To Town of Hollis Board of Selectman July 2, 2020

Detailed below is a lease proposal from Brookdale Fruit Farm Inc. of 38 Broad Street Hollis, NH for the Stefanowicz Farm location. Brookdale is proposing a 25-year lease for all 120 acres of the property with details for each specific area below. Brookdale is interested in this property for 25 years to help offset acreage for our ongoing apple replanting, expand our vegetable production and to give our existing fields a chance to rotate and rest within town. Brookdale has a long-standing history of working with the Natural Resource Conservation Service, as well as the state association of conservation districts, and UNH cooperative Extension to practice conservation farming, promote soil health, and improve growing conditions on all properties that Brookdale farms.

Our history and conservation farm practices would be applied to the leased property for continued improvement. Soil heal and property maintenance is a long-term investment and it takes years to see improvements in managed parcels. Detailed below are plans we would apply to this parcel, but over time plans can change as conditions change so not all aspects can possibly be captured for a 25-year window, but rather some key starting points to improve the property.

One note about conservation, in 2000 Brookdale Fruit Farm was chosen as one of the top 5 farms in the United States for Environmental Stewardship and Conservation Practices and was awarded with the Earth Agriculture Partnership Award. This award is given out every 25 years and for Brookdale to be the only Farm in New England to Receive it is an immense value to the town, our land, and Brookdale's farming credibility within the agricultural community. All of that knowledge and learned skill would be applied to the Stefanowicz Farm Parcel from Brookdale for its continued farming use.

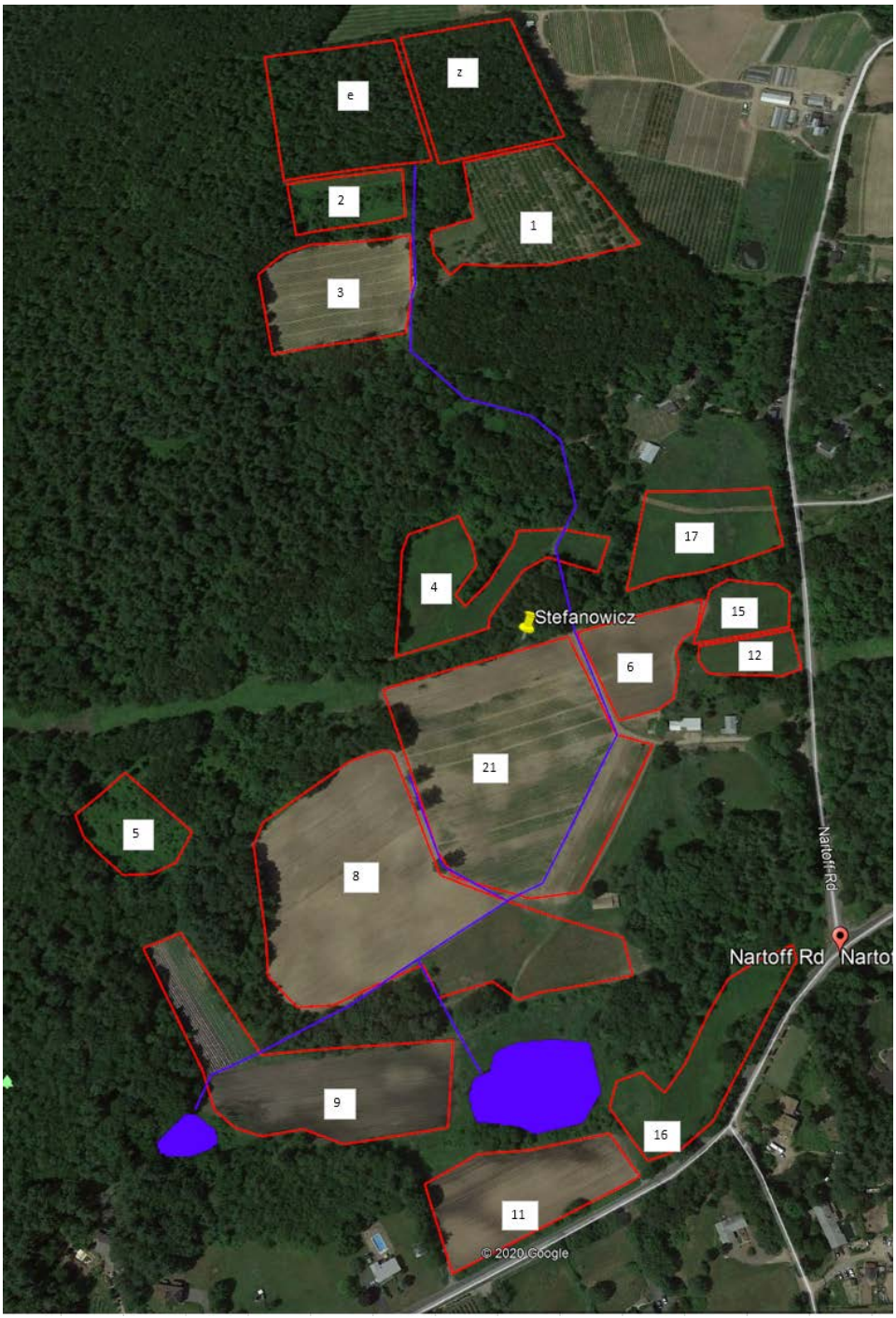
Key Long-Term Investments in Property

- Irrigation infrastructure Establishment
- Forestry Management Plan
- Soil Health plan
- Farm access road repair / establishment
- HEL soil structure improvements
- Field edge remediation
- Invasive species management
- Pollinator habitat
- Potential for field reclamation

A plan by field is detailed below for the first 2 years as we establish the health and capabilities for crops on existing cropped land and evaluate returning some pasture / hay land into production. A longer term NRCS conservation plan is also attached below to outline future improvements for the property. Since

the first year of the lease does not fall in line with NRCS conservation contracting a year buffer in schedule may happed due to detailed plan development and site evaluation.

Brookdale generated field map



Brookdale Field Schedule first two years

					2021	2022	
Field	Zone	Tract	HEL	Acreage	Crop		resource / short term plan
1	1	1406	NHEL	4.83	Peaches	TBD	Orchard evaluation for replant / health
2	1	1406	NHEL	1.71	Cover Crop	no till corn / pumpkin	Field establishment land reclaim and edge work
3	1	1406	NHEL	3.85	no till corn / pumpkin	no till corn / pumpkin	current NRCS observations of high erosion will plant cover crops and plant in a no till method to improve soil structure
4	2	1406	HEL	2.55	Cover Crop	Cover Crop	HEL lands plant cover clear edges first 2 years
5	3	1406	NHEL	1	Cover Crop	no till corn / pumpkin	Field establishment land reclaim and edge work
6	2	1406	HEL	1.49	no till corn / pumpkin	no till corn / pumpkin	Focus on No till or Deep Zone Tillage for HEL LAND followed by no till drilled cover crop seed for winter stabilization
8	2	1406	HEL	6.98	no till corn / pumpkin	no till corn / pumpkin	Focus on No till or Deep Zone Tillage for HEL LAND followed by no till drilled cover crop seed for winter stabilization
9	3	1406	NHEL	3.23	Vegetable production	vegetable production	Hydric soil location use coated slow release fertilizer 50% rest feed thru drip Annual plasticuture or direct seeded crops
11	3	1406	NHEL	1.67	Vegetable production	vegetable production	Hydric soil location use coated slow release fertilizer 50% rest feed thru drip Annual plasticuture or direct seeded crops
12	2	1406	HEL	0.67	Cover Crop	no till corn / pumpkin	Soil and cover establisment PH adjustment
15	2	1406	HEL	0.82	Cover Crop	no till corn / pumpkin	Soil and cover establisment PH adjustment
16	3	1406	HEL	1.69	nothing	TBD	Evaluation of field location to determine polinaor plot size and plant type
17	2	1406	NHEL	2.2	Cover Crop	no till corn / pumpkin	Soil and cover establisment PH adjustment
21	2	1406	HEL	7.2	no till corn / pumpkin	no till corn / pumpkin	Focus on No till or Deep Zone Tillage for HEL LAND followed by no till drilled cover crop seed for winter stabilization
z	1	1406	u	5.83	TBD	TBD	Timing / evaluation timber market and clearing
e	1	1406	u	6.5	TBD	TBD	Timing / evaluation timber market and clearing
				ACRES			
Totals				52.22	with new field		
				39.89	without new field		
	plasticuture/ direct seed						
	Vegetable no till 2021						
	peach evaluation 2021						
	evaluation / cover crops 2021						

Field summary Short Term

Field numbers in the above chart colored in Yellow will be planted in a no till fashion for 2021 and 2022, The fields in Orange will be planted in the conventional plow harrow method with either plasticulture crops and or direct seedings. Particular resource concerns for this area include the use of coated fertilizers to prevent leaching and irrigation via drip tape to supply nutrients to the crops. The peach field in green will be evaluated for orchard heath and a timeline determined as to when to replant. Since we have not grown these trees it will take a year or two to evaluate the longevity of what is left.

All fields in Blue will be cover cropped if necessary and or limed after soil samples are taken to establish their future potential for vegetable crops. The new proposed fields Z and E obviously will not be planted because they are still forested. Our Forester Eric Radlof has provided some information on a forest management plan that would include the clearing of these upper fields for future use. This is currently potentially scheduled for 2023 to 2025. The current timber market is not suitable to cut and clear right away. Also, to note in the short-term summary of field reports before major improvements start all Highly Erodible Land designations (HEL) have been modeled by NRCS and planting plans suggested for the sort term to prove that Brookdale is planting these fields with conservation in mind and appropriately to NRCS standards.

The long term plan

Below in this document is a specific conservation plan for the property. This conservation plan outlines the major issues addressed in the request for proposal, as well as infrastructure improvements and invasive management. This detailed plan covers the first 5 years of the lease once approved, so pending a one to two-year award of the contract this would cover till 2028 in the contract. This conservation plan is just the starting point of the long-term plan and after these goals are met, a new baseline is taken for the property and further improvements are identified. Major improvement plans in this contract are focused in the areas of erosion, irrigation, soil health, nutrient management, and invasive species.

On the long term plan the first major objective of erosion covers two specific areas. The first has to do with the soil in the field. On all land areas but field 9 and 11 planting practice would focus on reduced or no till production. To sum that up reduced till and no till mean that no full width tillage takes place across the field. This prevents the loosening of all soil aggregate and allowing the soil structure to wash away via wind or water. With reduced till and no till only small areas of the soil are disturbed where the seeds are entering the ground. The cover crop that was previously grown will stay in place in a living or decaying form to hold soil structure together and prevent erosion. Brookdale currently farms over 120+ acres in a no till fashion around town and we are equipped to do so. Specialty equipment for this application includes no till seed planters, No till vegetable transplanter, and no till seed drills for cover crops. Brookdale with NRCS has developed special cover crop mixes that aid in no till farming and also produce a larger percentage of nitrogen within the cover crop that is naturally available to the vegetable crops during their growing cycle this conserving and reducing our fertilizer inputs into a growing area.

The second erosion plan has to do with farm access roads. Currently the roads on the property are a washed-out mess. Road improvement is needed to safely transport produce and equipment to and from the field. This would be done in phases in conjunction with a Forrest management plan. For instance, final road work would not be completed till logging operations were finished based on a Forrest management plan. The NRCS conservation plan outlines the roads for improvement and the costs associated with that will be detailed later

Irrigation is a necessity to growing successful crops in New England in current times with climate change. The Stefanowicz property needs some development to bring irrigation to all planted areas of the property. Brookdale specializes in designing irrigation systems in new England and for this property there would be two different types of irrigation used. Drip irrigation would be used on a portion of the row crops and plasticulture land planted on the property, as well as overhead traveler irrigation for row crops such as sweet corn. In order to achieve these two major tasks, have to happen on the property. The first a new larger irrigation pond is needed to be able to supply enough water to maintain the property. This is detailed in the NRCS plan as to the location of the pond. Second the irrigation infrastructure such as pumps, filters, and supply lines need to be engineered to suit the location. Stefanowicz poses a particular challenge to irrigation as the water sources are at the bottom of the hill and the peaches and cherries are 200+ feet in elevation above the water source. An engineered plan is required to make sure that water volume and pressure can make it up the hill to irrigate the crops. This is one of the costliest investments needed in the property, but necessary to make it productive farmland.

Field soil health is the long-term measure for the Stefanowicz property and the prolonged value that is added to the town's asset. Soil health also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. To do this, we need to remember that soil contains living organisms that when provided the basic necessities of life - food, shelter, and water - perform functions required to produce food and fiber. How Brookdale will manage soil health on the property is start with a baseline test and assessment of every field on the property, then develop a pan of action to address the soil resource concerns that were identified as issues in the RFP as well as others. Soil stability and compaction are the first two conditions that will be addressed with cover cropping and strip tillage. This will allow the soil to breathe, regenerate and absorb water. From there a detailed cover crop plan will be established per field to further increase soil structure and organic matter. By not practicing full width tillage and keeping a living soil on the property less inputs will be required and soil health will improve. This long-term plan will be summarized in a soil health plan with measurable outcomes such as increasing soil organic matter that can be presented as improvement metrics over the timeline of the lease.

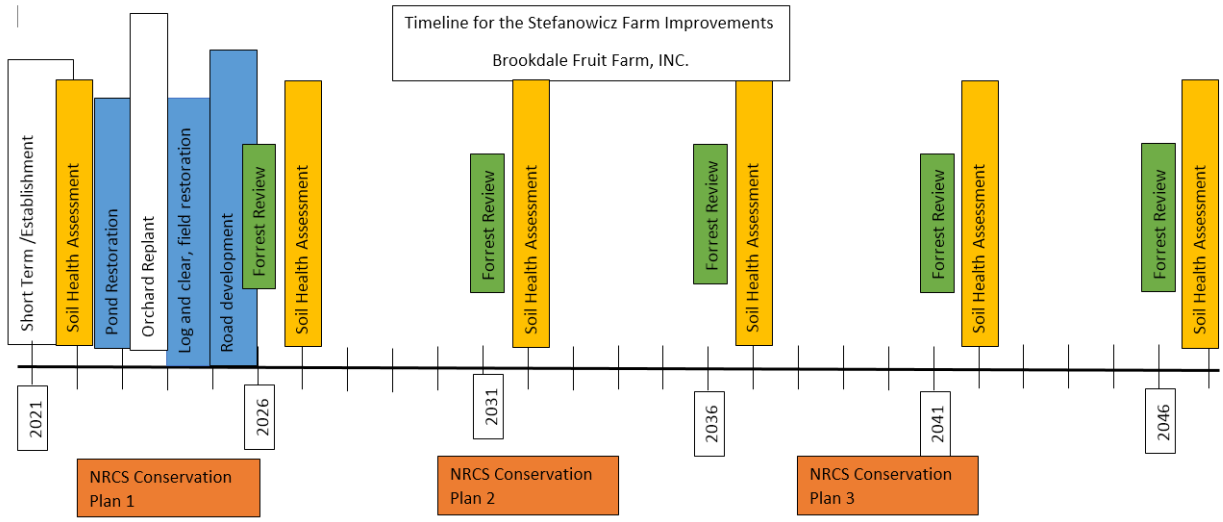
Nutrient Management for the property pairs with food safety and soil health. Since Brookdale is one of the largest direct to consumer produce suppliers in the State, we can not use any manure fertilizers as a base for our growing practices. All nutrients have to be grown organically in the soil or applied in a manner with a controlled release function or supplied through low dose injection through a drip irrigation cycle for the growing phases of the plants. This technological means of nutrient management aligns with NRCS standards and utilizes new technology such as coated polymer slow release fertilizers that prevent leaching beyond the target root zone. NRCS currently requires us in our existing conservation plans to use these fertilizers and this practice would be applied to the Stefanowicz property.

Invasive species management on the property in the forested areas is needed to clean up the field edges and prevent the spread of these species throughout the property. Both NRCS and our Forrester Eric Radlof have outlined management plans of invasive plants on the property. The majority of that work would take place in years 2023 through 2025 during logging operations and road construction. This job however will never be finished since there is so much on the property. The maintenance of the invasive species would include yearly trimming, mowing and or chemical applications of control. Part of field restoration can include managing one species to only have another pop up. Every 5 years as part of the lease an update can be given as to the control of invasive species on the property and how the plans have to change with the improvements made to the property. This is not a one and done activity, but rather a long term plan that Brookdale currently has on all our properties.

Additional property improvements include field edge reclamation. Currently some of the field edges are overgrown as much as 40 feet from the original stone wall locations. This simple but tedious and costly activity will bring a huge visual rural character improvement to the property as well as reclaim some lost farm land. Also planned is a native pollinator habitat for the property. This is a small area plan with a significant impact and improvement to the property. Native pollinator plants will we chosen in cooperation with NRCS and the Xerces society to best feed the local pollinators in the area. This will provide pollinator stability for the fields and great visual for the property.

This proposal is the first pass of a long-term property management plan for the entire area that Brookdale would implement and continue to expand on with our partners in the industry such as NRCS, Extension, and the Conservation districts. This is just the framework of the proposal with more detail to follow. A top-level timeline is provided below

TIMELINE



In the plan we also discuss clearing and reviving two older fields at the top of the hill that are labeled fields E and Z. This practice would happen as a 3-part joint effort in our plan. The players being Brookdale, the town conservation and ag commissions, and our Forrester Eric Radlof. The reason there are three players is Eric's Forrest management plan for the property can also extend into the non-leased portion of the property and return the forested areas into proper management. As indicated by the Ag commission the sale of the timber during that Forrest management practice value can be used to offset the huge expense of stumping and field reclamation. Because of current conditions we feel it is best to address the new field establishment two or three years after contract award so a proper plan with fully detailed costs can be discussed with the town committees, the Forrester and Brookdale to achieve the best outcome for the property as a whole. IF the expenses do not warrant clearing that property, we feel that the value from a selective cut logging activity could also be used as part of the farm access road repair for the property. Both outcomes achieve a property improvement and value to the towns land in the end. If the fields are to be cleared and brought back into production, those locations would be utilized for one to three years as vegetable production and then the potential replant to fruit crops such as peaches apples or cherries.

SUMMARY OF ADDED VALUE INVESTMENT

To calculate the added investments to the property a few basic numbers need to be outlined first. The total tillable acreage in the proposal not including the restoration of two fields up top is 40 acres. The linear footage of farm access road on the property is approximately 6000 feet. Field edge management footage is 14500 feet, and the pond size to be established is approximately 1 acre in size. All cost estimations are based from actual NRCS practice numbers as well as actual experienced costs via Brookdale.

The table below estimates the added value of described activities based on today's rates without inflation.

Activity	
Access roads	$63,206.00
pollinator	$12,000.00
irrigation	$115,516.00
edge clean up	$118,929.00
invasive management	$56,000.00
soil health improvement	$102,000.00
POND	$87,000.00
Total	$554,651.00

Access road calculation was made using 3 classifications of NRCS road repair of new farm road construction on either level ground ($6.39/ft), sloped terrain ($8.90/ft), or wet slopped terrain

($20.00/ft) with each classification being paid at different rates. An average was taken for 3 types of terrain over the linear footage of road totaling approximately 6000 feet to be a total vale of $63,206.00

Pollinator habitat establishment is total cost estimates taken from Brookdale's planted existing habitats to include soil prep and solarization, frost seeding, two weeding applications and mowing management

Irrigation estimates are based off a main line pipe install of 44oo linear feet of 6-inch sch 40 240 psi PW pipe with a 4 cylinder diesel engine pump and quad water filtration element with 55% drip application on tillable land of the property over the lifetime of the lease. This cost does not include the installation but rather just materials and hard goods. Note that the pipeline is to remain on the property but all portable capital expenses are not part of the property but assets of Brookdale and do not stay with the property as added investment. Only the pipeline remains as an asset to operate irrigation on the property with a total vale of over $36,000.00 worth of installed material.

Property Edge clean up to preserve the rural character and appearance of farmland in NH is estimated at an hourly rate equivalent to the current H2a labor rate of $14.26 per hour with an estimate of 2900 hours to clean up field edges of the property. This activity would take place over a few years and would be burnt and disposed of onsite totaling $39,643.00 per activity of clean up. 3 clean ups would be necessary over the course of a 25-year lease totaling at today's dollar amount at $118929.00

Invasive species management is an estimate based on mechanical control of invasive species. This is an estimate per application at $56,000.00 One to two applications would be necessary over 25-year lease, this includes the labor and equipment cost to mulch, cut and spray invasive species on the property.

Soil health improvements is measured on an average estimate of cover crop seed panting rates to improve soil health as a baseline assessment. There are many other costs that go into this number but this is the easiest to equate and calculate for a baseline establishment. Our average cover crop being winter rye is applied at 50 to 70 lbs. per acre with a total cost averaging $35 an acre. Our soil health conservation mixes being planted at rates of 70 to 120 lbs. per acre with a cost averaging of $137.00 per acre in seed leave an added investment cost of $102 in soil health seed per acre. At 40 acres a year over 25 years that is an added investment expense of $102,000.00 in soil health on the property

Pond estimates for an acre expansion are taken of a current quoted and NRCS designed pond expansion currently being built at Brookdale. This estimate seems low but is the only baseline number available to assess the cost of creating a pond. Note the fill that is not used elsewhere to fill voids and help level the property will be trucked off the property as part of the pond digging expense. This is currently estimated at $87,000.00

Total investment dollars towards the Stefanowicz property in this proposal sum to be $554,651.00. Given actual NRCS rate calculations and no inflation we predict this accurately accounts for at least 85% of the value to be invested into the property over the next 25 years. That breaks down to $22,186.04 per year or $554.62 per tillable acre per year for the next 25 years. The tables used to generate all these numbers with references can be made available upon request.

Annual Rent

The average rent paid in the State of NH for leased agricultural land is $42.00 per acre. The total land lease for the parcel is 120 acres, however the actual acreage that can generate revenue on that leased land currently is only 40 acres. Brookdale is applying to lease the entire parcel and will maintain the non-tillable acreage as part of the lease, but we feel that we should only pay rent according to the tillable acreage on the parcel that we can grow a crop on. That being said the math works out to $42.00 per acre at 40 acres to a total value of $1680.00. If the additional 12 acres were to be cleared a repurposed as crop land that additional acreage would be paid at the same average per age multiplied by the tillable acreage to the annual rent payment on the first year a crop is grown for sale. If everything is opened that would be an additional 12 acres at $42.00 per acre for a yearly addition of $504.00 to the lease payment. If you total the rent and yearly property improvement investment that's a returned value to the town annually of $1680 + $22,186.04 = $23866.04 per year.

Thank you for reviewing and considering Brookdale as a potential partner in the Stefanowicz property. If there are any questions about the proposal please contact Chip Hardy VP of Brookdale Fruit Farm Inc for further answers. We at Brookdale sincerely hope we will be awarded the ability to help preserve and maintain more agricultural land within a town we are so deeply rooted into.

Submitted by

Chip Hardy

Brookdale Fruit Farm Inc.

38 Broad Street

Hollis, NH 03049

603 465 2240

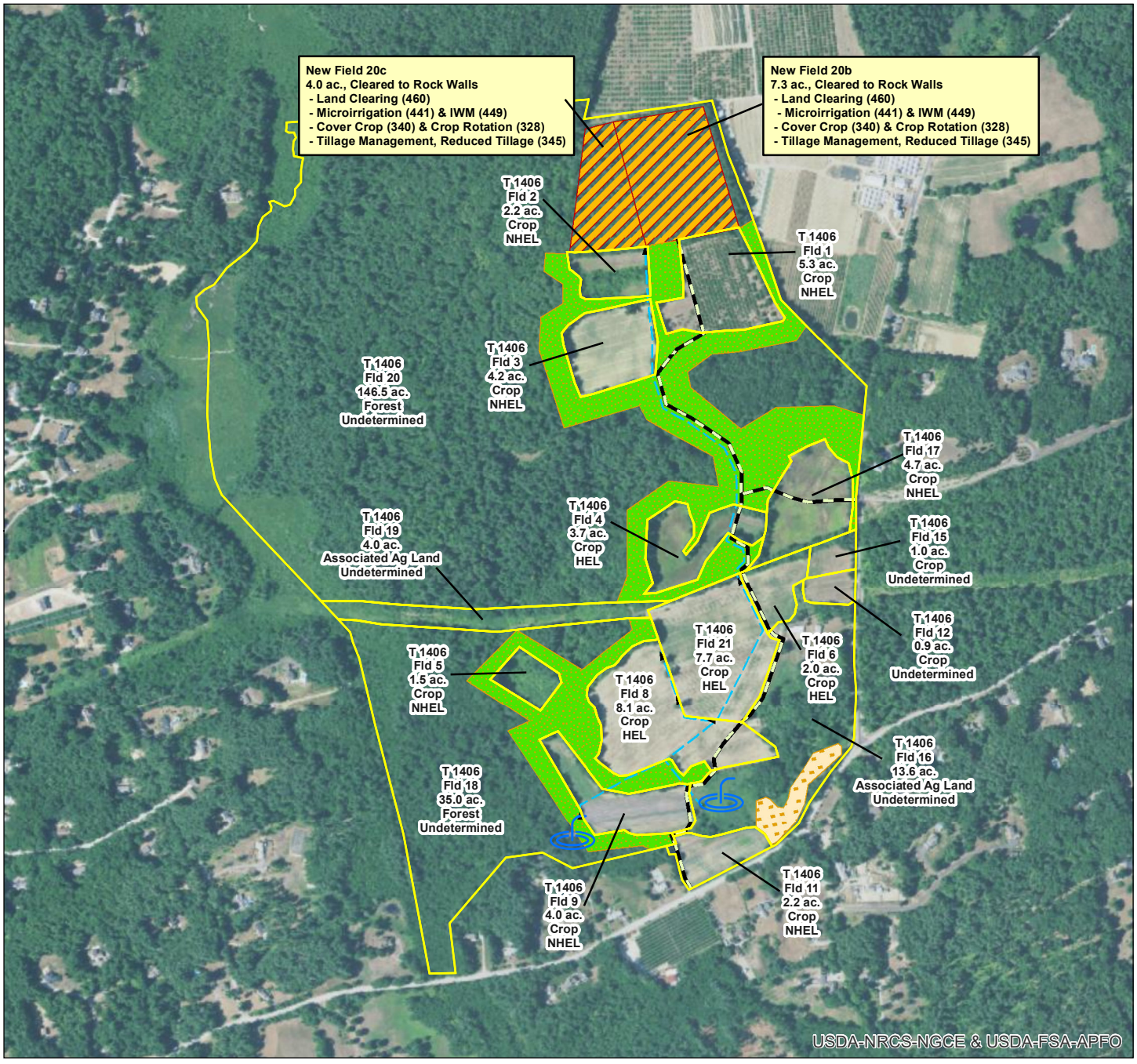
hardy1740@aol.com

Date: 7/1/2020

Conservation Plan Map

Client(s): BROOKDALE FRUIT FARM INC
Location: Nartoff Rd & Pine Hill Rd, Hollis, NH
Hillsborough County, New Hampshire
Approximate Acres: 246.66

Assisted By: CHAD COCHRANE
USDA-NRCS
MILFORD SERVICE CENTER
HILLSBOROUGH COUNTY CONSERVATION DISTRICT



Prepared with assistance from USDA-Natural Resources Conservation Service

0 752
Feet

Practice Schedule PLUs

Conservation Practice Points
Irrigation Reservoir (436)

Conservation Practice Lines
Access Road (560)
Irrigation Pipeline (430)

Conservation Practice Polygons
Brush Management (314)
Conservation Cover (327)
Land Clearing (460)

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USDA

United States Department of Agriculture

Natural Resources Conservation Service

CONSERVATION PLAN

BROOKDALE FRUIT FARM INC

CHAD COCHRANE
CONCORD, NEW HAMPSHIRE
(603) 223-6021
chad.cochrane@usda.gov
7/1/2020

MILFORD SERVICE CENTER
468 ROUTE 13 SOUTH
MILFORD, NH 03055
(603) 673-2409

Conservation Plan

BROOKDALE FRUIT FARM INC

PO BOX 389

HOLLIS, NH 03049

OBJECTIVE(S)

Improve soil health and productivity on active cropland by reducing tillage, improving the crop rotation, cover cropping, and practicing nutrient and pest management. Create water sources and conveyances for irrigation. Practice micro-irrigation and irrigation water management to conserve water resources and prevent leaching of nutrients. Clear land suitable for cropping. Reduce the infestation of invasive species and other unwanted brush along field edges.

Associated Ag Land

Tract: 1406

Conservation Cover (327)

Frost seeding or late summer seeding of native perennial flowering plants with especially high quality pollen and nectar. Increased cost is due to expensive seed and additional site preparation and weed control the first year after seeding.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
16	1.6 ac	11	2023	--	--
Total:	13.6 ac	--	--	--	--

Irrigation Reservoir (436)

Create or expand an excavated (dug-out) pond for the purpose of holding irrigation water. Pond should have stable side-slopes that are steep enough to prevent weed growth and maximize storage capacity. Reservoirs constructed in wetlands will require a wetland permit or exemption.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
16	1.00 ac-ft	08	2023	--	--
Total:	1.00 ac-ft	--	--	--	--

Crop

Tract: 1406

Access Road (560)

Repair existing roadways used by vehicles for the management of the operation. Roads may be regraded or resurfaced as needed to improve access and reduce erosion. Water control structures must be installed to properly carry runoff water over or under the road based on a final engineering design.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
17	604.00 ft	07	2022	--	--
21	4125.00 ft	07	2022	--	--
Total:	4729.00 ft	--	--	--	--

Conservation Crop Rotation (328)

Grow crops in a planned rotation for biodiversity and to provide adequate amounts of organic material for erosion reduction, nutrient balance and sustained soil organic matter.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--
17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--
5	1.5 ac	09	2021	--	--
6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
11	2.2 ac	09	2022	--	--
12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--

3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--
3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--
8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	42.2 ac	--	--	--	--

Cover Crop (340)

Plant a cover crop mixture with legumes, brassicas, grains or grasses according to NH 340 Planting Guide. Typically planted after harvest for erosion protection and nitrogen fixation. Assumes seed, equipment, and labor costs.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--
17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--

5	1.5 ac	09	2021	--	--
6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
11	2.2 ac	09	2022	--	--
12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--
3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--
3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--
8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	42.2 ac	--	--	--	--

Critical Area Planting (342)

Establishing permanent vegetation of low-growing, low-maintenance grasses under renovated or replanted orchards on slopes prone to erosion.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
1	5.3 ac	05	2021	--	--
Total:	5.3 ac	--	--	--	--

Irrigation Pipeline (430)

A pipeline and appurtenances installed to convey water for storage or application, as part of an irrigation water system.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
21	524.00 ft	08	2023	--	--
8	4031.00 ft	08	2023	--	--
Total:	4555.00 ft	--	--	--	--

Irrigation System, Microirrigation (441)

An irrigation system for frequent application of small quantities of water on or below the soil surface: as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
1	5.3 ac	09	2021	--	--
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--
17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--
5	1.5 ac	09	2021	--	--
6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
11	2.2 ac	09	2022	--	--

12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--
3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--
3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--
8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	47.6 ac	--	--	--	--

Irrigation Water Management (449)

The process of determining and controlling the volume, frequency, and application rate of irrigation water.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
1	5.3 ac	09	2021	--	--
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--

17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--
5	1.5 ac	09	2021	--	--
6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
1	5.3 ac	09	2022	--	--
11	2.2 ac	09	2022	--	--
12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--
3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
1	5.3 ac	09	2023	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--
3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--

8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	47.6 ac	--	--	--	--

Mulching (484)

Apply black polyethylene or biodegradable, starch-based plastic film mulch to reduce weed growth, herbicide use, cultivation, and moisture loss. Non-biodegradable mulch must be removed at the end of the growing season and disposed of properly.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
11	2.2 ac	05	2021	--	--
9	4.0 ac	05	2021	--	--
11	2.2 ac	05	2022	--	--
9	4.0 ac	05	2022	--	--
11	2.2 ac	05	2023	--	--
9	4.0 ac	05	2023	--	--
Total:	6.2 ac	--	--	--	--

Nutrient Management (590)

Implement a nutrient management plan for conventional and organic vegetable and fruits crops to supply adequate nutrients for crop growth while limiting leaching and runoff. Includes soil and compost tests, and labor for analyzing nutrient results and keeping mandatory records. Nutrients will be applied through split applications, slow-release granular fertilizers, and/or fertigation through drip irrigation.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
1	5.3 ac	09	2021	--	--
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--
17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--
5	1.5 ac	09	2021	--	--

6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
1	5.3 ac	09	2022	--	--
11	2.2 ac	09	2022	--	--
12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--
3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
1	5.3 ac	09	2023	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--
3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--
8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	47.6 ac	--	--	--	--

Pest Management Conservation System (595)

Used to implement a comprehensive IPM plan on field and forage crops. Assumes record keeping, monitoring of climate and pest populations, basing sprays on economic thresholds, and using cultural techniques to reduce pest suppression.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
11	2.2 ac	09	2021	--	--
12	0.9 ac	09	2021	--	--
15	1.0 ac	09	2021	--	--
17	4.7 ac	09	2021	--	--
2	2.2 ac	09	2021	--	--
21	7.7 ac	09	2021	--	--
3	4.2 ac	09	2021	--	--
4	3.7 ac	09	2021	--	--
5	1.5 ac	09	2021	--	--
6	2.0 ac	09	2021	--	--
8	8.1 ac	09	2021	--	--
9	4.0 ac	09	2021	--	--
11	2.2 ac	09	2022	--	--
12	0.9 ac	09	2022	--	--
15	1.0 ac	09	2022	--	--
17	4.7 ac	09	2022	--	--
2	2.2 ac	09	2022	--	--
21	7.7 ac	09	2022	--	--
3	4.2 ac	09	2022	--	--
4	3.7 ac	09	2022	--	--
5	1.5 ac	09	2022	--	--
6	2.0 ac	09	2022	--	--
8	8.1 ac	09	2022	--	--
9	4.0 ac	09	2022	--	--
11	2.2 ac	09	2023	--	--
12	0.9 ac	09	2023	--	--
15	1.0 ac	09	2023	--	--
17	4.7 ac	09	2023	--	--
2	2.2 ac	09	2023	--	--
21	7.7 ac	09	2023	--	--

3	4.2 ac	09	2023	--	--
4	3.7 ac	09	2023	--	--
5	1.5 ac	09	2023	--	--
6	2.0 ac	09	2023	--	--
8	8.1 ac	09	2023	--	--
9	4.0 ac	09	2023	--	--
Total:	42.2 ac	--	--	--	--

Pest Management Conservation System (595)

Used to implement a comprehensive IPM plan on fruit crops. Assumes record keeping, monitoring of climate and pest populations, basing sprays on economic thresholds, and using cultural techniques to reduce pest suppression.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
1	5.3 ac	09	2021	--	--
1	5.3 ac	09	2022	--	--
1	5.3 ac	09	2023	--	--
Total:	5.3 ac	--	--	--	--

Residue and Tillage Management, Reduced Till (345)

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round while limiting soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
12	0.9 ac	05	2021	--	--
15	1.0 ac	05	2021	--	--
17	4.7 ac	05	2021	--	--
2	2.2 ac	05	2021	--	--
21	7.7 ac	05	2021	--	--
3	4.2 ac	05	2021	--	--
4	3.7 ac	05	2021	--	--
5	1.5 ac	05	2021	--	--
6	2.0 ac	05	2021	--	--
8	8.1 ac	05	2021	--	--
12	0.9 ac	05	2022	--	--
15	1.0 ac	05	2022	--	--
17	4.7 ac	05	2022	--	--
2	2.2 ac	05	2022	--	--
21	7.7 ac	05	2022	--	--
3	4.2 ac	05	2022	--	--
4	3.7 ac	05	2022	--	--
5	1.5 ac	05	2022	--	--
6	2.0 ac	05	2022	--	--
8	8.1 ac	05	2022	--	--
12	0.9 ac	05	2023	--	--
15	1.0 ac	05	2023	--	--
17	4.7 ac	05	2023	--	--
2	2.2 ac	05	2023	--	--
21	7.7 ac	05	2023	--	--
3	4.2 ac	05	2023	--	--
4	3.7 ac	05	2023	--	--
5	1.5 ac	05	2023	--	--
6	2.0 ac	05	2023	--	--
8	8.1 ac	05	2023	--	--
Total:	36.1 ac	--	--	--	--

Forest

Tract: 1406

Brush Management (314)

Cut stem application for areas of mature above head height invasive plants where a backpack sprayer cannot be used safely. Also reduces drift which can kill desired native plants in mixed stands.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
18	8.7 ac	04	2022	--	--
20	20.9 ac	04	2022	--	--
Total:	181.5 ac	--	--	--	--

Conservation Crop Rotation (328)

Grow crops in a planned rotation for biodiversity and to provide adequate amounts of organic material for erosion reduction, nutrient balance and sustained soil organic matter.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	7.3 ac	09	2026	--	--
20	4.0 ac	09	2026	--	--
20	7.3 ac	09	2027	--	--
20	4.0 ac	09	2027	--	--
20	7.3 ac	09	2028	--	--
20	4.0 ac	09	2028	--	--
Total:	146.5 ac	--	--	--	--

Cover Crop (340)

Plant a cover crop mixture with legumes, brassicas, grains or grasses according to NH 340 Planting Guide. Typically planted after harvest for erosion protection and nitrogen fixation. Assumes seed, equipment, and labor costs.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	7.3 ac	09	2026	--	--
20	4.0 ac	09	2026	--	--
20	7.3 ac	09	2027	--	--
20	4.0 ac	09	2027	--	--
20	7.3 ac	09	2028	--	--
20	4.0 ac	09	2028	--	--
Total:	146.5 ac	--	--	--	--

Irrigation Reservoir (436)

Create or expand an excavated (dug-out) pond for the purpose of holding irrigation water. Pond should have stable side-slopes that are steep enough to prevent weed growth and maximize storage capacity. Reservoirs constructed in wetlands will require a wetland permit or exemption.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
18	1.00 ac-ft	08	2023	--	--
Total:	1.00 ac-ft	--	--	--	--

Irrigation System, Microirrigation (441)

An irrigation system for frequent application of small quantities of water on or below the soil surface: as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	7.3 ac	05	2026	--	--
20	4.0 ac	05	2026	--	--
Total:	146.5 ac	--	--	--	--

Irrigation Water Management (449)

The process of determining and controlling the volume, frequency, and application rate of irrigation water.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	7.3 ac	05	2026	--	--
20	4.0 ac	05	2026	--	--
20	7.3 ac	05	2027	--	--
20	4.0 ac	05	2027	--	--
20	7.3 ac	05	2028	--	--
20	4.0 ac	05	2028	--	--
Total:	146.5 ac	--	--	--	--

Land Clearing (460)

Remove trees, stumps, and other vegetation from wooded areas to enable cropping. Follow guidelines for proper erosion and sediment control.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	4.0 ac	07	2025	--	--
20	7.3 ac	07	2025	--	--
Total:	146.5 ac	--	--	--	--

Residue and Tillage Management, Reduced Till (345)

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round while limiting soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.

-- indicates no data is available

Field	Planned Amount	Month	Year	Applied Amount	Date
20	7.3 ac	05	2026	--	--
20	4.0 ac	05	2026	--	--
20	7.3 ac	05	2027	--	--
20	4.0 ac	05	2027	--	--
20	7.3 ac	05	2028	--	--
20	4.0 ac	05	2028	--	--
Total:	146.5 ac	--	--	--	--

To maintain eligiblity for USDA programs, all Highly Erodible Land (HEL) must maintain a crop rotation that reduces erosion below the tolerable limit for the given soil type. All permits required are the responsibility of the landowner. Many practices require additional guidance, specifications, and designs prior to implementation. Check with the local field office prior to the commencement of planned practices.

CERTIFICATION OF PARTICIPANTS

BROOKDALE FRUIT FARM INC DATE

CERTIFICATION OF:

CERTIFIED PLANNER DATE

CONSERVATION DISTRICT

HILLSBOROUGH COUNTY CONSERVATION DISTRICT DATE

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1400 Independence Avenue, SW.
Washington, DC 20250-9410

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Assessment of Water and Wind Erosion, Soil Tillage Intensity, Organic Matter Trend, Air Particulate Matter and Fuel Use

Area of Analysis AoA 3
Assessment (File) Name: C:\workspace\IET_Runs\Assessments\Brookdale - T1406\Reports\Erosion Report - Fld 4 - No-till Sweet Corn.pdf
County / State: Hillsborough County, New Hampshire,NH
Assessment Date: 7/1/2020

Management

Crop Rotation: No-till with Rollers, Sweet Corn, Cover Crop
Fuel Type: Diesel

Average Annual Water Erosion

Contouring: (none)
Strips / Barriers: (none)
Hydraulic Elements: (none)
Stripcropping: No
Climate File: http://csip.engr.colostate.edu/r2/climates/USA/New Hampshire/Hillsborough County.xml

Soil Map Unit	Soil Component	Slope Length (ft)	Slope Steepness (%)	Shape	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Chatfield	120	10		**2.0**	**0.32**

Average Annual Wind Erosion

Wind Region Length: 463.5 Feet
Width: 632.4 Feet
Orientation: 0 Degrees from North
Climate Station: CLINTON MA
Wind Station: Interpolated

Wind Barrier North: (none)
South: (none)
East: (none)
West: (none)

Soil Map Unit	Soil Component	Biomass (ton/ac/yr)	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Canton	**4.3**	**3.0**	**0.02**

Tillage Intensity, Air Particulates, Fuel Use, and Rotation Soil Organic Matter Trend

Annual Soil Tillage Intensity Rating (STIR):	**10**		**Rotation Soil Conditioning Index (SCI):**	**0.94**
Air Particulates (PM10):	**0.0**	**ton / ac / yr**	**SCI Organic Matter (OM) Factor:**	**1.0**
Fuel Use:	**2.2**	**gal / ac / yr**	**SCI Field Operation (FO) Factor:**	**0.89**
			SCI Erosion (ER) Factor:	**0.87**

Rotation Interval and Other Detailed Results

Total STIR: 10

Total Fuel Use: 2.2 **(gal / ac)**

Date	Operation	Crop	Residue	Residue Amt	Yield	Yield Units	Surf Res	Int Yrs	STIR	Fuel Use	Water Erosion	Wind Erosion	Creep Salt	Susp	PM10
06-01-0000	Roller, crimp, covercrop						99								
06-01-0000	Planter, double disk opnr with starter fertilizer	Corn, sweet			7300.00	lbs	99								
06-03-0000	Sprayer, post emergence		small grain cover crop	100			99								
06-30-0000	Sprayer, post emergence		weeds; 0-3 mo	20			99								
08-15-0000	Harvest, hand pick vegetables						97	1	10	2.2	0.0	0.02	0.01	0.0	0.0
08-17-0000	Shredder, flail or rotary						98								
08-19-0000	Drill or airseeder, double disk, w/ fluted coulters	Rye, winter cover			8000.00	lbs	97								

Surface Residue (Surf Res): %
Fuel Use: gallons/acre for crop rotation interval
Water, Wind erosion: tons/acre/year
Creep and Saltation: tons/acre/year
Suspension: tons/acre/year
PM10: tons/acre/year
Interval years: interval days/365
Residue: pounds/acre

Considerations for Conservation

Water Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA Revised Universal Soil Loss Equation (RUSLE2) model configured for local conditions calculates sheet/rill erosion for a slope representing a farm field or other area being assessed. Steps to reduce water erosion include reducing slope length (decreasing the length of water flow downslope), increasing crop residues especially during erosive precipitation periods, and building up organic matter to increase infiltration.

Wind Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA WEPS model configured for local conditions calculates total wind erosion, plus the creep/saltation component that can damage crops, and the component suspended in the air and lost off-site. Steps to reduce wind erosion include increasing surface residues during high wind energy periods (the most important factor), tillage perpendicular to most erosive wind direction, decreasing the area exposed to wind via wind strips or other methods, and decreasing wind energy through barriers such as windbreaks.

Soil Tillage Intensity: The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate an intensity rating for a full rotation or interval. Operations with high STIR ratings degrade soil structure and organic matter. Steps to reduce STIR include reducing tillage operations, or replacing high with lower intensity operations. The WEPS model computes the STIR values displayed in this report.

Soil Organic Matter Trend: Positive Soil Conditioning Index (SCI) values indicate soil organic matter buildup, and negative values indicate depletion. SCI is a function of annual crop biomass (OM factor), soil disturbance intensity (FO factor), and water and wind erosion (ER factor). Increasing plant biomass in the rotation (high residue crops, cover crops, etc.), reducing tillage to optimize soil microbial populations, and decreasing erosion causes the SCI to trend in a more positive direction. The RUSLE2 and WEPS models both contribute output for the calculation of SCI values.

Air Particulates: Very fine (PM10) air particulates, 10 micrometers or less in size, can damage crops and cause health problems. The WEPS model calculates the PM10 component of soil loss in tons/acre/year. PM10 particulate matter can be reduced by controlling wind erosion using the methods described above, especially increasing residues and organic matter. Keeping soil moist during high wind energy periods also reduces dust.

Fuel Use: This report provides estimates of average annual, crop interval, and total crop rotation fuel use based on the operations used in the rotation. Fuel use can be reduced by replacing high fuel use operations with lower ones, eliminating high fuel use operations via reduced or no tillage.

Assessment of Water and Wind Erosion, Soil Tillage Intensity, Organic Matter Trend, Air Particulate Matter and Fuel Use

Area of Analysis AoA 1
Assessment (File) Name: C:\workspace\IET_Runs\Assessments\Brookdale - T1406\Reports\Erosion Report - Fld 6 - No-till Sweet Corn.pdf
County / State: Hillsborough County, New Hampshire,NH
Assessment Date: 7/1/2020

Management

Crop Rotation: No-till with Rollers, Sweet Corn, Cover Crop
Fuel Type: Diesel

Average Annual Water Erosion

Contouring: (none)
Strips / Barriers: (none)
Hydraulic Elements: (none)
Stripcropping: No
Climate File: http://csip.engr.colostate.edu/r2/climates/USA/New Hampshire/Hillsborough County.xml

Soil Map Unit	Soil Component	Slope Length (ft)	Slope Steepness (%)	Shape	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Chatfield	125	10.5		**2.0**	**0.34**

Average Annual Wind Erosion

Wind Region
Length: 451.6 Feet
Width: 351.9 Feet
Orientation: 0 Degrees from North
Climate Station: CLINTON MA
Wind Station: Interpolated

Wind Barrier
North: (none)
South: (none)
East: (none)
West: (none)

Soil Map Unit	Soil Component	Biomass (ton/ac/yr)	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Canton	**4.3**	**3.0**	**0.02**

Tillage Intensity, Air Particulates, Fuel Use, and Rotation Soil Organic Matter Trend

Annual Soil Tillage Intensity Rating (STIR):	**10**		**Rotation Soil Conditioning Index (SCI):**	**0.94**
Air Particulates (PM10):	**0.0**	**ton / ac / yr**	**SCI Organic Matter (OM) Factor:**	**1.0**
Fuel Use:	**2.2**	**gal / ac / yr**	**SCI Field Operation (FO) Factor:**	**0.89**
			SCI Erosion (ER) Factor:	**0.86**

Rotation Interval and Other Detailed Results

Total STIR: 10

Total Fuel Use: 2.2 **(gal / ac)**

Date	Operation	Crop	Residue	Residue Amt	Yield	Yield Units	Surf Res	Int Yrs	STIR	Fuel Use	Water Erosion	Wind Erosion	Creep Salt	Susp	PM10
06-01-0000	Roller, crimp, covercrop						99								
06-01-0000	Planter, double disk opnr with starter fertilizer	Corn, sweet			7300.00	lbs	99								
06-03-0000	Sprayer, post emergence		small grain cover crop	100			99								
06-30-0000	Sprayer, post emergence		weeds; 0-3 mo	20			99								
08-15-0000	Harvest, hand pick vegetables						97	1	10	2.2	0.0	0.02	0.01	0.0	0.0
08-17-0000	Shredder, flail or rotary						98								
08-19-0000	Drill or airseeder, double disk, w/ fluted coulters	Rye, winter cover			8000.00	lbs	97								

Surface Residue (Surf Res): %
Fuel Use: gallons/acre for crop rotation interval
Water, Wind erosion: tons/acre/year
Creep and Saltation: tons/acre/year
Suspension: tons/acre/year
PM10: tons/acre/year
Interval years: interval days/365
Residue: pounds/acre

Considerations for Conservation

Water Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA Revised Universal Soil Loss Equation (RUSLE2) model configured for local conditions calculates sheet/rill erosion for a slope representing a farm field or other area being assessed. Steps to reduce water erosion include reducing slope length (decreasing the length of water flow downslope), increasing crop residues especially during erosive precipitation periods, and building up organic matter to increase infiltration.

Wind Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA WEPS model configured for local conditions calculates total wind erosion, plus the creep/saltation component that can damage crops, and the component suspended in the air and lost off-site. Steps to reduce wind erosion include increasing surface residues during high wind energy periods (the most important factor), tillage perpendicular to most erosive wind direction, decreasing the area exposed to wind via wind strips or other methods, and decreasing wind energy through barriers such as windbreaks.

Soil Tillage Intensity: The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate an intensity rating for a full rotation or interval. Operations with high STIR ratings degrade soil structure and organic matter. Steps to reduce STIR include reducing tillage operations, or replacing high with lower intensity operations. The WEPS model computes the STIR values displayed in this report.

Soil Organic Matter Trend: Positive Soil Conditioning Index (SCI) values indicate soil organic matter buildup, and negative values indicate depletion. SCI is a function of annual crop biomass (OM factor), soil disturbance intensity (FO factor), and water and wind erosion (ER factor). Increasing plant biomass in the rotation (high residue crops, cover crops, etc.), reducing tillage to optimize soil microbial populations, and decreasing erosion causes the SCI to trend in a more positive direction. The RUSLE2 and WEPS models both contribute output for the calculation of SCI values.

Air Particulates: Very fine (PM10) air particulates, 10 micrometers or less in size, can damage crops and cause health problems. The WEPS model calculates the PM10 component of soil loss in tons/acre/year. PM10 particulate matter can be reduced by controlling wind erosion using the methods described above, especially increasing residues and organic matter. Keeping soil moist during high wind energy periods also reduces dust.

Fuel Use: This report provides estimates of average annual, crop interval, and total crop rotation fuel use based on the operations used in the rotation. Fuel use can be reduced by replacing high fuel use operations with lower ones, eliminating high fuel use operations via reduced or no tillage.

Assessment of Water and Wind Erosion, Soil Tillage Intensity, Organic Matter Trend, Air Particulate Matter and Fuel Use

Area of Analysis AoA 2
Assessment (File) Name: C:\workspace\IET_Runs\Assessments\Brookdale - T1406\Reports\Erosion Report - Fld 8 - No-till Sweet Corn.pdf
County / State: Hillsborough County, New Hampshire,NH
Assessment Date: 7/1/2020

Management

Crop Rotation: No-till with Rollers, Sweet Corn, Cover Crop
Fuel Type: Diesel

Average Annual Water Erosion

Contouring: (none)
Strips / Barriers: (none)
Hydraulic Elements: (none)
Stripcropping: No
Climate File: http://csip.engr.colostate.edu/r2/climates/USA/New Hampshire/Hillsborough County.xml

Soil Map Unit	Soil Component	Slope Length (ft)	Slope Steepness (%)	Shape	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Chatfield	150	8		**2.0**	**0.26**

Average Annual Wind Erosion

Wind Region Length: 751.6 Feet
Width: 986.8 Feet
Orientation: 0 Degrees from North
Climate Station: CLINTON MA
Wind Station: Interpolated

Wind Barrier North: (none)
South: (none)
East: (none)
West: (none)

Soil Map Unit	Soil Component	Biomass (ton/ac/yr)	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Canton	**4.3**	**3.0**	**0.02**

Tillage Intensity, Air Particulates, Fuel Use, and Rotation Soil Organic Matter Trend

Annual Soil Tillage Intensity Rating (STIR): **10**
Air Particulates (PM10): **0.0** **ton / ac / yr**
Fuel Use: **2.2** **gal / ac / yr**

Rotation Soil Conditioning Index (SCI): **0.94**
SCI Organic Matter (OM) Factor: **1.0**
SCI Field Operation (FO) Factor: **0.89**
SCI Erosion (ER) Factor: **0.89**

Rotation Interval and Other Detailed Results

Total STIR: 10

Total Fuel Use: 2.2 **(gal / ac)**

Date	Operation	Crop	Residue	Residue Amt	Yield	Yield Units	Surf Res	Int Yrs	STIR	Fuel Use	Water Erosion	Wind Erosion	Creep Salt	Susp	PM10
06-01-0000	Roller, crimp, covercrop						99								
06-01-0000	Planter, double disk opnr with starter fertilizer	Corn, sweet			7300.00	lbs	99								
06-03-0000	Sprayer, post emergence		small grain cover crop	100			99								
06-30-0000	Sprayer, post emergence		weeds; 0-3 mo	20			99								
08-15-0000	Harvest, hand pick vegetables						97	1	10	2.2	0.0	0.02	0.01	0.0	0.0
08-17-0000	Shredder, flail or rotary						98								
08-19-0000	Drill or airseeder, double disk, w/ fluted coulters	Rye, winter cover			8000.00	lbs	97								

Surface Residue (Surf Res): %
Fuel Use: gallons/acre for crop rotation interval
Water, Wind erosion: tons/acre/year
Creep and Saltation: tons/acre/year
Suspension: tons/acre/year
PM10: tons/acre/year
Interval years: interval days/365
Residue: pounds/acre

Considerations for Conservation

Water Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA Revised Universal Soil Loss Equation (RUSLE2) model configured for local conditions calculates sheet/rill erosion for a slope representing a farm field or other area being assessed. Steps to reduce water erosion include reducing slope length (decreasing the length of water flow downslope), increasing crop residues especially during erosive precipitation periods, and building up organic matter to increase infiltration.

Wind Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA WEPS model configured for local conditions calculates total wind erosion, plus the creep/saltation component that can damage crops, and the component suspended in the air and lost off-site. Steps to reduce wind erosion include increasing surface residues during high wind energy periods (the most important factor), tillage perpendicular to most erosive wind direction, decreasing the area exposed to wind via wind strips or other methods, and decreasing wind energy through barriers such as windbreaks.

Soil Tillage Intensity: The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate an intensity rating for a full rotation or interval. Operations with high STIR ratings degrade soil structure and organic matter. Steps to reduce STIR include reducing tillage operations, or replacing high with lower intensity operations. The WEPS model computes the STIR values displayed in this report.

Soil Organic Matter Trend: Positive Soil Conditioning Index (SCI) values indicate soil organic matter buildup, and negative values indicate depletion. SCI is a function of annual crop biomass (OM factor), soil disturbance intensity (FO factor), and water and wind erosion (ER factor). Increasing plant biomass in the rotation (high residue crops, cover crops, etc.), reducing tillage to optimize soil microbial populations, and decreasing erosion causes the SCI to trend in a more positive direction. The RUSLE2 and WEPS models both contribute output for the calculation of SCI values.

Air Particulates: Very fine (PM10) air particulates, 10 micrometers or less in size, can damage crops and cause health problems. The WEPS model calculates the PM10 component of soil loss in tons/acre/year. PM10 particulate matter can be reduced by controlling wind erosion using the methods described above, especially increasing residues and organic matter. Keeping soil moist during high wind energy periods also reduces dust.

Fuel Use: This report provides estimates of average annual, crop interval, and total crop rotation fuel use based on the operations used in the rotation. Fuel use can be reduced by replacing high fuel use operations with lower ones, eliminating high fuel use operations via reduced or no tillage.

Assessment of Water and Wind Erosion, Soil Tillage Intensity, Organic Matter Trend, Air Particulate Matter and Fuel Use

Area of Analysis AoA 4
Assessment (File) Name: C:\workspace\IET_Runs\Assessments\Brookdale - T1406\Reports\AoA 4 - Fld 8 - Spring Plow Sweet Corn, No-till Drill Cover Crop.pdf
County / State: Hillsborough County, New Hampshire,NH
Assessment Date: 7/1/2020

Management

Crop Rotation: SP, Sweet Corn, NT Drilled Cover Crop
Fuel Type: Diesel

Average Annual Water Erosion

Contouring: (none)
Strips / Barriers: (none)
Hydraulic Elements: (none)
Stripcropping: No
Climate File: http://csip.engr.colostate.edu/r2/climates/USA/New Hampshire/Hillsborough County.xml

Soil Map Unit	Soil Component	Slope Length (ft)	Slope Steepness (%)	Shape	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Chatfield	120	9.5		**2.0**	**1.7**

Average Annual Wind Erosion

Wind Region Length: 788.4 Feet
Width: 676.3 Feet
Orientation: 330 Degrees from North
Climate Station: CLINTON MA
Wind Station: Interpolated

Wind Barrier North: Forest edge
South: Forest edge
East: (none)
West: (none)

Soil Map Unit	Soil Component	Biomass (ton/ac/yr)	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Canton	**3.1**	**3.0**	**1.5**

Tillage Intensity, Air Particulates, Fuel Use, and Rotation Soil Organic Matter Trend

Annual Soil Tillage Intensity Rating (STIR): **120**
Air Particulates (PM10): **0.02** **ton / ac / yr**
Fuel Use: **4.6** **gal / ac / yr**

Rotation Soil Conditioning Index (SCI): **0.08**
SCI Organic Matter (OM) Factor: **0.63**
SCI Field Operation (FO) Factor: **-0.28**
SCI Erosion (ER) Factor: **0.30**

Rotation Interval and Other Detailed Results

Total STIR: 120

Total Fuel Use: 4.6 **(gal / ac)**

Date	Operation	Crop	Residue	Residue Amt	Yield	Yield Units	Surf Res	Int Yrs	STIR	Fuel Use	Water Erosion	Wind Erosion	Creep Salt	Susp	PM10
04-22-0000	Plow, moldboard						8.4								
04-25-0000	Disk, tandem heavy primary op.						16								
05-05-0000	Harrow, coiled tine						13								
05-10-0000	Planter, double disk opnr	Corn, sweet			6300	lbs	14								
05-10-0000	Sprayer, pre-emergence						14								
08-01-0000	Harvest, hand pick vegetables						6.4	1	120	4.6	0.0	1.5	0.75	0.74	0.02
08-03-0000	Shredder, flail or rotary						36								
08-04-0000	Drill or airseeder, double disk, w/ fluted coulters	Cover crop, cool season mix, fall seeded			6000.00	lbs	32								

Surface Residue (Surf Res): %
Fuel Use: gallons/acre for crop rotation interval
Water, Wind erosion: tons/acre/year
Creep and Saltation: tons/acre/year
Suspension: tons/acre/year
PM10: tons/acre/year
Interval years: interval days/365
Residue: pounds/acre

Considerations for Conservation

Water Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA Revised Universal Soil Loss Equation (RUSLE2) model configured for local conditions calculates sheet/rill erosion for a slope representing a farm field or other area being assessed. Steps to reduce water erosion include reducing slope length (decreasing the length of water flow downslope), increasing crop residues especially during erosive precipitation periods, and building up organic matter to increase infiltration.

Wind Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA WEPS model configured for local conditions calculates total wind erosion, plus the creep/saltation component that can damage crops, and the component suspended in the air and lost off-site. Steps to reduce wind erosion include increasing surface residues during high wind energy periods (the most important factor), tillage perpendicular to most erosive wind direction, decreasing the area exposed to wind via wind strips or other methods, and decreasing wind energy through barriers such as windbreaks.

Soil Tillage Intensity: The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate an intensity rating for a full rotation or interval. Operations with high STIR ratings degrade soil structure and organic matter. Steps to reduce STIR include reducing tillage operations, or replacing high with lower intensity operations. The WEPS model computes the STIR values displayed in this report.

Soil Organic Matter Trend: Positive Soil Conditioning Index (SCI) values indicate soil organic matter buildup, and negative values indicate depletion. SCI is a function of annual crop biomass (OM factor), soil disturbance intensity (FO factor), and water and wind erosion (ER factor). Increasing plant biomass in the rotation (high residue crops, cover crops, etc.), reducing tillage to optimize soil microbial populations, and decreasing erosion causes the SCI to trend in a more positive direction. The RUSLE2 and WEPS models both contribute output for the calculation of SCI values.

Air Particulates: Very fine (PM10) air particulates, 10 micrometers or less in size, can damage crops and cause health problems. The WEPS model calculates the PM10 component of soil loss in tons/acre/year. PM10 particulate matter can be reduced by controlling wind erosion using the methods described above, especially increasing residues and organic matter. Keeping soil moist during high wind energy periods also reduces dust.

Fuel Use: This report provides estimates of average annual, crop interval, and total crop rotation fuel use based on the operations used in the rotation. Fuel use can be reduced by replacing high fuel use operations with lower ones, eliminating high fuel use operations via reduced or no tillage.

Assessment of Water and Wind Erosion, Soil Tillage Intensity, Organic Matter Trend, Air Particulate Matter and Fuel Use

Area of Analysis AoA 4
Assessment (File) Name: C:\workspace\IET_Runs\Assessments\Brookdale - T1406\Reports\Erosion Report - Fld 21 - No-till Sweet Corn.pdf
County / State: Hillsborough County, New Hampshire,NH
Assessment Date: 7/1/2020

Management

Crop Rotation: No-till with Rollers, Sweet Corn, Cover Crop
Fuel Type: Diesel

Average Annual Water Erosion

Contouring: (none)
Strips / Barriers: (none)
Hydraulic Elements: (none)
Stripcropping: No
Climate File: http://csip.engr.colostate.edu/r2/climates/USA/New Hampshire/Hillsborough County.xml

Soil Map Unit	Soil Component	Slope Length (ft)	Slope Steepness (%)	Shape	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Chatfield	120	9.5		**2.0**	**0.30**

Average Annual Wind Erosion

Wind Region
Length: 788.4 Feet
Width: 676.3 Feet
Orientation: 330 Degrees from North
Climate Station: CLINTON MA
Wind Station: Interpolated

Wind Barrier
North: Forest edge
South: Forest edge
East: (none)
West: (none)

Soil Map Unit	Soil Component	Biomass (ton/ac/yr)	Soil Loss (ton / ac / yr) Tolerance	Soil Loss (ton / ac / yr) Simulated
Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	Canton	**4.3**	**3.0**	**0.0**

Tillage Intensity, Air Particulates, Fuel Use, and Rotation Soil Organic Matter Trend

Annual Soil Tillage Intensity Rating (STIR): **10**
Air Particulates (PM10): **0.0** **ton / ac / yr**
Fuel Use: **2.2** **gal / ac / yr**

Rotation Soil Conditioning Index (SCI): **0.94**
SCI Organic Matter (OM) Factor: **1.0**
SCI Field Operation (FO) Factor: **0.89**
SCI Erosion (ER) Factor: **0.88**

Rotation Interval and Other Detailed Results

Total STIR: 10

Total Fuel Use: 2.2 **(gal / ac)**

Date	Operation	Crop	Residue	Residue Amt	Yield	Yield Units	Surf Res	Int Yrs	STIR	Fuel Use	Water Erosion	Wind Erosion	Creep Salt	Susp	PM10
06-01-0000	Roller, crimp, covercrop						99								
06-01-0000	Planter, double disk opnr with starter fertilizer	Corn, sweet			7300.00	lbs	99								
06-03-0000	Sprayer, post emergence		weeds; 0-3 mo	150			99								
06-30-0000	Sprayer, post emergence		weeds; 0-3 mo	20			99								
08-15-0000	Harvest, hand pick vegetables						97	1	10	2.2	0.0	0.0	0.0	0.0	0.0
08-17-0000	Shredder, flail or rotary						98								
08-19-0000	Drill or airseeder, double disk, w/ fluted coulters	Rye, winter cover			8000.00	lbs	97								

Surface Residue (Surf Res): %
Fuel Use: gallons/acre for crop rotation interval
Water, Wind erosion: tons/acre/year
Creep and Saltation: tons/acre/year
Suspension: tons/acre/year
PM10: tons/acre/year
Interval years: interval days/365
Residue: pounds/acre

Considerations for Conservation

Water Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA Revised Universal Soil Loss Equation (RUSLE2) model configured for local conditions calculates sheet/rill erosion for a slope representing a farm field or other area being assessed. Steps to reduce water erosion include reducing slope length (decreasing the length of water flow downslope), increasing crop residues especially during erosive precipitation periods, and building up organic matter to increase infiltration.

Wind Erosion: Soil loss tolerance (T value) is the maximum average annual erosion rate for maintaining current crop production levels economically and indefinitely. The USDA WEPS model configured for local conditions calculates total wind erosion, plus the creep/saltation component that can damage crops, and the component suspended in the air and lost off-site. Steps to reduce wind erosion include increasing surface residues during high wind energy periods (the most important factor), tillage perpendicular to most erosive wind direction, decreasing the area exposed to wind via wind strips or other methods, and decreasing wind energy through barriers such as windbreaks.

Soil Tillage Intensity: The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate an intensity rating for a full rotation or interval. Operations with high STIR ratings degrade soil structure and organic matter. Steps to reduce STIR include reducing tillage operations, or replacing high with lower intensity operations. The WEPS model computes the STIR values displayed in this report.

Soil Organic Matter Trend: Positive Soil Conditioning Index (SCI) values indicate soil organic matter buildup, and negative values indicate depletion. SCI is a function of annual crop biomass (OM factor), soil disturbance intensity (FO factor), and water and wind erosion (ER factor). Increasing plant biomass in the rotation (high residue crops, cover crops, etc.), reducing tillage to optimize soil microbial populations, and decreasing erosion causes the SCI to trend in a more positive direction. The RUSLE2 and WEPS models both contribute output for the calculation of SCI values.

Air Particulates: Very fine (PM10) air particulates, 10 micrometers or less in size, can damage crops and cause health problems. The WEPS model calculates the PM10 component of soil loss in tons/acre/year. PM10 particulate matter can be reduced by controlling wind erosion using the methods described above, especially increasing residues and organic matter. Keeping soil moist during high wind energy periods also reduces dust.

Fuel Use: This report provides estimates of average annual, crop interval, and total crop rotation fuel use based on the operations used in the rotation. Fuel use can be reduced by replacing high fuel use operations with lower ones, eliminating high fuel use operations via reduced or no tillage.

FULL CIRCLE FORESTRY, LLC

7/1/2020

Hollis Town Hall
Board of Selectman
7 Monument Square
Hollis, NH 03049

Re: Brookdale Fruit Farm- Stefanowicz Property Farm Lease

Dear Board of Selectman,

I have been contacted by Brookdale Fruit Farm to assist in preparing the proposal for the lease of the Stefanowicz property farmland. I am consulting forester working in southern NH specializing in forest management, wildlife habitat creation and restoration, and brush management. This also includes integrated vegetation management (IVM), specifically related to the treatment of invasive exotic plant species. I tend to manage properties very similar to the Stefanowicz property. These properties have a strong farmland component with adjacent forestland components. Much of southern NH has been transitioning from farmland into forestland over the past century. As time passes on, farmland tends to succumb to the natural process of succession, where open areas grow into young forest and eventually mature forests.

The Town of Hollis has a rich history of agriculture and takes pride in maintaining its rural character through the few remaining working farms present in town. The farm lease of this property allows the Town of Hollis to maintain its farming heritage while providing a variety of benefits such as wildlife habitat and recreational use. As we are all aware, open space in southern NH is becoming lesser as time goes on due to pressure for development and urban sprawl. Maintaining historical uses of properties such as this one helps to protect the town's history.

I am pleased to hear that Brookdale Fruit Farm is being considered for the farm lease of the Stefanowicz property. I have work with Brookdale Fruit Farm, managing their forestland for well over a decade with my predecessor working with Brookdale Fruit Farm for decades prior. Brookdale Fruit Farm has proven to be good stewards of the land for generations. Some of my more recent work with Brookdale Fruit Farm has been with recertification within the American Tree Farm System (ATFS). When properties are certified, they are held to a higher standard, meeting a vast criteria of standards set forth by the ATFS, a national program. This essentially means that a landowner is going above and beyond to ensure sound management of their forestland with a special emphasis on wood, water, wildlife, and recreational aspects. I have also assisted Brookdale Fruit Farm with vegetation management and the control of invasive exotic plant species on their properties over the years. Brookdale Fruit Farm realizes the importance of not only managing farmland but the landscape surrounding the farmland and the relationships between the two land use types.

ERIC RADLOF
113 Old Pound Road, Antrim, NH 03440
eradlof.fcf@gmail.com
603-321-3482

As part of their proposal, I have reviewed the farmland and surrounding upland at the Stefanowicz property. As a result, Brookdale Fruit Farm has put together a plan to not only manage the farmland but to also restore the property. One of the major components of this property is the presence of invasive exotic plant species. These invasive exotic plant species thrive in farmland settings where wooded edges invade farm fields or where farmland has been abandoned. This appears to be the case on this property along all of the field edges. Future management of this property needs to include the management of these invasive exotic plant species. Through integrated vegetation management, the invasive exotic plant species can be controlled. One of the biggest threats to habitat loss is through the invasion of invasive exotic plan species. At their current population, control can be obtained, protecting valuable farmland and wildlife habitat.

Another component of this property is the state of the infrastructure within the farmland. At present, the farm roads remain primitive with multiple signs of erosion and sedimentation. The current state of the farm roads inhibits the use of larger modern faming equipment and hinders support equipment such as trucks utilized for transporting agricultural goods. Upgrading of the farm road infrastructure can improve the overall access within the property. Greater access within the property leads to better management of the property. With improved access, comes greater interest to utilize the property for recreation. Access control measures can be implemented to control unwanted uses of the property.

A final component of the property is the available farmland for growing crops. There are currently two smaller areas of farmland that are in various stages of abandonment. Future management of this farmland can restore these areas and bring them back into productive farmland. The remaining areas of farmland have been slowly shrinking due to encroachment of the surrounding forestland. Future management can push these edges back to restore valuable farmland. A variety of stonewall have become hidden within these areas of growth. Many of these stonewall can be exposed through management, restoring the aesthetic component of this property. As part of reclaiming the farmland on the property, I have reviewed the forestland in the northeastern corner of the property. This 10 acre area of the property has been selected as a possible site for future expansion of farmland. A review of this forested area revealed a productive white pine/ oak forest type with signs of past management decades prior. The lack of stones present on the forest floor and the abundant stonewalls surrounding the forestland lend evidence to this areas prior use as farmland. Restoration of this forestland to farmland would be in line with the properties historical use. Proceeds from harvesting the trees within this area could be used to reinvest into the farmland on the property and help offset cost. The additional forestland to the west of the farmland could also be managed as part of the farm lease. Management of this forestland could improve the overall growing conditions within the forestland, improve wildlife habitat, improve the recreational component of the property, and produce periodic income that could be reinvested into the farmland on the property, allowing the property to be managed together as one property.

It may seem like an ambitious endeavor to restore this farmland, but it is an important endeavor. This opportunity would allow the Town of Hollis to protect its' agricultural heritage and support a local farmer within the community. Brookdale Fruit Farm has consulted with a variety of professionals to make the best informed decisions. This also includes consulting with the USDA NRCS for available grant monies to help with the future management of the property. The farm lease will give the Town of Hollis the chance to have more well managed farmland in town.

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603-321-3482

I appreciate your time in considering my letter. If you have any additional questions, feel free to contact me with the information provided at the bottom of the sheet.

Sincerely,

NH Licensed Professional Forester #447

ERIC RADLOF
113 Old Pound Road, Antrim, NH 03440
eradlof.fcf@gmail.com
603-321-3482

June 29, 2020

To: Board of Selectmen, Hollis, New Hampshire

Fr: William Lord, Extension Professor Emeritus, UNH Cooperative Extension

Re: Brookdale Fruit Farm - proposed lease of the Stefanowicz property

I am writing to strongly support Brookdale Fruit Farm's proposed lease of the Stefanowicz property. I have worked with the Hardy and Whittemore families in my capacity of UNH Extension Fruit Specialist (currently retired) for 45 years. Yes, they are exceptional fruit and vegetable growers. They employ cutting edge research and technology to produce high quality, local fruits and vegetables. And the economic impact of this farm to both the State and local community is substantial.

Brookdale is extremely committed to farming using the most effective conservation and input conscious methods available. The current irrigation design and equipment sector of the farm grew out of a commitment to reducing the amount of water used to produce crops on their farm. As such they were among the first in New England to utilize low flow irrigation techniques such as drip and trickle irrigation and they utilize these water delivery systems to deliver low dose nutrient applications. This technology reduces both water and nutrient applications per acre significantly, often by 75% or more.

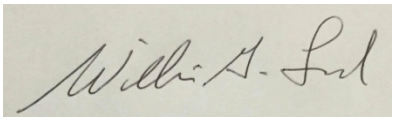
In an effort to both conserve the valuable soil resources on the farm and reduce fertilizer inputs Brookdale utilizes a variety of winter cover crops and green manure crops that both reduce the risk of soil erosion and fix nitrogen from the air for use by growing crops in the ensuing crop cycle. In addition, Brookdale utilizes cover crop species that have been demonstrated to reduce soil nematode populations, eliminating the need for pre-plant soil pesticide applications.

Integrated Pest Management: This important program, IPM, was introduced in 1977 and Brookdale Fruit Farm immediately began to put this approach to pest management into practice. They utilize weather data collection, insect trapping and a professional scouting team to identify pest problems and only essential

pesticide applications. As part of their approach, they select control materials that are specific to the pests being targeted thus avoiding injury to important beneficial insects.

In conclusion, Brookdale offers an excellent combination of crop management knowledge coupled with a strong commitment to ecologically sound farming practices. I strongly recommend them as committed stewards of the land, stewards who will farm the land with care.

Sincerely,



Extension Professor Emeritus

University of New Hampshire
Cooperative Extension

Hillsborough County
329 Mast Rd. Rm 101
Goffstown NH 03045
V: 603.641.6060
F: 603.645.5252

http://extension.unh.edu

County Offices

Belknap County
527.5475

Carroll County
447.3834

Cheshire County
352.4550

Coös County
788.4961

Grafton County
787.6944

Hillsborough County
641.6060

Merrimack County
796.2151

Rockingham County
679.5616

Strafford County
749.4445

Sullivan County
863.9200

Education Center
877.398.4769 (Toll Free in NH)

UNH Cooperative Extension State Office
862.1520

June 30, 2020

Brookdale fruit farm
38 Broad Street
Hollis, NH 03049

To Whom It May Concern

Upon the request of Brookdale Fruit farm in Hollis, NH, I am writing this letter of support for their application to acquire a long term rental agreement for the Hollis town farm property. I have worked with the Hardy and Whittemore families for the past 31 years as the Extension Field Specialist of UNH. During these visits I and other UNH Cooperative Specialists made pesticide recommendations, pest identifications, recommended best management production practices for vegetable and fruit crops, IPM recommendations and have had in-depth discussions on future plans for the fruit and vegetable operation.

Brookdale Fruit Farm has led to the adoption of drip irrigation and fertigation to optimize water and fertilizer efficiency, conservation practices to protect resources, in-depth soil testing including nitrate tests for sweet corn, and IPM in vegetable and fruit crops. In the past ten years, Brookdale Fruit Farm was converted to vegetable growing practices to reduce tillage/zone tillage/no-till systems to protect soil resources.

Waterways and ponds are used throughout the farming operation to catch sediment run-off. Also, the ponds are used for water sources to irrigate the various crops grown.

Drip irrigation for small fruit and vegetable crops is currently being used to conserve and maximize the water resources on the farm, along with better timing of fertilizer applications through the drip irrigation system. This maximizes fertilizer placement and time of plant nutrient needs of the plant, thereby, reducing pre-plant nitrogen application and reducing potential leaching of nitrogen fertilizer. Over 100 acres of fruits and vegetables are being irrigated with the use of drip irrigation.

In-depth soil testing and leaf tissue analysis are done to develop a complete fertilization program. This fertilization program will reduce amounts of fertilizer needed for crops with better timing of the fertilizer applications. Using the irrigation system they fine tune the fertilization program with small amounts of nutrients applied through the irrigation system.

Brookdale Fruit Farm has demonstrated an exceptional commitment to produce a quality product through the use of the most up to date methods that are environmentally conscientious and responsible. If Brookdale Fruit Farm is successful in securing the long term rental agreement on this Hollis town farm property, specialists at UNH Cooperative Extension will be available to consult and provide recommendations for the development of this farm land. I support Brookdale Fruit Farm in their plans to develop of a reduce-tillage vegetable farm on the Hollis town farm property.

Respectfully submitted,

George W. Hamilton
Extension Field Specialist - Fruit and Vegetable

NRCS NY Cover Crop Seed Rate Calculator With Implementation Requirements for NY-340- February 2018

USDA United States Department of Agriculture

Natural Resources Conservation Service

Name:	Brookdale early season cover crop mix					
Crop Year:	2018			County:	Hillsborough	
Tract:				Contract		
Field(s):	Early Corn	Tilled				
Acres:						
Soil MU:						
Planned Seeding Date:	15-Jul	15-Aug				
Actual Seeding Date:						

Designed By:		Date:		JAA:	
Approved By:		Date:		JAA:	
Field Check:		Date:		Cert Acres	
Plan Map Attached:					
Seed Tag w/Germination Attached:					
Erosion /SCI Reports Attached:					

Seeding Method		
Base monoculture rate is for seeds with good soil contact where seed is drilled or incorporated after planting.		
Method	**% Change**	**Describe Other**
Mix: Drill or Till and Cultipack		
Modify Above Base Seeding Rate Factor =	**0%**	

USDA Plant Hardiness Zone:			
Previous Herbicide Product and Rate:			
Seeding Method (From Left):			
Seeding Depth (Inches):			
Planned Total Seeding Rate (lbs/ac):		*Actual Total Seeding Rate:*	
Planned Termination Method:			
Planned Termination Height or Stage:			
Actual Termination Height or Stage:			
Planned Termination Date:		*Actual Termination Date:*	
Planned Biomass Level:		*Actual Biomass Level:*	

Mix Purposes:	**Nitrogen**

Round to nearest integer if > 3.0

Cover Type	Species	Seeds/lb (A)	$/lb (B)	Monoculture lbs/ac (C)	Competition Factor (D)	Adjusted lbs/ac (E)	Similar Cover Type Factor (F)	Mix lbs/ac (G)	Mix Seeds/ft² (H)	% of Mix lbs/ac (I)	% of Mix Seeds/ft² (J)	Price $/ac (K)
Clovers	Crimson Clover	107,000	$ 1.34	**20**	80%	16.0	2	8.0	19.7	7.6%	52.4%	$ 10.72
Cool Season Legumes	Winter Peas	4,000	$ 0.76	60	100%	60.0	2	30.0	2.8	28.7%	7.3%	$ 22.80
Warm Season Legumes	Soybean	3,000	$ 0.78	50	80%	40.0	1	40.0	2.8	38.2%	7.3%	$ 31.20
Brassicas	Daikon Radish	28,000	$ 1.50	6	10%	0.6	1	0.6	0.4	0.6%	1.0%	$ 0.90
Warm Season Grasses	Japanese Millet	121,000	$ 1.32	10	10%	1.0	1	1.0	2.8	1.0%	7.4%	$ 1.32
Cool Season Grasses - Grains	Wheat	16,000	$ 0.44	100	25%	25.0	1	25.0	9.2	23.9%	24.5%	$ 11.00
							Total:	104.6	37.5	100.0%	100.0%	$ 77.94

Additional Notes and Description of Work:

For early harvest/early planted sweet corn. High fall growth, low spring biomass. Nitrogen priority. (Clover radish in separate bag for small seed box) Rest in bulk bag for filling This mix is seeded at a rate of 150 lbs to acre resulting in a cost of $116.91 per acre

Operation and Maintenance: Evaluate and monitor the cover crop through the planned protection period to determine if the cover crop is meeting the planned growth and biomass levels to meet the practice purpose(s). Adjust cover crop management and/or termination dates as needed to meet planned biomass levels. Consider potential efects of Cover Crop to management and nutrient status of subsequent main crop. Adjust management as needed to main crop. Follow NRCS Termination Guidelines to avoid any conflicts with potential insurance programs for main crop.

Signatures: I hereby certify that this practice has been installed in accordance with NRCS standards and specifications:

NRCS Certification		Date:		Producer		Date:	

NRCS NY Cover Crop Seed Rate Calculator With Implementation Requirements for NY-340- February 2018

USDA United States Department of Agriculture

Natural Resources Conservation Service

Name:	Brookdale Fruit Farm Mid season mix						
Crop Year:				County:			
Tract:				Contract			
Field(s):							
Acres:							
Soil MU:							
Planned Seeding Date:							
Actual Seeding Date:							

Designed By:		Date:		JAA:		
Approved By:		Date:		JAA:		
Field Check:		Date:		Cert Acres		

Plan Map Attached:	
Seed Tag w/Germination Attached:	
Erosion /SCI Reports Attached:	

Seeding Method		
Base monoculture rate is for seeds with good soil contact where seed is drilled or incorporated after planting.		
Method	**% Change**	**Describe Other**
Mix: Till without Cultipacking	30%	
Modify Above Base Seeding Rate Factor =	**30%**	

USDA Plant Hardiness Zone:			
Previous Herbicide Product and Rate:			
Seeding Method (From Left):			
Seeding Depth (Inches):			
Planned Total Seeding Rate (lbs/ac):		*Actual Total Seeding Rate:*	
Planned Termination Method:			
Planned Termination Height or Stage:			
Actual Termination Height or Stage:			
Planned Termination Date:		*Actual Termination Date:*	
Planned Biomass Level:		*Actual Biomass Level:*	

Mix Purposes:	**Soil Health General**

Round to nearest integer if > 3.0

Cover Type	Species	Seeds/lb (A)	$/lb (B)	Monoculture lbs/ac (C)	Competition Factor (D)	Adjusted lbs/ac (E)	Similar Cover Type Factor (F)	Mix lbs/ac (G)	Mix Seeds/ft² (H)	% of Mix lbs/ac (I)	% of Mix Seeds/ft² (J)	Price $/ac (K)
Brassicas	Hybrid Turnip/Brassica	180,000	$ 2.60	**7.8**	17%	1.3	1	1.3	5.3	1.9%	10.9%	$ 3.35
Clovers	Crimson Clover	107,000	$ 1.34	26	60%	15.6	2	7.8	19.2	11.5%	39.3%	$ 10.45
Cool Season Legumes	Hairy Vetch VNS	12,000	$ 2.40	26	50%	13.0	2	6.5	1.8	9.6%	3.7%	$ 15.60
Cool Season Grasses - Grains	C. Rye VNS	18,800	$ 0.36	130	40%	52.0	1	52.0	22.4	76.9%	46.1%	$ 18.57
							Total:	67.6	48.7	100.0%	100.0%	$ 47.97

Additional Notes and Description of Work:

This cover crop mix is no till drilled at a rate of 120 lbs to acre resulting in a total average cost of around $96.00 per acre

Operation and Maintenance: Evaluate and monitor the cover crop through the planned protection period to determine if the cover crop is meeting the planned growth and biomass levels to meet the practice purpose(s). Adjust cover crop management and/or termination dates as needed to meet planned biomass levels. Consider potential efects of Cover Crop to management and nutrient status of subsequent main crop. Adjust management as needed to main crop. Follow NRCS Termination Guidelines to avoid any conflicts with potential insurance programs for main crop.

Signatures: I hereby certify that this practice has been installed in accordance with NRCS standards and specifications:

NRCS Certification		Date:		Producer		Date:

NRCS NY Cover Crop Seed Rate Calculator With Implementation Requirements for NY-340- February 2018

USDA United States Department of Agriculture

Natural Resources Conservation Service

Name:	Brookdale fruit farm new field establishment mix						
Crop Year:				County:			
Tract:				Contract			
Field(s):							
Acres:							
Soil MU:							
Planned Seeding Date:							
Actual Seeding Date:							

Designed By:	Date:	JAA:
Approved By:	Date:	JAA:
Field Check:	Date:	Cert Acres

Plan Map Attached:	
Seed Tag w/Germination Attached:	
Erosion /SCI Reports Attached:	

Seeding Method		
Base monoculture rate is for seeds with good soil contact where seed is drilled or incorporated after planting.		
Method	**% Change**	**Describe Other**
Mix: Drill or Till and Cultipack		
Modify Above Base Seeding Rate Factor =	**0%**	

USDA Plant Hardiness Zone:			
Previous Herbicide Product and Rate:			
Seeding Method (From Left):			
Seeding Depth (Inches):			
Planned Total Seeding Rate (lbs/ac):		*Actual Total Seeding Rate:*	
Planned Termination Method:			
Planned Termination Height or Stage:			
Actual Termination Height or Stage:			
Planned Termination Date:		*Actual Termination Date:*	
Planned Biomass Level:		*Actual Biomass Level:*	

Mix Purposes:	**Soil Health General**

Round to nearest integer if > 3.0

Cover Type	Species	Seeds/lb (A)	$/lb (B)	Monoculture lbs/ac (C)	Competition Factor (D)	Adjusted lbs/ac (E)	Similar Cover Type Factor (F)	Mix lbs/ac (G)	Mix Seeds/ft^2 (H)	% of Mix lbs/ac (I)	% of Mix Seeds/ft^2 (J)	Price $/ac (K)
Cool Season Grasses - Grains	C. Rye VNS	18,800	$ 0.36	100	40%	40.0	1	40.0	17.3	64.5%	33.9%	$ 14.29
Warm Season Broadleaf - Competitive	Buckwheat	18,000	$ 0.80	50	20%	10.0	1	10.0	4.1	16.1%	8.1%	$ 8.00
Clovers	Crimson Clover	107,000	$ 1.34	20	60%	12.0	1	12.0	29.5	19.4%	57.9%	$ 16.08
							Total:	62.0	50.9	100.0%	100.0%	$ 38.37

Additional Notes and Description of Work:

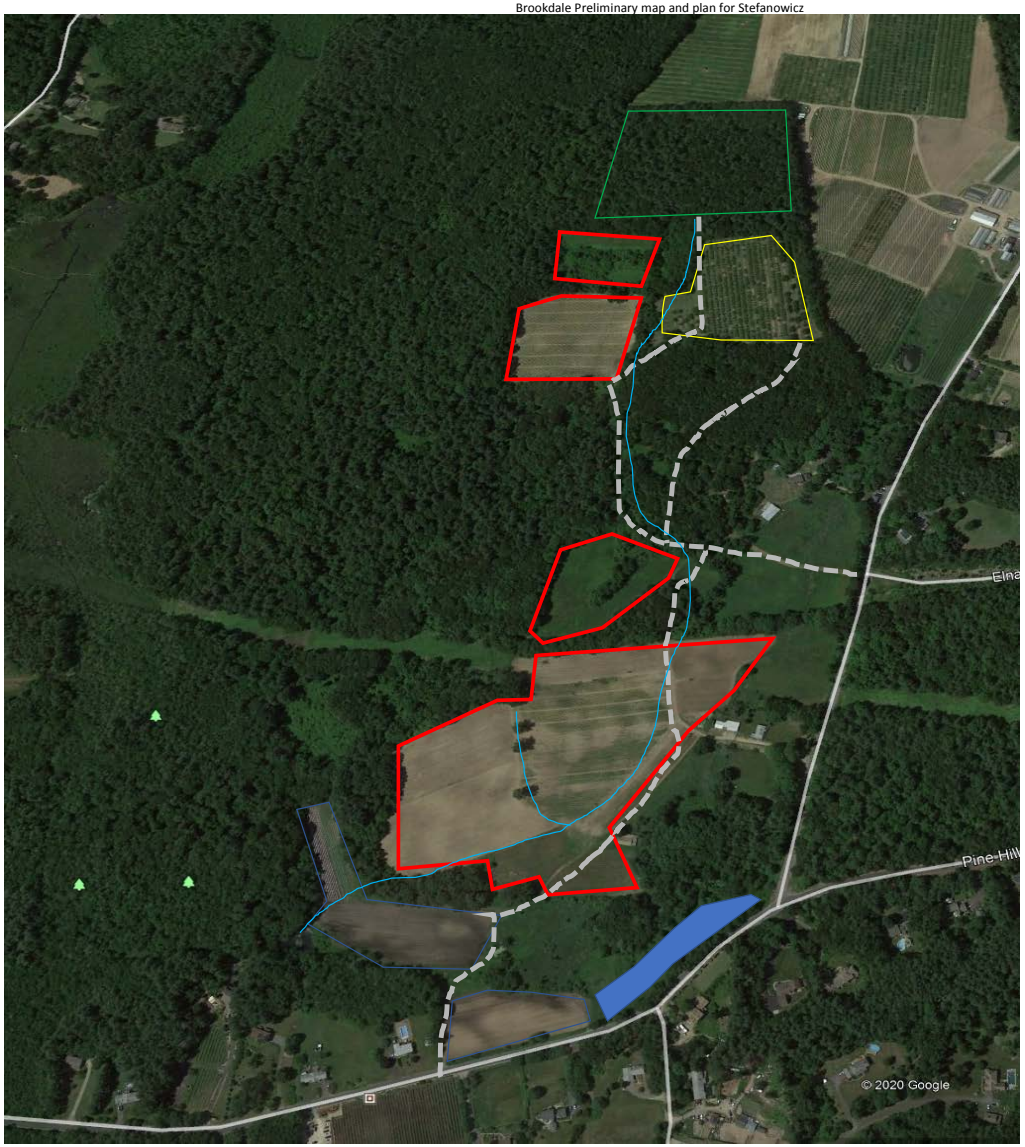
The actual seeding rate of this cover crop in field is 150 lbs per acre with a cost of $115.11 per acre

Operation and Maintenance: Evaluate and monitor the cover crop through the planned protection period to determine if the cover crop is meeting the planned growth and biomass levels to meet the practice purpose(s). Adjust cover crop management and/or termination dates as needed to meet planned biomass levels. Consider potential efects of Cover Crop to management and nutrient status of subsequent main crop. Adjust management as needed to main crop. Follow NRCS Termination Guidelines to avoid any conflicts with potential insurance programs for main crop.

Signatures: I hereby certify that this practice has been installed in accordance with NRCS standards and specifications:

NRCS Certification		Date:		Producer		Date:

Brookdale Preliminary map and plan for Stefanowicz



reduced till or no till plantings

orchard restoration / replant with brush mulching / mowing and seeding understory of trees with conservation grass to reduce erosion down hill

pollinator habitat for local species

direct seeded or transplanted crops in bare ground or plastic with controlled slow relase fertilizer and or only drip applied feeds to protect water quality

first 3 year plantings of cucurbits of soil establishment in a minimum to reduced till method depending on soilnew field clearing and establishment through logging establishment after logging and 5 year plan potention for fruit tree production trees

farm access road improvement

irrigation pipeline

Brookdale Fruit Farm **Date** 6.27.2020

38 Broad St PO Box 389 Hollis NH 03049 603 465 2240

Customer **IrrigationQuote**

Name	Stefanowicz Farm
Address	
Contact	

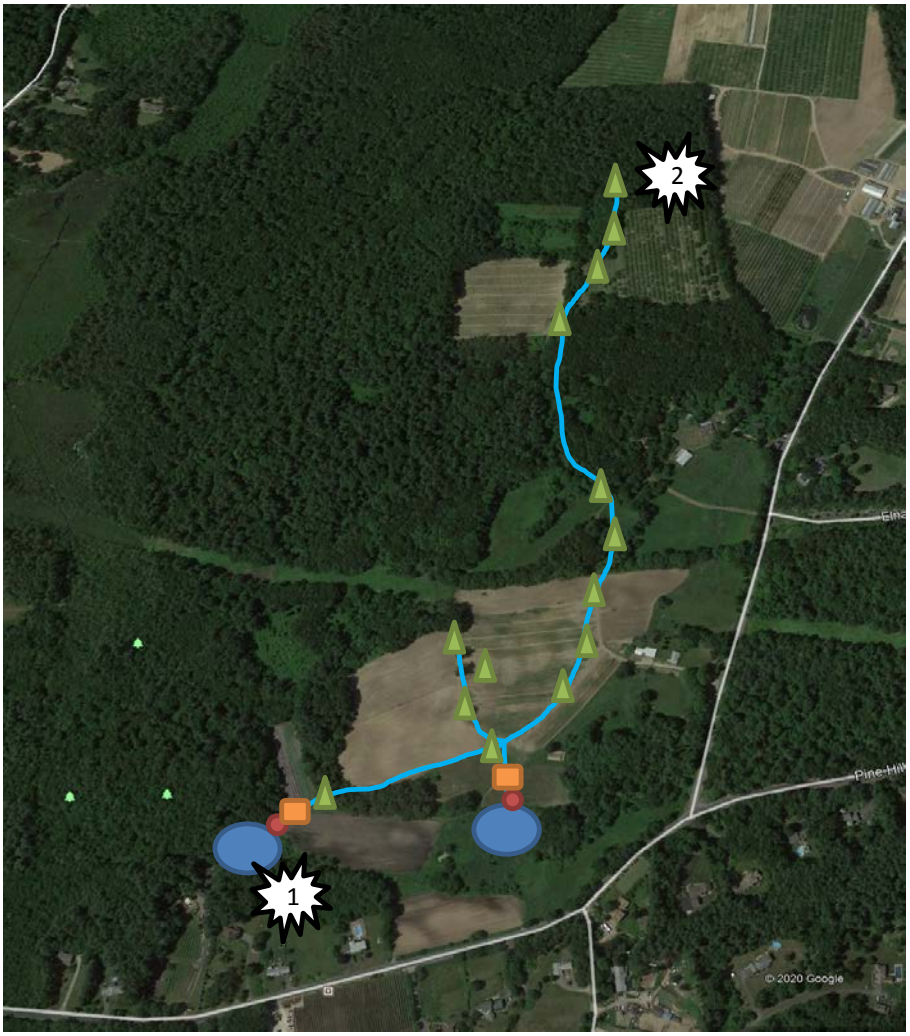
		Quantity	Unit	Item	Unit Price	Total
1		4400	feet	6 inch schedule 40 pipe	$6.39	$28,116.00
2						$0.00
3	**pump**	1	pump	complete including shipping 71 hp pump used w 90 hrs	$35,280.00	$35,280.00
4		20	feet	6 inch suction hose	$13.50	$13.50
5		4	each	6 inch ring lock clamp	$12.00	$12.00
6		1	each	6 inch bauer suction	$46.00	$46.00
7		1	assembly	6 inch ring lock x 4 inch camlock	$146.00	$146.00
8		1	each	6 inch sure flow foot valve strainer with short piece pipe	$450.00	$450.00
9				stainless steel		
10		**4**	rolls	4 inch x 300 red layflat	$790.00	$3,160.00
11		**1**	filtration	Custom quad disc filter system with automatic back flush	$4,800.00	$4,800.00
12		**14**	each	4 x 2 pressure regulator stations	$345.00	$4,830.00
13		**14**	each	6 inch hydrant stems	$146.00	$2,044.00
14		**14**	each	6 inch hydrant tops with 4 inch valve x cam lock	$293.00	$4,102.00
15		**2**	each	6 inch main line tee	$46.00	$92.00
16		**14**	each	4 inch x 2 inch cam lock bushings	$46.50	$651.00
17		**45**	rolls	eafc 5081222-750 pressure compensating drip tape	$163.00	$7,335.00
18		**8**	rolls	2 x 450 header	$125.00	$1,000.00
19		900	each	drip tape startes with valves	$1.50	$1,350.00
20		400	each	drip tape couplers	$0.56	$224.00
21		30	each	2 inch insert couplers	$1.55	$46.50
22		30	each	2 inch insert plugs	$2.25	$67.50
23						$0.00
24		25	each	4 inch cam lock c connector	$22.00	$550.00
25		25	each	4 icnh cam lock e connector	$14.00	$350.00
26		100	each	104-112 super clamps	$8.00	$800.00
27		1	assembly	4 inch x 1.5 inch fertilizer injector	$560.00	$560.00
28						$0.00
29						$0.00
30		1		Installation cost estimate?		$0.00
31		20		Concrete thrust blocks		$0.00
32		1		labor to install		$0.00
33						$0.00
34						$0.00
35						$0.00
36						$0.00

Notes:

Total	$96,025.50

Please Pay From This Invoice

Irrigation Layout



pumping plant

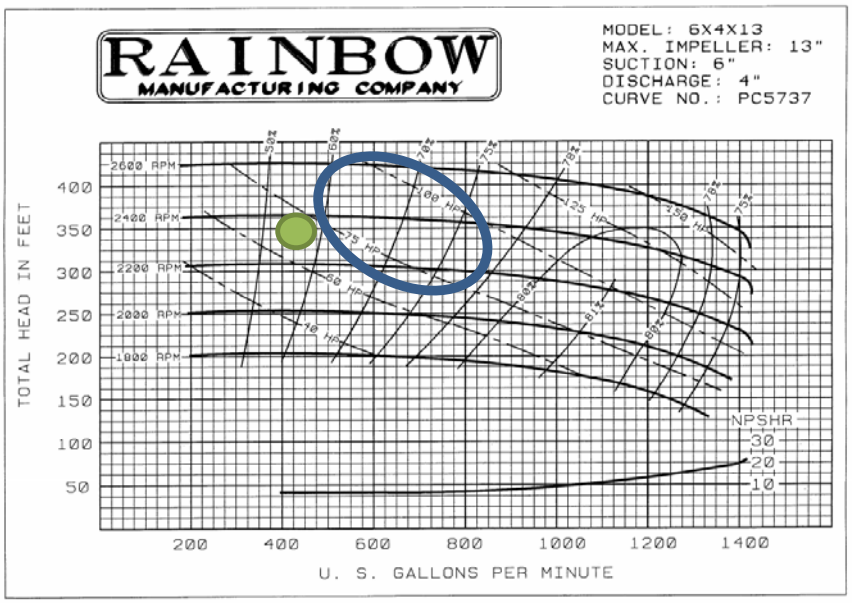
filter location

Hydrants

6" MAIN LINE

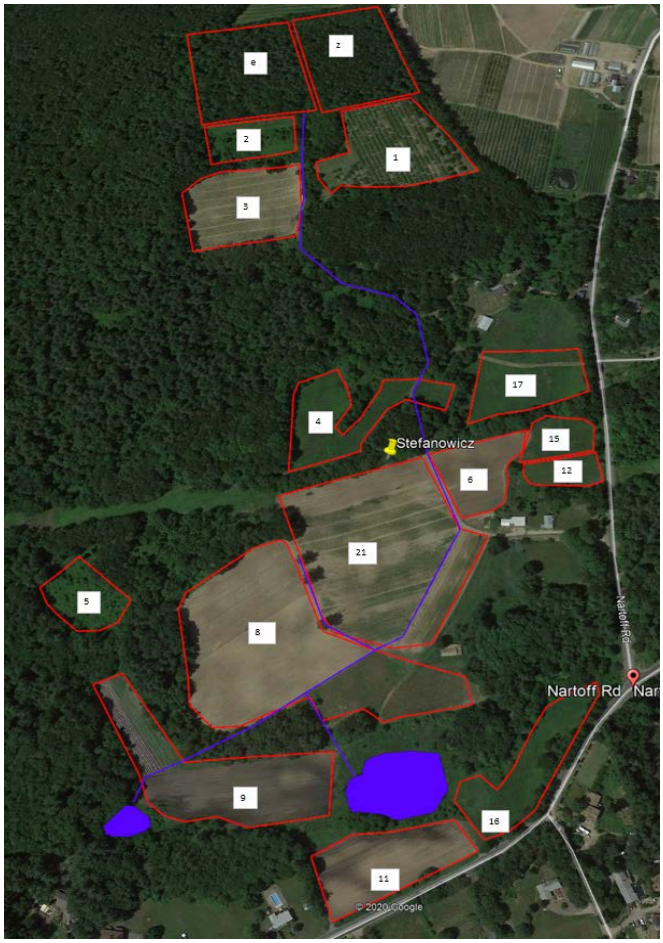
2 Elevation points

Irrigation pump specifications

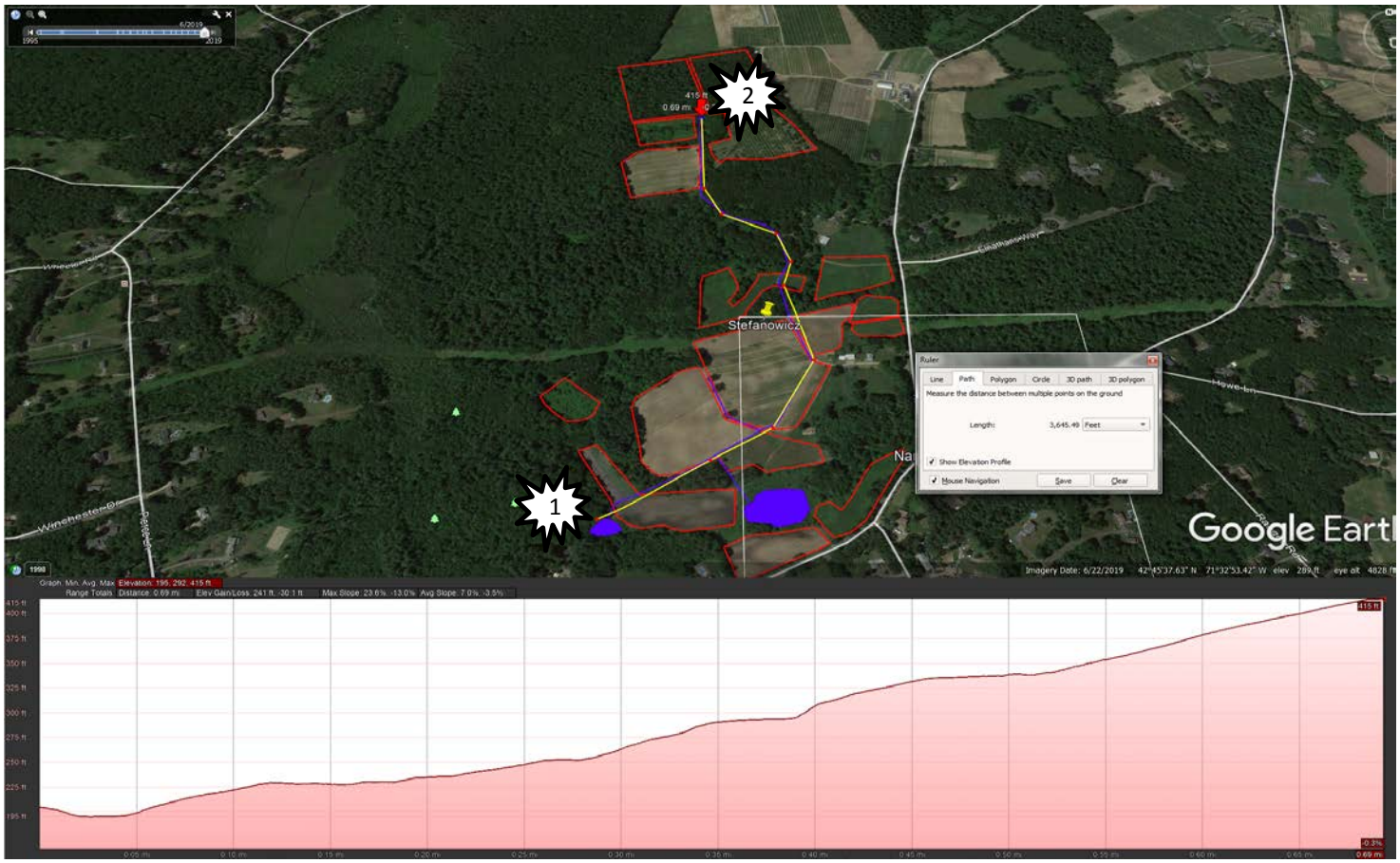


REQUIRED PERFORMANCE: 600 GPM at 300+ TDH

Quantity	Part Number	Description	Unit Price
1	O9000	Rainbow Engine Drive Pumping Unit- **MOBILE**	
	37178	*JOHN DEERE 4045HF280/99,BASE PUMP UNIT*	*T3*
	15113	CABINET, 4 CYL./ 300HF SERIES	**90 CHP**
	50255253441	RAINBOW 6X4X13 PUMP W/DRIVESET	**@ 2400 RPM**
	10620	PRIMING CHECK VALVE, 4" FLG X 6" FLG	
	10127	STARTER FLANGE KIT, 6" THD FLG	
	14454	TRAILER, 400 SERIES, 2-WHEEL	
	11919	TANK KIT, 150 GALLON, 400 SERIES	
	15287	BATTERY KIT, 950A, WITH BATTERY	
	39001	MUFFLER KIT, 4 CYL TURBO	
	13507	PRIMER KIT, # 9 DIAGHRAGM	
	11286	INTAKE FLANGE KIT, 6" THD	



Field	length	width	# rows	Row feet	gpm
1	490	466	24.0	11760.0	40.0
2	320	180	60.0	19200.0	65.3
3	430	360	120.0	51600.0	175.4
4	370	212	35.3	13073.3	44.4
5	266	185	30.8	8201.7	27.9
6	270	250	83.3	22500.0	76.5
9	425	300	100.0	42500.0	144.5
11	430	200	66.7	28666.7	97.5
12	230	120	40.0	9200.0	31.3
15	230	140	23.3	5366.7	18.2
16			0.0	0.0	0.0
17	400	140	23.3	9333.3	31.7
21	520	680	226.7	117866.7	400.7
TOTALS	4381	3233	834	339268	1154
		7.2	Tape	45.2	



1 elevation point 1 195 feet

2 elevation point 2 415 feet

Pipe flow head loss calculations

Pump Flow Rate	Pipe Diameter(ID)	Pipe Length	Differential Elevation	Pipe Material	Total Dynamic Head(TDH)
US GPM	in.	ft.	ft.	Plastic	ft.
100	6	4400	220		223.550407550131
Compute Total Dynamic Head(TDH)	Reset				

	PSI	TDH
main line	96.32	224
operating pressure to hill	35	80.85
total required TDH for flow at 100 GPM	131.32	304.85

Desired specifications to meet high head requirements due to elevation at the property looking for total of 350 gpm, with 100 dedicated flow to top of the hill with a 220 foot rise equates to 100 gpm at 305 tdh. Indicated on pump curve with green circle