

A Review and Analysis of Coffelt Farm



Prepared for the San Juan County Land Bank
by the Conservation Agriculture Resource Team (CART)
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Introduction

In August 2019, the San Juan County Land Bank established a working group, the Conservation Agricultural Resource Team (CART), to provide input on the future of the Coffelt Farm Preserve. CART includes representatives of agriculture and conservation-related agencies and organizations, as well as members of the farming community. CART reports and presents recommendations to the Land Bank Commission and staff for consideration.

CART Tasks

- Review past operations of Coffelt Farm and identify lessons learned.
- Assessment of agricultural potential (within resource parameters set by the Stewardship Management Plan and Conservation Easement) including possible types of operations.
- Plan, facilitate, and review community input.
- Assessment of Coffelt Farm infrastructure and recommendations for improvements.
- Consideration of alternate models for management of public farm properties.
- Identify critical elements to include in a Request for Proposals (RFP) and lease agreement.

Process

The work of CART builds on previous county-wide efforts including the 2011 report, *Growing our Future: An Agricultural Strategic Action Plan for San Juan County, WA*, which identified key goals and strategies that would result in the preservation of priority farmland and actions to strengthen agriculture in San Juan County. One of the issues identified in this report is that “Conservation organizations are challenged by the task of managing conserved farmland” and “successful conservation of land must go beyond preservation of land” (*Bill et al. 2011, pg 27*). The San Juan County Agricultural Resource Committee (SJC ARC) continues to advocate for policies that support agricultural activities, including the active utilization of conserved agricultural lands in recommendations to the San Juan County Council. In the spring of 2019, Washington State University (WSU) SJC Extension hosted a roundtable discussion with representatives of multiple land conservation and agricultural organizations, to review strategies for management of conserved agricultural lands and discussed key barriers and opportunities.

Meeting monthly for over a year, members of CART have conducted a systematic review of Coffelt Farm and management of conserved agricultural land. Key findings and recommendations are presented in this report. In addition to public input, key stakeholders and subject matter experts were engaged in a series of interviews. Interviewees included: Sidney Coffelt, life-estate holder; Meike Meisser, lessee of Stonecrest Farm on Lopez Island; Rusty Milholand, Washington Farmland Trust; Lisa Byers, OPAL Community Land Trust; Kyle Freeman, Orcas Island School District; and Lincoln Bormann, Land Bank. These conversations

helped inform the working group's perspective, provided important context, and helped shape recommendations. Beyond Coffelt Farm, the elements of this report have the potential to inform continued county-wide conversations on the on-going management of conserved agricultural land.

Coffelt Farm History

The 189-acre Coffelt Farm Preserve is integrated into the heart of the agricultural, ecological, and community landscape of Orcas Island. It has been documented that this area was inhabited by Native American people for over 6,000 years. Throughout the region, and the San Juan Islands, Coast Salish people engaged in various types of land management and cultivation including established camas plots in conjunction with harvest of aquatic resources (*Deur and Turner 2005*). While there have not been specific documentation of activities at Coffelt Farm, the San Juan Islands were a managed, cultivated landscape prior to European settler agriculture. First records of European occupation of Coffelt Farm started in the 1870s with Thomas Dixon. Throughout the late 1800s and early 1900s subsistence and commercial agricultural activities took place including livestock (cattle and lamb), flower bulbs, plums and apples, grain (wheat, oats, and barley), and vegetable crop production.

The Coffelt family purchased the property in 1950. Vern Coffelt took on management of the farm and engaged in the production of sheep, beef, apples, and grains while working an off-farm job with Orcas Power and Light Company. This period, from the 1950s to 1960s, saw a general decline in agriculture in San Juan County and a shift towards increased development of tourism and second homes. Vern married Sidney Coffelt in the 1970s and they took up full-time farming in the mid-1990s. During their time farming, Vern and Sidney were involved with the establishment of the Island Grown Farmers Cooperative and the USDA-inspected Mobile Slaughter Unit, which was the first of its kind in the country and had an international impact. With support from the Orcas Island Community Foundation and Land Bank, Coffelt Farm developed a host site that enables other island producers to bring livestock to the Mobile Slaughter Unit on Orcas.

In 1995 the Coffelts granted a conservation easement to the Land Bank and subsequently initiated the sale of the property to the Land Bank in 2008. After the sale of the property to the Land Bank, the existing conservation easement was extinguished with the agreement that it would be replaced by a new conservation easement held by the San Juan Preservation Trust (SJPT). That conservation easement was granted by the Coffelts and the Land Bank to the Preservation Trust in 2012. As stated in the recorded easement: "When the Coffelt family sold the property to the San Juan County Land Bank in 2007, it was with the understanding that the land would continue in active agriculture, growing food and providing opportunities for young farmers and members of the community to learn about sustainable, small scale agriculture." (*Appendix A: SJPT Conservation Easement*). This sentiment was reaffirmed by Sidney Coffelt in

a recent interview where she expressed the importance of prioritizing the production of food at Coffelt Farm. In 2010, Coffelt Farm Stewards was formed as a non-profit with the mission of supporting the operation of Coffelt Farm and providing educational opportunities and training in sustainable agriculture. During this time period, the Land Bank also established a field office on the property. Vern Coffelt remained directly engaged in day-to-day operations of the farm until he passed away in 2013. Sidney holds a life estate at Coffelt Farm Preserve and has stayed engaged in various aspects of farm management.

The Coffelt Farm Stewards managed the farm until 2019. During this time, many hard-working dedicated non-profit board members and staff engaged in the production of a diversity of livestock and crops including: beef, lamb, pork, chicken, eggs, raw milk, hay, orchard fruit, and market garden produce, as well as providing educational opportunities for members of the public and Orcas Island youth. A farm plan was developed in 2015 with support from the San Juan Islands Conservation District (SJICD) and in 2018 an additional Comprehensive Nutrient Management Plan was developed to address the management of livestock waste (*SJICD 2015 - Appendix F, SJICD 2018*). Challenges with inadequate housing, limited labor, deteriorating farm infrastructure, nutrient management, and insufficient funding were identified multiple times as barriers to farm operation by the Coffelt Farm Stewards. In early 2019, Coffelt Farm Stewards presented the Land Bank with a request for additional funding and investment in housing and infrastructure. An agreement could not be reached between parties and Coffelt Farm Stewards initiated a dissolution process.

In May 2019 the Land Bank issued a Request for Proposal (RFP) for an interim lease. Applications were reviewed and the interim lease was awarded to Lum Farm LLC. This lease agreement was extended by one year until December 2021 to allow for completion of the CART process, development of an RFP for long term management of Coffelt Farm, and to allow time for transition in operations. In 2020, the Land Bank developed a Coffelt Farm Preserve Stewardship Management Plan, which articulates long-term management goals for the property and creates a framework for areas of future agricultural use (*SJC Land Bank 2020*). As stated in the management plan, the Land Bank's stewardship goals for Coffelt Farm Preserve are:

- to protect agricultural resources and support a viable agricultural operation that demonstrates sustainable practices;
- to protect and enhance freshwater resources and other ecological values and services; and
- to provide the local community with access to and enjoyment of food and farmland, environmental and agricultural education, and scenic rural character.

Coffelt Farm: Lessons Learned

Based upon a review of recent history at Coffelt Farm, the following key lessons learned have been identified by CART to help inform future decisions regarding management of Coffelt Farm:

- County-level commitment is needed to preserve both agricultural lands *and* agricultural production.
- There is opportunity to continue engaging in community consensus building efforts to help shape the future of conservation agricultural lands in San Juan County.
- There is a need for the Land Bank to have clearly defined vision, goals, and priorities for agricultural properties.
- Lease agreements need to clearly define expectations, roles, metrics, responsibilities, exit plan, and include a process for conflict resolution.
- Strong communication and collaboration between Land Bank, lessee, and community is essential.
- A successful farming operation will require coordination with the Land Bank and community partners in addition to effective farm management.
- Transparency is critical in the lease development and selection process.
- There is an opportunity to educate the Land Bank Commission, staff, and members of the public on the needs and challenges of a working farm.
- Incorporate best management practices recommended in past farm planning processes that address known and identified resource concerns to achieve natural resource management and production goals.
- Integrate agricultural activities with Land Bank values and available resources (soil, water, and infrastructure).
- Create a management framework that allows for evolution and change in organizational structure, farming practices, and ecological systems. Recognizing that what worked in the past or the present may not work in the future. New opportunities and challenges may arise.
- Celebrate that these lands are protected and acknowledge the complexity, challenges, and opportunities.

Community Input

CART was tasked with collecting public input to shape and inform the recommendation process. Due to the COVID-19 pandemic in 2020, the first round of public input was shifted from holding an in-person listening session to distributing an online survey. The survey provided the community with an opportunity to weigh in on the importance of a range of past and future

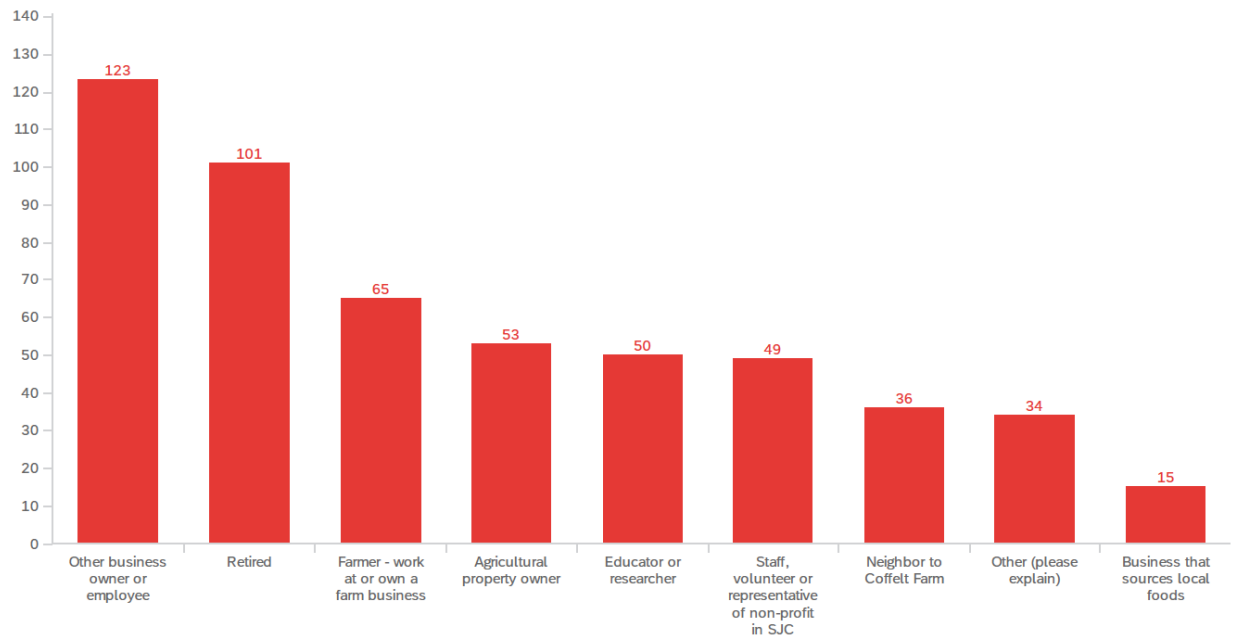
activities, public benefits associated with Coffelt Farm, and provided local farmers space to give input on more specific agricultural-related activities.

Survey Methodology

Participants were recruited using a convenience sampling method, because it was not a randomized sample of the population, it is not possible to draw conclusions about how responses represent the community as a whole. Responses were collected using an online survey tool, with invitations to participate in the survey sent out through the Land Bank email list, WSU SJC Extension Food and Farm listserv, posted and shared on Facebook, and distributed through personal connections. The survey was distributed in English and Spanish, though no Spanish responses were received. No personal identifying information was collected with survey responses and all results are reported as aggregate responses to maintain confidentiality. All survey responses were analyzed, including semi-completed surveys. Open-ended written responses were coded and used along with quantitative answers to identify major themes. Because a convenience sampling method was used, it is not possible to determine a response rate. The survey summary can be accessed online at: <https://ql.tc/gp5aQ> (*Appendix B: Survey Results*).

Survey Respondent Demographics

During the survey period, 407 total responses were collected, not all respondents answered every question. Based on self-reported demographics, 91% of respondents were full-time residents of San Juan County, and 74% lived on Orcas. Of total responses, 87% self-identified as White, 60% were over 55 years of age, 51% had household income above \$60,000, 75% had a 4-year college degree or higher and 70% did not have children living in their household. Occupations and connection to agriculture varied, in response to a multiple-choice question, 34% self-identified as a business owner or employee, 28% were retired, 18% worked at a farm or own a farm business, 15% owned agricultural property, and 14% were an educator or researcher (Figure 1). There was also a varying degree of past involvement with Coffelt Farm, 65% of respondents had purchased farm products from Coffelt Farm and 23% of respondents had not interacted with Coffelt Farm in the past. As noted above, the method of data collection does not allow for generalization or responses to all Orcas Island or San Juan County residents.

Figure 1. *Survey responses to the question, “How do you identify yourself?”*

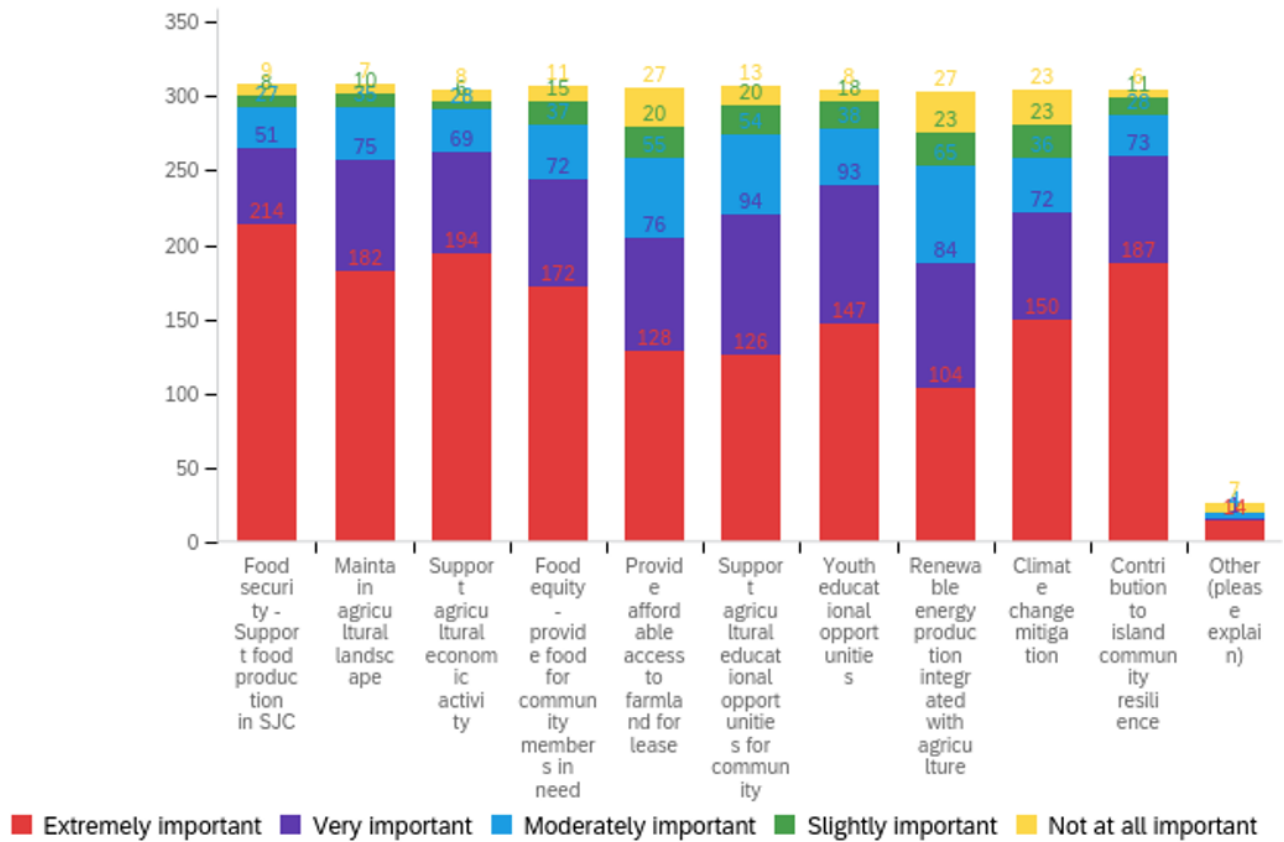
Survey Themes

Providing local community benefit

Survey responses suggested that local community benefit is distinguished from broader public benefit, and Land Bank investment should reflect benefits beyond supporting uses for a single farmer. Examples of local community benefits include: supporting educational and research opportunities, including new farmer training; providing environmental stewardship, providing locals with access to healthy food, and contributing to community resiliency. In response to the question “How important are the following public benefits?” food security, support agricultural economic activity, and contribution to island community resilience were ranked as top three in the “extremely important” category (Figure 2).

When asked what they envisioned at Coffelt Farm in 10 years, out of 212 written responses, 70% envisioned Coffelt Farm producing food and 46% envisioned the farm benefiting the local community. Examples of community benefits included: healthy, quality food for islanders of all income levels; opportunities for on-farm engagement (volunteering, harvesting); leasing to locals; sharing resources with local farmers; supporting local jobs, employment; and supporting island food self-reliance. Out of those same 212 written responses, 34% envisioned the farm providing agricultural education. Examples of education included: providing sites for local school field trips, providing sites for 4-H projects and activities, and training interns and beginning farmers.

Figure 2. Responses to the question, “How important are the following public benefits?”



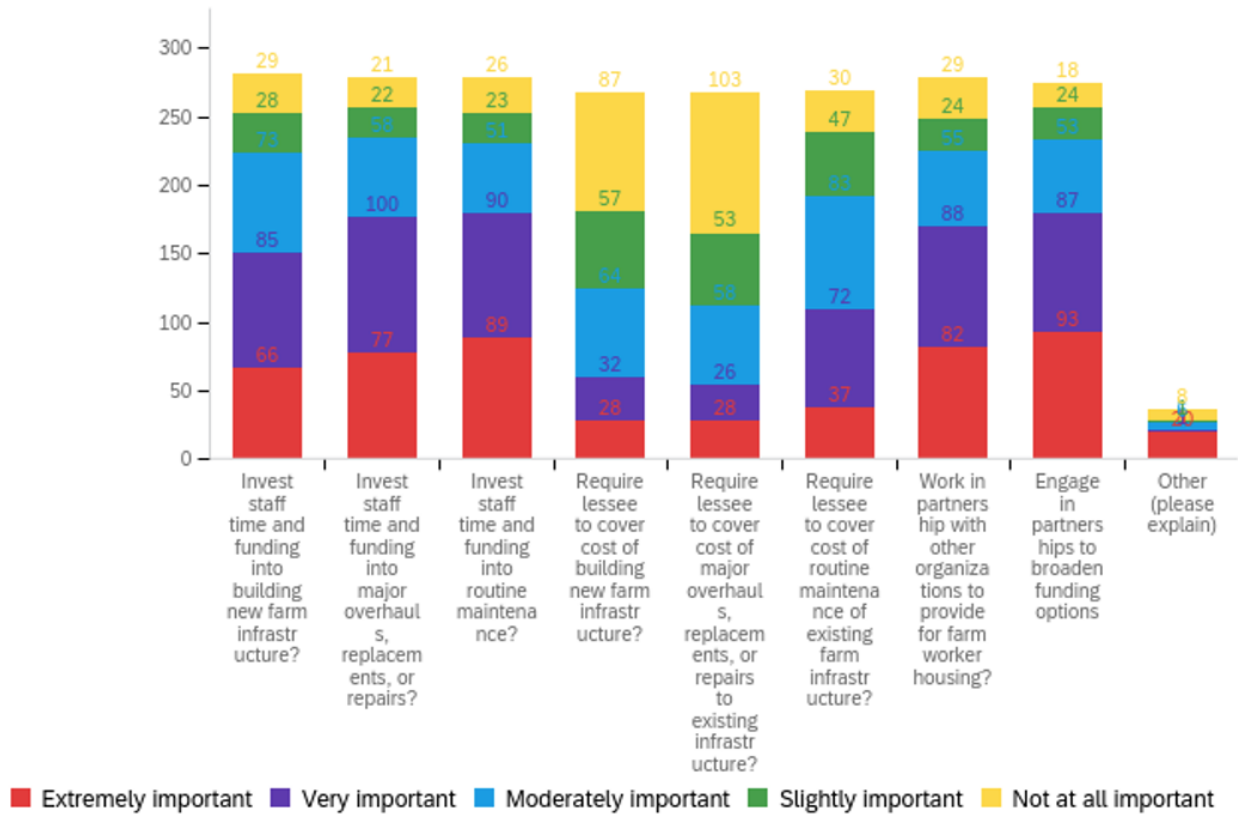
Environmental stewardship and sustainable land management practices

Throughout the survey, respondents made clear a desire for ecologically responsible management practices on this property. Out of 222 written responses to the open-ended question: “Do you think the lessee of Coffelt Farm should be held to specific farm management or land stewardship practices? Why or why not?”, 63% said yes; 10% said yes, but broadly; and 7% said no. A review of those 222 written responses indicated that 31% want to see the lessee farm with practices that include: organic, regenerative, sustainable, eco-friendly and 31% think the lessee should be held to specific practices to best steward the environment. This ties in with the recent planning process that the farm has gone through with the SJCD for both a Farm Management Plan/ Individual Stewardship Plan and a Comprehensive Nutrient Management Plan.

Important for Land Bank to engage in community partnerships and stay involved in maintenance of Coffelt Farm Preserve

Survey respondents indicated general support for Land Bank investment of staff time and resources in maintaining, repairing, and building new infrastructure at Coffelt Farm. Developing partnerships to expand funding options and address specific challenges such as housing, were also ranked highly (Figure 3).

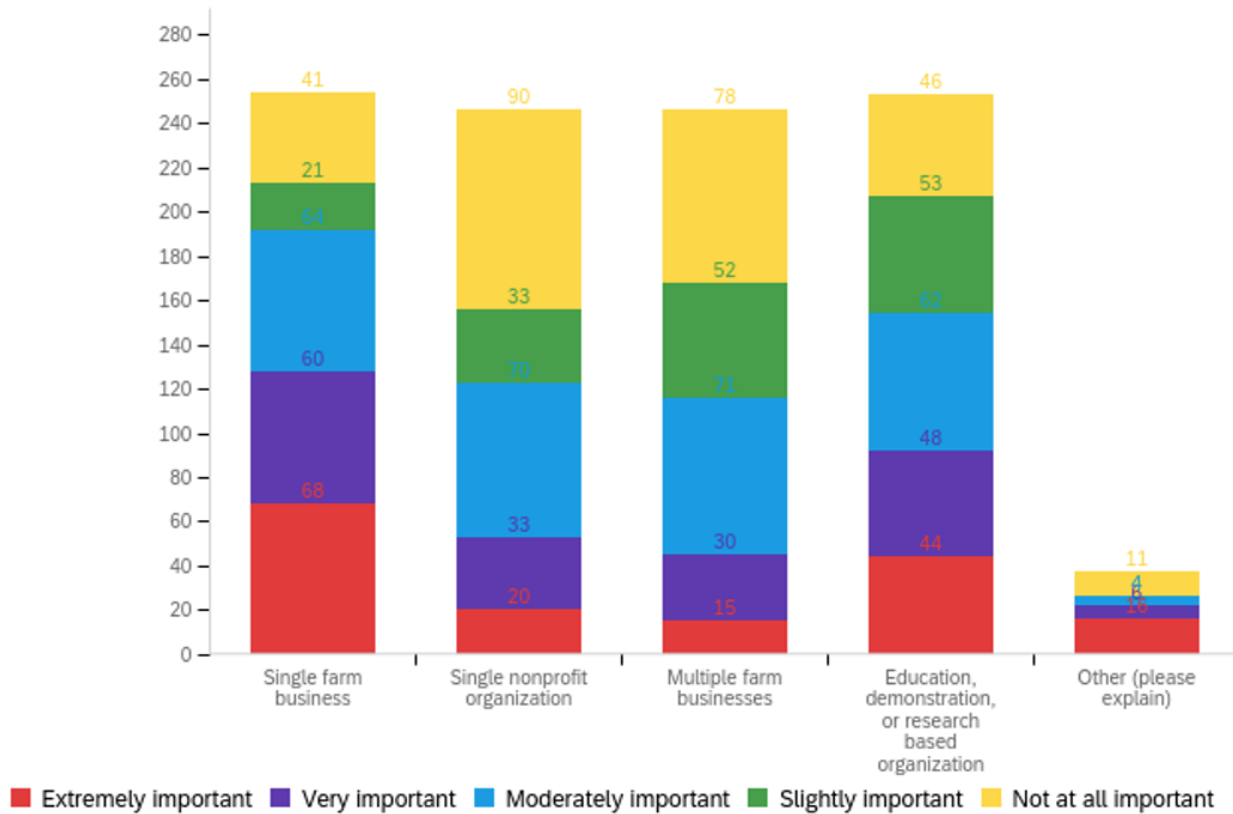
Figure 3. Survey responses to the question, “How important is it for the Land Bank to do each of the following at Coffelt Farm Preserve?”



Farm Management Models

There are conflicting areas of importance, with support for a single farmer lease structure as well as stress on the importance of providing community benefit. Leasing to a “single farm business” was ranked the highest at “moderately to very important”. “Education, demo, or research-based organization” was ranked in second place at “moderately important”, while “single nonprofit” and “multiple farm businesses” were ranked as “slightly to moderately important” (Figure 4).

Figure 4. Survey responses to the question, “How important is it that the Land Bank Lease Coffelt Farm to the following type of operation(s)”.



Providing benefit to local farmers and their businesses

Survey respondents indicated several ways for Coffelt Farm to support local agriculture (Figure 2 and Figure 5). Potential benefits to agriculture identified included: providing access to productive farmland, providing farming and farmer community-building opportunities, providing access to shared equipment and the mobile slaughter site, and providing educational opportunities. There is also a strong interest in investing in soil health (Figure 5).

Survey respondents who self-identified as farmers were asked a subset of questions this included, “Do you feel like the following activities and resources provided by Coffelt Farm have benefited your farm business in any way in the past?” Fifty farmers responded to the question, of those, 33 responded “yes” that increased awareness and support for agriculture had benefited their farm business, 32 to general agricultural activity, 23 to benefiting from access to mobile slaughter site, 20 to educational workshops, 12 to hired past Coffelt employees, 12 to access to shared equipment (Figure 6). Farmers also asked “what shared equipment?” and “how do I access shared equipment?”

Figure 5. Survey responses to the question, “Looking ahead - How important is it for the following activities and resources to be provided by Coffelt Farm?”

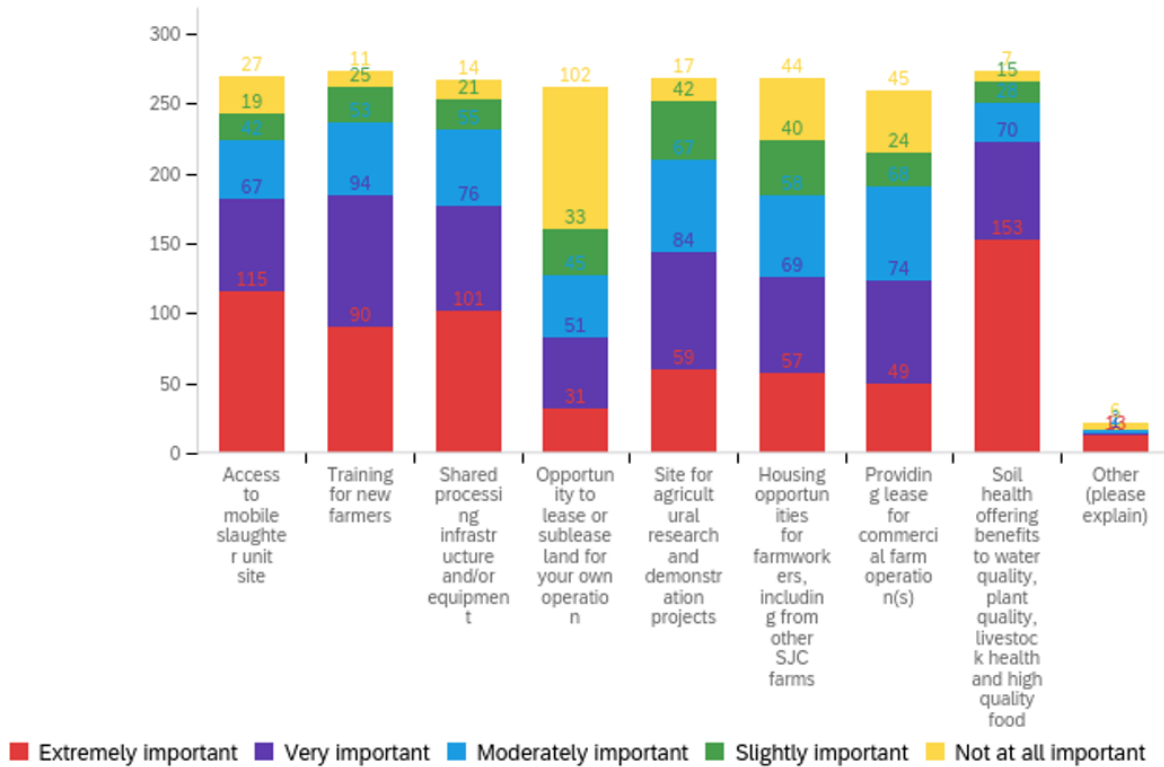
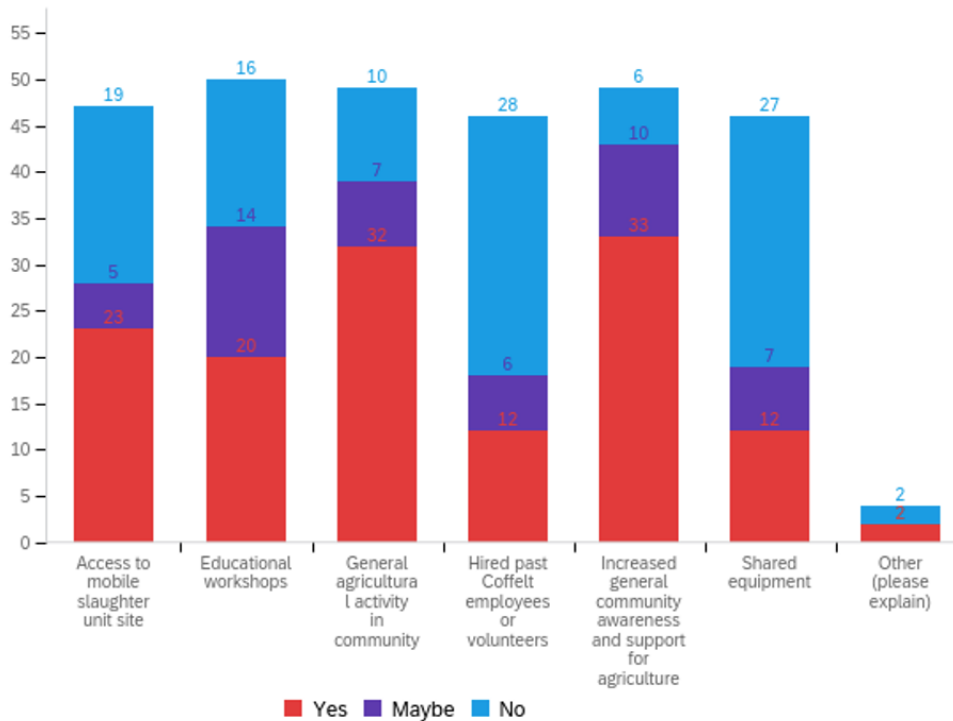


Figure 6. Farmer responses to the question, “Do you feel like the following activities and resources provided by Coffelt Farm have benefited your farm business in any way in the past?”



Farmers were also asked whether Land Bank ownership of Coffelt Farm has affected their own farm business. Of the 33 farmers who responded to the open-ended question: “Do you feel like Land Bank ownership of Coffelt Farm has affected your own farm business in a positive or negative manner?”, 33% said they’ve been affected positively, examples including: providing visibility to local agriculture, educating the public about locally produced food, and providing a go-to information source for farming-related questions. Twelve percent said they’ve been negatively impacted, with a perception that county funds are supporting a private business, creating unfair competition. 27% said they have not been affected.

Looking forward, farmers were asked how Coffelt Farm could provide benefit to their farm businesses and the broader agricultural community. Out of 35 written responses, the following themes emerged:

- 40% mentioned educational opportunities, examples include:
 - workshops on climate impacts of various farm practices and assistance to reduce the negative impacts;
 - a closer relationship with WSU; for example, research plots, seed isolation areas, adapting crop varieties for our zone, and anticipated climate changes;
 - outreach to the community at large about current farming practices;
 - increased access for the school community to use the preserve. A nature classroom, learning center, or dedicated space for school groups would be a fantastic community benefit.
- 37% mentioned providing farming opportunities
- 31% mentioned providing farmer community opportunities. Examples include:
 - General gathering place and meeting facility
- 20% mentioned offering shared equipment and facilities. Examples include:
 - Food hub and cold storage
 - tool rental library
 - plant repository and seed bank
 - electric farm equipment
 - heritage orchard to share scion wood

Community Listening Session

Continuing to adapt for the ongoing COVID-19 pandemic, CART held a virtual town hall January 14, 2021, for the second round of public input, seeking feedback on a preliminary draft of this report. The event was held via Zoom and included a presentation of the report and preliminary recommendations, followed by small group breakout discussions to gather input. These were facilitated by members of CART with question prompts. Each small group reported back to the full session, and then there was additional time for group discussion and questions. A total of 65 individuals participated in the meeting including 10 members of CART, 2 additional Land Bank employees and 2 Land Bank Commissioners and 1 member of the San Juan County Council. Additional written comments were solicited following the public meeting.

Key themes identified included:

- General consensus that the Coffelt property is a **community asset** and should be managed as such.
- Widespread agreement for stipulating **sustainable/regenerative farm practices** in a lease agreement.
- More details need to be discussed as to the Land Bank's **financial** commitment to Coffelt.
- Financial detail of the various proposed models was requested.
- Value of agricultural education opportunities for the community.

There was general discussion of management models identified in the report. Many of the participants supported a single farm lease, which was expressed during small group report outs. Many supporters of a single farm lease model had a specific farm operation in mind, however the goal of CART is not to identify a specific lessee. Concerns were voiced by some that a single farm operation could not be financially viable. There was additional concern that a commercial farm operation would operate in competition with other farms if a fair market lease was not established. There was also support echoed throughout the meeting for access for multiple farmers, farmer training and education/demonstration.

In response to listening session input, additional details have been added to the report including more specific information on lease rates (page 23), sustainable management practices (page 30), economics of Coffelt Farm Stewards operation (Appendix E, page 29), general financial considerations of management models (pages 32-38), and additional final recommendations (pages 40-41).

Consensus building opportunity

Based on input from the survey, listening session and individual team members, there are a wide range of perspectives on the best management strategy moving forward, as well as remaining concerns about past decision making and management. One approach to try and reconcile these different points of view would be to engage in a community consensus building effort. Such as the holistic management model utilized by the Community Consensus Institute (<https://www.aboutlistening.com/>). Such an effort would likely require professional expertise in consensus building methods and facilitation, as well as additional time and engagement with stakeholders.

Infrastructure

Coffelt Farm Preserve is unique to the Land Bank's Agricultural Preserves as it has extensive infrastructure including housing, a diversity of agricultural buildings and fencing, and a Land Bank field office (*Appendix C: Land Bank 2020 Ag Preserves*). As with any farm, there is never a shortage of maintenance, repair, and improvement needs; this has proved to be an ongoing challenge for the farm operators, lessees, and the Land Bank. Past agreements have lacked clarity in responsibility and there has been limited capacity for necessary work. The current interim lease, and the Stewardship Management Plan (SMP) articulate structure and preserve management areas, as well as the responsible party (*SJC Land Bank 2020*). These will be critical elements for future leases to clearly define.

The Land Bank's investment in infrastructure on the farm has been substantial, however there continues to be a need for maintenance. Throughout the Coffelt Farm Stewards tenure, there were many collaborations to improve farm viability, especially related to improvements to the raw milk dairy. With the dissolution of Coffelt Farm Stewards, both parties assessed and negotiated a sale of all critical equipment and assets to stay on the farm for future operations. During the current interim lease period, the Land Bank has prioritized critical projects (Table 1) and has partnered with the SJICD on a project that Coffelt Farm Stewards had initiated to update and improve the dairy heavy use area.

In this section we provide an overview of the existing infrastructure and current responsibilities; options, suggestions, and ideas for future maintenance, improvements, and capital projects; housing discussion and considerations; infrastructure as it relates to the SJPT Conservation Easement, and future lease rate considerations. Due to the multiple users of Coffelt Farm, the infrastructure can be broken down into three distinct categories: Land Bank use, Coffelt Life Estate use, and Farm use.

One option to clarify future cost of infrastructure is the completion of a reserve study, or other form of long-term capital budget planning, which would enable the Land Bank to better anticipate future costs associated with repair and maintenance of existing infrastructure.

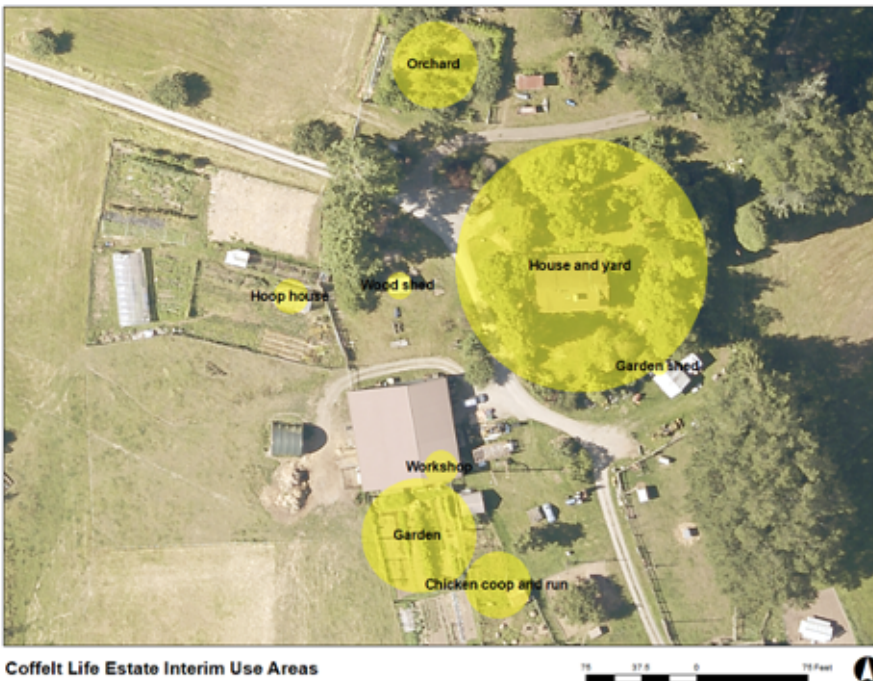
Land Bank Use and Management

Land Bank staff currently use an area and several small structures as a field office, tool storage, picnic shelter, and parking area for trucks and trailers. The Land Bank manages and maintains these areas. The tool shed is also used to store equipment for the San Juan Islands Youth Conservation Corp. Additional areas of specific ecological significance are defined within the SMP, which will be managed by the Land Bank, as well as potential areas for recreational trail development (*SJC Land Bank 2020*).

Coffelt Life Estate

The life estate area is owned and occupied by Sidney Coffelt. Structures and areas included in the life estate have been recently clarified. This includes the 3,392 sq ft, 2-story farmhouse with a basement that was built in 1981, woodshed, chicken coop and run, shared use of shop, garden, and orchard (see map below). Sidney is responsible for maintenance, repairs, utility costs, and property tax associated with these structures and areas. Upon transfer of the Life Estate, the Land Bank will take on ownership, and decide on the best use of these structures and areas (Figure 7).

Figure 7. *Life Estate Area Map: These buildings and areas are not available for lease.*



Farm Use

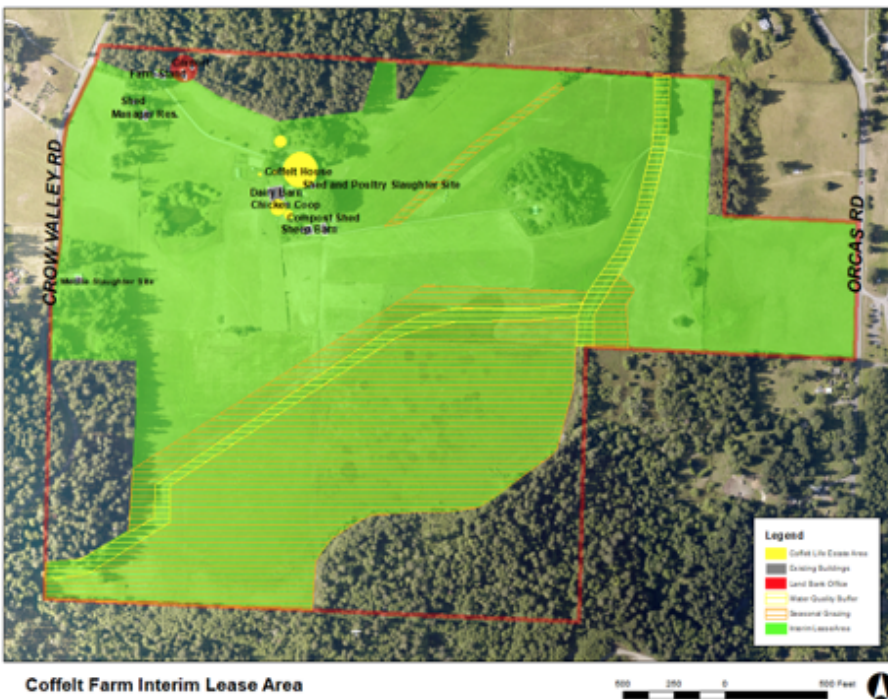
The majority of the farm infrastructure that has been included in past and current farm leases are listed with photos in *Appendix D: Coffelt Farm Infrastructure and Equipment*. Included is a 1-story house with loft (1,652 sq ft), tiny house (seasonal use), farm store, dairy facility, poultry processing shed, multiple barns, sheds, pump houses, livestock fencing, deer-fenced garden and orchard. In addition to structures, there is farm equipment, including dairy, processing, and market equipment and approximately 150 acres of agricultural land (Figure 8).

Although there are several water sources and systems that have been used on the farm, water remains a key limiting resource. A potable spring provides water to the residences, livestock, and up to ½ acre of non-commercial gardens. In 1968 a water right was established for the use of this spring, which allows for up to 2 acre-feet (651,702 gallons) per year to be used for

livestock and residential purposes. In addition to the spring, there is a low capacity (<300 gpd) deep well that has a Group B permit for use in the dairy facility and a pond that has been historically been used for garden and orchard irrigation. A water right application for the pond was submitted in late 2019 for irrigation of 1 acre of market garden and orchard.

The Coffelt's designed and built the farm to function primarily as a diversified, livestock-based operation. Livestock fencing divides the property into numerous pasture and hay areas that are used to rotationally graze along with additional electric portable fencing. Springwater is available in many of the pastures. Barns are set up for equipment storage as well as livestock management including shelter, lambing, hay/feed storage, dairy, and compost. A well-established farm store brings many customers to the farm.

Figure 8. *Coffelt Farm agricultural use area defined in current interim lease.*



Future Maintenance and Repairs Development

Maintaining the existing infrastructure for safety, functionality, and longevity should be a priority. Given the complex nature of the infrastructure at Coffelt Farm Preserve, it will be critical to determine a thoughtful strategy for long-term maintenance, repair, replacement, and improvement. Table 1 identifies current priority repair and maintenance priorities. The University of Vermont has developed a Farm Rental Guide which articulates several scenarios for determining who is responsible for the cost of infrastructure (*Cannella and Waterman 2014*). The details of scenarios outlined below should be articulated in future farm lease agreements:

Scenario #1 – Farmer pays the cost of all maintenance

Scenario #2 – Landowner pays the costs of all maintenance

Scenario #3 – Farmer and landowner share costs of maintenance

In evaluating these three scenarios, it is critical to consider factors such as:

- What is the Land Bank’s base responsibility regarding maintaining the values of the property, including infrastructure being structurally sound, functional, and safe?
- What is the public benefit of the investment in existing or new infrastructure?
- Is there a mechanism by which the value of work done by the lessee to infrastructure is compensated?
- Can repair and maintenance work be completed in a timely manner by the responsible party?
- What is the repair and maintenance schedule for each piece of infrastructure covered in the lease? How are estimated time, costs, and responsible parties defined?
- What is the mechanism for addressing questions about responsibilities that are not previously defined?

Public survey input indicates that there is strong support for the Land Bank to invest staff time and resources into maintenance of Coffelt Farm Preserve infrastructure (Figure 3), however, it is important to note that this investment should be balanced with community benefit. If the future lessee is a private farm business, heavy investment in infrastructure, without commensurate adjustment in lease rate, could disproportionately support a commercial farm operation in competition with other local farms.

Table 1. *Current priority maintenance and repair needs at Coffelt Farm.*

Task	Description	Status
Upgrade electrical system	Identify risky wiring	underway
Lighting in barns and shop	Replacement of inadequate lighting in barns and shop.	underway
Remove fuel tanks	Gasoline and diesel tanks with inadequate support/containment	underway
Install/replace gutters	Where needed	underway
Tiny House	Site prep and utilities installed	underway
Farm Manager house maintenance	General maintenance, exterior painting, etc.	underway

Future Capital Improvements

New capital improvements, beyond basic repairs and maintenance, will likely be necessary for the success of future operations. It is important to recognize that while substantial capital improvements may benefit the lessee in the near term, the value will be passed to the Land Bank at the end of a lease. This should be factored into who is responsible for costs of such investments and can be managed through changes in lease rate, payment for cost of improvements, or other mechanisms (*Cannella and Waterman 2014*).

Development and design of new infrastructure should be conducted in conjunction with the future lessee and the Land Bank while considering the potential to benefit the community. The list of possible capital improvements below is based on an assessment of past and current needs, and community interest in access to shared facilities and educational opportunities. The relevance and priority of specific investments would depend on the future farm operation.

Possible capital improvement ideas, and opportunities to be explored in lease

Farm infrastructure

- Complete hardening of dairy heavy use area with manure shed and loafing shed
- Replace interior fencing to provide for management of sensitive ecological areas
- Replace exterior fencing in areas
- Additional heavy use area and livestock shelters at grazing island and slaughter site
- Fruit and vegetable processing station
- More rodent-proof storage/cold storage
- Kitchen for farmworker use
- Year-round farmworker housing (in partnership with other organizations)
- Shared bathroom/shower/laundry facility for farm and Land Bank use
- Solar system
- Additional water source (golf course connection, new well, pond water right)

Community infrastructure

- Shared commercial kitchen
- Shared poultry processing facility
- Community space for classes, workshops, and events
- Shared farm store infrastructure
- SJI Food Hub storage and aggregation location

Housing

The challenge of finding adequate farmworker housing has been identified as a key issue countywide and has been an acute constraint at Coffelt Farm. The 2011 *Growing Our Future* report recommended that: “In partnership with affordable housing organizations research into the feasibility and collaborative approaches to low-cost housing for farms and farm workers should

be conducted” (*Bill et al. 2011, pg 30*). Recently the SJC ARC recommended additions to the Comprehensive Plan that would: “Encourage County Programs (i.e. Affordable Housing program and Land Bank) to collaborate in the development of affordable farmer/farmworker housing and supporting Ag infrastructure in functional proximity to agricultural lands held in public trust” (*SJCARC 2019, pg4*). Based on an interview conducted with OPAL Community Land Trust director, Lisa Byers, there is potential to explore collaborative solutions to developing housing options at Coffelt Farm, within constraints of land use, conservation easement requirements, and organizational capacity.

At Coffelt Farm, the farm manager house has historically been sufficient for a family, and there have been many less than ideal seasonal and temporary structures used over the years to house farm staff. Currently, the lessee family occupies the farm manager’s house and an employee is using a tiny house on a seasonal basis. It is important to note that at some point in time, hopefully a long time from now, Sidney Coffelt will transfer her life estate to the Land Bank. At that point, there will be new options for housing and integrating the space into farm operations. Despite that possibility, there is a real immediate need to consider options to address housing options for future lessee and farm operations. As with other changes in infrastructure development of new housing should be evaluated with the lessee and balance of investment appropriately distributed.

Housing options to consider:

- Continue as is.
- Develop an improved seasonal living scenario with necessary and well-designed amenities (shared kitchen, shower, toilet, laundry).
- Temporary structure or campsites.
- Develop “Farmworker Housing” within the framework of the easement and San Juan County development code.
 - Currently this requires enrollment in the Current Use Farm and Agriculture tax program, which is not possible for county owned property. An alternative standard for meeting this requirement is under review as part of the Comprehensive Plan update.
- Add a small year-round permitted dwelling (allowed as 3rd single-family residence within the easement)
- Build multi-use housing, event space, processing, and storage building such as was proposed by Coffelt Farm Stewards in 2019.

San Juan Preservation Trust Conservation Easement - Infrastructure

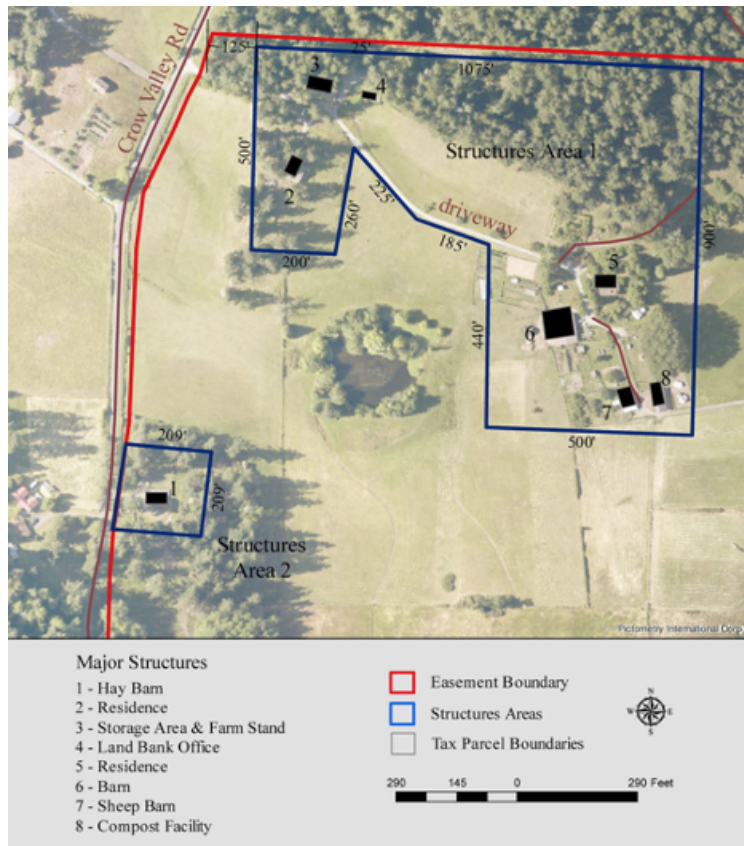
To protect the open-space and agricultural values of the property, the conservation easement limits residential use of the property to three single-family residences and their appurtenant structures located within Structures Area 1 and to limit agricultural structures to Structures Area 1 and 2 (Figure 9). The existing main residence and farmworker house are to

remain in their current locations. In addition to the single-family residences, agricultural structures may include structures used to house farm workers in accordance with Farm Stay Accommodations and Farm Worker Accommodations provisions of the San Juan County Unified Development Code 18.40.230.

Agricultural structures allowed in Structures Area 1 are any structures required for farming that are consistent with the terms of the Conservation Easement. Agricultural structures in Structures Area 2 are limited to a barn, corral, and feed area. Outside of the designated structures areas, the Land Bank may construct, maintain, use, repair, remodel, relocate, or replace fences, trellises, irrigation piping, feeding and watering troughs, movable poultry pens, and temporary row covers as may be associated with agricultural activities.

In 2019, the San Juan Preservation Trust gave Discretionary Authorization to the Land Bank to construct a heavy use area livestock shelter outside of the defined structures areas on the forested “Grazing Island.” This structure was allowed because it would benefit the conservation values of the property by reducing soil erosion, nutrient runoff, and allow proper management of manure and compost for use on the property. It was determined that these benefits outweigh the impact on the conservation values. The structure may not be used for non-agricultural purposes. For more detail regarding the terms of the conservation easement, including the reserved and prohibited uses, see the conservation easement document (*Appendix A*).

Figure 9. *San Juan Preservation Trust Conservation Easement structure areas.*



Lease Rate

There is limited information on agricultural leases in San Juan County and rates vary widely. On average western Washington pasture land is leased for \$61/acre/year and irrigated cropland is: \$284/acre/year (*USDA NASS 2020*). A survey conducted by the SJICD in fall of 2020 found that, of the farms in SJC that reported leasing property, 48% indicated that they pay no rent. Of the 14 farms that reported paying rent, the rate ranged from \$1 to over \$400 per acre and the weighted average was approximately \$100/acre per year, this included farms leasing for hay, grain, pasture, as well as vegetable production and housing (WSU SESRC 2021). Specific breakdown by type of lease is not available from this survey. Given the level of infrastructure at Coffelt Farm, further analysis of current rental rates for key structures including the house, barn, dairy facility, tiny house, and farm equipment should be considered. For example the market rental rate for a 3-bedroom house on Orcas Island was \$1,410 to \$1,610 based on 2017-2018 data (Kidder Mathews 2018). It is likely that demand has increased with COVID-19 pandemic, however current comprehensive data are not available.

Ownership of farm equipment adds additional complexity to leasing land and infrastructure. As long as county protocol is followed for transfer of public property, there are several options to explore. Including:

- Lease equipment with the farm (Land Bank retain ownership)
- Public equipment sale (open to public)
- Lease to own or sell to lessee(s) (Lessee owns equipment)
 - Could include a clause that equipment be sold back to Land Bank at termination of lease to ensure that equipment stays on farm.
- Explore options for rental of some equipment to the community.
 - For example, it may be possible to partner with the Northwest Agriculture Business Center, or other organizations, to provide a system for rental of Land Bank owned poultry processing equipment.

<https://www.agbizcenter.org/business-services/processing-equipment-rental>

As discussed above the lease rate may need to be adjusted, depending on the level of investment in maintenance and capital improvement, and the responsible party. Determining a fair market rate may also be influenced by the level of community benefit provided by the operation, as well as considering incentives for long term stewardship of the agricultural land and ecosystem function. Credits could potentially be given to lessee upon completion of in-kind contribution to maintenance and improvements, implementation of stewardship practices such as soil amendments, as well as facilitating public education opportunities.

Developing an effective, and equitable incentive structure will require careful consideration. There are two primary options:

- Incentive practices or activities (eg cost of soil amendment)
- Base incentive on measurement of outcome (eg improved soil health)

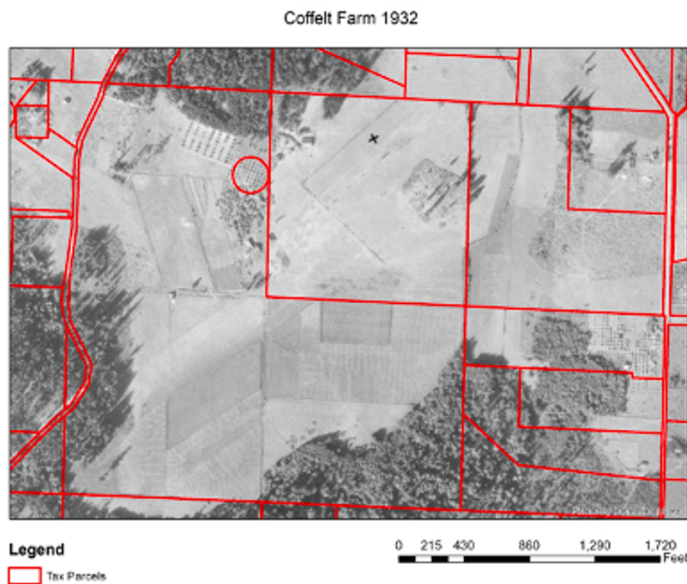
A lease incentive based around outcomes could use an annual assessment of factors such as soil testing, cropping system management, habitat, and public education opportunities. In a 2019 report published by the Delta Institute there is a framework for data tracking, which includes an agricultural conservation index, which could be adapted to local conditions (Delta Institute 2019 p. 29-31). The existing SJICD Farm Plan and CNMP provide baseline information and context for evaluation and there may be opportunities for monitoring in partnership with SJICD as part of the Voluntary Stewardship Program, schools or others.

Agricultural Potential

Past and Current Use

As noted in the Coffelt Farm History section above, this land has supported a wide range of livestock and crops. An aerial photograph of the property from 1932 shows the extent of cultivation, orchards, and establishment of drainage infrastructure (Figure 10). Through the years of management by the Coffelt family, the Coffelt Farm Stewards, and the current lessee, the property has primarily been managed for diverse livestock and forage production with a limited vegetable, fruit, and grain component. The future potential of any farm enterprise at Coffelt Farm revolves around soil types, water, climate, and market opportunities. It is important to note that expansion of annual or perennial crop production would likely require deer fencing and additional water resources.

Figure 10. *1932 Aerial photograph of Coffelt Farm*



Soils and Acreage

Coffelt Farm is 186 acres and has nine soil types (Figure 11). All but one of these nine soil types is considered Prime Farmland and one is Farmland of State Significance in the USDA NRCS Soil Survey. Six of these soil types make up 98% of the total farm area, are well suited to livestock and grazing management, and have historically been used in the cultivation of a wide range of annual and perennial crops (Table 2). Of the total acreage, 150 acres are available for agricultural lease.

Because of the underlying variation in soil type and topography, this property is well suited to a diversified farming operation. All the major soil types found on the farm, except for Semiahmoo muck (1006), have a shallow restrictive soil layer (dense clay) that impedes infiltration of water. This restrictive soil layer results in saturated soils in the winter, which can pose a challenge to certain farming activities. Potential crop production could involve annual vegetable or grain crops as well as perennial crops such as tree fruit orchards, vineyards, or berries with species that tend to tolerate poorly drained soils. Portions of the forested area are well established overwintering livestock areas, although additional agriculture use of forested areas is limited by the Stewardship Management Plan and the Conservation Easement. Within these limitations there may be opportunities to explore connections between agricultural and forest resources, for example, mushroom cultivation, managed grazing to assist with vegetation management, or the use of thinned trees to make biochar, which can be used on more agricultural intensive parts of the farm and will sequester carbon. There may also be opportunities to expand utilization of agroforestry into historic pasture areas through planting of hedges and trees that do not obstruct the view.

Optimizing production will require careful soil management and correction of existing nutrient deficiencies (*SJICD 2018 CNMP*). A range of strategies can be employed to improve soil quality, including grazing management, incorporation of cover crops, use of on-farm manure and compost, as well as imported soil amendments. Ongoing research in San Juan County has indicated that adequate levels of organic fertilizer can double forage production in an existing hayfield, as well as improve the forage quality (*WSU Extension 2019*). Along with the potential benefits, the costs of off-farm inputs need to be carefully considered.

Based on existing soil test information, applying certified organic fertilizer at the recommended rates to address deficiencies in soil Phosphorus (P), Potassium (K), Sulfur (S), Boron (B), and pH in pastures at Coffelt Farm would cost from \$188/acre on the low end, up to \$735/acre, in areas with greater soil nutrient deficiencies. This estimate does not include the cost of application. WSU SJC Extension pasture and hay amendment research has found a cost of approximately \$710/acre for base amendment of P and K, and up to \$1,400 per acre if additional nitrogen (N) is added to maximize productivity and quality of forage. These values are approximate and based on 2020 organic fertilizer prices. Local research results also indicate that benefits of organic fertilizer application to hay fields can last at least 3 years after application. Annual costs can be reduced by applying fertilizer below the recommended rate, additionally if organic production practices are not required, conventional sources of fertilizer are likely to have

a lower cost. Compost and manure may also be used to address nutrient deficiencies as long as adequate supply, and equipment to distribute are available and care is taken to apply manure that matches soil requirements. Practices such as cover crops, incorporating legumes, and rotational timed grazing, can also contribute to improving plant available nutrients and supporting soil health.

Figure 11. *Coffelt Farm area with soil types.*

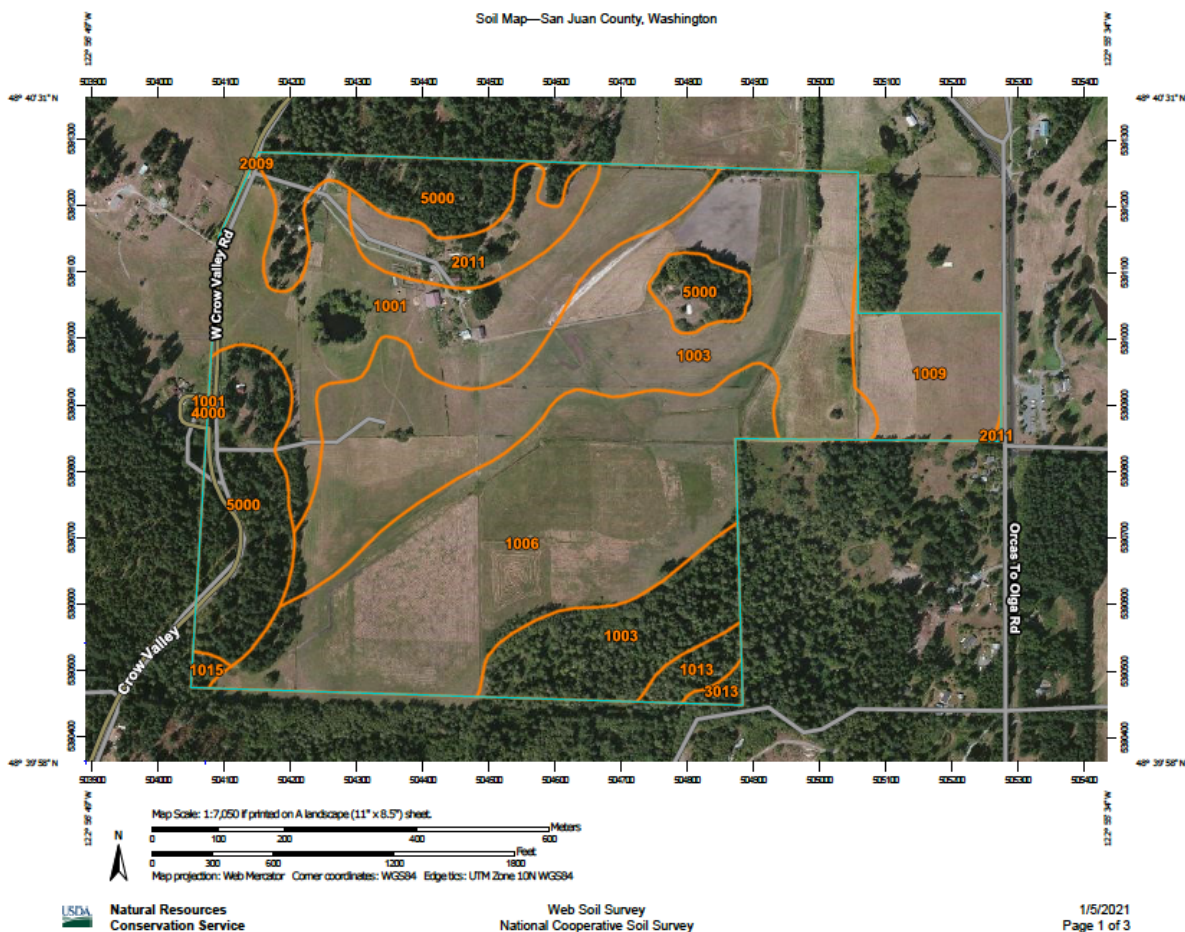


Table 2. Six primary soil types of Coffelt Farm, approximate acreage, potential agriculture use, and challenges to production.

Soil Type	Approx. Acreage	Primary Agriculture Uses	Challenges to Production
Coveland loam, 0 to 5 percent slopes (1001) ,	30	Seasonal pasture for grazing. Annual and perennial crops such as grains, vegetables, berries, fruit as well as hay.	Seasonally wet, drainage may be needed
Coupeville loam 0-5 percent slopes (1003)	61	Seasonal pasture for grazing. Annual and perennial crops, including hay.	Seasonally wet, drainage may be needed
Semiahmoo muck, 0-2 percent slopes (1006)	49	Late season pasture for grazing. Short-season annual crops tolerant of moisture and acidic soils.	Very poorly drained, drainage needed, excess ponding and water saturation into late spring, early summer that restricts cropping systems and grazing
Coveland-Mitchell Bay complex, 2 to 15 percent slopes (1009)	11	Seasonal pasture for grazing. Annual and perennial crops including hay.	Seasonally wet, drainage may be needed
Roche-Killebrew complex, 2 to 10 percent slopes (2011)	8	Most optimal soil for diverse annual or perennial crops. Also prime grazing area, particularly in early season	Moderately well drained. Seasonal irrigation would be a necessary component of potential crop enterprise.
Cady-Rock Outcrop complex, 5-30 percent slopes (5000)	24	Livestock heavy-use areas, IGFC MPU use site.	Thin layer of topsoil over unweathered bedrock. Very well drained.

Agricultural Water Resources

Water availability is a significant constraint on crop production in San Juan County, particularly in the summer months when there is little precipitation. As a rule of thumb, annual vegetable crops require one acre-inch of water per week, or approximately one acre-foot of water during the growing season which is 325,851 gallons of water per acre. A similar rate of irrigation is recommended to maximize pasture production. Conversely, high rainfall in the winter months results in soil saturation, limiting winter crop growth as well as grazing. Planting crops along the contour of slopes could be an important method to take advantage of seasonal water flows or deflect them if saturation is a problem. Maintaining established drainage is also important for the continuation of agricultural production in low-lying areas.

The use of surface water in Washington State requires a legal water right, and use of groundwater is limited to certain exempt allowances without a water right (<https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights>). At Coffelt Farm, the currently available surface water rights and infrastructure provide for domestic use, livestock watering, and limited non-commercial gardening. The existing Class B well is very limited in volume (300 GPD), however it currently provides for operation of a certified dairy and processing of poultry. Given these constraints, there is not currently a viable option for irrigation of commercial crops at Coffelt Farm, and expansion of food processing may be limited by lack of adequate water from the Class B well.

The Land Bank submitted a water rights application in 2019, for use of 2 acre feet of water on 1 acre of land which would allow for use of the surface water from an existing pond. The time until review and approval by the Washington Department of Ecology is unknown. Rainwater catchment from structures can be diverted, stored in tanks, or ponds, and used for irrigation, which may provide a short term, low volume solution for crop irrigation if appropriate infrastructure can be installed. Without additional access to irrigation, commercial crop production is likely to be limited to certain perennials, or annuals such as grain, which can be grown without irrigation. Additional groundwater sources may also be needed to expand dairy, develop commercial processing, or other areas requiring a certified water source. Developing adequate legal water supply is an important priority to continue investing in for commercial crop production.

Climate

San Juan County has a generally moderate climate influenced by the surrounding waters. There are important microclimate variations in precipitation, temperature, and winds that can influence production planning. Average annual precipitation at Coffelt Farm is between 25 - 40 inches, and the mean annual air temperature is: 48-50°F. The frost-free period is 200- 240 days with an average first frost date of November 15th and last frost date of April 15th. Use of greenhouses, high tunnels, or other protective structures, can help extend the growing season. High winds can damage crops and infrastructure, as well as stress livestock. Continued use of the

established livestock areas within the forest can provide winter livestock shelter in addition to the barn infrastructure and recommended future Heavy Use Areas with integrated livestock sheltering.

Financial, Economic and Market Considerations

According to USDA Agricultural Census (*USDA NASS 2017*), there are 316 farms in San Juan County and 576 producers. Of these producers, 64% worked some days off the farm and 30% worked 200 days or more off the farm. The average San Juan County farm has an annual gross revenue of \$13,035 per farm and 95% of farms gross less than \$50,000 per year. Similarly the 2020 SJC Ag Viability Survey found that 82% of farms gross less than \$50,000 per year (WSU SESRC 2021). With 8% of farms grossing between \$50,000 and over \$250,000. While the economic challenges of local agriculture are not unique to San Juan County, they highlight the importance of a careful consideration of financial plans for the long-term economic viability of proposed agricultural operations.

Market demand for San Juan County products remains strong and there is some evidence that the current Covid-19 pandemic has revived community relationship to local farm products, and renewed interest in purchasing local food. In past years, tourism has driven high demand in the summer months and this demand will likely continue. Farmers markets, restaurants, farm stands, community supported agriculture (CSAs), and other forms of direct marketing are important outlets. The recent establishment of the San Juan Islands Food Hub is increasing opportunities for interisland, as well as mainland, sales of products, since its establishment in spring of 2020 has enabled the sale of over \$200,000 in local products. Within San Juan County, the top crops in acreage are livestock forage, barley, fresh vegetables, apples, pears, berries and flowers. The most common livestock in San Juan County, in order of abundance are laying hens, cattle, sheep, horses, goats, and hogs. In addition to access to affordable farm land, access to appropriate equipment and infrastructure for storage, processing, and distribution are critical components of economic viability and should be considered as a part of building a viable path forward for future farming operations.

From 2012 to 2016 Coffelt Farm Stewards reported an annual average gross profit of \$142,761 (*Appendix E, Coffelt Farm Stewards 2012 to 2016 Financials*). Gross farm revenue included \$70,230 in meat sales (beef, lamb, pork, and poultry), \$22,542 in dairy, \$12,637 in eggs, \$12,197 in produce, as well as \$6,180 in other products including comforters, socks, wool and sheep skins. Fundraising income was an average of \$11,537 annually. Average annual expenses from 2012 to 2016 were reported to be \$132,918 including \$53,751 in payroll expense. Net income during this period was an average of \$5,912 annually. Based on these records and a report prepared by Coffelt Farm Stewards in 2018, it is clear that Coffelt Farm operated at close to break-even, however as was clearly identified, there were multiple factors including substantial deferred maintenance costs, inadequate staffing, and substandard housing, such that continued operation was deemed to be unsustainable without significant improvements in infrastructure (Coffelt Farm Stewards 2019).

San Juan Preservation Trust Conservation Easement – Agricultural Activities

The purposes of the conservation easement are to preserve and protect the agricultural, ecological, scenic, and open-space values of the property in perpetuity; to limit residential use of the property to three single-family residences and their appurtenant structures and agricultural structures within defined structures areas, and to forever preserve the agricultural area as open-field farmland, wetlands, and mature woodland for agricultural and natural resource conservation uses and to be utilized in a manner that conserves the quality of the soils for open-field agricultural use.

The conservation easement allows for commercial or non-commercial agriculture. Grantor may cultivate, mow, and graze the open fields, raise livestock, horses, or poultry; raise cash or field crops; plant and cultivate orchards, vineyards, or other crops, including non-food products such as lavender or nursery plants; or engage in other forms of farming and agriculture using best management practices.

While the easement is not prescriptive about which type of agriculture should be carried out, it does have certain restrictions that would preclude some uses of the property. For instance, the manipulation or alteration of any marshes, wetlands, or surface drainage patterns is prohibited with the exception that the historic drainage channels found on the property may be maintained. The clearcutting of trees is prohibited, except within Structures Areas for building sites, for driveways and utility corridors, or to restore and replace orchards. Industrial uses of the property are prohibited including, for example, animal feedlots for livestock not raised on the property. Also, views of the property from Crow Valley and Orcas Road may not be obstructed. For more detail regarding the terms of the conservation easement, including the reserved and prohibited uses, see the conservation easement document in *Appendix A*.

Sustainable Production Practices

There are several resources that can help guide the implementation of sustainable production practices at Coffelt Farm, that address potential conflict between ecological considerations as well as long-term stewardship of agricultural productivity. The Stewardship Management Plan, clearly defines ecologically sensitive areas of the farm, which are not suited to active agricultural use. San Juan County has opted into the Voluntary Stewardship Program (VSP), which creates a voluntary approach for management of agricultural activities that intersect with ecological critical areas as defined by the State's Growth Management Act. (<https://www.sanjuanislandsdcd.org/voluntary-stewardship-program>)

The existing SJICD farm plan, for Coffelt Farm, as well as the Comprehensive Nutrient Management Plan meet the requirements of an Individual Stewardship Plan under VSP and should be used to guide best management practices on the farm in combination with monitoring of critical areas. This document should also be updated as appropriate to reflect management changes. Finally there is opportunity to incentivise sustainable management practices that

address soil quality and other natural resource concerns with lessee given credit for either implementing practices, or monitoring of target outcomes as discussed above in Lease Rates.

Educational and Research Potential

Education is a strongly held community value, and as noted in the *Growing our Future* report, “Local conservation organizations have a mission to conserve farmland and to promote agriculture and education. Farmland held by conservation organizations has the stability and security necessary for long term programs and leases. These lands offer a link from Agricultural education to learning to owning” (*Bill et al. 2011, pg 30*). One of the intents of the Coffelt family was to support education and training of new farmers in sustainable production practices. To address the continued need for training new farmers the SJC ARC recommended that Comprehensive Plan Economic Development Element include the language: “Support the education, training and counseling of county residents towards internships in agriculture to supplement and replace an aging talent pool” (*SJCARC 2019, pg 3*). Community input gathered during the CART survey also indicated strong support for educational opportunities as a function of Coffelt Farm. To learn more about the needs on Orcas, CART interviewed Principal Kyle Freeman, who indicated that Orcas Island School District has the capacity to collaborate to provide agricultural and food-related educational programming for school kids - from raising animals and vegetables to how they are prepared and enjoyed.

A farm-based facility for education would not just benefit school kids, but also adults in the community. This could expand opportunities to collaborate with other organizations within San Juan County that provide education for new and beginning farmers, such as WSU Extension, San Juan Islands Agricultural Guild, San Juan Islands Conservation District and others. There is consistent demand for educational programming. For example, the San Juan Islands Agriculture Summit draws over 150 participants annually. Cooperating farms are an important part of delivering relevant programming and hands-on, farmer-led workshops are of particular interest to the community.

Public land also offers the potential for stable long-term research projects, which can provide a benefit to the larger agricultural community, address issues related to sustainable production practices, and explore potential impacts or benefits of agricultural activities on ecosystem function. Coffelt Farm is well suited for research as soil types, as well as historic agricultural use, are reflective of many farms in San Juan County. WSU Extension has conducted applied agricultural research at the Land Bank’s Beaverton Marsh Preserve since 2016 and established an organic fertilizer and no-till pasture seeding trial at Coffelt Farm Preserve in the fall of 2019. Continued and expanded research activities at Coffelt would benefit, and benefit from, public education activities. Research activities could be compatible with a wide variety of lease models as long as the lessee is open to collaboration and willing to make accommodations for certain management changes.

Development of Coffelt Farm into an education and research farm would require substantial investment to support not only farming activities, but research staff, equipment, and overhead needed to develop, acquire, and carry out grant-funded projects. Education and research require different skill sets and support than commercial agriculture. Success would depend on a clear vision and adequate investment in staff capacity and partnerships to carry out multiple functions. There is an opportunity for the Land Bank, as property owner, and SJPT, as easement holder, to engage more directly with the community in support of educational programs in a manner that would raise overall awareness of the organizations and support long-term conservation goals.

Models for the Conservation of Agricultural Lands

The models presented below are generalized examples of strategies for conserving working agricultural land. There is considerable overlap between strategies, including the examples presented, and many conservation efforts use multiple approaches in combination. Specific examples are provided as a reference, as well as some of the key benefits and challenges to each generalized model.

Model #1: Protect with conservation easement and sell the farm

This model is utilized by many land trusts whose sole mission is to preserve agricultural land and working farms. The development rights are removed. The utilization of a “mandatory agricultural use” or “covenant to farm” clause can be used as an additional safeguard to ensure the ongoing agricultural utilization of the land. It is important to note that Coffelt Farm is already protected with an easement held by the SJPT.

Examples:

- [Washington Farmland Trust](#) (WA)
- [Marin Agricultural Land Trust \(MALT\)](#) (CA)
- [Sonoma Agricultural Land Trust \(SALT\)](#) (CA)
- [Equity Trust](#) (National)

Benefits:

- Simple management in the long term.
- Ensures protection.
- Conservation easements in general, can deflate the value of agricultural land and make it more accessible for new farmers.
 - This could be enhanced if the existing easement was amended to include “mandatory agricultural use”

Challenges:

- Protection is only as good as the easement terms.
- May not end up being used for agricultural purposes if no mandatory agricultural use is utilized.
- Mandatory agricultural use can be a challenging requirement to monitor and enforce.
- Transition continues to be tied to the real estate market.

Additional Concepts:

- Covenant to Farm or Mandatory Agricultural Use as part of easement (used by MALT & Equity Trust)

Financial Considerations:

- Funds from the sale of the property can be used for other high priority conservation projects.
- Would relieve need for future management and maintenance costs.

Model #2: Single farmer lease

This option has the simplicity of working with one farmer while holding the land and guiding how it is utilized through the lease. There is a long history of public lands being leased for agriculture and grazing on both BLM and state DNR lands. Currently, the Land Bank leases other properties (eg. King Sisters, Frazer Homestead, and False Bay Creek) using this model. The success of a single farm lease model is tied to the clarity of the Request for Proposals, lease, and willingness of partners to follow through with commitments. Successes with this model have been able to balance the farmer's need for autonomy in making business and management decisions, with the needs of the landowner.

Examples:

- [Stonecrest Farm - Lopez Community Land Trust](#) (Lopez Island, WA)
- [WA State Department of Natural Resources](#) (WA)
- [Greenfield Berry Farm](#) (Cuyahoga, OH)
- [Pitkin County, CO](#)
- [Boulder County, CO](#)

Benefits:

- Simplicity of dealing with one entity.
- Continues to support local food production.
- Can create clarity about who is responsible for what infrastructure and areas through the lease.
- Potential to reduce stress of the life tenant, as there are fewer relationships to manage.

Challenges:

- Success is dependent on the ongoing relationship between lessor and lessee.
- While public lands can be leased out to private entities there is potential for public displeasure and perception of public funds supporting private business.

Additional Concepts:

- This could be utilized in conjunction with other models for a designated portion of Coffelt Farm.

Financial Considerations:

- Lease revenue to Land Bank, or in kind contribution, could help offset cost of maintenance and future repairs.
- Financial viability of the farm operation would depend on the successful execution of a business plan and farm operators may require off farm sources of income for personal needs.

Model #3: Multiple leases with multiple farm enterprises

This model is often used in conjunction with the goal of farm business incubation. It can provide an entry point for multiple farmers. Different farm enterprises (e.g. livestock, vegetable, dairy) could provide synergy and utilization of different aspects of the preserve. These kinds of programs often couple land access with business support and mentorship.

Examples:

- [Viva Farms](#) (Mount Vernon, WA)
- [Snovalley Tilth Experience Farming Project](#) (Carnation, WA)
- [Dusty Williams & Broadleaf Farm](#) (Everson, WA)
- [Scatter Creek South of the Sound Community Farmland Trust](#) (Thurston, WA)
- [Mara Farms](#) (Seattle, WA)
- [Cloud Mountain Incubator](#) (Everson, WA)

Benefits:

- Greater access to beginning farmers, who may lack all of the financial resources required to start up.
- Ability to have multiple farm enterprises utilize the space in ways that produce different food products for the community.
- Multiple visions could lead to greater community benefit.
- Infrastructure for a variety of farm enterprises is on-site and available for use. Examples include:
 - Refrigeration
 - Packing/Processing shed

- Established water system suitable for agriculture
- Tool storage
- Tractor and implements available for hourly rent or tillage services available for hire
- Greenhouse space available for rent
- Shared market outlets. For example, Viva Farms provides access to an established farmstand, CSA, and wholesale market channel for growers to sell through.

Challenges:

- Everything is shared and space may be limited.
- “Business roommate” feel.
- Some situations require more from the grower in terms of continuing education, limitations on timeframe.
- More lessees means more communication required and a structure to facilitate positive and constructive relations.
- Most models utilize a central point person and an overarching non-profit to manage the big picture, not always though.
- Multiple livestock operations in a shared area can create biosecurity issues.
- Potential discomfort of Life Tenant associated with a large number of people and relationships to manage.
- No existing infrastructure for administrative activities.

Financial Considerations:

- Lease revenue to Land Bank, or in kind contribution, could help offset cost of maintenance and future repairs.
- Overhead cost of organization managing multiple leases and shared infrastructure.
- Potential for grant and donor funding to support land access, education and infrastructure.

Model #4: Non-profit education and research farm

These kinds of farm entities can influence and drive change in the regional agricultural sector. They are hubs of community engagement and learning. Having this kind of entity in the county could raise the profile of local agriculture.

Examples:

- [Vashon Maury Island Land Trust Matsuda Farm](#) (Vashon Island, WA)
- [Oxbow Farm](#) (Carnation, WA)
- [Rodale Institute Facilities and Campuses](#) (PA, IA, GA, CA)
- [Pitney Meadows Community Farm](#) (Saratoga Springs, NY)
- [Menoken Farm](#) (Menoken, ND)
- [UC Center for Agriculture and Sustainable Food Systems](#) (UC Santa Cruz, CA)

- [WSU Research and Extension Centers and Farms](#) (WA)
- [Silverwood County Park Demonstration Farm](#) (Edgerton, WI)

Benefits:

- Provides community and public benefits through public access and volunteer opportunities.
- Opportunities to partner with other community organizations such as OPAL, the school districts, food banks, WSU Extension and SJICD.
- Research and education could benefit managers of other agriculture and forest lands in San Juan County and the region.

Challenges:

- Would require either the creation of a new entity to run the farm or a robust commitment of staff and management by the Land Bank, or other existing organization.
- Needs a very clear mission and commitment.
- Needs additional staff and resources to support a research and educational mission in addition to farm management.
- If sale of farm products were continued, it could create a perception of unfair competition if operations are supported by grants and donor contributions.
- There is no existing dedicated infrastructure for administrative, research or education activities.

Additional Concepts:

- While education institutions such as WSU are listed as examples these facilities are supported by a wide range of funding sources including state, federal and county funds, tuition, grants, donations, and contracts. On a county level state and federal funds for operations and staff are often extremely limited or not available and establishment of new facilities would require additional funding from outside sources.

Financial Considerations:

- Lease revenue to Land Bank, or in kind contribution, could help offset cost of maintenance and future repairs.
- Potential for community partnerships as well as access to grant and donor funding to support research and educational opportunities.
- Potential to generate revenue from educational opportunities.
- Additional staff, infrastructure and operational costs would need to be supported.

Model #5: County (or other public entity) operated farm

Examples:

- [78th Street Heritage Farm](#) (Vancouver, WA)

- [Burlington County Agricultural Center](#) (Moorestown, NJ)
- [Slate Run Historical Farm](#) (Canal Winchester, OH)
- [Historical Farm at Carriage Hill MetroPark](#) (Dayton, OH)
- [Menoken Farm](#) (Menoken, ND)

Benefits:

- Public input on crops grown, services offered, public access, etc. “governed by the community”
- Consistent management and oversight by a responsible agency.
- Opportunity to sublease specific areas or contract operations.
- Opportunity to direct products to food access organizations, such as the food bank.

Challenges:

- Significant investment for an agency whose focus may include, but is not limited to agriculture.
- Requires experienced staff to run a farming operation.
- Managing potentially divergent public expectations.
- Bureaucracy associated with public entities can slow implementation of projects.
- Any sale of commercial farm products would need to be carefully managed in order to avoid competition with private enterprises.

Financial Considerations:

- Funding through tax revenue may provide consistent support for farm operations and infrastructure. However, funding may be vulnerable to budget restrictions at public agencies.
- Less pressure to turn a profit on farm operations.
- Greater financial investment by Land Bank, or other public agency, to run the farm.
- No, or limited, lease revenue to Land Bank to assist in maintenance and repairs of infrastructure.

Model #6: Regional employee-owned vertically integrated cooperatives

Emerging conversations in the sustainable agriculture community are challenging existing assumptions regarding the potential of single-family farm operations to have an impact. The model of vertically integrated, landscape-scale cooperatives is being proposed as an alternative that can scale up to reduce prices, and facilitate greater food justice, without sacrificing ecological principles. This model also supports leadership and empowerment of Black, Indigenous, People of Color (BIPOC).

Examples:

- [Sylvanaqua Farms](#) (Montross, VA)

- [New Roots Cooperative Farm](#) (Lewiston, ME)

Benefits:

- Potential to help drive systemic change in sustainable agriculture.
- Addresses social justice as a component of land conservation and food production.
- Has potential for long-term economic viability.

Challenges:

- Access to land, capital, and human resources necessary to scale.
- Systemic barriers to BIPOC ownership and leadership in agriculture and food system.
- Need for integration with other farms, processing, and distribution operations that may not exist.

Financial Considerations:

- Lease revenue to Land Bank, or in-kind contribution, could help offset cost of maintenance and future repairs.
- Would require substantial capital to establish multiple integrated operations operating at a regional scale.

Further considerations for lease models

Based on review of agricultural lease resources, existing models, interviews with stakeholders and professionals in agriculture conservation, as well as personal experience, several important considerations were identified for development of an appropriate lease.

Recognizing the multiple demands on Coffelt Farm, including productive agriculture, public access, and conservation of natural resources, as well as residence of Life Tenant, and lessee, it is critical to create clear zones of responsibility and access. Farming often requires a fast pace of operation and a high degree of pressure. Public access areas should be carefully defined and designed in a manner to avoid disruption of working agriculture, which can create conflict as well as potentially dangerous interactions between equipment, livestock, and the public. Clear boundaries are crucial for respecting privacy of individuals living and working at Coffelt Farm. It is also important to manage public expectations of appearance, as the day to day reality of farm production activities may not always visually reflect what is presented in popular depictions.

Similarly, there is a wide range of perspectives regarding appropriate types of agriculture management, as well as access to shared infrastructure, educational and research opportunities. It is critical to recognize individual strengths and limitations and be aware that a single lessee may not be suited to meeting all of these expectations. If the goal is to provide a broad spectrum of community opportunities, potential partnerships should be explored to honor individual strengths

and not overburden lessees responsible for agricultural production with other demands which may not be within their skill set.

Based on public input, there is strong community support for sustainable production practices at Coffelt Farm. In some situations, mandating specific practices can create unrealistic constraints on farm operation and broad principles may be more appropriate. Year to year variation in weather, market opportunities, available staff, equipment breakdowns, livestock and crop disease, and pests all require flexibility. Successfully implementing mandated sustainable production practices, while managing an economically viable operation, will likely require additional financial and technical assistance. Monitoring of production practices and impact on factors such as soil quality and ecosystem services also require a large degree of time, specific knowledge, and resources to conduct in a consistent manner. Partnerships between a lessee and the Land Bank or other organizations may be needed to facilitate robust monitoring of agricultural practices and benefits to natural resources.

Leases are the framework of a relationship. Long-term success will rely on the ability of individuals to establish clear boundaries, allow for flexibility, and build trust between the lessee, the Land Bank, organizational partners, and the community.

On the other hand, the Land Bank should perhaps entertain the thought of looking at agricultural properties in their portfolio in a different way. What is the long-term protection of agricultural land linked to? Soil health is the foundation of viable agriculture. The future viability of agricultural lands and how they contribute to place, community and the local food system. The Soil Bank concept: in which soil health becomes the desired outcome that leads the land into future generations of islanders whether they are farmers or residents. All will reap the benefits of human agricultural activity and the desire to have a healthy environment that agriculture can provide for in so many ways. You can not put a price on that without extremely intense study of the ecosystem benefits that the land can provide when managed correctly with a holistic outlook.

Conclusions

Coffelt Farm is a remarkable community asset and next steps to lease this property should be carefully considered. Based on the review of Coffelt Farm as presented in this report, CART has identified some general recommendations to help guide future decision making by the Land Bank Commission and staff. It is recognized that the Land Bank has multiple priorities and demands on resources, which will influence decision making. However, CART believes that it is important to fully value the role of agriculture in the conservation mission of the Land Bank, and recognize that simply preserving the land, and the view, is insufficient to support long-term viability of agriculture. There is a need and opportunity to continue engaging with a holistic approach to agricultural conservation that engages the needs of production, ecosystem function, and community benefit.

Recommendations

General:

- Carefully review lessons learned (p. 7) to look for ways to move forward. Continue to engage stakeholders in consensus building.
- Seek and honor the input of the life estate holder. Engage with life estate holder in the selection process of lessee(s) to reduce potential for conflict and support the health of relationships on the farm.
- Recognize the historic and current connection between this land and tribal communities and proactively engage them as stakeholders to solicit input and potential lease proposals.
- Define clear zones of responsibility and access through lease development process(es).
- Define clear responsibilities around agricultural activities, community engagement, and recognize that a single entity might not be able to fulfill all expectations without partnerships.
- Recognizing historic and current conflict regarding management and decision making at Coffelt Farm, consensus building is an option which the Land Bank could pursue to further identify community needs and vision for management of Coffelt Farm and heal community division.
- Celebrate the opportunity presented by Coffelt Farm and allow space for imagination.

Production Practices:

- There is strong community support for sustainable production practices. This creates an opportunity to develop lease structure(s) that incentivizes implementation and utilization of best management practices that steward the land for long-term productivity and benefit the underlying ecosystem and soil health.
 - Structure incentives based on implementation of best management practices and metrics of ecosystem function and contribution to Soil Bank.
- Future lessee and Land Bank should continue to engage with service providers such as the SJICD to develop, implement, monitor and revise the Individual Stewardship Plan as part of the Voluntary Stewardship Program.
- Allow for flexibility in type of agricultural operation, do not hold the lessee to specific agricultural production requirements beyond the framework of SMP and easement.
- Encourage annual monitoring of ecosystem metrics, if degradation is occurring include a stepped framework for addressing resource degradation within the lease.

Financial

- Prior to issuing an RFP, the Land Bank should conduct a reserve study to determine the value of infrastructure and future costs of maintenance and repair. This would help provide a clearer understanding of financial commitment by Land Bank.
- Use information from reserve study, in conjunction with local and regional averages, to inform determination of fair market lease rate and. Allow for negotiation of trial lease

rate based on need for establishment of new operation. Communicate process for determining lease in a transparent manner.

- Lease RFP should include a request for a financial plan that details the potential financial viability of proposed operations including production, outside fundraising, and other partners.

Education

- Recognize community prioritization of agricultural education opportunities. Encourage development of partnerships, and activities to support community agricultural education.

Equipment and Infrastructure

- There was clear community support for investments in infrastructure that has community benefit such as education facilities and shared infrastructure. Prioritize investments such as:
 - Covered public education space and kitchen, to be built and managed by Land Bank, or in partnership with lessee, or other community partners, that could be used to host workshops or classes.
 - Engage in creative partnerships with community organizations to help address housing needs of future operations.
 - Investigate potential of hosting San Juan Island Food Hub drop-off, distribution and shared storage infrastructure.
 - Explore partnering with Northwest Agriculture Business Center, or other organizations, to provide a system for rental of Land Bank owned poultry processing equipment, or other equipment.
- The current lack of water for crop irrigation, and expanded food processing, is a major constraint and should be a priority to address.
- Structural repairs should follow county guidelines and code.
- Land Bank should be responsible for maintenance, repairs, and replacement of existing infrastructure in regards to structural elements, exterior, and utilities. Lease income should be put towards this work, but should not be expected to cover all costs.

Models:

- Recognize that a range of models have the potential to be successful in leasing Coffelt Farm, issue RFP(s) that are open to multiple types of operations.

Lease:

- Public access areas should be carefully defined and designed in a manner to avoid disruption of working agriculture.
- Any in-kind contributions of lessee, such as work on infrastructure, will need to follow county protocol and be addressed on a case by case basis.

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Appendices

Appendix A: San Juan Preservation Trust Conservation Easement

The complete Recorded San Juan Preservation Trust Coffelt Farm Conservation Easement is available online:

<https://apps.sanjuanco.com/auditor/recording/TempImages/461277395123941.pdf>

Appendix B: Survey Results

Participants were recruited using a convenience sampling method, because it was not a randomized sample of the population, it is not possible to draw conclusions about how responses represent the community as a whole. Responses were collected using an online survey tool, with invitations to participate in the survey sent out through the Land Bank email list, WSU SJC Extension Food and Farm listserv, posted and shared on Facebook, and distributed through personal connections. The survey was distributed in English and Spanish, though no Spanish responses were received. No personal identifying information was collected with survey responses and all results are reported as aggregate responses to maintain confidentiality. All survey responses were analyzed, including semi-completed surveys. Open-ended written responses were coded and used along with quantitative answers to identify major themes. Because a convenience sampling method was used, it is not possible to determine a response rate. The survey summary can be accessed online at: <https://ql.tc/gp5aQ>.

Appendix C: Land Bank 2020 Ag Preserves

Land Bank Agricultural Preserves 2020			
Property	Approx. ag acres	Status	Infrastructure
Coffelt Farm, Orcas	150	Interim lease through 2021. Long-term lease options being explored. \$1500/month	Farm Manager House and seasonal tiny house Well established farmstead with extensive infrastructure and equipment (See Appendix D).
King Sisters, San Juan	40	Leased for livestock grazing and market garden. \$300/month	No housing Perimeter woven livestock fence with electrified top strand, well water system, hay barn/ loafing shed, grid power, pump house
Alderman, San Juan	10	Short term management agreement. Considered for resale with Conservation Easement.	No housing Perimeter fencing combined with neighboring farmland
Frazer Homestead, San Juan	50	Leased to 2027 for livestock grazing and grain production. \$800/yr plus improvements	No housing Perimeter woven livestock fence with two barbwire top strands, solar-powered pond water system.
Beaverton Marsh North, San Juan	60	Short term management agreement for hay production. Collaborations with WSU Extension for pasture improvement research.	No Housing Perimeter livestock fence not functional, two drilled wells need testing (no power)
Beaverton Marsh South, San Juan	140	No active agricultural use. This is wetland dominated by reed canary grass.	No housing Old perimeter fencing not functional
Beaverton Marsh corner, San Juan	5	Short term management agreement for hay production.	No Housing Old well (no power), some perimeter fencing

False Bay Creek, San Juan	30	Leased for seasonal livestock grazing. \$900/year or exchange for services	No Housing Perimeter and interior woven livestock fencing with electric top strand, solar-powered pond water system
Zylstra Lake, San Juan	70	Short term management agreement for hay production. In the process of assessing future use.	No housing Some functional livestock fencing, several loafing sheds, concrete slabs, potential pond/lake water
Weeks Wetland, Lopez	5	Short term management agreement for hay production.	None

Appendix D: Coffelt Farm Infrastructure and Equipment



A. Farm Stand and Shed



B. Sheep Barn



C. Dairy Barn and Workshop



D. Chicken Processing Shed



E. Composting Barn



F. Spring Pump House



G. Loafing Shed



H. Market Garden and Hoop House



I. Hay Barn and Mobile Slaughter Site



J. Deep Well Pump House



K. Farm Manager House



L. Tiny House

Coffelt Farm – Land Bank Owned Farm Equipment

*Purchased from Coffelt Farm Stewards in June 2019 at these values

Manure spreader	2500.00
Chicken Processing Equipment (plucker, scalding cones, insulated container, Traulsen Comm. Fridge)	2569.00
Rat proof feed containers	100.00
Temp Loafing shed	500.00
Dairy Equipment	
Conde Vacuum pump	1000.00
Cooling Freezer, circulating pumps, controls	400.00
Milk Fridge (Frigidaire)	500.00
Oil filled heaters	50.00
Hach Test Kit and lot of Permachem Reagent	100.00
Lot of cleaning/maintenance tools	75.00
Barn Bathroom/ Manager's House	
GE Gas Range	491.00
Wood Stove and pipe	300.00
Market Garden Lot	
Tillers, tools, shed with supplies	2,000.00
High Tunnel	1,000.00
Chicken Equip (mobile coop, pullet coop, brooder, and supplies	3600.00
Fencing	
E-fence energizer @ Island	200.00
Multiple solar energizers	200.00
5 brown gates	750.00
Sheep electroneet 85' x 8	210.00
Sheep electroneet 165' x 35	1500.00
Lot of various fencing	525.00
Other Important Tools/Equipment	
Hay Conveyor w/ gas and electric motors	400.00
Water troughs with float valves	400.00
Farm Store	
Outdoor Commercial Fridge	800.00
Indoor Fridge Kenmoor 70722	515.00
Indoor Chest Freezers (2)	1200.00

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Conservation Agriculture Resource Team Report: Review and Analysis of Coffelt Farm 2021

					2012	2013	2014	2015	2016 (to Dec 6)		Total (2012 - 2016)	Annual Average (2012 to 2016)
				Wool Processing Sheepskins	4,011.46	2,250.82	2,304.57	1,492.47	1,420.63		11,479.95	1,913.33
				Wool Processing Yarn & Comfort.	0.00	0.00	2,258.98	989.53	545.30		3,793.81	632.30
				Sheep Expense - Other	2,449.52	1,391.77	329.62	297.09	148.88		4,616.88	769.48
				Total Sheep Expense	7,298.46	5,394.04	16,610.40	12,898.17	13,883.56		56,084.63	9,347.44
				Veterinarian expense	126.88	0.00	0.00	0.00	0.00		126.88	21.15
				Animal Expenses - Other	0.00	0.00	0.00	1,222.00	766.50		1,988.50	331.42
				Total Animal Expenses	46,147.22	42,802.48	66,320.56	72,109.17	56,722.65		284,102.08	47,350.35
				Casual Farm Labor	1,040.00	311.12	413.06	0.00	715.50		2,479.68	413.28
				cat food	0.00	0.00	0.00	0.00	24.50		24.50	4.08
				Farmers Market	0.00	0.00	0.00	0.00	7.50		7.50	1.25
				Garden Expense	994.76	807.13	919.85	2,430.41	86.59		5,238.74	873.12
				Island Hardware Discount	-1,317.24	-51.51	-119.75	-102.74	-59.18		-1,650.42	-275.07
				Pasture Expense	0.00	2,231.05	550.57	447.84	400.46		3,629.92	604.99
				Payroll Expenses								
				941 - Quarterly								
				Federal Withholding	80.54	0.00	0.00	0.00	0.00		80.54	13.42
				Medicare	646.08	555.37	880.16	1,121.03	862.58		4,065.22	677.54
				Social Security	2,498.70	2,374.69	3,763.40	4,793.36	3,688.25		17,118.40	2,853.07
				Total 941 - Quarterly	3,225.32	2,930.06	4,643.56	5,914.39	4,550.83		21,264.16	3,544.03
				Employment Security	66.30	65.11	103.20	131.43	77.35		443.39	73.90
				FUTA	0.00	36.61	0.00	0.00	0.00		36.61	6.10
				Gross Wages	39,002.75	38,301.43	61,300.27	76,878.45	59,488.00		274,970.90	45,828.48
				Labor & Industries	2,695.34	2,323.17	2,335.10	2,202.30	11,785.04		21,340.95	3,556.83
				Payroll	0.00	0.00	0.00	0.00	0.00		0.00	0.00
				QuickBooks Payroll fees	0.00	0.00	102.27	0.00	0.00		102.27	17.05
				Payroll Expenses - Other	0.00	0.00	1,137.07	1,881.72	1,330.45		4,349.24	724.87
				Total Payroll Expenses	44,989.71	43,656.38	69,621.47	87,008.29	77,231.67		322,507.52	53,751.25
				Processing								
				Meat Processing	21,667.62	28,475.92	0.00	0.00	0.00		50,143.54	8,357.26
				Total Processing	21,667.62	28,475.92	0.00	0.00	0.00		50,143.54	8,357.26
				Repairs & Maintenance								
				Equipment	5,542.43	3,729.45	1,181.77	1,440.41	1,361.41		13,255.47	2,209.25
				Farm Buildings	96.44	129.43	219.80	673.26	1,527.02		2,645.95	440.99
				Fencing	334.05	235.17	925.19	1,529.19	204.41		3,228.01	538.00
				Grounds	2,095.59	1,819.27	794.25	518.09	669.99		5,897.19	982.87
				Tools	91.71	0.00	141.97	574.22	101.78		909.68	151.61
				Vehicle Maintenance & Repairs	954.00	1,950.58	3,315.81	2,172.90	1,300.04		9,693.33	1,615.56
				Total Repairs & Maintenance	9,114.22	7,863.90	6,578.79	6,908.07	5,164.65		35,629.63	5,938.27
				Supplies	3,507.64	1,194.25	1,667.49	2,507.69	1,627.19		10,504.26	1,750.71
				Vehicle Expense	0.00	0.00	0.00	0.00	0.00		0.00	0.00
				Fuel - gasoline	3,822.83	4,456.64	5,729.50	3,145.90	2,580.33		19,735.20	3,289.20
				Offroad Fuel - diesel	1,975.55	0.00	0.00	0.00	0.00		1,975.55	329.26
				Vehicle License	245.75	295.55	245.50	265.50	315.50		1,367.80	227.97
				Vehicle Expense - Other	0.00	43.75	0.00	0.00	0.00		43.75	7.29
				Total Vehicle Expense	6,044.13	4,795.94	5,975.00	3,411.40	2,895.83		23,122.30	3,853.72
				OS (Farm Operations) - Other	0.00	0.00	0.00	0.00	161.09		161.09	26.85
				Total OS (Farm Operations)	132,188.06	132,086.66	151,927.04	174,720.13	144,978.45		735,900.34	122,650.06
				Reconciliation Discrepancies	0.00	0.00	0.00	0.00	0.00		0.00	0.00
				Short/Over	0.00	0.00	0.00	-112.61	75.63		-36.98	-6.16
				Square Up Service Fee	0.00	0.56	0.00	0.00	0.00		0.56	0.09
				SUSPENSE Expense	-0.05	-8,894.34	0.00	0.00	412.37		-8,482.02	-1,413.67
				Taxes	0.00	-0.05	0.00	-0.73	44.38		43.60	7.27
				Total Expense	144,180.67	136,053.09	174,907.43	186,832.50	155,532.88		797,506.57	132,917.76
				Net Ordinary Income	27,748.18	54,756.55	-17,609.67	-8,413.09	2,576.19		59,058.16	9,843.03
				Other Income/Expense								
				Other Income								
				Interest Income Banking	5.76	21.09	49.54	14.36	6.54		97.29	16.22
				Tax Refund	0.00	0.00	0.00	0.00	0.00		0.00	0.00
				Total Other Income	5.76	21.09	49.54	14.36	6.54		97.29	16.22
				Other Expense								
				Depreciation Expense	6,851.00	16,830.00	0.00	0.00	0.00		23,681.00	3,946.83
				Total Other Expense	6,851.00	16,830.00	0.00	0.00	0.00		23,681.00	3,946.83
				Net Other Income	-6,845.24	-16,808.91	49.54	14.36	6.54		-23,583.71	-3,930.62
				Net Income	20,902.94	37,947.64	-17,560.13	-8,398.73	2,582.73		35,474.45	5,912.41

Appendix F: Coffelt Farm 2015 Resource Conservation and Management Plan.
Prepared by Bruce Gregory - San Juan Island Conservation District

INTRODUCTION

This is a resource management system (RMS) level conservation and management plan for the Coffelt Farm owned by the SJC Land Bank and under management by the Coffelt Farm Stewards. The property is currently operated as a multiple enterprise farm and includes forage and livestock production. Assisted by: Bruce Gregory and Ellen Jones, San Juan Islands Conservation District,
Date: May-June 2015

This information is provided to assist the owners, partners, current manager and the community in obtaining their mutually desirable, long-term property management goals. Development of this plan, complete with recommendations, is intended to result in the protection of soil fertility, native biodiversity, grass-based livestock agriculture and eco-system functions along with surface and ground water resources. This plan is written at the request of the owners and partners. This plan is an extension of the broad management objectives developed developed in the spring of 2015 with initial site visits and discussion in May of 2015.

OBJECTIVES

The management team of Coffelt Farm want to add additional farm enterprises to increase production, move closer to a sustainable, integrated farming operation and continue to raise healthy animals, vegetable crops and provide a quality local source for the islands food system. In order to do this, the farm management team wants to protect and enhance the resource base they depend upon, build up supporting infrastructure and continue to reach out to the local community with educational opportunities with value added marketing, along with educational programs. In pursuing these goals, the objectives will be to continue to address water quality, plant and soil health concerns by implementing practices to improve and protect soils and the seasonal flows of Crow Valley, some of which run through the property.

This Plan will serve as a guide to assist the interested parties in maintaining and implementing best management practices. These practices will help reach the goals of the SJC Land Bank, the Coffelt Farm Stewards, the management and farm workers and ultimately the community, who support the farm by purchasing food products and several of the partners in funding.

EXISTING CONDITIONS

Farm Description

The San Juan Land Bank is the property owner of the three parcels that make up Coffelt Farm. The SJC Land Bank has a Conservation Easement agreement on the same three parcels. Coffelt Farm Stewards, a non-profit management organization is in charge of day-to- day farm management and stewardship. They have provided day-to-day farm management for the

property for five years since the Land Bank purchased the farm from Vern and Sidney Coffelt in 2010.

This is a property with mostly pastures and small clusters of forest resources on three adjacent parcels. The physical location is 1071, 1071B and 1071C, Crow Valley Road on Orcas Island in San Juan County, Washington. The farm is located in the SW Qtr. of the NW Qtr. of Sec. 27, Township 37 North, Range 2 West; the tax parcel identification numbers are: 272722001, 272721001 and 272712001. The parcels combined total approximately 189.85 acres. The acreage is mostly pastureland, small forest patches, farm residential buildings and associated homestead outbuildings.

At the time of this plan 131 acres of the farm are grazed pasture (using cattle and sheep) or harvested as hay with some post harvest grazing. For the property location and various site maps, please refer to the maps in [section 3](#) of this report.

Table 1 - Farm Land Use areas:

Area	Size – acres	Crop
1	6.22	Hay / Grazing
Headquarters (west)	1.89	Office-Store-Housing
2	16.46	Hay, Pond, seasonal wet area
3	2.51	Lambing / Hay
4	7.18	Forested / Hogs
Homestead Area	1.0	Home, out buildings, CSA & private garden, orchard dairy cow area, compost facility
5	4.66	Hay land, pasture
6	17.81	Hay land, pasture

7	3.63	Is. Hub Knob, Heavy Use Area
8	12.25	Hay land, pasture
9	11.68	Haylage, late season grazing
10-N (not owned but used)	(7.78)	Post lambing grazed, then haylage (managed for another owner)
10-S	12.08	Post lambing grazed, then haylage
11	1.82	Lamb out & hay
12	10.76	Hay, then grazed
13	20.62	Fen, cattle graze
14	21.34	Grazed, then hay
Forest Resources West	16.44	Slaughter site, hay Storage, other forestland
Forest Resources East	21.27	Spring (water), other forestland
Total acres	189.62 + 7.78 other owner	

Soil

Of the nine soil types found on the farm, six make up 98% of the total land area and are found in the pastureland management areas and rock outcrops. Out of these soil types, all but one is considered Prime Farmland and one is Farmland of State Significance in the USDA NRCS (Natural Resource Conservation Service) Soil Survey. **Coveland loam, 0 to 5 percent slopes (1001)**, makes up almost 30 acres of the farm. The remaining soil components of the farm are **Coveland-Mitchellbay complex, 2 to 15 percent slopes (1009)** at 21 acres; **Coupeville loam 0-5 percent slopes (1003)** at 61 acres; **Semiahmoo muck, 0-2 percent slopes (1006)** at 49 acres and **Roche-Killebrew complex, 2 to 10 percent slopes (2011)** at 10 acres. **Cady-Rock Outcrop complex, 5-30 percent slopes (5000)** is found on 24% of the farm. The three additional soil types present occupy very small areas or are found near but off of the farm.

For more information on these soils, their characteristics, and their use potentials please refer to the Soils Resource Report map and attached soil survey information located [in section 3](#) of this report.

The last known soil testing was done in 2008-09. As soil tests should be monitored on a three-year basis it would be wise to once again take soil tests for up to date monitoring.

Soil quality conditions in some areas are at risk. There has been field pugging in the past and the potential for mud to form in the grazing pastures during the winter or early spring is high. Planning and management to develop feeding areas for livestock on higher portions of land above seasonal water flows would be desirable. Making sure these areas are managed with seasonal grazing or have areas set up as sacrifice zones is important. Several areas have been established already. Other than the potential for mud in early season, there are few visible signs of soil resource concerns such as erosion, field pugging, and compaction on most of the property. Noxious weeds were present in several locations in overgrazed sections and in areas used as sacrifice zones. The time of year and our droughty late summer must also be considered as a limitation on the forage base in areas used for sacrifice zones. These areas will recover; it just takes time and proper management.

Water

Surface

The farm sits in the upper reaches of the Eastsound Watershed. This watershed feeds Fowlers Pond, the largest pond and drainage found on this portion of Orcas Is. There is seasonal water flow from the farm to this large pond and wetlands found to the northeast on the way to emptying into Eastsound. One small pond located in Area 2 provides irrigation water that is stored in a 20,000 gallon holding tank.

Ground

A developed spring provides water for domestic needs to the farmhouses and outbuildings in headquarters. The spring depth is 4 feet but GPM is not known. The spring is protected by a

buried cement pipe section with cover and is located in forest resources to the south. Water is pumped via pipeline to a 1200 gallon holding tank. An additional 400-foot-deep (1 GPM) well has been drilled and is being developed for the licensed raw milk dairy. No animals have access to within 100' of the well nor are any fertilizers or soil amendments applied within 100' of the well.

Air

There are no known or identified air quality concerns in the area at this time. The site does have an extreme exposure to prevailing winds out of the southwest/south/southeast, which has a profound influence on the types of plant life that can grow and thus limitations based upon this exposure.

Plants –

CSA Vegetable production fields

Several vegetable production areas are in use. One of the larger is the CSA produce production area of 1/3 acre that supports a 10 share CSA program. A long term vegetable production area and orchard are maintained for use by Sidney Coffelt. The remaining garden area is maintained near the Headquarters area for use by staff for a family food system.

Pastureland

Current pasture conditions range from high quality to moderate with some areas having low quality. These highly mutable conditions are because of a variety of soil conditions, excess (or lack of) water, a low level of fertility, plant diversity and invasives. (Please see the quality criteria rating and discussion in [Sec. 6](#), of this plan. The Tech Note 14, Pastureland Narrative, provides more information on the current condition rating process).

Noxious weeds have been identified and control methods have been taken for the following weeds on the property: Canada thistle (*Cirsium arvense*), Bull thistle (*Cirsium vulgare*), Blackberry (*Rubus discolor*), Reed Canarygrass (*Phalaris arundinacea*) and Tansy Ragwort (*Senecio jacobaea*). Please contact the San Juan County Noxious Weed Board coordinators for additional assistance. Judy Jackson or Jason Ontjes would be happy to assist you and can be reached at 376-3499.

To meet the nutritional and grazing needs of the livestock and the resource base, the monitoring of soil fertility and application of a blended fertilizers or organic inputs at the appropriate time to the grazed and harvested forage fields is recommended. The goal to increase the fertility, health and diversity of forage plants that are in the fields can be reached with help using this management. Plant diversity that you could see over time in the pasture inventory would be: new grass and legume varieties, chicory, forage beets and other modern forage plantings. Additional diversity can be added by re-seeding with a no-till drill or through prescribed grazing and frost seeding. Management of grazing through appropriate timing and livestock presence in any particular grazing cell is the key to retaining a vegetative pasture by consistently monitoring for no less than a 3-4" leaf length. This will assure adequate leaf material is remaining to continue the process of harvesting solar energy and building strong root

systems and a thick healthy sod that will not only produce more grass but filter run off as needed in the seasonal wet months. A quick plant inventory of the pastures indicated an average of about five varieties of forage species, which is moderately adequate for the crop harvested. Some smaller paddocks had more because of different management. Future monitoring and timed grazing work is recommended and it is encouraging to see results from that type of management.

As grazing livestock and forage plant species in many ways are dependent upon each other it is better to anticipate an increase in diversity from proper livestock management scenario found in Prescribed Grazing / Management Intensive Grazing (M.I.G.) before soil disturbance and re-planting are taken on.

Significant Natural Features (PHS) & Cultural Resources (CR) Check

There are no **Cultural Resources (CR)** recorded in Section 27 and adjacent sections. CR information was verified by reviewing the state lists on 6/23/2015 by Kathy Smith, NRCS, Mount Vernon.

Priority Habitat System (PHS):

WA Dept. Fish & Wildlife Barriers - NONE

Lakes/Ponds – YES, 1 w/in the property, no name, several more just off site, downstream)

Streams – 1 seasonal flow.

Wetlands – Yes, seasonal freshwater wetlands

Wildlife Survey Data Management - YES bald eagle occurrence.

Marine Environment – YES, downstream Salmon habitat, Eastsound.

Endangered Plant Data – None listed

Animals

Table - 2

Livestock Inventory:

Livestock class	No.	Weight lb.
Mother cows	3	1000 ea.
Heifers	2	800 ea.
Sheep (ewes)	70	120 ea.
Lambs	100	75 ea.
Pigs	20	100-150 ea.
Steers (yearling)	10	900 ea.
Chickens (layers)	150	5 ea.
Chickens (meat)	390	6 ea.
Total animals	745	Approx.

There is a limited amount of space in out buildings for winter housing of livestock, either barn and or loafing sheds. Vegetative, wind sheltered areas located near the edge of forestland and knolls provide needed winter cover for the current livestock when needed. Hogs, chickens, dairy cows all have shelters.

Currently, a herd of 5 cows and flock of 170 sheep are managed on the property. 20 pigs are confinement fed using an existing bay of a covered compost facility. After additional fencing infrastructure, fertility management and MIG have been instituted and pasturelands have become more diverse, healthy and fertile, carrying capacity may be higher. Most manure is not collected for compost but has been animal applied to forage production areas during grazing.

Wildlife

The usual native wildlife species are present. Owls, Red-tailed hawk, Raven, swallows and Red-wing black bird are found in abundance on or near the farm as it has a good mix of habitat types and year round water resources.

Human – Coffelt farm has been in active production for over 100 years. The Coffelt family has owned the farm since 1950 and Vern Coffelt, now deceased, operated the farm since 1960 with his wife Sidney Coffelt. The San Juan County Land Bank purchased the farm from the Coffelt's in 2007. The Coffelt's continued to help manage the farm until Vern's death at which time the farm transitioned to management by the Coffelt Farm Stewards non-profit. Casey McKenzie became associated with the farm in 2004 when he became farm foreman to help with transitioning the work load from Vern and Sidney. Casey now manages production and oversight of the farm operations with administrative help from Charly Robinson, Executive Director of Coffelt Farm Stewards and a paid staff of four and numerous volunteers and farm interns.

EVALUATION AND ALTERNATIVES

The current farm conditions and management practices were described above. Specific practices have been identified based upon the current conditions. These are recommendations based upon your goals, the specific site under management and thinking about how to reach the goals you have while still protecting and enhancing the natural resources on this farm.

The potential practices that are recommended are in many ways already being implemented. Several of them could use additional resources in management and infrastructure. Practices that have been implemented include **Nutrient Management** (590), **Prescribed Grazing** (528A) facilitated with new temporary or permanent **Fencing / Gates** (382), **Use Exclusion** (472), a **Heavy Use Area** with **Protection** (561) – for over wintering livestock; a **Forage and Biomass Planting** (512), and **Access Road** (560). Suggested new practices that will build upon those already implemented include: **Watering Facility** (614), **Pump & Pipeline** (516-533), **Herbaceous Weed Control** (315), and additional **Heavy Use Area** with **Protection** (561) combined with **Livestock Shelter** (576) for covered feeding areas for dairy cows and hogs.

NUTRIENT MANAGEMENT (590) – In this plan, nutrient management (also called fertility management) is the foundation of the goals expressed and vision for the future of the farm. This includes CSA production areas, all grazing paddocks and harvested forage fields. Since livestock are used in the management of the grasslands, a major recommendation is that you perform **Nutrient Management**, (Natural Resources Conservation Service (NRCS) practice code **590**) to maintain and if possible, improve the condition, health, and productivity of the soils and both hay and pasture paddocks. Improving productivity will serve to continue to lessen the threat of ground and surface water contamination from nutrient and sediment runoff and have a profound and measurable effect on plant and animal nutrition and growth over time. The same practice applied to CSA production areas could integrate farm-produced compost with documented organic non-composted nutrients for a balanced and sustainable vegetable production and orchard growing areas.

Nutrient Management is the balancing of all of the nutrients/resources generated or used on the farm (animal feeds, manure, other fertilizers, plants, animals, etc...) while protecting surface and ground water quality. Creating a nutrient balance assists in nutrient management and means applying manure/fertilizers (nutrients) at rates and times that plants can use them. Nutrient balance figure(s) help determine how much and how often you should apply manure or other fertilizers to your fields and in some cases, how much manure needs to be taken off, if ever and used elsewhere. The most important tool for this practice is soil testing.

Soil Testing – a key indicator tool

Prior to performing any type of fertilizer or manure application, we recommend conducting soil tests to establish a nutrient baseline and determine what concentrations of nitrogen, phosphorous, potassium and micronutrients are actually available in your soil. Initial soil tests have been done in the past and should be re-done each three years.

The information obtained from the soil test results is necessary to ensure that soil resources are being used and built up while preventing damage to surface or ground water quality resources. The soil should be considered a “bank account” of fertility and soil life. When requesting your soil analysis, be sure to ask for fertilizer recommendations from the soil-testing lab, as these will be very useful to you. The type and volume of fertilizer you apply is up to you but should be based upon a measured need. Soil testing will be important to establish the correct level of nutrients required for future grasslands health and diversity.

If costs become an issue, applying at least a portion of the recommended fertilizer over a four or five-year period is better than doing nothing. Doing nothing is essentially “carbon mining” as nutrients are removed and not replaced.

There are two different types of soil tests, a fall soil nitrate test, also referred to as the post-harvest soil nitrate test, which measures the amount of nitrate left in the soil after the final crop harvest of the season. It is the most important tool used in monitoring the past management of nitrates on the farm. This test is used to look back in time to see how well you met the needs of the grass (or other crop production soils) without doing harm to the environment in the process. The other soil test is a spring soil test to help you anticipate the nutrient needs of your fields. These soil tests were done in the recent past for future operations under an EQIP Cost share contract with NRCS. Once you have a good understanding of how nutrients are cycled on the farm based upon test results and the initial test results do not indicate a serious nutrient imbalance, you should perform these tests once every 3 years or so.

Take fall soil nitrate tests approximately 3 weeks after any manure/fertilizer applications have taken place and before the heavy fall rains begin (Sept. – Oct.). Take spring soil tests early enough in the spring that you have the test results back in time to apply your nutrients to the fields (i.e. once they have dried out enough and rains will not create a runoff potential). Please refer to the additional 590-practice recommendation information in [section 5](#) of this report. I have included soil testing reference material and a list of test labs.

Supplemental Feed Nutrient Sources

Often overlooked as a potential and contributing source of fertility for increased soil health and pasture plant diversity are the available nutrients deposited by grazing livestock from feed brought in from off farm sources. Currently haylage and hay from the farmland is fed out. As livestock generally take between 3-7% of any nutrients available in these supplemental feeds there is a good portion of the nutrients deposited in urine and manure directly onto the ground along with wasted hay. Additional energy spent developing fertile soils and forage is a valuable management practice to create healthy, fast growing livestock, and milk which move nutrients through the nutrient cycle on the farm. Hogs are fed a concentrate from Conway Feed which can be captured in manure and composted for application to production soils either vegetable, fruit or livestock forage / pastures.

(Note: Additional testing for harvested forage, manure and soil testing which includes the nitrate and ammonium component was not available at the point this plan was developed. It can be added later when a CNMP / DNMP (Comprehensive Nutrient Management Plan or Dairy Nutrient Management Plan is done) for a complete and finished nutrient balance overview of the current operation and is useful in reaching targeted outcomes).

PRESCRIBED GRAZING (528A) – All pasture / grazing land -

Prescribed Grazing, or Management Intensive Grazing (MIG) is an alternative management practice that is partially in practice now. The sheep flock seems to have a higher level of MIG in place than the beef or dairy cows. MIG for these other animals would be important in the future management recommended. As MIG helps improve pasture and soil health, production and

utilization, it should be integrated into the Nutrient Management program and Forage and Biomass Planting practices to move farm fertility to a new level. This will provide healthier pastures and animals. The challenge will be in utilizing more portable fencing that will be set up in your current grazing areas or future areas. This practice involves employing an animal rotation scheme to move the animals through the paddock system based on rate of grass growth. The key to rotational grazing is to get the animals off of the grass before they graze below a 3-inch height minimum and to allow the grass to recover to a 6-inch height minimum for tall growing grasses and 3-4 inches for low growing grasses, before resuming grazing. On average, a 21-day resting period is recommended for grass re-growth during the active growing period. When the animals are moved into the next paddock, mow the previous paddock to a uniform height of 3-4 inches to prevent any taller remaining grass clumps and weeds from going to seed and to keep grass production high. Field topping with a mower is also recommended if grass is to be kept in a vegetative state. At a minimum, the paddocks need to be mowed at least once a year to prevent weeds from going to seed. Any current problems with over grazing and noxious weeds in any grazing areas can be reduced and eliminated over time using this management and related practices mentioned above. Each grazing paddock or cell represents a solar harvesting unit or “salad bar” that if properly managed over time provides and establishes the necessary results as desirable outcomes and goals for the grasslands. High stocking rates are also a desirable component of this style of management for hoof action in concentrated areas over short periods has desirable effects on forage and nutrient cycles.

The actual grazing period, the growing season, the number of animals and how fast the animals graze the grasses down to the 3-4-inch height minimum determine the size, and the numbers of grazing paddocks. You have a minimum of approximately twelve grazing paddocks based upon management area divisions on the farm currently. More are actually in use than this base count and more are recommended, thus lengthening the number of days for forage recovery before animals return. Moving the animals every 3 to 5 days to prevent grazing of the short tender re-growth would be optimal, but you need to ultimately tailor the grazing period to your specific seasonal site conditions and needs. Rapid spring and early summer re-growth requires rapid movement of livestock. As the dry time of the season arrives this rotation will slow and perhaps even require a sacrifice area be established for livestock. The crown of each grass plant is located within the lowest 3 inches of the plant, and provides the nutrients for the plant to keep growing. Therefore, protecting the crown portion of each plant is a critical concern because when the crown is grazed, the plant energy reserves become depleted, and the plant can wither and eventually die. This opens up the opportunity for noxious weeds to take or more undesirable forage species to become the dominant forage in the paddock.

An important consideration in creating paddocks within the pastures is to design the paddock layouts with “the lay of the land.” Much of this has been accomplished. By combining the paddocks based on the differing soil moisture levels that occur at different times during the year. Arranging your paddocks so that the wetter pasture areas are together, the quicker drying pastures together, and the quickest drying paddocks are accessed together pays off in forage health. The goal of this arrangement is to turn the animals out in the paddock area(s) that are the first to dry out in the spring while preventing animal access to those areas that are still saturated. This will serve to alleviate soil compaction and mud issues and supply forage for a longer

duration. As the paddocks progressively dry out the animals can be rotated into the newly dried out pastures.

Ideally, the animals should be kept off the pastures when they are wet and/or not growing (late summer, dry fall, winter to early spring). Having livestock in wet conditions is not conducive to maintaining a high level of pasture and animal health. Cool season pasture grasses go into a regenerative state in the early fall, just before winter. Pasturing and overgrazing at this time will greatly reduce the quality and quantity of forage returning in the spring. Having livestock on saturated and rain soaked pastures during the rainy season is a catalyst for soil compaction. Pastures in the Northwest simply cannot survive continuous grazing and trampling in the winter months when they are saturated with water. The soils are most vulnerable to compaction at this time. Compaction of the soil makes water filtration and plant growth very difficult and can lead to greatly reduced pasture productivity, poor grass stand condition, weed colonization, soil erosion, nitrogen runoff, and increased feed costs.

There will be assistance in establishing all of the above management.

Carrying Capacity-

Average Animal Weight method measurements for grazing using AUM

The animal unit month (AUM) concept is the most widely used way to determine the carrying capacity of grazing animals on pastures. The AUM provides us with the approximate amount of forage a 1000 lb. cow with calf will eat in one month. It was standardized to the 1000 lb. cow with calf when they were the most prevalent on pasture. This AUM was established to be 800 lbs. of forage on a dry weight basis (not green weight). All other animals were converted to an “Animal Unit Equivalent” of this cow. For example, a mature sheep has an Animal Unit Equivalent of 0.20. This means a sheep eats about 20% of the forage a cow will eat in one month. This allows managers to match the number of animals with the amount of available forage. There are numerous ways to calculate how many animals can be carried on a particular pasture area, based on what is available and what is being eaten. The following conversion based upon the soil type AUM figures given in the USDA/NRCS 2007-09 Soil Survey data is a starting point. How it can be altered depends on seasonal weather, management goals and management intensity.

Table 4 - Soil types and AUM:

Soil symbol	Soil Name	AUM rating	Acres
1001	Coveland loam	6.49	28
1003	Coupeville loam	7.04	48
1006	Semiahmoo muck	7.26	50
1009	Coveland-Mitchellbay	5.99	16
2011	Roche-Killebrew	4.29	6

Avg. AUM available: 6.2166 - Actual acres available: 148*

*Some of the soil acreage on the farm has restrictions for grazing removed for this calculation

To balance these figures and provide a more accurate measurement of grazing potential it is important to look at combining the estimates above with estimated forage production figures from the Soil Survey for the same soil types.

Table 5 – Soil types and forage production Tons Per Acre (TPA):

Soil symbol	Soil Name	Forage (TPA)	Acres
1001	Coveland loam	2.95	28
1003	Coupeville loam	3.20	48
1006	Semiahmoo muck	3.30	50
1009	Coveland-Mitchellbay	2.73	16
2011	Roche-Killebrew	1.95	6
	Avg. Forage TPA	2.81 (5,632 lb.)	

Using the data from these estimates, **which are based upon a high level of management, i.e. nutrient or fertility management is in place and being followed, MIG is in place and active,** we can determine the estimated carrying capacity of livestock.

We begin by assuming the level of management is ramped up. The Soil Survey figure for average forage in tons per acre is 2.81 TPA or 5,632 lb. per acre. There is approximately 148 acres available.

Average Animal Weight Method of Carrying Capacity -

1) Calculation of Total Available Forage:

*Total Available Forage (TAF) = Total Production X (how much you can use) * 0.5 X Allotment Size*
TAF=5,632 X 0.5 X 148 acres available or 416,768 lb. (Total Available Forage) for the available allotment.

*Note: * Calculating the total “available” forage by using the “take half, leave half” method, either divide total production by 2, or multiply by 0.5. The leave half portion represents the solar harvesting residual necessary for continued forage base health. This is higher than the 3” residual most often desired. 50% is the most common use factor. This can vary based on time of the growth season, management and species present. We will leave it at this rate for a fudge factor.*

2) Now we determine the average animal size in pounds by converting for animal type being grazed using with Animal Unit Measure (Equivalents): (See Table 2, page 6 for animal numbers).

A) In this situation the majority of animals, 170 are sheep. 70 ewes are 120 lb. and 100 are lambs up to 100 lb. This is a total equivalent of 15.3 ea. 1200 lb. animals.

Cows / Heifers / Steers are averaged to 11.3 animals each representing a 1200 lb. animal. So that gives us a total AUE of **26.6** (rounded out to **27** for this calculation). We are not including hogs or chickens, as they are not grazing livestock.

So we have determined we have 27 animals equivalent to 1200 lb. animals

B) Now we multiply by the conversion factor for AAW, which is 0.02667

Forage consumed per day = Animal Weight X AAW conversion factor
1200 lb. X 0.02667 = **32 lbs. forage eaten per day**

C) Now we multiply this figure by 30 days/month to determine the amount of forage consumed per month:

Monthly intake = 32.00 lbs X 30 days = **Monthly intake = 960 lbs.**

3) Now we determine the stocking rate

Stocking Rate = $\frac{\text{Available Forage lb. per available acres}}{\text{Pounds Eaten/Month}}$

Stocking rate = $\frac{416,768 \text{ lb.}}{960 \text{ lb.}}$ **So the Stocking Rate = 434 animals/month**

4) Now we determine the amount of animals that can be grazed over the allotted time:

Number of animals = $\frac{\text{AUM for class of livestock}}{\text{Number of months of available grazing}}$

Number of months of available grazing

Number of animals = $\frac{434 \text{ animals / mo.}}{3 \text{ months}}$ Or: Number of animals = $\frac{434 \text{ animals / mo.}}{6 \text{ months}}$

3 months

6 months

Number of animals = 144.66 (145) AUE (Grazing for 3 months)

Number of animals = 72 (Grazing for 6 months)

If we now compare these results to the highest reported animal numbers we can see that the current capacity is below the potential carrying capacity for the resource at this level of management. Given the current level of management and the goal of higher management through MIG, Nutrient Management and Forage and Biomass Replanting, we can envision a situation in which smaller paddocks, with more active animal movement, with more animals (or slightly higher number) will provide the long-term management goals. Again only TIME will tell and is completely connected to soil fertility and forage quality. If management is not “turned up” it is probably better to stay a current carrying capacity or slightly higher based upon current conditions.

Seasonal weather variations, time of turn out and desirable forage height, dry summers coming on early, and or lack of nutrient management would of course reduce the capacity and force the manager to move to a sacrifice area earlier and move to feeding supplemental feed earlier and or stock removal to allow for pasture rest for the whole farm.

FENCING (382) – length, in feet, to be determined

Fencing should be used to implement rotational or **Prescribed Grazing**, a practice discussed above. Fencing is also used to support a practice referred to as **Use Exclusion** and discussed in the following section. You may use portable, electric, flexible netting or plain-woven wire (non-electric) depending upon the site situation and finances available. In this situation current fence lines could be added to and the pond in Area 2 protected. New, five or six wire high-tensile electric would provide the needed level of animal control for this installation if needed while impacting the visual aspect of the resource the least and reducing costs over mesh field fencing.

Use Exclusion is another recommended alternative management practice. It is essentially preventing livestock access to a specified area for any specified time. An example of use exclusion relevant to your situation is preventing the animals' access to any of the paddock areas and pond not only during the wet winter and spring months but during the summer to improve water quality. Another time of year when **Use Exclusion** is important is during the very dry season, when the grasses are least productive, the number of animals high, and the potential for overgrazing is severe. **Use exclusion** can be achieved by establishing a *sacrifice or heavy use confinement area* to house the animals when the pastures are wet and easily damaged or in droughty/dormant growing conditions.

Use Exclusion is also desirable in the riparian stream zone.

In order to aid in the restoration and rejuvenation of pastures it is recommended that you use a **heavy use confinement or “sacrifice” area** throughout the year as needed for any livestock.

HEAVY USE AREA WITH PROTECTION (HUA) (561) – At least 1 – (Area 2 East, Area 4, Area 12 or?)

A Sacrifice Area, or Heavy Use Confinement Area, is a designated enclosure, such as a corral, run, or pen, which is meant to be your animals' outdoor living quarters. It is called a sacrifice area because you are giving up, or sacrificing, the use of that small portion of land as a grassy area for the benefit of the rest of your pastures. You have used this practice on one of these areas already where you keep the dairy cows. In this situation it is being recommended that the current location in Area 2 East used by the dairy heifers be utilized in the future but with fencing and surface footing, armoring added to prevent cows from wandering into the lower areas into water draining pastures or the riparian zone. This area should be armored with additional gravel footing so it is usable in the wet winter months.

If beef cows are to be left out in Area 12 a HUA location and installation is recommended in this area.

The hog production area in Area 4 is also another location where a HUA would be important. The current practice of housing hogs in the forest area 4 while practical in many ways has the potential of altering the forest stand itself through long term animal impact. An actual production facility that accommodates the hog production cycle and integrates a HUA with a covered feeding area and rotation of use within the area, would be a valuable future solution to the potential long-term problems with hogs in the forest area. Use of the compost facility for raising hogs should be moved to this area freeing up the compost facility to provide more valuable fertility inputs for the farm.

HUA utilize footing layers that are at least a minimum thickness of 8 inches using gravel or hog fuel / course wood chips. Graveled areas would also be appropriate for the bale stacking area and vehicle access roads.

The concept of multiple sacrifice areas could be a key management component for achieving desirable management objectives. The benefits of this sacrifice area include the fact that you will rest the pastures thereby increasing pasture production, improving pasture quality, you will reduce your risks of soil compaction, pugging and unhealthy muddy situations and the altering of forest cover and ecology.

Heavy use protection areas should be located such that water flow through the area is minimal, and should be located well away from drainages. The hill top location (Area 7) is a classic example of this in use as it is an isolated holding area with appropriate fence lines that allow for this and drainage is captured and filtered by grasslands that are intact and with proper grazing management retain the desired 3-4" minimum height.

FORAGE AND BIOMASS PLANTING (512) – variable acreage.

One of your pasture and forage harvest management goals is to increase pasture fertility and the variety of forage species available to your grazing animals or harvested mechanically from the forage fields. You can do this using frost seeding; direct planting of seed using a no-till drill, or seed and feed using animal hoof impact. Often, the results of Prescribed Grazing (MIG) are an increase in plant diversity and if legumes increase, a beneficial increase in nitrogen for related forage species to feed upon. This practice is most effective when integrated with MIG, and Nutrient Management.

WATERING FACILITY (614) – At least 2 portables, or permanent installations TBD.

A Watering Facility is a device (tank, trough, or other watertight container) for providing animal access to water. To make sure your animals have access to fresh, free choice water I suggest you use at least one tank, trough, or other watertight container in your seasonal grazing area. Lightweight portable troughs would work for each grazing paddock.

Size

The troughs or tanks should have adequate capacity to meet the water requirements of your animals. This should include the storage volume necessary to carry over between periods of replenishment.

Where water supplies are dependable and animals are checked daily, troughs with little water storage capacity may be used. Troughs or tanks must at least provide the daily requirement of the animals and provide access to the entire herd within a short period of time. During times of high forage moisture content (i.e. Spring and early Summer) water requirements are minimal if no dry feed is being fed as the animals will extract much of their water needs from the forage.

Location – Area 2 Pond

The site should be well drained; if not, drainage measures should be provided. Areas adjacent to the trough or tank that will be trampled by the animals should be graveled or otherwise treated to provide firm footing and reduce erosion. Design of the protective surface around the trough shall be in accordance with the Heavy Use Protection Area practice discussed above. With small rotational paddocks this trampling problem is reduced and eliminated as animals spend shorter periods of time in one cell before moving on to the next.

PUMP FACILITY (533) – Will allow the use of pond water for a stock watering system. This can be a low-flow solar unit. The current well and pump house may be adequate for water distribution but will require extensive installation of sub-surface poly pipe and tank valves. This is a decision that should be evaluated by farm staff and any expert opinion from the private sector.

PIPELINE (516) – A permanent installation for the pond in Area 2 with additional options for other management areas. Additional pipelines could also be installed to allow the movement of stock watering tanks within the grazing cells during MIG. Low cost $\frac{3}{4}$ " or 1" poly pipe laid along fence lines with quick connect valves that can be drained for the winter and /or buried lines for year round use would be appropriate depending upon need and seasonal use. A solar pumping station or mains power are both options. Buried lines for distribution would be based upon the sub-division paddock development locations.

LIVESTOCK SHELTER (576) – Livestock shelters have many potential applications in livestock management. They provide protection for livestock from excessive heat, wind, cold, or snow, protect surface waters from nutrient and pathogen loading, protect wooded areas from accelerated erosion and excessive nutrient deposition by providing alternative livestock shelter/shade location and can improve the distribution of grazing livestock to enhance wildlife habitat, reduce over-used areas, or correct other resource concerns resulting from improper livestock distribution.

The use of a permanent livestock shelter can be integrated with a covered feeding area, or mobile livestock shelters may be developed for use in rotational grazing or other Heavy Use Area developments. Our recommendation is that Livestock Shelters be considered for a covered feeding area for the dairy cows, a mobile unit for the beef cows and sheep. This practice can also be integrated into a HUA for hogs.

Complementary practices are HUA, Watering Facilities and Fencing.

HERBACEOUS WEED CONTROL (315) – Many of the areas under management have had long-term issues with noxious weeds. Weeds are an indicator of soil resource problems such as overgrazing and a lack of nutrient management (soil fertility). Weeds are opportunistic and fill a void where a weakness in the nutrient cycle is found. Over-grazing also adds to the problem by reducing or even killing over time, desirable species that livestock will eat.

In taking on many of the management scenarios mentioned above the weeds will become less of a problem. As soil disturbance is the biggest factor in new infestations due to the seed bank that has been laid down by existing weeds preventing soil disturbance would be of utmost importance. Cut and daub, actual herbicide spraying techniques would be important in this battle. It will take time and it is a generational problem. I encourage you to contact the SJC Noxious Weed Coordinators whom you have worked with before for more up to date control information. (376-3499, Judy or Jason).

SUMMARY & DECISIONS

A farm plan is a dynamic management tool. Implementing practices will take time, labor and of course, money. There is no expectation that anything will happen over-night and it is recommended that you chose the practice that will give you “the biggest bang for your buck” to start with. The management plan will be based on a set of practices that you decide to implement. These decisions are summarized on the attached Conservation Action Plan Record of Decisions. These sheets provide a detailed list of practices you could decide to complete and a general time frame in which you plan on using the practices. Once you have made conservation practice decisions, those decisions will form your conservation plan. A conservation plan is a dynamic management tool and should be updated periodically to reflect current management practices.

Once you have read this plan feel free to call me with questions, changes or to request additional help.

Sincerely,

Bruce Gregory,
Natural Resource Planners
San Juan Islands Conservation District