

Solid Waste Management on North Captiva

January 2009

Background

The North Captiva Community requested that Lee County review aspects of solid waste generation and management on North Captiva. The Community is interested in options that will provide an environmentally sound and economically reasonable solid waste management system to serve the Community.

Executive Summary

The Lee County Solid Waste Division has reviewed and documented existing solid waste management practices used by full-time and part-time residents and businesses of North Captiva. The review included information gathered from businesses and residents that are knowledgeable of solid waste generation, transportation and the general handling of materials on North Captiva. We found no significant variability between the amount of solid waste generated during the winter season compared to the summer. The overall system for handling solid waste appears to function well although improvements could be made related to volume reduction and sanitation maintenance (i.e. areas that are used for temporary storage of solid waste could be cleaned-up more frequently).

The several solid waste handling and disposal systems that are used work well but could be improved with additional time and equipment allotted to volume reduction. We believe that such activities would improve the economics of the system(s).

Current systems require active participation by the individual generators to ensure proper and consistent service. Some community members have expressed an opinion that County management may provide more consistent service with less direct involvement from the residents. County involvement could provide a central point for airing complaints and resolving problems. Additionally, it has been expressed that County management of a more uniform system may provide a more economic basis of scale.

Included with this report is "Exhibit A" that shows several scenarios that the County has structured. Estimated costs are shown and compare the impacts of more active operating services.

I. Generation

1. Summer Residential and Commercial (May – October)
 - a. Known summer municipal solid waste (MSW) Volume (From Waste Pro 2008 Billing Reports).
NCIC – includes Mango's, Grocery, Restaurant, Offices, and 92 residential

Dwellings - ----- 758 CY (loose)
 Safety Harbor – includes Firehouse, Restaurant and 104 Residential Dwellings ---
 ----- 20 CY (ash)
 Barnacle Phil’s ----- 79 CY
 Islander Realty (12 Residential Dwellings) 60 CY

Total Known Summer Volume = 917 Cubic Yards

b. Estimated summer MSW Volume without incineration, (assume NCIC known volume as representative and reduce by 79 CY commercial, i.e., same as B. Phils) – $(758-79)/92 = 7.4$ CY/ Res. Unit.

NCIC ----- 758 CY (loose)
 Safety Harbor (104X7.4) ----- 770 CY
 Barnacle Phil’s ----- 79 CY
 Islander Realty ----- 60 CY
 Dwellings with no service (94 x 7.4) ----- 695 CY

Total Estimated Summer Volume = 2,362 Cubic Yards/6 Mos.

2. Winter Residential and Commercial (November – April)

a. Known winter MSW volume (From Waste Pro 2007/08 Billing Reports)
 NCIC – includes Mango’s, Grocery, Restaurant, Offices, and 92 Residential Dwellings ----- 552 CY (loose)
 Safety Harbor – includes Firehouse, Restaurant, and 104 Residential Dwellings --
 ----- 16 CY (ash).
 Barnacle Phil’s ----- 102 CY
 Islander Realty ----- 48 CY

Total Known Winter Volume = 718 Cubic Yards

b. Estimated winter MSW volume (assume NCIC known volume as representative and reduce by 102 CY commercial, i.e., same as B. Phils) – $(552-102)/92 = 4.9$ CY/Res. Unit.

NCIC ----- 552 CY (loose)
 Safety Harbor (104X4.9) ----- 510 CY
 Barnacle Phil’s ----- 102 CY
 Islander Realty ----- 48 CY
 Dwellings with no service (94 x 4.9) -- 460 CY

Total Estimated Winter Volume = 1,672 Cubic Yards/6 Mos.

Total Annual Estimated Volume Garbage = 4,034 CY/Yr.

3. Construction and Demolition (C&D)

- a. C&D boxes are made with 4'x 8' plywood sheeting ($4' \times 8' \times 4' / 27 = 4.7$ CY). These boxes generally contain construction materials, furniture, empty paint cans, broken golf carts and misc. metal.
 - b. NCIC – 75 boxes/year or 352 cubic yards.
 - c. Safety Harbor – 24 boxes/year or 113 cubic yards.
 - d. Residents also occasionally hire contractors, primarily Loggerhead Barge or Barnacle Bay Transport, to remove C&D, but quantity is unknown.
4. Horticulture and Special Waste
- a. Horticulture - Based on observations of stockpiled horticulture on State land, Safety Harbor, and NCIC it is estimated that 3,750 cubic yards are generated annually.
 - b. Special Waste - Identified wastes include white goods, bulky goods, lead acid batteries, paint, and, to a lesser extent, motor oil.
 - White Goods - NCIC and Safety Harbor collect and remove about 50 appliance items annually via barge. These appliances usually go to All Scrap Recycling on Pine Island.
 - ii. Bulky Goods - NCIC and Safety Harbor collect and remove in C&D boxes.
 - iii. Lead Acid Batteries - NCIC and Safety Harbor remove about 300 batteries each annually. Batteries are taken to All Scrap Recycling on Pine Island.
 - iv. Paint - Most paint is used up, but some unused paint may go in C&D boxes.
 - v. Motor Oil - All motorized equipment using oil is serviced by contractors that take used oil off the island after servicing.

II. Current Solid Waste Handling and Storage Practices

- 1. Residential (Full and Part Time Residents including Rentals)
 - a. NCIC Properties - MSW - NCIC provides garbage collection services two times per week for approximately 92 residential dwellings. Collection normally occurs on Monday's and Friday's using one NCIC employee with a golf cart pulling a trailer. A route sheet is carried, but the employee normally knows which

members are on the Island generating trash and only stops at other routed residences if he is unsure. Residents place trash in two lined 40 gallon cans enclosed raccoon proof, plastic or wood boxes. The employee pulls the bags from the cans, replaces bags when necessary and repairs the enclosure boxes as needed. When the trailer is full, the employee brings trash to a fenced area of about 1,500 sq. ft. on the NCIC property and places the garbage bags in eight (8) - six (6) cubic yard aluminum dumpsters. The trash is compacted in the dumpsters by means of a forklift to a ratio of about 1.6:1. Barnacle Bay Transport (Ray Holmes) transports the filled and compacted dumpsters to the Island's barge landing for transport to the Pine Island Commercial Marina, usually on Thursday's.

Yard Waste - NCIC takes a chipper to members' residences where landscaping is being done and spreads the mulch on site. Excess mulch is brought back to another NCIC gated area for later use. Large logs and stumps are often buried.

b. Safety Harbor - MSW - Safety Harbor provides garbage collection service either weekly or monthly to approximately 104 residential dwellings. Collection normally occurs on Tuesday's using one or more employee with golf carts pulling trailers. The employees have route sheets that are accurate, as members are required to check in at office when they are on the Island. Safety Harbor has an incinerator capable of burning 600 pounds per hour located in the maintenance yard. An employee begins bringing the unit up to temperature on Tuesday morning and the collection employees begin burning the trash when they bring it back to the yard. The burning process is complicated by a small feed door opening making it difficult to put in bags or material greater than 2' in diameter. If material gets jammed in the opening, a metal ram is used to push the material into the furnace. Exploding aerosol cans become a safety hazard due to metal and other material being discharged from the furnace opening. Additionally, if the door is open for too long, the excess air causes opacity from the stack and complaints from the neighbors. The garbage burning process continues until all of the garbage is burned. The process may take as much as three days, depending on the amount of trash. Ash from the unit is shoveled out and into a 4 cubic yard dumpster after it has cooled, usually two days later. Barnacle Bay Transport brings the ash dumpster to the Pine Island Commercial Marina when it is full.

c. Island Realty - This real estate agency supplies a single six (6) cubic yard container for 12 residential dwellings. The dumpster is located within an enclosure located on the corner of Point House Trail and Seair Lane. Residents subscribing to this service bring their trash to the Container. Barnacle Bay Barge takes the container to the Pine Island Commercial Marina (PICM) when full. There is no horticulture collection or disposal provided with this service, however, it is presumed that some bags of horticulture are placed in the container.

e. Other Residential MSW and Yard Waste - There are approximately 106 residential dwellings on North Captiva that do not subscribe to any collection

service. It is assumed that many of these residents take trash back to the mainland when they leave, but there is considerable evidence that trash is also being placed in existing containers on the Island. There is also evidence of illegal dumping of yard waste throughout the Island.

2. Business (Commercial) Waste

a. Barnacle Phil's - Employees of the restaurant and upstairs office put trash in two - six (6) cubic yard containers located behind the restaurant or on the Barnacle Bay Transport site owned by the Kinsey family. Barnacle Bay Transport transports the containers to PICM, normally every two weeks.

b. NCIC - There is an office, pool bar, grocery, Mango's and a restaurant generating commercial trash. There is no separation of this trash from the residential trash. All trash is placed in eight (6) six cubic yard containers that are compacted by fork lift and transported to PICM, normally once per week.

c. Safety Harbor - Commercial trash at the Safety Harbor complex consists of a small amount at the sales office, waste generated by the privately owned Dockside Restaurant, and the Fire Station. There is no separation of this trash from the residential trash. The residential collection employee picks up the office trash at the start of his route. The Restaurant and Fire Station employees bring their trash to the maintenance yard for incineration.

3. Recycling – Barnacle Phil's pays for a 6 CY container for fiber and two 64 gallon totes for comingled recyclables. The 6 CY container and the totes are serviced infrequently.

4. C&D – Materials in this category generally consist of construction materials, furniture, empty paint cans, broken golf carts, and misc. metals. Most of the C&D, contained in plywood boxes, is removed by Barnacle Bay Transport and Loggerhead Barge. Most of the metal is separated and recycled at All Scrap recycling on Pine Island. Remaining material is brought to Charlotte County for disposal. Barnacle Bay Transport also has several 15 CY roll-off containers that are leased to property owners for C&D removal.

5. Special Waste – White Goods, metal bulky goods, and lead acid batteries are removed by Barnacle Bay Transport and Loggerhead Barge and recycled at All Scrap Recycling on Pine Island.

6. On-Island Existing Property Use/ Locations for Solid Waste Management

a. NCIC - Dumpsters are located in a fenced area of about 1,500 sq. ft. (30'x 50') just west of the tennis courts on Rum Road. Across the road is another fenced area of approximately 6,000 sq. ft. (100'x 60') used for stockpiling yard waste,

construction materials and other items including the fork lift and chipper.

b. Safety Harbor - The incinerator and ash dumpster is located in a fenced maintenance yard of approximately 15,000 sq. ft (200'x 75'). The maintenance yard also has a shop and parking for trailers and golf carts. Just to the east of the maintenance yard is a fenced area of about 12,000 sq. ft.(150'x 80') used for storage of yard waste and a chipper.

c. Islander Realty - Gary Walker has a 144 sq. ft. (12'x 12') enclosure for his 6 CY container located at the corner of Point House Trail and Seair Lane.

d. Loggerhead Barge Co. - Peter Jeffers owns a lot at 4441 Point House Trail (14,000 sq. ft. with a dock).

e. Barnacle Bay Transport - The Kinsey family owns two lots behind Barnacle Phil's Restaurant on Point House Trail. Ray Holmes leases one of the lots (7,000 sq. ft.) for storage and his barge and construction operation.

f. State Park Property - An area of about 25,000 sq. ft. contains(ed) stockpiled yard waste awaiting a controlled burn. The State has agreed to allow a burn since a large portion of the debris originated on State property during Hurricane Charlie.

III. Current Practices Cost Review

1. Residential

a. Collection /Handling / Storage

- i. NCIC - Garbage collection fees are \$600.00 per year for being on the collection route and \$14.00 /can/collection. Normally residents have two cans, but these are only serviced when members/renters are staying in the units. There may be additional charges if the garbage is scattered and clean-up is required. There is a \$75.00 charge for collection of white goods and other bulky items.
- ii. Safety Harbor - Members of Safety Harbor that own a lot or a home ("A" or "C" members) pay an annual maintenance fee of \$4,200.00 for dock space, use of the tennis courts and pool, and garbage collection service. Collection service consists of removal of bags from two cans within a wood or plastic enclosure and replacement of the bags. There is a charge for collection of bulky items and white goods (\$50.00 per item average) and an unknown charge for collection of excess garbage.
- iii. Island Realty - Gary Walker provides a 6 (six) cubic yard container for

11 to 12 properties. Subscribers pay \$100.00 per month and must bring their trash to the container.

b. Water Transport

- i. Barnacle Bay Transport - Ray Holmes charges \$175.00 per 6 cubic yard container to barge trash from his yard to the Pine Island Commercial Marina (PICM). Included services consist of movement of the full containers from the storage locations to the barge and back and movement of the containers at the PICM. NCIC, Island Realty and Barnacle Phil's use this service for garbage. Safety Harbor uses this service for Removal of ash from the incinerator. C&D from NCIC is removed for \$175.00 per container 4.7 CY). (Note: The above fees do not include mainland haul/disposal charges). Ray Holmes also has several 15 CY roll-off boxes that are rented to individuals doing cleanup work at a rate of \$1000.00 per pull (including disposal?).
- ii. Loggerhead Barge Co. - Peter Jeffers charges \$350.00 per container (4.7 CY) to transport construction materials (including disposal?).

c. Transport/Disposal (Mainland)

- i. NCIC – Waste Pro, the franchised hauler for Pine Island, provides collection service for garbage at the PICM when the Barnacle Bay barge arrives. The containers are marked NCIC and are counted prior to dumping in the collection vehicle. NCIC is billed monthly, based on the number of containers that are dumped during the month. Current rates are \$23.34 per pull and \$25.17 disposal for each six (6) cubic yard container. Annual mainland garbage collection and disposal charges are approximately \$5,100.00 for 92 dwelling units and 4 commercial locations. (Containers are compacted at a ratio of about 1.6:1)

C&D material is brought over in the plywood construction boxes and hauled by Barnacle Bay Transport to the Charlotte County Landfill for \$76.00/ ton. Metal and white goods are hauled by Barnacle Bay Transport to All Scrap Recycling on Pine Island for scrap value.

- ii. Safety Harbor - Waste Pro, the franchised hauler for Pine Island, provides garbage collection service at the PICM when the Barnacle Bay barge arrives. The container marked Safety Harbor is counted prior to dumping in the collection vehicle. Safety Harbor is billed monthly based on the number of containers dumped during the month. Current rates are \$20.67 per pull and \$16.78 disposal for each four (4) cubic yard container. Annual mainland collection and disposal charges for Safety Harbor's ash is approximately \$1,348.20 for 104 dwelling units and two commercial locations.

C&D is brought over in plywood boxes and hauled by Loggerhead Barge Co. to the Charlotte County Landfill at a rate of \$76.00 per ton.

Metal and white goods are hauled by Loggerhead Barge Co. to All Scrap Recycling on Pine Island for scrap value.

- iii. Islander Realty - Waste Pro, the franchised hauler for Pine Island, provides collection service for garbage at the PICM when the Barnacle Bay barge arrives. The containers are marked Island Realty and are counted prior to dumping in the collection vehicle. Island Realty is billed monthly, based on the number of containers that are dumped during the month. Current rates are \$23.34 per pull and \$25.17 disposal for each six (6) cubic yard container. Annual mainland garbage collection and disposal charges are approximately \$873.18 for 12 dwelling units.

Information on Potential Alternative or Additional Technologies/Equipment

Garbage or MSW

For the activity of collecting and transporting garbage on Upper Captiva, the Solid Waste Division believes that the current system is sufficient and preferred. We investigated the utilization of a medium duty packer-type truck that could be used for the collection of both residential and commercial garbage. This type of vehicle would have to be gasoline or diesel powered in order to operate the packer (compaction) system. We could find no all-electric type vehicle capable of handling this type of service. A medium duty packer truck would carry 5 to 10 CY of compacted garbage, equivalent to 15 to 30 CY of loose garbage and could be transported on a barge. Such a truck would likely be intrusive from a noise perspective to the normal Island tranquility. It would also be difficult to maneuver such a truck on many of the Island roadways and would require significant 'backing' operations (a backup alarm would be required). We would not recommend a packer truck at this time.

We believe that the storing of garbage, as currently practiced, can be reasonably improved. Utilization of the standard 6 CY containers appears to be appropriate for regular solid waste (garbage) on the Island. However, the containers should be fabricated using a more durable design. A custom design would likely be required and should include reinforcement ribbing, a heavier lid, and the ability to stack the containers two-high. To economize on water transport, use of one or more, on-Island, vertical compaction units would be recommended. Electric power would have to be available for the compacting unit(s).

Horticulture

The Solid Waste Division (roughly) estimates that the volume of horticulture material generated on the Island is approximately equal to the residential garbage volume or about 3,750 CY per year. To the extent possible, for economic reasons, this material should stay on the Island. The recent opportunity for a controlled burn of this material is certainly the most logical and economic system for disposal. It would be quite practical to perform this operation 2 or 3 times per year. However, our discussions on this subject with State Park officials indicated that they would not be favorable to such an operation on a regular basis.

Chipping the horticulture and using it as mulch, as is often practiced on the Island, is recommended. Mixing excess loose horticulture with garbage and transporting off-island is feasible but will increase the over-all solid waste management cost. A more economical system might include chipping all horticulture, use half the volume of resulting mulch on-Island, and transporting excess mulch off-Island with reduced volume (from loose horticulture).

Recycling

Residential and Commercial recycling will reduce solid waste disposal cost but not the larger 'handling' costs. We do not believe that the Island, in general, produces enough suitable paper and cardboard materials to make recycling of these items practical. However, it is likely that recycling of containers (glass, metal, and plastic) would be appropriate particularly if such items are compacted prior to the water transport. We believe that if a compaction and handling system was provided for garbage, it could also be used for this purpose. If a central site/location is established for solid waste compaction then it could also allow for the individual generators to drop-off such recyclable containers at the central site. Further review and investigation is required to determine the cost-effectiveness and practicality of recycling containers. Glass bottles may prove to be particularly problematic.

Exhibit A

Estimated Cost for Uniform, County Administered, Residential Solid Waste Management System For North Captiva Island

Assumptions / Estimates:

Residential Units 302

Residential Garbage Generation - 3672 CY per Yr (612 Six-Yd Cans)

Residential Horticulture Generation - 3750 CY per Yr (Say the same 612 Six-Yd Cans)

Note: The following scenario costs range from \$1450 to \$1880 per residential unit per year. Also see notes below last table.

Scenario 1: Haul all materials from Island; Conventional system, loose

Items/Activities	Assumptions	Cost per Resi. Unit per Yr.
Collection Cost Garbage 2x/Wk, Hort. 1x/Wk	302 Res. Units	\$900 / Yr
Water Transport, Garb	At \$175 / Container	\$355
Mainland Haul/Dispose, Garb	At \$48.50 / Container	\$98
Water Transport, Hort	At \$175 / Container	\$355
Mainland Haul/Dispose, Hort	At \$36 / Container	\$73

Operations Site	At \$\$6,000 / Yr	\$20
Water Access Opers. Site	At \$30,000 / Yr	\$100
Total	See Notes	\$1800 to \$1880 / Yr

Scenario 2: Reduce Hort. Removed From Island. Mulch 100%, Remove 50% Of Mulch

Items/Activities	Assumptions	Cost per Resi. Unit per Yr.
Collection Cost Garbage 2x/Wk, Hort. 1x/Wk	302 Res. Units	\$900 / Yr
Water Transport, Garb	At \$175 / Container	\$355
Mainland Haul/Dispose, Garb	At \$48.50 / Container	\$98
Mulch Hort	3750 CY	\$135
Water Transport, Mulch	At \$175 / Can x 102 Cans	\$60
Mainland Haul/Dispose, Mulch	At \$36 / Container x 102	\$12
Operations Site	At \$\$6,000 / Yr	\$20
Water Access Opers. Site	At \$30,000 / Yr	\$100
Total	See Notes	\$1580 to \$1660 / Yr

Scenario 3: Senario 2 and Compact Garbage by 2:1 Ratio

Items/Activities	Assumptions	Cost per Resi. Unit per Yr.
Collection Cost Garbage 2x/Wk, Hort. 1x/Wk	302 Res. Units	\$900 / Yr
Operate Compactor	3672 CY	\$45
Water Transport, Garb	At \$175 / Container	\$180
Mainland Haul/Dispose, Garb	At \$98 / Container	\$98
Mulch Hort	3750 CY	\$135
Water Transport, Mulch	At \$175 / Can x 102 Cans	\$60
Mainland Haul/Dispose, Mulch	At \$36 / Container x 102	\$12

Operations Site	At \$\$6,000 / Yr	\$20
Water Access Opers. Site	At \$30,000 / Yr	\$100
Total	See Notes	\$1450 to \$1530 / Yr

Scenario 4: Compact Garbage 2:1. Remove all Hort. Loose

Items/Activities	Assumptions	Cost per Resi. Unit per Yr.
Collection Cost Garbage 2x/Wk, Hort. 1x/Wk	302 Res. Units	\$900 / Yr
Operate Compactor	3672 CY	\$45
Water Transport, Garb	At \$175 / Container	\$180
Mainland Haul/Dispose, Garb	At \$98 / Container	\$98
Water Transport, Hort	At \$175 / Container	\$355
Mainland Haul/Dispose, Hort	At \$36 / Container	\$73
Operations Site	At \$\$6,000 / Yr	\$20
Water Access Opers. Site	At \$30,000 / Yr	\$100
Total	See Notes	\$1670 to \$1750 / Yr

Notes: Does not include capital costs except allowance for land rental.
Does not include white goods, bulky goods
House collection cost is not a competitive bid. Bidding is likely to reduce indicated cost.
Does not include commercial participation. Requiring comm. properties to participate in certain services such as site, compaction, fork-lift, chipper may marginally reduce costs.
Does not include existing residential SW Assessment of approx. \$20 per unit/Yr.
All costs in 2009 dollars.

Potential Capital Cost Items (may be part of costs included above e.g. collection

vehicles):

Golf cart/wagon x 2, vertical compactor, dumpster cans, chipper, fork lift, electric service, water service.

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