Subwatershed: NARATH
Site Name: DOLPHIN COVE / SECRET HARBOR ESTATES

Description of Existing Conditions:

New development projects need to ensure full compliance with ESE and other local regulations.
Given location of STEMW, consider requiring stormwater facility to provide WQ treatment for 1.25" of runoff.

Additional Notes and/or Sketch Information:
Subwatershed: NAZALET BAY

Site Name: SECRET HARBOR BEACH RESORT

Description of Existing Conditions:

Potential for a number of bioretention to be installed to treat parking lot runoff (north end of upper lot and new maths building).

Low priority

Additional Notes and/or Sketch Information:
Subwatershed: COURT

Site Name: ANCHORAGE C8-1

Description of Existing Conditions:

Drainage above yacht club/Anchorage come down as cause flooding by the boat house at yacht club. Drainage was created to divert onto Anchorage property northwest of tennis courts.

- Consider creating small constructed wetland or shallow bio in gravity area at Anchorage and formalize drainage from yacht club to be diverted into the retrofit.

Good location for watershed signage.

Additional Notes and/or Sketch Information:
Description of Proposed Project:

- Eliminate culvert from Yacht Club leading to Anchorage.
- Runoff should be managed on each individual property.
- Consider a bio-swale type system on Yacht Club lot on north side of existing concrete wall. Vegetation removal and replacement will be required. Boat storage will have to be relocated slightly north.
- Install a bioretention area or constructed wetland type system on Anchorage property to manage and treat their site runoff prior to discharge at beach.
- Install a second constructed wetland system south of tennis courts on Anchorage site to treat runoff from the southern half of the property.

Additional Notes and/or Sketch Information:

Site Priority:  □ Love it  □ Has Potential  □ Not Likely  □ Enforcement Needed
Subwatershed: **COWPERS BAY**

Site Name: **Yacht Club CB-2**

Description of Existing Conditions:

Water comes down from condo parking lot and from road. Saturates tennis court and area to shed. Once well was constructed, the water could no longer drain.

There used to be a salt pond in grassed area adjacent to tennis courts at anchorage.

Yacht club installed drain pipe, but it gets blocked by anchorage. French drain system in discharge on beach.

Yacht Club pumps water into anchorage, which then is pumped uphill.

Additional Notes and/or Sketch Information:
Subwatershed: **Cowper Bay**

Site Name: **Cowper West (CB-3)**

Description of Existing Conditions:

Manager mentioned no issues with drainage.

High density condo area, no units.

Parking lots are used for some residential vehicle maintenance.

Drain inlets and pipes appear to discharge primarily to "rock channels" on side of property.

Some rooms in parking lot islands to demo a rain garden or porous pavers in parking spills; however this is a low priority.

Additional Notes and/or Sketch Information:
Subwatershed: **COMPET**

Site Name: **ELYSIAN (CB-4)**

Description of Existing Conditions:

- The east edge of Elysian accepts runoff from Compert East down storm concrete channel.
- Ligated CB at tennis courts, lower lot drains to curb cut and outlet pipe near restaurant entrance.
- Upper lot drains to 32" CMP on western property line and discharges at beach. (Some photos show open pipe). Drainage crosses into Compert West.

*Retrofit options exist at (A) western loop of parking area where boat trailers are stored; (B) parking lot island near restaurant/tennis court; (C) at curb cut area near restaurant could expand and include sediment box.

Additional Notes and/or Sketch Information:

- Highly visible location for signage, part since discharge pipes are right on the beach.
Subwatershed: Cowpet Bay
Site Name: Cowpet Bay East (CB-5)

Description of Existing Conditions:

- Contact: Alan LaPlace
- WWTP (package) services all loads
  - discharges approx. 10 ypm (or 14,400 gal/day)
  - Ro facility produces ~20 gpm of pretreated water
  - Drinking water stored in cisterns
    - 12 rainwater kept on site (20% of on-site and all treated with chlorine = 9 cisterns total)
    - Used for irrigation and toilet flushing
- Beach nourishment (sand) added once per year
  - About 200 tons requested annually
  - Comes from TNT? (Company from Bermuda)
- All runoff flows downhill to Elysian Beach East
  - And is discharged at main outfall near Elysian Restaurant
- WWTP across road from Ritz plant. Same location as Elysian WWTP.

Additional Notes and/or Sketch Information:
Description of Proposed Project:

- Construct a bio retention area to treat runoff from easternmost parking lot.
- Install a curb cut or diversion structure to redirect runoff from parking lot into bio area.
- Currently a trench drain directs flows away from proposed bio.
- Possible opportunities for pavement removal at easternmost parking lot.

Additional Notes and/or Sketch Information:

- Proposed Bio Retention Area.
- Terrain may be necessary due to gradient.
- Proposed diversion structure.
- Driving Lane.
- Ex. Trench Drain.
- Parking.
- Carpet Bay East.

Site Priority:  □ Love it  □ Has Potential  □ Not Likely  □ Enforcement Needed
Subwatershed: Great Bay

Site Name: Ritz Carlton

Description of Existing Conditions:

Contacts: Mr. Kuhler (GM), Dave Gebre (Dir of Eng)
Lester Nichols (Asst. Eng), Dudley (Manager of Mkt)

- Ritz is a RIUte Play resort
- Treated RO water is used for toilet flushing
- Reef water is not used - flow overland to wetlands
- Restaurant often floods out when wetland overtops
- Nearly every year -
- Beach erosion is also an issue when pond overtops - no ev. pond outlet

Engineers were previously discussing adding an outlet to the wetland to stop overtopping
- They are concerned that beach erosion may result
- If an outlet (pipe) is installed on the beach

Additional Notes and/or Sketch Information:

Dudley x 8500 - Ritz Main # - Manager Wtr/WT Facilities

140,000 gpd capacity - peak season ~ 90%
RO plant - chlorines to 500 ppm conductivity
Two storage cisterns for RO water

Effluent chlorinated and used strictly for irrigation
Irrigation not supplemented

- 2 ponds/wetlands receive all rain / flow yearly (overtop)
- Wetland runs both hotel and condo
Description of Proposed Project:

- Consider bio-retention area installations in the upper parking lot island.
- Islands will need to be converted from raised beds to depressions.
- Significant tree and vegetation removal would be necessary for bio installations.
- Install culvert at southeast parking lot corner/driveway location to prevent pavement deterioration.
- Existing wetland removed - see side description memo.

Additional Notes and/or Sketch Information:

Site Priority:  □ Love it  □ Has Potential  □ Not Likely  □ Enforcement Needed
Site Description
The Ritz-Carlton Resort is located in the Great Bay subwatershed. It lies on an approximate 15 acre beach-front lot. The primary resort facilities such as the lobby, guest rooms, and beach-front restaurant are centrally located around an interior wetland. The majority of the runoff from the immediate surrounding area discharges into this wetland. Ritz-Carlton employees have reported that during large storm events, or about 1-2 times per year, the capacity of the wetland to manage stormwater is exceeded. When this occurs, the wetland overtops and floods the downgradient restaurant. Field investigations suggest that the wetland lacks a primary outlet structure or pipe. Therefore, when the approximate 3-4 feet of storage is exceeded, water spills over the wetland embankment and flows onto and underneath a nearby footpath. Since the restaurant is below the footpath, runoff can easily flow into it.

The northeastern portion of the resort has a small detention pond/constructed wetland and a few Stormceptor systems, which collect parking lot runoff and discharge to Muller Bay (outside the watershed).

Proposed Concepts
Ritz-Carlton managers were receptive to possible retrofits that would help to reduce the number of instances the restaurant was flooded and consequently closed. To solve this problem, an outlet structure could be installed within the wetland to manage most storm events. Discharges would then flow through an outlet pipe adjacent to the restaurant and ultimately discharge on the beach. Utilizing an outlet structure over a culvert helps to reduce susceptibility to clogging. In addition to this retrofit, opportunities for flow reduction to the wetland should be considered. Options may include up-gradient recharge, attenuation, and/or rainwater harvesting.

Practice Sizing/Design Considerations
The wetland outlet structure should be sized to accommodate flows for up to the 25-year recurrence interval storm event. The total drainage area to the site is approximately 10.5 acres with 35% impervious surface. The wetland currently offers about 5,000 cubic feet of volume for attenuation. A primary design consideration for this project is where to locate the proposed outfall. It will have to be placed in a location that is effective for drainage and will not contribute to beach erosion. Resort managers are also likely to want it placed in a hidden location, away from beach goers.

Next steps
- Complete a topographic survey of the area. Determine if there are any site utility conflicts;
- Contact property owner to gauge project interest, discuss potential funding, and provide input on the design;
- Map existing resource area boundaries and buffers; and
- Check maintenance status of existing BMPs on site to ensure that they are functioning properly and not impacting existing wetlands.
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Drainage Area (ac)</th>
<th>% Impervious</th>
<th>Design Storm (yrs)</th>
<th>Practice Volume Required (sf)*</th>
<th>Practice Volume Available (cf)*</th>
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<td>35</td>
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<td>4,900</td>
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</table>

*Design Treatment Volume: \( T_v (\text{cf}) = (1.25'')(I)/12; I = \text{impervious area (sf)} \)

*Practice Area Required is calculated based on practice-specific design assumptions.

*Practice Area Available is estimated from available mapping. Actual practice area may be adjusted as needed during pre-construction.
GM Kuhler
- Blue Flag Resort
- Cisterns
- 110,000 gpd hotel/condo
- Irrigation
- RO plant
- Potable use/toilets
FIELD ASSESSMENT NOTES

Subwatershed: GREAT BAY

Site Name: CABRITA PT. SALT POND

Description of Existing Conditions:

Called out in DPW Wetlands Conservation plan – one of last remaining salt ponds that hasn’t been impacted.

1. Investigate land acquisition options
2. Apply WQ criteria for new dev.
3. Enforce additional buffer reg.

Additional Notes and/or Sketch Information: