Overview and Purpose:

There are two ways to determine the amount of residual manure nitrogen. These options are outlined in the Penn State Agronomy Guide. Both options rely on the manure application history, particularly the frequency of manure application provided by the operator for each field. This is noted as the number of years out of the past five years that a field has received manure. In addition, option 2 requires the type of manure, the manure analysis and the application rates for each year in the past 5 that manure was applied to a field.

Option 1 uses the Penn State Agronomy Guide, Table 1.2-14B. This method is commonly called the "Total N Method". Based on the frequency of manure application over the past five years the appropriate residual nitrogen value is determined.

Option 2 uses the Penn State Agronomy Guide, Table 1.2-15.

This method provides a more refined estimate of residual manure nitrogen that utilizes the chemical manure analysis that provides the amount of ammonium N and organic N in the manure to calculate the amount of residual nitrogen. This method is commonly called the "N Fractions Method". The Manure N Residual Calculator that must be completed for Option 2 and must be included in Appendix 10: Supporting Information and Documentation.

This procedure describes how to complete the optional Residual N Calculator for determining the manure residual nitrogen in a Nutrient Management Plan (NMP) using the "N Fractions Method".

You can find Residual N Calculator Worksheet tabs by looking for the hyper link in the NMP Spreadsheet Index



This particular worksheet is an optional worksheet so it has a green colored sheet tab in the NMP workbook. The tab looks like this:

Residual N Calculator

Layout of the Calculator to determine manure nutrients deposited by grazing animals

	A	В	С	D	E	F	G	Н					
1	Manure N Residual Calculator												
3	This calculator will determine manure N residual based on the approach and values provided in The Penn State Agronomy Guide Table 1.2-15.												
4	Enter Past Manure Application Rates under "Rate". Crop Years 2018												
5	Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate	Organic N Factor	Organic N Ibs applied	Manure N Residual (Ib N/A)					
6		1 yr ago											
7		2 yrs ago											
8		3 yrs ago											
9		4 yrs ago											
10		5 yrs ago											
44	Residual N Ca	lculator		I		I	I	I I					

Helpful notes added in Column Headers

The blue column headers cells with red triangles have helpful notes included to help you understand what needs to be entered or what the cell data is used for. Where you see a red triangle in the cell, there is a note to help explain what should be entered in that column.

For example when you click in the blue column header "Field or CMU ID", the following pop-up box will appear:

4	A	В	С	D	E	F	G	Н
_			Manure N F	Residual Calcul	ator			
_	This calculator will de	termine manu	re N residual based on the approac	ch and values provided i	in The Penn	State Agrono	omy Guide Tab	le 1.2-15.
Ċ	Enter Past Manure	Application	Rates under "Rate".			•		Crop Years 201
	Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate	Organic N Factor	Organic N Ibs applied	Manure N Residual (Ib N/A)
1		1 yr ago						
		2 yrs ago						
-		3 yrs ago						
		4 yrs ago		<u>_</u>				
		5 yrs ago					<u> </u>	
		2 vrs ano				••		
		3 vrs ago					-	
		4 yrs ago			\sim			
1		5 yrs ago				<u> </u>		
		1 yr ago						
		2 yrs ago					<u></u>	
		3 yrs ago						
		4 yrs ago					>	
		5 yrs ago						
1								
	Ma	anure N F	lesidual ID					
	Or	nce entere	d, the Residual N IDs will app	ear in the drop-do	wn list fo	r the Manu	re History	
1	De	scription in	h Appendix 4 Input.					
1								
	Th	e appropri	ate Manure N Residual calcu	lated on this sheet	will then	be entered	into Apper	ndix 4
	In	out.						
	111							
-								

1. Procedure

1.1. Enter the Manure N Residual ID

Enter a name that best describes the manure N history. Once entered, the Residual N IDs will appear in the drop-down list for the Manure History Description in Appendix 4 Input

1.2.Year

Each year is the timeframe from the plan year.

Enter Past Manure Application R							
Manure N Residual ID	Year						
Fields 1-2 Manure N Residual History	1 yr ago 2 yrs ago 3 yrs ago 4 yrs ago 5 yrs ago						

1.3. Manure Group ID

The manure group names are selected drop-down list. They are the manure groups created in Appendix 3 Input sheet. For a manure group is not part of the current NMP, enter the manure group Id in Appendix 3 Input tab and the manure nutrient information in the Manure Average Input tab. The manure group selected must have the manure analysis values completed or the calculator won't work. An example might be imported Poultry Litter.

Α	В	C	D								
Manure N Residual Calcula											
This calculator will determine manure N residual based on the approach and values provided i											
Enter Past Manure Application Rates under "Rate".											
Manure N Residual ID	Year	Manure Group ID	Manure Type								
	1 yr ago	Imported Poultry Litter		Poultry							
Fields 1.2 Manura N	2 yrs ago	Heifer Barn		Dairy							
Preidual History	3 yrs ago	Spring Liquid		Dairy							
Residual History	4 yrs ago	Imported Poultry Litter		Poultry							
	5 yrs ago	Imported Poultry Litter	-	Poultry							
	1 yr ago	Fall Liquid									
	2 yrs ago	Heifer Barn									
	3 yrs ago	Imported Poultry Litter									
	A This calculator will dete Enter Past Manure A Manure N Residual ID Fields 1-2 Manure N Residual History	A B This calculator will determine man Enter Past Manure Application Manure N Residual ID Year Fields 1-2 Manure N Residual History 1 yr ago 2 yrs ago 3 yrs ago 5 yrs ago 2 yrs ago 3 yrs ago 3 yrs ago	ABCManure N Residual Enter Past Manure Application Rates under "Rate".Manure N Residual IDYearManure Group IDFields 1-2 Manure N Residual History1 yr ago 2 yrs ago 3 yrs agoImported Poultry Litter 9 Imported Poultry LitterFields 1-2 Manure N Residual History1 yr ago 2 yrs ago 3 yrs ago 9 Imported Poultry LitterFields 1-2 Manure N Residual History1 yr ago 2 yrs ago 3 yrs ago 9 Imported Poultry LitterFields 1-2 Manure N Residual History1 yr ago 3 yrs ago 1 yr ago 9 Imported Poultry LitterFields 1-2 Manure N 3 yrs ago 1 yr ago 1 yr ago 9 Imported Poultry LitterFields 1-2 Manure N 3 yrs ago 1 yr ago 1 yr ago 1 yr ago 1 yr ago 1 yr ago 1 yr ago 1 Imported Poultry Litter	A B C Manure N Residual This calculator will determine manure N residual based on the approach and Enter Past Manure Application Rates under "Rate". Manure N Residual ID Year Manure Group ID I Fields 1-2 Manure N Residual History 1 yr ago Imported Poultry Litter I 3 yrs ago Spring Liquid 4 yrs ago Imported Poultry Litter I 1 yr ago Imported Poultry Litter Imported Poultry Litter I 3 yrs ago Imported Poultry Litter Imported Poultry Litter Imported Poultry Litter 1 yr ago Fall Liquid Spring Liquid Imported Poultry Litter Imported Poultry Litter							

<u>Note</u>: An example Appendix 3 Manure Group Information sheet is attached at the end of this document listing the manure groups and analysis information used to complete the manure N residual calculator.

1.4. Manure Type

The manure type will be automatically transferred from Manure Average Input sheet. The manure type must be completed for the calculations to work.

	A	В	С	D									
1	Manure N Residual Calcula												
3	This calculator will determine manure N residual based on the approach and values provided i												
4	Enter Past Manure Application Rates under "Rate".												
5	Manure N Residual ID	Year	Manure Group ID	Manure Type									
6		1 yr ago	Imported Poultry Litter	Poultry									
7	Fielde 1-2 Manura N	2 yrs ago	Heifer Barn	Dairy									
8	Residual History	3 yrs ago	Spring Liquid	Dairy									
9		4 yrs ago	Imported Poultry Litter	Poultry									
10		5 yrs ago	Imported Poultry Litter	Poultry									
				-									

1.5.Rate

Enter the manure rate applied for the year listed. Don't enter the units (tons/Acre or gallons/Acre). For example if poultry litter was applied one year ago at a rate of 4 tons/Acres then enter only 4. Don't enter the units of ton/A.



4 Enter Past Manure Application Rates under "Rate".

5	Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate
6		1 yr ago	Imported Poultry Litter	Poultry	4
7	Fields 1.2 Manura N	2 Manura N 2 yrs ago Heifer Barn		Dairy	12
8	Pleids 1-2 Manufe N	3 yrs ago	Spring Liquid	Dairy	6000
9	Residual history	A yrs ago Fall Liquid		Dairy	6000
10		5 yrs ago	Imported Poultry Litter	Poultry	4

1.6.N Factor

The Organic N Factor from past applications is transferred from Table 6in the NMP. (Agronomy Guide Table 1.2-15)

- 4	Α	В	С	D	E	F						
1	Manure N Residual Calculator											
3	This calculator will determine manure N residual based on the approach and values provided in The Penn State Agronc											
4	Enter Past Manure Application Rates under "Rate".											
5	Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate	Organic N Factor						
5	Manure N Residual ID	Year 1 yr ago	Manure Group ID Imported Poultry Litter	Manure Type Poultry	Rate	Organic N Factor 0.12						
5 6 7	Manure N Residual ID	Year 1 yr ago 2 yrs ago	Manure Group ID Imported Poultry Litter Heifer Barn	Manure Type Poultry Dairy	Rate 4 12	Organic N Factor 0.12 0.05						
5 6 7 8	Manure N Residual ID Fields 1-2 Manure N	Year 1 yr ago 2 yrs ago 3 yrs ago	Manure Group ID Imported Poultry Litter Heifer Barn Spring Liquid	Manure Type Poultry Dairy Dairy	Rate 4 12 6000	Organic N Factor 0.12 0.05 0.02						
5 6 7 8 9	Manure N Residual ID Fields 1-2 Manure N Residual History	Year 1 yr ago 2 yrs ago 3 yrs ago 4 yrs ago	Manure Group ID Imported Poultry Litter Heifer Barn Spring Liquid Fall Liquid	Manure Type Poultry Dairy Dairy Dairy Dairy	Rate 4 12 6000 6000	Organic N Factor 0.12 0.05 0.02 0.02						

The Organic N factors are listed in Table 6 of the NMP.

Ϊ	- A	В	с	D	E	F	G	н	I J K L M N O
	Table	6. Factors for calculating m	nanure nitrogen availability bas	ed on time of	application, incorpor	ation, field	history, and manure a	analysis with	h ammonium and organic N fractions.
	Recor	nmended for all manures,	but required for atypical or tre-	ated manures	. Based on Penn Stat	e Agronom	y Guide Table 1.2-15.		
	5					Total Manu	re N		
1	7			Ammonium N	Analysis				Organic N Analysis (Total N - ammonium N)
		Application Season	• Application Method	Poultry	Poultry <5% Solids 2	Other	Other <5% Solids 2	Compost	Organic M decomposed dwing new applied
	9		Evil of Definition	0.90	0.90	0.80	0.80	0.80	Ciganie is decomposed during gear applied
	0	Spring: 1.2-15	Series 1.2-15: Incorporated within 1 day	0.80	0.80	0.60	0.60	0.60	Poultry Svine Other Dairy Comp
Ī	1	For corplother summer annuals	Sering 1.2-15:Incoregrated within 2 - 4 days	0.60	0.80	0.40	0.60	0.40	Summer Crop 0.60 0.50 0.35 0.35 0.10
1	2	grass hay	Spring 1.2-15: Incorporate dwithin 5 - 7 days	0.40	0.60	0.20	0.40	0.20	Winter Crop 0.40 0.30 0.25 0.25 0.10
1	3		Spring 1.2-15: Incorporated after 7 days	0.20	0.40	0.10	0.30	0.10	Additional organic N available to the summer crop in a
1	4		Summer 1.2-15: In carpareted the same day	0.90	0.90	0.80	0.80	0.80	double crop system from manure applied in the fall for the winter crop (above)
1	5	Summer: 1.2-15	Summer 1.2-15: Incorporated within 1 day	0.80	0.80	0.60	0.60	0.60	Summer Crop 0.30 0.25 0.20 0.20 0.10
1	6	For corn, other summer annuals	Summer 1.2-15: Incorporated within 2 - 4 days	0.60	0.80	0.40	0.60	0.40	
1	7	grass hag	Summer 1.2-15: Incorporated within 5 - 7 days	0.40	0.60	0.20	0.40	0.20	
1	8		Summer 1.2-15: Incorporated ofter 7 days	0.20	0.40	0.10	0.30	0.10	
			Early Fall 1.2-15: fall and soring use by grass hav.	0.80	0.80	0.60	0.60	0.40	
01	9	Early Fall: 1.2-15 ⁸	zmell grainz en dzmell grein zile go. In carp 0+2 deyz						
	20	For fall and spring use by grass	hay, mall grains and small grainsilage. Incorp 3-7	0.50	0.70	0.30	0.50	0.20	
ľ		hay, small grains and small grain silage	easy Early Fall 1.2-19: fall and spring use by grass hay,	0.20	0.40	0.10	0.20	0.00	
2	21		zmell grainz endzmall greinziloge. Incurp after 7 dayz	0.20	0.40	0.10	0.30	0.00	
			Early Fall 1.2-15: nextrummer we by a rummer cray	0.45	0.45	0.35	0.35	0.35	Organic N decomposed from past applications
1	22	Ende Ended a Sta	after a green manure cover crop. Incorp 0-2 days						
	23	Early Factorio	Early Fall 1.2-15: nextrummer we by aronmer craj	, 0.20	0.40	0.15	0.35	0.15	Manure applied Manure Compost
1		For following summer utilization by a summer crop following a	Early Fall 1.2-15: next summer we by a summer and						
1	24	non-harvested cover crop used as a green manure.	after a green manure caver crap. In carp after 7 days	0.00	0.20	0.00	0.20	0.00	1yrago 0.12 0.05
			Full Full 2.4Full and an and a	0.00	0.00	0.00	0.00	0.00	2 wrs ano 0.05 0.02
1	25		fallauine a harverte duinter crap ar na uinter crap	,					
		Late Fall: 12-15 ⁴	Lato Fell 1.2-15: Summor corn or annuals with no	0.00	0.00	0.00	0.00	0.00	3 yrs ago 0.02 0.01
2	6	For following summer utilization	cover crop or cover crop harverted for sila qu						
		by a summer crop following a harvested winter crop or no	Late Fall 1.2-15: Spring grazz hay, zmall grainz ar Summer care, annuals with green manure caver	0.60	0.60	0.50	0.50	0.50	4 urs ago 0.02 0.01
2	27	winter crop	crop						
		hla 6	Minter 1.2-15: Summer carn ar annuals with na	0.00	0.00	0.00	0.00	0.00	5 urs ago 0.01 0.01
2	28	aDIE 6 g summer utilization	caver crap ar caver crap harverted farsilage	0.00	0.00	2.22	0.00		434390 001 001
A.		a second failling from a				-			

1.7. Organic N lbs. applied

The amount of residual organic nitrogen applied during the year applied is calculated for each manure applied for up to five previous years.



In the example above the application rate for each previous year is multiplied by the manure group organic N then multiplied by the Organic N Factor to determine the pounds of organic nitrogen applied in that year.

(See Section 4.1 of this document for the Appendix 3 Manure Group Information)

Example Calculation for Fields 1-2 Manure N Residual History

1 year ago Imported Poultry Litter manure applied

 $\frac{4 \text{ tons poultry litter}}{1 \text{ acre}} \times \frac{60.70 \text{ lbs Organic Nitrogen}}{1 \text{ ton poultry litter}} \times 0.12 \text{ Organic N Factor} = 29.14 \text{ lbs Organic N lbs. applied}$ $\frac{2 \text{ years ago Heifer Barn manure applied}}{1 \text{ acre}} \times \frac{9.36 \text{ lbs Organic Nitrogen}}{1 \text{ ton Heifer Barn}} \times 0.05 \text{ Organic N Factor} = 5.62 \text{ lbs Organic N lbs. applied}$ $\frac{6000 \text{ gallons Spring Liquid}}{1 \text{ acre}} \times \frac{16.5 \text{ lbs Organic Nitrogen}}{1 \text{ ton 0 gallons Spring Liquid}} \times 0.02 \text{ Organic N Factor} = 1.98 \text{ lbs Organic N lbs. applied}$ $\frac{6000 \text{ gallons Spring Liquid}}{1 \text{ acre}} \times \frac{17.2 \text{ lbs Organic Nitrogen}}{1000 \text{ gallons Spring Liquid}} \times 0.02 \text{ Organic N Factor} = 2.06 \text{ lbs Organic N lbs. applied}$ $\frac{6000 \text{ gallons Fall Liquid}}{1 \text{ acre}} \times \frac{17.2 \text{ lbs Organic Nitrogen}}{1000 \text{ gallons Fall Liquid}} \times 0.02 \text{ Organic N Factor} = 2.06 \text{ lbs Organic N lbs. applied}$ $\frac{5 \text{ years ago Imported Poultry Litter manure applied}}{1 \text{ acre}} \times \frac{60.70 \text{ lbs Organic Nitrogen}}{1 \text{ ton poultry litter}}} \times 0.01 \text{ Organic N Factor} = 2.43 \text{ lbs Organic N lbs. applied}$

1.8. Manure N Residual (lb. Nitrogen/Acre)

The value is the sum of the residual manure nitrogen from up to five years of manure application. In the example below, a total of 41 pounds of residual organic nitrogen is available in the current crop year.

	A	В	С	D	E	F	G	Н
1			Manure N Res	idual Calcu	lator			
	This set of the set o						0 i I T	

3 This calculator will determine manure N residual based on the approach and values provided in The Penn State Agronomy Guide Table 1.2-15.

4	Enter Past Manure Application Rates under "Rate". Crop Years 2018										
5	Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate	Organic N Factor	Organic N Ibs applied	Manure N Residual (Ib N/A)			
6		1 yr ago	Imported Poultry Litter	Poultry	4	0.12	29.14				
7	Fields 4.0 Manual N	2 yrs ago	Heifer Barn	Dairy	12	0.05	5.62				
8	Pielus 1-2 Manure N	3 yrs ago	Spring Liquid	Dairy	6000	0.02	1.98	41			
9	Residual History	4 yrs ago	Fall Liquid	Dairy	6000	0.02	2.06				
10		5 yrs ago	Imported Poultry Litter	Poultry	4	0.01	2.43				

2. Selecting manure nitrogen history in Appendix 4 Input

2.1. Residual Manure Nitrogen

The completed Residual Manure Nitrogen group will be available as a selection at the bottom of the Residual Manure N drop-down list.



3. Appendix 4 Crop & Manure Management Printout

The newly created manure residual group and pounds of available organic nitrogen will be displayed in the manure history description.

	App. 4: Crop Yrs. 2018	9 Yrs. 2018 1					
ļ	CMU/Field ID				Į.		
	Acres		10.0		ļ.		
	Soil Test Report Date		October 2, 201	6	ŀ		
	Laboratory Nama		AASL		ŀ		
	Soil Test Levels (Mehlich-3 P & K)	ppm P	ррт К	рН	ŀ		
	[Show conversions to ppm in Appendix 10]	121 150 6.8					
	P Index Part A Evaluation	Nk	o to All Part A		ŀ		
	Part A Result	N Baped					
	Crop		Corn for Silag	e	ļ.		
	Planned Yield		21	ton/A			
	DSI Soil Task Decommendation (Ib) 6)	N	P205	K20			
		160	0	90	ſ		
	User Soil Test Recommendation (Ib/A)				ľ		
	Other Nutrients Applied (Ib/A)	۵	<u>^</u>	0	ľ		
	(Nutrients applied regardless of manure)			· · · ·	L		
	P Index Application Method						
l	Double Crop CarryOver N (Ib/A)	0					
l	Manure History Description		Fields 1-2	Manure N			
l	Repidual Manure N (Ib/A)	41 Residual Histo					
	Legume History Description Residual Legume N (Ib/A)	0 No Previous Year Legu					
	Net Nutrients Required (Ib/A)	119	0	90	t		
	Manure Group	Imported Po	ultry Litter		1		
	Application Season: Management (Incorporation, cover crops, etc.)	Spring: Sp Incorpora	ring or summa tion after 7 da	rutilization- ys or none			
	A No. 1. Mar. W No	Total N	NH4-N	Org. N	ſ		
	(Total N or NH4-N & Organic N)	0.15			ľ		
	P Index Application Method				ľ		
	N Balanced Manure Rate (ton; gal/A)	******	11	toac/A	ľ		
	P Removal Balance Manure Pate		1	tons/A	ŀ		
	(ton or gsl/A; If required by P Index)	Crop P B	enoval (Ib/A)	84.0	ŀ		
	D In day Value				ľ		
	Pindex value				ŀ		
	Planted Manure Hate (ton or garA)			CONSER	ŀ		
	Nutrients Applied at Planned Manure Rate (Ib/A)	44	238	193	h		
	Netrient Balance after Masure	75	-238	-103	ŀ		
	Supplemental Fertilizer (Ib/A)	В	0	0	ļ,		
	P Index Application Method			,	l		
	Final Netrient Balance (Ib/A)	0	-238	-103	ľ		
	Multiple Application				ſ		
	Manure Utilized on CMU		40	tons	ľ		
					411		

Appendix 4 Crop & Manure Mgmt.

4. Supplemental Information

4.1.	Appendix	3	Manure	Group	Information	for	use ir	n section	1.7	' calculation
------	----------	---	--------	-------	-------------	-----	--------	-----------	-----	---------------

Appendix 3 Manure Group Information Crop Yrs. 2018	Fall Liquid		Spring Liquid		Heifer Barn		Imported Poultry Litter	
Manure Report Date (note if averaging several reports)	November 1, 2016		March 31, 2017		March 20, 2017		November 20, 2017	
Laboratory Name	AASL		AASL		AASL		AASL	
Manure Type	Dairy		Dairy		Dairy		Poultry	
Manure Unit (Ibs/ton or 1000 gal)	lb/1000 gal		lb/1000 gal		lb/ton		lb/ton	
Total Nitrogen (N) (Ibs/ton or 1000 gal)	27.00		25.00		11.00		73.42	
Ammonium N (NH ₄ -N) (Ibs/ton or 1000 gal)	9.80		8.50		1.64		12.72	
Total Organic N (Ibs/ton or 1000 gal)	17.20	Go to NMP Index	16.50		9.36		60.70	
Total Phosphate (P ₂ O ₅) (Ibs/ton or 1000 gal)	12.00	Go to Appendix 3 Input	10.00		6.00		59.41	
Total Potash (K ₂ O) (Ibs/ton or 1000 gal)	23.00	Go to Manure Avg Inout	22.00	_	7.00		48.31	

Appendix 3 Manure Group Info.

4.2. Print the Residual N Calculator for submission in Appendix 10: Supporting Information and Documentation

	A	В	С	D	E	Select sheets to print	×
1		Drint on	NMD report	using the	button I		
2		Print an	the Technica	Using the	Dutton I	NMP Index	OK
3		Require	d Annendices	and Sun	section.	NMP Instructions	
4		you will	need to print f	for a mee	t a speci	Contacts for Additional Info.	Cancel
0		,				Farm Specific Animal List	
7		Any she	et listed in the	e non un t	box can t	Appendix 3 Input	
8		print one	e sheet vou ca	an iust se	lect a si	App 4 Input	
9			,			Manure Average Input	
10		Use the	button below	to print	an NMP	Farm Crop List	
11						NMP Summary	
12			Print NM	P Report		NMP Summary Notes	
14						Manure Spreader Calibration	
15		_				Appendix 3 Manure Group Info.	
16						Appendix 4 Crop & Manure Mgmt.	
						Appendix 5 P Index	
•	rin	IT NMP	Report			Table 6	
						Appendix 10 Supporting Info	
						Manure Avg Printed	
						Winter Application Matrix	
						Print NMP Report	
						Rainfall Worksheet	
						Animal Weight Calculator	
						Animal Type-Manure Production	
						Crop List Options	
						Residual N Calculator	
						Grazing Group Manure Calculator	

4.3. Printed Residual N Calculator

Manure N Residual Calculator

This calculator will determine manure N residual based on the approach and values provided in The Penn State Agronomy Guide Table 1.2-15.

Enter Past Manure Application Rates under "Rate".								
Manure N Residual ID	Year	Manure Group ID	Manure Type	Rate	Organic N Factor	Organic N Ibs applied	Manure N Residual (Ib N/A)	
	1 yr ago	Imported Poultry Litter	Poultry	4	0.12	29.14		
Field 1	2 yrs ago	Heifer Barn	Dairy	12	0.05	5.62		
	3 yrs ago	Spring Liquid	Dairy	6000	0.02	1.98	41	
	4 yrs ago	Fall Liquid	Dairy	6000	0.02	2.08		
	5 yrs ago	Imported Poultry Litter	Poultry	4	0.01	2.43		

Version 6.2 - March 2018

Residual N Calculator Page - 1

Date	Previous Revision	Description of Significant Changes
Apr 2, 2018	None	First issue of the document.