



Sea Pines Resort

Hilton Head Island, SC
Host RBC Heritage
Golf Tournament

Tony Wartko
twartko@seapines.com

- 6 restaurants
- 3 Golf Courses
- 4 star 60 Room Hotel
- Manage 425 Homes and Villas
- 12,000 sf of Meeting Space
- Retail shops and pier



Who We are:

- 5 miles of beaches, 21 tennis courts, 14 miles of bike/walking trails, horseback riding, Eco-Adventures, water sports, a 605-acre Forest Preserve with wildflowers, wetlands, 130 species of birds.
- First Eco-planned destination in the U.S., The Sea Pines Resort has become the blueprint for beach developments around the country.

RECYCLING HARVESTING PHILOSOPHY

- Prefer to process and add as much value and avoid comingling commodities.
 - Source separate into containers:
 - 1) Plastic/Aluminum
 - 2) Glass
 - 3) Food
 - 4) Cardboard
 - 5) Trash
- Plastic is sorted at restaurant location service yard to identify contamination immediately.
- Prefer to link selling price of the commodity to a manufactured product, possibly make one.



2018 Waste Stream Harvesting

- Define the commodities.
- Show the Process.
- Identify some costs. 130 ton compaction with environmental, taxes, rental, in our area.
- Detail Partnerships



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2018 Recycling Feedstock Stream

Sea Pines Resort 2018

Recycled Waste measured in lbs / tons

Week of	SS	CB	Glass	CFL	Metal	Paper	Batt/Ewaste	Oysters	Coffee	Food waste	Grease	Pallets	Landscape Debris	Recycled Waste Tons
Jan Total Tons	5.81	4.41	3.191			1.04	0.122	0.047	0.24	2.7112	0.615	0.0336	6.48	24.7
Feb Total Tons	5.58	4.12	4.95			1.16	0.0093	0.34	0.482	2.92	1.23	0.0861	6.48	27.4
Mar Total Tons	6.3	10.77	5.632			1.164	0.095	0.299	0.327	4.87	0.614		6.48	36.6
Apr Total Tons	16.01	21.138	9.83		1.71	0.632	0.1445	0.395	0.45	6.6176	0.82	0.882	6.48	65.1
May Total Tons	17.49	12	5.32		1.5	0.34	0.044	0.33	0.56	9.155	0.61	1.596	6.48	55.4
Jun Total Tons	14.07	8.443	5.509		1.48	0.259	0.0485	0.546	0.64	8.22		3.132	6.48	48.8
Jul Total Tons	14.08	12	6.71		0.92	0.22	0.0725	0.912	0.993	9.24	1.435	3.132	6.48	56.2
Aug Total Tons	13.08	12.18	4.7			0.21	0.0945	0.347	0.665	6.41	0.41	2.436	6.48	47.0
Sept Total Tons	8.55	7.103	4.11		1.24	0.28	0.0575	0.374	0.318	3.84		1.781	6.48	34.1
Oct Total Tons	13.059	9.2	8.932			0.682	0.0485	0.741	0.409	8.97	0.205	2.835	6.48	51.6
Nov Total Tons	6.52	5.15	4.04			0.35	0.076	0.5	0.385	4.64		3.192	6.48	31.3
Dec Total Tons	5.59	4.61	2.96		2.17	0.42	0.0475	0.289	0.044	2.567		1.596	6.48	26.8
Year End Tons	126.139	111.124	65.884	0	9.02	6.757	0.8598	5.12	5.513	70.1608	5.939	20.7017	77.76	505.0

Cardboard 111 ton Glass 65 ton

“Single Stream” (Plastic/Aluminum) ” 126 ton

Food (70 T), coffee (5 T), oysters (5 T) Total = 80+ ton

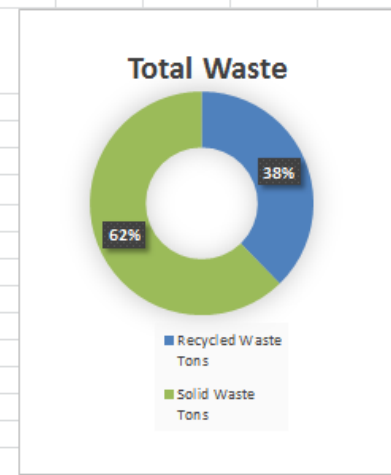
38 % Recycled 505 ton

2018 Harvesting Stream managed

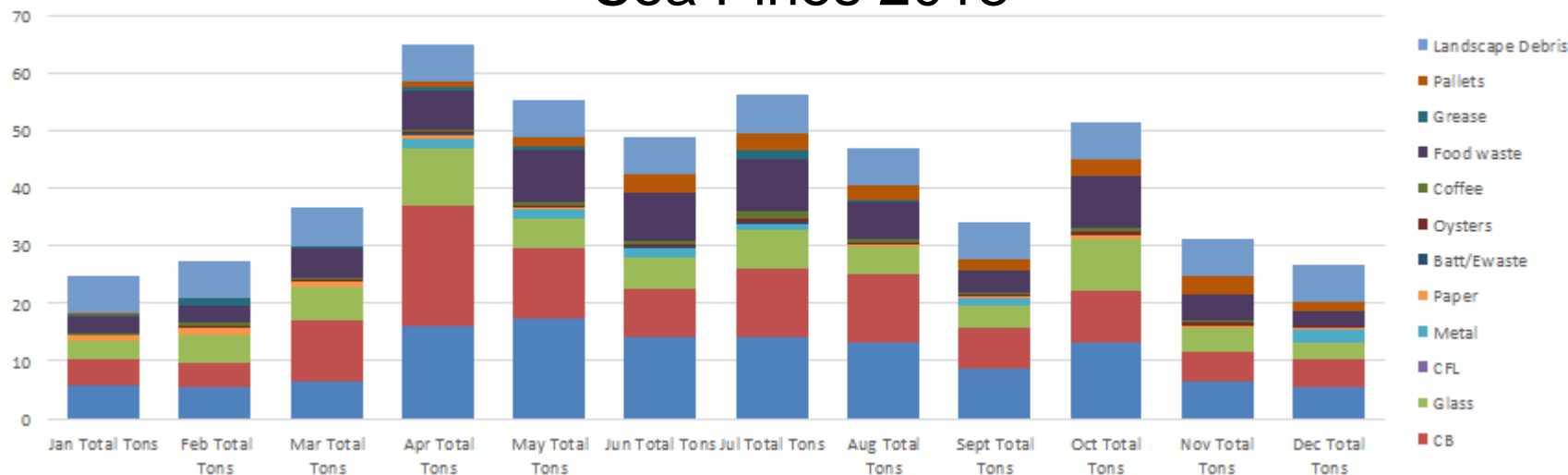
by:



Solid Waste in Tons		
Solid Waste Tons	Total Overall Tons	Percent Recycled
41.41	66.1	37%
55.35	82.7	33%
55.32	91.9	40%
54.22	119.3	55%
79.59	135.0	41%
112.8	161.6	30%
136.66	192.9	29%
115.86	162.9	29%
59.7	93.8	36%
45.67	97.2	53%
38.54	69.9	45%
38.54	65.3	41%
833.66	1338.6	38%



Sea Pines 2018



2017 Recycling Stream

2017	SS	CB	Glass	CFL	Metal	Paper	Coffee	Food waste	Grease	Pallets	Landscape Debris	Recycled Waste t	Solid Waste in t	Total Waste in t	% Recycled
January	13.1	4.9	5.5	-	0.1	1.8	0.3	5.5	0.6	0.0	6.5	38.7	24.3	63.0	61.4%
February	11.2	8.8	8.3	-	0.1	1.7	0.5	5.4	1.2	0.1	6.5	44.0	43.2	87.2	50.4%
March	19.3	11.9	14.5	-	0.7	2.4	0.7	4.9	0.6	0.0	6.5	62.2	71.7	133.9	46.4%
April	22.3	22.3	22.7	-	0.1	2.4	0.9	6.8	0.8	0.9	6.5	86.8	85.3	172.1	50.5%
May	19.1	13.0	18.5	-	0.1	2.2	0.2	5.4	0.6	1.6	6.5	69.0	30.4	99.4	69.4%
June	18.3	12.0	13.7	-	0.0	0.9	0.6	3.7	0.0	3.1	6.5	59.3	89.9	149.1	39.7%
July	22.2	11.0	16.9	-	0.0	0.5	0.5	4.8	1.4	3.1	6.5	68.2	120.2	188.4	36.2%
August	22.2	15.3	11.9	-	0.0	1.5	0.8	5.5	0.4	2.4	6.5	67.3	49.9	117.2	57.5%
September	12.4	10.8	13.1	-	1.1	0.1	0.6	1.5		1.8	6.5	47.8	92.7	140.5	34.0%
October	13.8	14.9	15.6	-	0.0	1.1	0.5	3.3	0.2	2.8	6.5	59.4	45.7	105.1	56.5%
November	12.9	10.9	11.7	-	1.5	0.1	0.6	4.3	0.0	3.2	6.5	52.4	38.6	91.0	57.6%
December	12.3	6.9	7.9	0.0	1.1	1.5	0.2	4.4	0.0	1.6	6.5	42.6	38.5	81.2	52.5%
Total	199.1	142.7	160.2	0.0	4.7	16.1	6.4	55.4	5.9	20.7	77.8	697.8	730.3	1428.1	48.9%
% share of recycled	28.5%	20.4%	23.0%	0.0%	0.7%	2.3%	0.9%	7.9%	0.9%	3.0%	11.1%	100.0%			
% share of total waste	13.9%	10.0%	11.2%	0.0%	0.3%	1.1%	0.4%	3.9%	0.4%	1.4%	5.4%		51.1%	100.0%	

“Single Stream” 199 tons

Cardboard 140 tons

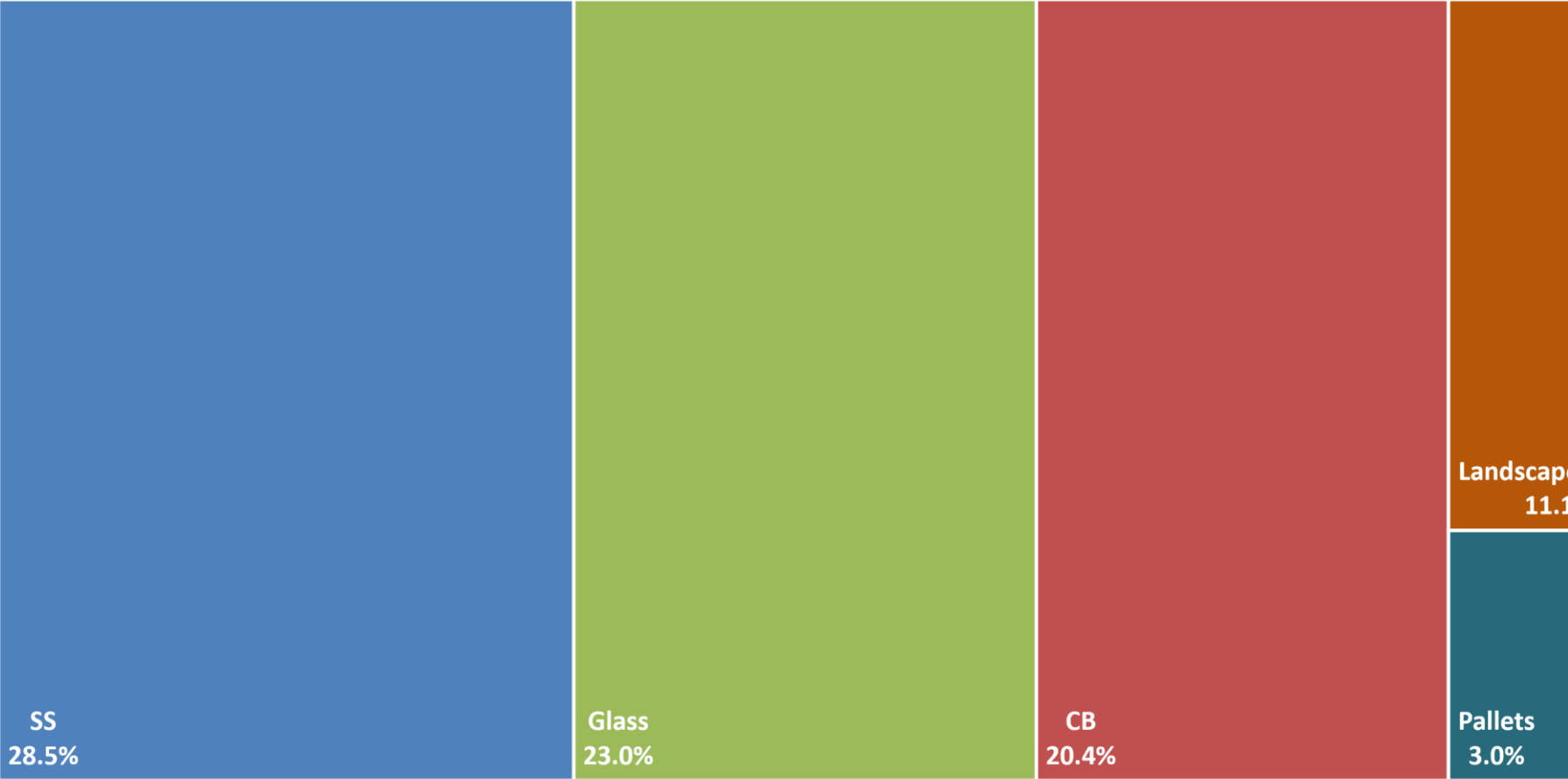
Glass 160 tons

48.9 % Recycled 697 tons

Food (55 T), coffee (6.4), oysters (8.08 tons) 65+ tons

	SS	CB	Glass	CFL	Metal	Paper	Batt/ Ewaste	Oysters	Coffee	Food waste	Grease	Pallets	Landscape Debris	Recycled Waste in t	Solid Waste in t	Total Waste in t	% Recycled
2016	246.04	108.51	129.89		21.04	22.81	2.67	6.13	8.49	56.89	0.00	6.71	0.00	609.17	771.15	1380.32	44.1%
YoY % change	-16.8% ▼	-5.6% ▼			75.3% ▲		33.3% ▲	-16.6% ▼	65.7% ▲	98.4% ▲				30.7% ▲	-7.2% ▼	6.4% ▲	22.8% ▲
% of total recycled	40.4%	17.8%	21.3%		3.5%	3.7%	0.4%	1.0%	1.4%	9.3%	0.0%	1.1%	0.0%	100.0%			
2017	199.08	142.67	160.19		4.72	16.08	0.86	8.08	6.36	55.36	5.94	20.70	77.76	697.80	730.32	1428.11	48.9%
YoY % change	-19.1% ▼	31.5% ▲	23.3% ▲		-77.6% ▼	-29.5% ▼	-67.7% ▼	31.9% ▲	-25.1% ▼	-2.7% ▼		208.5% ▲		14.5% ▲	-5.3% ▼	3.5% ▲	10.7% ▲
% of total recycled	28.5%	20.4%	23.0%		0.7%	2.3%	0.1%	1.2%	0.9%	7.9%	0.9%	3.0%	11.1%	100.0%			

2017 % share of all recycled



Harvesting Glass (65 ton)

- Glass (wine, liquor, and beer bottles) from 6 restaurants
- Cost Avoidance $65 \text{ t} \times \$130/\text{t} = \$8,450$ per year.
- Currently pay \$3,660/ year for 65 t = \$56/t processed into counter tops in Yamasee, SC.
- Art work, tiles



- Crushed glass is being tested to use as base for walkways etc.



Harvesting Food Waste (80 ton)

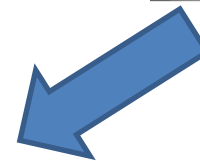
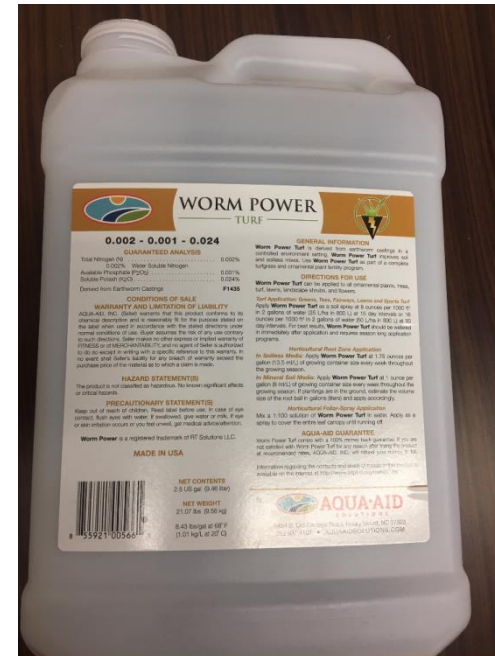
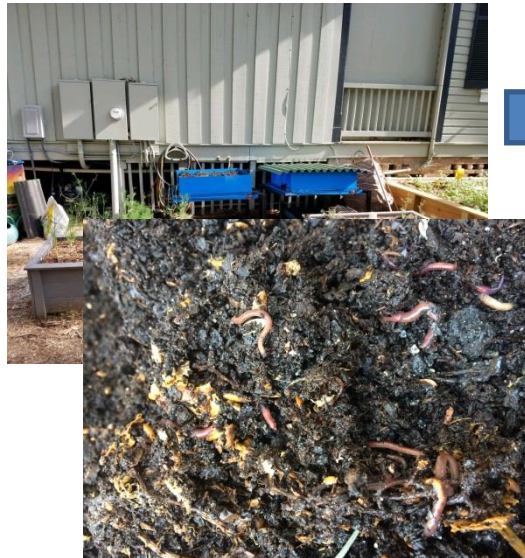
- Minimize use
 - Herb garden and towers
- Vermi-culture and worm tea (\$26/gal)
- Compost
- Dehydrator



Aeroponics and Hydroponics

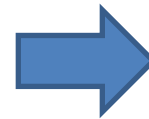


Pre-consumer Vegetative Waste is Processed through Vermi-culture



Worm castings are valuable for soil enhancement. Worm juice supplied by a vendor is used on the golf course. We hope to produce our own in 2018.

Pre-consumer Vegetative Waste is Composted and Used in Herb Garden



Oyster Recycling and Seeding



Kitchen staff places post consumer oysters in buckets and they are delivered to DNR collection site



Oysters are bagged and planted by S.C.O.R.E. to assist in shore line protection



From one shell to cluster in 6 months.

- COSTS –cost to have oyster picked up - \$1,200/year to transport 12,280 lbs.
- BENEFIT – Oysters clean 2.5 gallons of water per hour, creates fish habitat and protects the shoreline.

Pre-consumer Food Waste

- Large volume of catering waste
- Dehydrator removes 90% of water



Harvesting Fiber, Cardboard and Paper (117 ton)



- Cardboard is baled and sold.
- Waste Cost avoidance of \$130/ton (.06/lb) = \$15k/year
- Revenue of \$75/ton (.05/lb) = \$ 8k/year
- Material Handling Cost = \$5.2 k/year
 - 66% is service charge for pickup and storing.
- We can only store 2 to 3 bales in our 6 service yards so unable to store in bulk.
- Equipment Costs 4 balers @ 200 = \$800/month = \$9,600 per year. Revenue \$17,800-9,600=\$8,200.

Commodity Revenue and Cost Avoidance

- Metal

9 tons = x .05 \$4,200/yr

- It costs us costs \$100/monthBased on mixed load price

- Pallets 20 tons (42 lbs each) = hauling costs of \$1,502

- Open top holds 2 to 3 tons

X \$142 per trip for 60 pallets 1.5= \$480/yr

Mtl	Price-frt	% of total	Total
#1	0.05	0.17	4,183
#2	0.1	0.1	4,921
Al	0.41	0.08	16,140
			25,244



Commodity Revenue

- Cardboard Recycling

142 tons = \$14,200/yr

- Paper (Mixed)

22.81 tons = \$1,642/yr

- Aluminum, # 1 and #2 Plastics

246.04 tons = \$25,243/yr



- Metal

21.04 tons = \$4,200/yr

- Based on mixed load price

- Pallets 6.71 tons/42 lbs each = 320

X 1.5= \$480/yr

Mtl	Price-frm	% of total	Total
#1	0.05	0.17	4,183
#2	0.1	0.1	4,921
Al	0.41	0.08	16,140
			25,244



Harvesting Plastic #1 and #2

- Plastic is sorted and soon shredded on site reducing hauling costs and adding value.
- We have partnered with a company who is producing
- These kits for fundraisers, teaching composting gardening.



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Water Reuse and Compost Garden

- 5 Ton HVAC unit produces approximately 2 gallons of water per hour which is captured in rain barrel



- Water is piped to pump powered by solar panel which irrigates herb and flower garden

- Pump, solar panel, battery pack/inverter



- COSTS - Pump, solar panel, battery pack/inverter costs approximately \$1,300.
- BENEFIT - free water for fresh flowers and herbs.

Divert from Dumpster

- In 2011 a 30-yard open top dumpster was pulled 2 to 3 times per week in Maintenance Yard. Now, once every two weeks.



Each pull is \$400 to \$500 each. A lot of material is recovered by staff who up cycle.

Container Totals

- We had 9 8-yard containers.



Now 3 8-yard containers (all recycling).



We had 2 30 yard compactors



Now 2 30 yard compactor



We had 1 30 yard container.



Now 1 30 yard container.



GLASS PROCESSING – 130 tons/year



Draft Plan-THEORY



Merger. Made with sand or graphite molds.



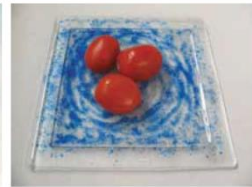
Seals. Made with small graphite molds.



Injection glass. Made with manual injection machine.



Press. Made with metal mold plan.



Bottles ground into sand



Other Issues and To Do List

- Soap reprocessing with Clean the World, left over soap from hotel is reprocessed and sent to third world countries.
- Zero Waste at the Welcome Center
- Bee Habitat – nuisance bee hives are relocated.
- Cultural Sustainability/Staffing Sustainability
- If you have any questions feel free to contact me on 843 422 5990 or at twartko@seapines.com



Capture 40 gallons of condensate water then use solar panel and pump to irrigate garden.

Heritage Golf Tournament

- GEO Sustainable Event Award

RBC Heritage Earns Distinction of GEO Certified® Tournament

To minimize the impact the RBC Heritage Presented by Boeing has on the environment, The Sea Pines Resort stepped up its game this year, reducing the amount of trash generated during the week-long event by almost 30 percent.

This comes on the heels of the 2017 Heritage earning the distinction of GEO Certified® Tournament for its sustainability practices. It is one of the first PGA TOUR events in the world to achieve the distinction, golf's new mark of sustainability.

"We took additional measures this year to get to 30 percent," said Sea Pines Director of Facilities Services Tony Wartko. "We haven't compiled the figures yet, but I'm confident we made it."

Last year, the tournament's recycling efforts diverted 18.8 tons of waste from the landfill, including:

5.47 tons of cardboard,

2.39 tons of glass,

1.88 tons of carpet

1.02 tons of pallets.

A total of 20 percent of all materials were recycled or composted.



- Carpet & Construction Debris
- Plastic bottles
- Furniture, Appliances etc.
- Batteries (small and large), electronics
- If systems are in place it is easier to scale and delegate to trusted vendors.



Valuable Space Gained by Eliminating Dumpsters



A Back of the House to match the Front of the House



Sea Pines Beach Club Service Yard

- Valuable Real Estate for deliveries etc.

- No dumpsters
- No flies
- No rodents
- No smell
- Access for deliveries
- Clean area for staging



<Before

^
After

Welcome Center is Zero Waste

- All Styrofoam, food waste, dirty tissue put in trash cans in break room and restrooms.
- Office cans changed to recycling no trash bags.
- Saved 60 to 70 trash bags 3 times per week.

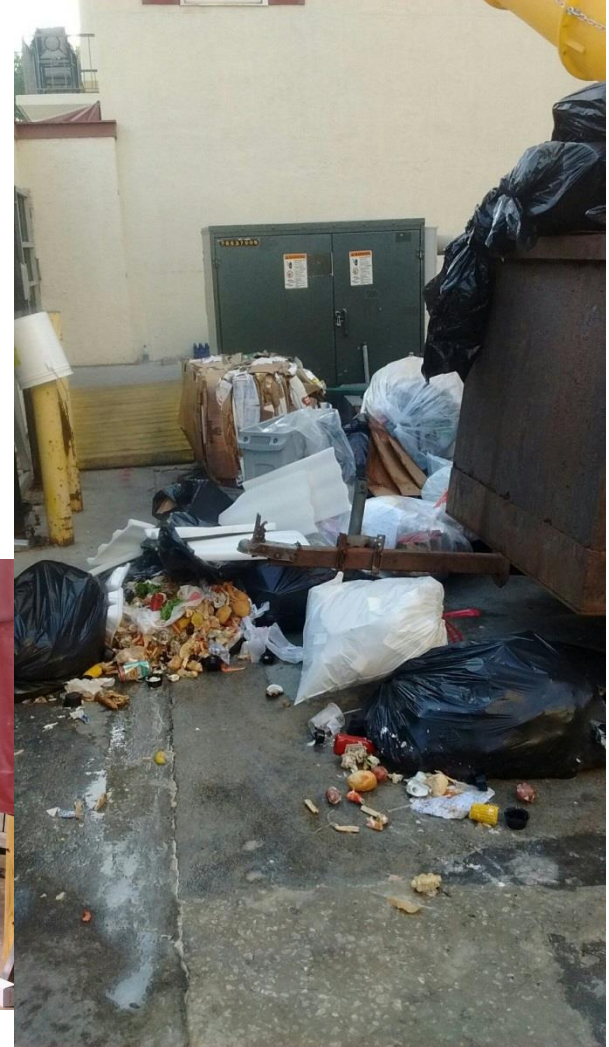


Systems to Handle Material

- Metal
 - Appliances
 - Filing cabinets
 - Furniture
- Construction Debris
- Carpets
- Plastic bottles
- Furniture
- Batteries (small and large), electronics
- If systems are in place it is easier to scale and delegate to trusted vendors.
- Animal carcasses



And sometimes it needs refining.



Harvester at Sea Pines Center



Community commodity harvester totaled 2.13 tons of Paper/Cardboard = saving 36 trees
7 + Tons of glass, plastic, aluminum between January 2015 and April 2015. The plastic bottles are used by factories in South Carolina to produce plastic liners and the cardboard is processed into new cardboard. Currently these factories cannot get enough plastic bottles from South Carolina, so must import plastic bottles and cardboard from other states to keep their manufacturing processes operating. The Harvester is placed in a shopping center parking lot twice per week.

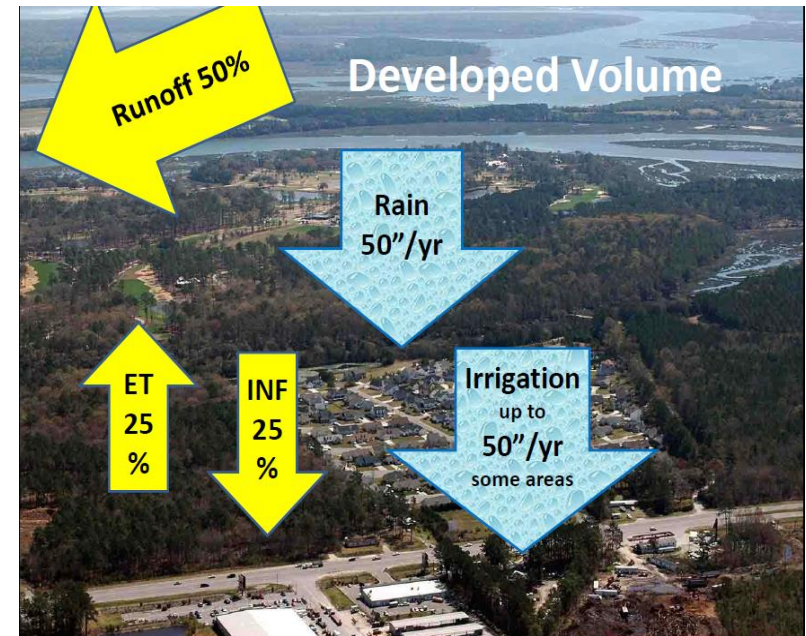
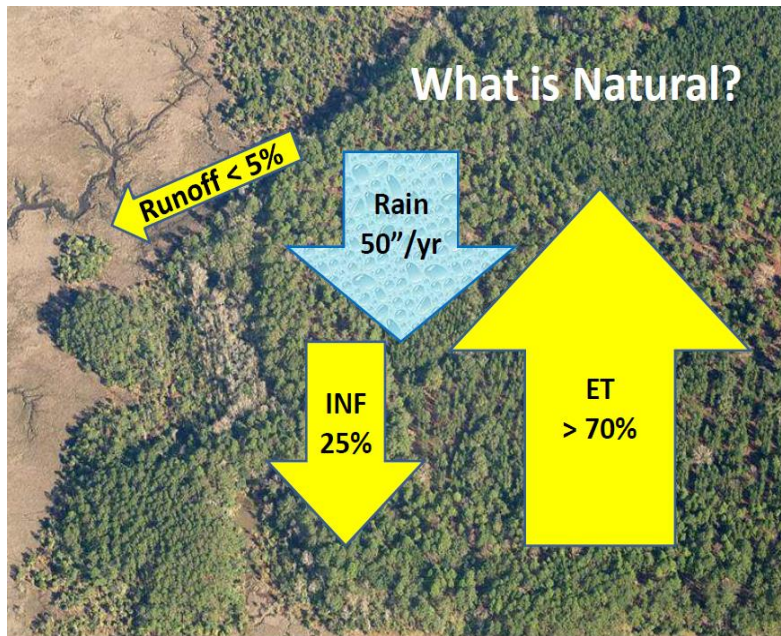
EXAMPLES of SUSTAINABILITY PRACTICES at SEA PINES

- Herb garden is irrigated with condensate from air conditioner (5 – ton AC unit produces 2 gallons of water per hour) via a solar panel and pump.
- Golf Courses use 100% recycled water and are Audubon and GEO (Golf Environmental Organization) Certified. Worm tea used on Atlantic Dunes greens to improve root development.
- Active local food sourcing program.
- Electricity and water are being monitored for reduction.

Examples of Sea Pines Resort Sustainability Practices

- Processes for Various Waste Streams
 - Unused bar soap from hotel is sent to Clean the World where it is reprocessed sent to third world countries donated to impoverished communities to improve sanitary conditions.
 - Tennis balls are recycled.
 - 20 tons – Pallets are recycled.
 - 6 tons – Fryer oil is sold to company and processed into biodiesel.

Rain Equation from Allen Ward





Biofiltration areas in parking lots remove pollutants left by vehicles and reduce necessary storm water infrastructure

Bio-retention areas handle larger quantities of water and reduce required storage





Thank You



Tony Wartko twartko@seapines.com
843 422 5990