

OFFERING PROSPECTUS

Williams

HUDSON BAY

Farm

3300 CONTIGUOUS ACRES | UMATILLA COUNTY, OREGON



WilliamsHudsonBay.com





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Executive Summary

The Williams Hudson Bay Farm is located in Umatilla County, Oregon directly adjacent the Washington-Oregon border 15 miles SW of Walla Walla, Washington. The farm is comprised of 3062 FSA organic cropland acres and a heifer cattle feedlot certified for 8000 head on feed. Twenty-eight crops have been grown on 2750 tillable acres of the Williams Farm over the past five years with primary crops including organic spring and winter wheat, corn grain, corn silage, and mixed forages. Secondary rotational crops include organic edible beans, alfalfa seed, peas, barley, and canola. Higher value specialty crops include organic pumpkins, squash, and melons with organic potato and onion production available for the rotation. The Williams Farm includes a 6.3 acre vineyard on the south slope of the property with air drainage and soil characteristics suitable for up to 100 acres of vineyard expansion.

Elevation ranges from approximately 520 feet on the valley floor to just over 950 feet on the south hills. The Williams Farm has extensive water rights including surface water from the Hudson Bay District Improvement Company. The water rights provide for 2545 acres of primary irrigation and 4675 acres of supplemental irrigation. The interconnected irrigation system serves all tillable acres through pivot and hand line systems. The majority of cropland acres have both surface and ground water rights available.

The Williams Farm cattle feedlot provides a connected market to deliver organic forages, including double crop mixed forages, produced on the cropland acres. The feedlot also provides organic fertilizer to support the organic crop production. This integrated operations create a unique structure for the Williams Farm to produce multiple crops from each acre annually while building fertility and soil health required for successful organic production.



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History of the Hudson Bay Farm

The Williams Farm land was originally farmed by the Hudson Bay Trading Company from 1821-1856 raising horses, cattle, and food crops. The Farm was established in 1821 by HBC to support the growing and highly profitable Pacific Northwest fur trade after English royalty forced a merger with HBC rival company, Montreal-based North West Company. The HBC operations were so distant and remote from supplies that the company workers and their families had to provide for their own subsistence. The Williams Farm site was chosen by HBC because of the productive soils, moderate climate, and available water. The Hudson Bay Trading Company moniker still sits on a granite boulder mounted plaque in the middle of the Williams Farm.



George Gibbs, Columbia Basin settlement sketch – NPS Photo



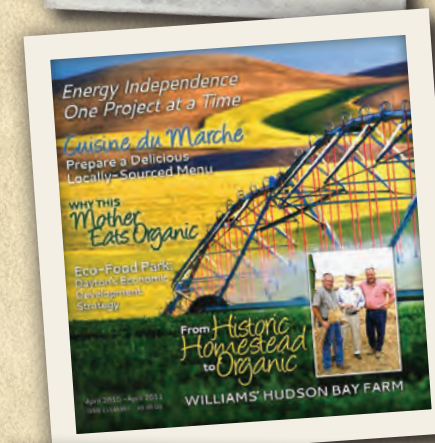
Trading Beyond the Mountains: The British Fur Trade on the Pacific 1793-1843. Vancouver: University of British Columbia (UBC) Press. ISBN 0-7748-0613-3

Williams Family History

The Williams Hudson Bay Farm is a third-generation family business. Brothers Ray and Tom Williams began managing the farm in the late 1970's. Ray returned to the farm after completing his education at Stanford University, and Tom returned following his work at Duke University. The Williams brothers worked for three decades to build upon the 600 acres they inherited from their father. They focused on growing the heifer feeding business unit and then expanding forage and grain acres to create an integrated operation with coordinated scale to maximize performance outcomes.

In the early-2000's the farm was successfully producing a diverse set of crops that were sold into locally available supply chains. Changing supply chain dynamics and consumer preferences forced key crop buyers out of business locally, and the Williams brothers were forced into a familiar position for the area of scrambling to find market outlets to sell their crops. These circumstances inspired the Williams brothers to critically examine their business strategies. Extensive time and energy were put into understanding evolving consumer preferences. The Williams brothers recognized the incredible business opportunity from establishing a farm that could be responsive to changing consumer patterns and produce products that reach further into food supply chains that deliver value-added marketing.

Working to execute of the strategy they had identified, the Williams brothers aggressively engaged a transition to organic production and nearly all crops produced on Williams Farm land in 2006 were certified organic. The integrated livestock operation, moderate climate, and plentiful water provided an ideal agronomic platform for their organic transition. The Williams brothers then took advantage of their proximity to large West Coast markets with rapidly expanding organic food consumption patterns. The brothers aggressively pursued marketing relationships with organic food companies while optimizing their agronomic production techniques to consistently produce crops meeting strict quality standards. Today the Williams Farm produces value added organic crops on contract for premium buyers including Bob's Red Mill Natural Foods, Bainbridge Organic Distillers, Cairnspring Mills, Camas County Mill, Fairhaven Organic Flour, Hummingbird Wholesale, Stahlbush Island Farms, Charlie's Produce, Puget Consumer Cooperative, and Macrina Bakery. Consistent crop quality and performance with these premium buyers are dependably getting crop prices 20%-50% above existing organic market premiums.



Customer Profile



Bob's Red Mill was initially skeptical that the Williams Farm could deliver high-quality, high-protein spring wheat competitive with their sources in Montana. A series of rigorous quality tests established the high quality of the Williams Farm produced wheat. The relationship has continued for many years.

Geologic History (Eastern Washington & Northeastern Oregon)

The soils and farming landscapes of eastern Washington and northeastern Oregon, the Walla Walla Valley, and of the Williams Property are intertwined with the history of Ice-Age mega floods (the largest flows of water ever to occur on earth!) from glacier-impounded Lake Missoula in western Montana. The lake filled with glacial meltwater and sediment, then giant floods broke out through the ice dam dozens of times between about 20,000 and 14,000 years ago. The floods roared from western Montana and northern Idaho through the Spokane Valley and flowed southwest through today's Tri Cities and from there down the Columbia River canyon past today's Portland, Oregon to the sea. Erosion caused by the floods formed the 'moonscapes' of the famous 'Channeled Scabland' of central Washington, such as the Grand Coulee and Dry Falls cataract, where the floods eroded into the hard, black lava bedrock of the entire region.

And as the floodwaters carried into southcentral Washington, they deposited millions, perhaps billions, of tons of gravel, sand and silt in the low-lying areas, and billions more tons of sediment were laid down by the same floods in Oregon's Umatilla Basin and again in the Willamette Valley before the floods blasted into the Pacific Ocean.

These sediments from the floods, along with huge areas of sediment that were reworked by wind in the current 'interglacial' period (last 14,000 years or so), form the basis for the tremendous agricultural soils throughout eastern Washington and northeastern Oregon, both in the dryland and irrigated areas.

Along the path of today's Columbia River and other areas, the mega floods were raging fast and deep and so the sediments deposited there were coarse gravels and sands.

In the axial or tributary valleys to the Columbia River like the Walla Walla and Yakima valleys, quieter, slower moving waters, still more than 800 feet deep, backed up into the valleys from the flooding along the Columbia and laid down layers of sediment from the quieting and eddying floodwaters. These deposits, locally called 'slackwater sediments' were tens or even hundreds of feet deep, forming a thick valley

fill of silts and finer sands. Since the end of the last glacial epoch about 14,000 years ago, the modern rivers like the Yakima and Walla Walla have flowed across and eroded deeply down into these deposits so that their remnants form low lying, nearly flat-topped terraces in these valleys.

The tremendously productive soil resource in the region stems partly from the sediments laid down directly by the floods, but an even larger area of soils stems from the action of strong winds after the Ice Ages.

These winds, which blow at their strongest generally from southwest to northeast, reworked and moved flood sands into sand dunes over a vast area. Today these areas of dune-derived soils form the backbone of more than half a million acres of generally flat, productive property - ground perfectly suited for center pivot irrigated row, field, and horticultural crops.

The strong winds for thousands of years at and just after the end of the last Ice Age also picked up the smaller and lighter-weight silts from the flood deposits, creating massive dust storms. The dust traveled tens to hundreds of miles before settling out onto the land. In the areas where the dust settled out, extending from the uplands surrounding the Walla Walla and Yakima valleys and for more than a hundred miles to the northeast, the soils resulting from the dustfall are silt-loam textured loess soils many tens of feet thick.

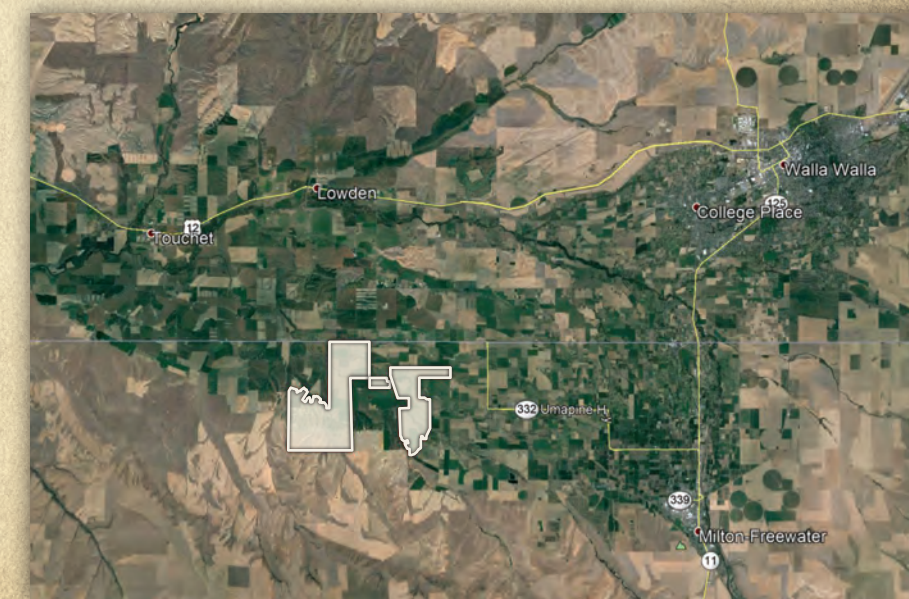
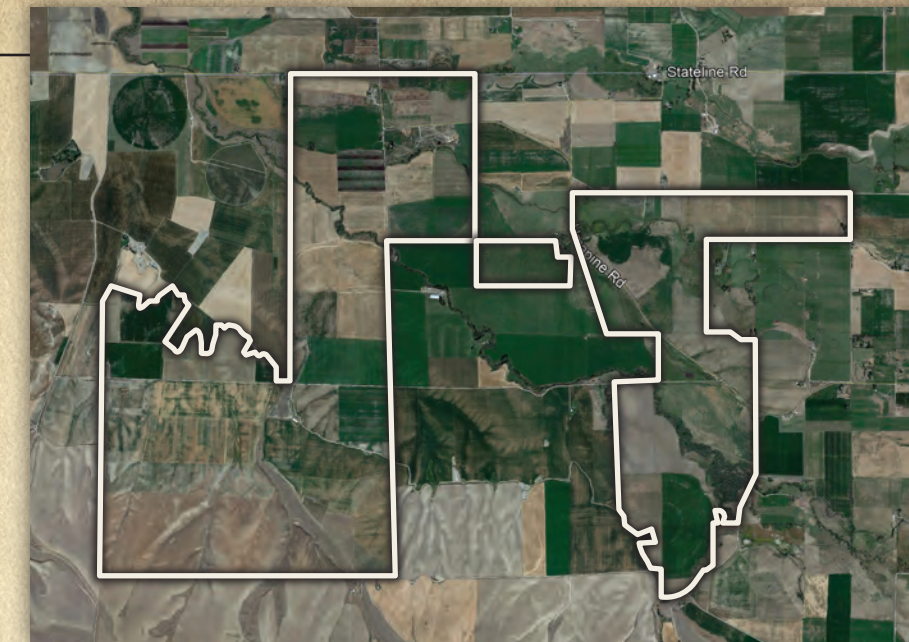
Since the bedrock throughout all of eastern Washington and northeastern Oregon consists of hard black basaltic lavas erupted in the eons before the Ice Ages, and because basalt weathers to soil incredibly slowly in the low rainfall (<10" MAP) rain shadow of the Cascade Range, if it were not for the giant floods that laid down gravel, sand and silt in the valleys, and for the strong winds that have reworked the sediments from the floods into sand dunes in the basins and loess on the higher slopes and hills, farming in eastern Washington would consist of little more than hardscrabble grazing for a few sheep or goats!

Location

The Williams Property comprises about 3,062 acres in two large holdings on the Oregon side of the OR-WA state line in the upper Walla Walla Valley about 10 miles west-northwest of Milton-Freewater, Oregon. The west parcel totals 2152 acres and the east parcel is 910 acres.

The Williams property is situated within the Columbia Plateau region of Oregon. The Columbia plateau encompasses a majority of Umatilla County and the surrounding area. This is Oregon's principal wheat production area. Irrigation along the Columbia River has transformed what was once sagebrush and desert into some of the nation's most productive farmland where you can find potatoes, onions, a variety of vegetables for processing, watermelon, tree fruit, and alfalfa.

Regional Map



Current Farming Operation

CROP PRODUCTION

The Williams Farm has produced 28 unique crops over the past five years. The cropping system strategy is built around four components:

- A primary set of organic row crops and alfalfa forage represent approximately 60% of the acres in a particular year. These include spring and winter wheat varieties, corn and corn silage, and alfalfa. This component of the strategy is formulated around the crops with robust and consistent markets.
- A secondary set of organic row crops including edible beans, alfalfa seed, peas, canola, and barley represent approximately 25% of the cropland acres in a typical year. These crops are placed based on a combination of rotational benefits and marketing opportunities.
- Approximately 15% of the cropland acres are planted to organic higher value specialty crops on an annual basis. The placement of these crops is driven by rotational and direct marketing opportunities. Historical production includes pumpkins, squash, melons, and onions. This component of the cropping strategy provides significant financial upside for the operation.
- Each of the previously mentioned row crops is managed in a double crop system with strategically placed forage crop covers. The forage double crops are configured to support optimal nutrient cycling and cattle feed ration value.

INTEGRATED OPERATIONS FOR ORGANIC NUTRIENT CYCLING

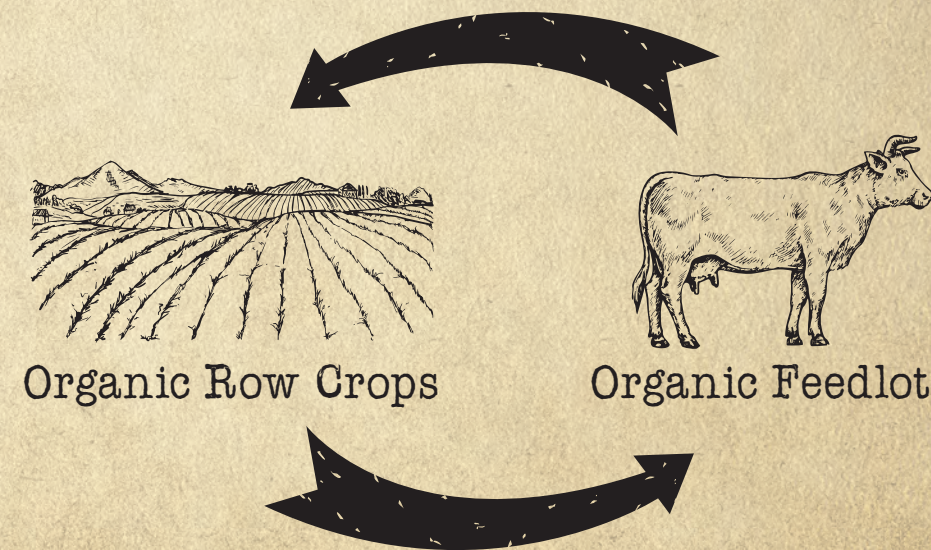
The Williams Farm is uniquely configured for organic production. The cattle feedlot provides a direct value-added buyer for the forage feedstocks produced from the organic cropland operations. This integration facilitates the production of two cash crops on all row crop acres each year. The cattle feedlot provides the primary organic fertility source for the cropland operations. Strategically developed crop rotations including legume crops to fix nitrogen extend the value and impact of the cattle organic fertility source. This dynamic simultaneously increases annual revenue from each acre while building critical organic soil quality and fertility. The composite soil test results below show well above average soil quality and fertility characteristics for this region.

HUMAN RESOURCES

The Williams Farm operations are executed by 12 full time employees including the owner-managers. These human resources are dedicated to individual business units, and the diversity of crop production provides consistent labor requirements throughout most of the year. Additional resources are brought in to support with hand harvesting of specialty crops as needed.

CROP MARKETING

The Williams brothers have worked extensively to build value-added marketing relationships for their crops. The agronomic management practices and crop rotations have been optimized to meet specific crop quality characteristics demanded by their customers. These efforts have resulted in consistent crop price premiums significantly above standard organic premiums. The Williams Farm wheat is consistently marketed above \$17/bushel and corn grain above \$16/bushel.



Current Farming Operation

5 YEAR HISTORY - 28 ORGANIC CROPS

Spelt Wheat	
Dark Northern Spring Wheat	
Soft White Winter Wheat	
Hard White Winter Wheat	
Hard Red Spring Wheat	
Barley	
Alfalfa Seed	
Oats	
Purple Corn	
Corn Grain	
Corn Silage	
Popcorn	
Black Beans	
Garbanzo Beans	
Canola	
Alfalfa	
Forage Barley	
Forage Oats	
Forage Sorghum	
Mixed Forages	
Triticale	
Buckwheat	
Pasture	
Pumpkins	
Squash	
Peas	
Melon	
Mustard Seed	
Cabernet Sauvignon Grapes	
Cabernet Franc Grapes	

FSA REPORTED INFORMATION

FARM #	TRACT #	FARMLAND	CROPLAND	DCP CROPLAND	EFFECTIVE DCP
5294	11497	464.26	389.32	389.32	389.32
5543	10850	280.97	235.1	235.1	235.1
6972	12730	222.46	213.56	213.56	213.56
6973	12731	215.68	204.74	204.74	204.74
6974	471	160.78	155.59	155.59	155.59
6974	500	57.56	55.84	55.84	55.84
6974	13075	146.5	71.35	71.35	71.35
6974	13076	184.46	121.22	121.22	121.22
6975	12733	191.01	191.01	191.01	191.01
8090	1045	175.36	173.31	173.31	173.31
8090	1056	111.32	103.86	103.86	103.86
8090	10851	838.26	798.15	798.15	798.15
8091	10662	42.47	41.86	41.86	41.86
8091	10663	334.51	307.03	307.03	307.03
TOTAL		3425.6	3061.94	3061.94	3061.94

FSA PROGRAM INFORMATION

CROP	BASE ACRES	WEIGHTED AVG PLC YIELD	CROP ELECTION
Wheat	1223.13	61	ARC COUNTY
Corn	160.25	159	ARC COUNTY
Soybeans	32.98	29	ARC COUNTY
Barley	107.74	46	ARC COUNTY
Mustard	18.1	672	ARC COUNTY
Oats	1.4	50	ARC COUNTY
	1543.6		



Investment Analysis - Cash Rent Basis

This analysis identifies the investment returns from the Williams Farm under a cash rent management structure. The cash rent is established for each crop based on local standard assumptions and organic premiums. The analysis assumes crop yields based on historical performance. Crop prices are assumed at organic market levels for the area. The crop rotation follows the current Williams Farm business plan with 60% of the acres in primary organic crops, 25% in secondary rotational organic crops, and 15% in higher value specialty organic crops. All row crop acres are double cropped with value added mixed forage production to support the cattle feedlot. The analysis assumes market level forage prices are paid from the feedlot business unit for the forage crops, and that the cropland business unit is paying market level prices to the feedlot business unit for the organic fertility. The operating cost structures are fully expense loaded based on locally published data and Williams Farm financial reporting. The analysis identifies a market level cash rent of \$1.47M annually for the 2750 cropland acres, an average of \$535 per acre. The operations will generate an over return of 35% on crop production at this cash rent. The analysis includes a detailed 2019 crop insurance quote for all acres and crops. The operations, at the identified cash rent level, will be to guarantee a profit of \$84K.

CASH RENT OPERATOR ANALYSIS				
	PRIMARY ROTATIONAL CROPS	SECONDARY ROTATIONAL CROPS	HIGH VALUE SPECIALTY CROPS	CASH RENT OPERATOR SUMMARY
Total OpEx	\$1,536,906	\$296,325	\$1,520,115	\$3,353,346
Total Income	\$2,566,625	\$813,300	\$3,135,150	\$6,515,075
Cash Rent	\$711,250	\$292,500	\$467,500	\$1,471,250
Net Income	\$318,470	\$224,475	\$1,147,535	\$1,690,480
Operator Returns	14.2%	38.1%	57.7%	35.0%

CROP INSURANCE REVIEW	
Insurance Revenue Guaranteed	\$4,908,542
Insurance Guaranteed Profit	\$83,947

INVESTOR INCOME SUMMARY	
Total Rent	\$1,471,250
Total Rent Per Acre	\$535

INVESTOR NET RETURN ANALYSIS CAP RATE VS. CASH RENT MATRIX					
BASELINE AVE CASH RENT (\$/AC)	4.0%	4.5%	5.0%	5.5%	6.0%
\$350	\$21,131,688	\$18,783,722	\$16,905,350	\$15,368,500	\$14,087,792
\$375	\$22,850,438	\$20,311,500	\$18,280,350	\$16,618,500	\$15,233,625
\$400	\$24,569,188	\$21,839,278	\$19,655,350	\$17,868,500	\$16,379,458
\$425	\$26,287,938	\$23,367,056	\$21,030,350	\$19,118,500	\$17,525,292
\$450	\$28,006,688	\$24,894,833	\$22,405,350	\$20,368,500	\$18,671,125
\$475	\$29,725,438	\$26,422,611	\$23,780,350	\$21,618,500	\$19,816,958
\$500	\$31,444,188	\$27,950,389	\$25,155,350	\$22,868,500	\$20,962,792
\$525	\$33,162,938	\$29,478,167	\$26,530,350	\$24,118,500	\$22,108,625
\$550	\$34,881,688	\$31,005,944	\$27,905,350	\$25,368,500	\$23,254,458
\$575	\$36,600,438	\$32,533,722	\$29,280,350	\$26,618,500	\$24,400,292
\$600	\$38,319,188	\$34,061,500	\$30,655,350	\$27,868,500	\$25,546,125

Investment Analysis - Direct Investor Operations

The Williams Farm is ideally suited for organic cropland investors implementing direct operations on their assets. This analysis identifies the return to land as a direct operating investment. Crop prices are assumed at organic market levels for the area. The crop rotation follows the current Williams Farm business plan with 60% of the acres in primary organic crops, 25% in secondary rotational organic crops, and 15% in higher value specialty organic crops. All row crop acres are double cropped with value added mixed forage production to support the cattle feedlot. The analysis assumes market level forage prices are paid from the feedlot business unit for the forage crops, and that the cropland business unit is paying market level prices to the feedlot business unit for the organic fertility. The operating cost structures are fully expense loaded based on locally published data and Williams Farm financial reporting. Overhead costs are escalated to fund dedicated staff and resources for the investor to manage the asset. The analysis assumes crop yields based on historical performance. These assumptions identify the return to land from direct operations to be \$2.87M annually. The crop insurance revenue guarantees will ensure \$1.27M annual return to land for the direct operations.

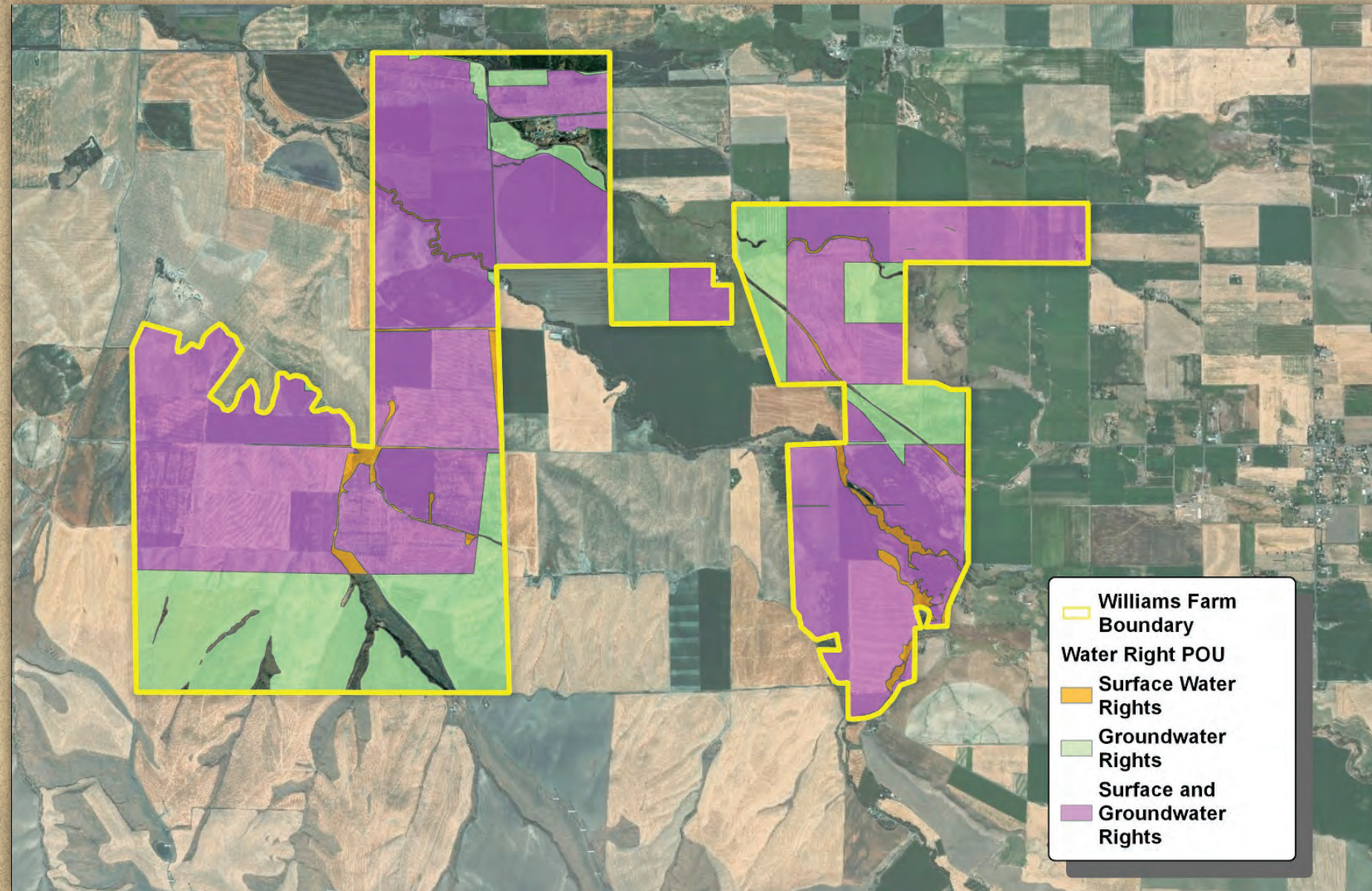
INVESTOR DIRECT OPERATIONS ANALYSIS				
	PRIMARY ROTATIONAL CROPS	SECONDARY ROTATIONAL CROPS	HIGH VALUE SPECIALTY CROPS	DIRECT OPERATIONS SUMMARY
Total OpEx	\$1,696,906	\$356,325	\$1,588,865	\$3,642,096
Total Income	\$2,566,625	\$813,300	\$3,135,150	\$6,515,075
Total Net Income	\$869,720	\$456,975	\$1,546,285	\$2,872,980

CROP INSURANCE REVIEW	
Insurance Revenue Guaranteed	\$4,908,542
Total Income	\$869,720

INVESTOR INCOME SUMMARY	
Total Net Income	\$2,872,980
Total Net Income Per Acre	\$1,044.72

INVESTOR NET RETURN ANALYSIS CAP RATE VS. NET INCOME MATRIX					
DIRECT OPERATIONS RETURN TO LAND	7.0%	7.5%	8.0%	8.5%	9.0%
\$1,250,000	\$16,182,393	\$15,103,567	\$14,159,594	\$13,326,676	\$12,586,306
\$1,500,000	\$19,753,821	\$18,436,900	\$17,284,594	\$16,267,853	\$15,364,083
\$1,750,000	\$23,325,250	\$21,770,233	\$20,409,594	\$19,209,029	\$18,141,861
\$2,000,000	\$26,896,679	\$25,103,567	\$23,534,594	\$22,150,206	\$20,919,639
\$2,250,000	\$30,468,107	\$28,436,900	\$26,659,594	\$25,091,382	\$23,697,417
\$2,500,000	\$34,039,536	\$31,770,233	\$29,784,594	\$28,032,559	\$26,475,194
\$2,750,000	\$37,610,964	\$35,103,567	\$32,909,594	\$30,973,735	\$29,252,972
\$3,000,000	\$41,182,393	\$38,436,900	\$36,034,594	\$33,914,912	\$32,030,750
\$3,250,000	\$44,753,821	\$41,770,233	\$39,159,594	\$36,856,088	\$34,808,528
\$3,500,000	\$48,325,250	\$45,103,567	\$42,284,594	\$39,797,265	\$37,586,306
\$3,750,000	\$51,896,679	\$48,436,900	\$45,409,594	\$42,738,441	\$40,364,083

Water Rights Analysis



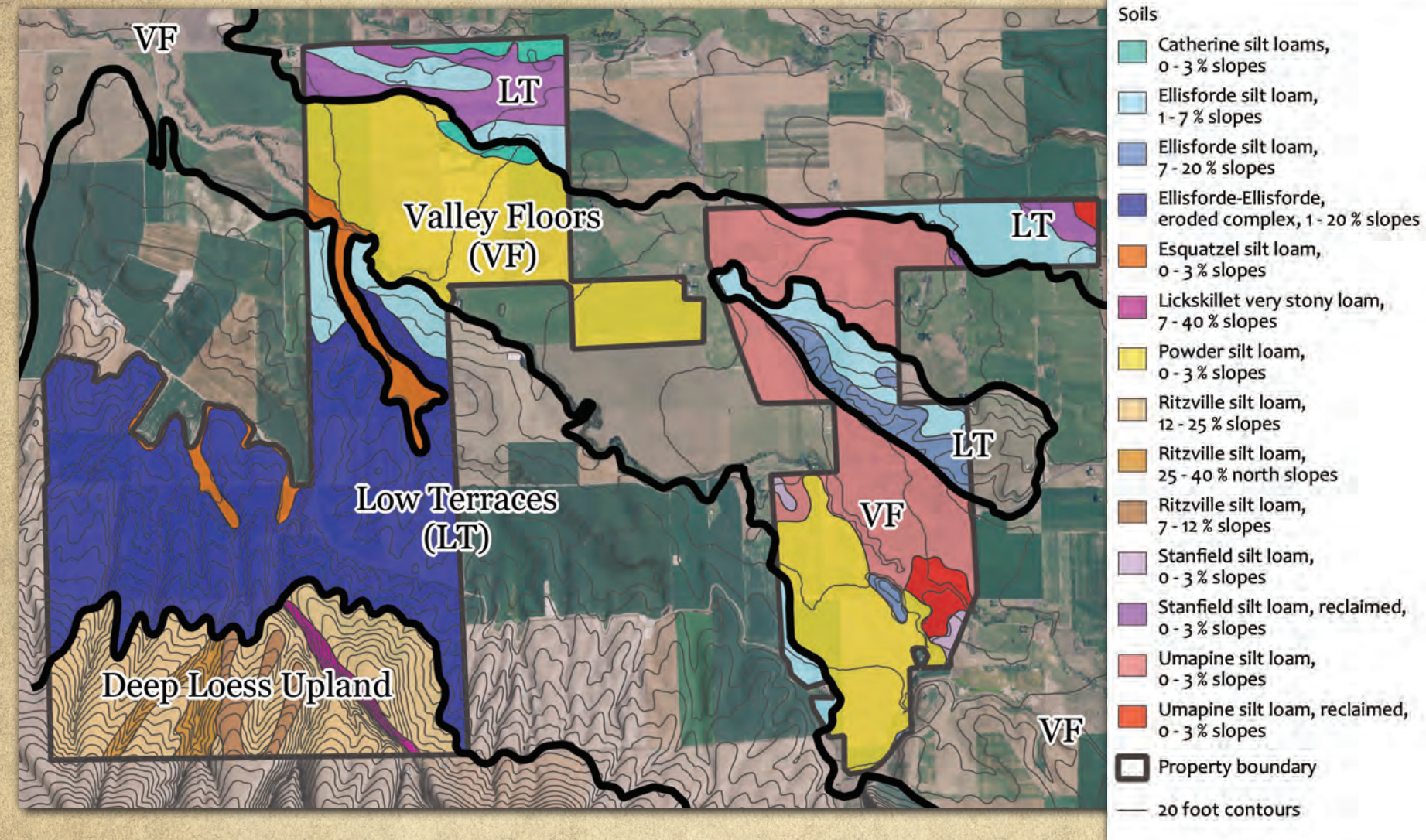
Water & Irrigation

The Williams Farm has surface or ground water rights covering all cropland acres. The majority of acres are covered by both surface and ground water rights. The local geology supports lower depth basalt wells on the Southern portion of the property. The northern portion of the property is serviced by alluvial sand and gravel wells. There are 16 wells currently on the asset supporting 14 separate groundwater rights that provide for 1,463 acres of primary irrigation and 4,606 acres of supplemental irrigation. The 14 surface water rights cover 1,052 acres of primary irrigation and 69 acres of supplemental irrigation. Water rights are associated with the Hudson Bay District Improvement Company with a typical annual fee structure between \$35K-\$45K. The water rights have priority years ranging from 1861 to 2001. Surface water is collected from adjacent and intersecting flows including Pine Creek, Swartz Creek, Dry Creek, and Little Mud Creek. The irrigation system is connected through a series of mainlines with. Irrigation water is currently delivered through a combination of pivot and hand line systems. The Williams Farm is currently working to install pivot irrigation systems on acres managed through hand lines.



➤ WilliamsHudsonBay.com

Soil Survey



The Williams Property occupies three different landforms that condition the best land uses. Refer to the map above. The three are 1. upland steep hills with deep soils from windblown loess; 2. intermediate elevation low rolling hills (low terraces) formed of loess about 2 to 4 feet thick overlying layered sands and silts from outburst floods; and 3. low alluvial fans, narrow valley ways, and valley floors underlain by silty alluvium. The three different landforms are indicated on the soils map because the soil types are based in part on the kinds of geologic parent materials from which they formed.

High Quality Soils

Soils of the **Ritzville series** are shown in the mocha brown colors above elevations of about 700 feet. Ritzville soils are *Mollisols* (true prairie soils). They are very deep loess soils with silt loam textures and no restrictive horizons and occur on landform 1, upland steep hills of the Horse Heavens. They are used principally for dryland winter and spring wheat but are used for irrigated permanent crops in some nearby areas. They make up about 16% of the property.

The **Ellisforde series** soils are shown in deep blue and lighter blue-gray shades and occur below elevations of about 700 feet. The related **Stanfield series** soils are shown in shades of purple. Both soils occur on the low rolling hills and terraces of landform 2 and are moderately deep to very deep soils formed in loess about 2 to 4 feet thick overlying layered sands and silts from outburst floods. Whereas Ellisforde soils are *Mollisols* with silt loam textures, the slightly coarser Stanfield soils with lower water holding are classed as *Aridisols*, although in practice under irrigation they are used for the same type of field and row crops and some permanent crops with sprinkler or drip irrigation, respectively. Together the soils of landform 2, Ellisforde and Stanfield, make up about 45.5% of the property.

Finally, the **Umapine series** in shades of pink, the **Powder series** in yellow, and the minor **Esquatzel series** in orange-red are the soils on the low alluvial fans, narrow valley ways, and valley floors that make up landform 3. These nearly flat-lying soils have been used extensively for irrigated row and field crops with some limitation outlined below. Together they make up about 37% of the property.

All of the soils of the Williams Property are exceptional in several ways: First, 95% of the soils on the property are very deep (>60 inches to bedrock or a restrictive layer) and the remainder are moderately deep (50-60 inches to bedrock or a restrictive layer).

Second, all of the soils on the Williams Property have a dominant texture of silt loam or very fine sandy loam in the rooting zone. This is hugely important because silt loam has the highest available water holding capacity of any soil texture class at 2.0 inches to 2.5 inches of plant-available water per foot of soil.

Third, all of the soils on the property are developed from fresh mineral parent materials that have weathered only slightly in a semi-arid grassland ecosystem with limited leaching, which means that inorganic nutrients are in abundant supply, the root environment is rich in available calcium, and the content of humus and of organic nitrogen is low to moderate: all features that are outstanding for the production of permanent crops under drip irrigation, because plant health is promoted by high availability of inorganic elements but vigor of the crops and ripening of fruit can be controlled by carefully tailored applications of nitrogen and water throughout the growing season.

Fourth, approximately 80% of the soils on the Williams Property are well drained and have no water tables, salts, or alkali.

Only the Umapine series soils on valley floors (about 14% of the total property) are saturated with water within about 40 inches of the surface at some time of the year in most years; the upper 40 inches of soil is strongly alkaline or very strongly alkaline; and the exchangeable sodium percentage exceeds 15% in the upper 20 inches. According to the county soil survey, some areas of the Umapine soils have been reclaimed. The Stanfield series soils, which make up a scant 5% of the total property, are only moderately well drained under irrigation.

FALL 2018 EXAMPLE COMPOSITE SOIL ANALYSIS

% ORGANIC MATTER	NITRATE N LB/AC	PHOSPHORUS PPM	POTASSIUM PPM	MAGNESIUM MEQ	CALCIUM MEQ	SULFUR PPM	ZINC PPM	MANGANESE PPM	COPPER PPM	IRON PPM	BORON PPM
4.8	81	70	937	8	23	24	2.5	35.3	2.1	26.7	1.22

Annual soil sampling is performed on the Williams farm to ensure crop quality and meet reporting requirements for cattle manure management. These results represent a composite sample from the fall of 2018 for acres rotating into high protein wheat production for the 2019 crop year.

Slope & Aspect

SLOPE

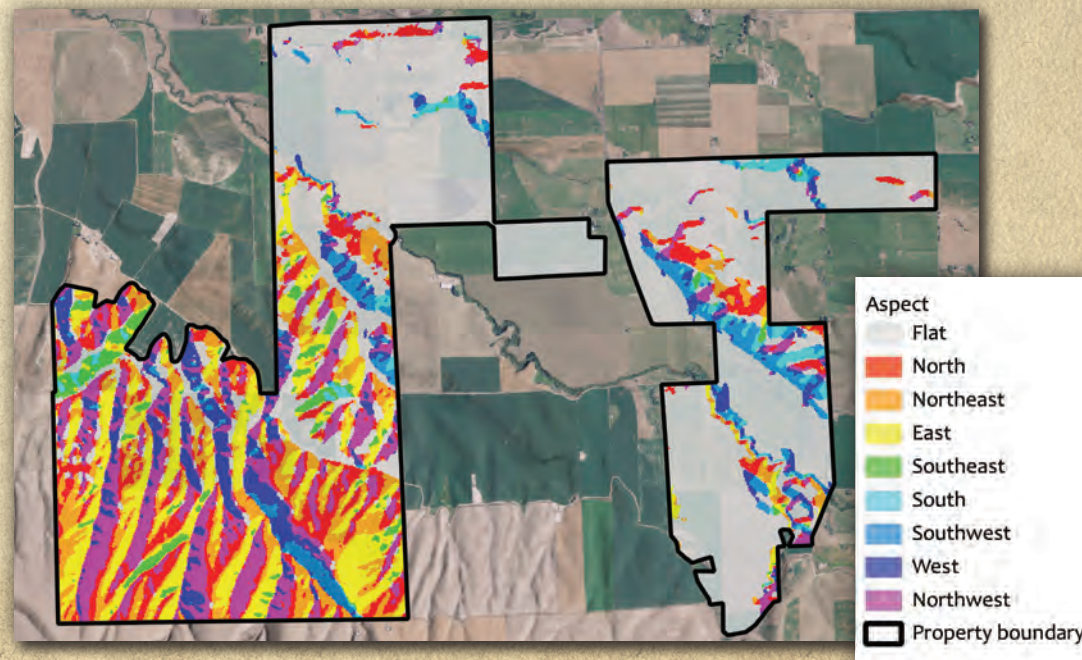
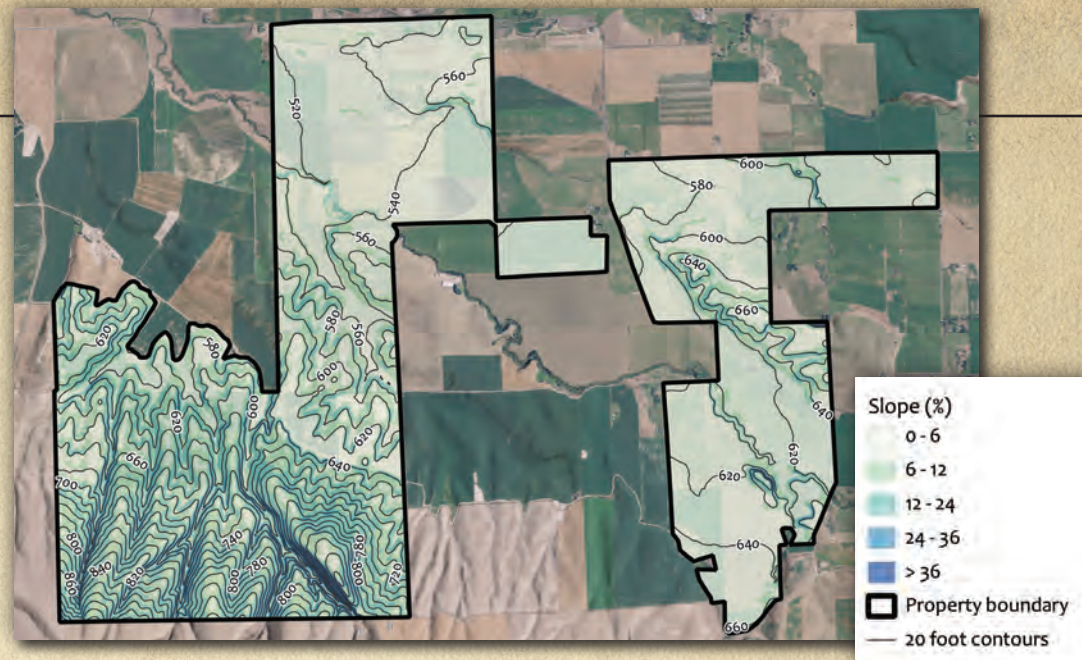
About 77%, or more than three-quarters of the entire property, has highly farmable, gentle to moderate slopes of less than 12%. Another almost 20% of the property has very farmable slopes between twelve and 24%; and a negligible 4.5% of the farm has slopes steeper than 24%. The smoothest and flattest landform clearly is the valley floor. This is followed by the low terrace landscape where the terrace treads (tops) having dominant slopes of less than 12%, and thus are suitable for hand line, wheel line, and in some cases center-pivot irrigation. The deep loess upland landscape has much steeper slopes and the traditional use has been wheat-fallow rotation.

SLOPE	ACRES	% OF PARCEL
0-6%	1798	57.1
6-12%	642	20.4
12-24%	564	17.9
24-36%	106	3.4
> 36%	36	1.1

ASPECT	ACRES	% OF PARCEL
Flat (< 4%)	3	0.1
North	384	12.2
Northeast	477	15.2
East	605	19.2
Southeast	672	21.3
South	467	14.8
Southwest	312	9.9
West	129	4.1
Northwest	98	3.1

ASPECT

The key characteristic of slope aspect is that about half (48.4%) of the Williams Property is essentially flat, defined here as having slopes of less than 4% and these flat areas are dominantly on the valley floor landform. The low terrace landform area has a dominance of northwest-, southeast-, and east-facing slopes because the natural drainage channels are oriented SSW-NNE. The deep loess upland landform has a similar preponderance of northwest-, and east-facing slopes again because the smaller valleys that are cut into the loess (and underlying basalt) have a SSW-NNE orientation.



Air Drainage & Elevation

AIR DRAINAGE

A perspective view of the vineyard in 3D looking toward the south highlights the steeply sloping deep loess uplands on the southern part of the property that falls gradually to the valley floor land with the small stream running on the valley floor and passing through both parcels of the property flowing to the NW.

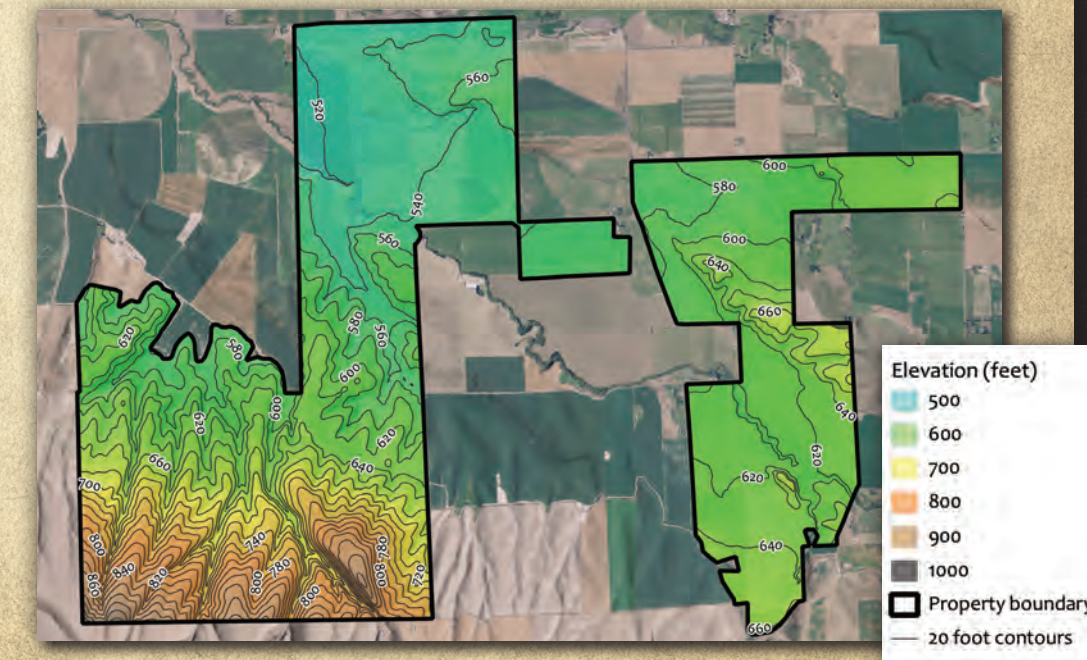
The valley areas of eastern Washington and NE Oregon, including low lying areas of the Walla Walla Valley like the flat part of the property are susceptible to infrequent and difficult to predict winter cold spells that can damage particularly cold sensitive permanent crops such as stone fruit and wine grapes. For example, on the chart of weather data for the Touchet station for the period January 1-15, 2017, the boxed area on the left shows that this part of the Walla Walla Valley reached nighttime minimum temperatures below zero F on several nights and as low as -15.2 degrees F on January 12.

As shown above from examination of climate data tables from the Touchet weather station, the entire farm has suitable to excellent growing season climate for a variety of row and field crops in the flatter parts and for winter and spring wheat on the uplands; however, the winter freeze hazard is significant enough on the low parts of the farm that freeze-sensitive permanent crops would not be suited there. If suitable temperature data is collected on the higher elevation parts of the farm in the deep loess upland, permanent crops may be suitable if irrigation water can legally be applied there.

ELEVATION

A perspective view of the property in 3D looking toward the south highlights bottomlands through the center of the two parcels with low rolling hills both to the north and the south of the bottomlands and the property finally rising into steeper hills on the southwest. Elevation contours on the maps show that the property ranges from a low of about 520 feet on the floor of local valley ways to a high of just over 950 feet in the foothills to the south.

Maps prepared by Richard Rupp, Palouse Geospatial, February 2019
Background image courtesy of the U.S. Geological Survey. This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Local Climate

Washington State University maintains a system of more than 180 total weather stations throughout the state, mainly to support agriculture.

The closest weather station to the Williams Property is the 'Touchet' station, which is about six miles northwest of the vineyard at about 550 feet elevation and was installed in 1989. It thus offers a 30-year record of agricultural climate accessible for free. Several data summary tables have been accessed for the Touchet weather station and offer valuable documentation of the excellent farming conditions on the Williams Property.

The table to the right with dates of first and last frost and growing season length shows that the 10-year average growing season ranges from 145 to 190 days and that the average date of the last frost in the spring is in early April to early May.

The table below with climate averages from 2008 to 2018 reveals a number of weather measurements, among which are that the average annual air temperature is about 53 degrees F and the average annual rainfall is about 8 inches. The 10-year average solar radiation, at about 5500MJ/m², attests to the nearly cloud-free growing seasons east of the Cascade Mountains. And reference annual evapotranspiration (ET_r) of over 60 inches against average rainfall of 8 inches is evidence of the very low relative humidity and the long, full sunshine days during the growing season.

10-YEAR AVERAGE GROWING SEASON					
YEAR	LAST SPRING FROST	LAST SPRING FROST TEMP	FIRST FALL FROST	FIRST FALL FROST TEMP	FROST-FREE DAYS
2018	4/23/2018	29.8°F	10/14/2018	29.9°F	174
2017	4/11/2017	30.4°F	10/4/2017	28.8°F	176
2016	3/30/2016	31.0°F	10/12/2016	28.2°F	196
2015	4/26/2015	30.0°F	11/4/2015	25.5°F	192
2014	4/14/2014	30.0°F	9/12/2014	31.0°F	151
2013	5/2/2013	31.7°F	10/14/2013	29.5°F	165
2012	5/12/2012	31.7°F	10/3/2012	28.7°F	144
2011	5/4/2011	30.8°F	10/25/2011	26.5°F	174
2010	5/7/2010	29.6°F	10/13/2010	31.3°F	159
2009	4/24/2009	27.8°F	10/6/2009	31.2°F	165
2008	5/2/2008	29.1°F	10/9/2008	29.0°F	160
2007	4/20/2007	30.9°F	10/26/2007	31.9°F	189
Average	4/18	29.6°F	10/12	29.3°F	170

DATE	AVERAGE AIR TEMPERATURE			AVG DP °F	AVG RH %	AVG LW U	WIND			SOIL TEMP AVG 8 IN. °F	TOTAL PREC. IN.	TOTAL SOLAR RAD MJ/M2	REF. ET	
	MIN °F	AVG °F	MAX °F				AVG DIR	AVG SPEED MPH	MAX GUST MPH				ETO IN.	ETR IN.
2008	39.2	51.4	63.3	37.9	65.9	0.10	W	6.0	88.6	37.9	6.46	3686	39.50	57.00
2009	40.3	52.2	63.9	38.0	64.4	0.14	SW	5.8	49.3	55.2	8.05	5539	47.10	65.07
2010	41.7	52.8	63.9	40.3	67.5	0.19	SW	5.8	46.8	56.4	9.71	5236	44.09	60.85
2011	40.8	52.3	63.6	38.0	62.7	0.10	SW	6.3	47.9	55.7	6.13	5520	46.51	64.82
2012	41.8	53.6	65.1	39.7	63.8	0.13	SW	6.0	57.2	56.9	10.55	5622	46.73	64.24
2013	41.3	53.0	64.5	39.4	64.6	0.09	SW	5.5	59.3	56.5	5.61	5766	46.51	63.13
2014	42.8	54.4	65.8	40.3	63.6	0.09	SW	5.8	50.0	57.7	6.47	5648	48.50	66.62
2015	43.4	55.6	67.4	41.6	64.6	0.13	SW	5.1	47.9	58.5	7.38	5803	48.37	65.54
2016	42.9	55.0	66.5	41.3	65.4	0.12	SW	5.6	48.2	58.1	9.21	5820	47.79	65.19
2019	40.5	52.2	63.4	38.9	67.1	0.12	SW	4.8	51.1	57.2	8.99	5331	43.07	58.06
2018	42.7	54.4	65.9	37.2	60.2	0.13	SW	5.4	50.7	57.6	7.63	5428	47.11	64.96

Heifer Feedlot

The Williams Farm cattle feedlot operates through contracts with multiple dairies to breed and feed out heifers. The feedlot collects yardage fees on a per head per day basis. The yardage fees are set to include all feed, medical needs, and labor associated with the heifer management. The feedlot is certified for 8000 head of cattle, but the current practical capacity of the feedlot is 5000 head. The Williams Farm organic forage and grain production provides feed ration components that command a premium organic heifer yardage fee of approximately \$3.00 per head per day. Additional revenue comes from the sale of organic fertility back to the cropland business unit. The heifer feedlot consumes all of the forage produced from the cropland business unit, and additional supplemental feed ration components are acquired from local sources including wine grape and food processing waste.

The pro-forma analysis here is built from Williams Farm operating financials and industry standard assumptions. The integrated organic cropland and feedlot provides significant operational advantages for the Williams Farm. Beyond the operational value, the feedlot provides additional net income for the investor.



HEIFER FEEDLOT PRO-FORMA		
Head on Feed	3,000	
Organic Yard Feed	\$3.00	per head per day
Annual Days on Feed	325	
Manure Sales	\$109,688	\$25 per ton
Total Revenue	\$3,034,688	
Annual Feed Expense	\$2,008,125	
Annual Labor Expense	\$247,000	
Annual Medical Expense	\$145,500	
Annual Equipment Expense	\$142,000	
Annual Misc Expense	\$46,550	
Annual Net Income	\$445,513	

EXAMPLE MANURE ANALYSIS REPORT			
NUTRIENT	UNIT	AS IS BASIS	DRY BASIS
Moisture	%	53.24%	
Solids	%		46.76%
Total Nitrogen (N)	%	0.80%	1.72%
Total Nitrogen (N)	Lbs/Ton	16.09	34.4
Total P205	%	0.62%	1.33%
Total P205	Lbs/Ton	12.44	26.6
Total K20	%	2%	4%
Total K20	Lbs/Ton	38.12	81.6

Williams
HUDSON BAY
Farm

3300 CONTIGUOUS ACRES | UMATILLA COUNTY, OREGON



Drone Video

Visit our website WilliamsHudsonBay.com and check out the drone video footage of this diverse property.



Interactive Tour

Also available on our website WilliamsHudsonBay.com take a 360° interactive tour from multiple locations on the property.



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