

Sustainability Internship Report and Recommendations
Green River Preserve
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Table of Contents

Introduction	3
Project Summary	3
Impact Assessment Results	3
Emissions	3
Waste	5
Water	5
Survey Results.....	6
Five-Year Tuition Projection	6
Sustainability Recommendations	7
Environmental.....	7
Water	8
Waste	9
Food	10
Energy	12
Social	13
General.....	14
Appendix	16

Introduction

The mission of Green River Preserve (GRP) is to inspire environmental stewards through a joyful connection to nature. Sustainability is at the heart of GRP's work with youth and there is a continuous need for the organization to lead by example, or "walk the sustainability talk". With the multitude of sustainable solutions and initiatives that can be built into GRP's business plan, knowing where to start and where to focus their time, money, and energy can be difficult. With a new initiative starting this year where GRP will set aside 1% of camp tuition to sustainability efforts, a plan needs to be set in place for where to put these allocated funds. The sustainability internship was created to meet this need.

The sustainability intern 2022, Kendall Pritsch, is an Impact MBA candidate at Colorado State University. This report will include Kendall's project summary, results from the impact assessment she conducted, responses from the sustainability survey sent out to stakeholders, a five-year tuition forecast she created, and her recommendations for the continuation of GRP's sustainability journey.

Project Summary

The sustainability project was split into three parts: an impact assessment, a financial projection, and a plan for recommendations.

The impact assessment included Scope 1 and 2 emissions along with a waste assessment and a water assessment. In addition, a survey was conducted to gauge the community's understanding of sustainability, where stakeholders feel GRP is at in their sustainability journey and to seek feedback from the community on potential sustainability projects in the future.

While assessing GRP's impacts, a five-year projection of funds coming in through camp tuition was created. This projection was utilized to develop recommendations for furthering GRP's sustainability efforts.

Impact Assessment Results

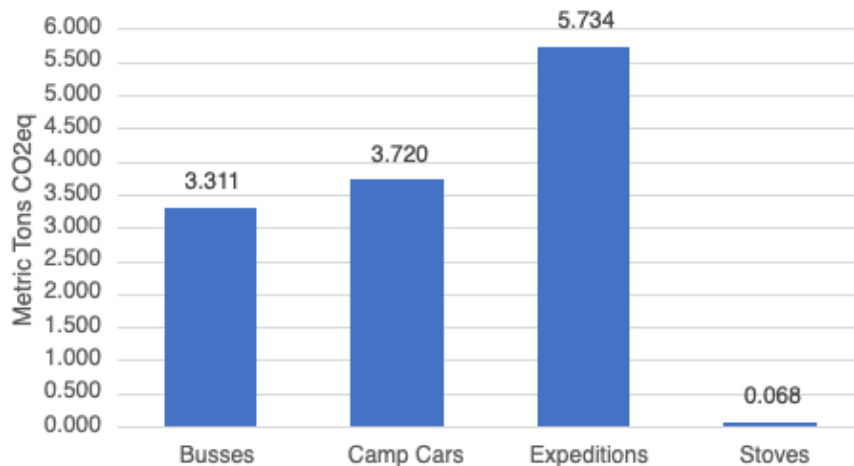
Emissions

Green River Preserve's Scope 1 emissions, or the direct emissions from fuel combustion, totaled 12.82 metric tons of CO2 equivalent. For comparison, one metric ton of CO2 equivalent is emitted by driving an average sedan from San Francisco to Atlanta (roughly 2,500 miles).

GRP's Scope 1 emissions were calculated from the camp buses, camp vehicles including those used for expeditions, and camp stoves. The total metric tons of CO2 equivalent emitted from these sources was calculated by multiplying the mass of fuel combusted by the CO2 emissions

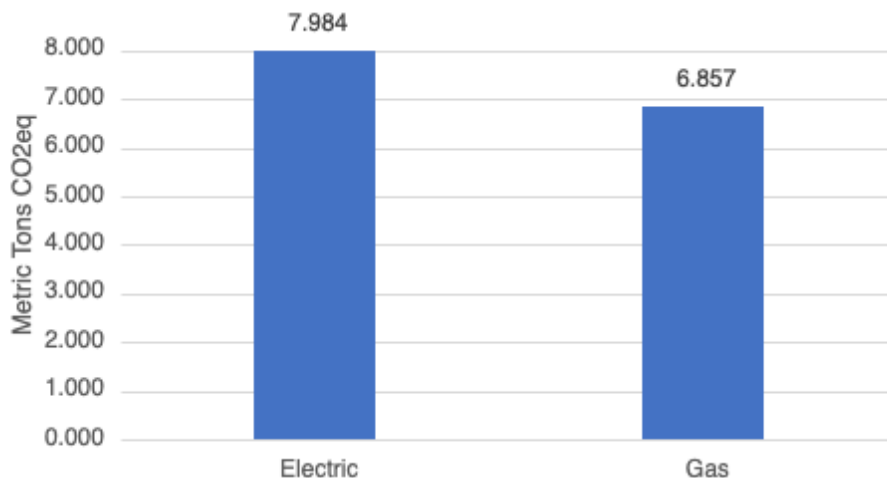
per unit mass. The emissions factor for each fuel type came from the U.S Energy Information Administration and mass of fuel combusted was calculated through an estimated miles driven divided by an estimated average MPG of the vehicle type. The breakdown of Scope 1 emissions by category is shown in *Figure 1* below.

Figure 1



The Scope 2 emissions, or purchased emissions, were calculated from the 2021 utility bills; they totaled 14.84 metric tons of CO2 equivalent. These emissions were calculated by taking the energy or gas consumption multiplied by the CO2 emissions factor associated with the specific consumption. The emissions factors came from Duke Energy and the U.S. Energy Information Administration. The Scope 2 emissions by category can be seen in *Figure 2* below.

Figure 2



Scope 3 emissions can be difficult to calculate because they include emissions from activities not owned by the company. Scope 3 emissions at Green River Preserve include emissions from

supplying the camp store, kitchen, office, and health hut as well as emissions from families traveling to camp. While all Scope 3 emissions were not calculated, the emissions from food orders were measured and found to be 3.78 metric tons of CO2 equivalent. This was calculated by taking the average miles driven, multiplied by the number of shipments, multiplied by average weight of the order and the CO2 emissions factor.

The Excel document, [GRP Impact Assessment](#), shows full details of how Scope 1, 2, and 3 emissions were calculated, what assumptions were made, and where data was taken from. This document can be used as a guide for tracking emissions in the future.

Waste

For seven days, the waste at Green River Preserve was collected, sorted, and weighed in accordance with the EPA Waste Audit Process. The numbers from this waste sort were used to estimate the amount of waste produced by Green River Preserve during the Spring, Summer, and Fall sessions. In the week that waste was collected, GRP composted over 150 pounds more food than they sent to the landfill. *Table 1* below outlines the estimated tons of waste produced annually and how they are managed.

Table 1

	TONS LANDFILLED	TONS COMPOSTED	TONS RECYCLED
CANS (FROM FOOD)			0.66
CANS (FROM BEVERAGE)			0.2
CARDBOARD	0.02	unknown	2.46
FOOD WASTE	3.57	4.96	
1 PETE	0.02		0.1
2 HDPE	0.01		0.1
4 LDPE	0.01		
5 PP	0.002		0.02
7 OTHER	0.01		
MIXED RECYCLE			0.33
GLASS	0.01		0.11
OFFICE PAPER	0.02		0.06
BROWN PAPER	0.01		0.01
MUNICIPAL SOLID WASTE	6.63		

Water

Green River Preserve's water impact is relatively low. Though the exact recharge rates of the aquifers utilized on property are unknown, the general groundwater trends in the region are not decreasing. Water is turned off on property during the wither months; this coupled with the assumption that trends on the preserve are comparable to those in the region would mean that Green River Preserve is not drawing water faster than it is recharging.

Survey Results

The sustainability survey released at the beginning of the season generated 28 responses. The survey consisted of yes/no, free response, and multiple-choice questions. Among the various yes/no questions asked about sustainability efforts already being implemented and their importance, 50% or more of people knew that these efforts are being made and why they mattered for sustainability. These include the use of LED lightbulbs and their effectiveness, buildings being built from timber harvested in the valley, and the fire lines on property. Results from these questions are shown in *Table 2* below.

Table 2

Question	Answered Yes
Did you know GRP uses majority LED lightbulbs?	50%
Do you know why LED lightbulbs are different than incandescent lightbulbs?	78.6%
Did you know the bus drivers ride their bikes between pick up locations as opposed to using a shuttle car?	64.3%
Did you know there are fire lines on GRP property to help control potential wildfires and allow controlled burns to use existing lines?	57.1%
Do you know why controlled burns are important?	100%
Did you know that most of the buildings on property are built from wood logged in the valley?	96.4%

All survey respondents showed a general understanding of sustainability, and many contributed ideas to future sustainability efforts. *Figure 3* and *Figure 4* below highlight the different areas that respondents recommended sustainability projects or changes. *Table 3* and *Table 4* in the appendix include all recommendations suggested through the survey.

Figure 3

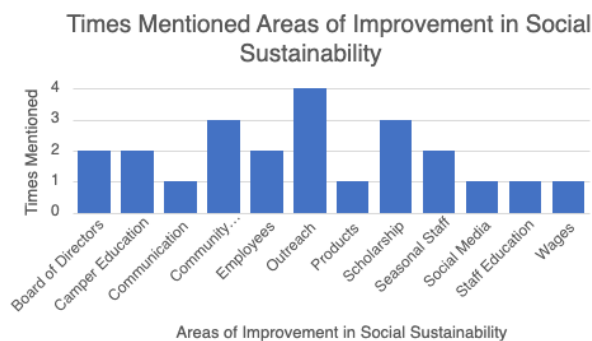
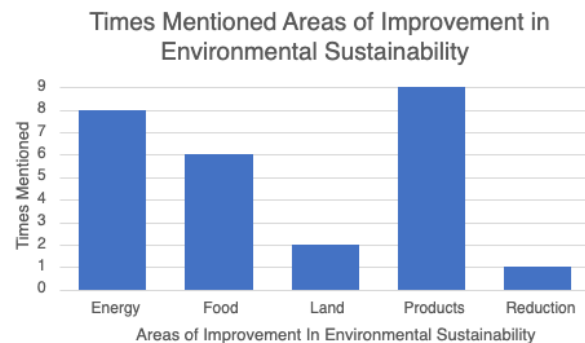


Figure 4



Five-Year Tuition Projection

Based on historical trends, a five-year projection of enrolment numbers and tuition costs was created. Green River Preserve has committed to setting aside 1% of funds that come from camp tuition for sustainability efforts starting in 2022.

Table 5 below shows the projected amount of money coming into Green River Preserve through camp tuition starting in 2023 to 2027. Over the next five years, it is projected that GRP will set aside over \$100,000 for sustainability efforts. The excel sheet, [GRP Tuition Forecast](#), outlines how projections were calculated and reasoning behind them.

Table 5

	23	24	25	26	27
TOTAL \$	\$ 2,178,507	\$ 2,121,864	\$ 2,247,756	\$ 2,223,061	\$ 2,274,408
1%	\$ 21,785.07	\$ 21,218.64	\$ 22,477.56	\$ 22,230.61	\$ 22,744.08

Sustainability Recommendations

Though many have impacts in multiple areas, recommendations have been divided into seven different categories: environmental, water, waste, food, energy, social, and general. They are rated on a scale of 1-3 based on time and financial investment. Recommendations with a 1 rating require a lower time and financial investment while recommendations with a 3 rating require a higher time and financial investment.

Environmental

Assess Conservation Easement 3: moderate-high time, moderate-high financial

Green River Preserve has taken many great steps already in their sustainability journey. The conservation easement enacted in 2006 is one of many actions GRP has taken to preserve the land.

For internal measurements and potential sustainability reports, an assessment of the conservation easement could quantify the positive environmental impact of the easement. This would include the impact on biodiversity, soil health, and carbon sequestration. Tom Fanslow of Conserving Carolina recommended starting with a conversation with Rob Lamb of Eco Foresters in Asheville. With a quantified amount of carbon being sequestered, GRP can make fully formed goals of carbon neutrality and/or carbon reductions and make informed investment decisions with future conservation efforts.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$2,000-\$3,000	Unknown	Emissions and ecosystem services	<ul style="list-style-type: none"> - Stakeholder awareness of what the conservation easement means in terms of sustainability - Internal knowledge for sustainability goal setting and future investments

1% for the Planet certification 2: low-moderate time, moderate financial

In 2020, less than 3% of philanthropic donations went to environmental causes. With a 1% for the Planet certification, Green River Preserve would commit to donating 1% of their gross sales through a combination of monetary, in-kind, and approved promotional support directly to environmental nonprofits that align with their values and mission. 1% for the Planet would help GRP build a relationship with nonprofit partners and certify donations. This certification can be displayed on GRP's website and signal to both internal and external stakeholders that the organization is committed financially to environmental efforts.

As a nonprofit organization, Green River Preserve's goals go beyond the bottom line. Investing in certifications like 1% for the profit means an annual commitment to investing in causes that align with the values of GRP. Learn more about 1% for the Planet on their [website](#), and start the process by filling out this [non-binding form](#) to get questions answered and work with someone from 1% for the Planet directly.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
1% of tuition – roughly \$20,000	N/A	Environmental	- Influential business to business relationships - Financial commitment to sustainability

Water

Rainwater Harvesting 3: moderate-high time, moderate-high financial

The climate at Green River Preserve is conducive to utilizing rainwater harvesting for both potable and non-potable water. Though rainwater harvesting will not save GRP money on water bills due to the two aquifers utilized on property, it will act as a reliable back-up source of water and assist in limiting groundwater depletion. [Rainwater Management Solutions](#) has tanks and pumps available for shipment. Price varies by tank size and material; 1300-gallon polyethylene tanks are priced at \$1726 not including freight.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$1,500-\$8,000+	N/A	Environmental impact through reducing ground water demand	- Backup water source - Fewer issues with cabin water operations

Aquifer Recharge Rate Assessment 3: moderate-high time, moderate financial

Assessing the recharge rate of the two aquifers utilized on property will give Green River Preserve a clearer understanding of their water usage and if it needs to be more heavily reduced or monitored. [Here](#) is a publication through USGS about groundwater monitoring and its importance.

Monitoring devices can be installed in the well to measure the recharge rate, not of the entire aquifer, but of the well itself. This is a great starting point for data gathering to better understand the water impact at GRP.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$300-\$700	N/A	Environmental impact	- Internal knowledge for goal setting and future investments

Waste

Reusable campout bags 1: low time, low financial

Because recycling and composting are very efficiently used at Green River Preserve, the focus on waste management should be on reduction strategies. A simple waste reduction strategy would be to purchase reusable, washable bags for campout snack pack out. Single-use plastic bags are cheap and convenient, but their production and end of life has damaging effects on the environment. These cotton, reusable drawstring [bags](#) come in a variety of sizes that can accommodate an array of snacks being packed in them. They are durable, made from organic cotton, are free of plastics, and can be washed between uses with standard washing machine settings. Not only will these bags reduce GRP's single use plastic bag usage by an estimated 800 bags per summer season, but they will also educate campers and staff through example on how to be environmental stewards in small ways.

170 bags would cover a full session of campers each having an individual snack bag (112), two counselors for each cabin side having an individual snack bag (32), each mentor going on campout having a snack bag (8), two staff snack bags per group (16), and 12 extras. The payback period for a switch like this is long due to just how cheap single use plastic is. However, waste reduction in a visible way is a long-lasting way to educate campers and staff.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$450 (170 bags)	16+ years	Waste reduction	- Aligning operations with values and the mission of inspiring environmental stewards

			- Visible to consumer actions and camper education moments
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Recycled/nature crafts 1: low-moderate time, low financial

Activities are a large source of waste during the summer season at Green River Preserve; the craft lodge being a large contributor. Reworking the crafts that are offered during activity periods can drastically reduce GRP's waste. Create crafts with the environment in mind. Making something with nature involved brings the joyful connection with nature into their everyday life when they are in art class at school or want to stretch their creative brain in a physical way. A book of collected craft ideas can be created for future craft lodge activity leaders. This can act as a reference point forevermore.

Crafts include making paper from used office paper. Papers from the office and old weekly schedules would be collected from counselors and sent to the craft lodge to make paper pulp. Campers would press their own pages and include flowers or other leaves to create a small notebook. A simpler craft option is repurposing used food cans and jugs to make vases. Campers would select their recycled vessel and decorate it with twigs and other items found outdoors to create a beautiful vase or jar. A simple google search can bring up a plethora of creative ideas for more crafts with minimal impact.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	Waste reduction	- Less financial investment in the craft lodge - Aligning operations with values and the mission of inspiring environmental stewards

Food

Locally Sourced Food 2: moderate-high time, low-moderate financial

With a continuously developing farm to table program, Green River Preserve is already thinking locally regarding food sourcing. Due to the season and the size of the farm operation, GRP still relies heavily on food orders to fill its needs. Through continuing and building relationships with local farmers, GRP could reduce the number of miles their produce, eggs, and even meat travels. This not only reduces the emissions associated with food, but also puts money back into the communities within which GRP operates.

Start by talking with farmers GRP is already connected with to assess potential orders for the next season. The Brevard and Hendersonville farmers' markets are also viable places to connect with local farmers. The Brevard Farmers' Market website has a list of [vendors](#) with their vendor websites. Talk with farmers before the planting season. Farm communities are typically well connected and if one farmer does not feel like they have the operation size to satisfy GRP's needs, they might have a connection with a farmer who does.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	<ul style="list-style-type: none"> - Emissions reduction - Social sustainability through supporting local business 	<ul style="list-style-type: none"> - Aligning operations with values and the mission of inspiring environmental stewards - Beneficial business to business relationships - Building camp brand awareness with local communities

33% Vegetarian meals 1: low-moderate time, low financial

Meat is the main source of food waste going to landfill at Green River Preserve, and one of the only food products that cannot be composted. Meat and imitation meats are also two of the highest priced items on food orders. Reducing the meat served to campers will drastically lower food waste and food associated emissions, as well as provide financial benefit by lowering food order costs.

33% of meals being vegetarian would mean that only one meal per day wouldn't include meat. Protein is an important part of any balanced diet, and protein-rich meals can be prepared without meat.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	<ul style="list-style-type: none"> - Emissions reduction 	<ul style="list-style-type: none"> - Aligning operations with values and the mission of inspiring environmental stewards - Visible to consumer actions and camper education moments

Energy

10% Solar Goal 3: moderate-high time, high financial

Scope 2 emissions are a large part of Green River Preserve's overall impact. Reducing dependence on fossil fuels will reduce overall emissions. Transitioning to 100% solar is an unrealistic goal. However, setting a goal to be operating with 10% of power coming from solar in the next 5 years is much more achievable.

Many companies in this region offer free solar project consultations. [Sundance Power Systems](#) and [Asheville Solar Company LLC](#) are two of many that could get Green River Preserve started on their solar journey. Since the lodge has been inspected and proven not to be acceptable for rooftop solar, ground solar installations are recommended.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$18,000-\$20,000+	15+ years	- Emissions reduction	- Self sufficiency - Reduced electric bills - Potential increase in property value

Solar Hot Water 3: moderate-high time, high financial

Another high-impact way to address Scope 2 management is through solar hot water. Passive solar hot water systems can be low-maintenance and drastically reduce the amount of energy it takes to heat water. The system would heat Green River Preserve's water before it reaches the on-demand water heaters so that the water heaters have to heat the water less before it is used.

Converting to solar hot water would contribute to a 10% solar goal. Depending on the scope of the project, estimated costs vary. The lodge is the recommended starting point for solar hot water followed by the health hut and mentor lodge. The payback period of the project would depend on project scope and hot water demand. [Sundance Power Systems](#) and [Asheville Solar Company LLC](#) also provide consultations and information on solar hot water.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
\$5,000+	Undetermined	- Emissions reduction	- Self sufficiency - Reduced electric bill

Monitor Emissions 1: low-moderate time, low financial

Monitoring emissions is one way Green River Preserve can continue to set goals and build reduction strategies. The Excel document, [GRP Impact Assessment](#), can be utilized as a template to continue to monitor Scope 1 and 2 emissions.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	- Emissions reductions	- Continuation of sustainability efforts - Assess historical trends in energy consumption - Build reduction strategies to lower costs

Social

Local Suppliers 2: moderate-high time, low-moderate financial

Amazon is cheap and convenient, but not a sustainable solution. As a business, Green River Preserve cannot control all the upstream happenings in their supply chain, however they can build local supplier relationships and source camp store, office, activity, and kitchen supplies more sustainably. Sourcing from local suppliers not only puts money back into the community that GRP is servicing, but also drastically reduces the emissions associated with packaging and shipping products.

[Greenville Office Supplies](#) is a place to start for local office suppliers. [Recover](#) is a sustainable wholesale clothing brand located in North Carolina that could be utilized to stock the camp store. In general, Green River Preserve should source and shop intentionally with sustainability in mind. Ask questions like: How is this product being made? What will happen to this product at the end of its life? Where is this product coming from and how many stops does it go through before it gets to us?

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	- Emissions reductions - Social impact	- Beneficial business to business relationships - Reliable shipments of supplies

Relationship Building with Indigenous Communities 2: high time, low financial

Community outreach and involvement were overwhelmingly the highest areas of interest in making improvements to Green River Preserves social sustainability. This year GRP invited Davy Arch to come and share stories, art, and teachings with the staff during staff training week. Inviting Davy Arch and other members of indigenous communities to share with staff and campers during sessions is a way for GRP to honor those who used to walk this land and teach campers and staff. Continued conversations with Davy and others who are in our network will allow GRP to grow and honor the communities who once lived on this land.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	Social impact	<ul style="list-style-type: none">- Transparency will increase trust and commitment to the organization- Further understanding of the land and its history- Educational opportunity for staff and campers- Continuation of more accurately representing the relationship between the land and the indigenous communities

General

Create a Sustainability Report and Plan 2: moderate-high time, low financial

By creating and publishing a sustainability report and plan annually, Green River Preserve can communicate the efforts that they have made, where their impacts are, and what goals and solutions they plan to implement to internal and external stakeholders. Creating a public facing plan will assist GRP in setting and completing goals in a meaningful and impactful manner. [Here](#) is a simple example of a sustainability report published by Camp Friedenswald out of Washington.

Things to include in a sustainability report and plan:

- Why this (sustainability) is important to the organization
- Annual Scope 1 and 2 emissions and historical reference
- Any calculated impact categories and historical reference
 - Ex: x% reduction in food waste since 2019
- Current sustainability efforts and the numbers associated
 - Food waste (composting vs landfill)
 - Conservation easement
 - Recycling bins

- Social commitments (scholarships, hiring methods, etc)
- etc.
- Goals
 - Financial, Social, and environmental
 - Future committed projects
 - Ex: Operating with 10% solar energy by 2027

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
N/A	N/A	- Impact reductions	- Transparency will increase trust and commitment to the organization

Sustainability Position 2: low-moderate time, moderate-high financial

Whether it is a continuation of a sustainability internship or a year-round position, Green River Preserve should have someone who is leading a sustainability position. Many projects require year-round commitment, and with someone leading sustainability efforts GRP will more easily meet and complete their goals. The sustainability position can be collaborative and should be a part of regular board and admin meetings as many employees at GRP are sustainably minded and new and great ideas are generated when many minds are involved.

Estimated Cost	Payback Period	Sustainability Impact	Other Business Impacts
Variable	N/A	- Continuation of sustainability development	- Aligning operations with values and the mission of inspiring environmental stewards - Focused development of setting and reaching goals

Appendix

Table 3: Sustainability survey responses

Give an example or two of how you think GRP can improve their environmental sustainability:
Could do an energy audit to see where improvement could be made
they're doing well!
Expanding farm operations to allow more GRP sourced food options
Solar power
Perhaps building composting toilets and using the sawdust waste for fertilization and mulch at the farm. On some of the paths thru forested areas the roots of trees have become exposed. This will eventually kill some trees. A work project to bring in soil and level up that paths again would help the trees and teach kids to respect their silent, air purifying neighbors.
Incorporate solar or alternative energy resources into programs and buildings.
Add solar ,wind, and water systems for energy production
GRP should consider improved composting options that do not result in landfilling food waste (including animal products and 'contaminated' foods. GRP can continue to reduce single-use plastic waste in its operations by revising purchasing and practices. GRP can assess purchasing in general, including limiting physical commercial production gifts and unsustainable gear. GRP could likely use solar water heating (boys' shower house is close to back field). GRP can start to plan for a solar based energy generation. GRP should prepare to have the energy infrastructure (incoming voltage, charging stations, for electric vehicles, most boldly ultimately electric buses). GRP should actively engage with the land management plan of SFC and be an advocate for the greater environmental region and land management area including DuPont State Recreational Forest and SC lands.
Biodegradable trash bags?
Sourcing local materials: buying program supplies from local vendors instead of Walmart/Sam's club/Amazon, sourcing local produce and meat and decreasing volume of single-use plastics in our food systems, etc.
Biodegradable things? Lol and less ORT
More organic food and products, more food produced from the farm or local sources
Transition away from natural gas (used in kitchens and some heating).
Invest in an industrial compost facility to successfully compost eggs/meat/dairy.
More locally sourced goods, less plastic use/more environmental friendly bags
While solar panels are a little unsightly I, they make a great way to harness power to heat water as opposed to natural gas.
Packaging- especially for food (COVID sucks, we used to be better)
Short showers and not making them mandatory (but encouraging a few each week!)
No buses for GLPs unless absolutely necessary
Reduce disposable packaging--but this is really tough with health codes
Meatless Mondays/ Substitute (Sustainable) Sundays? Collect Rain Water. Make a system for less serving tray/plate food waste. Look into renewables such as solar.

Table 4: Sustainability survey responses

Give an example or two of how you think GRP can improve their social sustainability:
doing well
More directly addressing the concerns of employees
Positive impact on campers by learning about the importance of protecting wildlife, trees, and clean rivers.
Doing pretty well. It might be necessary to meet the questions around race and immigration head on. I would start be talking to campers and see what they have to offer. Find out what they need.
Increase outreach and access to people and families who cannot afford to attend summer camp. Create programs that still focus on GRP's mission and can reach those who cannot come to summer camp due to time, money, or other reasons.

A healthy community promotes diversity and environmental stewardship
GRP should leverage scholarships to include underrepresented participants, including individuals, schools, and staff. GRP should grow the KALE outreach program. GRP should continue to strengthen educational and training models for campers and staff to build life-long social and human capital. GRP should strengthen virtual outreach to extend the reach of GRP's mission work (through education, community building, etc). GRP should leverage its alumni network to strengthen its mission impact.
Connection to local communities that are responsive to the lives experiences of their intersectional identities, meaningful DEI initiatives that address root causes of inequity in WNC and in the camp/outdoor industries, offer livable wages, health insurance/retirement, and opportunities for advancement for seasonal staff, collaborative involvement from alumni on boards and committees to shape future of organization, a board of directors that is selected based on commitment to the org values not just friends/family of the Izard's/Schenck's, transparency in program decision making and financial stability.
Invite local native communities into land?
Scholarships for potential Native American staff & campers
Increase representation within the board of directors. Continue with audits like this!
More locally sourced products
I think GRP is doing great here! Continue to do the work that allows people from all walks of life to have a seat at the table on conversations like these, as well as be a part of the incredible community that exists there!
Scholarships!
Promoting it on social media and amongst the staff and campers