the cornerstones of the EPA’s conclusion that there is reasonable assurance rests on the scenario tool.¹⁸ However, the significant deviation in the extent of BMP application between the 3rd draft RAPs and the scenario tool calls into question any assurance that the necessary phosphorus reductions can and will be achieved.

EPA not only relies on the RAPs for reasonable assurance that agricultural source reductions will occur, but also to demonstrate that streambank source reductions will take place. “Both the 25 foot buffer requirement for agricultural lands and the livestock exclusion requirement will lead to more stable (well vegetated) stream banks and *eliminate* erosion caused by livestock trampling” (emphasis added).¹⁹ As noted above, the RAPs reduce erosion from trampling by excluding livestock from areas that already display signs of erosion. However, the RAPs will not eliminate erosion since livestock still have access to trampling along stream banks.

AAFM should provide its analysis of the expected phosphorus reductions associated with RAP implementation. This will allow Vermonters to keep track of our commitments to EPA, assess gaps and potential areas of concern, and ensure clean water in Lake Champlain.

Sincerely,



Rebekah Weber
Lake Champlain Lakekeeper
Conservation Law Foundation



Elena Mihaly
Staff Attorney
Conservation Law Foundation

¹⁷ 2016 TMDL p. 51.

¹⁸ *Id.* at p. 50

¹⁹ *Id.* at p. 53.

Appendix A

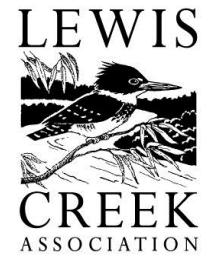
Comments on the Draft Required Agricultural Practices, December 18, 2015.

Please find attached.

Appendix B

Comments on the Second Draft Required Agricultural Practices, March 21, 2016.

Please find attached.



March 21, 2016

Secretary Chuck Ross
VT Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, Vermont 05620

Sent via electronic mail

Re: Comments on the Second Draft Required Agricultural Practices

Dear Secretary Ross:

Conservation Law Foundation, Connecticut River Watershed Council, Lewis Creek Association, Vermont Council of Trout Unlimited, Lintilhac Foundation, Vermont Conservation Voters, Vermont Natural Resources Council, Vermont Chapter of the Sierra Club, Lake Champlain International, and Lake Champlain Committee submit the following comments to the Vermont Agency of Agriculture, Food and Markets (AAFM) on the second draft Required Agricultural Practices (2nd Draft RAPs).

Promulgating forward-thinking agricultural regulations is imperative to meeting state and federal legal mandates as well as promoting economic stability and environmental health. Vermont's agricultural regulators are tasked with preventing and controlling activities on all farms harmful to water, improving water quality, and attaining unprecedented phosphorus reductions within the Lake Champlain watershed, which accounts for half of Vermont's land area. Vermont Act No. 64 (2015) § 1(b)(1), (5), and (6). Reducing phosphorus runoff from farmland is particularly important considering agriculture – at 41 percent of the aggregate pollutant load – represents the single largest contributor of phosphorous pollution to Lake Champlain.¹

The RAPs play a crucial role in protecting Vermont's substantial investment in clean water, including its tourism and real estate industries, and strengthening Vermont's resilience to the mounting challenges of climate change. Restoring our water resources is as much a legal and ecological mandate as it is about economic vitality, public health, and buttressing our natural defenses to extreme weather events.

Though we encourage AAFM to incorporate provisions into the RAPs to account for farms that engage in practices that protect water quality, such as regenerative, integrated, and organic agriculture, the 2nd Draft RAPs do not reflect this nuanced approach. Instead, they exempt large numbers of farms and relax requirements for all farms. Again, we encourage AAFM to include provisions in the RAPs that truly foster practices leading to long-term sustainability and clean water. We also reiterate our support for outreach and incentive systems that will help farms be good stewards of the environment. Vermont is fortunate to have many diversified farms leading the way with environmentally friendly and economically profitable models, and AAFM should encourage and promote these models through the RAPs not only for the health of Vermont's waters, but for the long term vitality of agriculture in the State.

Unfortunately, the 2nd Draft RAPs fail on several counts. They conflict with the legislative intent of Act 64 – Vermont's clean water law; they are in several respects unenforceable; and they are inadequate to meet Vermont's water quality standards.

¹ Phosphorus TMDLs for Vermont Segments of Lake Champlain ("Draft 2015 TMDL") (August 14, 2015), pg. 47 fig. 7.

The 2nd Draft RAPs conflict with the legislative intent of Act 64 by exempting a category of farmers from the RAPs.

The 2nd Draft RAPs section 3.1, which defines the applicability of the Required Agricultural Practices, violates the plain language of Act 64 because it fails to include all farms under the purview of the RAPs. Under the Act, “Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State.” 6 V.S.A. § 4810(b) (emphasis added). The Act further mandates that “the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices on *all farms* eliminate adverse impacts to water quality.” 6 V.S.A. § 4810a(a) (emphasis added). Under Act 64, “farming” means cultivating the land for food or fiber, raising animals or bees, producing maple syrup, operating greenhouses, and managing agricultural or fuel products from the farm. 6 V.S.A. §4802(2) (incorporating farming definition from 10 V.S.A. § 6001(22)). The *only* size limitation in the statutory definition of farming relates to horses (four or more equines).

The Act does not authorize AAFM to exempt categories of farms from the RAPs, whether for concerns about agency resources or for other reasons. AAFM may distinguish between farms that are subject to the small farm certification and those that are only subject to the RAPs (which are all remaining farms). 6 V.S.A. § 4810(a)(1). This would not bring every backyard chicken coop under the realm of the RAPs because a parcel of land is not a “farm” unless it is “devoted primarily to farming.” 2nd Draft RAPs at 2 § 2.12; *see also* 10 V.S.A § 6001(22) (designating multiple activities that qualify as farming), and would lawfully address AAFM’s concerns about having sufficient resources to administer the RAPs.

AAFM has committed to regulating all farming operations under the RAPs within the Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan (Phase I Plan) and in the Revised Secretary’s Decision from Conservation Law Foundation’s petition to require mandatory pollution controls in Missisquoi Bay basin. “The Phase I Plan commits to ... increasing the base regulatory standards in the RAPs (formerly called Accepted Agricultural Practices (AAPs prior to Act 64 of 2015), which are applicable to all farming operations regardless of size or type.”²

Further, as some farmers in the State have pointed out, leaving regulation of smaller farms to municipal bodies is an invitation for inconsistent regulation and unfairness across the State, where some small farms may be subject to meaningful water quality requirements and others remain exempt. This would also be an abdication of authority by AAFM, the agency charged with implementing the RAPs under Act 64, and could impose substantial burdens on municipal governments that may lack the resources and expertise to develop agricultural regulatory systems where AAFM has failed to.

We are extremely concerned that despite the continued decline of Lake Champlain, the 2nd Draft RAPs limit AAFM’s authority to regulate farms. Currently, the “Accepted Agricultural

² Revised Secretary’s Decision, In re: CLF Petition to Require Mandatory Pollution Control Best Management Practices for Agricultural Non-Point Sources Identified in the Missisquoi Bay Basin, AAFM Docket #: 2014-6-04 ARM, pg. 10.

Practices are basic practices that *all farm operators* must follow as a part of their normal operations.” AAPs at 2 § i. General (emphasis added). Relaxing agricultural regulations beyond the current standards causes us to question AAFM’s commitment to improving water quality and implementing the mandates of Act 64.

The 2nd Draft RAPs conflict with the legislative intent of Act 64 by authorizing livestock access to waters of the State.

Act 64 compels AAFM to establish livestock exclusion standards that *prevent* erosion and adverse water quality impacts. 6 V.S.A. § 4810a(a)(9). The use of the word “prevent” rather than “reduce” or “minimize” is significant because it sets a zero tolerance standard for additional erosion and adverse water quality impacts from livestock. Studies have shown that livestock with access to streams cause phosphorus, sediment, and pathogen pollution by depositing manure in the water and by trampling and destabilizing stream banks.³ Therefore, any regulation that grants livestock access to waters of the State violates the plain language and intent of Act 64.

The 2nd Draft RAPs allow livestock to access streams outside of production areas that do not contain unstable banks or where erosion is present. 2nd Draft RAPs at 20 § 7(c)(1). This provision is inconsistent with Act 64 and will result in the degradation of stable stream banks by directing livestock toward areas that are not currently eroded. In addition, the 2nd Draft RAPs permit livestock in water crossings and watering areas, neither of which is limited in size or clearly defined in the regulation, causing any intended restriction to be meaningless.

The approach of section 7(c)(2), which provides the Secretary the authority to revoke livestock access to areas that have “actual or potential threat to water quality as a result of livestock access,” is illogical. It is well recognized that livestock *always* have the potential to threaten water quality. Moreover, placing the burden on AAFM to hear complaints and determine restricted areas is an inefficient use of limited state resources and fiscally unsound. Preventing erosion is cost effective compared to mitigating its effects. Instead, livestock should be restricted from all waters of the State except in areas designated by the Secretary. Off-stream water sources must be established and, where absolutely necessary, livestock should only have access to streams with access ramps.

Key provisions of the 2nd Draft RAPs are practically unenforceable.

AAFM includes language in the 2nd Draft RAPs that is ambiguous, rendering much of the rules unenforceable. In several provisions, AAFM unnecessarily concedes authority to regulate the farming community. Please find a list below of the specific sections that should be revised to ensure enforceability.

- Under 6.03(d), AAFM allows a drawdown approach to manure application when soils are saturated with phosphorus. The phrase “implement practices to reduce

³ Water Quality Remediation, Implementation and Funding Report (“Act 38 Report”) (January 14, 2013) pg. 14 § 1.5.

phosphorus levels over time” should be changed to “immediately implement practices to reduce phosphorus.” To allow farmers to continue to apply manure despite soil analyses demonstrating 20 ppm phosphorus levels will directly lead to increased phosphorus loading into Vermont’s waterways. In addition, the wording “eliminating or reducing” is in conflict. AAFM should require farmers to eliminate manure application once soils are saturated with phosphorus, as indicated by a 20 ppm soil test.

- Section 6.03(f) should require a standard form for record keeping on all farms. These records should be provided to the Secretary on an annual basis – not just “upon request” – so that records are incorporated into the public domain. For Medium and Large Farm Operations, AAFM should establish and implement an IT system designed to track the transport and application of manure and other agricultural wastes, similar to the electronic manifest system developed for hazardous waste. Once developed, users of the system would be able to create manifests electronically and transmit them through the system.
- Under 6.04(a), AAFM should establish specific standards for each of the mentioned conservation practices, as mandated by Act 64. *See* 6 V.S.A. § 4810a(10) (stating that AAFM shall “[e]stablish standards for soil conservation practices”). The wording “considered and implemented as practicable” should be changed to “implemented as practicable.” That is, the sentence should read: Conservation practices, including reduced tillage, conservation tillage, avoiding mechanical activities on saturated soils, addition of organic matter using manure, green manures and compost, sod and legume rotations, and the use of cover crops shall be implemented as practicable). The inclusion of the word “considered” unnecessarily weakens AAFM’s position; qualifying implementation with “as practicable” ensures AAFM’s ability to require actual action where practicable, as opposed to mere consideration.
- Under 6.04(c), the word “minimize” should be changed to “prevent” and the wording “reduce or eliminate” should be changed to “eliminate.” Gully erosion is a severe form of soil erosion caused by water moving in rills, which concentrate to form larger and more persistent erosion channels.⁴ Gully erosion is, by definition, problematic for healthy soils and waterways – regardless of whether discharges to waters are apparent. Grassed waterways should be strongly encouraged to mitigate gully erosion.
- Under 6.04(d), the first sentence should be revised to read: “annual croplands shall be required to be planted to cover crops.” Extreme weather conditions should be the only reason for allowing an exemption. Qualifying the cover crop requirement by including the phrase, “as soil, weather conditions, and generally accepted agronomic practices allow” puts too much discretion in the hands of the regulated community to determine whether conditions may or may not allow for cover cropping. In

⁴ Environmental Protection Agency, *National Management Measures to Control Nonpoint Pollution from Agriculture* (July 2003), <http://www.epa.gov/sites/production/files/2015-10/documents/chap4c.pdf>.

addition, cover crops are an important practice for maintaining soil health and should be encouraged throughout the state, and not only on land subject to frequent flooding.

Furthermore, cover crops should not be sprayed with harsh pesticides, such as glyphosate and atrazine, in order to remove them each year. This would only add to Vermont's ever-increasing use of chemical pesticides and associated environmental and public health concerns. Rather, cover crops should be killed through non-chemical practices such as mow-down and rolling, slicing, and crimping techniques.

The 2nd Draft RAPs are inadequate to meet water quality standards.

Under the federal Clean Water Act, Vermont must ensure that Lake Champlain meets water quality standards. 33 U.S.C. § 1313(d)(1)(C). The lake is currently impaired by phosphorus, which regularly causes toxic algal blooms, impaired aquatic life, and reduced recreational use.⁵ The amount of phosphorus currently discharging into Lake Champlain is 33.7 percent above the legally compliant level,⁶ and to achieve attainment, the agriculture sector must reduce phosphorus loading by 51.5 percent.⁷ The 2nd Draft RAPs are inadequate to sufficiently reduce phosphorus discharges and reach water quality standards.

Certification Applicability for Small Farm Operations is Unreasonably High

The 2nd Draft RAPs raise the threshold for small farm certification by 150 percent compared to the first draft RAPs. This represents a significant increase that exempts many more farmers from needing to certify as a Small Farm Operation and comply with the associated requirements. We are troubled that AAFM is continuing to relax regulations despite strict water quality mandates.

The Soil Loss Tolerance Tool is Inappropriate to Manage Water Quality

The 2nd Draft RAPs require cropland to be cultivated in a manner that results in an average soil loss less than or equal to the soil loss tolerance (T). 2nd Draft RAPs at 14 § 6.04(b). This means that managing to T, which is not tied to water quality protection, would equate to some accepted annual loss of soil and associated nutrients at the farm. However, loss of soil through erosion is a major contributor to nutrient loading. Moreover, the average annual acre of cropland in the United States is already eroding at an alarming rate of seven tons per year.⁸

AAFM should develop and implement alternatives to management based on soil loss tolerance such as management based on a Phosphorus Index. In the meantime, the 2nd Draft RAPs should require management to half T, considering that seven tons of annual

⁵ Draft 2015 TMDL pg. 12.

⁶ Draft 2015 TMDL pg. 18 tbl. 3; pg. 43 tbl. 7.

⁷ Draft 2015 TMDL pg. 44 tbl. 8.

⁸ Act 38 Report pg. 15.

erosion (or soil loss at T) is equivalent to 1.3 large dump trucks per acre per year.⁹ Agricultural regulations should not defend such obvious and significant phosphorus discharges into Lake Champlain.

Buffers Zones are Inappropriately Defined

Under Vermont statute, a buffer is defined as an “undisturbed area consisting of trees, shrubs, ground cover plants, duff layer, and generally uneven ground surface....” 10 V.S.A. § 1422(10). Undisturbed, vegetated buffers are critical for providing wildlife habitat, infiltrating pollutants, mitigating flood and erosion hazards, and serving as water temperature controls. The 2nd Draft RAPs’ list of authorized activities in buffer zones, including grazing, fertilizer application, and harvesting completely warps the definition and purpose of a buffer. *See* 2nd Draft RAPs at 17 § 6.07(d), (e), and (g). The result is that agricultural buffers will serve as phosphorus sources rather than sinks and lead to water quality degradation.

In addition, adjacent surface waters, including tributaries and intermittent streams should be buffered from croplands and other agricultural land uses by a minimum of 50 feet and from ditches by 20 feet to reflect best available science. The Vermont Department of Environmental Conservation river corridor procedures must inform land use guidance, similar to all other land use sectors in Vermont. The guidelines provided in Act 64 are *minimum* distances with the further requirement that buffers must “adequately address water quality needs” on a site-specific basis. 6 V.S.A. § 4810a(a)(6)(B). We are not aware of any data or studies showing that the proposed buffers in the 2nd draft RAPs are sufficient to protect water quality and reduce sediment loss. Moreover, stream buffers should be comprised of woody vegetation with deep roots, whenever possible, and then grasses or other perennial vegetation demonstrated to aid sediment filtering and erosion reduction.

AAFM Should Take Action Now to Address Tile Drains

The State lacks much-needed information on tile drains specific to Vermont. We do not know the extent of existing tile drainage systems, but estimates range upwards of 50 percent of agricultural fields in some watersheds. In addition, tile drains are being installed at an extremely high rate in the Lake Champlain Basin, particularly Franklin County, yet there are not practices in place to ensure that the systems do not result in the discharge of more phosphorus into the lake. Existing research demonstrates there is significant cause for concern.^{10,11}

Until research is completed that demonstrates tile drains can be utilized in Vermont without causing unacceptable contributions of phosphorus pollution, continuing to allow

⁹ Sullivan, P., *Appropriate Technology Transfer for Rural Areas, Sustainable Soil Management*,

<http://soilandhealth.org/wp-content/uploads/01aglibrary/010117atrasoilmanual/010117attra.html>

¹⁰ King, K.W., Williams, M.R., and N.R. Fausey. 2015. Contributions of Systematic Tile Drainage to Watershed-Scale Phosphorus Transport. *J. of Environ. Qual.* 44: 486-494.

¹¹ Kleinman, P.J., Smith, D.R., Bolster, C.H., and Z.M. Easton. 2015. Phosphorus Fate, Management, and Modeling in Artificially Drained Systems. *J. of Environ. Qual.* 44: 460-466.

tile drains to be installed is in conflict with water quality standards and our State's legal obligations to clean up Lake Champlain. While the Vermont General Assembly extended AAFM's deadline for rulemaking on tile drains to 2018, we strongly urge AAFM to address the issue now.

Accordingly, we recommend that until AAFM promulgates rules governing the use of tile drains, AAFM impose a moratorium on the installation of any new tile drainage systems using its existing authority to protect water quality.

AAFM should include in this version of the proposed RAPs requirements for mapping and monitoring of existing tile drains, including the locations of all existing drainage systems and outfalls, and regular monitoring data from the outfalls. Longer-term actions to regulate tile drains should, at a minimum, include a baseline of practices for reducing phosphorus pollution from tile drains.

Conclusion

We believe the 2nd Draft RAPs conflict with the legislative intent of Act 64, lack enforceability, and are not adequate to meet water quality standards. We urge AAFM to incorporate and address our comments before engaging in the formal rulemaking process.

Thank you for your consideration.

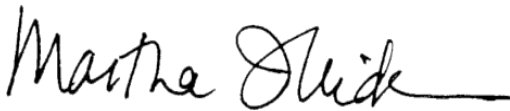
Sincerely,



Rebekah Weber
Lake Champlain Lakekeeper
Conservation Law Foundation



David Deen
Upper Valley River Steward
Connecticut River Watershed Council



Marty Illick
Executive Director
Lewis Creek Association



Clark Amadon
Chair
Vermont Council of Trout Unlimited



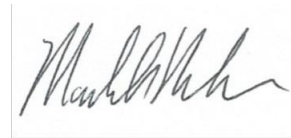
Crea Lintilhac
Director
Lintilhac Foundation



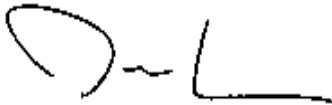
Lauren Hierl
Political Director
Vermont Conservation Voters



Jon Groveman
Policy and Water Program Director
Vermont Natural Resources Council



Mark Nelson
Chair
Vermont Chapter of the Sierra Club

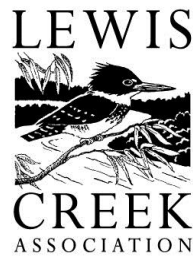


James Ehlers
Executive Director
Lake Champlain International



Lori Fisher
Executive Director
Lake Champlain Committee

cc: House Committee on Fish, Wildlife and Water Resources, House Committee on Agriculture and Forest Products, Senate Committee on Natural Resources and Energy, and Senate Committee on Agriculture



December 18, 2015

Agency of Agriculture, Food and Markets
116 State Street
Montpelier, Vermont 05620

Sent via electronic mail

Re: Comments on the Draft Required Agricultural Practices

Dear Agency of Agriculture, Food and Markets:

Thank you for the opportunity to submit comments to the Vermont Agency of Agriculture, Food and Markets (AAFM) on the draft Required Agricultural Practices (draft RAPs).

The Vermont Chapter of the Sierra Club, Conservation Law Foundation, Connecticut River Watershed Council, Vermont Natural Resources Council, Vermont Conservation Voters, Lewis Creek Association, and Lake Champlain Committee are member-supported, non-profit organizations that use educational, legal, scientific, and policy tools to protect and enhance water

resources in Vermont. We have played a key role in advocating for strong protections for Vermont's surface and ground waters. However, despite decades of cleanup efforts, many lakes and rivers throughout the state continue to decline due, in part, to agricultural runoff. The draft RAPs are therefore critically important to addressing Vermont's water quality concerns.

We appreciate the time and effort that AAFM staff has committed to this process as well as the outreach, stakeholder meetings, and preliminary comment period that has encouraged widespread public input. While the draft RAPs are an improvement over the Accepted Agricultural Practices, more is required to safeguard Vermont's water resources and ensure consistency with Act 64 and the federal Clean Water Act.

If we are to comply with state and federal water quality laws, Vermont must implement widespread agricultural reform. Vermont's agricultural regulations are tasked with preventing and controlling activities on all farms that may be harmful to water; sustainably improving water quality; and improving water quality sufficiently to attain unprecedented phosphorus reductions within the Lake Champlain watershed – which accounts for half of Vermont's land area. The current draft RAPs are inadequate to fulfill these legal requirements. Embracing a statewide transition to sustainable agricultural systems and providing greater strength and specificity to the RAPs will help drive the necessary changes.

We encourage AAFM to incorporate flexibility into the draft RAPs to account for farms that engage in organic, biodynamic, regenerative, and/or restorative practices, as long as the farms can demonstrate that their practices are achieving the same level of water quality protection as the draft RAPs require. Additionally, we recognize that complying with regulations can be difficult for some farms. While we believe that all farms must be accountable for the pollution they create, just as other businesses or individuals are, we support outreach and incentive systems that will help farms be good stewards of the environment and provide comparable support mechanisms as those proposed for other land use sectors, such as stormwater, transportation, and developed lands.

We offer our comments in three main areas:

1. The draft RAPs must satisfy state and federal legal mandates.
2. The draft RAPs should foster a statewide transition to sustainable agricultural systems.
3. The draft RAPs must provide greater strength and specificity, including science-based justifications that the RAPs are sufficiently stringent to meet water quality goals (section-by-section comments).

1. The draft RAPs must satisfy state and federal legal mandates.

Act 64 recognizes that “Vermont’s surface waters are vital assets that provide the citizens of the State with clean water, recreation, and economic opportunity.” Vermont Act No. 64 (2015) Sec. 1(a)(2). It also recognizes the importance of addressing “all activities harmful to water” and of “sufficiently addressing, improving, and forestalling degradation of water quality in the State in a sustainable and effective manner....” Vermont Act No. 64 (2015) Sec. 1(a)(4), (8). The purpose of Act 64 is to improve water quality; engage *all* agricultural operations to improve water

quality; and to provide the necessary mechanisms, staffing, and financing to improve water quality. Vermont Act No. 64 (2015) Sec. 1(b)(1), (5), (6) (emphasis added); *see also* 6 V.S.A. § 4810a(a).

We understand from the plain language of Act 64 that the draft RAPs must address all farming activities harmful to water quality as well as promote sustainable and effective farming. While costs and time are real considerations in regulating the agriculture sector, Act 64 envisions and sets up a process for ensuring that adequate staffing and financing will be provided. 10 V.S.A. §§ 1387, 1388, 1389. Therefore, financial considerations cannot justify regulations that do not ensure water quality goals are met. The draft RAPs must be revised to apply to all farms and to improve water quality sufficiently to meet the goals and requirements of Act 64.

Further, under the Clean Water Act (CWA), Vermont must ensure that Lake Champlain meets water quality standards. 33 U.S.C. §1313(d)(1)(C). The lake is currently impaired by the nutrient phosphorus, which regularly causes toxic algal blooms, impaired aquatic life, and reduced recreational use.¹ The current load of phosphorus discharged into Lake Champlain from Vermont sources is 630.6 metric tons per year, while the loading capacity, or amount of phosphorus Lake Champlain can receive and still meet its water quality standards, is 417.64 metric tons per year.² The amount of phosphorus discharging into Lake Champlain is therefore 33.7 percent above the legally compliant level.

Lake Champlain's largest source of phosphorus originates from farm fields, which contribute 41 percent of the phosphorus load.³ To meet the loading capacity, the agriculture sector must reduce phosphorus discharges by 51.5 percent.⁴ In some lake segments, these federally mandated reduction requirements reach nearly 60 and even 83 percent.⁵ The draft RAPs therefore need to be sufficiently stringent to attain these reduction requirements.

Vermont's agricultural standards are critical to ensuring clean water and compliance with state and federal law. The targets set by Act 64 as well as the federal Clean Water Act, including cleanup requirements for Lake Champlain, are significant. The draft RAPs cannot simply support minor adjustments to the status quo farming system. Rather, applied RAPs must result in targeted watershed pollution reductions and reflect our commitment to preserve the uses, benefits, and values of our lakes, rivers, and streams. Vermont Act No. 64 (2015) Sec. 1(a)(4).

2. The draft RAPs should embrace a statewide transition to sustainable agricultural systems.

Sustainability rests on the principle of meeting the world's current needs without compromising the ability of future generations to meet their own needs. Congress defines sustainable agriculture as "an integrated system of plant and animal production practices having a site-specific application that will, over the long term: satisfy human food and fiber needs; enhance

¹ Phosphorus TMDLs for Vermont Segments of Lake Champlain ("Draft 2015 TMDL") (Aug. 14, 2015), p.12.

² Draft 2015 TMDL, p. 18 tbl. 3, p. 43 tbl. 7.

³ Draft 2015 TMDL p. 47 fig. 7.

⁴ Draft 2015 TMDL p. 44, tbl. 8.

⁵ Draft 2015 TMDL p. 44 tbl. 8.

environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole.” 7 U.S.C. § 3101(19).

Sustainable agriculture integrates environmental health, economic profitability, and social justice.⁶ We recognize the range of innovative practices farmers use to improve sustainable farming and encourage AAFM to incorporate flexibility into the RAPs to account for variance across farm fields. However, the fundamental principles of sustainability should be applied consistently to Vermont’s agricultural sector. Appendix A is a list of practices that we believe provide a baseline of options for supporting land and water stewardship as well as satisfying Vermont’s legal commitments. We believe these practices should inform Vermont’s agricultural regulations.

3. The draft RAPs must provide greater strength and specificity, including science-based justifications that the RAPs are sufficiently stringent to meet water quality goals.

The draft RAPs must provide greater strength and specificity as to some requirements, and contain more provisions for education, oversight, and transparency. Please find our detailed comments below:

Introduction and Applicability

- The RAPs should apply to “all farms,” as required by Act 64 and as stated in the Introduction to the Draft RAPs. 6 V.S.A. § 4810a(a) (“the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices *on all farms* eliminate adverse impacts to water quality”) (emphasis added); Draft RAPs at 1, Introduction (“In accordance with 6 V.S.A. §§ 4810a and 4810, these regulations are intended to establish statewide requirements designed to improve water quality in the State and to assure practices *on all farms* eliminate adverse impacts to water.”) (emphasis added).
- Similarly, the language in the “Applicability” Section should be revised to reflect Act 64. Act 64 does not limit the applicability of the RAPs to “agricultural activities” (which is not defined in the Act), or to only “animal waste management and disposal, soil amendment applications, and crop production and management.” Draft RAPs at 1, Applicability. Rather, as stated above, the Act applies to “practices on all farms.” 6 V.S.A. § 4810a(a). The list of RAP requirements in Act 64 is not an exclusive list, but a “minimum” set of requirements that must be addressed. 6 V.S.A. § 4810a(a).
- There should not be a presumption that compliance with the RAPs equals no discharge. The proposed presumption is problematic for several reasons. First, Act 64 does not authorize this presumption. Instead, it states that RAPs must assure that farm practices “eliminate” adverse impacts to water quality. 6 V.S.A. § 4810a(a). Second, as a practical matter,

⁶ See Sustainable Agriculture Research & Education (SARE), What Is Sustainable Agriculture?, <http://goo.gl/frcZ7Y>; National Sustainable Agriculture Coalition, What Is Sustainable Ag?, <http://goo.gl/USo7Gu>.

allowing a presumption of “no discharge” does not encourage either farms or AAFM to identify and address discharges that *are* actually occurring. Third, AAFM has not provided any data or assurances that compliance with the RAPs actually *will* mean “no discharge.” Finally, this presumption is inconsistent with Vermont’s Water Pollution Control Law and the federal Clean Water Act because it seeks to apply to “discharge[s] of agricultural pollutants to waters of the State.” Draft RAPs at 1, Introduction. However, any unpermitted discharge of agricultural pollutants from a point source is an enforceable violation of the Clean Water Act, and Vermont’s Water Pollution Control Law likewise prohibits discharges. 33 U.S.C. § 1311(a); 10 V.S.A. § 1259(a). The presumption could give false assurances to farms regarding their compliance with other water quality laws.

We understand that this provision may be an effort to provide some assurances to farmers regarding compliance with the RAPs and enforcement of Vermont’s agricultural water quality law. A better approach would be for AAFM to use its enforcement discretion when addressing discharges that occur despite a farm’s compliance with the RAPs.

Section 1: General

- The wording of the final sentence under Section 1.3, in particular the word “verifiable,” reads as an effort to limit the enforcement authority of the Vermont Agency of Natural Resources and the Attorney General’s Office, which AAFM cannot do. Draft RAPs at 1, § 1.3. The water pollution control enforcement authorities of ANR and the Attorney General are already laid out in statute (10 V.S.A. §§ 1274, 8001-8221) and include, among other things, the authority to “issue a written warning” when ANR “determines that a violation will or is likely to occur.” 10 V.S.A. § 8006. We recommend revising the sentence as follows: “These rules do not in any way prevent the ANR or Attorney General from enforcing the state’s Water Pollution Control statutes and regulations.”

Section 2: Definitions

- In the definition of “small farm,” the language in subsection (d) that limits the rationales the Secretary may use in designating a small farm should be deleted (“based on the [farm’s] management, agricultural inputs used by the farm, tillage practices used by the farm”). Draft RAPs at 5, § 2.25(d). Act 64 provides that the Secretary’s determination regarding whether to designate a small farm must be based on whether “the farm poses a threat of discharge to a water of the State or presents a threat of contamination to groundwater.” 6 V.S.A. § 4871(b).

Section 3: Required Agricultural Practices Activities

- In Section 3.1, there should not be a presumption that compliance with the RAPs equals no “discharge to waters of the state and groundwater.” Draft RAPs at 6, § 3.1. (See above.)
- Most of Section 3 is unnecessary because, as explained above, Act 64 is clear that the Required Agricultural Practices apply to “all farms.” 6 V.S.A. § 4810a(a) (“the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices *on all farms* eliminate adverse impacts to water quality”)

(emphasis added). The Act does not authorize AAFM to exempt categories of farms from the RAPs, whether for concerns about agency implementation resources or for other reasons. Rather, AAFM should distinguish between those farms that are subject to Small Farm certification, and those that are only subject to the RAPs (which are all remaining farms). 6 V.S.A. § 4810a(a)(1). This would not bring every backyard chicken coop under the realm of the RAPs, because a parcel of land is not a “farm” unless it is “devoted primarily to farming.” Draft RAPs at 2, § 2.07; *see also* 6 V.S.A. § 4802(2) (designating multiple activities that qualify as farming).

- Our understanding is that there may be large numbers of farms in Vermont that would not be covered by the RAPs under the exemption in this Section. We have also heard concerns that some RAPs could not be implemented on the smallest farms because, e.g., there would not be enough space for a required buffer. Rather than exempt large numbers of farms that may be significantly contributing to Vermont’s agricultural water pollution problems, a better approach—and one that would be consistent with Act 64—would be to establish a different set of standards for farms that fall under a certain size. *See* 6 V.S.A. § 4810a(11) (authorizing AAFM to allow for “alternative techniques or practices” where site-specific conditions prevent compliance with the RAPs).

Section 4: Small Farm Certification

- The RAPs should specify the requirements for the annual certification form, so that the public can provide comments and input. Draft RAPs at 7, § 4.10.
- The language of § 4.10(f) must make clear the Secretary has the authority to inspect small farms, “at any time for the purpose of assessing compliance by the small farm with the required agricultural practices and determining consistency with a certification of compliance submitted by the person who owns or operates the small farm.” 6 V.S.A. §4871(e).
- Small farms should be inspected more than once. Under the current draft, a small farm must only be inspected once, ever, and only sometime within the first ten years of certification. Draft RAPs at 8, § 4.10(f). Inspections are key to identifying problems, sharing information, and finding solutions. This is especially true where lack of information and education about water quality requirements has been identified as a primary cause of pollution problems on farms. Additionally, without regular, meaningful inspections, the small farm certification program becomes little more than voluntary. Small farms should be inspected, at the very least, once every five years on an ongoing basis. Relevant inspection results, such as land use changes, should be included in a database management tool that monitors land use change and phosphorus reduction progress by subwatershed.
- Required Farm Operator Training should be required on an annual, or at the most, semi-annual basis. Draft RAPs at 8, § 4.12. As mentioned, education and outreach are key to helping to prevent pollution problems, and often it is the small farms that have the most difficulty obtaining helpful guidance.

Section 5: Required Agricultural Practices; conditions, restrictions, and operating standards

We firmly believe the practices of section 5 should incorporate the activities and perspective of sustainable agriculture outlined in this letter. In addition, we encourage AAFM to adjust the draft RAPs accordingly:

- We recommend adjusting the language of Section 5.1 to help inform farmers that point source discharges from *any* part of the farm (not just the production area or waste management system) require a permit from ANR. Draft RAPs at 9, § 5.1.
- Field stacking of manure should be prohibited in floodplains as well as “lands in a floodway or otherwise subject to flooding.” Draft RAPs at 9, § 5.2(e).
- Nutrient Management Plans should be renewed at least once every five years, and more often as needed to ensure appropriate agricultural utilization of nutrients. Draft RAPs at 10, § 5.3. The current draft of the RAPs appears to require one-time development only.
- The final sentence of Section 5.3(c) should be moved to create a new subsection (d) to specify that NMPs and records of soil analyses, manure application, and waste analyses must be maintained by all farms subject to Section 5.3 (not just those farms in subsection (c)). Further, these records should be provided to the Secretary on an annual basis, not just provided to the Secretary “upon request.” Draft RAPs at 10, § 5.3(c).
- We recommend adding to Section 5.4 that cover crops may not be sprayed with harsh pesticides, such as glyphosate, in order to remove them each year. Rather, cover crops should be killed through non-chemical practices such as mow-down and rolling/slicing/crimping techniques.
- The provision regarding gully erosion should be more specific. Draft RAPs at 11, § 5.4(d). Though it is mandatory (“shall be managed”), the actual requirements are too vague to provide adequate guidance to farmers or adequate requirements to protect water quality. We recommend adding language specifying that gully erosion shall be managed to “*prevent discharges to waters* through the use of appropriate management strategies, etc.”
- The “Waste Application Standards” section of the RAPs should require all persons who land apply wastes to comply with the same requirements with which custom manure applicators must comply (see Section 10). This will help to ensure that applicators at all farms are fully knowledgeable and aware of best practices for preventing water pollution. Draft RAPs at 11, § 5.5.
- We recommend adding language to Section 5.5 to make it clear that the prohibition on applying wastes when the weather and/or field conditions can be reasonably anticipated to result in flooding, etc., applies regardless of whether a Nutrient Management Plan would otherwise allow waste application. We also recommend adding an example of what “reasonable anticipation” would mean, e.g., the responsibility to check a given weather tracker site. Draft RAPs at 11, § 5.5(d).

- All buffer zones and waste application setbacks should, at a minimum, be doubled and be justified by best available science. Draft RAPs at 11, 13, §§ 5.5(e), 5.7. River corridors must be allowed to regain and maintain equilibrium with 50 ft buffers. VTDEC river corridor procedures must inform working lands land use guidance, similar to all other land use sectors in Vermont. The guidelines provided in Act 64 are *mimumum* distances with the further requirement that buffers must adequately address water quality needs on a site-specific basis. 6 V.S.A. § 4810a(a)(6). We are not aware of any data or studies showing that the proposed buffers in the draft RAPs are sufficient to protect water quality and to reduce sediment mobilization and nutrient runoff in accordance with specified watershed pollution reduction targets. Additionally, stream buffers should be comprised of woody vegetation with deep roots first, wherever possible, and then grasses or other perennial vegetation demonstrated to aid in the filtering of sediment and reduction of erosion.
- We recommend adding a requirement that all farms practice integrated pest management rather than starting with the application of chemical pesticides, through the use of techniques such as crop rotation, the planting of crops that are natural pesticides, identification and removal of pests before they become harmful, and weeding. This will not only help to reduce the use of chemical pesticides and associated pollution of waterways and groundwater, but will encourage ecological health of farms more generally.
- This Section should be revised to require that livestock actually be excluded from surface waters. Draft RAPs at 14, § 6; 6 V.S.A. 4810a(9) (AAFMs must “[e]stablish standards *for the exclusion of livestock* from water of the State to *prevent erosion and adverse water quality impacts*”) (emphasis added). In particular, allowing livestock outside production areas to have access to surface waters unless there are already unstable banks with erosion neither excludes livestock, nor prevents erosion and adverse water quality impacts. Relying on AAFMs to go farm-by-farm to designate all areas where water quality may be impacted by livestock stream access is insufficient; it could encompass every stream in the State. Draft RAPs at 14, § 6(b).
- The “and” in subsection (a)(iv) should be changed to an “or” to make it clear that the Secretary may conduct groundwater sampling under any of the listed conditions. Draft RAPs at 15, § 8(a).

Conclusion

We believe that adopting Vermont’s new Required Agricultural Practices provides an important opportunity for taking much-needed, innovative steps that will not only protect Vermont’s water quality, but can also support transitioning to sustainable systems that will ensure the vitality of Vermont’s farms and environment for the long term. Therefore, we urge you to revise the draft RAPs consistent with these recommendations.

Thank you for your consideration.

Sincerely,



Mark Nelson
Chair
Vermont Chapter of the Sierra Club



Rebekah Weber
Lake Champlain Lakekeeper
Conservation Law Foundation



David Deen
Upper Valley River Steward
Connecticut River Watershed Council



Brian Shupe, AICP
Executive Director
Vermont Natural Resources Council



Lauren Hierl
Political Director
Vermont Conservation Voters



Marty Illick
Executive Director
Lewis Creek Association



Lori Fisher
Executive Director
Lake Champlain Committee

Appendix A

Plant Production Practices⁷

Selection of site, species, and variety: Preventative strategies, adopted early, can reduce inputs and enable sufficient planning to lessen water quality impacts. When possible, pest-resistant crops should be selected which are tolerant of existing soil or site conditions. When site selection is an option, factors such as soil type and depth, previous crop history, and location (e.g. climate, topography, including proximity to surface waters, floodplains, inundation areas, and wetlands) should be taken into account before planting.

Diversity: Diversified farms are typically economically and ecologically resilient. While monoculture farming has advantages in terms of efficiency and ease of management, the loss of the crop in any one year can put a farm out of business and seriously disrupt the stability of the community dependent on that crop. By growing a variety of crops, farmers spread economic risk and are less susceptible to the radical price fluctuations associated with changes in supply and demand. Properly managed, diversity can also buffer a farm from pest infestations, which can result in fewer synthetic chemicals entering waterways.

Soil management: Activities that increase organic matter, reduce compaction, promote biological activity, reduce erosion and maintain nutrient levels are necessary to provide long-term sustainability of agricultural soils and protection of surface water areas and continuous riparian buffers. Practices that promote these goals include reduced tillage, avoiding tillage and traffic on wet soils, addition of organic matter using manure, green manures and compost, sod and legume rotations and the use of cover crops.

Efficient use of inputs: The application of any synthetic, petroleum-based fertilizers and/or pesticides and/or herbicides should be prohibited. The active ingredients of these chemicals degrade many of Vermont's water bodies. Soil fertility and crop nutrients should be managed through mechanical tillage and cultivation practices, crop rotations and cover crops, supplemented with animal and crop waste materials and, under specified conditions, certain permitted synthetic materials. The use of sewage sludge should also be prohibited.

Consideration of farmer goals and lifestyle choices: Management decisions should reflect not only environmental and broad social considerations, but also individual goals and lifestyle choices. For example, adoption of some technologies or practices that promise profitability may also require such intensive management that one's lifestyle actually deteriorates. Management decisions should promote water quality improvement, sediment and nutrient reduction targets, as well as nourish the community and individual.

Animal Production Practices⁸

Management planning: Including livestock in the farming system increases the complexity of biological and economic relationships. The mobility of the stock, daily feeding, health concerns,

⁷ Adapted from: SARE, Plant Production Practices, <http://goo.gl/O9egFX>.

⁸ Adapted from: SARE, Animal Production Practices, <http://goo.gl/3YGgTb>.

breeding operations, seasonal feed and forage sources, and complex marketing are sources of this complexity. Therefore, a successful operation plan should include enterprise calendars of operations, stock flows, forage flows, labor needs, herd production records, and land use plans to give the manager control and a means of monitoring progress and mitigating water quality infractions.

Animal selection: The animal enterprise should be appropriate for the farm and natural resources. Farm capabilities, potential impacts on water bodies and aquatic features, and constraints such as feed and forage sources, landscape, climate, and skill of the manager should be considered in selecting which animals to produce.

Animal nutrition: Feed costs are the largest single variable cost in any livestock operation. While most of the feed may come from other enterprises on the farm, some purchased feed is usually imported from off the farm. Feed costs can be kept to a minimum by monitoring animal condition and performance and understanding seasonal variation in feed and forage quality on the farm. Producers should feed livestock feed products that are 100 percent organic, but may also feed permitted vitamin and mineral supplements. All animals should have ready access to pasture and, for the entire length of the grazing season, should get 30 percent of their feed on a dry-matter basis from pasture. Minimizing the use of feed supplements can reduce excess nutrients discharging into waterways.

Reproduction: Using quality germplasm to improve herd performance is another key to sustainability. In combination with good genetic stock, adapting the reproduction season to fit the climate and sources of feed and forage reduces health problems and feed costs. The benefits also extend to minimizing synthetic inputs.

Herd health: Animal health greatly influences reproductive success and weight gains, two key aspects of successful livestock production. Unhealthy stock waste feed and require additional labor and inputs that may negatively impact water quality. To maintain health, animals should be raised in clean environments with adequate space to reduce animal-stress and the likelihood of infections. The use of antibiotics should be prohibited except in the case of acute infections in sick animals.

Grazing management: The stocking rate must be correct for the landscape and the forage sources. Prolonged concentration of stock that results in permanent loss of vegetative cover on uplands or in riparian zones should be avoided. Livestock should be excluded from surface waters, river corridors, and inundation areas. Livestock may have temporary access to surface waters at defined livestock crossings.

Confined livestock production: Animal health and waste management are key issues in confined livestock operations. Confined livestock production is increasingly a source of surface and ground water pollutants, and should be avoided. All livestock must have ready access to pasture and, for the entire length of the grazing season, should get 30 percent of their feed on a dry-matter basis from pasture. Livestock production systems that disperse stock in pastures so the wastes are not concentrated and do not overwhelm natural nutrient cycling processes are strongly

encouraged. Animals should only be temporarily confined, and only for reasons of health, safety, to protect soil or water quality, and/or the animal's state of production.

*Economics and Social Context*⁹

Profitability: Farms are businesses that rely on turning a profit. Transitioning to an agricultural system that internalizes the costs of production can affect the farmer's bottom line. Therefore, farmers should adhere to business models that increase their price point, including but not limited to organic, value-added, and diversified farming operations that supply local and regional markets. Economic stability is an important driver that enables environmental protection. Oftentimes producers do not feel they have the option of conserving water quality and stewarding their land because of financial constraints.

- ***Organic:*** American consumer demand for organic products has grown by double-digits every year since the 1990s. Organic sales have increased from \$3.6 billion in 1997 to over \$39 billion in 2014. The vast majority of Americans purchase some organic products with a recent *Consumer Reports* survey demonstrating that 84 percent of American consumers purchase organic food.¹⁰ With restrictions on synthetic chemical use under the new RAPs, transitioning to organic would be fairly straightforward. Vermont farmers could also take advantage of large organic consumer hubs in Boston, New York, and Philadelphia.
- ***Value Added:*** Value-added production changes the state of a product or alters the production process to enhance the value of the end product.¹¹ Providing value can be in the form of marketing a unique product, filling a market niche, simplifying the supply chain, providing a service, and many other ways. Examples of value added products include organic milk or yogurt.¹²
- ***Diversified:*** Diversified farming systems are a set of methods and tools developed to produce food sustainably by leveraging ecological diversity at plot, field, and landscape scales. While there is no single template, an example of diversified farming includes multiple crops and/or varieties and integration with livestock.¹³ If adequate management and labor resources exist, diversification reduces financial risk. Diversification hedges against drought and economic pressures from increased input costs, commodity price declines, and regulations that affect the supply of certain commodities.¹⁴
- ***Local and Regional:*** In 2012, 163,675 farms in the U.S. were marketing foods locally, defined as either direct-to-consumer or intermediated sales of foods. The number of farms with direct-to-consumer sales increased by 17 percent and sales increased by 32 percent between 2002 and 2007. Overall, sales of local foods were estimated to have

⁹ Adapted from: SARE, The Economic, Social, & Political Context, <http://goo.gl/5110Ap>.

¹⁰ Organic Trade Association, State of the Industry, <http://goo.gl/iMf2c2>.

¹¹ USDA, Value-Added Producer Grant, <http://goo.gl/7h96GJ>.

¹² Agricultural Marketing Resource Center, What Is Value-Added Agriculture?, <http://goo.gl/ieeWbz>.

¹³ Berkeley Food Institute, Center for Diversified Farming Systems, <http://goo.gl/lyMsbi>.

¹⁴ UW-Madison, Center for Integrated Agricultural Systems, <http://goo.gl/OsBzOJ>.

grown from \$4 billion in 2002 to \$6.1 billion in 2012.¹⁵ Vermont, in particular, has a rich farm to plate culture with potential for significant increase in direct-to-consumer sales.¹⁶

Land use: Conversion of agricultural land to urban uses is a particular concern in Vermont as rapid growth and escalating land values threaten farming on prime soils. Existing farmland conversion patterns often discourage farmers from adopting sustainable practices and long-term perspective on the value of land. Adopting sustainable farming practices can play a key role in building public support for agricultural land preservation.

Conservation and preservation of productive agricultural land and water resources for long-term stewardship should be a priority over development. Those seeking to convert needed agricultural land to other uses bear the burden of proving that the proposed new use is more important to current and future public welfare than agriculture and that there is no other feasible location for the proposed use. Comprehensive statewide land use planning is necessary to ensure a balance of lands for all purposes. It is important that there be wide public and professional participation in the land use planning process.

Labor: In Vermont, the conditions of agricultural labor are generally far below accepted social standards and legal protections in other forms of employment. On-the-farm policies should provide adequate wages, safe working conditions, health benefits, and changes for economic stability. The needs of migrant labor for year-round employment and adequate housing are a particularly critical issue. Labor exploitation, like environmental degradation, is often an economic issue. Social and environmental considerations are overlooked because of the upfront costs. It is critical to encourage fair working conditions at the same time as demanding water quality protection – as both are proxies for farm stability.

Rural community development: Locally based sustainable agriculture encourages strong, rural communities by creating jobs, developing a community ethos, protecting water resources, providing food security, and connecting rural and urban areas.¹⁷

¹⁵ USDA, *Trends in U.S. Local & Regional Foods Systems* (Jan. 2015), <http://goo.gl/bRxHMk>; John Ikerd, *The Economics of Sustainable Farming*, <http://goo.gl/i7hBxY>.

¹⁶ Farm to Plate, 3.7: Nutrient Management, <http://goo.gl/b4pRMt>.

¹⁷ Duke Law Community Enterprise Clinic, *Developing Whole Communities: Community Economic Development & Locally Based Sustainable Agriculture*, <https://goo.gl/sYf5jK>.

Patch, Ryan

From: David Darr <ddarr@dfamilk.com>
Sent: Thursday, July 7, 2016 12:44 PM
To: AGR - RAP
Subject: RAP comments
Attachments: Proposed Rule Comments, DFA.pdf; ATT00001.htm

Comments for the Required Agricultural Practices (RAPs) Rule for the Agricultural Nonpoint Source Pollution Control Program (Proposed Rule) attached.

Thank you,

David Darr

David Darr

General Manager, Farm Services

Vice President, Sustainability

Dairy Farmers of America

816-801-6432

ddarr@dfamilk.com



July 7, 2016

Vermont Agency of Agriculture, Food, and Markets
Attn: RAPs
116 State Street
Montpelier, VT 05620-2901

Dear Agency:

On behalf of our 130 member farm families in Vermont, Dairy Farmers of America, Inc. (DFA) would like to submit comments on the Required Agricultural Practices (RAPs) Rule for the Agricultural Nonpoint Source Pollution Control Program (Proposed Rule).

DFA and our members appreciate the open process the Agency has utilized in development, and revision to, the RAPs. We and our members (individually and through Green Mountain Dairy Farmers) have been actively involved in the process. We continue to support the comments and ongoing efforts of Green Mountain Dairy Farmers. These comments are based on a technical review of the Proposed Rule that DFA had prepared by Dragun Corporation, a global environmental consulting firm with significant experience in the dairy industry, and Michael Best & Friedrich LLP. The technical review was prepared to identify potential areas for revision to the RAPs, with the intent of helping develop regulation that is supportive of water quality, and vibrant industries, like dairy.

In the attached comments that have been prepared, there are four key themes, (1) clearer definition of terms (2) regulatory certainty (3) focus on environmental benefit and (4) flexibility to account for practical on-farm solutions. We believe that with some adjustments to current language, the RAPs can better achieve the goal of improving water quality in the State, and doing it in a manner that maintains a vibrant dairy industry.

Again, we thank the Agency for the opportunity to comment on the Proposed Rule, and look forward to continuing to collaborate with the Agency as the process moves forward.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Darr', is written over a light blue circular background.

David Darr
Vice President, Sustainability
General Manager, Farm Services

More Cooperative.

Technical Review of the Proposed Required Agricultural Practices (RAPs) Rule for the Agricultural Nonpoint Source Pollution Control Program, Vermont Agency of Agriculture, Food and Markets
 Prepared for Dairy Farmers of America, Inc. by Dragun Corporation and Michael Best & Friedrich LLP
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Proposed RAP Number	Comment on Proposed RAP	Suggested Change to RAP	Rationale	Detailed Analysis
Scope of RAPs	RAPs should be limited to the authorizing language of Act 64.	See below.	See below.	<p>The Vermont Legislature authorized the Secretary of the Vermont Agency of Agriculture, Food and Markets (the Agency or VAAFM) to implement Act 64 (6 V.S.A. § 4810(a) or the Act). However, the Legislature's grant of authority to the Agency is not without limitation.</p> <p>The Act requires the Agency to amend the required agricultural practices (RAPs) "in order to improve water quality in the State, assure all practices on farms eliminate adverse impacts to water quality, and implement the small farm certification program required by [Act 64]." 6 V.S.A. § 4810a(a). However, many sections of the RAPs include prohibitions, restrictions and limitations that are disconnected from Act 64's goal of improving the state's water quality and, in fact, could have just the opposite effect.</p> <p>The RAPs also impose significant economic burden on many (but certainly not "all") of those involved in "farming" without sufficient justification that the environmental benefit of the RAPs justify the economic burden. The incremental environmental benefit must improve water quality and then must meet the balance required by Act 64 that the RAPs "shall be practical and cost-effective to implement." 6 V.S.A. § 4810(b). The RAPs must be amended and revised to meet Act 64's requirements to improve water quality while being practical and cost-effective to implement. In many cases, this means that the RAPs must incorporate additional regulatory clarity, consistent terminology and flexibility to allow site-specific matters to be addressed by farm owners and operators along with a farm's nutrient management planner and other advisors. These are the people that are in the best position to assess environmental impacts and effect on-farm change in a way that ensures practices are "practical and cost-effective to implement."</p>
1.1	"agricultural pollutants" is/are not defined in the document; multiple terms are used throughout.	Change language or add definition to Section 2.	Consistent terminology will be important to producer understanding.	<p>Consistent with Act 64, Section 1.1 requires that the RAPs "shall be" designed to protect water quality and "shall be" practical and cost-effective to implement. Additional focus on these two guiding principles - water quality impacts and practical/cost-effective practices - is necessary throughout.</p> <p>It is an important part of the RAP framework that producers in compliance with the RAPs "shall be presumed to not have a discharge of agricultural pollutants to waters of the State." This is a critical component of the RAPs and is also why additional clarity is necessary throughout to allow a producer to confirm his/her compliance with the RAPs.</p> <p>Section 1.1 describes the RAPs as "management standards" and "shall include, as well as promote and encourage, practices for farmers in preventing agricultural pollutants from entering the groundwater and waters of the State." It would appear from this language that complying with these "management standards" and "practices" would be sufficient to be compliant with the RAPs and "not have a discharge." However, many of the RAPs and terms within the RAPs indicate that a farm's compliance with the RAPs may be measured against a numeric value, standard, or threshold as a result of a "discharge" to surface water or groundwater. This context of compliance within the RAPs appears to be beyond the authority provided within Act 64.</p> <p>If the term "agricultural pollutants" means something different than "Waste or Agricultural Waste" as defined in Section 2.33, then producers need to understand the distinction. If there is no distinction, consistent terminology should be used.</p> <p>It is understood the term "agricultural contaminants" appeared in prior versions of the AAPs but now that Act 64 defines "Waste or Agricultural Waste," it is recommended that all of the terms like agricultural pollutant/agricultural contaminants be replaced with a consistent term.</p>
1.2	Terms "control and reduce" are used; terms elsewhere are much more rigid (e.g. Section 6 uses "prevent" and "Farms shall not create any discharge").	Change language to clarify.	Consistent terminology will be important to producer understanding.	Act 64 prohibits only a limited number of actions - the RAPs provide less flexibility than authorized by the Vermont legislature. The RAPs must recognize that the definition of "agricultural waste" (Section 2.35) includes sediments, minerals, and plant nutrients that are naturally occurring in the environment. These materials will be present in surface water and groundwater at some natural level within a geologic and geographic area regardless of whether farming is occurring in that area. The hydrologic cycle and nutrient cycle dictate that nutrients (at some level) will move throughout the cycle, and, in fact, such deposition and movement is necessary for the "natural" ecosystem. See also the discussion in 8 (a) and 8 (b).
2.03	"Annual Cropland"	Change language for "annual cropland" to be consistent with the definition of "farming."	Need for an all-in approach.	<p>The definition of "annual cropland" should be consistent with the definition of "farming" to include phosphorus contributions from all sources as envisioned in the "all in" approach of Act 64.</p> <p>While it may appear that every sector of farming has a role in implementing the RAPs due to the all-encompassing definition of "farming" in Section 2.15, grain farms and vegetable, fruit and berry crops are then immediately excluded from the definition of "Annual Cropland" in Section 2.03. The term "Annual Cropland" is the trigger for a majority of the restrictions in the RAPs, and exclusion of key phosphorus contributing sources from the "all in" approach is inconsistent with Act 64. This will result in only a segment of the "farming" industry having to soldier a majority of the costs and responsibilities associated with Act 64's goal of improved water quality. An "all in" approach should really mean all in, with everyone at the table.</p>
2.05	Buffer zone definition uses other defined terms ("surface water" and "ditch") in a manner that conflicts with other definitions.	Change language to clarify.	Consistent terminology will be important to producer understanding.	As indicated in the comments on Section 2.12, it is unclear what distinction VAAFM is making between the definition of "ditch" and use of the terms "surface inlets or open drains." This distinction is important because the distinction between an "open drain" and a "ditch" is an additional fifteen (15) feet of buffer zone requirements. See also discussion under Section 2.12 regarding issues related to "ditches" and "surface inlets or open drains."
2.11	This definition is the only place in the document where "emission" is used.	Strike "emission."	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	The term "emission" does not appear in Act 64 and it should not appear in the RAPs.

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2.12	Suggest review of the entire definition for "ditch."	Definition should track NRCS standards 607 and 608 with respect to ditch-related features.	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	<p>The term "ditch" appears in ten (10) different sections of the RAPs (Sections 2.05, 2.12, 3.2, 6.01, 6.02, 6.06, 6.07, 6.08, 6.09, and 7). Section 2.12 defines ditch as "a constructed channel or channel which forms as a result of human activities primarily associated with land drainage or water conveyance through or around private or public property or infrastructure."</p> <p>In order to comply with the RAPs, producers need to be able to identify what is and is not a ditch on their properties. Use of language such as "water conveyance through or around private or public property or infrastructure" could conceivably incorporate almost any land feature that, at any point in time, conveys some water on a property to another location. Such an expansive definition would not be consistent with the requirement in Section 1 of the RAPs that the RAPs be focused on protecting water quality and be practical and cost-effective to implement.</p> <p>This understanding is further complicated by the use of the term "ditch" in the definition of "Buffer Zone" in Section 2.05 and in Section 7. The definition of "Buffer Zone" references a buffer being required between the edge of cropland and "a ditch that is not a surface water under State law", yet in Section 7 (which is titled "Exclusion of Livestock from the Waters of the State") there is a requirement that "livestock shall not have access to surface water in production areas or immediately adjacent to production areas except...in areas prescribed by a rotational grazing plan...which shall maintain ... 10 feet between the top of bank and ditches..." (emphasis added). Inclusion of the term "ditch" within the definition in Section 7 could imply that certain ditches may be "Waters of the State" yet Section 2.05 specifically requires buffer zones for <u>ditches that are not a surface water under State law and are not a waters of the United States</u>.</p> <p>Further, the definition of "ditch" does not make any distinction between what features constitute a "ditch" (requiring a 10-foot buffer in 6.07(b)) and what features constitute "surface inlets or open drains" (requiring a 25-foot buffer in 6.07(c)). The RAPs must provide a definition of ditch that allows a producer to distinguish between a "ditch," a "surface inlet" or "open drain." As drafted, the current RAPs provide none of this clarity.</p> <p>The USDA Natural Resource Conservation Service (NRCS) has two (2) long-standing conservation practice standards for ditch-related features ("Surface Drain, Field Ditch", VT NRCS 607-CPS-1 and "Surface Drain, Main or Lateral", VT NRCS 608). These NRCS standards make a distinction between a graded channel that intercepts excess surface and shallow subsurface water from a field that gets conveyed to a surface main or lateral ("Surface Drain, Field Ditch") and an open drainage ditch that moves excess water collected by a field ditch or subsurface drain to a safe outlet ("Surface Drain, Main or Lateral"). The definition of "ditch" in Section 2.12 makes none of these distinctions and, as such, is vague and unclear as well as overly restrictive.</p> <p>The definition of "ditch" should be revised so that a "ditch" is an easily distinguishable feature. Additionally, since the term "ditch" is used within other definitions and sections of the RAPs, the RAPs should be reviewed to confirm that the use and meaning of "ditch" (and associated potential enforcement triggers) is consistent throughout the RAPs. If it was the Agency's intent to broaden the meaning of the term "ditch" in these RAPs, this reasoning should be made clear and justification should be provided that establishes how such an expanded definition of "ditch" will improve water quality while remaining practical and cost-effective.</p>
2.17	Different definitions are used in Sections 6.05 (b) and (c) and 6.06 (b)(9) references USDA Soil Flooding Frequency Class soil types. Section 9 (a) references a Flood Hazard Area and River Corridor permit.	Review for consistency within the RAPs.	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	<p>Definitions 2.17 (Flood Hazard Area), 2.18 (Floodplain), and 2.19 (Floodway) in the RAPs are used to define areas of flooding and characteristics of flooding within watercourses of Vermont. These definitions are taken from the Vermont DEC Flood Hazard Area and River Corridor Protection Procedures, Dec. 5, 2014 ("Flood Hazard and River Corridor Procedures"). The purpose of this document, among others, "... is to provide how the Department of Environmental Conservation (DEC or Department): (1) defines and maps flood hazard areas and river corridors...; and (6) has established floodplain and river corridor best management practices..." The DEC Flood Hazard and River Corridor Procedures also include references to, and use of methods within, the National Flood Insurance Program and FEMA-designated floodway.</p> <p>The RAPs' reliance on the Flood Hazard and River Corridor Procedures is consistent with the requirements articulated by the Vermont Legislature in Act 64. See, for example, § 4802(6) (Definition of "Top of Bank" includes a reference to an annual flood event as determined by the Flood Hazard and River Corridor Procedures, and § 4810(a)(8) requires the construction or siting of farm structures or the storage of manure, fertilizer or pesticides within a river corridor to be done consistent with the Flood Hazard and River Control Procedures. However, RAP Sections 6.05 (b) and (c) and 6.06 (b)(9) introduce the use of USDA Soil Survey Flooding Frequency Class soil types with respect to defining "... land subject to frequent flooding..." in the context of limiting manure spreading and application. By no longer relying on the Flood Hazard and River Control Procedures to be the guiding set of principles to manage floodplain and river corridor best management practices, despite the fact that the procedures were developed for just that purpose, the RAP requirements unnecessarily overlap with the Flood Hazard and River Control Procedures. Further, the RAPs would be more understandable and implementable if the RAPs relied on the existing control procedures in place to address all floodplain and river corridor-related best management practices. Moreover, the Flood Hazard and River Control Procedures are more technically appropriate than the USDA Soil Survey Flood Frequency class approach relied on in RAP Sections 6.05 (b) and (c) and 6.06 (b)(9).</p> <p>It is highly likely that the USDA Soil Survey Flooding Frequency Class soil types would be deposited and are present within "flood" areas as defined in the Flood Hazard and River Control Procedures Vermont DEC Flood Hazard Area and River Corridor Protection Procedures, Dec. 5, 2014. However, these soil classes would also be present in other portions of the watercourse, not likely to flood, through normal meandering and associated deposition. Accordingly, the inclusion of these soil classes outside of defined flood areas as defined by the Flood Hazard and River Control Procedures Vermont DEC Flood Hazard Area and River Corridor Protection Procedures, Dec. 5, 2014, is over-reaching and would unnecessarily preclude manure application activities without environmental benefit.</p>
2.18	Different definitions are used in Sections 6.05 (b) and (c) and 6.06 (b)(9) references USDA Soil Flooding Frequency Class soil types. Section 9 (a) references a Flood Hazard Area and River Corridor permit.	Review for consistency within the RAPs.	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	See the comments for Section 2.17.
2.19	Different definitions are used in Sections 6.05 (b) and (c) and 6.06 (b)(9) references USDA Soil Flooding Frequency Class soil types. Section 9 (a) references a Flood Hazard Area and River Corridor permit.	Review for consistency within the RAPs.	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	See the comments for Section 2.17.
2.38	Phrase "surface water and groundwater as applied" should be consistent with Section 2.32.	Phrase "surface water and groundwater as applied" should be consistent with Section 2.32.	Consistent terminology will be important to producer understanding; regulatory certainty and compliance.	It is confusing when VAAFM uses different definitions of "Waters of the State" for different agricultural programs. Here, "Waters of the State" means surface water and groundwater. In the LFO and MFO permits, "Waters of the State" has the same definition as the RAPs definition of "Surface Water or Waters." Again, interchanging definitions for two agricultural-focused programs does not make sense and should be avoided.

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2.39	Use of the term "water supply" should be clarified.	The reference to "water supply" should be limited to those water supply sources installed and operating in a manner consistent with the Department of Environmental Conservation Water Supply Rules including, but not limited to, the state's Construction and Isolation Standards for Wells.	Regulatory certainty and compliance.	The use of the term "water supply" (as opposed to just the term "wells" that was included in the prior version of the Accepted Agricultural Practice Standards (AAPs)) indicates the Agency is referring to those wells installed and operating in accordance with the Department of Environmental Conservation's Water Supply Rules, including the Construction and Isolation Standards for Wells. Given the investigation and enforcement authority in Act 64 and Section 8 of the RAPs, it is critical that "water supply" features that could trigger such an investigation and/or enforcement are those features that are installed and operating in accordance with the state's Water Supply Rules.
6.01 (a)	"any discharge" seems to be an impossible (or very improbable) limit given the definition of "Agricultural Waste" (2.35). Are there specific discharge standards?	Clarify how "discharge" will be determined.	Regulatory certainty and compliance.	<p>Note that the AAPs required that agricultural operations "shall not create any direct discharge" while the RAPs now prohibit "any discharge." The prohibition on "any discharge" is impractical and is beyond the scope envisioned by Act 64 which prohibits only certain actions such as stacking or piling manure in a manner and location that presents a threat of discharge.</p> <p>The term "discharge" is used in 10 (ten) different Sections of the proposed RAPs (1.1, 2.11, 2.19, 3.1, 4.2, 5, 6.01 (a) & (b), 6.04, and 6.07). Section 2.11 defines discharge as "the placing, depositing, or emission of any wastes, directly or indirectly, into an injection well or into waters." With respect to this definition, Section 1.1 as the introduction to the RAPs states, "Persons engaged in farming who are in compliance with these practices shall be presumed to not have a discharge of agricultural pollutants to waters of the State." Section 3.1 also states, "Persons engaged in farming who are in compliance with these conditions, restrictions, and operating standards, as applicable, shall be presumed to not have a discharge of agricultural wastes to waters of the State."</p> <p>Section 1.1 describes the RAPs as "management standards" and "shall include, as well as promote and encourage, practices for farmers in preventing agricultural pollutants from entering the groundwater and waters of the State." It would appear from this language that complying with these "management standards" and "practices" would be sufficient to "not have a discharge."</p> <p>However, the use of the term "emission of any waste" either "directly or indirectly" within the definition of discharge seems contradictory to the description of the RAPs to include "practices for farmers in preventing." It also creates an issue with how one will determine whether a "discharge" has occurred. If a "discharge" is the indirect or direct "emission of <u>any</u> waste" (emphasis added), it seems an impossible threshold. Regardless of whether farming is occurring, there will be a dynamic interaction between the soil, groundwater, and surface water during precipitation events. The hydrologic cycle and nutrient cycle dictate that nutrients (at some level) will move throughout the cycle, and in fact is necessary for the "natural" ecosystem. This concept has been recognized by the U.S. Environmental Protection Agency ("USEPA") in its exclusion of "agricultural storm water runoff" from the definition of a "point source" in 40 C.F.R. §§ 122.2 and 122.23. As such, the RAPs' use of the term "indirectly" within the definition of discharge also seems over-reaching in that it infers somehow that agricultural storm water (clearly "non-point discharge") should be regulated like a point source discharge and measured like a point source discharge.</p> <p>Along those same lines, Section 6.01(a) also states that, "Farms shall not create <u>any discharge</u> of agricultural wastes to surface waters of the State through a discrete conveyance such as ... a ditch... with a permit..." (emphasis added). The use of the term "any discharge" is over-reaching for all the reasons discussed above. In addition, Vermont's existing stormwater management requirements (10 V.S.A. § 1264) provide a permitting exemption for "stormwater runoff from farms in compliance with agricultural practices adopted by [VAAF] as well as stormwater runoff from permitted concentrated animal feeding operations ("CAFOs"). FN1. Therefore, under the current RAPs, a discharge of stormwater runoff carrying an "agricultural waste" from a ditch would be specifically exempt from a permit under the state's stormwater statute but would specifically require a permit under the RAPs. This inconsistency and lack of clarity is not acceptable and must be corrected.</p> <p>Another example of how the definition of "discharge" is a concern is how the definition varies from the definition of "discharge" in the Medium Farm Operation (MFO) and Large Farm Operation (LFO) permit programs. The definition of a "discharge" under the MFO and LFO Permits is "the placing, depositing, or emission of waste directly into surface water." The definition in Section 2.11 of the RAPs substantially expands that definition by including "any waste" (and "waste" is defined to be significantly more broad in the RAPs than it is defined in the MFO and LFO permits), "indirect" deposition and into "injection wells" as well as surface waters. Therefore, with the enactment of these RAPs, discharges from 50 cow dairy farms will be more strictly regulated than discharges from MFOs and LFOs are currently regulated. For context, the State of New York defines a "discharge" for its permitted CAFOs to be "any release of manure or process wastewater, including releases from feed storage areas into the surface waters of New York State. Agricultural stormwater discharges as defined herein are exempt and do not classify a facility as discharging or proposing to discharge." (GP-0-09-001, New York State Department of Environmental Conservation, State Pollutant Discharge Elimination System (SPDES) General Permit for Concentrated Animal Feeding Operations, "NY CAFO General Permit). "Agricultural stormwater" is defined to be "a discharge comprised entirely of stormwater from a land area upon which manure and/or wastewater has been applied in accordance with proper agricultural practices, including land application of manure or wastewater in accordance with a site-specific nutrient management plan." (Appendix A, NY CAFO General Permit).</p> <p>The definition of "discharge" should, at a minimum, remove reference to "indirect" placing, depositing or emission and include a similar exemption for agricultural stormwater that is recognized in 10 V.S.A. § 1264, by USEPA and by numerous other state programs.</p> <p>Finally, see also the comment regarding Sections 8(a) and 8(b) that identifies the need for developing a process for establishing and considering background concentrations in the context of what does and does not constitute a "discharge."</p> <p>FN1: 10 V.S.A. § 1264 addresses stormwater management. Note that the "findings and intent" of the statute indicate that the legislature tasked the Agency of Natural Resources with developing a process that, among other things, was to be consistent with the federal Clean Water Act and the State water quality standards and "recognize that stormwater runoff is different than the discharge of sanitary and industrial wastes because of the influence of natural events of stormwater runoff...."</p>
6.01 (a) (cont'd)	Inclusion of the word "ditch" in the definition seems to take a non-point discharge of a farm field and make it a discharge from point-source. Does this exclude non-point sources?	Clarify the definitions for "ditch" and "discharge."	Regulatory certainty and compliance.	Act 64 does not provide this sort of expansive authority. For example, Act 64 requires that the construction and management of barnyards, waste management systems, animal holding areas and production areas be in a manner that "prevents runoff of waste to a surface water, to groundwater, or across property boundaries." Note the absence of a reference to "ditches." Given the legislature's inclusion of "ditches" in other provisions, it can be assumed that the legislature's omission of "ditch" in this section was intentional. Therefore, the term "ditch" should be removed from 6.01(a). Further, as indicated above, the definition of "discharge" should, at a minimum, remove reference to "indirect" placing, depositing or emitting and include an agricultural stormwater exemption as recognized by Vermont's stormwater management statute. Finally, see also the comments on the definition of "ditch" in Section 2.12.

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6.01 (b)	The term "prevent" needs clarification; this appears to be an arbitrary standard that can be interpreted differently depending on the inspector.	Modify to be "prevent or reduce"; omit "indirect" discharges; focus on discharges to surface water only.	Regulatory certainty and compliance.	When paired with the restriction in Section 6.01(a), the RAPs would both prohibit any direct or indirect discharge of agricultural waste to surface waters from any pipe, ditch or conduit without a permit <i>and</i> require prevention of direct or indirect discharges of agricultural wastes to surface and groundwater from any other area of a farm (production areas, barnyards, animal holding or feedlot areas, manure storage areas, and feed storage areas). This appears to assume that any discharge from the areas identified in 6.01(b) would qualify as "agricultural waste" which is incorrect. This approach strays from Act 64's purpose of focusing on water quality protection <i>while also</i> being practical and cost-effective to implement. Further, while the LFO rules requires that milkhouse waste and leachate be contained in a way so as to prevent a discharge to waters of the state (defined to be equivalent to the RAP definition of "Surface Water or Waters"), the RAPs would impose a more significant burden on certified small farm operators to prevent the discharge of agricultural wastes to surface water or groundwater than Vermont's LFO and MFO regulations require. By definition, it is hard to believe such an approach strikes the appropriate balance between protection of groundwater quality and practical and cost-effective implementation.
6.02 (e)(4)(E)	"areas subject to concentrated runoff" needs reference for identification and determination.	Define "areas subject to concentrated runoff" and how such areas are designated and/or identified. Alternatively, delete this restriction.	Regulatory certainty and compliance.	Define or delete the reference to "areas subject to concentrated runoff."
6.02 (f)	The statement "... Secretary determines that ... will not have an adverse impact ..." does not clarify how the determination will be made.	Amend to be consistent with Act 64's language; allow flexibility via the nutrient management process provided for by NRCS 590.	Regulatory certainty and compliance.	Act 64 requires that VAAFM allow for alternative techniques or practices when the owner or operator cannot comply with the requirements of the RAPs due to site-specific conditions. According to Act 64, such alternatives must "reduce adverse impacts to water quality" - not have "no adverse impacts on groundwater quality or surface water quality" as required by 6.02(f).
6.03 (d)	The phrase "shall implement practices to reduce" is different than "prevent" or "any discharge" used elsewhere.	Review for consistency within the RAPs.	Regulatory certainty and compliance.	The RAPs' use of the terms "shall implement practices to reduce" is appropriate and should be used throughout the RAPs to replace the use of "prevent any discharge" terminology.
6.03 (d) (cont'd)	The phrase "over time" is vague; a reference to how this is determined is needed.	Change language to clarify deference to site-specific nutrient management planning process.	Regulatory certainty and compliance.	Use of the term "over time" is open to significant interpretation. While that is appropriate, producers need some assurance that VAAFM will allow site-specific review and analysis of this issue in the context of the farm's nutrient management planning process and that the agency will defer to the nutrient management planning process which is best suited for implementation of a site-specific review and implementation plan.
6.03 (e)	Vague terms such as "significant" and "timely manner" are undefined.	Change language to clarify.	Regulatory certainty and compliance.	Additional guidance is necessary in order for producers to comply with this requirement. It is unclear what would amount to a "significant change" and the length of time that would meet a "timely manner" requirement. Reporting obligations should be minimized to maintain consistency with Act 64's focus on water quality and practices that are practical and cost-effective to implement.
6.03 (e) (cont'd)	It is unclear how "significant changes in animal numbers" would relate to requirements under the SFO/MFO and LFO permit programs.	Change language to clarify.	Regulatory certainty and compliance.	Clarify how this requirement interacts with the requirements that apply to SFO/MFO and LFOs in Vermont.
6.04 (d)	Strictness of the timeline fails to allow for the planting and harvesting flexibility needed in dealing with changing weather/climate conditions.	Remove reference to USDA Soil Survey Flooding Frequency Class and replace with the Flood Hazard and River Control Procedures and classifications. The environmental concern triggering this restriction is soil loss, but soil loss is already part of any NRCS 590-compliant nutrient management plan (T/soil loss evaluation). Therefore, all site-specific modifications should be incorporated into a farm's nutrient management planning process and simply document such a site-specific modification to VAAFM.	Environmental benefit and flexibility.	6.04(d) is one example of a RAP that fails to meet Act 64's directive because it is not focused on water quality benefits and/or is not practical or cost-effective to implement. As an initial matter, while the Agency is authorized to establish standards for "required" nutrient management planning on all farms that manage agricultural waste, the Agency is only authorized to "recommend" practices for improving and maintaining soil quality and healthy soils." 6 V.S.A. § 4810a(4). However, the RAPs (including Section 6.04(d) and others) that identify practices to improve and maintain "soil quality and healthy soils" are not "recommendations only" but are characterized as requirements, the violation of which subjects the farm operator to enforcement risk. There is no technical justification for the Agency's selection of the date ranges included in Section 6.04(d). Act 64 requires a focus on water quality impacts and VAAFM offers no evidence that these calendar-based restrictions are appropriately set to protect water quality while also meeting Act's 64's requirements to be cost-effective and practical to implement. Calendar restrictions, by definition, oversimplify the complex nature of the nutrient management planning process. For example, it may be more important for water quality impacts to harvest a corn field after October 15 due to weather conditions, etc. The RAPs, as drafted, would preclude a complete harvest on October 16 without going through a complex and timely approval process. Also, refer to the discussion regarding Section 2.17's over-reaching use of USDA Soil Survey Flooding Frequency Class soils.
6.04 (d) (cont'd)	The Secretary "may, on a case-by-case basis, approve alternative planting dates" but the request process and how timely the Secretary's response to the farmer will be should be addressed. A weather driven request would need to be processed very quickly.	See above. Further, any modification driven by the environment would have to be timely reviewed and approved by the VAAFM. Again, the nutrient management process is designed to address site-specific matters and should be relied on for this purpose.	Environmental benefit and flexibility.	Although Section 6.04(d) identifies a process for case-by-case approvals for alternative cover crop planting dates, there is no defined process for applying for the alternative dates nor is there a timetable for the department's approval. Further, Act 64 requires that VAAFM allow for alternative techniques or practices when the owner or operator cannot comply with the requirements of the RAPs due to site-specific conditions. Act 64 does not limit the availability of site-specific alternatives to "unusual soil or weather conditions" (whatever that means). Moreover, according to Act 64, such alternatives must only "reduce adverse impacts to water quality" which would require VAAFM to be more permissive than the RAPs are currently drafted. Finally, as previously addressed, reference to the USDA Soil Survey Flooding Frequency Classes is not only inappropriate, it appears to, incorrectly, even further limit the availability for site-specific alternatives.
6.04 (d) (cont'd)	The basis for the 30% crop residue relative to soil loss is not substantiated.	Remove 30% crop residue requirement and allow nutrient management planning process to address site-specific issues consistent with Code 329 Residue and Tillage Management.	Environmental benefit and flexibility.	As currently drafted, if annual crops cannot be harvested from frequently flooded fields by October 15, then 30% crop residue must remain in the field to limit soil loss. VAAFM has provided no technical support for the 30% crop residue requirement. NRCS Code 329, Residue and Tillage Management defines a minimum criteria of 2,000 lbs/acre of residue and a crop stubble height of 10 inches. Such restrictions (30%) may actually do more harm because farms will be forced to plant a shorter day length corn which will ultimately result in less crop phosphorus removal and may actually increase deposition of phosphorus in the environment. There is no technical justification for VAAFM's selection of the 30% crop residue requirement and it should be removed. In its place should be a deference to the farm's nutrient management planner to devise a site-specific plan in accordance with the NRCS conservation practice Code 329.
6.05 (a)	The terms "significant" and "adequate" are vague and undefined.	Change language to clarify how VAAFM will interpret "significant potential of runoff to waters of the State" and what length of notice is "adequate notice."	Regulatory certainty and compliance.	Additional guidance is necessary in order for producers to comply with this requirement. It is unclear what would amount to "significant" and "adequate." Act 64 requires a focus on water quality and practices that are practical and cost-effective to implement.
6.05 (b)	Strict use of soil description to define areas of flooding is too encompassing and inclusive. Some of the soil classes under this definition are also naturally deposited through historical stream and river meandering. There are lands currently used by farms that meet this definition yet are well outside of any "flood plains."	Review for consistency within the RAPs with respect to defining flood areas (see definitions 2.17, 2.18, 2.19) and remove reference to "USDA Soil Survey Flooding Frequency Class"; provide flexibility to nutrient management planners for site-specific approaches; remove baseless calendar restrictions.	Environmental benefit and flexibility.	Again, Act 64 requires a focus on water quality impacts and VAAFM offers no evidence that these calendar-based and percentage-based restrictions are appropriately set to protect water quality while also meeting Act's 64's requirements to be cost-effective and practical to implement. Strict calendar restrictions, by definition, oversimplify the complex nature of the nutrient management planning process. For example, it may be more important to minimize water quality impacts to harvest a corn field after October 15 due to weather conditions, etc. The RAPs, as drafted, would preclude a complete harvest on October 16 and, at the same time, leaving 30% of the crop residue in the field is not only impractical and cost-inefficient, it may actually increase deposition of phosphorus in the environment.

Proposed RAP Number	Comment on Proposed RAP	Suggested Change to RAP	Rationale	Detailed Analysis
6.05 (e)(3)	The phrase "have exposed bedrock" is too broad given the writing of the section.	Amend text to clarify that the application cannot be "on" exposed bedrock or define a setback from the exposed bedrock.	Regulatory certainty and compliance.	Use of the term "areas to croplands, perennial grass lands, or hay lands that ... have exposed bedrock" is confusing. How much of an area must be avoided? Recommend that this language be modified to be consistent with the language in Section 6.02(e)(3) which clearly prohibits application "on exposed bedrock." Further, clarity is necessary around the term "potential to runoff to surface water" since, in theory, any application may have a "potential to runoff to surface water."
6.05 (f)	Setback of 100 ft is inflexible and could lead to significant acreage loss in many areas.	Consider more flexibility with a focus on environmental benefit and a practical, cost-effective approach. For example, in New York the filter strip width required minimum is 20 ft for slopes <1%; with each percent of slope increase, the filter strip required width will increase by 1.5 ft. Maximum width is 100 ft. Many other Great Lakes states utilize a smaller minimum buffer and a more flexible method of determining the need for increased buffer zones (refer to attached Table A).	Flexibility and Environmental Benefit.	The 100 foot vegetated buffer zone requirement is unclear - is it required for all manure application on all fields with a slope of more than 10%? Or, is it only required for those fields with more than a 10% slope <i>and</i> the field is adjacent to a "downslope surface water"? Regardless, a requirement that there be a 100 foot vegetated buffer zone required for all manure application fields with an average field slope of >10% would significantly reduce available acres on many farms and has the potential to <i>cause</i> environmental harm by reducing available land base. There should be a streamlined process in place for a farm to either get an alternative setback upon a brief showing that, consistent with Act 64, such an alternative would not have adverse water quality impacts. Again, Act 64's focus was on water quality impacts and a practical and cost-effective implementation program and the RAPs should be consistent with the legislature's intent. See also Table A showing setback comparisons among various states indicating that Vermont has one of the most restrictive setbacks with the least flexibility.
6.06 (b)	Considerable information is requested for an exemption request given that the request is likely a time critical issue that necessitated the request.	Clarify that exemptions are available for variances from both the seasonal winter spreading restrictions <i>and</i> from the frequently flooded field spreading restrictions. Exemptions should be granted in a timely fashion without additional administrative burden outside the specific requirements of Act 64. See also suggested modification referenced in 6.06(c).	Flexibility and Environmental Benefit.	Section 6.06 (b) addresses seasonal exemptions to manure spreading (i.e., between the strict calendar dates of December 15 and April 1). Considerable information is requested for an exemption request especially given that such requests would almost always be necessitated by a time critical issue. The list of information required for an alternative winter spreading approval is lengthy and would require significant effort to compile. Further, much of this information is already available to the Agency. Without a significant administrative burden, producers should be able to receive a variance to apply manure on fields between December 15th and April 1st. The same is true for all strict calendar-based restrictions. Act 64 envisions a process that allows for "alternative techniques or practices" when the owner or operator cannot comply with the requirements of the RAPs due to site-specific conditions. Act 64's only restriction is that such an alternative reduces adverse impacts to water quality and omits the lengthy requirements that VAAFM is proposing to require for a farm to get approval for a site-specific alternative. Instead of focusing on advanced record submittal for an alternative, VAAFM should require post-modification documentation.
6.06 (b)(4)	Reference to "depth to groundwater" is not currently part of nutrient management plans and may not be known.	Remove reference to "depth to groundwater" or clarify that a general state-wide resource is available and sufficient.	Flexibility and Environmental Benefit.	Does the VAAFM expect producers to consult a general state-wide resource to provide estimated depth to groundwater information? Exact depth to groundwater is often not known and can be expensive and time-consuming to identify. Again, many site-specific features are already identified in a farm's nutrient management plan and VAAFM should not require additional (new) information be submitted when seeking alternative manure spreading dates.
6.06 (c)	There is no obligation for the Agency to respond to a request within a specific time frame. Given the nature of the need to request an exemption, timing is likely critical and, as currently drafted, the Agency has a lot of required information to review.	Remove restriction that all approvals be provided in advance and in writing. If a producer must spread manure outside of the designated calendar restrictions, the RAPs should allow that to happen consistent with the farm's nutrient management plan and other restrictions in the RAPs. The producer would then be obligated to report the spreading modification to the Agency within a time-frame commensurate with the urgency of the request (e.g., 72 hours).	Flexibility and Environmental Benefit.	Given the "prohibitions" listed, it would seem that a "compliant" NMP would be all that was necessary for the request under 6.06 (b) and the approval (with some possible caveats by the Agency) under 6.06 (c). The Agency should look at the provided NMP and be able to identify the optimum places to approve spreading. The Agency should consider allowing producers to identify/suggest fields that could be used for winter spreading if necessary in order to minimize the need for time-sensitive submissions. Further, the NMP process would be able to identify the best areas for winter spreading and, as a result, be included in a farm's regular nutrient management planning process.
6.07 (b)	The term "significant" is vague and undefined.	Change language to clarify how the Agency will interpret "potentially transport significant waste or nutrients to surface water...."	Regulatory certainty and compliance.	Additional guidance is necessary in order for producers to comply with this requirement. It is unclear what would qualify as "potentially transport significant waste or nutrients to surface water" and what the process is for such a determination. Is it completed during the nutrient management planning process? See prior comments regarding the definition of "ditches" (Section 2.12) and the lack of technical justification for a 10 foot buffer between croplands and all "ditches." Also, as previously noted, additional guidance is necessary to decipher a "ditch" (10 foot vegetated buffer) and "surface inlets or open drains" (25 foot vegetated buffer) as required 6.07(c).
6.07 (i)	The term "significant" is vague and undefined.	Change language to clarify how the Agency will interpret "has the potential to transport significant waste or nutrients...." Instead of agency review, buffer modification measures should be considered on a site-specific basis by a farm's nutrient management planner and incorporated into a nutrient management plan.	Flexibility.	The RAPs must ensure sufficient flexibility to allow farms the opportunity to focus on the right practice/technique/approach to achieve an environmental benefit. The standards included in the RAPs for granting an alternative setback are much more restrictive than Act 64's language which would allow an alternative setback if it "adequately addresses water quality needs based on consideration of soil type, slope, crop type, proximity to water, and other relevant factors." Also, while Appendix A does provide a defined process for alternative setbacks, there is no timetable for the Agency's response.
6.07 (i) (cont'd)	The phrase "potential to transport nutrients" requires further analysis or reference for its definition.	Change language to clarify how the Agency will interpret "has the potential to transport significant waste or nutrients...." Instead of agency review, buffer modification measures should be considered on a site-specific basis by a farm's nutrient management planner and incorporated into a nutrient management plan.	Flexibility.	The RAPs' standard for granting an alternative vegetative buffer zone is inconsistent with the legislature's language in Act 64. Site-specific matters such as buffer zone widths should be considered by a farm's nutrient management planner and incorporated into nutrient management plans.

Proposed RAP Number	Comment on Proposed RAP	Suggested Change to RAP	Rationale	Detailed Analysis
8. (a)	Establishment of background groundwater concentrations needs clarification, and it is unclear whether secondary standards are enforceable.	Change language to incorporate concept of background concentrations.	Regulatory certainty and compliance.	<p>The Agency cannot enforce against an individual producer without establishing what levels are considered background and what levels relate to a different agricultural farming operation.</p> <p>The proposed RAPs incorporate terms including “discharge,” “emission,” “detectable,” “contaminated,” and “eliminate” in the context of handling “agricultural wastes” during farming activities.</p> <p>The definition of “discharge” (Section 2.11) “...means the placing, depositing, or emission of any wastes, directly or indirectly, into an injection well or into waters” (emphasis added).</p> <p>Section 6.01(a) states, “Farms shall not create any discharge of agricultural wastes...” (emphasis added).</p> <p>Section 6.04 states, “Croplands shall be managed to minimize gully erosion and reduce or eliminate associated sediment discharges” (emphasis added).</p> <p>Finally, Section 8 (e) states, “The Secretary shall conduct a groundwater investigation where sampling indicates that drinking water or groundwater contains detectable concentrations of agricultural contaminants” (emphasis added).</p> <p>These terms infer the introduction of “agricultural wastes” into surface water or groundwater as a result of a farm’s practices. Within this context, under the RAPs, farmers will be held to very strict, if not impossible, standards. The terms or phrases “emission of any,” shall not create any,” “eliminate,” and “detectable” could be interpreted to mean none, zero, or very close to zero.</p> <p>The definition of “agricultural waste” (Section 2.35) includes sediments, minerals, and plant nutrients, as well as other materials. Clearly, these are naturally occurring in the environment and will be present in surface water and groundwater at some natural level within a geologic and geographic area regardless of whether farming is occurring in that area. The hydrologic cycle and nutrient cycle dictate that nutrients (at some level) will move throughout the cycle, and in fact is necessary for the “natural” ecosystem. There is nothing in the proposed RAPs that indicates this naturally-occurring background is being considered, nor do the RAPs indicate how naturally-occurring background will be evaluated relative to implementing and enforcing the RAPs at a specific farm or location.</p> <p>Beyond the natural background levels, historical practices (farming, mining, land development, etc.) have resulted in elevated background levels of “wastes” in surface water and groundwater. In fact, these preexisting elevated levels are purportedly the basis for the imposition of a TMDL, the driver for developing the proposed RAPs. There is nothing in the proposed RAPs that indicates that this background is being considered, nor do the RAPs indicate how preexisting background levels will be evaluated relative to implementing and enforcing the RAPs at a specific farm or location.</p> <p>The RAPs reference certain thresholds that, if exceeded, would trigger a finding of “contamination” and result in an investigation and/or enforcement activity.</p> <p>Section 8 (a) states, “Farm operations shall be conducted so that the concentration of wastes in groundwater originating from agricultural operations do not reach or exceed the primary or secondary groundwater quality enforcement standards.”</p> <p>Section 8 (d) states, “The Secretary shall conduct a groundwater investigation where the Secretary has received a complaint from a water supply owner in the vicinity of a farm that the farm or its agricultural practices has contaminated the drinking water or groundwater of the water supply owner” (emphasis added).</p> <p>As stated above, it is entirely possible, if not likely that current “background” levels of some agricultural wastes due to natural and/or historical practices already exceed these criteria or are considered “contamination.” There is nothing in the proposed RAPs that indicates the Agency will consider background sources (both naturally occurring and based on historical practices), nor is there an explanation of how the Agency would evaluate background concentrations relative to implementing and enforcing the RAPs at a specific farm or location.</p> <p>Other states, including for example Wisconsin, include extensive regulations for the sole purpose of calculating background concentrations. The fact that the RAPs are silent on this point indicates that additional regulatory review is necessary. It is an untenable position for producers to be held responsible for concentrations of “agricultural waste” in surface water and/or groundwater that was naturally occurring or was caused by activities unrelated to that specific farm.</p> <p>Further, a method of determining a background concentration as a benchmark to offset the presence of existing “wastes” in surface water and/or groundwater determination of an “emission” is not discussed nor provided.</p>
8. (a) (cont'd)	USEPA TMDL-related concerns provide additional support for the need to clarify background groundwater concentrations.	Change language to incorporate concept of background concentrations.	Regulatory certainty and compliance.	<p>Regarding the USEPA TMDL, it would be remiss not to mention that it is imperative that all of the contributing factors be thoroughly accounted for and weighted appropriately during the establishment and implementation of the TMDL. As indicated above, there is concern that appropriate consideration has not been given to the determination of a natural background concentration or the current background levels of phosphorus (albeit natural or historically elevated due to anthropogenic activities) in the TMDL calculations.</p> <p>The 2016 TMDL released by USEPA includes some recognition of “background” levels of phosphorus. However, it is not clear how the USEPA determined the “natural background” contribution. It is without question that some level of phosphorus is naturally occurring in all ecosystems. The presence of the phosphorus will be based on the geologic makeup of the parent material (phosphorus-containing rock) and the flora and fauna in the watershed. While one comment was made in the TMDL “Response to Comments” document referring to geological assessment and evaluation relative to natural background of phosphorus, no information (published articles, research, etc.) was offered to support the conclusion that natural background phosphorus loading was only a minor consideration and did not warrant further quantification. Further, it is unclear whether past mining activities, including mining for apatite enriched in phosphorus, within the Lake Champlain watershed were considered in the USEPA’s TMDL evaluation. These TMDL-related concerns only further emphasize the need for the Agency to provide clarity regarding background concentrations as a benchmark to offset the presence of preexisting impacts that are entirely unrelated to a specific farm operation.</p>
8. (b)	See comment for 8. (a).	Change language to incorporate concept of background concentrations.	Regulatory certainty and compliance.	The RAPs reference certain thresholds that, if exceeded, would trigger a finding of “contamination” and result in an investigation and/or enforcement activity.
8. (c)(3)	The phrase “vulnerable site characteristics” is vague and needs definition.	Change language to clarify how the Agency will interpret “vulnerable site characteristics.”	Regulatory certainty and compliance.	

Proposed RAP Number	Comment on Proposed RAP	Suggested Change to RAP	Rationale	Detailed Analysis
8. (d)	The mere lodging of a "complaint" with or without supporting documentation and the implication by this language that the "contamination" is from the farm in the vicinity seems like a loss of "due process." It should be required that quantitative data from the complainant be provided before an investigation is undertaken.	Change language to clarify that the Agency must rely on quantitative data from the complainant or the Agency before conducting an investigation.	Regulatory certainty and compliance.	Section 8 (a) states, "Farm operations shall be conducted so that the concentration of wastes in groundwater originating from agricultural operations do not reach or exceed the primary or secondary groundwater quality enforcement standards" (emphasis added).
8. (e)	The Agency's definition of "agricultural contaminants" needs specificity.	Clarify language and distinction (if any) between "agricultural contaminants" and "Waste or Agricultural Waste" as defined by Section 2.35.	Regulatory certainty and compliance.	
8. (f)(3)	This language implies that the farm operation has already impacted the water supply.	Strike "or impacted by" so that farm operators receive test results for water supply wells adjacent to the crop land or facilities managed by the farm operation.	Regulatory certainty and compliance.	Section 8 (d) states, "The Secretary shall conduct a groundwater investigation where the Secretary has received a complaint from a water supply owner in the vicinity of a farm that the farm or its agricultural practices has contaminated the drinking water or groundwater of the water supply owner" (emphasis added).
8. (g)	It is unclear how the Agency intends to "identify" "sources of ... contamination," especially without the establishment of background concentrations.	Change language to incorporate concept of background concentrations. Add the word "potential" to "sources of contamination" (as included in 8. (g)(2)) to identify that the Agency is investigating potential sources. Remove the term "remediate" because "corrective action" measures are addressed in 8. (g)(4).	Regulatory certainty and compliance.	
8. (g)(7)	This step needs to be the first, not the last, in this process.	Move 8. (g)(7) to be 8. (g)(1).	Regulatory certainty and compliance.	As stated above, it is entirely possible, if not likely, that current "background" levels of some agricultural wastes due to natural and/or historic practices already exceed these criteria or are considered "contamination." There is nothing in the proposed RAPs that indicates the Agency will consider background sources (both naturally occurring and based on historic practices), nor is there an explanation of how the Agency would evaluate background concentrations relative to implementing and enforcing the RAPs at a specific farm or location.
8. (i)	How the Secretary will establish background contaminant concentrations versus contaminant concentrations introduced by a WSF that has violated the State's Groundwater Quality Standards is unclear.	Change language to incorporate concept of background concentrations.	Regulatory certainty and compliance.	
9. (e)(1)(B)	The phrase "no possibility" is inflexible and does not leave room for reasonable alternatives.	Strike "there is no possibility that the property can be developed in conformity with the provisions of this rule and that." Also, the Agency should provide examples of "physical conditions or constraints" that would be meet this section.	Regulatory certainty and compliance; flexibility.	
10. (d)	It is not stipulated whether or not the training of employees and seasonal workers is a one-time event.	Change language to clarify.	Regulatory certainty and compliance.	Other states, including for example Wisconsin, include extensive regulations for the sole purpose of calculating background concentrations. The fact that the RAPs are silent on this point indicates that additional regulatory review is necessary. It is an untenable position for producers to be held responsible for concentrations of "agricultural waste" in surface water and/or groundwater that was naturally occurring or was caused by activities unrelated to that specific farm.
10. (e)	The requirement is unclear; the certification is valid for five years but needs to be renewed annually?	Change language to clarify.	Regulatory certainty and compliance.	
11	It is unclear how the Agency will determine "potential" in reference to a "potential for agricultural pollutants to enter the waters of the State."	The Agency's authority to require site specific practices in excess of the RAPs should be limited to those instances where an <i>actual</i> (not just a <i>potential</i>) discharge to waters of the State has occurred is causing a violation of water quality standards.	Regulatory certainty and compliance.	Further, a method of determining a background concentration as a benchmark to offset the presence of existing "wastes" in surface water and/or groundwater determination of an "emission" is not discussed nor provided.
App. A (a)(9)	Clarification of who is providing the "certification" should be provided. This is redundant given Appendix A (a)(2).	Strike Appendix A (a)(9) or clarify that a producer can make this certification.	Regulatory certainty and compliance.	

Table A. Minimum Riparian Protection Criteria for Agricultural Areas - Surface Water Buffer Zone/Filter Strip Regulations by State

Sensitive Nutrient Receptors	Vermont ¹	New York ²	Michigan ^{3,4}	Ohio ⁵	Wisconsin ^{4,6}	Minnesota ⁷
Surface waters (protection from suspended contaminants)	25 ft	20 ft	20 ft ^b	20 ft	20 ft	30 ft
Surface waters (protection from dissolved contaminants)	25 ft	20 ft	30 ft ^b	30 ft	30 ft ^d	60 ft ^e
Surface waters receiving runoff from 10%+ average slopes	100 ft	a		c		f

Notes:

^a Filter strip width required minimum is 20 ft for slopes <1%; with each percent of slope increase, the filter strip required width will increase by 1.5 ft. Maximum width is 100 ft.

^b - Zonal approach, applicable to more developed areas, per the Michigan Filter Strip Design Tech Note (based on the NRCS National Agronomy Technical Note No. 2 (Using RUSLE2 for the Design and Predicted Effectiveness of Vegetative Filter Strips (VFS) for Sediment)):

Zone 1 - adjacent to surface waters; naturally forested 25 ft

Zone 2 - natural/managed forest 50 ft

Zone 3 - filter strip; grasses and shrubs 20-216 ft

-Note that Zone 3 can replace Zones 1 & 2 in areas with no existing tree cover; depends on factors such as slope, soil type, flow length.

^c - Surface application may not be undertaken on slopes >15% unless additional safe guards are implemented, depending on site characteristics.

^d - Minimum filter strip width is 30 ft. For additional protection from dissolved contaminants, filter Strip widths will be calculated using Revised Universal Soil Loss Equation (RUSLE2).

^e - Minimum filter strip width is 60 ft. For additional protection from soluble materials and pathogens, filter strip widths will be calculated based on slope and size of contributing area.

^f - For surfaces >12% contributing runoff, additional requirements apply. Filter strip widths for dissolved contaminants may be a required 120 ft maximum.

¹ Vermont Agency of Agriculture Food and Markets (May 12, 2016). Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program. Retrieved from

http://agriculture.vermont.gov/sites/ag/files/pdf/water_quality/RAP/Required-Agricultural-Practices-Regulations-Proposed-Rule-05122016.pdf

² USDA Natural Resources Conservation Service (Sept, 2001). NRCS Conservation Standard: Filter Strip - Area, New York code NY393a. Retrieved from: <https://efotg.sc.egov.usda.gov/references/Delete/2005-11-26/ny393a.pdf>

³ Michigan Dept. of Environmental Quality (May 14, 2015). MDEQ Nonpoint Pollution Source Best Management Practices Manual. Retrieved from: <https://www.michigan.gov/documents/deq/wrd-nps->

[bmp-rb_456916_7.pdf](#)

⁴ USDA Natural Resources Conservation Service (June, 2007). Agronomy Technical Note 2, Using Revised Universal Soil Loss Equation (RUSLE2) for the Design and Predicted Effectiveness of Vegetative Filter Strips (VFS) for Sediment. Retrieved from:

<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=18578.wba>

⁵ USDA Natural Resources Conservation Service (Nov, 2012). NRCS Conservation Standard: Filter Strip, Ohio code 393. Retrieved from:

https://efotg.sc.egov.usda.gov/references/public/OH/Oh_393_Filter_Strip_Standard.pdf

⁶ USDA Natural Resources Conservation Service (Aug, 2015). NRCS Conservation Standard: Filter Strip, Wisconsin code 393. Retrieved from:

https://efotg.sc.egov.usda.gov/references/public/WI/393_Standard.pdf

⁷ USDA Natural Resources Conservation Service (Feb, 2010). NRCS Conservation Standard: Filter Strip, Minnesota code 393. Retrieved from: <https://efotg.sc.egov.usda.gov/references/public/MN/393mn.pdf>

Patch, Ryan

From: mike bald <choosewiselyvt@gmail.com>
Sent: Thursday, July 7, 2016 10:06 AM
To: AGR - RAP
Subject: RAP comments attached
Attachments: ag_best_practices_draftcomments_7july16.odt

Please acknowledge, and thanks for your work.
Mike

--

Mike Bald

Got Weeds?

<http://choosewiselyvt.wordpress.com>

Royalton, VT

**Comments on Draft RAP Regulations,
The Agricultural Non-point Source Pollution Control Program**

7 July, 2016

Submitted by Michael Bald, Royalton, VT

Thank you again for the opportunity to comment.

I presently do not farm, although I someday hope to.

I do plenty of growing, and I see plenty of landscape transition.

For my world, the art of site transition begins with control of invasive species.

I do as much eradication as anyone else in the state, and I see daily the value of healthy soils.

My comments are not intended to be critical; rather my hope is to make the RAPs as relevant and integrated as possible. They need that relevance; in present form they apply to farms and agricultural policies from past decades. The RAPs need to move us collectively forward in tight sync with other forward-thinking policies, otherwise they will simply reinforce silo or stovepipe mindsets while wallowing in disjointed isolation from other practices. If the Agency of Agriculture does not have purview to integrate the RAPs or to reach into other management realms, this would be the opportunity to adjust that purview. There is no reason why the legislature could not be advised that the RAPs need better integration and a shift in purview or focus. Purview does not need legislation, it can be broadened and achieved with meaningful Memoranda of Agreement / Understanding. Agricultural policies need to show connection with energy policy, transportation, public safety and numerous additional realms, if only to justify future discussion and open funding avenues. To fail in this integration of the practices is to deny the significance of related practices and deliberately shut down future discussion.

The farm is a dynamic place. The activity of farming is also dynamic. It's actually so dynamic that the constant change almost becomes a constant of its own making. This is a critical point, because it highlights how near-impossible it is to regulate the work of agriculture, particularly on smaller scales. Ask anyone with an open field, "Who's haying for you this year?" Nine out of ten responses will be "hard tellin', not knowin'." It all depends on who's still healthy, how many family members / friends / laborers are available, whose tractor is still running, what the weather will allow, and whose barn is still standing. You can't chop hay without all those pieces falling into place; this is agriculture, and that is a fairly simple example.

I repeat, for emphasis: the activity of farming is ever-changing and very much a moving target. Plants and trees and crops and pollinators come with an element of mystery each year; there is no certainty that one particular crop will succeed more so than others. The number of people available to work on the farm goes up and down as people come and go in life, and the environmental conditions each year are almost completely unpredictable. There are few givens, which is why insurance became vital.

In that light, I look at the Required Agricultural Practices (RAP) draft and see wording and ideas left over from decades ago. The world has changed drastically; it's hotter, weather is more unpredictable than before, and there are more toxins accumulated with each passing year. Most critically, the condition of our soils is as degraded and depleted as ever. The RAPs cannot

be drawn from prior Best Management Practices which evolved out of Accepted Agricultural Practices of the 1990s. Those practices applied to a different world; the RAPs need to address current situations and integrate seamlessly with related themes. We need to repair our soils. I could also argue that the AAPs and BMPs were created in an era of “Get Big, or Get Out.” On that basis, the entire Draft is skewed to favor some approaches to agriculture while stacking the odds and costs against others. Vermont is unique ground; the soils and the land differ greatly even from neighboring states. The practices and the scale that works in the rest of the country are not necessarily a fit for Vermont.

On the subject of integration, agriculture overlaps into many other areas, specifically the larger issue of water quality, the huge issue of carbon sequestration, pollinator protection, wildlife habitat, human health, public safety, heritage, and the regional labor supply. I see no mention of these topics in the Draft. I made these points in my initial comments, filed in DEC 2015. Agricultural practices, at any scale and in any place, need to emphasize the importance of healthy, functional soil communities. This is not a vote for organic farming; it could be, but the message applies to land use in general. Diverse, well-managed landscapes build soil high in organic content. This act of creation and constant renewal leads directly to clean water. The soil and the organic content are the filter.

The RAPs need to resolve the issue of federal partnerships, best-practices funding, and federal program goals. It is entirely possible that the goals of the EPA, the FDA, and the USDA do not align with the needs and desires of citizens in Vermont (case in point: GMO labeling). The RAP Draft does not mention Integrated Pest Management; it cannot justifiably do so since IPM is not encouraged or supported in Vermont at a federal agency level. So how does this reconcile? How can federal agencies fund invasive species control, under various program names, and yet direct no funding whatsoever to manual and mechanical control methods? That dis-connect does not bear hard scrutiny; it also gives conventional farming a competitive advantage over organic producers. How does that fly from a legal standpoint? Organic farmers add organic matter to their fields every year, but the federal agencies push landowners to add only pesticides and fertilizers to their soil. This practice over past decades has made soil quality an even more urgent issue; things are not improving as persistent chemicals accumulate.

I make the following bullet points:

1. Water quality testing is justified; it is the right thing to do and will reveal useful data. Testing should be wider in scope than currently proposed, and should include contaminants such as atrazine. This is an overlap with public health.
2. Farms and landowners in general should receive compensation for data they generate. Data has value, and businesses in the US know that.
3. Water quality testing should be funded by fees leveled on synthetic soil additives which include pesticides.
4. Funding is in good supply for studies on food allergies and cancer-related issues – Vermont needs to corral some of this funding and direct it to monitoring of agricultural chemicals which are known carcinogens and endocrine disruptors.
5. Burn piles – towns are responsible for managing this realm, but a unified approach would allow Vermont to begin building a supply soil through slow decomposition. No one needs to be told what to do, but an incentive program would allow landowners to

convert unwanted vegetation into future soil. So much smarter than mindless burning. Here at 5 years past TS Irene, we would have some rich soil to work with by now had we not burned off so much undesired vegetation. A missed opportunity.

6. Federal money comes with strings attached. Rather than accepting federal programs that support huge cost overheads, synthetic pesticide usage, the force-fit of generic practices, and endless bureaucratic process, Vermont should begin billing the federal government for the amount of carbon it sequester each year in newly created soil. Let the federal government continue to search for water on Mars while Vermonters mitigate climate change and get credited / paid for doing so.
7. Our understanding of water channels and riparian areas is inept and primitive, at least in practice. I see huge issues with the approach to culverts and the notion of buffers. The most important rule in the world of buffers is to allow common sense to play its role. Buffer zones cannot be uniformly designed; north-facing banks can be completely different from south-facing banks on the same water channel.

Vermont's statewide agricultural practices have real costs, in terms of environmental health and public health. The increasing use of carcinogenic and endocrine-disrupting pesticides is a growing burden on all citizens. Health care and water supply clean-up should not fall to upcoming generations when past promises on product safety were false and misleading. If Vermont wishes to reign in health care costs, it needs to address pesticides, urgently. The waiting period is over. If the federal government chooses not to step up and hold industries accountable, then Vermont should break the connection with federal agencies and resolve its own dilemmas. Again, let the federal government search for water on other planets.

Finally, the practices need to address some clean-up issues. Those issues are many. Who will pay for removal of tire piles statewide, but on farms in particular? We need to control mosquitoes, right? Farmers need a supply of tires, but there are tire dumps all over this state. Who will pay for the growing number of safety incidents that trace to wild parsnip on publicly owned land? Or on privately owned farms that are attempting to incorporate recreation into the business model? You cannot have a swimming hole or an agricultural recreation event in a space overwhelmed by wild parsnip and / or poison ivy. How do we compensate farmers for time and land lost to these noxious weeds? Poison ivy is a native and has its place, but wild parsnip is not native, and it is no fault of farmers that it established on their property. How do we pay for all this? By integrating farm practices into public safety issues, recreation, and all the topics I've already mentioned.

Perhaps Vermont can lead the way with agricultural technology as well, but not if tech development goes unmentioned in the RAPs. Perhaps that mention comes in an executive summary rather than a specific practice. Drones could be powerful tools in many aspects of water quality monitoring and enforcement. There are many technical nuances to the creation of healthy soil, but the subject does not come up and funding does not arise if technology is given no acknowledgment or mention in the world of agriculture.

These RAPs are a big deal. They need to mover Vermont agriculture forward, and if that requires a little extending of the scope, an expansion of purview, then so be it. That can happen if the will exists. Thank you, and I would be happy to share whatever time and expertise I have with the Agency to refine and finalize these practices.

Patch, Ryan

From: AGR - RAP
Sent: Thursday, July 7, 2016 12:19 PM
To: mike bald; AGR - RAP
Cc: DiPietro, Laura; Leland, Jim
Subject: RE: RAP comments attached

Hi Mike,

We have received your comments.

Thank you,
-Ryan

Ryan Patch
Sr. Ag Development Coordinator
Vermont Agency of Agriculture, Food and Markets
116 State St. Montpelier, VT 05620
Cell: (802) 272-0323
Fax: (802) 282-1410
ryan.patch@vermont.gov
<http://agriculture.vermont.gov/>

From: mike bald [mailto:choosewiselyvt@gmail.com]
Sent: Thursday, July 7, 2016 10:06 AM
To: AGR - RAP
Subject: RAP comments attached

Please acknowledge, and thanks for your work.
Mike

--
Mike Bald
Got Weeds?
<http://choosewiselyvt.wordpress.com>
Royalton, VT

Patch, Ryan

From: Brian Burkholder <user@votervoice.net>
Sent: Thursday, July 7, 2016 10:14 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Brian Burkholder
444 Lakota Rd
Woodstock, VT 05091
beburkholder@yahoo.com

Patch, Ryan

From: Corrie Miller <corrie_miller@hotmail.com>
Sent: Thursday, July 7, 2016 10:06 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Corrie Miller
357 Dunbar Hill Rd
Moretown, VT 05660
corrie_miller@hotmail.com

Patch, Ryan

From: Kathy Ehlers <wollieb@tds.net>
Sent: Thursday, July 7, 2016 10:07 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Kathy Ehlers
209 Deroo Ln
Ludlow, VT 05149
wollieb@tds.net

Patch, Ryan

From: Karl Hammer <soil@vermontcompost.com>
Sent: Thursday, July 7, 2016 9:51 AM
To: AGR - RAP
Subject: Comment on RAP Proposed Rule

To the writers of the RAP's:

The section of the rule pertaining to the feeding of human food residuals to livestock should exempt wells owned by the farm from the proposed 200' setback (as the mortalities composting section does).

The 200' setback from property lines for the feeding of food residuals is excessive and will make siting feeding difficult or impossible on some otherwise suitable sites. impacts on abutting property from feeding of food residuals will be determined by a combination of management and topography not distance per se.

Thank you for your consideration of these concerns.

Karl Hammer
President
Vermont Compost Company

Patch, Ryan

From: Paul Stone <paul@stonewoodfarm.com>
Sent: Thursday, July 7, 2016 9:14 AM
To: AGR - RAP
Subject: Required Ag Praticice
Attachments: Required Ag Praticice.docx

VT Agency Ag,

Attached are comments regarding the proposed RAPs.

Thank you, Paul A.Stone, 107 Griswold Ln, Orwell, VT; 802-770-9270

Required Ag Practices,

July 7, 2016

Comments, Paul A. Stone, 107 Griswold Ln, Orwell, VT 05760; 802-770-9270

Paul@stonewoodfarm.com

Section 2. Definitions:

2.03 Remove word “ Annual.” I don’t think “row” as defining crops has any meaning like in the old days.

It doesn’t matter what land is used for, no matter what crop is grown, orchard, small grain, corn or pumpkins, the idea is to stop erosion and run off; Therefore no farm land should be exempt.

Erosion and run off can happen on any crop land no matter the crop, even pasture and hay land, even in apple trees. No land being farmed should be exempt.

There is serious erosion on my neighbor’s land where he grows soybeans continually without rotation. Are his soybeans a row crop or not? He plants them with a grain drill same as small grains. But no matter how they are planted there is serious erosion every year.

2.05 Unclear

2.09 Crop land is land. Crops are plants growing. Add fuel crops.

2.11 Discharge: What is an “injection well” ?

2.12 Ditch:

Add: Need to add definition of a Diversion Ditch. A diversion ditch is a man made depression , generally following the contour of a field at a slope of

around 1 to 2% for the purpose of reducing water runoff and therefore erosion. Generally no tillage is done within 10 ft. of the center line of the diversion. Frequently the effluent from a diversion is carried to an nearby stream via a tile out let and pipe. Such a practice shall not be construed as a direct discharge to the waters of the state.

Add: Definition of tile out let. A tile out let is a manmade device, designed to accept storm water from a diversion or other similar area, and is designed to allow water to slowly drain and be carried to nearby waters such as a stream. Thus there is a temporary ponding of water that reduces the speed or storm runoff.

Add: Definition of a permeate grass water way and that they should not be tilled.

3.32 Are you intending to include manure lagoons in this definition?

Section 6.

6.01 (a) tile out let and diversion systems should be removed from this section. They are providing a function to reduce erosion and runoff and are of a benefit to the state. They generally are designed and cost shared by NRCS.

6.04 (c) Diversion ditches and permanent grassed water ways should be included here.

6.07 (b) what does this mean?

6.07 (f) add spraying to kill vegetation.

And there needs to be spray operator, especially custom operators, training not to spray permanent buffers or permanent grass water ways.

Section 8. (b) how is "concentration or wastes" and (c) "monitoring to assess" measured. What is measured?

(d) "has commented" change to "may have contaminated."

(e) how is "detectable ... contaminants" measured?

Section 11. This gives broad power and negates all of the aforementioned rules.

This section must be eliminated.

Add:

1. Pesticide applicator training should include “not to spray with herbicides” buffers, grass water ways, diversions, and other areas designed to be in permeant grass to prevent erosion and run off.

2. Grandfather existing improvements and structures, unless causing an major impact on the environment, so that they can continue to be used. These would include, diversions, tile outlets, manure and evaporation ponds (such as used by farm slaughter facilities to process waste water), and structures that might not meet the new RAP setbacks or distances.

Patch, Ryan

From: ddeen@ctriver.org
Sent: Thursday, July 7, 2016 8:37 AM
To: AGR - RAP
Subject: FW: CRWC comments on the draft RAPs
Attachments: CRWC RAP comments.docx

Hi

Pasted below and attached are the Connecticut River Watershed Councils comments on the draft RAPs.

David

July 7, 2016

Chuck Ross Secretary
Agency of Agriculture, Food and Markets
116 State Street
Montpelier, VT 05620

Re: Connecticut River Watershed Council comments on the draft rule to establish Vermont Required Agricultural Practices

The Connecticut River Watershed Council (CRWC) thanks the Vermont Agency of Agriculture, Food, and Markets ("AAF") for taking the extended period to draft the Required Agricultural Practices. That extra time allowed for robust stakeholder input in two previous drafts prior to the introduction of this draft in the formal rule making process.

CRWC is a membership organization throughout the four state Connecticut River watershed advocating for the Connecticut River since 1952. We are keenly hopeful that these rules will improve its water quality to the benefit of people and the river and its terminus body of water, Long Island Sound. Our concerns when we engaged this rule making process were appropriate farm field and animal management and healthy riparian zones that prevent runoff of nitrogen and sediment from agricultural practices. These draft rules work toward addressing our concerns.

Our comments on the draft rule to establish Required Agricultural Practices (RAPs) follow.

Section 1

1.1 AAFM should add some positive words to the introduction that explain, "Why are we doing this?" Maybe something along the lines of what the logging AMPs offer at the beginning of their rules:

The purpose of the AMPs is to provide measures for loggers, foresters, and landowners to utilize, before, during, and after logging operations to comply with the Vermont Water Quality Standards... The AMPs are proper methods for the control and dispersal of water collecting on logging roads, skid trails, and log landings to minimize erosion and reduce sediment and temperature changes in streams.

1.2 Stating that the rules will help farmers improve the waters of Vermont through reducing pesticides, erosion, nutrients, and excessive soil from reaching the waters of Vermont and will improve the health of the waters of Vermont would enhance this section. This might be the appropriate section to state that enforcement is not the first step in enforcing these rules. In any event, the text of the rule does not say these rules will help our waters anywhere and should.

Section 2

2.05 AAFM should rewrite this subsection to make it clear that a ditch and other practices should have a buffer zone. The use of the negative in the second phrase is confusing. It might be easiest to write this subsection as two sentences.

2.09 AAFM should add at the end of the sentence, “and the land upon which they are grown” because without that phrase, there is no connection between the word Cropland in the heading and the text since the text only identifies crops.

Section 3

This entire Section brings to the fore issues about whether all farms must meet these rules or just a certain subset of all farms. It is important for AAFM to be clear that these standards will prevent discharges into the waters of Vermont and ALL discharges from any source; agricultural or otherwise without a permit are illegal. It is so for all farms or back yard husbandry all the time. This Section should make that abundantly clear.

To what do the RAPs apply and why needs to be clarified. AAFM needs to explain why AAFM is using that rational and as AAFM is drawing a distinction between what they consider farming and what is backyard husbandry then that simple, new, added declarative statement should lead off this section of the rule. “AAFM does not feel, and the law does not specify that all plant or animal husbandry is farming.”

AAFM can then move on to set trigger levels that bring the RAPs into play under Section 3. Otherwise, drawing a distinction through establishing trigger levels for an activity that the RAPs in its own words apply to all farming is confusing. The text of the rule introduction in **Section 1** juxtaposed to this section makes it seem unfair to those farms that are say one chicken above the trigger levels.

3.2 AAFM has not in all of the practices listed in the paragraphs (a-k) set out anything about establishment and maintenance of riparian buffers. Since this Section details activities to which RAP standards apply, riparian buffers should be on the list. AAFM could add them as part of (f) or a new subsection.

Section 6

6.07 (a) AAFM set out 25 feet as the standard buffer along waters of Vermont. CRWC is aware of various studies by various reputable sources including Yale School of Forestry, the USACE, and literature review studies and although they differ in their suggested minimum widths; none that we are aware of is less than 30 feet wide. Federal and State of Vermont riparian grant programs require a minimum of 35 feet and more in cases with active erosion up to 100 feet along streams.

The independent studies looked solely at this minimum distance from the perspective of protecting the water body and wildlife. The federal programs look at long-term bank stability. There may be other elements used as part of the AAFM decision process in reaching the 25' width that were not solely in the interests of water, wildlife, or bank stability. AAFM, as part of the required responsiveness summary prepared on comments to this draft should give a rationale for setting the standard at 25 feet.

6.07 (e) (f) (g) Together these subsections take the notion of a healthy riparian buffer zone and reduce its worth as protection of the waters of Vermont. The best of the literature on riparian zones does not speak about healthy riparian buffers as 3-inch high grass but as full fledge undisturbed natural vegetation that has grass, ferns, bushes, trees, as well as leaf litter available to the stream and on the ground as duff. According to most sources, rough multilayered canopy with its shade and plant litter is what constitute a riparian buffer. The woody debris feeds the stream and the duff is what slows runoff and allows it to infiltrate. Grass contributes little to the duff layer and is not good at slowing overland runoff.

A stream without a natural riparian buffer is less likely to support good cold-water fish populations because they depend on cooler water temperatures to some level aided by the shade provided by overhanging trees. Grass does not contribute noticeable shade to a river.

Stream health depends on contributions of woody debris from streamside natural growth. Woody debris is a significant link between the primal energy produced by the sun and the aquatic food chain. Grass does not contribute woody debris to a river.

A healthy root matrix provided by large woody plants and trees enhance streambank stability far better than does any other plant community near water bodies. The interlacing of large plant roots remains an important contributor to bank stability in tests throughout the river sciences. Grass does not contribute to the root matrix that provides streambank stability.

The draft RAPs allow for the grazing of livestock in buffer zones, which effectively allows animal defecation in these riparian buffers. Allowing active grazing does seem like direct manure application without the intermediary and a contradiction to the prohibition on spreading of manure. For buffers to remain even minimally vegetated and to have stable banks, livestock should not graze in the buffer zone except in those few situations where grazing animals can control invasive plant species.

Hayed, fertilized, and grazed grass does not constitute a riparian buffer regardless of width. CRWC calls on AAFM to rewrite this portion of the RAPs and move the requirement for riparian buffers toward a true and valuable real riparian buffer zone standard either in this proceeding or at the 2018 rewrite of these RAPs.

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(b) (2) The second sentence does not say what it should say. Approved grazing plans we believe should protect the 25 feet between the top of bank and other field uses beyond the 25 feet, not protect the area between “the top of bank and the surface water.” That would unlikely be 25 feet in most situations and given the definition of top of bank, the land would be sloped down to the water. AAFM should rewrite this sentence.

The RAPs do not identify any specific methods by which farmers should exclude their livestock from streams. The RAPs should identify preferred approaches while including the flexibility for farmers to be innovative. Actively eliminating livestock only from waters with unstable banks or evident erosion is to invite exactly those conditions. As one approach, natural vegetative buffers that include willows, alder, and other scrub bushes provide one innovative mechanism to keep animals from indiscriminately crossing a stream or entering it to take water.

CRWC thanks AAFM for their inclusive process to gather input from interested parties beyond the farming community through the extensive number of hearings held around the state. We hope AAFM will incorporate our suggested changes but once AAFM completes this phase of the rule making, CRWC stands ready to help AAFM with community outreach and education that will help make these rules an effective reality.

CRWC has a strong and active restoration program that has helped a wide variety of private landowners and farmers with project management, technical expertise, and funding to protect their investment in the Connecticut River valley’s valuable soil. We look forward to continuing this work to build effective riparian buffers throughout our watershed.

For the Connecticut River,



David Deen
Upper Valley River Steward

Connecticut River Watershed Council

David L Deen Upper Valley River Steward }>}}}}}'>

PO Box 206

Saxtons River, VT 05154

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Fax 802-869-1103

ddeen@ctriver.org

www.ctriver.org

The River Connects Us



CONNECTICUT RIVER WATERSHED COUNCIL

The River Connects Us

Upper Valley: P.O. Box 206, Saxtons River, VT 05154

802-869-2792 - ddeen@ctriver.org - www.ctriver.org

July 7, 2016

Chuck Ross Secretary
Agency of Agriculture, Food and Markets
116 State Street
Montpelier, VT 05620

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For the Connecticut River,

David Deen
Upper Valley River Steward

Patch, Ryan

From: John Cooper <john.cooper@maine.rr.com>
Sent: Thursday, July 7, 2016 7:07 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

John Cooper
212 Bruce Hill Rd
Cumberland Center, ME 04021
john.cooper@maine.rr.com

Patch, Ryan

From: Jeff McBurnie <Jeff.McBurnie@casella.com>
Sent: Thursday, July 7, 2016 6:44 AM
To: AGR - RAP
Cc: Michael R Hodge; Karen Flanders; Cheri L'Esperance; Lindsay D'Anna; Jeff Brinck; William Gibson; Anthony Drouin; John P Kelly; Ned Beecher
Subject: RAP Public Comment
Attachments: Casella VT RAPs Comments_070616.pdf

To Whom It May Concern:

Attached please find Casella's RAPs comments.

Sincerely,

Jeff

Jeffrey C. McBurnie, P.E.
Director of Permitting & Regulatory Affairs
Casella Organics

48 Liberty Dr., Suite A, Hermon, ME 04401
p. 207.347.3618 | c. 207.272.8395 | f. 207.286.1696

Learn more at casellaorganics.com

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July 6, 2016

VT Agency of Agriculture, Food and Markets
Attn: RAPs
116 State St.
Montpelier, VT 05620-2901

Submitted via e-mail to AGR.RAP@vermont.gov

Re: Comments on Vermont Required Agricultural Practices Draft #3

Dear Agency of Agriculture, Food, and Markets:

Thank you for the opportunity to comment on the Agency's draft of Required Agricultural Practices. Casella Organics (Casella) manages and recycles many sources of organic and mineral nutrients and soil amendments throughout the northeast United States. As such, Casella is a strong proponent of wise nutrient use and water quality protection and improvement. We offer the following comments and suggestions to hopefully further the Agency's missions of agricultural sustainability and environmental stewardship.

Consideration of Phosphorus

We are concerned that UVM Extension guidance on phosphorus (P) management may not be up to date, more specifically as this applies to its Phosphorus Index determination. There have been no significant updates to P fertilization guidance since the 2005(?) release of the VT Phosphorus Index calculator (Version 5.1). This is not meant as a criticism of UVM Extension, but is intended to point out that there has been significant research related to P sources, loading, availability, and nonpoint source pollution since the last formal update. Incorporation of the findings of this research should further enhance the functionality of the calculator and its ability to properly manage P in sensitive watersheds.

One of the shortcomings in the current P Index calculator is that there is no accounting for different sources of P (commercial vs. manure vs. biosolids); a significant portion of P (in the form of phosphates) in biosolids, for example, is tightly bound to calcium, iron or aluminum ions through processes used in wastewater treatment (coagulation/flocculation). The concern here is that P loading rates may be suppressed for biosolids-based fertilizers because the plant availability of the phosphorus will be assumed to be similar to that of commercial P fertilizers. This could result in the under-fertilization of crops and ultimately a deficiency in the production of vegetation. With less vegetation comes less protection from erosion and higher potential for

nonpoint source pollution. This might not necessarily be Phosphorus pollution, but would definitely include increases in sediment and organic matter losses.

Another issue with the P Index calculator is its sole reliance on the Modified Morgan soil P test method. While the Modified Morgan is popular among many of the Land Grant University soil laboratories in the region, the Mehlich III extraction procedure is commonly used by private commercial laboratories. There should be some allowance for, or conversion method provided for, soil P test results other than the Modified Morgan method. The Mehlich III extractant is much more aggressive than the weak-acid Modified Morgan extractant, and may be a more appropriate (and possibly more accurate) extraction procedure for the more acidic northeast US soils.

Nutrient Management Plans

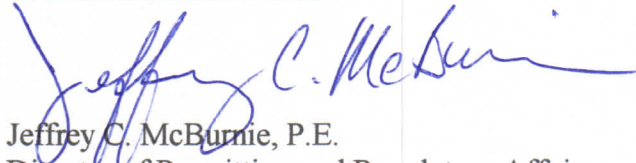
We are concerned about the availability, or potential lack of availability, of nutrient management planners for small, diverse farms. With approximately 1,500 (out of 5,500) Small Farm Operations requiring certification and nutrient management plans (NMPs), there could be significant delay in farms being able to submit NMPs if there are not a sufficient number of planners available to complete this work. Granted, not all farms will need these services, either having previously had an NMP prepared or having the internal skills and resources to prepare their own, but there may still be a significant demand on planners' time, especially in the early stages of the program. We hope that there has been or will soon be an assessment of the availability of planners in Vermont.

Another possible complication may occur with very small, very diverse farms. It is possible that their plans may be more complex and therefore more time-consuming and expensive than larger scale farm operation plans. More complicated plans may also be more cost-prohibitive to small farms. We suspect that this situation will not be a significant problem, but thought it was an important consideration..

Thank you for your time and your consideration of these comments.

Sincerely,

CASELLA ORGANICS



Jeffrey C. McBurnie, P.E.
Director of Permitting and Regulatory Affairs

Patch, Ryan

From: Janie McKenzie <user@votervoice.net>
Sent: Wednesday, July 6, 2016 10:17 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Janie McKenzie
16 Marion St
Burlington, VT 05401
jmmck52vt@aol.com

Patch, Ryan

From: Jean Palthey <thillfarm@gmail.com>
Sent: Wednesday, July 6, 2016 9:17 PM
To: AGR - RAP
Subject: "RAPS" draft

"RAPS" draft
Required Agricultural Practices

My name is Jean Palthey and I thank you the opportunity to comment on the RAPs I have been farming the same land for 25 years. I hope to continue for a while.
I share your concern about water quality.

All of us including the VAAFM have great responsibilities yet our resources are already stretched thin. I offer a solution.
Please refer to: RAPs Proposed Rule: Farm Size Factsheet.

My basic premise is that farmers know what they are doing. In fact Vermont has been a hot bed of ingenuity when it comes to non polluting and sustainable farming that protect our Vermont waters.

let us get specific.

1. Exempt all SFO from RAPs
2. Exempt CSFOs from RAPs.
3. Build a build and sustain a working relationship with MFOs and LFO. Take a hands off approach unless there is a demonstrated and measurable problem. If issues need to be resolved, ask the farmer for a solution.

By following the above outline the VAAFM could manage its scace resources and focus on problem zones. Some zones may need attention and sustained action for decades to be effective.

Finally I would like you to consider the Food safety Modernization Act. Farmers are good at what they do. Put together FSMA and RAPs may have unintended consequences. For example it may hinder folks from getting into agriculture. FSMA and the RAPs as written seem an unworkable over reach.

Thank you for your time,
Sincerely Jean Palthey

Wendy and Jean Palthey
Tunbridge Hill Farm
802-889-3565
Tunbridgehillfarm.com

Patch, Ryan

From: Raymond Gonda <user@votervoice.net>
Sent: Wednesday, July 6, 2016 9:06 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

I have spent many days and hours on rivers and streams canoeing and fishing and just plain exploring them - rivers both large and small and brooks and small streams. A key feature of a healthy riverine ecosystems is cool water maintainable only by streamside buffering - particularly trees and brush. Simply put, keep the cows out of the water and away from the stream banks. Effective streamside buffering and the presence of cows are not compatible concepts.

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Raymond Gonda
31 Berkley St
South Burlington, VT 05403
gonda05403@yahoo.com

Patch, Ryan

From: Alex MacDonald <almacd@gmavt.net>
Sent: Wednesday, July 6, 2016 6:31 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Alex MacDonald
1045 Quaker St
Lincoln, VT 05443
almacd@gmavt.net

Patch, Ryan

From: Jared Carpenter <rjaredcarpenter@gmail.com>
Sent: Wednesday, July 6, 2016 5:42 PM
To: AGR - RAP
Subject: Written Comments by the Vermont Council of Trout Unlimited
Attachments: Comments by the Vermont Council of Trout Unlimited on Final Draft RAPs 070616.pdf

Good Afternoon,

Attached, please find the written comments of the Vermont Council of Trout Unlimited on the final Draft Required Agricultural Practices (RAPs).

Thank you again for the extended draft and comment periods.

Sincerely,

Jared Carpenter

NLC Representative

Vermont Council of Trout Unlimited



Vermont Council

July 6, 2016

Agency of Agriculture, Food and Markets
116 State Street
Montpelier, VT 05620

Via email to AGR.RAP@vermont.gov

Re: Comments on the Final Draft of the Required Agricultural Practices Rule

These are the comments by the Vermont Council of Trout Unlimited (“VTTU”) on the Draft Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program (“Draft RAPs”) as required in Act 64 ‘An act relating to improving the quality of State waters.’

VTTU thanks the Vermont Agency of Agriculture, Food and Markets (“AAFM” or “Agency”) for the extended period of time drafting the RAPs, a process that has resulted in three drafts and an extensive comment period. This process is important as the RAPs play a key role in protection and restoration of all surface waters of the state, and the rules will have far-reaching impacts on the public, the environment, and on agriculture.

VTTU consists of five chapters touching all parts of the state with over 1,200 members. Our mission is to conserve, protect and restore Vermont’s fisheries and their watersheds. While much of the public focus of Act 64 is on the health of Lake Champlain, VTTU is focused on protection and restoration of the rivers, streams, and headwaters that also benefit from Act 64.

The Draft RAPs are a step in the right direction to help curb agricultural runoff and provide direction on farming practices and procedures that will help in the restoration of the state’s lakes and rivers. We trust that this is the beginning of a longer process that will provide Vermont’s agricultural producers with much needed education, financial and technical assistance and, if need be, enforcement.

There are many sections of the Draft RAPs with which we generally agree. We are supportive of the manure stacking and setback regulations, the inclusion of more farms in Nutrient

Management Planning, and new rules regarding manure spreading. However, we remain concerned with several sections, including the presumption of compliance without verification, the length of time between inspections of small farms, and parameters for groundwater quality investigations and remediation.

But instead of revisiting our past comments on these aspects of the RAPs, we will instead focus these comments on three key areas that must be strengthened for the RAPs to be effective: (1) the applicability of the RAPs to all those that raise crops and livestock, regardless of size or numbers; (2) the riparian buffer zones adjacent to rivers that must truly be buffers; and, (3) the exclusion of livestock from headwaters, streams and rivers. More broadly, we will also briefly address the concerns over expense and of the newly proposed review process.

Initially, the concerns of cost must be addressed. Throughout the debate in the Vermont Legislature on Act 64 and in public forums for the Draft RAPs, the foremost comment has been that the remedy for clean water will be expensive. Yes, cleaning our waters will be expensive, but there are multiple state and federal financial resources available. We as a state are legally and morally bound to restore and protect our headwaters, streams, rivers and lakes. Efforts must be undertaken to educate farmers on these funding resources and provide assistance to access it.

Financial concerns are the primary reason AAFM is limiting the application of the RAPs, but cost cannot be an excuse for ineffective half-measures. As some of this financial burden will fall directly onto the agricultural community, a greater portion of the state and federal financial assistance must be directed towards farm programs. The vast majority of the pollution comes from agricultural practices, so the Clean Water Fund Board should direct a proportional amount of state funding to help farmers alleviate the problem. VTTU will continue to advocate for greater financial resources for AAFM both in the general budgetary process and that a greater percentage of the Clean Water Fund be allocated for agriculture over other areas. Further, the state should seek nonprofit partners such as VTTU to assist farmers in implementation of these practices. Expense cannot be a reason to propose weak RAPs.

VTTU commends the addition of Section 1.5, which allows AAFM to revisit the RAP rules in 2018 when rules regarding subsurface tiles drains are added. “As part of the rule amendment process, the Secretary may also evaluate the current status of effectiveness of the Required Agricultural Practices, the implementation of additional best management practices, and the current water quality condition of waters of the State.” We are encouraged that “[t]he Secretary may consider additional changes to the Required Agricultural Practices, as appropriate, to meet the water quality goals of the State.” This will not only offer the opportunity for review, but also to tighten any rules that are not meeting expectations and fulfilling objectives.

We have two suggestions that would strengthen this review process. The first is that the review appears optional rather than mandatory and, second, that two years from now may be too soon for a proper review. A language change from “the Secretary may also evaluate” to “will also evaluate,” will ensure that future Administrations will conduct a review rather than opt out. Second, another review at five or more years may more accurately gauge the effectiveness of the RAPs. Regardless, we encourage the Agency to adopt a strong rule now, rather than wait for a review.

1. All Farming Activities Must Comply With The RAPs

VTTU remains concerned about the limited applicability of the RAPs in the overall farming community. The fact that the RAPs do not apply to all those engaged in farming activities, be it raising even a small number of livestock or crops, is a serious shortcoming of the rule. While only a few acres or a small number of livestock on their own may not cause much potential harm to waterways, the cumulative impact could be significant if these farms are excluded. In order to truly be effective, the RAPs must apply to all properties that raise crops or livestock, regardless of acreage or number. However, the new language in Section 3(e) will be helpful in addressing problem properties regardless of size.

It is the intent of both Act 64 and the Vermont legislature that all farms follow the RAPs. 6 V.S.A. §4810a(a) plainly states the Secretary “shall” “assure practices on all farms eliminate adverse impacts to water quality.” The Legislative intent is specific that all farms must be included, but the Agency side-steps this through slight of hand by limiting the definition of a “farm.” Even just the ‘hobby’ of raising crops or livestock is an agricultural practice that can cause nonpoint pollution. As all agricultural practices regardless of size can pollute waterways and cumulatively have an outsized impact, therefore, the RAPs must apply to all farm practices.

Rather than the RAPs applying to all agricultural operations, regardless of size, AAFM has created an artificial floor with a regulatory definition of what constitutes a farm, effectively exempting any agricultural activity below this threshold. AAFM is essentially exempting, in their words, “thousands” of smaller farms from following the RAPs. But these “thousands” will still add to water pollution. While AAFM has taken steps forward in many areas, it also takes a step back with the ‘floor’ placed regarding the size of farms that have to follow the RAPs.

The addition of the language of Section 3.1(e) will help the Agency address problem properties, but this ‘trapdoor’ has many caveats that dilute the purpose. The additional language in Section 3.1(e) will apply the RAPs to a farm “raising, feeding, or managing other livestock types, combinations, and numbers” and those that are “managing crops or engaging in other agricultural practices on less than 4.0 contiguous acres” if it is having adverse impacts on area waterways. However, this section of the rule will only be utilized if the municipality has no ordinances in place “to manage the activities causing the water quality impacts.” AAFM has drafted this section to apply only if harm is already occurring to a stream or river and only if the municipality has no authority to act.

We are concerned that the caveats in this section will limit the applicability and use by the Agency. We would suggest that the Agency step in to protect state waters even if municipal ordinances are in place, but the town refuses to use them. We argue AAFM has a duty to protect state waters from a known polluter, regardless of local ordinances.

We understand that farmers are frustrated by the RAPs for multiple reasons, cost being one, but also a general confusion as to what regulations apply to specific properties. The simplest solution for the latter would be to apply the RAPs to all farming operations regardless of size. Additionally, there must be an extensive education process for all people who raise livestock,

crops, or both, regardless of the number of livestock or acreage. Many of the RAPs are simply common sense and could be followed by all.

Overall, voluntary efforts are not often undertaken by the bad actors, so mandatory requirements for all those engaged in farming practices, even as a ‘hobby,’ will be the most effective at protecting and restoring Vermont waters. The deciding factor cannot be a lack of funds to educate or enforce. VTTU will continue to vigorously advocate for more funds for AAFM programs to educate, assist and enforce the RAPs. But, the RAPs must be applicable to all agricultural practices, regardless of size.

2. §6.07 Buffers Zones

VTTU is not aware of any data or studies showing that the proposed 25-foot grass buffers in the RAP’s are sufficient to protect water quality and reduce nutrient runoff. Federal and State of Vermont riparian buffer establishment grant programs require a minimum of 35 feet and often 50 to 100 feet along streams with active erosion, as should the final version of the RAPs.

We recommend the RAPs follow Vermont’s Act 250 program. This requires buffers wider than the 50 to 100 foot minimums where rare, threatened, endangered, or sensitive species, and sensitive significant natural communities are either directly associated with or in close proximity to the project site. Further, this would address actively adjusting channels that are undergoing channel lengthening and floodplain development.

VTTU recognizes that a 100-foot buffer is not always attainable on our small farms. Narrower buffers may be acceptable, at the Secretary’s discretion, where riparian functions and values will be adequately protected by a narrower buffer, such as sites adjacent to small, stable intermittent streams, or the location and extent of existing encroachments severely limits the ecological benefits that would be derived from a wider buffer.

Additionally, stream buffers should be comprised of woody vegetation with deep roots as prescribed by the Vermont Conservation Reserve Enhancement Program (CREP) and U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) regulations. The latest version of the RAPs would only require grass buffers that can be harvested as well as fertilized, which will do little to reduce runoff and improve water quality in Vermont. Riparian forests have been severely damaged or destroyed over the years by agriculture, timber harvesting, development, and other human uses. Losing these buffers has negatively affected wildlife habitat and water quality throughout the state. We recommend the RAPs should prevent harvesting and require woody vegetation using CREP and NRCS program guidelines.

Fish depend on a good aquatic habitat, and a stream without a forested riparian buffer is not likely to support healthy fish populations. Resident fish such as brook trout, Vermont’s state cold water fish, depend on the shade and cooler water temperatures provided by over hanging tree cover. Sediment caused by erosion and runoff can be especially damaging to fish by clogging their gills and smothering spawning sites for both fish and aquatic insects. A true,

vegetated riparian buffer (not a grass strip) helps to supply organic materials (leaves and woody debris), which provide food for aquatic invertebrates and these, in turn, provide food for wildlife. These forested buffers serve as the basis for a more diverse structural habitat for all aquatic life. As a stream's water quality declines, more tolerant fish species such as suckers increase, and those less tolerant, such as trout, begin to decline, which unfortunately is what has happened on most of Vermont's main stem rivers.

3. §7 Livestock Exclusion

As an organization that strives to protect rivers, streams and headwaters, VTTU is particularly concerned that all livestock owners follow Section 7. Our mission is the protection of fish habitat in smaller waterbodies, not just impacts on Lake Champlain. For small streams that make up the headwaters of watersheds, a few cows can do considerable harm, so livestock exclusion is key.

The language in Act 64 is plain; the language in the Draft RAPs is not. The statute states the Secretary shall "[e]stablish standards for the exclusion of livestock from waters of the State to prevent erosion and adverse water quality impacts." 6 V.S.A. §4810a(a)(9). Rather, the Draft RAPs are reactive rather than preventative.

The Draft RAPs should more clearly define the purpose of this section and explain any methods to reach this goal. The rules that apply to production areas should also include nonproduction areas, rather than the two standards. Further, we advocate that stream crossings and fencing be used both in production and non-production areas to contain livestock to a specific area with limited impact and not be allowed to linger or wallow in the area.

We understand that absolute exclusion of livestock from waterways is in some cases impractical and, in a few, may be impossible. Livestock needs water and the stream may have to be crossed to access an adjacent pasture. Nevertheless, every effort should be taken to keep livestock out of headwaters, streams and rivers unless no other alternative is feasible. The RAPs should reflect that every effort be taken to ensure that livestock are not allowed extended continuous access or to wallow in rivers, streams and headwaters. We understand there is sometimes a need for livestock to cross a waterway to get to another part of the property, but this should be a brief and well-managed crossing.

Section 7(b) should be expanded to incorporate (c) as well. In the current draft, the only difference between the regulations regarding livestock access in (b) production areas or immediately adjacent, and (c) "areas outside of production areas" is that livestock shall not have access to areas that "(1) contain unstable banks or where erosion is present." This allows livestock to erode an area and create unstable banks that cause sedimentation or are more susceptible to precipitation events. Efforts should be undertaken to prevent this degradation before it happens. Instead, livestock should be excluded from headwaters, streams and rivers both in production areas and outside of production areas, except "(1) at defined livestock crossings or defined watering areas." Designating certain areas where livestock can cross or water in pastureland will act as a preventative measure, rather than waiting for erosion to occur.

The language used by the NRCS could serve as a model for livestock exclusion. In particular, stream crossings would “[i]mprove water quality by reducing sediment, nutrient, organic and inorganic loading of the stream,” as well as “[r]educe streambank and streambed erosion.”¹ This would bring the Draft RAPs in line with the intent of the statute.

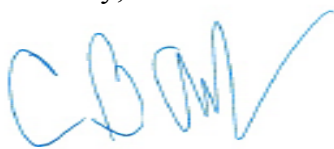
Moreover, NRCS guidance notes that the location of a stream crossing should “[d]iscourage livestock loafing in the stream by locating crossings, where possible, out of shady riparian areas or by including gates by design.”² As noted above, shady riparian areas are prime fish habitat, so habitat impacts are minimized if livestock are excluded from these areas. And, while direct habitat protection is not part of Act 64, NRCS guidance offers ways to further reduce impacts on aquatic habitat, including effects on upstream and downstream flow conditions, effects on erosion and sedimentation, and preventing habitat fragmentation. This is the specificity of guidance that should be offered by the state to exclude livestock from waterways and reduce impacts as much as possible.

For smaller streams and headwaters, exclusion of livestock is key, as only a few animals can cause outsized harm to aquatic habitat. Apart from the regulation, incentives and finances should be offered for hardened crossings, off-site watering areas, and fencing in areas that would be susceptible to wallowing or continuous access.

Conclusion

VTTU again thanks AAFM for the opportunity to comment on these draft regulations and commends the Agency for drafting a solid basis for the new Required Agricultural Practices. But, these RAPs need to be fine-tuned. Foremost, to be effective, they must apply to any property owners that plant crops or own livestock. A lack of funding and staff cannot be a basis to implement a partial regulation. The cumulative impact of these exempt farms will undermine the overall purpose of Act 64, the protection and restoration of Vermont’s waters.

Sincerely,



Clark Amadon, Chair
Vermont Council of Trout Unlimited

¹ “Stream Crossing,” Natural Resources Conservation Service, Conservation Practice Standard, Code 578, NRCS-VT, April 2014, pg. 1.

² *Id.*

The Vermont Council comprises of the:

Central Vermont Chapter, representing members in Chittenden, Addison, Orleans, and Franklin Counties.

Connecticut River Valley Chapter, representing members in Windham and Windsor Counties.

Greater Upper Valley Chapter, representing members in Windsor, Orange, and Caledonia Counties.

MadDog Chapter, representing members in Washington, Lamoille, Caledonia, and Essex Counties.

Southwestern Vermont Chapter, representing members in Bennington and Rutland Counties.

Patch, Ryan

From: Nathaniel Brown <phenn777@gmail.com>
Sent: Wednesday, July 6, 2016 5:27 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,
Nathaniel Brown

Sincerely,

Nathaniel Brown
PO Box 752
Hardwick, VT 05843
phenn777@gmail.com

Patch, Ryan

From: David Bahrenburg <dbahren@gmail.com>
Sent: Wednesday, July 6, 2016 5:09 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

David Bahrenburg
1164 Savage Pt Rd
North Hero, VT 05474
dbahren@gmail.com

Patch, Ryan

From: Grey Hagwood <ghagwood@gmail.com>
Sent: Wednesday, July 6, 2016 4:48 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

· RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm. Mr. Ross, I have you speak a few times about how important clean water is to the welfare of the State, however, the draft RAPs are very weak on implementation of measure to help improve our water quality. I realize that it is your job to advocate for farmers and the ag industry in Vermont, but farming is the greatest offender in creating the phosphorous loads our waters carry. The resource belongs to us all, and we all need to protect the resource because our existence depends on it. It is irresponsible to do otherwise.

· Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways. The draft RAP language is not very clear about livestock exclusions. The language needs to be straight forward, to the point, and easy to understand, with no ambiguity.

· A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water. The buffers should also be appropriately sized to sufficiently filter runoff as it flows into the waterways. There are farms along the road where I live in Franklin County where the fields are cultivated right to the edge of drainage ditches. I cringe every time I ride by them, knowing that there is no filter for the run off. And not only will the buffers aid the water habitat, it also provides improved wildlife habitat that has been removed over the years due to more efficient farming equipment and techniques.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Grey Hagwood
1973 Polly Hubbard Rd
Saint Albans, VT 05478
ghagwood@gmail.com

Patch, Ryan

From: Leon Graves <leon_graves@stalbanscooperative.com>
Sent: Wednesday, July 6, 2016 4:12 PM
To: AGR - RAP
Cc: Leon Berthiaume; Harold Howrigan; Tom Gates; Leon Graves
Subject: RAP comments on draft #3
Attachments: RAP comments on rule 3, 07.06.16.pdf; St. Albans Comments 3-28-16.pdf

Secretary Ross,

Please note the attached comments from St. Albans Cooperative relative to draft 3 of the RAP rules. I have also attached a copy of the comments submitted on March 25th and make reference to them in the current comments. Thanks for the opportunity for additional comments, let me know if you have questions or would like further information.

Regards,

Leon Graves, Manager
Business Development and Marketing
St. Albans Cooperative

St. Albans Cooperative Creamery, Inc.
138 Federal Street
St. Albans, Vermont 05478



Tele: 802-524-6581
800-559-0343
Fax: 802-527-1769
Email: stalbanscoop@stalbanscooperative.com

July 6, 2016

Secretary Chuck Ross
Vermont Agency of Agriculture, Food & Markets
116 State Street
Montpelier, VT 05620-2901

RE: Draft #3 of the RAP Rule for the Agricultural Nonpoint Source Pollution Control Program

Secretary Ross,

St. Albans Cooperative is a member owned dairy cooperative with members in Vermont, New York and New Hampshire. Our membership includes approximately 300 members in Vermont. Our members produce approximately 1.25 billion pounds of milk annually. Additionally, our members own a dairy processing facility and farm supply store in St. Albans and recently acquired McDermott's Trucking in Enosburg, Vermont.

On behalf of the St. Albans Cooperative and its members, I would like to provide the following comments relative to draft #3 of the RAP rule. Throughout this process, the St. Albans Cooperative's members, Board and management have been engaged and have appreciated the opportunity to share our concerns relative to the impact these rules will have on our member's farming operations. I want to thank the Agency for soliciting comments and providing feedback throughout this process. I recognize that we all have a stake in ensuring that we are making progress to improve water quality. Having said that, it's important for regulators and the public to understand the significant impact on our members and their businesses.

On March 25, 2016, I submitted the attached comments relative to the Agency's draft #2 of the RAP rules. In the attached comments, the Agency only addressed three issues. In Section 2.02, the definition of Annual Cropland was expanded to include the production of sweet corn and pumpkins, but excluded the production of small grains. I still question whether it's reasonable and fair to continue to exclude row crops of vegetables, fruits and berries. In sections 6.03 (e) and 6.04 (d), more restrictive language was added than in the previous draft regarding the requirements to implement corrective actions on fields with phosphorus soil tests >20 ppm. In section 6.04 (d) the opportunity for flexibility on establishing cover crops was deleted and the requirement to establish cover crops was more narrowly defined. In general, draft #3 appears to be more restrictive in general, at a time when we should be providing as much flexibility as possible in meeting water quality standards.

In a recent RAP hearing, I shared with your staff the following comments. I'd like to reinforce these points once again and offer the following additional comments.

The requirement for the certification of the small farm operations will have a significant impact on St. Albans Cooperative small member farms. I am concerned about their economic viability while meeting an ever increasing set of regulatory requirements, especially in light of the financial stress currently being experienced by dairy farmers. It also concerns me that the vast majority of the state's beef cattle and equine operations will not be impacted by the RAPs.

The 20ppm phosphorous standard seems arbitrary and low, especially in light of the fact that it's less than 50% of the requirement to produce a good crop of corn. Appropriate phosphorous levels need to be based on the agronomic rates necessary to produce a good crop. Conditions such as soil types and expected yields need to be taken into account when establishing this standard. Penn State Extension has provided the following guidance on appropriate phosphorous levels for corn production. "if the Mehlich 3 soil test is used, in Pennsylvania, soil extraction levels between 30 and 50 parts per million (ppm) phosphorus are optimum for production of agronomic crops. Below 30 ppm phosphorus, additional phosphorus must be applied to build up the soil for optimum crop production. Above 50 ppm phosphorus, there will be no benefit to adding additional phosphorus. In some cases, applying a small amount of phosphorus as a starter on soils testing above 50 ppm may be beneficial. The optimum range is 30-50 ppm to offset crop removal and to maintain optimum soil phosphorus levels over time."

The dates that further restrict manure spreading and cropping practices significantly shorten the growing season. Additionally, the manure spreading restrictions will significantly increase the need for manure storage capacity on many farms. The requirement to harvest and establish cover crops between October 1st and the 15th, depending on the season is unrealistic, especially due to the differences in growing conditions from year to year. The differences in growing degree days and seasonality in different regions of the state would suggest that a better solution would be to establish regional zones allowing for a more practical implementation of these practices. I would recommend that you consider establishing 4 zones in the state. Examples to consider would include southern Vermont, central Vermont, the Lake Champlain Valley and the Northeast Kingdom. Absent a more flexible approach to these restrictions, these requirements will put additional pressure on more marginal land in order to meet the forage needs on Vermont's farms.

The requirement for 100 foot buffers on land with slopes in excess of 10% will reduce the available acreage for forage production. A better approach would be a process where all buffer requirements could be adjusted where warranted on a case by case basis, when doing so would not adversely affect water quality. The requirement for 15'-25' buffers upland of tillable acreage will have no impact on water quality, while significantly reducing acreage available to grow crops. I would urge the Agency to develop a process that would allow the maximum amount of flexibility while still achieving the desired water quality improvement.

The RAPs include additional restrictions on frequently flooded land as determined by a field's USDA Soil Survey Flood Frequency Class. Those soil classifications are not intended to indicate soil erosion potential and the restrictions will end up applying to fields with no erosion concern. I would request that a process be implemented that would provide landowners an opportunity to demonstrate whether or not their land is frequently flooded and whether or not the predominance of any flooding tends to be in the spring or fall of the year. This is yet one more area where the Agency could provide an opportunity for flexibility when appropriate evidence is provided by landowners and farmers.

I have been engaged in this process from the beginning and continue to provide insight and comments at every opportunity. The common themes that continue to resonate between the cooperatives, watershed groups and other farm oriented stakeholders need continued attention from the Agency. We need to continue to see progress in the areas of flexibility on the implementation strategies such as soil tests, regionalization of manure spreading timeframes, harvest dates and the establishment of buffers and cover crops.

I would also reinforce and support the comments submitted by the Green Mountain Federation of Dairy Farmer Cooperatives.

In closing, I would ask that as the Agency develops an implementation strategy for the RAPs, that it take into consideration an implementation and enforcement strategy that addresses the current economic conditions for dairy farmers; ensuring that there are sufficient financial resources, educational tools and technical assistance for a successful outcome, minimizing the financial impact on Vermont's farmers.

Thanks for your consideration of my comments.

Sincerely,

A handwritten signature in black ink, appearing to read "H. Howrigan". The signature is fluid and cursive, with a prominent initial "H" and a long, sweeping tail.

Harold Howrigan, President
St. Albans Cooperative

St. Albans Cooperative Creamery, Inc.
138 Federal Street
St. Albans, Vermont 05478



Tele: 802-524-6581
800-559-0343
Fax: 802-524-4015

March 25, 2016

Secretary Chuck Ross
Vermont Agency of Agriculture, Food & Markets
116 State Street
Montpelier, VT 05620-2901

RE: Draft 2 of the RAP Rule for the Agricultural Nonpoint Source Pollution Control Program

Secretary Ross,

On behalf of the St. Albans Cooperative I would like to provide input on the new Required Agricultural Practices (RAP) rules that are currently in their second draft form. The new rules will impact our dairy farmer members across all farm sizes but will also hopefully create greater uniformity in Vermont's agricultural sector.

St. Albans Cooperative Creamery, Inc. is a member governed dairy cooperative serving Vermont, New York and New Hampshire dairy farmers. Our membership is comprised of approximately 70 New York members, with an additional 300 in the State of Vermont. Our farms produce in the range of 1.25 billion pounds of milk on an annualized basis. Our dairy farmers own and operate a milk manufacturing facility in St. Albans, Vermont.

As it relates specifically to Draft 2 of the new RAP's, we have had various conversations with our members and observed several of the RAP workshops the Agency conducted last fall. We have provided specific input and/or comments by section, which is listed below.

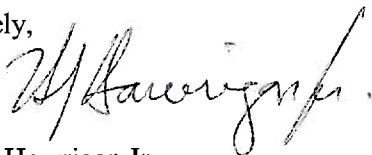
Section

- 2.02 The definition of Annual Cropland includes annual row crops but then excludes row crops of vegetable, fruit and berry crops. It seems as this exclusion is not necessary if the goal is to bring all agriculture to a similar standard.
- 2.04 While the Buffer Zone definition is improved from Draft 1, further clarification would be helpful on what defines a ditch under State law versus Federal law.
- 2.13 This section seems excessive that a simple out building would need to go through formal approval process. This could create significant delays in the event that NRCS needs to be involved in any additional farm structures. Any new structures within a barnyard would already be designed with a waste management plan.
- 4.1 The requirement of 50 mature dairy cows being the minimum to need a Small Farm Certification seems subjective and could be hard to defend with the dairy community in Vermont. If not managed properly 25 mature dairy cows could potentially cause similar issues to a farm with 50 mature dairy cows. Please consider lowering minimum requirement.
- 6.01 (a) Please add exception under Discharges that states that extreme weather events outside of producers control may not apply under this section.
- 6.03 (d) Please define what the acceptable soil tests are acceptable to determine the 20 ppm of phosphorus.

- 6.03 (e) Please provide more detail on what would be expected to achieve “significant changes” on fields with phosphorus test results over 20 ppm. Possibly provide a template form that farmers could utilize to document those changes.
- 6.04 (d) Requiring cover crops on floodplain fields makes sense to allow producers the ability to utilize those fields for annual crops. However, we believe that there will be circumstances where it is not practical to cover crop a field depending on weather conditions. The language should provide some leeway for producers in years where weather conditions do not allow producers to get their crops harvested prior to October 1st. In the northeastern part of Vermont, the corn harvest hardly ever occurs prior to October 1st. In addition, it seems that all annual crops should fall under this requirement, regardless of the type of annual crop.
- 6.05 (b) This requirement could create significant challenges for many of our producers, limiting their ability to spread manure by 75 days. We urge the Agency to remove or modify this restriction to allow producers some alternative practices that would make them subject to the December 15 to April 1 standard requirements.
- 6.05 (c) Vegetable acres should not be exempt in this section.
- 6.05 (f) We believe a large percentage of our producers fields have slopes over 10%. Requiring a 100-foot buffer on our producer’s fields under this section would eliminate significant acres of land available for manure application. We strongly believe that in order to make this more manageable that either the slope percentage should either increase or the buffer requirement should be decrease by at least 50%.
- 6.07 (c) Please provide further definition of a surface inlet or open drain. Are these always connected to a subsurface tile system? Possibly delay incorporation of this sub-section until 2018 when more research and evidence is available on subsurface tile systems.
- 6.07 (i) Please include under exceptions to the required vegetative buffer zone widths, situations where a ditch is on the upward slope of a field and hence would not pose a threat of runoff. This would also be an example where a 10-foot buffer would not be necessary.
- 10 (h) It seems unreasonable for a custom applicator to have to fully understand every individual clients Nutrient Management Plan. We believe as long as the custom applicator is following the rules outlined under the RAP’s and that they are following the application locations and rates instructed by the producer (who should know what the Nutrient Management Plan requirements include for their farm) that that should be sufficient. Otherwise this could create extreme bottlenecks and delays for a custom applicator to take care of manure application when needed.
- 11 Adding Site Specific On-Farm Conservation Practices on top of the new RAP’s seems a little excessive. This section basically could put a producer at risk of additional unfunded expense, even if they are full compliance with the RAP’s. This may be necessary in the future but not until actual threats to water quality are deemed imminent.

Thank you in advance for your consideration of this subject matter and we appreciate the opportunity to provide input.

Sincerely,



Harold Howrigan Jr.
President

Patch, Ryan

From: Pete Meijer <picknell420@gmail.com>
Sent: Wednesday, July 6, 2016 3:55 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,
Peter Meijer

Sincerely,

Pete Meijer
PO Box 177
Quechee, VT 05059
picknell420@gmail.com

- > Thank you,
- > Mark Nelson
- > Chair, Vermont Chapter of the Sierra Club Explore, enjoy and protect
- > the planet
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Patch, Ryan

From: Dana Evans <montanapowderhound@gmail.com>
Sent: Wednesday, July 6, 2016 1:31 PM
To: AGR - RAP
Subject: Is it worth it?

Dear Agency of Agriculture of Agriculture,

Try and picture what Vermont Rivers looked like a hundred years ago. Clear, cold water running down from the mountains. Brook Trout rising to hatching insects in the riffles and pools. The smell of clean, crisp air.

Look what it has become. Warm, polluted waters with so much algae growing it is in fact UNSAFE for people to be swimming in them. Very few trout, existing in only the most isolated tail-waters around the state. Such little aquatic invertebrate life that even if the water was cold and clear, the fish wouldn't have anything to eat.

What, or who, is to blame? Can we blame the farmers for letting their cattle graze in and around the cold streams? Can we blame the farmer who sprays fertilizers on his crops to increase yields to feed his family? Can we blame the multitudes of motor-boaters whose engines leak oil and gas into an already struggling Lake ecosystem? The truth is we are all to blame. Because whether or not you own a motor boat, or ranch cattle, or grow corn, we all have an impact either by directly contributing, or condoning or endorsing the lifestyles and practices of those contributing. If you've ever bought cheese from a Vermont dairy farmer you've. If you've ever bought corn from a local farmer who's fields border a river or stream, you've contributed.

We can spend an entire lifetime pointing fingers at people and get absolutely nowhere. The fact is, no one is going to voluntarily stop grazing their cattle near rivers or spraying fertilizers on crops, and it would be unrealistic and unfair to ask them. The only way to actually make a change is to enforce higher standards and stricter regulations to EVERYONE, no matter the size of the farm or dairy operation. The current legislation falls pathetically short of addressing the contribution of many, small-scale farms, and only addresses the larger operations. How can we think that multitudes of smaller farming operations don't contribute to the pollution of the Lake and its tributaries?

Should cattle be allowed in and around flowing water? Absolutely not. Fecal matter from bovines is not only extremely high in nitrogen, but it also carries pathogens that then flow DIRECTLY down stream into larger bodies of water. Not to mention how disgusting it is to swim in a river that is clogged with algae blooming in the presence of excess runoff. Cattle need to be kept at a distance from water sources, especially if they are headwaters potentially holding trout.

The need for a riparian buffer is one of the most important issues when it comes to mitigation of excessive runoff. According to the current plan, RAP allows landowners to apply fertilizer, graze livestock, and 'harvest' a buffer. That sounds a lot more like 'farming' than 'planting a riparian buffer to stem runoff'. Riparian buffers are built by planting trees on river banks to help filter excessive chemical runoffs. If you FERTILIZE an area that already has excessive nutrients, how is that contributing to REDUCING runoff? This simply makes no sense. To allow cattle to graze near this buffer zone further reduces the effectiveness of this buffer.

In conclusion, we need to ask ourselves: Is It Worth It? Is it worth it to let stubborn out of date farming practices remain intact? Is it worth it to acquiesce to an antiquated system because that's "just the way it's always been done"? Is it worth the potential PERMANENT effects these farmers are having on future generations of Vermonters, who have every right to enjoy Lake Champlain and its many tributaries in an unaltered state? It's time to take action. It's time to make a change.

Sincerely,

Dana Thomas Evans
80 Leonard St
Burlington, VT 05408
montanapowderhound@gmail.com

Patch, Ryan

From: Ryan Kinkel <kinks19@gmail.com>
Sent: Wednesday, July 6, 2016 1:16 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Ryan Kinkel
2 Hawthorne Rd
Saint Albans, VT 05478
kinks19@gmail.com

Patch, Ryan

From: Christopher VanDenburgh <user@votervoice.net>
Sent: Wednesday, July 6, 2016 12:49 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Christopher VanDenburgh
36 Russell Dr
Stillwater, NY 12170
voxvulture@yahoo.com

Patch, Ryan

From: Brian Riopelle <brian.riopelle@gmail.com>
Sent: Wednesday, July 6, 2016 12:43 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Regards,

Sincerely,

Brian Riopelle
2891 W Lemhi St
Boise, ID 83705
brian.riopelle@gmail.com

Patch, Ryan

From: Jay Modry <jmodry@ossu.org>
Sent: Wednesday, July 6, 2016 12:48 PM
To: AGR - RAP
Subject: Required Agricultural Practices

Dear Agency of Agriculture of Agriculture,

In the spirit of Act 64 I am writing to urge the Agency of Agriculture to implement rigorous Required Agricultural Practices (RAPs) on all Vermont farms to protect the water quality of our state's waters for generations to come. We have tolerated dirty farming practices for too long, it is time to enact and enforce regulations that reduce nutrient pollution of our public waters.

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Jay Modry
647 Lake Shore Rd
Greensboro, VT 05841
jmodry@ossu.org

Patch, Ryan

From: Jason Aylward <jay.aylward@gmail.com>
Sent: Wednesday, July 6, 2016 12:31 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Jason Aylward
160 Rattlesnake Gutter Rd
Leverett, MA 01054
jay.aylward@gmail.com

Patch, Ryan

From: Ira Norton <user@votervoice.net>
Sent: Wednesday, July 6, 2016 11:53 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Ira Norton
1422 Memorial Dr
Saint Johnsbury, VT 05819
IraNorton76@yahoo.com

Patch, Ryan

From: Michael Collins <collins.michael68@gmail.com>
Sent: Wednesday, July 6, 2016 11:53 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Michael Collins
21 Marshall Dr
Burlington, VT 05408
collins.michael68@gmail.com

Patch, Ryan

From: Steve Stanley <sstanley907@gmail.com>
Sent: Wednesday, July 6, 2016 11:43 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Steve Stanley
48 Colonial Rd Unit 103
Fairfax, VT 05454
sstanley907@gmail.com

Patch, Ryan

From: Brendan Hare <bhare23@gmail.com>
Sent: Wednesday, July 6, 2016 11:41 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Brendan Hare Milton VT
8 Grandview Rd
Milton, VT 05468
bhare23@gmail.com

Patch, Ryan

From: Reed Kennedy <user@votervoice.net>
Sent: Wednesday, July 6, 2016 11:20 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Reed Kennedy
PO Box 627
Manchester Center, VT 05255
viewsnbrews@yahoo.com

Patch, Ryan

From: Chris Murphy <cemurphy89@gmail.com>
Sent: Wednesday, July 6, 2016 11:24 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Chris Murphy
82 Winter St
Newport, VT 05855
cemurphy89@gmail.com

Patch, Ryan

From: Chris Lynch <cjlynch14@gmail.com>
Sent: Wednesday, July 6, 2016 11:07 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

chris lynch
167 River Ridge Rd
Hyde Park, VT 05655
cjlynch14@gmail.com

Patch, Ryan

From: William Anderson <andersonb@stifel.com>
Sent: Wednesday, July 6, 2016 10:09 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

William Anderson
1 Hill Pond Rd
Rutland, VT 05701
andersonb@stifel.com

Patch, Ryan

From: Mark N <m.a.nelson@live.com>
Sent: Wednesday, July 6, 2016 9:43 AM
To: AGR - RAP; Ross, Chuck; Leland, Jim; DiPietro, Laura
Cc: Mike Winslow; Elena M. Mihaly; jgroveman@vnrc.org; Lauren Hierl; Jared Carpenter; James Ehlers; marty.illick@gmail.com; Crea Lintilhac; denisefnlc@gmail.com; Laura Murphy; Robb Kidd; ddeen@ctriver.org; Marina Welch; vt-sierra-club-water@googlegroups.com; Lori Fisher
Subject: Comments on Draft Required Agricultural Practices
Attachments: 2016-07-06 VTSC Draft RAP Cmts.docx

Dear Agency of Agriculture, Food and Markets:

Attached are comments on the Draft Required Agricultural Practices from the Vermont Chapter of the Sierra Club.

Please let me know if you have any questions.

Thank you,
Mark Nelson
Chair, Vermont Chapter of the Sierra Club
Explore, enjoy and protect the planet



Vermont Chapter of the Sierra Club
PO Box 492
Montpelier, VT 05601

July 6, 2016

Agency of Agriculture, Food, & Markets
116 State Street
Montpelier, Vermont 05620-2901
AGR.RAP@vermont.gov

RE: Comments on Draft Required Agricultural Practices

Dear Agency of Agriculture, Food, & Markets:

Thank you for the opportunity to submit these comments on the Draft Required Agricultural Practices (RAPs). We appreciate the outreach that the Agency of Agriculture, Food, & Markets (AAFM) has conducted in sharing prior versions of the draft RAPs, holding stakeholder meetings, and accepting preliminary comments from the public. We also appreciate the time and effort that AAFM staff is putting into this process.

The Vermont Chapter of the Sierra Club is committed to ensuring that Vermont's water quality is restored, maintained, and protected, and we offer the following comments to further those goals. While we appreciate that some positive changes have been made to the RAPs during this process, other changes have made the Draft RAPs less protective of water quality; and the current Draft Required Agricultural Practices are insufficient to protect water quality and ensure consistency with Act 64.

In general, the Draft RAPs should be revised to apply to all farms, bring the definition of "small farm" into compliance with Act 64, provide more strength and specificity as to some requirements, and contain more provisions for education, oversight, and transparency.

We also encourage AAFM to incorporate flexibility into the RAPs to account for farms that engage in organic, biodynamic, regenerative, and/or restorative practices, as long as the farms can demonstrate that their practices are achieving the same level of water quality protection as the RAPs require. AAFM has an important opportunity here to encourage, promote, and require these types of practices, which can lead Vermont toward real long-term solutions for sustainable agriculture and a healthy environment and economy. *See* Sierra Club Vermont Chapter et al., Comments on the Draft Required Agricultural Practices, Appendix A (Dec. 18, 2015). AAFM has the authority to move in this direction because the list of RAP requirements in Act 64 is not an exclusive list, but a "minimum" set of requirements that must be addressed. 6 V.S.A. § 4810a(a).

Finally, we recognize that complying with regulations can be difficult for some farms. While we believe environmental costs should be internalized and that farms must be accountable for the pollution they create, just as other businesses or individuals are, we support outreach and incentive systems that will help farms to be good stewards of the environment.

Thank you again for your consideration.

Section 1: General

- The RAPs must apply to “all farms” as required by Act 64 and as acknowledged in the Draft RAPs. 6 V.S.A. § 4810(b) (“Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State”) (emphasis added); 6 V.S.A. § 4810a(a) (“the Secretary shall amend by rule the required agricultural practices in order to improve water quality in the State [and] assure practices *on all farms* eliminate adverse impacts to water quality”) (emphasis added); Draft RAPs at § 1.1 (“As defined in 6 V.S.A. Chapter 215, §§ 4810 and 4810a, the Required Agricultural Practices (RAPs) shall be management standards to be followed by *all persons engaged in farming* in this State.”) (emphasis added).
- We discourage AAFM from including language in the RAPs that, presumptively, compliance with the RAPs equals no discharge. The presumption is problematic for several reasons, most importantly because it is inconsistent with the federal Clean Water Act and Vermont’s Water Pollution Control Law, and could give false assurances to farms regarding their compliance with these water quality laws. Any unpermitted discharge of agricultural pollutants from a point source is an enforceable violation of the Clean Water Act, and Vermont’s Water Pollution Control Law likewise prohibits discharges. 33 U.S.C. § 1311(a); 10 V.S.A. § 1259(a). The statutory presumption in 6 V.S.A. § 4810(b) cannot trump the federal Clean Water Act, and highlighting the presumption in the RAPs could be misleading.

Further, as a practical matter, highlighting a presumption of “no discharge” does not encourage either farms or AAFM to identify and address discharges that *are* actually occurring. Additionally, AAFM has not provided any data or assurances that compliance with the RAPs actually *will* mean “no discharge.”

Section 2: Definitions

- The definition of “farm” is inconsistent with Act 64. *See* Draft RAPs at § 2.13. As explained above, Act 64 requires that the RAPs shall apply to “all farms.” By defining “farm” as requiring that the parcel be devoted primarily to farming, *and* establishing other threshold requirements, the Draft RAPs do not comply with Act 64.

Section 3: Required Agricultural Practices Activities and Applicability

- For the reasons explained above, § 3.1 should not include language that compliance with the RAPs creates a presumption that there is no discharge of agricultural wastes to waters of the State. Draft RAPs at § 3.1.
- Most of Section 3 is unnecessary because, as explained above, Act 64 is clear that the Required Agricultural Practices apply to “all farms.” The Act does not authorize AAFM to exempt categories of farms from the RAPs, whether for concerns about agency

implementation resources or for other reasons. Rather, AAFM should distinguish between those farms that are subject to Small Farm certification, and those that are only subject to the RAPs (which are all remaining farms). 6 V.S.A. § 4810a(a)(1). This would not bring every backyard chicken coop under the realm of the RAPs, because a parcel of land is not a “farm” unless it is “devoted primarily to farming.” Draft RAPs at § 2.13; *see also* 6 V.S.A. § 4802(2) (designating multiple activities that qualify as farming).

Our understanding is that there may be large numbers of farms in Vermont that would not be covered by the RAPs under the criteria in this Section. We have also heard concerns that some RAPs could not be implemented on the smallest farms because, e.g., there would not be enough space for a required buffer. Rather than exempt large numbers of farms that may be significantly contributing to Vermont’s agricultural water pollution problems, a better approach—and one that would be consistent with Act 64—would be to establish a different set of standards for farms that fall under a certain size. *See* 6 V.S.A. § 4810a(11) (authorizing AAFM to allow for “alternative techniques or practices” where site-specific conditions prevent compliance with the RAPs).

Section 4: Small Farm Certification and Training Requirements

- The definition of Certified Small Farm is flatly inconsistent with Act 64 and is a step backwards from AAFM’s original draft RAPs. Under Act 64, a “small farm” must be certified. 6 V.S.A. § 4871(b) (“a person who owns a small farm *shall* . . . certify compliance”). And a “small farm” is “a parcel or parcels of land: (1) on which 10 or more acres are used for farming; (2) that house no more than the number of animals specified under section 4857 of this title; and (3)(A) that house at least the number of mature animals that the Secretary of Agriculture, Food and Markets designates by rule under the required agricultural practices, *or* (B) that are used for the preparation, tilling, fertilization, planting, protection, irrigation, and harvesting of crops for sale.” 6 V.S.A. § 4871(a) (emphasis added).

AAFM does not have the authority to change the definition of small farm and limit it to parcels greater than 50 acres.¹ Under the statute, a small farm includes a parcel(s) of land on which 10 or more acres are used for the preparation, tilling, fertilization, planting, protection, irrigation, and harvesting of crops for sale.

- The RAPs should specify that the requirements for the annual certification form will be subject to public notice and comment. Otherwise, because the Draft RAPs do not include the requirements for the certification form, these requirements will escape public notice and comment. Draft RAPs at § 4.3.

¹ 6 V.S.A. § 4810a(a)(1)(A) is not a license for AAFM to make up its own definition of “small farm.” Rather, it requires the Secretary to specify the farms that must comply with certification requirements because of the farms’ potential impact on water quality, over and above those farms that meet the definition of “small farm.” *See* 6 V.S.A. § 4871(c) (allowing Secretary to require farm to certify based on water quality threat, where farm is not otherwise subject to small farm or other permitting requirements). The statute is very clear about what a “small farm” is, and that all small farms must certify. 6 V.S.A. § 4871(a)-(b).

- While the inspection requirement is an improvement over the initial Draft RAPs, small farms should be inspected more than once every seven years. Draft RAPs at § 4.3(b). Inspections are key to identifying problems, sharing information, and finding solutions. This is especially true where lack of information and education about water quality requirements has been identified as a primary cause of pollution problems on farms. Additionally, without regular, meaningful inspections, the small farm certification program becomes little more than voluntary. Small farms should be inspected, at the very least, once every five years on an ongoing basis.

Section 5: Agricultural Water Quality Training

- Required Farm Operator Training should be required on an annual, or at the most, semi-annual basis. Draft RAPs at § 5(b). As mentioned, education and outreach are essential in helping to prevent pollution problems.

Section 6: Required Agricultural Practices; Conditions, Restrictions, and Operating Standards

- Field stacking of manure should be prohibited in floodplains as well as lands in a floodway or otherwise subject to flooding. Draft RAPs at § 6.02(e)(2).
- Section 6.02(i) should specify that pesticides shall also be applied in accordance with the federal Clean Water Act, with 10 V.S.A. § 1259, and with all regulations promulgated thereunder.
- Section 6.03(d) should require farms to *stop* applying nutrients to fields when the soil analysis shows more than 20 ppm of phosphorus. Simply requiring farms to reduce phosphorus levels “over time” provides no assurance that reduced levels will *ever* occur; and it makes no sense to continue dumping phosphorus on fields that are already saturated and are contributing to the excessive phosphorus levels in Lake Champlain.
- Section 6.03(e) should be more specific and apply not just to “significant” changes. It should require farms to submit documentation of changes to AAFM, along with updates to the NMPs based on the changes, and it should provide a specific timeframe. Otherwise, this provision is little more than a recommendation.
- The records required to be kept in Section 6.03 should be submitted to the Secretary on an annual basis, not just available upon request.
- The provision regarding gully erosion is not meaningful as currently drafted. Draft RAPs § 6.04(c). Though it is mandatory (“shall be managed”), “minimizing” gully erosion and eliminating *or* reducing associated discharges does not actually require farms to prevent either gully erosion or associated discharges.

- In § 6.04(d), cover crops should be required on all annual croplands, with only very limited exceptions. We also recommend adding that cover crops may not be sprayed with harsh pesticides, such as glyphosate, in order to remove them each year. Rather, cover crops should be killed through non-chemical practices such as mow-down and rolling/slicing/crimping techniques.
- We recommend adding language to § 6.05(d) to make it clear that the prohibition on applying wastes when the weather and/or field conditions can be reasonably anticipated to result in flooding, etc., applies regardless of whether a Nutrient Management Plan would otherwise allow waste application. We also recommend adding an example of what “reasonable anticipation” would mean, e.g., the responsibility to check a given weather tracker site. Draft RAPs at 11, § 5.5(d).
- The “Waste Application Standards” in § 6.05 should require all persons who land apply wastes to comply with the same requirements with which custom manure applicators must comply (see Section 10). This will help to ensure that applicators at all farms are fully knowledgeable and aware of best practices for preventing water pollution.
- Harvesting and grazing should *not* be allowed in buffer zones. Draft RAPs at § 6.07. A buffer is no longer a buffer if it is farmed. Further, all buffer zones and waste application setbacks should, at a minimum, be doubled. The guidelines provided in Act 64 are *minimum* distances with the further requirement that buffers must adequately address water quality needs on a site-specific basis. 6 V.S.A. § 4810a(a)(6). We are not aware of any data or studies showing that the buffers in the Draft RAPs are sufficient to protect water quality. Additionally, stream buffers should be comprised of trees and then grasses or other perennial vegetation demonstrated to aid in the filtering of sediment and reduction of erosion.
- We recommend adding a requirement that all farms practice integrated pest management rather than starting with the application of chemical pesticides, through the use of techniques such as crop rotation, the planting of crops that are natural pesticides, identification and removal of pests before they become harmful, and weeding. This will not only help to reduce the use of chemical pesticides and associated pollution of waterways and groundwater, but will encourage ecological health of farms more generally.

Section 7: Exclusion of Livestock from the Waters of the State

- This Section should be revised to require that livestock actually be excluded from surface waters. See 6 V.S.A. 4810a(9) (AAFMs must “[e]stablish standards *for the exclusion of livestock* from water of the State to *prevent erosion and adverse water quality impacts*”) (emphasis added). In particular, allowing livestock outside production areas to have access to surface waters unless there are already unstable banks with erosion neither excludes livestock, nor prevents erosion and adverse water quality impacts. Relying on AAFMs to go farm-by-farm to designate all areas where water quality may be impacted by livestock stream access is insufficient; it could encompass every stream in the State. Draft RAPs at § 7(c).



Vermont Chapter of the Sierra Club
PO Box 492
Montpelier, VT 05601

Tile Drains

Subsurface tile drainage is cause for major concern in Vermont, as a direct source of readily available dissolved phosphorus to Lake Champlain and other Vermont waterways. In advance of AAFM's final study on tile drains, AAFM should prohibit the installation of additional tile drains. At the very least, AAFM should include in the current RAPs requirements for mapping and monitoring of existing tile drains, including the locations of all existing drainage systems and outfalls, and regular monitoring data from the outfalls. This is a common-sense way to obtain much-needed information. *See* Letter from Lake Champlain Committee et al. to AAFM re: AAFM Interim Tile Drain Report (Dec. 21, 2015); Letter from Lake Champlain Committee et al. to AAFM re: Comments on Subsurface Tile Drainage Interim Report (Apr. 26, 2016).

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark White", written over a light blue horizontal line.

Chair
Vermont Chapter of the Sierra Club

Patch, Ryan

From: Mr. & Mrs. William Murphy <allagashbill@gmail.com>
Sent: Wednesday, July 6, 2016 9:21 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

William J. Murphy
1501 S Windsor St
South Royalton, VT 05068
allagashbill@gmail.com

Patch, Ryan

From: Jared Carpenter <rjaredcarpenter@gmail.com>
Sent: Wednesday, July 6, 2016 8:26 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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Sincerely,

Sincerely,

Jared Carpenter
PO Box 793
Montpelier, VT 05601
rjaredcarpenter@gmail.com

Patch, Ryan

From: Jeff Dutton <chefdutton@gmail.com>
Sent: Tuesday, July 5, 2016 4:09 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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Sincerely,

Sincerely,

Jeff
404 Cityside Dr Unit 77
Montpelier, VT 05602
chefdutton@gmail.com

Patch, Ryan

From: Dick Byrne <dick.byrne58@gmail.com>
Sent: Tuesday, July 5, 2016 3:39 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

R J Byrne
12 Old Georges Mill Rd
Sunapee, NH 03782
dick.byrne58@gmail.com

Patch, Ryan

From: George Plumb <plumb.george@gmail.com>
Sent: Tuesday, July 5, 2016 8:42 AM
To: AGR - RAP
Subject: ACT 64 and RAP's

I am very concerned about what the confluence of climate change and pollution is doing to the quality of our water. Even in the hills of Washington I can see the impact. We must act now to protect the future of our water quality

This new law – Act 64 – sets requirements for agriculture and storm water coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture, Farms and Markets is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution – the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

The proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

- *Cows should not tromp and poop in our streams. When we're requiring expensive upgrades of our wastewater plants and fancy storm water practices to cut down on phosphorus pollution, we can't afford giving cows direct access to our waterways.*
- *Buffers are needed to separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. Don't allow the application of fertilizer, grazing, and harvesting in buffers.*
- *Stacking of manure should be prohibited in flood plans.*
- *Cover crops should be planted in frequently flooded areas adjacent to surface waters.*
- *Pesticides should be applied in accordance with the Clean Water Act.*
- *Don't allow more nutrients to be applied to soils that are already saturated with excessive phosphorous levels.*
- *Farm ditch erosion should be prevented to inhibit the flow of nutrients and sediment into nearby waterways.*
- *All farms should be required to comply with Vermont's Clean Water Act.*

Thank you for your support of clean water.

**Namaste,
George Plumb**

Patch, Ryan

From: Mike Ware <mikeware@madriver.com>
Sent: Monday, July 4, 2016 10:04 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Mike Ware
201 Strong Rd
Waitsfield, VT 05673
mikeware@madriver.com

Patch, Ryan

From: David Ellenbogen <pianomath@gmail.com>
Sent: Monday, July 4, 2016 12:49 AM
To: AGR - RAP
Subject: RAP's feedback

Dear Sir or Madam,

The draft RAPs (Required Agricultural Practices) are, unfortunately, inadequate to address the declining condition of Vermont's lakes, ponds, and stream. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

- Cows should not tromp and poop in our streams. When we're requiring expensive upgrades of our wastewater plants and fancy storm water practices to cut down on phosphorus pollution, we can't afford giving cows direct access to our waterways.
- Buffers are needed to separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. Don't allow the application of fertilizer, grazing, and harvesting in buffers.
- Stacking of manure should be prohibited in flood plans.
- Cover crops should be planted in frequently flooded areas adjacent to surface waters.
- Pesticides should be applied in accordance with the Clean Water Act.
- Don't allow more nutrients to be applied to soils that are already saturated with excessive phosphorous levels.
- Farm ditch erosion should be prevented to inhibit the flow of nutrients and sediment into nearby waterways.
- All farms should be required to comply with Vermont's Clean Water Act.

Thank you for your support for clean water,

David Ellenbogen
PO Box 193
Calais, VT 05648
802-363-6868

Patch, Ryan

From: Connie Long <ccklong@q.com>
Sent: Sunday, July 3, 2016 9:51 PM
To: AGR - RAP
Subject: RAP - Lake Champlain

I would like to comment on the RAP that is up for approval. Having grown up in Vermont and now returning each summer to the St Albans Bay area, I am shocked at the condition of the water in Lake Champlain. For a State that has always prided itself on the beauty of its' green mountains and ecological conservation programs, it is difficult to see the water quality in the lake continue to worsen.

Clean water is vital to not only our quality of life, but to the economy of the State. While I recognize this clean water bill is a start; it does not do enough nor recognize the seriousness of the pollution. I feel this RAP should take real steps to improving our waterways that will result in positive changes and not just a weak attempt at meeting federal guidelines. For example, stringent storm water controls and well managed buffer zones should be implemented.

I am sure you have visited this area of the lake and monitored the water results yourself. I urge you to create more effective requirements in this plan.

Concerned citizen
C Long

Patch, Ryan

From: Byron Reed <byron.reed@gmail.com>
Sent: Sunday, July 3, 2016 9:37 AM
To: AGR - RAP
Subject: I want clean water for outdoor recreation and drinking--and farmers are not helping

Dear Agency of Agriculture of Agriculture,

Clearly, agricultural runoff is a large proportion of the problem of phosphorus pollution in Vermont, and frankly I'm tired of farmers whining that they cannot comply with simple rules for buffer zones and similar items. We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Byron Reed

Sincerely,

Byron Reed
34 Evergreen Ln
Middlebury, VT 05753
byron.reed@gmail.com

Patch, Ryan

From: Colin Cascadden <user@votervoice.net>
Sent: Saturday, July 2, 2016 9:34 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Colin Cascadden
24 Bolster Rd
Barre, VT 05641
cptred@yahoo.com

Patch, Ryan

From: Kenneth Hatch <dhatch88@icloud.com>
Sent: Saturday, July 2, 2016 8:56 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Here in Vermont we have a great reputation as an environmental state, lets live up to that reputation. This is very important not only for environmental reasons but for our tourism economy also.

Sincerely,

Kenneth Hatch
78 Birch Hill Rd
Bethel, VT 05032
dhatch88@icloud.com

Patch, Ryan

From: Tom Juiffre <tomjuiffre@gmail.com>
Sent: Saturday, July 2, 2016 6:26 AM
To: AGR - RAP
Subject: Fwd:
Attachments: photo 1.JPG; photo 2.JPG; photo 3.JPG; Saint Albans Bay images.pptx

Hello,

My name is Tom Juiffre, property owner on St Albans Bay, Georgia, VT.

I'm writing with regards to farming rules and respective buffers.

I purchased our camp in 2009 and have watched the water quality deteriorate since that time. The algae blooms have increased in frequency, duration and onset.

Prior to this purchase, I was a renter on St Albans Bay since the year 2000 and was very familiar with the water. As of summer 2015 and earlier years I would drive along lower Lake Street in Saint Albans and literally see the cows standing in the brook (every weekend), hundreds of feet from where it reaches St Albans Bay. This has been mind boggling to me, as we're much smarter than this. Regardless of our background we know feces and urine are horrible for our waterways and the impact these things have on people and the water itself. We've all seen footage of contaminated waters in third world countries. This is absolutely, no different. As of this Spring (2016) the above mentioned farm, now has fencing on the edge of this brook. This is somewhat helpful, but the quantity of cows, size of property and lack of buffer from this water way, leave little to no ground filtration. Additionally, my property has a corn field next to it. The nearest edge to the lake is 115' from the water. The perimeter of this corn field has a drainage ditch, which has culverts directed straight into the bay. The fertilizing and planting of this field is done right to the edges of these drainage ditches, with all fertilizer run off going directly into the lake. This doesn't even account for the drainage tiles which are placed under these fields and piped into these drainage ditches.

I'm a Vermonter, born and raised, with the utmost respect for farmers and farming. I have many friends and family members associated with the farming industry.

We cannot accept complaints regarding the cost implications of increasing buffers and changing the way we treat our waterways. ALL industries have rules and regulations to abide by, many of which do not have the implications on our world, nearly as great as our waterways.

My property draws water from this bay, as do many others... Kind of scary, right?

The attached photos were taken last weekend (June 26th) These images will be far worse in the weeks and months ahead.

This is an area where leniency cannot be accepted. We all deserve better!

Thank you for your attention to this matter!

Sincerely,
Tom juiffre

Sent from my iPhone









201 Ferrand Rd

Lake Street St Albans

Brook with Cows constantly around it



Closer view of brook



This is a Google Earth image of Saint Albans Bay. I believe you'll be rather Surprised at what you see, just by zooming in on various properties around the water. Many contributing factors to the poor water quality and the closeness of activity to those Waterways.



Patch, Ryan

From: Ray Daigle <rbdaigle@gmail.com>
Sent: Saturday, July 2, 2016 5:23 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Ray Daigle
147 Derby Farm Rd
Moretown, VT 05660
rbdaigle@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, July 1, 2016 5:48 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

jan blum
2160 leavenworth st apt 201
jan, CA 94133-
1janblum@sbcglobal.net
(415) 254-7453

Patch, Ryan

From: Greg Russ <gregruss3@gmail.com>
Sent: Friday, July 1, 2016 3:12 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Greg Russ
156 Columbia Rd
South Royalton, VT 05068
gregruss3@gmail.com

Patch, Ryan

From: Casper Crouse, IV <ccrouseiv@gmail.com>
Sent: Friday, July 1, 2016 2:37 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Casper Crouse
201 Peace St
Dorset, VT 05251
ccrouseiv@gmail.com

Patch, Ryan

From: syl stempel <sjs0610@comcast.net>
Sent: Friday, July 1, 2016 2:36 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

syl stempel
275 Mansion Hollow Rd
Waterbury Center, VT 05677
sjs0610@comcast.net

Patch, Ryan

From: Jesse Haller <sagejesse@gmail.com>
Sent: Friday, July 1, 2016 12:11 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

It has long been my hope that the Green Mountain State would value the resource they they are lucky enough to have. Cold Clean water is a commodity. One that every person should be privy to. We are so fortunate to have a bountiful supply in our state. But that continues to be at risk. It is clear and empirical that the water quality on a given watershed degrades after it has run through agricultural areas. Farms are Food, but that doesn't mean they they should be responsible for their practices. You can pick any, ANY, watershed in VT, and find a clear and blatant disregard for reasonable protection of the water adjacent. Along short tributaries to the Otter Creek in Central Vermont, I could point out violations at nearly every piece of agricultural land. A lack of riparian zones, flagrant spreading of manure prior to every rain storm, and several other issues are glaring. Further, a lack of enforcement of any reported violations continues to be overlooked. Our enforcement is flaccid at best. It's embarrassing.

Our watershed management should be far superior. We should be a leader, not the last one to the show. Summer recreation in Vermont is highly dependent on water. That's millions of dollars in income and jobs. If anything I know at least the money matters. Support clean water, support recreation, support an opportunity for future generations to enjoy a primary reason VT is such a great state.

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Jesse Haller
186 Halladay Rd
Middlebury, VT 05753

sagejesse@gmail.com

Patch, Ryan

From: Ian Sweet <madtv12@gmail.com>
Sent: Friday, July 1, 2016 9:47 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Ian Sweet

Sincerely,

Ian Sweet
PO Box 28
Waitsfield, VT 05673
madtv12@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, July 1, 2016 8:53 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Alison Parsons
P.O. Box 8
N. Ferrisburgh, VT 05473-
parsonsaj@comcast.net
(802) 425-3246

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, July 1, 2016 12:25 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kimberly Wiley
72 Chimney Hill Rd, Address 2
Rochester, NY 14612-
kwiley16@hotmail.com
5852274544

Patch, Ryan

From: Michael Caterer <mcaterer@gmail.com>
Sent: Thursday, June 30, 2016 2:06 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters. I'm a Trout Unlimited member and I'm writing to urge the agency to reconsider the draft RAPs for Act 64. I've spent countless hours fishing, paddling, and enjoying Vermont waterways. Unfortunately, I find myself preferring to spend time in the Adirondacks, New Hampshire or Maine due the effects of agricultural run-off on the Vermont waterways. Act 64 needs better RAPs in order to protect the precious natural resources that we all enjoy.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Thank you.

Sincerely,

Michael Caterer
54 Douglas Rd
Williston, VT 05495
mcaterer@gmail.com

Patch, Ryan

From: Tad Dippel <tdippel@cssu.org>
Sent: Thursday, June 30, 2016 1:35 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

X
258 Juniper Rdg
Shelburne, VT 05482
tdippel@cssu.org

Patch, Ryan

From: Liz Royer <lroyer@vtruralwater.org>
Sent: Thursday, June 30, 2016 9:34 AM
To: AGR - RAP
Subject: RAP comments from VRWA
Attachments: VRWA_RAPcomments3.pdf

Thank you for giving us the opportunity to provide comments on the Required Agricultural Practices Proposed Rule (5/13/16 version). On behalf of the Vermont Rural Water Association, our edits and suggestions are attached as a PDF document. Please contact me with any questions regarding these comments.

Liz Royer, Source Protection Specialist
Vermont Rural Water Association
(802) 660-4988 x336
lroyer@vtruralwater.org

June 28, 2016

Thank you for giving us the opportunity to provide comments on the Required Agricultural Practices Proposed Rule (5/13/16 version). On behalf of the Vermont Rural Water Association, we would like to submit the following edits and suggestions:

Section 2.39

- Consider adding definitions of public water supply and private water supply
- Water Supply means a drinking water source that intersects the water table and provides potable water through pipes or other conveyances and includes drilled wells, dug wells, driven point wells, and natural springs.

Section 7 (d)

- In order to be more consistent with other setbacks for animal waste material and since livestock pasturing could result in a significant amount of waste, consider increasing isolation distance to be consistent with Section 6.05 (g). Caveats can remain, but please consider the following:

(d) Livestock shall not be pastured within ~~50~~ 100 feet of a private water supply or 200 feet of a public water supply without the permission of the water supply owner.

Section 8 (c)(2)

- upon the request of or on behalf of a water supply owner or tenant;

Throughout the document, there are mentions of public water supplies, private water supplies, potable water supplies, and public and private drinking water wells. For consistency and clarity, we suggest only the defined terms of “public water supply” and “private water supply” be used. Water supplies can include drilled wells, dug wells, and springs so the use of the term “drinking water well” is misleading.

Please note the following sections:

6.05 (b)(3) the location of nearest surface water, mapped wetlands, mapped floodplains, wells water supplies, tile drains, surface inlets or open drains, property boundaries and ditches;

6.05 (g) Manure or other agricultural wastes shall not be mechanically applied within 100 feet of a private water supply or 200 feet of a public water supply. This prohibition shall not apply to private water supplies that have been established inconsistent with the Department of Environmental Conservation Water Supply Rules existing at the time that the well private water supply was established.

6.06 (c)(4) within 200 feet of a ~~potable~~ private or public water supply, ~~as that term is defined in 10 V.S.A. 1972(6);~~ (water supply is defined in section 2.39)

6.06 (d) Approvals for seasonal exemptions to the winter spreading ban shall establish requirements and conditions for the application of manure when frozen or snow-covered soils prevent effective incorporation at the time of application, require manure to be applied according to a nutrient management plan, establish the maximum amounts of manure that may be applied per acre during any one application, and establish required no application zones from surface water, wells water supplies, and other water conveyances. Seasonal exemptions to the winter spreading ban may be renewed annually upon request and submission of winter spreading records of application.

6.08 (b)(3) a minimum of 200 feet from public or private ~~drinking water wells~~ water supplies not owned by the farm;

7 (d) This prohibition shall not apply to private water supplies that have been established inconsistent with the Department of Environmental Conservation Water Supply Rules existing at the time that the well water supply was established.

8 (c)(1) selected by the Secretary where well water supply owners or tenants have volunteered or agreed to participate in the sampling program;

9 (e)2(D) 200 feet from public or private wells water supplies.

Please contact me with any questions regarding these comments.

Thank you,

Liz Royer, Source Protection Specialist
Vermont Rural Water Association
lroyer@vtruralwater .org
802-660-4988 x336

Patch, Ryan

From: Edward Dombroski <ed.dombroski@gmail.com>
Sent: Wednesday, June 29, 2016 4:54 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Edward Dombroski
31 Orr Rd
Jericho, VT 05465
ed.dombroski@gmail.com

Patch, Ryan

From: Timothy Davis <thetimdavis@gmavt.net>
Sent: Wednesday, June 29, 2016 10:02 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Timothy B Davis
602 Old Hollow Rd
North Ferrisburgh, VT 05473
thetimdavis@gmavt.net

Patch, Ryan

From: Aron Merrill <aronmerrill@gmail.com>
Sent: Wednesday, June 29, 2016 9:57 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Aron Merrill
20 Lansdowne St
Williston, VT 05495
aronmerrill@gmail.com

Patch, Ryan

From: Michael Kelley <user@votervoice.net>
Sent: Tuesday, June 28, 2016 5:10 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Michael Kelley
31 Cherry View Rd
Manchester Center, VT 05255
m99kelley@verizon.net

Patch, Ryan

From: Dan MacAndrews <dan.macandrews@gmail.com>
Sent: Tuesday, June 28, 2016 3:22 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Dan MacAndrews
5 Oneida Ave
Essex Junction, VT 05452
dan.macandrews@gmail.com

Patch, Ryan

From: Howard Trachtenberg <tberg@alum.mit.edu>
Sent: Tuesday, June 28, 2016 3:08 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Howard Trachtenberg
50 Webster Rd
Hartland, VT 05048
tberg@alum.mit.edu

Patch, Ryan

From: matt stedina <mstedina@vttroutbum.com>
Sent: Tuesday, June 28, 2016 2:11 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

matt stedina
71 ARNOLD MOUNTAIN RD
STOCKBRIDGE, VT 05772
mstedina@vttroutbum.com

Patch, Ryan

From: James Schweithelm <jschweithelm@gmail.com>
Sent: Tuesday, June 28, 2016 1:13 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Jim Schweithelm
35 Van Patten Pkwy
Burlington, VT 05408
jschweithelm@gmail.com

Patch, Ryan

From: Robert Kasvinsky <bob.kasvinsky@usa.net>
Sent: Tuesday, June 28, 2016 12:46 PM
To: AGR - RAP
Subject: Forty years ago NERBC in its Lake Champlain Study pointed out the need to control phosphorus and nitrogen!

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

This is not new news!

More than forty years ago, the New England River Basins Commission (a joint federal-state Water Resources organization) with membership AND PARTICIPATION IN THAT REPORT that included both Vermont and New York state, concluded in the Lake Champlain Level B Study that phosphorus and nitrogen were negatively impacting the lake.

Vermont has not paid much attention to those findings!

I have no idea what you are thinking; it is time to face reality and literally get off the pot!

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to finally do the right thing and implement strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Robert Kasvinsky
660 Ring Rd
Waterbury Center, VT 05677
bob.kasvinsky@usa.net

Patch, Ryan

From: Erik Schoeffel <minutmanlabs@hotmail.com>
Sent: Tuesday, June 28, 2016 12:20 PM
To: AGR - RAP
Subject: strong specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

East Calais VT
12 Back St
East Calais, VT 05650
minutmanlabs@hotmail.com

Patch, Ryan

From: Evan Jackson <jackson24@gmail.com>
Sent: Tuesday, June 28, 2016 11:58 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Evan Jackson
40 John St
Shelburne, VT 05482
jackson24@gmail.com

Patch, Ryan

From: Robert Collier <user@votervoice.net>
Sent: Sunday, June 26, 2016 9:49 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Robert Collier
97 Bacon Dr
Shelburne, VT 05482
rcca17@yahoo.com

Patch, Ryan

From: Claire Ayer <CAyer@leg.state.vt.us>
Sent: Sunday, June 26, 2016 4:42 PM
To: barbara felitti; AGR - RAP
Cc: Christopher Bray; Tom Stevens; Rebecca Ellis
Subject: RE: Comment on RAP

Thank you Barbara. I agree. Claire

*Senator Claire Ayer
Addison County, Huntington, Buels Gore
Assistant Majority Leader
Chair, Senate Health and Welfare Committee*

*802-322-5616, Statehouse
802-759-2748, Home*

cayer@leg.state.vt.us

From: barbara felitti [mailto:bfvermont@yahoo.com]
Sent: Saturday, June 25, 2016 9:03 PM
To: AGR.RAP@vermont.gov
Cc: Claire Ayer ; Christopher Bray ; Tom Stevens ; Rebecca Ellis
Subject: Comment on RAP

I am writing to support the proposed Required Agricultural Practices proposed rules.

Since 1991 when I moved to Vermont, there has been talk about pollution problems in Lake Champlain. There has also been information, best practice and grant programs to help farmers. And these programs did not start in 1991. So farmers have had **decades** to improve their agricultural management practices.

As I ride along the Main Road in Huntington and Richmond I see examples of excellent husbandry - the Moulthrop Farm in Richmond, with large grass buffers between the cow fence and the streams. And I also see corn fields where the field is plowed as close to the stream as possible, leaving only several feet - not enough for an effective buffer.

There has been a great deal of time, information, funding and opportunities provided to help farmers improve their agricultural management practices. Farmers choose whether or not to comply, and Lake Champlain suffers when they don't. The time has come to use enforcement as a mechanism for those farmers who will not change their practices. It is time to prioritize the health of the lake and the economic vitality it supports.

Sincerely,
Barbara Felitti
Huntington, VT

Patch, Ryan

From: barbara felitti <bfvermont@yahoo.com>
Sent: Saturday, June 25, 2016 9:03 PM
To: AGR - RAP
Cc: Ayer, Claire; Christopher Bray; Tom Stevens; Rebecca Ellis
Subject: Comment on RAP

I am writing to support the proposed Required Agricultural Practices proposed rules.

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As I ride along the Main Road in Huntington and Richmond I see examples of excellent husbandry - the Moulthrop Farm in Richmond, with large grass buffers between the cow fence and the streams. And I also see corn fields where the field is plowed as close to the stream as possible, leaving only several feet - not enough for an effective buffer.

There has been a great deal of time, information, funding and opportunities provided to help farmers improve their agricultural management practices. Farmers choose whether or not to comply, and Lake Champlain suffers when they don't. The time has come to use enforcement as a mechanism for those farmers who will not change their practices. It is time to prioritize the health of the lake and the economic vitality it supports.

Sincerely,
Barbara Felitti
Huntington, VT

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 24, 2016 9:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Alice Berliner
172 Church St
Alice, VT 05055-
alb172cs@gmail.com
(802) 649-7286

Patch, Ryan

From: Patch, Ryan
Sent: Friday, June 24, 2016 11:45 AM
To: AGR - RAP
Subject: FW: RAP Public Comment

From: Raymond, Faith
Sent: Friday, June 24, 2016 11:26 AM
To: Patch, Ryan ; Ross, Chuck ; Smith, Terry
Subject: FW: RAP Public Comment

Ryan
I am forwarding this to you. He was not able to submit through our website. I did check it and sent a test... seems to be working fine.
Thanks
Faith

From: James H. Maroney, Jr. [<mailto:maroney.james@gmail.com>]
Sent: Friday, June 24, 2016 11:24 AM
To: Raymond, Faith <Faith.Raymond@vermont.gov>
Subject: Fwd: RAP Public Comment

Begin forwarded message:

From: "James H. Maroney, Jr." <maroney.james@gmail.com>
Subject: RAP Public Comment
Date: June 24, 2016 at 11:22:34 AM EDT
To: Chuck Ross <chuck.ross@state.vt.us>
Cc: Peter Burmeister <peter@burellifarm.com>, choosewiselyvt@gmail.com, lyn.desmarais@gmail.com, Brian Kemp <briankemp@shoreham.net>, Andrew Stein <andrew.stein@vermont.gov>, Beth Pearce <beth.pearce@state.vt.us>, Doug Hoffer <doug.hoffer@state.vt.us>, Lisa McCrory <lmccrory@hughes.net>, Rebekah Weber <rebekah.s.weber@gmail.com>, Brian Campion <bcampion@leg.state.vt.us>, Claire Ayer <cayer@leg.state.vt.us>, Tim Ashe <tashe@leg.state.vt.us>, Jane Kitchel <jane45@hotmail.com>, Julie Moore <jmoore@stone-env.com>, Christopher Bray <cbray@sover.net>, dmf633@gmail.com

Dear Secretary Ross:

Following is a written comment on the proposed Required Agricultural Practices Rules (RAPs), which I made orally at your meeting yesterday at the Vermont Law School in South Royalton.

First, 60% of the problem in the lake is attributable to poorly designed or antiquated municipal waste water treatment plants and storm water run off and 40% to “agriculture.” The state has estimated that the projected cost of implementing Act 64 will come to \$1.4B or \$70M year, which means that the population of Vermont or 624,000 people will be obligated to shoulder 60% of the cost or \$42M/year for twenty years while farmers, who number somewhere between 700 and 7,000, will be obligated to shoulder 40% of the cost or \$28M/year for twenty years.

There are two problems with this scenario the first being that the legislature has no intention of raising any part of \$42M/year through the imposition of new taxes or fees and the second, the farmers have no capacity whatsoever for raising \$28M/year. The oft-stated directive from the secretary that Vermonters must be “all in” on the solution to this problem is an empty shell.

There is, however, a far larger problem with the RAPs. The problem in the lake is only a manifestation of a problem on the land, which is not attributable to a few rule breakers. It is the application of 40,000 tons of artificial NPK fertilizer, which brings along with it about 5% or 2,000 tons of phosphorus. It is the importation of about 200,000 tons of high energy feed supplements, which bring along with it about 1% or another 2,000 tons of phosphorus. We are only seeking to reduce phosphorus loading by a mere 350 tons 2/3 of it from “agriculture.” Why are these two practices exempt?

The secretary begins almost every meeting he chairs on this subject with an admonishment to the audience to realize that the dairy industry is vital to the State of Vermont, that it brings in some \$2.2B in economic activity every year, employs many thousands of people, etc. The secretary also warns us that while the problem in the lake is serious and must be addressed, the remedy must balance the interests of the dairy industry with the attainment of our water quality standards. This is why the RAPS make no mention of either artificial fertilizer or imported feed supplements nor make any attempt to regulate them. From this we can rightly conclude that the RAPs were not written to clean up the lake; they were written to shield the conventional dairy industry from the kind of regulations that would.

These facts and many others are presented in a colorful brochure issued by the Agency of Agriculture Food & Markets entitled *Agriculture in Vermont: 2016 Highlights*. But the brochure leaves out the most important fact about Vermont agriculture and its largest sector conventional dairy: the price of milk is hovering at \$14-15/cwt which is \$5 below the median Vermont dairy farmer’s cost of production. The median farmer who milks 100 cows will lose this year alone about \$100,000, and the industry, which the agency assure us provides us with so many collateral benefits will lose about \$100,000,000. Vermont agriculture is not profitable and has no prospects for becoming so, which is why it can pay virtually none of the cost of cleaning up the lake. This means that the taxpayers will pick up agriculture’s cost of cleaning up the lake, or \$28M/year, which will be yet another subsidy added to the \$60/80M/year the taxpayers already pay to prop up this industry.

I was greatly heartened at the number of remarks submitted at yesterday’s hearing, prominent among them Peter Burmeister Lisa McCrory and Michael Bald, that to fix the problem in the lake the state must address what farmers are doing to the soil and that the avenue to healthier soil and water is regenerative agriculture. I agree entirely.

The fundamental economic premise of conventional farming, which is the prevailing modality in Vermont, is to lower the costs of soil fertility, weed control and labor by exchanging them for cheap toxic chemicals. The promise of such benefits was extremely attractive to farmers and the technology works as advertised. But it ignores the side effects, which are over production,

leading to low farm prices, leading to farm attrition and rural economic decay, to offset which the conventional farmer takes on more debt with which to buy more land, more equipment and more cows, which leads to the application of more chemicals to more land in an effort to boost production, which means more atmospheric and lake pollution. The evidence that these are the results of conventional farming is plain and undeniable and yet the secretary insists upon devoting all his resources and copious new taxes to the preservation of this antiquated modality which outlived its usefulness if not in the 1970s then in the early 1960s, or even shortly after it was introduced. Regenerative agriculture, by contrast, requires its practitioners to respect the land and the water for which, in exchange, it offers a greater share of the retail value of their product. Think of the collateral effects of converting the entire agricultural sector to organic: lower production, yes, but higher net incomes, higher land values and lower pollution in Vermont's air and water. Aren't these the objectives you and all of us are trying to obtain? Aren't these the fundamental precepts of the Vermont brand?

In a word, Mr. Secretary, the RAPs do not need a little tweak here or a little alteration there; they are wrong at their very first step on this journey and I implore you to scrap them entirely and start again. Remember too that clean water is an absolute to which all persons and all industries including conventional dairy must adjust, not the other way around.

James H. Maroney, Jr.
1033 Bullock Road
Leicester, VT 05733
Cell: (802) 236-7431

James H. Maroney, Jr.
1033 Bullock Road
Leicester, VT 05733
Cell: (802) 236-7431

Patch, Ryan

From: Michael Storace <mstorace@trorc.org>
Sent: Friday, June 24, 2016 9:46 AM
To: AGR - RAP
Cc: Peter G. Gregory
Subject: RAP Public Comment
Attachments: RAP_Comments_TRORC.pdf

Dear Vermont Agency of Agriculture, Food, and Markets,

Please consider the attached comments submitted by the Two Rivers-Ottawaquechee Regional Commission regarding the proposed Required Agricultural Practices.

Sincerely,
Michael Storace



Regional Planner | **Two Rivers-Ottawaquechee Regional Commission**
128 King Farm Road | Woodstock, Vermont 05091
(802) 457-3188 - phone | (802) 457-4728 - fax
mstorace@trorc.org | trorc.org

Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620-2901

Re: Proposed Required Agricultural Practices

June 24, 2016,

Dear Agency of Agriculture, Food, and Markets,

Thank you for your public outreach efforts on this proposed rule. The Two Rivers-Ottawaquechee Regional Commission offers the following comments based on the policy direction contained in our adopted Regional Plan.

According to data that identifies phosphorus pollution sources, agricultural nonpoint source runoff accounts for at least 40% of Lake Champlain pollution concerns, consisting of the largest sector. In order to achieve recognizable and significant improvements in water quality, both in Lake Champlain and statewide, the nonpoint sources from agriculture must be responsibly addressed with improved restrictions on the way farms treat the livestock and land that they own and operate adjacent to surface water resources of the State of Vermont. Act 64 required the establishment of the Required Agricultural Practices.

Vegetated riparian buffers provide a source of nutrient retention and uptake to prevent the untreated runoff of phosphorous, nitrogen, and sediment into surface waterways, and they simultaneously play an important role in stabilizing stream banks from erosion, especially if forested. However, these functions depend upon adequate width. The proposed Required Agricultural Practices (RAPs) specify “a vegetative buffer zone of perennial vegetation” and required width of 25 feet. An undisturbed buffer width of 50 feet would be more in keeping with standards set by the Agency of Natural Resources that are applied in Act 250, and ideally this would entail at least 35 feet of forested area for improved bank stability, stream shading, and nutrient uptake. Perhaps some variance process could be provided to allow for a smaller riparian buffer on lands that slope away from streams or very small streams, akin to the ditch standard.

Several other inconsistencies exist within the buffer requirements in the Required Agricultural Practices. The RAPs, as written, allow the harvesting and maintenance of the buffer as a crop (presumably hay) by farmers and allow farms to use fertilizer or compost in the buffer areas. If the buffer is being harvested perennially then it cannot be forested, and if fertilizer is being applied within it, then it is unclear how it can sufficiently prevent nutrients from entering surface waters. Riparian buffer areas **must be** excluded from all fertilizer application. Harvesting of perennial crops in the buffer that would include selective wood harvests, shrub crops, etc. seem appropriate, and areas outside of the 35 foot buffer could be hay.

The RAPs must have stronger language and restrictions for the exclusion of livestock from surface waters and riparian buffer areas. The RAPs currently allow the grazing of livestock in buffer zones, which effectively allows the defecation from livestock in these riparian buffers (though spreading of manure by farmers is not allowed). For buffers to remain sufficiently vegetated and to have stable banks, livestock should not be allowed on banks except at designated crossings, and grazing must not be allowed except as a control method for invasive species. The buffers are intended to act as a barrier to protect surface waters from the detrimental effects of phosphorous and nitrogen runoff, but cannot function this way if such farm activities are permitted within their limits.

128 King Farm Rd.
Woodstock, VT 05091
802-457-3188
trorc.org

William B. Emmons, III, Chair
Peter G. Gregory, AICP, Executive Director

The RAPs do not contain specific language as to the methods by which

farmers must exclude their livestock from surface waters. The RAPS need to require fencing or other control of livestock to prevent indiscriminate intrusion into perennial waterways and streambanks. As the RAPs are currently written, livestock are only excluded from waters near unstable banks, evident erosion, or specific areas that have potential threat to water quality. However, the principal concept behind nonpoint source pollution is that its diffuse nature makes it difficult to identify singular pollution sources. Livestock access should be presumed to be a threat to water quality, and should not require the Secretary to determine this. The RAPs must be written to instead allow the Secretary of Agency of Agriculture, Food, and Markets to make specific exceptions.

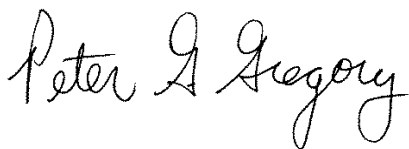
The RAP language pertaining to soil health management and cover cropping should be strengthened so that §6.04(c) reads the “croplands shall be managed to prevent minimize gully erosion . . .” Cover crops are required in croplands that are “subject to frequent flooding from adjacent surface waters as described in the USDA Soil Survey Flooding Frequency Class.” This language should be extended to mapped floodways as these usually have the greatest erosive force. Cover crops are an important best management practice to retain nutrient and topsoil on croplands

TRORC supports the restrictions of manure stacking within 200 feet from the top of bank of surface water, and 100 feet from a ditch or conveyance to surface water.

Agriculture, when done right, is an excellent use of floodplains. Agricultural structures are a needed part of farms. Though we recognize the threat from flooding, due to the nature of most agricultural buildings they do not suffer water damages like insulated structures do, and if constructed appropriately can be made to let floodwaters flow through them. While we support exclusion of structures from flood areas and River Corridors in general, we do not think that local flood bylaws that prohibit *all structures* in these areas should set the standards for compliance. Rather, we suggest that the outside of floodways, the rule specifically allow pole barns and open ended buildings that are anchored and aligned with stream flows to be permitted.

Lastly, we suggest that Section 9(d) should provide that notice be given to the Administrative Officer in towns with flood regulations (whether freestanding or in a full zoning bylaw), and to the Town Clerk when so such regulations are present.

Sincerely,

A handwritten signature in black ink that reads "Peter G. Gregory". The signature is written in a cursive, flowing style.

Peter G. Gregory, AICP
Executive Director

Patch, Ryan

From: Gwynn Zakov <gzakov@vlct.org>
Sent: Thursday, June 23, 2016 3:03 PM
To: AGR - RAP
Subject: RAP Public Comment
Attachments: RAP Comment Letter to Secretary.docx

Dear Secretary Ross:

Please accept public comments from the VLCT on the Draft Required Agricultural Practices (RAPs).

Regards,

Gwynn Zakov, Esq.

Municipal Policy Advocate

Vermont League of Cities and Towns

(802) 229-9111 x 1945



*Serving and
Strengthening
Vermont Local
Governments*

June 23, 2016

Chuck Ross, Secretary
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620

Dear Secretary Ross:

I am writing on behalf of the 246 member cities and towns of the Vermont League of Cities and Towns to comment on the proposed Required Agricultural Practices Regulations (RAPs) for the Agricultural Non-point Source Pollution Control Program.

State agencies, departments, and local governments will be working diligently to help clean up the waters of Vermont as we implement the mandates specified in Act 64. The major component of what municipalities are doing to address Act 64 mandates is stormwater management. All municipalities will have to comply with the new Municipal Roads General Permit obligations that are intended to achieve significant reduction in stormwater-related erosion from municipal roads, both paved and unpaved. Municipalities will implement a customized, multi-year plan to stabilize their road drainage system. The plan will include bringing road drainage systems up to yet to be determined standards, and additional corrective measures to reduce erosion as necessary to meet the Lake Champlain TMDL or other water quality restoration efforts. Given the close proximity between farm lands and municipal right-of-ways in the state, it is vital that the Agency of Agriculture, Food, and Markets take this close nexus into consideration as the RAPs are drafted.

A great concern we have with the proposed RAPs is the lack of consideration for the impact pollution created on farms will have on municipal right-of-ways in municipalities across the state. Municipal right-of-ways are oftentimes adjacent to farms and the associated farm practices that take place on the farms. The drainage and ditching that is allowed to take place on farms oftentimes directly or indirectly flows or drains into municipal drains, culverts, ditches, swales, channels, and the like. The definition of “waters of the State” and “surface waters” do not clearly include intermittent waters such as municipal ditches. However, once stormwater runoff originating on a farm comes within a municipality’s right-of-way, the municipality becomes fully responsible for the management of the pollutants therein. We are concerned that the proposed RAPs do not have adequate mechanisms to prevent, as much as possible, the direct and indirect channeling of pollutants into areas of municipal jurisdiction.

VLCT continues to have concerns with minimum setback and buffer distances provided in several areas of the RAPs. For example, in Sec. 6.07, the buffer zones for manure and agricultural waste are insufficient and inconsistent with what the Agency of Natural Resources recommends. A 25’ stream buffer, and a 10’ ditch buffer are much too small and woefully inadequate. We strongly encourage VAAFAM to increase the distances and align buffer distances to be consistent with what the Agency of Natural resources has set for riparian buffers.

VLCT also has concerns with access to waters of the State by livestock. There is no definition of or limitation on the number of livestock “defined crossings” or “watering areas” in Sec. 7. Presumably livestock crossings and watering areas could be several, in large areas, and livestock access could be practically unrestricted. It is also unclear why livestock pasturing is limited within 50’ of private water supplies, but a similar restriction is not made for public water supplies.

Sponsor of:

VLCT Employment
Resource and Benefits
Trust, Inc.

VLCT Municipal
Assistance Center

VLCT Property and
Casualty Intermunicipal
Fund, Inc.

We have general concerns over the wide discretion the Secretary of VAAF and the Agency of Natural Resources (ANR) are given with regard to certain exemptions and variances. It is understandable that there needs to be flexibility for the agencies and farms to address those concerns that fall outside this “one size fits all” model, however there needs to be assurance that when variances or exemptions are approved, the RAPs will be enforced as strictly and consistently as possible. For example, pursuant to Sec. 6.07, already inadequate buffer zones can be further decreased by the Secretary. Additionally, in Sec. 9, there is a continuation of allowing zoning setbacks to be ignored, despite the possibility for those structures to one day become non-conforming, non-farm structures. The criteria that the Secretary needs to consider are also discretionary, and therefore much too liberal and unrestricted. This is particularly concerning when considered along the recent legislative change in Act 105 which allows siting of manure, nutrient, or fertilizer facilities sited even closer to water sources as defined in the RAPs, and allowing farm structures to be sited within the FEMA floodway.

The groundwater investigations that are triggered in accordance with Sec. 8 should be investigations that are led by the Secretary of ANR rather than the Secretary of VAAF. Certain complaints addressed in Sec. 8 may originate off-premise of a farm or affect a water source off-premise, and therefore the proper Agency with jurisdiction should be ANR. Therefore once a complaint is received pursuant to this section, the Secretary of ANR should conduct the investigation, provide the written notifications, identify and remediate sources of drinking water and groundwater contamination and address waste storage facilities that violate the state’s Groundwater Quality Standards.

Thank you for the opportunity to comment.

Sincerely,

Gwynn Zakov
Municipal Policy Advocate

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 23, 2016 2:19 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Katherine Busby
410 Hinton Hill Rd
Orleans, VT 05860-
busby.katherine@yahoo.com
8025253625

Patch, Ryan

From: Bob Groff <rw_groff@hotmail.com>
Sent: Thursday, June 23, 2016 10:25 AM
To: AGR - RAP
Subject: Act 64

Hello,

As someone who enjoys the wonderful resources of our Vermont, there are some serious issues I have personally experienced that have put those resources at risk. Every year Lake Champlain becomes murkier, less appealing and, at ever increasing times, unhealthy to access. Many municipalities obtain their drinking water from Lake Champlain and many places rely on clean, healthy water access for their success. That is why I am writing to request you implement stronger rules for Act 64. As you know, Lake Champlain and the other waterways around our state have been abused for many decades. Lake Champlain and the Vermont waterways are part of what makes Vermont so iconic and if we do not take care of our resources we will lose a major part of this great state. It will take many years to reverse the damage we have done and we must start with sensible and strong rules. Not allowing livestock direct access to waterways should be a no-brainer. Livestock with direct access will deposit manure directly into the waterways negating clean up efforts. Livestock must not have direct access to waterways. A second point is that a buffer between fields and waterways should be just that, a buffer. It cannot be called a buffer if it is not used as one. To be a real, functional buffer grazing, fertilizing and harvesting must not be allowed. A good buffer will go a long way to help to start undoing the damage we have done to our state.

We have a chance to show we are responsible in the care of the resources of Vermont. If we do not take that responsibility seriously we will not only further damage our ecosystem that we all, including the flora and fauna, rely on but we will lose control of our own future. By not acting responsibly we will forfeit our control to the Federal Government, and rightfully so. Let's show we have what it take to step up to the job of caring for our resources and provide those coming after us with clean, healthy and attractive resources. Please establish strong and serious rules in Act 64.

Thank you,

Robert W Groff
1222 Arnold Bay Road
Panton, VT 05491
rw_groff@hotmail.com
802-475-3463

Sent from [Mail](#) for Windows 10

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Nicholas Sherman <e-info@clf.org>
Sent: Thursday, June 23, 2016 12:05 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 22, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mr. Nicholas Sherman
682 Riverside Ave
Burlington, VT 05401-3624
nicholaspsherman@yahoo.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 22, 2016 3:21 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

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Thank you for your support of clean water.

Sincerely,

Rachel Sanborn
251 Dupont Road
Lunenburg, VT 05906-
vtmorningstar@live.com
(802) 477-3871

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 22, 2016 12:10 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Dianne Laplante
82 Taft Brook Rd
Westfield, VT 05874-
laplante@vtlink.net
(802) 744-2335

Patch, Ryan

From: Scott Magnan <scctmgnn@gmail.com>
Sent: Wednesday, June 22, 2016 11:24 AM
To: AGR - RAP
Subject: Section 10(i)

To whom it may concern,

In response to section 10(i) Custom Applicator training Certification reading If a Custom applicator has a request to apply manure or agricultural wastes on a farm that does not have a nutrient management plan as required, the applicator must notify the Agency and request the ability to proceed with the land application. The Secretary may require application restrictions.

In understanding there are limitations to how fast small farms will be able to comply fully with the proposed RAP's, that there are limitations in the Dept of Agriculture's department to identify all of these farms, and also limited resources to make Nutrient Management plans. I propose that Custom operators who have been through required training be able to make Judgment calls on these farms, and on fields not identified on current plans. Decisions would be based on the information that a state official would use in his/her evaluation of the site. I advise they provide those clients with documented application rates applied to those fields. I feel the custom operator should keep those records on file in case a complaint should be filed. The curriculum in training would give the custom operator enough understanding of crop uptake potential, and be able to identify slope and runoff concerns to apply rates that would not fall in a range above the average of fields with similar crops, spreading history and terrain. This would allow the proper handling of these nutrients, in a timely manner with no delay. This flexibility gives the custom operator the means to be proactive in working with the farmer, and handle the waste in a responsible manner. Training could also address how to provide the farmer with the resources his/her business would need to proceed with the process of establishing a NMP. This rule could be postponed until more small farms have plans in place, potentially with a target date of April 2019.

Sincerely,

Scott Magnan

Patch, Ryan

From: Alfred Cumming <acumming744@gmail.com>
Sent: Wednesday, June 22, 2016 9:51 AM
To: AGR - RAP
Subject: Strengthen Act 64 RAPS

I am writing to express serious concerns that draft Act 64 regulations, in certain critical areas, are excessively weak and ultimately inadequate if Vermont is to meet recently-issued EPA standards regarding phosphorous runoff.

Two areas reflect these fundamentally weaknesses. Farmers will continue to be permitted to give their cows direct access to our waterways. Second, so-called buffers, already entirely too small, will be further compromised by allowing farmers to continue to allow farmers to apply fertilizer, graze, and harvest on buffers.

It is long past time to directly confront the antiquarian and environmentally-destructive farm practices that continue to pollute our economically-vital lakes and streams. After the progress made in approving Act 64, it is unbelievably frustrating to see these arguably modest efforts further undermined by regulations that would continue to permit farming practices that should have ended years ago.

Vermont confronts a fundamental decision: continue to abet farming practices that many other states long-ago outlawed, or support an effective water clean-up that will start, finally, to reverse the results of these damaging practices.

Alfred Cumming
Swanton, VT

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 22, 2016 9:21 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

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Thank you for your support of clean water.

Sincerely,

George Plumb
305 Plumb Rd
Washington, VT 05675-
plumb.george@gmail.com
(802) 883-2313

Patch, Ryan

From: Laurie Sedlmayr <lauries112@gmail.com>
Sent: Wednesday, June 22, 2016 8:48 AM
To: AGR - RAP
Cc: Laurie Sedlmayr
Subject: Concerns with RAPs

Dear Madam/Sir,

I write to express my concerns about the proposed new RAPS and what I see as serious inadequacies. I hope you will consider the issues I am raising and substantively address them in the final RAPs.

In order to meet the EPA's new TMDLs all aspects of the Vermont community will need to contribute. Because we live on Lake Champlain we recently put in a highly efficient, environmentally sound septic system. We believe we all need to contribute to improving lake quality.

I recognize that the Agriculture Department is charged with looking out for the farmer's interest, but there is also a greater requirement to take care of our lake (if not for environmental reasons, then certainly for economic reasons!)

Very specifically I am concerned that the provisions of the RAPs that would continue to allow cattle into riparian areas and buffers largely in name only need to be substantially modified.

Riparian Areas-- Keeping cows out of streams, rivers, and other waterways should be a minimum standard. The science is clear that not only does this practice contribute to erosion and degradation, the very existence of cows in riparian areas (doing what we all do) contributes directly to the pollution levels in our lakes and streams. Please make modifications to require the active exclusion of cows from all riparian areas.

Buffer Areas-- We know that buffers can make a significant difference. Undisturbed grasses, forbs, shrubs and trees can make a substantial difference in terms of filtering and preventing phosphorus from adding to the loads on our waterways. Allowing the fertilization, grazing and harvesting of these areas turns the buffer proposal into a sham. Buffers need to be real buffers. The science is there, let's please follow best science and make modifications to the RAPs to establish significant buffers.

Thank you for your kind attention my concerns. I look forward to seeing improved RAPs in the near future.

Laurie Sedlmayr
220 Maquam Shore Road
Swanton, VT 05488
LAURIES112@gmail.com

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of LAURIE SMITH <e-info@clf.org>
Sent: Wednesday, June 22, 2016 8:26 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 22, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Ms. LAURIE SMITH
25 McCabe Cir
Shelburne, VT 05482-4423
laurie05661@gmail.com

Patch, Ryan

From: Marvin Elliott <marvelliott61@gmail.com>
Sent: Wednesday, June 22, 2016 7:01 AM
To: AGR - RAP
Subject: We need clean water

Dear Agency of Agriculture of Agriculture,

I am an active member of the Audubon Society and Trout Unlimited. I also grew up on a farm and recognize the challenges of profitable agriculture. please hear me. We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Marvin Elliott
62 Heather Ln
Rutland, VT 05701
marvelliott61@gmail.com

Patch, Ryan

From: David Capen <david.capen@uvm.edu>
Sent: Tuesday, June 21, 2016 10:46 PM
To: AGR - RAP
Subject: Stron RAPs for clean water

Dear Agency of Agriculture of Agriculture,

I've lived on the shore of Lake Champlain for 20 years and regularly witness irresponsible pollution of the lake by farmers, big and small, who don't seem to care if their fields erode into the lake or if the waste from their livestock runs into the lake. I also frequent rivers in the state and often witness poor agricultural practices along river and stream banks.

We need strong agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms can pollute lakes, rivers, and streams. .

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

David E. Capen
12 Adams Landing Rd
Grand Isle, VT 05458
david.capen@uvm.edu

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 10:25 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Nancy Burroughs
1444 Prickly Mountain Rd
Warren, VT 05674-
clayneb@yahoo.com
8024962201

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 3:50 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Susan Detato
564 Evansville Rd
Brownington, VT 05860-
susandetato@comcast.net
(802) 999-9999

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 1:23 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Christopher Wilson
8 Pierce Road
Christopher, VT 05150-
c_wilson@stride-r-web.com
(000) 000-0000

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 12:31 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Tom Warhol
158 Macintosh Hill Rd
Randolph, VT 05060-
warholtom@gmail.com
(802) 234-5570

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 11:41 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Steven K McKendall Sr
1203 Marlboro Road Apt Unit 9
Brattleboro, VT 05301-
steve.mckendall@gmail.com
(802) 595-8206

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Violet Gautesen Krukonis <e-info@clf.org>
Sent: Tuesday, June 21, 2016 10:22 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 21, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mrs. Violet Gautesen Krukonis
6 Rosewood Ln
Essex Junction, VT 05452-3780
vbkrukonis@hotmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 10:09 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Chris Paterson
PO Box 409
Taftsville, VT 05073-
c.paterson@gmx.net
802 269 069

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Kristine Winnicki <e-info@clf.org>
Sent: Tuesday, June 21, 2016 8:21 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 21, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

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Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mrs. Kristine Winnicki
PO Box 28
257 Goat Farm Rd
Chester, VT 05143-0028
kwinnicki@hotmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 8:07 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Matthew Wood
112 Willow Cir
White River Junction, VT 05001-
mjlw511@yahoo.com
(802) 356-6592

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 7:48 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Callie Willis
126 Old Orchard Way
Warren, VT 05674-
cwillis@gmavt.net
(802) 496-4119

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 7:29 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Akankha Perkins
36 Pleasant St Unit 6B
Woodstock, VT 05091-
akankhap@gmail.com
(802) 457-1273

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 7:06 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

James Leopold
227 Three Islands Rd
Colchester, VT 05446-
jamie@ableadvertising.com
(802) 888-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 6:18 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures. but, it doesn't go far enough. Cows and fertilizer don't belong in our streams - this practice has been going on too long, and needs to be changed

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Elizabeth Peabody
635 Academy Rd
Thetford Center, VT 05075-
bill.betsy.peabody@gmail.com
(802) 785-2989

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 5:06 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

William Forsythe
4523 Kirby Mountain Rd
Concord, VT 05824-
wfors1@mac.com
(802) 695-1335

Patch, Ryan

From: Evan Jackson <jackson24@gmail.com>
Sent: Tuesday, June 21, 2016 3:19 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Evan Jackson
40 John St
Shelburne, VT 05482
jackson24@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 21, 2016 12:16 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Jesse LoVasco
32 Main St. #107
Montpelier, VT 05602-
contact@jesselovasco.com
(802) 229-1453

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 11:53 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Pamela Wilcox
185 Meeting House Ln
Brattleboro, VT 05301-
scentastics@att.net
(802) 490-2268

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 10:29 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Marilyn Sowles
1528 Porters Point Road
Colchester, VT 05446-
marilysowles@gmail.com
(802) 864-6013

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 10:15 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Donald Morrison
4502 Brownsville Hartland Road,
West Windsor, VT 05089-
vox4pax@comcast.net
8026749396

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 10:15 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Donald Morrison
4502 Brownsville Hartland Road,
West Windsor, VT 05089-
vox4pax@comcast.net
8026749396

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 10:12 PM
To: AGR - RAP
Subject: It is time to set and enforce strong Required Agricultural Practices

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Jonathan Dowds
34 Latham Ct #2
Burlington, VT 05401-
jonathan.dowds@gmail.com
6176456163

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 9:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Martha Douglass
30 Majestic Dr
Waterbury, VT 05676-
blackriver0723@gmail.com
(802) 244-6472

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 9:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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blackriver0723@gmail.com
(802) 244-6472

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Thank you for your support of clean water.

Sincerely,

Lindsay Pusateri
2000 Tremont Ct.
Libertyville, IL 60048-
115ap@yahoo.com
8473735467

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 9:39 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Melissa Wales
PO Box 172
Saxtons River, VT 05154-
zeta369@gmail.com
(413) 222-9554

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 8:43 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Kristine Winnicki
PO Box 28
Chester, VT 05143-
kwinnicki@hotmail.com
(802) 875-3115

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:46 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Helen Egan
743 Meadowbrook Rd
Brattleboro, VT 05301-
egan743@comcast.net
(802) 490-2096

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:41 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Michael Kolaowski
556 Perini rd
Newbury, VT 05051-
mjk0186@yahoo.com
(802) 866-5950

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:34 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kate Bullock
1093 Pine Banks Rd
Putney, VT 05346-
kpbullock@comcast.net
(802) 722-4838

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Phyllis Erwin
1012 Broad Brook Rd
Guilford, - 05301-
perwin1943@gmail.com
(802) 257-8138

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:24 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Marcia Smith
PO Box 133
East Hardwick, VT 05836-
mssmith079@gmail.com
(802) 533-7722

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:20 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Mary Scollins
214 Meadowood Dr
South Burlington, VT 05403-
mscollins2@myfairpoint.net
(802) 658-2330

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 7:16 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Michael Yantachka
393 Natures Way
Charlotte, VT 05445-
miyantach@hotmail.com
(802) 233-5238

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 6:42 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

gunnar sievert
280 s. pasture rd.
shelburne, VT 05482-
gunnar@sievertfamily.com
1111111111

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 5:32 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

S Handwerker
103 S Beach Rd
Steven, VT 05403-
peacewk@peacewk.org
(561) 371-0412

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 5:16 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Karl Novak
95 Red Truck Ln Hinesburg VT5461
Hinesburg, VT 05461-
kavon95@gmavt.net
(802) 482-6656

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 5:03 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Ann Metcalf
140 Upper Sunny Brook Rd
Middlesex, VT 05602-
a_metcalf4@yahoo.com
(802) 458-7345

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 20, 2016 3:21 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Geoffrey Giampa
60 Brickyard Rd
Essex Junction, VT 05452-
phez85@yahoo.com
(610) 585-7094

Patch, Ryan

From: Michael Kelley <user@votervoice.net>
Sent: Monday, June 20, 2016 10:14 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Michael Kelley Manchester Center
31 Cherry View Rd
Manchester Center, VT 05255
m99kelley@verizon.net

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 19, 2016 4:11 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Diana and Charles Bain
2657 Hemenway Rd
Bridport, VT 05734-
cdbain@gmavt.net
(000) 000-0000

Patch, Ryan

From: Chris Lynch <cjlynch14@gmail.com>
Sent: Sunday, June 19, 2016 1:01 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Chris Lynch
150 River Ridge Rd
Hyde Park, VT 05655
cjlynch14@gmail.com

Patch, Ryan

From: Edward Dombroski <ed.dombroski@gmail.com>
Sent: Saturday, June 18, 2016 11:19 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely, Ed Dombroski

Sincerely,

Edward Dombroski
31 Orr Rd
Jericho, VT 05465
ed.dombroski@gmail.com

Patch, Ryan

From: Ray Gonda <gonda05403@gmail.com>
Sent: Saturday, June 18, 2016 3:37 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters. A estimates that more than 80% of the phosphorous flowing into the lake comes from agricultural practices, and dairy and other animal husbandry practices. Lets keep the cows out of the streams and keep a vegetated buffer zone without cows along them.

Phosphorous reduction goals for Lake Champlain:

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Ray Gonda
31 Berkley St
South Burlington, VT 05403
gonda05403@gmail.com

Patch, Ryan

From: John Young, Jr <jdmtyoung@mac.com>
Sent: Saturday, June 18, 2016 7:36 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

John Young Jr
351 Buck Hollow Rd
Fairfax, VT 05454
jdmtyoung@mac.com

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Greg Mikkelson <e-info@clf.org>
Sent: Saturday, June 18, 2016 6:45 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 18, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Dr. Greg Mikkelson
PO Box 332
Richford, VT 05476-0332
greg.mikkelson@ecologyfund.net

Patch, Ryan

From: Fred Kamerling <frkamerling@gmail.com>
Sent: Friday, June 17, 2016 9:46 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Fred Kamerling
43 Pettingill Rd
Essex Junction, VT 05452
frkamerling@gmail.com

Patch, Ryan

From: Taylor Gabriel <t.gabes91@gmail.com>
Sent: Friday, June 17, 2016 9:05 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely, Taylor Gabriel.

Sincerely,

Taylor Gabriel
1425 S 32nd St
Manitowoc, WI 54220
t.gabes91@gmail.com

Patch, Ryan

From: syl stempel <sj0610@comcast.net>
Sent: Friday, June 17, 2016 3:59 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

syl stempel
275 Mansion Hollow Rd
Waterbury Center, VT 05677
sj0610@comcast.net

Patch, Ryan

From: Doug Zehner <dougzehner1@gmail.com>
Sent: Friday, June 17, 2016 2:40 PM
To: AGR - RAP
Cc: wesley butler; Gary West; Pete Diminico; Paul Urband; paul scaramucci; Heath Butler; Megan Osterhout Brakeley
Subject: RAP - My Personal Comments

Vermont Agency of Agriculture, Food, and Markets
Attn: RAPs
116 State Street
Montpelier, Vt 05620-2901
PROPOSED RAP - PUBLIC COMMENTS

AGR.RAP@vermont.gov

TO: Department of Agriculture, Ag Commissioner

It has been over forty years since the passage of the Clean Water Act in the United States and yet water pollution in many of our waterways and lakes still remains disgraceful. In Vermont, many millions of federal dollars have been dumped into the effort to make Lake Champlain and its tributaries, “swimmable, drinkable and fishable” again - yet we have severe impacts occurring constantly.

In the mid 1970’s/ 1980’s many studies were conducted by many federal agencies and state partnerships to discover where these impacts were coming from. Phosphorus was identified as one of the major non-point pollution problems. Phosphorus is a “limiting factor” in the balance of aquatic ecosystems in the United States—Great Lakes, Ohio River Basin, Mississippi River Delta, Chesapeake Basin, on and on and of course, Lake Champlain. The lake is suffering major impacts from these additional inputs of phosphorus. Without question from all the research, the largest source of non-point pollution identified – is agricultural runoff from fertilizers, pesticides from cropland and animal waste.

After all this time and effort, there is damn little to show for improvements in the Lake. While the regulatory hammer has fallen on many small towns and communities across the country, we treat the mega-dairy industry in Vermont with kid gloves and try to paint a picture of “Ma and Pa” in the barnyard with a pitchfork one step ahead of the bank foreclosure. Sooo . . . we give them tax shelters on land taxes for “ag purposes”, we subsidize most of their crops guaranteeing them a price including on milk, and give them government grants for making “Improvements” on their lands, give them a “pass” destroying rural roads with heavy equipment. Yet - they still spread manure everywhere, dumping manure in fields without necessary soil testing, without incorporation of these wastes into the soil to protect from runoff - and in many cases, have raised soil test levels of phosphorus to such high levels that instead of being tied to soil particles, phosphorus becomes soluble to the point of moving with ground water. These producers are still polluting our water resources, not to mention creating questionable air quality emissions in some cases.

There are a few model farms that have made significant strides to being good neighbors and are managing these products responsibly without polluting our streams and lakes. But the majority of others have a long, long way to go to reach this level of management. ***Without significant penalties to these “bad actors” these clean water objectives will never be reached.*** Even the issue of land application is in question, for the simple fact that with the amount of phosphorus produced by Vermont’s livestock and the commercial fertilizer purchased, there is not enough cropland, hayland and pasture land to safely cycle phosphorus without threatening Vermont waterways. Forty years of minor progress in Lake Champlain using only the “carrot” approach has been miserably unsuccessful. Other industries in the US are regulated for water pollution, why then is the agricultural industry exempt?

In an effort to address this tremendous water quality issue, last year, Vermont passed a clean water law – **Act 64** – to cut down on the pollution and erosion that harms our rivers and lakes. As one of the ways to restore our waters, the Agency of Agriculture is updating the statewide Required Agricultural Practices (RAPs) to reduce the impact of farms on lakes and rivers. ***According to an August 2015 report by the U.S. Environmental Protection Agency, agriculture is the largest contributor of phosphorus pollution,*** and the RAPs are critical to protecting Vermont’s water resources by reducing phosphorus and nitrogen pollution.

Unfortunately, the draft RAPs proposed by the Agency don’t go nearly far enough. They do not apply to everyone raising livestock and crops, only those of a certain size. Further, they permit many activities known to cause phosphorus and nitrogen pollution, such as giving cows direct access to streams, and allowing farmers to apply fertilizer and graze livestock next to riverbanks.

Healthy farms are important to clean waters for Vermont and good farmers will benefit from clear and consistent regulations that address water pollution. Just as other businesses and individuals are accountable for any pollution they create, farms should be held to such standards. **NO MORE GIVEAWAYS AND PROTECTING EXCESSIVE POLLUTERS! FIX THE Required Agricultural Practices (RAPS)!**

- Apply the rule to all farms
- Buffers must function as buffers, not cropland – therefore, no crops or plant material may be allowed to be removed from areas designated as buffers. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.
- No livestock allowed in the streams or waterways of the state. If allowed unrestricted access, even a small amount of livestock can cause a lot of damage through erosion and manure disposal to a headwater and small stream. When we’re required expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can not allow cows open access to our waterways.
- Require cropland in the 100 year floodway to plant cover crops helping protect from pollution during storm runoff events
- Immediate incorporation or injection of manure applied to cropland according to manure, soil test and crop needs tests
- New Technology and exporting excess phosphorus from high livestock population area watersheds or a limit to livestock numbers in relation to carrying capacity of the land, must be added to the rule – otherwise, there is no possible way to adequately minimize impacts of phosphorus into the waterways of Vermont
- Since the rule is based upon (590 –Nutrient Management Code) “soil health” and “allowable erosion” rates in USDA technical standards, no guarantee in water quality improvement should be assumed – this standard is not a stand-alone water quality standard without other practices in many cases.

Without these corrections in the rule, little progress will likely be made concerning the condition of water quality in Vermont at potentially high costs to the public.

Sincerely,

Douglas Zehner

A Vermonter who cares about Clean Water in Vermont
Water, The most important resource in the World in the 21st Century – Albert Einstein

Cc: Senator Bernie Sanders

Senator Patrick Leahy

Congressman Peter Welch

Robert Kidd, Vermont Chapter of the Sierra Club

Louis Porter, Vermont Fish and Wildlife Commissioner

All Members of the Vermont Legislature

Patch, Ryan

From: Mr. & Mrs. John Doherty <vtdoherty@comcast.net>
Sent: Friday, June 17, 2016 1:54 PM
To: AGR - RAP
Subject: We need strong and specific Required Agricultural Practicess for cleaner water in Vermont

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely, JD

Sincerely,

John T Doherty
222 Crossfield Dr
Colchester, VT 05446
vtdoherty@comcast.net

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 17, 2016 12:14 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

barbara wynroth
3 Cathedral Sq #8H
BURLINGTON, VT 05401-
bwynroth@sover.net
861-2825

Patch, Ryan

From: Bob Ackland <ackland@gmavt.net>
Sent: Friday, June 17, 2016 12:05 PM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Bob Ackland
56 Retreiver Run
Warren, VT 05674
ackland@gmavt.net

Patch, Ryan

From: Aron Merrill <aronmerrill@gmail.com>
Sent: Friday, June 17, 2016 11:43 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Aron Merrill
20 Lansdowne St
Williston, VT 05495
aronmerrill@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 17, 2016 11:16 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

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Thank you for your support of clean water.

Sincerely,

susan bray
494 higbee rd
susan, VT 05445-
springhousearts@gmavt.net
(802) 425-2033

Patch, Ryan

From: Chris Chiquoine <user@votervoice.net>
Sent: Friday, June 17, 2016 10:30 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Chris Chiquoine
39 Prospect St Apt A
Essex Junction, VT 05452
chiquoine@aol.com

Patch, Ryan

From: Bartlett, Stever <shbartle@middlebury.edu>
Sent: Friday, June 17, 2016 10:27 AM
To: AGR - RAP
Subject: Comment on RAP Proposed Rule

Please do all you can to enforce these regulations once they are agreed upon. I urge stronger restrictions on buffers and riparian zones, and I would like to see something about reducing waste from barnyards. There are a lot of farms that store (or don't properly) store waste of all kinds on their farms. But most importantly the rules need to be enforced.

Thank you

S. Bartlett

Addison county vt

Patch, Ryan

From: Steve Bartlett <steverhb@gmail.com>
Sent: Friday, June 17, 2016 10:16 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
- A riparian buffer must be a buffer. The current draft RAP allows landowners to apply fertilizer, graze livestock, and harvest a buffer. That's not a buffer. A buffer needs to separate our rivers and streams from cornfields and pastureland to keep manure and fertilizer out of our water.

I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

S Bartlett
81 Sunset Orchard Rd
Middlebury, VT 05753
steverhb@gmail.com

Patch, Ryan

From: Tom Warhol <warholtom@gmail.com>
Sent: Friday, June 17, 2016 10:11 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Tom Warhol
158 Macintosh Hill Rd
Randolph, VT 05060
warholtom@gmail.com

Patch, Ryan

From: Stephen Oster <soster@middlebury.edu>
Sent: Friday, June 17, 2016 10:14 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters. I speak directly from experience, both as a chemist and as one who once fell through the ice on Richville Pond, in the town of Shoreham. Because of the first, I recognize that current agricultural practices in Vermont and water quality are mutually exclusive. Because of the second, I am fully aware that dairy farms have turned the Lemon Fair River into a sewer (I came out of the water smelling as if I had fallen into a manure pond.).

Industries would lower their operating costs if they could discharge untreated effluent, but Vermont forbids that. Dairy farms should be held to the same standard. Doing otherwise is unfair.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Stephen S. Oster
961 Shoreham Depot Rd
Orwell, VT 05760
soster@middlebury.edu

Patch, Ryan

From: Bruce Jager, Jr. <bruce.jager3@gmail.com>
Sent: Friday, June 17, 2016 9:48 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Bruce Jager
60 Gates St
White River Junction, VT 05001
bruce.jager3@gmail.com

Patch, Ryan

From: Clark Amadon <clark@amadononline.net>
Sent: Friday, June 17, 2016 9:45 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

As a preamble before the main points I'd like to share this observation make while driving along the Connecticut River. I was during west on Route 2 in the heart of the river bottom land. Since I'm sensitive to healthy and poor riparian buffers I noticed valuable farm land on the Vermont river bank sloughing into river! No riparian zone... None! The field was worked and harvested right the edge. It even looks like a tractor could pitch into the river if the farmer really wanted to work the meadow to the brink.

This one of hundreds of examples of why we need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

- RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.
- Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.
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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Clark Amadon, Moretown, VT
1719 VT Route 100B
Moretown, VT 05660
clark@amadononline.net

Patch, Ryan

From: Ron Rhodes <rhodes@sover.net>
Sent: Friday, June 17, 2016 9:13 AM
To: AGR - RAP
Subject: We need stronger and more specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

Dear VT Ag - Vermonters need clean water. We need your help to ensure it happens.

· RAPs must apply to all farms, no matter what size. Any landowner that raises crops or livestock should follow common-sense rules to reduce erosion and keep manure out of Vermont's waterways. Even the smallest farms together can cause cumulative harm.

· Livestock must be excluded from our headwaters, streams and rivers to minimize harms. If allowed unrestricted access, even a small group of livestock can cause a lot of damage through erosion and manure to a headwater and small stream. When we're requiring expensive upgrades to our wastewater treatment facilities and stormwater practices to cut down on phosphorus and nitrogen pollution, we can't afford to give cows open access to our waterways.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Ron Rhodes, Pomfret, VT
Trout Unlimited member

Sincerely,

Ron Rhodes
PO Box 94
South Pomfret, VT 05067
rhodes@sover.net

Patch, Ryan

From: Howie McCausland <howie@middlebury.edu>
Sent: Friday, June 17, 2016 8:50 AM
To: AGR - RAP
Subject: We need strong and specific RAPs for clean water

Dear Agency of Agriculture of Agriculture,

We need strong but fair agriculture rules to reduce phosphorus and nitrogen pollution to protect and restore Vermont waters.

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I urge you to consider strong but fair regulations to protect headwaters, streams, and rivers.

Sincerely,

Sincerely,

Howie McCausland
PO Box 123
Waitsfield, VT 05673
howie@middlebury.edu

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 17, 2016 8:16 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Sara Beeken
167 Mount Philo Rd
Shelburne, VT 05482-
sbeeken7@yahoo.com
(802) 985-2909

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 17, 2016 7:58 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Hal Trufan
6808 Old Forge Dr
Charlotte, NC 28226-
htrufan@gmail.com
7048370177

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Seth Brownstein <e-info@clf.org>
Sent: Friday, June 17, 2016 5:40 AM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 17, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mr. Seth Brownstein
35 Alfred Ter
Burlington, VT 05401-4105
stufsig@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 8:25 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

As a member of the Calais Conservation Commission and the Calais Lakes and Streams Committee, I have been deeply involved in local efforts to protect our water and thus Vermont's water. I implore you to toughen the proposed RAPs.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

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Thank you for your support of clean water.

Sincerely,

Larry Bush
267 Bliss Pond Road
Calais, VT 05648-
cambs.larry@gmail.com
8022230667

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 8:25 PM
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Thank you for your support of clean water.

Sincerely,

Larry Bush
267 Bliss Pond Road
Calais, VT 05648-
camb.s.larry@gmail.com
8022230667

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Donald Morrison <e-info@clf.org>
Sent: Thursday, June 16, 2016 7:09 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 16, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

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Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mr. Donald Morrison
4502 Brownsville Hartland Rd
West Windsor, VT 05089-9786
vox4pax@comcast.net

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 6:37 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Lawrence Hamilton
342 Bittersweet Ln
Charlotte, VT 05445-
silverfox@gmavt.net
(802) 425-6509

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 5:53 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Janice Mccann
1361 Brook St
Rochester, VT 05767-
janmccann@myfairpoint.net
(802) 767-3667

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Cassandra Church <e-info@clf.org>
Sent: Thursday, June 16, 2016 5:39 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 16, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

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It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Ms. Cassandra Church
1853 County Rd
Montpelier, VT 05602-8638
sparrowcat2@gmail.com

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Novella Adoue <e-info@clf.org>
Sent: Thursday, June 16, 2016 5:39 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 16, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

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Sincerely,

Miss Novella Adoue
PO Box 725
Manchester Center, VT 05255-0725
adoue_novella@yahoo.com

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Lance Polya <e-info@clf.org>
Sent: Thursday, June 16, 2016 4:39 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 16, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

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Sincerely,

Dr. Lance Polya
46 Fields Ln
Jericho, VT 05465-9627
lpvt14@gmail.com

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Robb Kidd <e-info@clf.org>
Sent: Thursday, June 16, 2016 3:17 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 16, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

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Sincerely,

Mr. Robb Kidd
18 Ridge St
Montpelier, VT 05602-3131
evolvingpeace@gmail.com

Patch, Ryan

From: Katharine Hikel <hikelbreck@gmavt.net>
Sent: Thursday, June 16, 2016 1:11 PM
To: AGR.RAP@vermont.gov
Subject: RAP public comment and Meeting Reminder: Public Hearings for the Agency of Agriculture's Required Agricultural Practices Proposed Rule to begin June 21, 2016

Dear AGR –

Thanks for posting the RAP proposed rules; they seem clear, well-organized, thoughtful, and thorough, but for one thing: the lack of regulation around HERBICIDE residues, such as glyphosate (Roundup) which is ubiquitously applied to fields ("Roundup Ready" corn) all around us; and which, we've heard, is present in much of the water in long-term treatment areas – both surface and well water:

<http://www.reuters.com/article/us-glyphosate-pollution-idUSTRE77U61720110831>

This omission raises concerns about BigAg's (Monsanto's) corporate and financial interests in the Vermont agriculture community.

Monsanto is the corporation that gave us PCBs. Glyphosate may turn out to be the next PCB.

<http://naturalsociety.com/wp-content/uploads/article-QA-Glyphosate-who.pdf>

Research supported by Monsanto indicates no health risks. Research from the rest of the scientific world indicates otherwise:

<http://www.scientificamerican.com/article/weed-whacking-herbicide-p/>

Many of us remember the Big Pharma push for opiates in pill form in the late 1980s - supported by a lot of research saying that these drugs were 'well-tolerated' by patients.

Pesticide residues included in the proposal; but it is worrisome that think that Big Ag (+ Big Pharma – Monsanto/Pfizer/Bayer) could prevent the inclusion of agricultural herbicide residues in VT's water-monitoring plans.

Meanwhile, Europe is restricting glyphosate use:

<http://www.europarl.europa.eu/news/en/news-room/20160407IPR21781/Glyphosate-authorise->

[for-just-seven-years-and-professional-uses-only-urge-MEPs](#)

Glyphosate testing for well water is prohibitively expensive for most taxpaying citizens. The users and sellers of these agricultural products should be required to support monitoring of surface and well waters within, say, a mile of application areas.

It would complete the Agency's plan for water quality and environmental health to include at least a mention of future monitoring, regulation, and testing for agricultural herbicides in the plan.

I applaud all the work that went into this good proposal.

PLEASE! DON'T STOP!

My best (and a big hug to Chuck Ross) –

Katharine Hikel, MD
350 Tyler Bridge Road
Hinesburg VT 05461
802-482-4015

Chittenden County Medical Reserve Corps
Secretary, Steering Committee

On 6/15/2016 3:57 PM, Patch, Ryan wrote:

Meeting Reminder

Public Hearings for the Agency of Agriculture's Required Agricultural Practices Proposed Rule to begin June 21, 2016

Public Comment Period open until July 7, 2016.

The Vermont Agency of Agriculture, Food & Markets (VAAFM) will host six public hearings on the Required Agricultural Practices (RAPs) Proposed Rule on June 21 in St. Albans, June 22 in Brandon, June 23 in South Royalton, June 27 in Manchester, June 28 in Newport, and June 29 in Brattleboro.

WHAT: VAAFM will host six public hearings throughout Vermont for farmers, stakeholders and the public to provide testimony and comment on the RAP Proposed Rule. A public comment period on the RAP Proposed Rule is open until July 7, 2016. The RAP Proposed Rule is available on the Agency website: <http://agriculture.vermont.gov/water-quality/regulations/rap>

As a result of Act 64—the Vermont Clean Water Act—signed into law in June 2015, the Agency of Agriculture was tasked with updating the Accepted Agricultural Practices (AAPs) to further reduce the impact of agriculture on water quality across the state. The RAPs are an updated version of the AAPs, the rules in place since 1995 which regulate farms in order to protect water quality, re-written to a higher level of performance. To date, VAAFM has held more than 80 small stakeholder and large public meetings on the RAPs to solicit feedback from farmers, stakeholders and the public. Over 1800 constituents have attended these meetings since October, 2015. Summary outreach materials, including the recording of a webinar explaining the RAP Proposed Rule in detail, are available on the Agency website: <http://agriculture.vermont.gov/water-quality/regulations/rap>

These public hearings open to the public. A print copy of the RAP Proposed Rule can be requested by e-mail, phone or in writing. Email AGR.RAP@vermont.gov or call (802) 828-2431 for more information.

Written public comment can be submitted to the Agency's RAP e-mail inbox at AGR.RAP@vermont.gov or by mailing comment to the Agency of Agriculture at 116 State Street, Montpelier, VT 05620.

WHO: Farmers, stakeholders and the general public can attend these public hearings to learn more about the RAP Proposed Rule and to share testimony and comment. VAAFM was directed by the Legislature to draft the RAPs pursuant to Act 64, signed into law on June 16, 2015. Act 64 of 2015 amended and enacted multiple requirements related to water quality in the State. Act 64 requires that the revised RAPs include requirements for: small farm certification, nutrient storage, soil health, buffer zones, livestock exclusion, and nutrient management.

WHEN/WHERE: Required Agricultural Practices Proposed Rule Public Hearing
June 21, 2016 | 12:30–3:30 PM
St Albans Historical Museum | 9 Church Street, St. Albans City, VT 05478
Required Agricultural Practices Proposed Rule Public Hearing
June 22, 2016 | 12:30–3:30 PM
Brandon American Legion | 590 Franklin St., Brandon, VT 05733
Required Agricultural Practices Proposed Rule Public Hearing
June 23, 2016 | 12:30–3:30 PM
Vermont Law School | 164 Chelsea St., South Royalton, VT 05068
Required Agricultural Practices Proposed Rule Public Hearing
June 27, 2016 | 12:30–3:30 PM
Fraternal Order of Eagles | 2282 VT-11, Manchester Center, VT 05255
Required Agricultural Practices Proposed Rule Public Hearing
June 28, 2016 | 12:30–3:30 PM
Newport American Legion | 160 Freeman St., Newport, VT 05855
Required Agricultural Practices Proposed Rule Public Hearing
June 29, 2016 | 12:30–3:30 PM
Brattleboro American Legion | 32 Linden St., Brattleboro, VT 05301

CONTACT: Ryan Patch
Sr. Ag Development Coordinator
Agency of Agriculture, Food & Markets
Ryan.Patch@vermont.gov
802-272-0323

For more information about the RAPs, and the Agency's efforts to implement Act 64 of 2015, please visit <http://agriculture.vermont.gov/water-quality/regulations/rap> or contact the Vermont Agency of Agriculture, Food and Markets at (802) 828-2431.

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About the Vermont Agency of Agriculture, Food & Markets: VAAFM facilitates, supports and encourages the growth and viability of agriculture in Vermont while protecting the working landscape, human health, animal health, plant health, consumers and the environment. www.Agriculture.Vermont.Gov

If you would like to be removed from our email distribution list, please reply with "unsubscribe" in the subject line.

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 12:03 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Rachel Stevens
144 Main St.
Montpelier, VT 05602-
rlbstev@gmail.com
(678) 468-7228

Patch, Ryan

From: Dan <dldegraff@comcast.net>
Sent: Thursday, June 16, 2016 10:47 AM
To: AGR - RAP
Subject: Re: RAP Proposed Rules

Thank you...

Dan

On Thu, Jun 16, 2016 at 10:18 AM, AGR - RAP <AGR.RAP@vermont.gov> wrote:

Hi Dan,

Yes, I have dropped a copy of the RAP Proposed Rule in the mail for this afternoon's mail.

Thanks,

-Ryan

Ryan Patch

Sr. Ag Development Coordinator

Vermont Agency of Agriculture, Food and Markets

116 State St. Montpelier, VT 05620

Cell: [\(802\)-272-0323](tel:(802)272-0323)

Fax: [\(802\) 282-1410](tel:(802)282-1410)

ryan.patch@vermont.gov

<http://agriculture.vermont.gov/>

From: Dan [mailto:dldegraff@comcast.net]
Sent: Thursday, June 16, 2016 7:11 AM
To: AGR - RAP <AGR.RAP@vermont.gov>
Subject: RAP Proposed Rules

Hello,

Would you please mail a printed copy of the RAP Proposed Rules to:

Danny DeGraff

527 Hathaway Point

St. Albans, VT 05468

Thanks much,

Dannny DeGraff

Patch, Ryan

From: AGR - RAP
Sent: Thursday, June 16, 2016 10:18 AM
To: Dan; AGR - RAP
Cc: Patch, Ryan; DiPietro, Laura; Ryan, Jim
Subject: RE: RAP Proposed Rules

Hi Dan,

Yes, I have dropped a copy of the RAP Proposed Rule in the mail for this afternoon's mail.

Thanks,
-Ryan

Ryan Patch
Sr. Ag Development Coordinator
Vermont Agency of Agriculture, Food and Markets
116 State St. Montpelier, VT 05620
Cell: (802)-272-0323
Fax: (802) 282-1410
ryan.patch@vermont.gov
<http://agriculture.vermont.gov/>

From: Dan [mailto:dldegraff@comcast.net]
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527 Hathaway Point
St. Albans, VT 05468

Thanks much,
Dannny DeGraff

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 16, 2016 3:52 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Serena Wittkopp
3970 N Interstate Ave Unit 401
Portland, OR 97227-
serena.camille.scw@gmail.com
(503) 752-0684

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 5:37 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Karen Potts
315 Avery St.
Karen, OR 97520-
kfotheringhampotts47@gmail.com
(541) 482-1819

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 4:30 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Geoff Hamer
82 Karatzas Ave Apt 305
Manchester, NH 03104-
geoffh87@aol.com
(603) 935-7414

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 4:03 PM
To: AGR - RAP
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Sincerely,

Jack Coulehan
804 North Berlyn Avenue
Ontario, CA 91764-
zamak5@yahoo.com
6614967019

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 12:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Gwen Edgett
1450 Sagebrush Trail, #218
Euless, TX 76040-
gwen.edgett@gmail.com
8176826331

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 10:57 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Thomas DeSellier
54 Center Street
Granby, MA 01033-
tjdesell@gmail.com
4133131591

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 10:28 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

susann eastridge
3795 ashville road
marshall, VA 20115-
suseast@erols.ocm
(540) 364-3025

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 10:28 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

susann eastridge
3795 ashville road
marshall, VA 20115-
suseast@erols.ocm
(540) 364-3025

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 7:55 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

David A. Woolsey
36 Brimmer Point Way
Ellsworth, ME 04605-
woolsey.david.violinmaker@gmail.com
2072223333

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 7:43 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kathy Oppenhuizen
8135 Olive Trail
West Oive, MI 49460-
salzberryhill@gmail.com
(616) 846-1956

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 6:39 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Marcia Karuba
PO BOX 10340
PITTSBURGH, PA 15234-
mlkaruba@hotmail.com
4128601199

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 1:23 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

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A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

David Ellenbogen
PO Box 193
Calais, VT 05648-
pianomath@gmail.com
(802) 363-6868

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 15, 2016 12:42 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Elaine Becker
2514 Sharmar Rd.
Roanoke, VA 24018-
elainebecker@yahoo.com
(540) 400-6129

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 14, 2016 7:00 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Judy Bellairs
PO Box 265
Hardwick, VT 05843-
judybellairs@gmail.com
(802) 441-5606

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 14, 2016 2:18 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Dennis Morley
104 Throckmorton Lane
Old Bridge, NJ 08857-
dadcos@optonline.net
(732) 679-8037

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 14, 2016 9:57 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Jeff Phillips
232 Spinnaker Ln
Shelburne, VT 05482-
jeffmphilips@me.com
(802) 985-8524

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 14, 2016 7:48 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Tom Cate
95 Deronde Rd
Montpelier, VT 05602-
tcate@ezcloud.com
(802) 229-4320

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Tuesday, June 14, 2016 1:52 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Michele de la Rosa
87 Roundelay Lane
Santa Rosa, CA 95407-
hummingrose6@cs.com
decline to provide

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 13, 2016 5:51 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

doug krause
1201 N University Dr
Fargo, ND 58102-
dougkrause@mts.net
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 13, 2016 2:13 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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This is not a maybe but a necessity. We can not keep delaying on obtaining clean water.

Thank you for your support of clean water.

Sincerely,

M Susan Knightes
7 Upper Gilman St
Saint Albans, VT 05478-
dsknightes@myfairpoint.net
(802) 524-6894

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 13, 2016 1:22 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Elizabeth Bartlett
2653 Scotch Hollow Rd
Newbury, VT 05051-
elizabeth.costlow@yahoo.com
(802) 274-8328

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Monday, June 13, 2016 12:24 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Dominique Meyers
719 Bugbee Crossing Rd
West Burke, VT 05871-
anitra99@yahoo.com
(802) 467-8589

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 12, 2016 4:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Lorraine Barrie
15 kulanihakoi
Lorraine, HI 96753-
lbarrie@mac.com
1111111111

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 12, 2016 3:59 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Phyllis Erwin
1012 Broad Brook Rd
Guilford, VT 05301-
perwin1943@gmail.com
(802) 257-8138

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 12, 2016 2:55 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

JOYCE SHIFFRIN
576 EASTERN PARKWAY APT 3H
BROOKLYN, NY 11225-
jshiffirin200111213@yahoo.com
(718) 363-0708

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 12, 2016 1:50 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Gabriel Weiss
72 Grove St
Brattleboro, VT 05301-
sageandborage@gmail.com
(802) 579-3247

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Sunday, June 12, 2016 11:12 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Jay Perlberg
PO Box 829
Vernon, VT 05354-
japerlberg@gmail.com
(413) 522-1138

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Saturday, June 11, 2016 9:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Jeff Kiralis
410 Potato Hill Rd
Fairlee, VT 05045-
kiralis@tutanota.com
(603) 000-0000

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Ronni Solbert <e-info@clf.org>
Sent: Saturday, June 11, 2016 4:06 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 11, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water.

It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mr. Ronni Solbert
29 S Main St
Randolph, VT 05060-1371
rgsolbert@gmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Saturday, June 11, 2016 12:28 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Nathan Hundemann
PO Box 1272
West Dover, VT 05356-
nathmann@myfairpoint.net
(802) 464-3776

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Saturday, June 11, 2016 1:52 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Nicholas Sherman
517 Main Project Rd
Schriever, LA 70395-
nick8472@gmail.com
(985) 228-0330

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 9:02 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Alan Citron
PO Box 1785
Manchester Center, VT 05255-
alantcitron@hotmail.com
(802) 236-7982

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 7:08 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kevin Bessett
60 Hillside Ln
Richmond, VT 05477-
kevinbessett@gmavt.net
(802) 434-6398

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 4:06 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Bonnie Duncan
851 Cricket Hill Rd
Hyde Park, VT 05655-
vermontelements@comcast.net
(802) 888-8481

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Violet Gautesen Krukonis <e-info@clf.org>
Sent: Friday, June 10, 2016 3:34 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 10, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

We need stronger RAPs if we are going to make meaningful progress in reducing the phosphorus pollution that is choking Vermont's waterways.

Specifically:

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and new stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Mrs. Violet Gautesen Krukonis
6 Rosewood Ln
Essex Junction, VT 05452-3780
vbkrukonis@hotmail.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 3:26 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Bruce Abbott
3 Slates End
Newark, DE 19702-
bsdk4@verizon.net
(302) 733-0964

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 1:57 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Lenore Reeves
19934 Hickory Stick Ln
Mokena, IL 60448-
lerves@gmail.com
(708) 755-7010

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 1:47 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Heather Kennedy
590 Barnes Rd
Montpelier, VT 05602-
hkennedytmcmurdo@yahoo.com
(802) 225-6008

Patch, Ryan

From: Conservation Law Foundation <e-info@clf.org> on behalf of Mary Harbaugh <e-info@clf.org>
Sent: Friday, June 10, 2016 12:46 PM
To: AGR - RAP
Subject: Vermont Needs Strong Required Agricultural Practices

Jun 10, 2016

Vermont AGR Vermont Agency of Agriculture

Dear Vermont AGR of Agriculture,

Agriculture is one of the largest contributors to phosphorus pollution in Vermont's waters, leading to the toxic outbreaks of blue-green algae that plague Lake Champlain and other waterways across the state.

The updated Required Agricultural Practices (RAPs) are a critical step in curbing phosphorus pollution and healing our lakes, rivers, and streams. But the currently proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

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Please strengthen the RAPs so that we can take back our waterways from the toxic algae blooms that make them unsafe for swimming and fishing and that kill aquatic life. Strong RAPs are a must for clean water in Vermont.

Sincerely,

Ms. Mary Harbaugh
100 Congress St
Saint Albans, VT 05478-1646
mary@strongstreet.com

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 12:20 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Lorenz Steininger
13 main st
stafford, VA 22554-
schreibdemstein@posteo.de
1111111111

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 8:13 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Victoria Neumann
2745 Stage Rd
Benson, VT 05743-
vjpneumann@gmail.com
(802) 537-3594

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Friday, June 10, 2016 8:07 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Tecari Shuman
PO Box 338
Brandon, VT 05733-
tecari.shuman@gmail.com
(802) 247-5547

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:54 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Marge Heggison
4047 US Route 5 N
Bradford, VT 05033-
steve.n.marge@gmail.com
(802) 222-4605

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:04 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Nicholas Sherman
682 Riverside Ave
Burlington, VT 05401-
nicholaspsherman@yahoo.com
(985) 228-0330

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:45 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Diane Stevens
89 Maple St
Essex Junction, VT 05452-
dls0231@gmail.com
(802) 872-1606

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:43 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

April Hancy
70 Tremont St
Barre, VT 05641-
aprilhancy@gmail.com
(802) 431-5948

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:18 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Katherine Busby
410 Hinton Hill Rd
Orleans, VT 05860-
busby.katherine@yahoo.com
(802) 525-3625

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 1:45 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Hartson Doak
96226 Waiawa Rd #43
Pearl City, HI 96782-
hartson.doak@gmail.com
(808) 542-8695

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:50 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Barbara Wynroth
3 Cathedral Sq Apt 8H
Burlington, VT 05401-
bwynroth@sover.net
(413) 458-5793

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:39 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Susan Detato
564 Evansville Rd
Brownington, VT 05860-
susandetato@comcast.net
(802) 999-9999

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:25 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Lindsey Sears
447 Oak Circle
Colchester, VT 05446-
linmsears@yahoo.com
(802) 598-6992

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:11 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Steven Dicicco
277 Plantation Rd
Hyde Park, VT 05655-
steved518@aol.com
(802) 888-9893

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:10 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Charles Larkin
182 Portal Rd
Montpelier, VT 05602-
charleslarkin2nd@gmail.com
(802) 223-7627

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:05 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Jean Ceglowski
PO Box 38
Rupert, VT 05768-
rupvet@myfairpoint.net
(802) 394-2962

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:41 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

We allow toxic algae blooms in Lake Champlain because ... why? Protect clean-water standards! Protect Lake Champlain! Protect Vermont agriculture from itself!

Yours,
Mike Fleming
Brattleboro

Sincerely,

Michael Fleming
68 Brook St
Brattleboro, VT 05301-
wyomike@earthlink.net
(603) 878-0531

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:37 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Lindsey Wild
PO Box 306
Underhill, VT 05489-
wildfly11@yahoo.com
(802) 899-1459

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:32 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Mark Gannett
B2 Stonehedge Dr
South Burlington, VT 05403-
mgannett914@comcast.net
(802) 862-2190

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:30 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

jeanette capotorto
16 plum tree lane
commack, NY 11725-
capotro@aol.com
(631) 543-5665

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:14 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Gail McMullen
1734 N Kingsley Dr #4
Los Angeles, CA 90027-
gjmcm48@yahoo.com
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 11:06 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Christina Mckye
24 Lincoln Ave Unit 2
Saint Albans, VT 05478-
christina.weigert@gmail.com
(347) 996-9042

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:54 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Nancy Burroughs
1444 Prickly Mountain Rd
Warren, VT 05674-
clayneb@yahoo.com
(802) 496-2201

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:48 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Christopher Wilson
8 Pierce Rd
North Springfield, VT 05150-
cwilson37@hotmail.com
(000) 000-0000

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:46 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Gregory Rouse
871 Cady Hill Rd
Cambridge, VT 05444-
g1rouse@yahoo.com
(802) 644-5907

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:44 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Reto Pieth
409 Route 121 E
Grafton, VT 05146-
rpieth@sover.net
(802) 843-2270

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:37 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Anne Imhoff
6 Parker Ct
Waterbury, VT 05676-
amiex10@gmavt.net
(802) 244-8433

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:34 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Paula Myles
163 Main Street
Harwich, MA 02645-
paulamyles49@yahoo.com
(508) 432-4402

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:27 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Sincerely,

Jere Conner
343 Lincoln Rd
Williston, VT 05495-
jroverp6@comcast.net
(802) 777-5220

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:16 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Winn Adams
1305 W Clearbrook Dr #3
Bellingham, WA 98229-
1305wa@gmail.com
3607338371

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 10:14 AM
To: AGR - RAP
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Sincerely,

Jonathan Fine
PO Box 754
Dorset, VT 05251-
jwfblues@yahoo.com
(802) 867-2556

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:46 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Janice Meier
228 Preedom Hill Rd. S
Janice, VT 05149-
jmeier@afuture4all.com
(802) 228-4443

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:40 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

John Papandrea
110 west 90, 2f
New York, NY 10024-
jpap100@aol.com
2122121212

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2122121212

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:38 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Elizabeth Frost
3248 US Route 7
Pittsford, VT 05763-
vtcreativelady@comcast.net
(802) 483-9972

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 9:19 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

George Plumb
305 Plumb Rd
Washington, VT 05675-
plumb.george@gmail.com
(802) 883-2313

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From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 8:57 AM
To: AGR - RAP
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Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

John Pinezich
4617 Highland Drive # 1
Longmont, - 80503-
j.pinezich@centurylink.net
(303) 867-5309

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 8:54 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

James Burde
PO Box 272
Jericho, VT 05465-
james@teiki.com
(802) 899-2497

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 8:32 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Amy Henevald
24 Daigle Dr
Enosburg Falls, VT 05450-
mesangenonnette@gmail.com
(802) 933-8351

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 8:07 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Susan Achenbach
PO Box 42
Hartland Four Corners, VT 05049-
susan.achenbach@dartmouth.edu
(802) 436-2806

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 8:06 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Michelle Kaufman
93 Center St Apt 1
Rutland, VT 05701-
marsupigal@aol.com
(561) 756-0600

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:43 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Jesse Lovasco
32 Main St
Montpelier, VT 05602-
contact@jesselovasco.com
(802) 229-1453

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:35 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Tom Pollak
Church St
Burlington, VT 05401-
tom@tealcity.com
(802) 864-1234

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:27 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

David Skopin
11 Skyline Dr
Essex Junction, VT 05452-
dudeigotemail@gmail.com
(513) 886-3061

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:23 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Justin Davis
16 Crescent St
Barre, VT 05641-
rusrockt10@hotmail.com
(802) 476-8902

Patch, Ryan

From: Susan Riggen <sriggen@comcast.net>
Sent: Thursday, June 9, 2016 7:13 AM
To: AGR - RAP
Subject: RAP

Mr. Ross,

The proposed RAPs not go far enough to protect our waters. Please strengthen regulations so that there are actually real buffers between agriculture and our waters. Cow manure and fertilizers and pesticides *must not* be allowed to contaminate our lakes and streams.

Thank you

Susan Riggen

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:07 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to reduce pollution and soil erosion along our riverbanks and lake shores. Its enactment must be the strong foundation for building resilience that protects Vermont's fields, forests, and waterways from the impacts of global warming.

This new law - Act 64 - sets requirements for agriculture and for stormwater run-off from parking lots, rooftops, and roads. It requires the Agency of Agriculture is to update the Vermont's Required Agricultural Practices (RAPs). These RAPs are critical to protecting Vermont's water resources because conventional agriculture is one of the largest contributors to phosphorus pollution. That pollution is the main force producing toxic cyanobacteria outbreaks in Lake Champlain and in other Vermont waters each year.

Unfortunately, the proposed RAPs don't go far enough. They permit many activities known to cause phosphorus pollution, such as giving cows direct access to streams and allowing farmers to apply fertilizer and graze livestock next to riverbanks and in our floodplains.

Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to wastewater treatment facilities, and regulating stormwater practices in order to cut down on phosphorus pollution, we undercut the effort if we allow cows to have direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. To permit farmers to apply fertilizer, graze cows, and apply crop fertilizers in our buffers defeats the purpose of RAPs.

Thank you for your support of clean water.

Sincerely,

Elizabeth Champagne
17 Church St Apt 8
St Johnsbury, VT 05819-
bcham@sover.net
(802) 751-8756

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 7:01 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Melinda Meyerhoff
PO Box 702
Hartford, VT 05047-
melinda229@gmail.com
(802) 359-3887

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:51 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Barbara Deangelis
979 W Corinth Rd
Washington, VT 05675-
angelhart3@gmail.com
(802) 883-2262

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:49 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Victoria Pearl
10 Loomis St
Montpelier, VT 05602-
victoriapearlyo@gmail.com
(802) 793-0758

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 6:26 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

John Rosenblum
PO Box 205
Calais, VT 05648-
john.rosenblum@gmail.com
(802) 734-2468

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 4:32 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Michael Quinn
4 Wells St
Windsor, VT 05089-
mtq72@comcast.net
(802) 674-2522

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 2:06 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Patrice GARCIA
2577 W Greenway Rd
Phoenix, AZ 85023-
pg59@laposte.net
(000) 000-0000

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 1:18 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Bonnie Lynn MacKinnon
1603 S Elm St
Georgetown, TX 78626-
bmackinnonwitherspoon@yahoo.com
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:42 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Nancy Dean
PO Box 318
Norwich, VT 05055-
nhdean@comcast.net
(802) 649-1324

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:10 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Bonnie Faith
290A Washington Street
Cambridge, MA 02139-
whiteowl1@comcast.net
(617) 492-3821

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Thursday, June 9, 2016 12:00 AM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Richard DiMatteo
236 Kalmia St. #107
San Diego, CA 92101-
richarddimatteo@cox.net
6192340236

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 11:19 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

David Nepveu
1738 Garfield Rd
Hyde Park, VT 05655-
dnepveu@hotmail.com
(802) 888-3363

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 11:17 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Vickey Baker
2407 Roland Lane
Harlan, IA 51537-
doghaven@harlannet.com
7127552851

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 11:05 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Sandra Woodallq
118 W. Hermine Blvd.
San Antonio, TX 78212-
lswoodall@gmail.com
(210) 824-5422

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 11:03 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Reynaldo Reyna
501 E La Fragua Ave
Roma, TX 78584-
reyreynajr@hotmail.com
(956) 437-7429

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 10:38 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

john pasqua
843 s escondido blvd
escondido, CA 92025-
killself5150@yahoo.com
7604843741

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 10:30 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kelly Murphey
990, Taber Ridge Rd.
Stowe, VT 05672-
kellymurphey@aol.com
(802) 310-4994

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 10:10 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Karen Amirault
33 North Ave Apt 2
Burlington, VT 05401-
amirault@burlingtontelecom.net
(802) 862-0966

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 9:52 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Will Allen
225 Pavillion Rd
East Thetford, VT 05043-
will@thewaronbugsbook.com
(802) 785-4737

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 9:45 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Emily Sloan
320 Wood Rd
Worcester, VT 05682-
emseaturtle@gmail.com
(802) 223-1161

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 9:32 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Richard And Lenore Macomber
509 Wake Robin Dr
Shelburne, VT 05482-
lenrick@hotmail.com
(802) 985-5699

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 9:20 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Brittany Ericksen
PO Box 125
Waterbury Center, VT 05677-
brittlit713@yahoo.com
(615) 403-7545

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 9:18 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Tom and Sanne Woodward
644 Basin Harbor Rd
Bridport, VT 05734-
adhatchery@gmail.com
(386) 951-4316

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:57 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jonathan Niper
378 Martindale Rd
Shelburne, VT 05482-
juanniperio@gmail.com
(802) 922-1728

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:54 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Steven Wisbaum
245 Ten Stones Cir
Charlotte, VT 05445-
swisbaum@gmavt.net
(802) 363-3930

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:44 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Synthetic fertilizers should not be allowed as they contribute greatly to Phosphorus runoff

Please develop RAPs that will result in clean water.

Sincerely,

Darlene Palola
4710 Main Rd
Huntington, VT 05462-
darlenepalola@gmavt.net
(802) 490-0285

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:42 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Steven Miskell
PO Box 407
Jacksonville, VT 05342-
skagrot213@gmail.com
(719) 252-4770

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

andrea f.
39171 N Bernice Ter
Beach Park, IL 60099-
and9930@yahoo.com
8472222222

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:32 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Don McKelvey
765 East 236 St
Euclid, OH 44123-
donmckelvey38@gmail.com
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:29 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Elise Marks
87 Fairmont Pl
Burlington, VT 05408-
elise_create@yahoo.com
(802) 951-5933

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:14 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Hal Bill
PO Box 142
Montgomery, VT 05470-
vtcrossbill@yahoo.com
000000000

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:13 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Alice Berliner
172 Church St
Norwich, VT 05055-
alb172cs@gmail.com
(802) 649-7286

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Sent: Wednesday, June 8, 2016 8:13 PM
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Thank you for your support of clean water.

Sincerely,

Donald Morrison
4502 Brownsville Hartland Rd
West Windsor, VT 05089-
vox4pax@comcast.net
(802) 674-9396

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 8:13 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Charlotte Bill
PO Box 142
Montgomery, VT 05470-
vtcrossbill@yahoo.com
(000) 000-0000

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Thank you for your support of clean water.

Sincerely,

Susan Mills
PO Box 61
Randolph Center, VT 05061-
millsvt@gmail.com
(802) 728-9033

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:28 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Charlie Holland
179 Roaring Brook Rd
Killington, VT 05751-
c19f47h@gmail.com
(802) 422-4343

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:20 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Thomas Reynolds
66 New Salem South Road
Voorheesville, NY 12186-
1941train@nycap.rr.com
5187652685

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:11 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Robin Gorges
216 Main St
Montpelier, VT 05602-
dcwkmv@gmail.com
(802) 222-2222

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:10 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jonathan and Charlen Morse
PO Box 127
Marlboro, VT 05344-
jonathan@mindelmorse.com
(802) 254-5791

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:09 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jim Snee
1321 Quarterline Rd
Center Rutland, VT 05736-
jimsnee@mac.com
(802) 786-2332

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:08 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Kathleen Rummel
2403 W. Walnut St
Colmar, PA 18915-
krummel503@aol.com
(215) 822-3506

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:02 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Elizabeth Bancroft
PO Box 203
East Barre, VT 05649-
alchemilla@myfairpoint.net
(802) 476-5031

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 7:01 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Karen Glauber
140 Oak Dr
Middlebury, VT 05753-
kglauber117@gmail.com
(607) 748-7475

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:54 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Alexander Anlyan
634 Tebbetts Rd
Marshfield, VT 05658-
pndrgrn99@gmail.com
(802) 563-6014

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:45 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Patty Murphy
PO Box 87
Wilmington, VT 05363-
vtgirls@myfairpoint.net
(802) 446-3277

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:44 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

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Thank you for your support of clean water.

Sincerely,

Anne Emerson
631 Sweet Pond Rd
Guilford, VT 05301-
xerxesae@yahoo.com
(802) 257-5558

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:43 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kate Kenner
31 Woodman St
Jamaica Plain, MA 02130-
faunesiegel@gmail.com
(617) 522-6631

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:16 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Mary Tremmel
132 Barbara Ter
Colchester, VT 05446-
mary.tremmel@gmail.com
(802) 310-9678

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:08 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Sheldon Weeks
11 Oak Grove Avenue
Brattleboro, VT 05301-
weekssg@rocketmail.com
(802) 490-0018

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:07 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Deb Day
420 Hyde Point East
Grand Isle, VT 05458-
luckyday5@me.com
(561) 324-8765

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 6:01 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Kristine Winnicki
257 Goat Farm Rd
Chester, VT 05143-
kwinnicki@hotmail.com
(802) 875-3115

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:54 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lisa Rochelle
46 Third St
Montpelier, VT 05602-
lisaroch@gmail.com
(802) 229-1984

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:52 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Hilarie Gade
1675 Lime Kiln Rd
New Haven, VT 05472-
piggator@together.net
(802) 877-3041

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:50 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Mark Nelson
PO Box 207
Ripton, VT 05766-
m.a.nelson@live.com
(802) 388-2857

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:49 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Manon Roberge
95 Crispin Dr
South Burlington, VT 05403-
manonroberge4@gmail.com
(802) 489-5012

Patch, Ryan

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Sent: Wednesday, June 8, 2016 5:49 PM
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Sincerely,

Steven K. Mckendall, Sr.
1203 Marlboro Rd
Brattleboro, VT 05301-
steve.mckendall@gmail.com
(802) 595-8206

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:41 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Kathi Squires
PO Box 216
Quechee, VT 05059-
klsquires6@gmail.com
111-111-1111

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:32 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lisa Neste
4437 Garden Club St
High point, NC 27265-
lilmouse1213@earthlink.net
3362596096

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:27 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Patsy Cushing
PO Box 2101
Brattleboro, VT 05303-
cushingp@gmail.com
(802) 579-1348

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:26 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Marilyn Sowles
1528 Porters Point Rd
Colchester, VT 05446-
marilysowles@gmail.com
(802) 864-6013

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:21 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Kate Ruland
3589 Morse Hill Rd
Dorset, VT 05251-
kyruland@aol.com
(802) 362-4583

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 5:01 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Chelsea Lynes
PO Box 263
Bradford, VT 05033-
chelsea.lynes@gmail.com
(802) 249-8925

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:57 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Rachel Moulton
30 Baldwin Ave
South Burlington, VT 05403-
rachelmoulton1@comcast.net
(802) 658-2286

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Timothy Brennan
149 N Main St
Fair Haven Vt, VT 05743-
brenn1959@gmail.com
802 287 092

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:49 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Teodoro Senni
121 Covey Rd Apt 1
Brattleboro, VT 05301-
teodoro.senni@gmail.com
(802) 451-0217

Patch, Ryan

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Sincerely,

Debi Bergsma
14000 San Bernardino Avenue
Fontana, CA 92335-
debiane3@gmail.com
9093506300

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Sincerely,

Michael Kolakowski
556 Perini Rd
Newbury, VT 05051-
mjk0186@yahoo.com
(802) 866-5950

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:47 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Craig Fortier
344 Fortier Dr
Williston, VT 05495-
csf_roo@hotmail.com
(802) 878-3486

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:44 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Tami Palacky
8005 BETHELEN WOODS LN
SPRINGFIELD, VA 22153-
tpalacky@gmail.com
7033823248

Patch, Ryan

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Sincerely,

Robb Kidd
18 Ridge St
Montpelier, VT 05602-
robb.kidd@sierraclub.org
8025051540

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:43 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Peet Pearson
PO Box 113
Vershire, VT 05079-
peetpearson@gmail.com
,xxxxxxxxxx

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:42 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jean Miller
PO Box 349
Arlington, VT 05250-
vtjem@comcast.net
(802) 375-6655

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:42 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jason Bradley
73 Peru St
Burlington, VT 05401-
jasoncbradley@gmail.com
(802) 683-5840

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:40 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Sondra Boes
1640 Manton Ct.
Campbell, CA 95008-
jsboes@sbcglobal.net
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Merrily Lovell
133 New South Farm Rd
Hinesburg, VT 05461-
merrilylovell@gmail.com
(802) 482-5655

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:30 PM
To: AGR - RAP
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Sincerely,

Beverly Taylor
218 Ricker Rd
Wells River, VT 05081-
sedonabev@me.com
(603) 733-6813

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:26 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Donald Baumgartner
2218 Mary Ave
Missoula, MT 59801-
doninmt@gmail.com
(406) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:24 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Paige Kier
31 Greening Ave
South Burlington, VT 05403-
paige.kier@gmail.com
(802) 999-9999

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:23 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Christopher Murphy
1283 Keene Rd
East Hardwick, VT 05836-
krizmurfy@gmail.com
(802) 730-9332

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:23 PM
To: AGR - RAP
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Sincerely,

John Lamperti
244 Upper Loveland Rd
Norwich, VT 05055-
j.lamperti@dartmouth.edu
(603) 646-2866

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:18 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lodiza Lepore
334 Dewey St
Bennington, VT 05201-
lodiza@comcast.net
(802) 445-1029

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:15 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Victor Afanasiev
14041 Avenida Central
La Grange, CA 95329-
mariavic@inreach.com
(209) 852-0000

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:15 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Dianne Douglas
2723 E Valencia Drive
Phoenix, AZ 85042-
ddouglas@mainex1.asu.edu
6022687065

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:11 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Jim Santos
557 High Farms Rd
Stowe, VT 05672-
santos@pshift.com
(802) 253-4424

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:07 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

James Mulcare
1110 Benjamin St
Clarkston, WA 99403-
xsecretsx@cableone.net
(509) 758-3934

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:05 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Peggy Carlisle
326 Pleasant St
Saint Johnsbury, VT 05819-
peggy.spooky@charter.net
(802) 748-3847

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:04 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Sharyn Layfield
3 Moccasin Ave
Grand Isle, VT 05458-
s5layf@myfairpoint.net
(802) 372-5395

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:03 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Denis Rydjeski
520 Parker Hill Rd
Springfield, VT 05156-
drr@dartmouth.edu
(802) 885-4826

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:02 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Kate Ullman
552 Turkey Mountain Rd
Jamaica, VT 05343-
kullmanvt@hotmail.com
(802) 874-7057

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 4:00 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Sarah Lincoln
556 Quaker St
North Ferrisburgh, VT 05473-
slincoln556@gmail.com
(802) 735-7987

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:58 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Sue And John Morris
1392 Vt Route 232
Marshfield, VT 05658-
suereel@editide.us
(732) 334-8433

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:56 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Marc Schoenberg
21761 S. Brandon
Farmington Hills, MI 48336-
mschoenberg@twmi.rr.com
(555) 555-5555

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:54 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Christina Beliveau
244 N Champlain St
Burlington, VT 05401-
gdcb2015@yahoo.com
(802) 310-8015

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:53 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Gordon Abrams
649 Bugbee St Apt 31
White River Junction, VT 05001-
gordonrabrams@myfairpoint.net
(802) 280-1744

Patch, Ryan

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Sent: Wednesday, June 8, 2016 3:52 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Glenna And Rodney Copeland
390 Saint Paul St
Burlington, VT 05401-
copelandsvt@aol.com
(803) 318-9170

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:47 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Janice Day
1631 Hidden Valley Rd
Shaftsbury, VT 05262-
mday2837@comcast.net
(315) 283-3277

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:47 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Jarryd Audette
890 Vt Route 15
Underhill, VT 05489-
jrod3412@yahoo.com
(802) 355-4703

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:46 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Meryl Pinque
615, Odlin Rd
Bangor, ME 04401-
merylpingue@yahoo.fr
(060) 398-6142

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:43 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Steven J. Prince
2426 Washington Aly
Eugene, OR 97405-
cands78@comcast.net
(541) 543-2864

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:38 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Cows shouldn't be pooping and tromping around in our streams. When we're requiring expensive upgrades to our wastewater treatment facilities and fancy stormwater practices to cut down on phosphorus pollution, we can't afford to give cows direct access to our waterways.

A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

DEBORAH SMITH
3044 N.W. 30TH
OKLAHOMA CITY, OK 73112-
deborah993@cox.net
4059426953

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:38 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Jeff Creech
1701 Salem Rd, C-15
Burlington, NJ 08016-
jeffcreech1959@gmail.com
6094311236

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:36 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Sincerely,

Ainslie Gilligan
25 Strand Ave
Brattleboro, VT 05301-
ainslie.gilligan@gmail.com
(802) 254-1017

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:36 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Carol Thompson
2874 Amy Drive
South Park, PA 15129-
mcact8@gmail.com
(412) 655-2112

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:33 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

jennifer brent
314 Grove St
Bennington, VT 05201-
jenbrentrn@yahoo.com
(802) 442-0188

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:31 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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I live near the Connecticut River and travel along it's banks for long distances. I see farmland that is used year after year to plant the same cattle corn which is GMO corn which includes very toxic chemicals and they spray their "cesspool" so called fertilizer many times on soil that is so polluted and devoid of minerals and goodness that nothing else can live in. These corn fields run right down to the river without real buffers. When the river overflows it goes right onto these fields. There is one of these "cesspools" here in Lunenburg, VT that is also close to the river. All these poisons run off into the river killing fish and other living things in the river, yet nothing is done about it. It is a disgrace that there are not more healthy "organic", sustainable farming practices here in Vermont where we should be setting the example for what is right instead of agribusiness controlling you with their money. Wakeup before it is too late and strengthen RAPs to clean up our water sources before more people get sick or even die.

Thank you for your support of clean water.

Sincerely,

Rachel Sanborn
251 Dupont Rd
Lunenburg, VT 05906-
vtmorningstar@live.com

(802) 477-3871

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:26 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

steven Handwerker
103 S Beach Rd
South Burlington, VT 05403-
drstevenshandwerker@gmail.com
(561) 465-5350

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:21 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Linda Satter
198 Bonnet St
Manchester Center, VT 05255-
Indashome@comcast.net
(802) 362-5214

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:20 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lance Polya
46 Fields Ln
Jericho, VT 05465-
lpvt14@gmail.com
(802) 899-2303

Patch, Ryan

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Sincerely,

Hilary Roberts
286 Aurielle Dr
Colchester, VT 05446-
hilaryroberts@gmail.com
(802) 922-3633

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:16 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Liz Zundel
17 Academy St Apt 2
Barre, VT 05641-
liz.zundel@me.com
(802) 595-5977

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
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Sincerely,

John Hanson
8509 Vt Route 125
Bridport, VT 05734-
jhanson@middlebury.edu
(802) 758-5004

Patch, Ryan

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Sent: Wednesday, June 8, 2016 3:16 PM
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Subject: Strong RAPs are a must for clean water.

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Sincerely,

Kyle Pickering
318 Sugarbush Access Rd
Warren, VT 05674-
pickeringkyle@yahoo.com
(772) 713-7806

Patch, Ryan

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Sent: Wednesday, June 8, 2016 3:16 PM
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Subject: Strong RAPs are a must for clean water.

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Sincerely,

Gunnar Sievert
280 S Pasture Rd
Shelburne, VT 05482-
gunnar@sievertfamily.com
(111) 111-1111

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:15 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

John Robohm
467 Butler Brook Rd
Jacksonville, VT 05342-
john@livewirefarm.com
(802) 368-2353

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:14 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lisa Stead
PO Box 51
Jeffersonville, VT 05464-
lstead@luhs18.org
(802) 644-2363

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:11 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Sincerely,

Lee English
48 Townline Rd
Grand Isle, VT 05458-
leeenglish118@comcast.net
(802) 372-8398

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:10 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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A buffer should actually be a buffer. Buffers are great because they separate our rivers and streams from cornfields and pastureland. The trees, shrubs, and grass keep manure and fertilizer out of our water. It just doesn't make sense that the RAPs allow farmers to apply fertilizer, graze, and harvest in our buffers.

Thank you for your support of clean water.

Sincerely,

Phyllis and Bill Herrick
PO Box 148
Manchester, VT 05254-
herrick554@comcast.net
(802) 375-2307

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:07 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

Last year, Vermont passed a clean water law to help cut down on the pollution and erosion that harms our rivers and lakes. Its enactment is none too soon as the changing climate is only heightening our water woes with increased rainfall and rising temperatures.

This new law - Act 64 - sets requirements for agriculture and stormwater coming off parking lots, rooftops, and roads. The biggest job for the Agency of Agriculture is to update the statewide Required Agricultural Practices (RAPs). The RAPs are critical to protecting Vermont's water resources because agriculture is one of the largest contributors of phosphorus pollution - the main culprit of the toxic cyanobacteria outbreaks plaguing Lake Champlain and other Vermont waters every year.

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Thank you for your support of clean water.

Sincerely,

Louise Rickard
1713 Elder Hill Rd
Lincoln, VT 05443-
lrickard8@gmail.com
(802) 453-5664

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:05 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

Richard Hiscock
31 Windy Ln
Vergennes, VT 05491-
rch@gmavt.net
(802) 877-2727

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Sincerely,

Dawna Knapp
7251 Lillivale Ct
Citrus Heights, CA 95621-
dawna.knapp@sierraclub.org
(415) 320-2213

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Sincerely,

Sayre Wardell
884 Wade Pasture Rd
Stowe, VT 05672-
hawk@gmavt.net
(802) 253-2675

Patch, Ryan

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Sincerely,

Robert Mutell
2328 Regan Rd
Montgomery Center, VT 05471-
bmutell@hotmail.com
(802) 326-3043

Patch, Ryan

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Thank you for your support of clean water.

Sincerely,

Steven Handwerker
103 S Beach Rd
South Burlington, VT 05403-
peacewk@peacewk.org
(802) 497-1841

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 3:03 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

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Thank you for your support of clean water.

Sincerely,

James Tillotson
2528 Hondo Ave Apt 117
Dallas, TX 75219-
jamestillotson67@gmail.com
(682) 233-5177

Patch, Ryan

From: KnowWho Services <noreply@knowwho.services>
Sent: Wednesday, June 8, 2016 2:16 PM
To: AGR - RAP
Subject: Strong RAPs are a must for clean water.

Dear Food and Markets,

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Thank you for your support of clean water.

Sincerely,

Ed Vieira
63 Russek Dr.
Staten Island, NY 10312-
edvjr63@aol.com
7185555555

Patch, Ryan

From: first-born86 <oceangal86@gmail.com>
Sent: Wednesday, June 8, 2016 11:24 AM
To: AGR - RAP
Subject: STRONG RAPS ARE A MUST

PLEASE support strong RAPS
SAN LAKE-ALBUQUERQUE

Patch, Ryan

From: Gibson, Lauren - NRCS, Saint Albans, VT <Lauren.Gibson@vt.nacdnet.net>
Sent: Friday, June 3, 2016 2:22 PM
To: AGR - RAP
Subject: wording confusion

In Section 7 (b) (2) the phrasing of exactly where the 3 inches of vegetative growth must be maintained is confusing. It says "in the 25 feet between the top of bank and surface water..." making it seem like the bank itself is where the 3in of growth needs to be maintained, rather than 25ft from the top of bank, which makes more sense. I would suggest changing the wording to eliminate confusion: ... growth in the area that is 25 feet from the top of bank of surface waters, and 10 feet from the top of bank of ditches.

Thank you,
Lauren Gibson
Lauren Gibson

***Land Treatment Planner
Vermont Association of Conservation Districts (VACD)
27 Fisher Pond Rd Ste 1
St. Albans, VT 05478
802-524-6505 x114***

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

Patch, Ryan

From: Ransomshaw@aol.com
Sent: Thursday, June 2, 2016 1:20 PM
To: AGR - RAP
Cc: carlottac2@aol.com
Subject: Lake shoreline is white

Pleased be advised that action is required to protect the recreational and aesthetic value of the Vermont/NYS Lake Champlain shoreline.

This year, and several years preceding it, we have resorted to hand scrubbing our shoreline to try to reduce the white bacterial deposit clinging to the rocks. Not only is the white cover unsightly, it dangerous to walk on when wet. How relatively pristine the shoreline was when we bought property here 40 years ago. The lake resource is degraded year by the year due to regulations and enforcement capabilities that are inadequate to deal with the scope of the problem. As goes the lake, so goes the property values and associated economic benefits. To say nothing of the quality of life it influences. It is a magnificent resource worth protecting.

Regards,
Ransom and Carlotta Shaw

Patch, Ryan

From: barbara wynroth <bwynroth@sover.net>
Sent: Thursday, June 2, 2016 10:28 AM
To: AGR - RAP
Subject: Regulations on waters and streams

I'm concerned that regulations on keeping cows out of streams need to be stated more clearly and regulations on buffers for bodies of water have stronger protections.

Thank you for taking my comments.

Barbara Wynroth

3 Cathedral Sq #8H
Burlington, 05401

802-861-2825

Patch, Ryan

From: Bill Magnus <magnusww@gmail.com>
Sent: Friday, May 20, 2016 9:26 AM
To: AGR - RAP
Subject: Re: RAP Public Comment

Ryan,

Thanks for your response. I will read the document you sent but for now you must have a gut feeling. I see farmers scrambling to get in under the wire as I suspect your findings will not promote them in the future. The longer we wait to give the final report the more sad the state of the lake becomes. A moratorium seems to make sense to me till we know whether this practice will cost us more in the future.

On Fri, May 20, 2016 at 9:16 AM, AGR - RAP <AGR.RAP@vermont.gov> wrote:

Mr. Magnus,

Thank you for your comments.

In response to your comment regarding Agricultural Subsurface Tile Drainage, the current RAP rule revision process is not considering tile drainage requirements at this time. Act 64 of 2015 set out a timeline whereby VAAFM and VANR would provide an interim report to the legislature in 2016 and a final report in 2017 regarding the status of current, scientific research relating to the environmental management of subsurface agriculture tile drainage and how subsurface agriculture tile drainage contributes to nutrient loading of surface waters.

VAAFM and VANR jointly submitted the interim report on subsurface agricultural tile drainage to the Vermont General Assembly in February, 2016. The Subsurface Tile Drainage Interim Report is a summary of the progress the two agencies have made in preparing a final report on tile drainage, which is due to the Legislature in January, 2017. The interim report is available today on the Vermont Agency of Agriculture, Food and Markets (VAAFM) website: <http://agriculture.vermont.gov/water-quality/news-events/tile-drainage>

You can download the interim report directly here:

http://agriculture.vermont.gov/sites/ag/files/pdf/water_quality/Tile-Drain/VAAFM-VANR-Subsurface-Tile-Drainage-Interim-Report-02152016.pdf

As requested by the General Assembly, the interim report summarizes assumptions and facts about the use and impact of subsurface tile drainage on Vermont's farms and waters. A literature review of current research around North America, and ongoing studies in Vermont, will further inform recommendations for management of tiles drains in the final report. The Lake Champlain Basin Program is funding a tile drainage review of literature, which is due in the spring of 2016. The Interim Report provides context regarding the use of subsurface agricultural tile drainage in Vermont, outlines changes in the practice over time, summarizes the benefits and impacts of tile drainage, and outlines management strategies currently available and being researched. While this report provides an interim assessment of the benefits and costs of tile drainage for farms and impact on waters, the final report will more fully describe current scientific research relating to the environmental management of agricultural tile drainage and how tile drains contribute to nutrient loading of surface waters. The final report will also include recommendations on how to best manage tile drainage to prevent or mitigate the contribution of tile drainage to water quality in Vermont's surface waters. Likewise, the

final report will identify knowledge gaps and areas where further study is needed, as well as opportunities for further investment in this field of research.

Thank you,

-Ryan

Ryan Patch

Sr. Ag Development Coordinator

Vermont Agency of Agriculture, Food and Markets

116 State St. Montpelier, VT 05620

Cell: [\(802\)-272-0323](tel:(802)-272-0323)

Fax: [\(802\) 282-1410](tel:(802)282-1410)

ryan.patch@vermont.gov

<http://agriculture.vermont.gov/>

From: Bill Magnus [mailto:magnusww@gmail.com]

Sent: Wednesday, May 18, 2016 5:00 PM

To: AGR - RAP <AGR.RAP@vermont.gov>

Subject: RAP Public Comment

In 6.05 (d) my suggestion is we not allow farming of any kind in areas that are deemed potential flood areas. Rather than spending the money to clean up an event why not pay the farmer not to use the property at all. This compensation would be given over a 10 yr period and begin a phase out in year 11 till reduced to zero in year 15. This would be only on farm lands that have been continuously farmed for the last 5 years using 5/16 as the start date.

In paragraph 7 farm animals should be excluded from waterways other than crossing under all circumstances

In Paragraph 9, no construction of any sort in flood prone areas. Allowing this makes no sense at all for anyone

Drainage tile was not discussed in any part of this rewrite unless I missed it. A moratorium on installation should begin now until it is determined that it is safe in the area used and any system in place that is dispensing water with nutrients of any kind should be ordered to cease and desist immediately, with fines determined for noncompliance starting on the day notified there is a problem. Drainage is a huge problem that will cost us for the rest of the century.

Bill Magnus

Swanton

--



Best Regards,
Bill Magnus, Broker, CRS, ABR, SRS, GREEN, e-PRO

Call/Text 802-363-5000

Mobile URL: <http://app.kw.com/KW2LYFPDU>

KWVERMONT-KELLERWILLIAMS, REALTY

[Search all Properties: BillMagnus.com](#)

A Veteran Helping Veterans

****Vermont Consumer Information Disclosure****

Unless you have **signed** a contract (not a 'Disclosure') with me to represent you, keep your personal information confidential. Ask me to explain.

Patch, Ryan

From: AGR - RAP
Sent: Friday, May 20, 2016 9:16 AM
To: Bill Magnus; AGR - RAP
Cc: Leland, Jim; DiPietro, Laura; Huber, David
Subject: RE: RAP Public Comment

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Ryan Patch
Sr. Ag Development Coordinator
Vermont Agency of Agriculture, Food and Markets
116 State St. Montpelier, VT 05620
Cell: (802)-272-0323

Fax: (802) 282-1410
ryan.patch@vermont.gov
<http://agriculture.vermont.gov/>

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Bill Magnus
Swanton

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Bill Magnus
Swanton

Patch, Ryan

From: John Parizeau <parizeau@connellco.com>
Sent: Wednesday, May 18, 2016 10:33 AM
To: AGR - RAP
Subject: RAP Public Comment - Submit Public Comment on RAP Proposed Rule

Dear sir,

My concern and objection is in reference to 6.07 **Buffer Zones: Manure and Agricultural Wastes Application Setbacks.**

Specifically, (a) Adjacent surface waters shall be buffered from croplands by 25 feet of perennial vegetation, and, (b) Ditches shall be buffered from croplands by 10 feet of perennial vegetation.

While 25 feet may work in some areas, it is unquestionably inadequate to stop the flow of contaminated water on land that is sloped towards surface waters. I would imagine in certain areas of a sloped terrain cropland, a buffer of 100 feet may not even be sufficient to stop the flow of contaminated water into adjacent water ways. I also question the viability of a buffer zone in the winter when the vegetation dies off.

As for the 10 feet buffer next to ditches, the same concerns arise. It's just not enough to stop the flow when excessive precipitation occurs. Perhaps a requirement of a berm to stop the flow of contaminated water should be required and constructed when sloping fields yield to much of a flow that a 25 foot buffer cannot stop from polluting the surface waters.

I don't think one has to be a hydrologist to realize the 25 and 10 foot buffers zones are unquestionably inadequate in some situations to stop the flow of contaminants that I believe is the main source of pollutants entering Lake Champlain.

Sincerely,

John M Parizeau



Chief of Police - Retired - Westfield New Jersey