FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☒ Other _____

Subwatershed: NAZARETH

Site Name: DOLPHIN COVE / SECRET HARBOR ESTATES

Description of Existing Conditions: NZ-1 NZ-2

New development projects here need to ensure full compliance w ESC and other dev. regulations.

Given location at STEER, consider requiring stormwater facilities to provide WQ treatment for 1.25" of runoff.

Additional Notes and/or Sketch Information:

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FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: NAZARETH BAY

Site Name: SECRET HARBOR RESORT

NZ-3

Description of Existing Conditions:

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

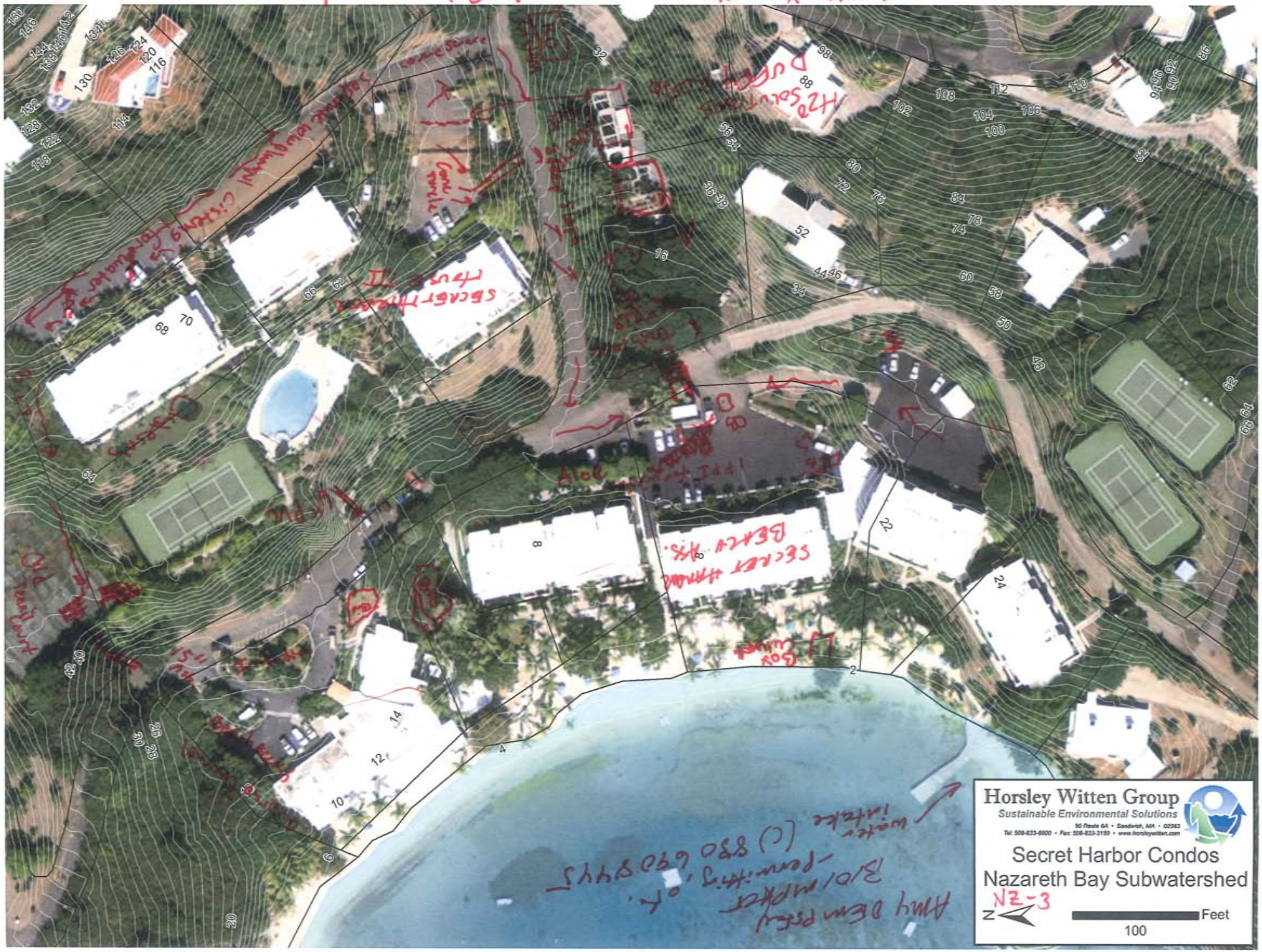
low priority

Additional Notes and/or Sketch Information:

SECRET HARBOUR
BEACH RESORT
SAINT THOMAS USVI

HARVEY DUNBAR
General Manager

6280 Estate Nazareth . St. Thomas . US Virgin Islands 00802-1104
(340) 775-6550 . Fax (340) 775-1501 . Reservations 800-524-2250
hdunbar@chrco.com



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FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: COWPET

Site Name: ANCHORAGE CB-1

Description of Existing Conditions:

Drainage above Yacht Club/Ancorage comes down an causes flooding by the boathouse at Yacht Club. Drain (informal) was created to divert onto Ancorage property northwest of tennis courts.

- Consider creating small constructed wetland or shallow bio in grassy 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 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

FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: COWPET BAY

Site Name: YACHT CLUB CB-2

Description of Existing Conditions:

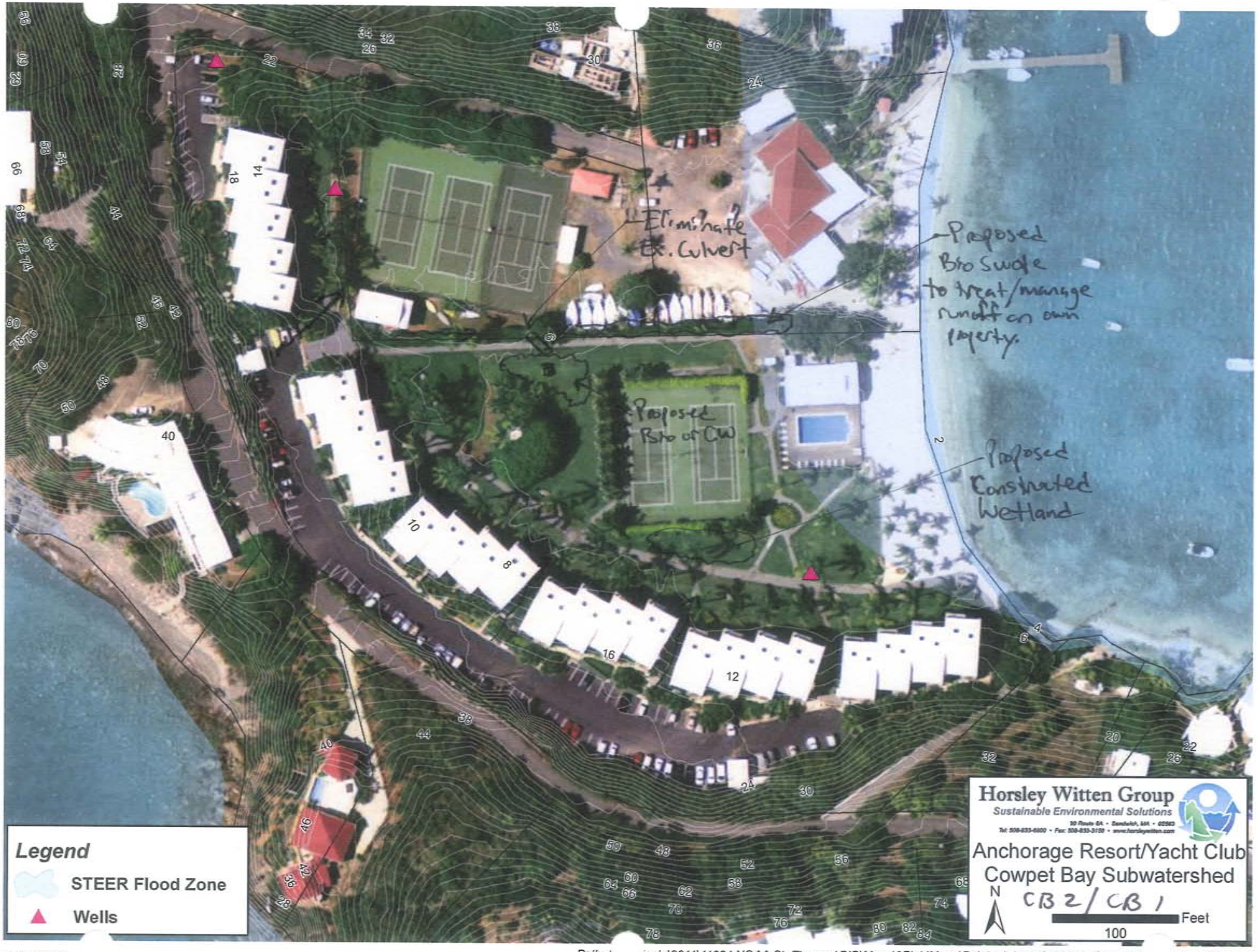
Water comes down from condo parking lot and from road. Saturates tennis court and area to shed. Once wall was constructed, the water could no longer drain.

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 to discharge on beach.

Yacht Club pumps wastewater to Anchorage, which then is pumped uphill.

Additional Notes and/or Sketch Information:



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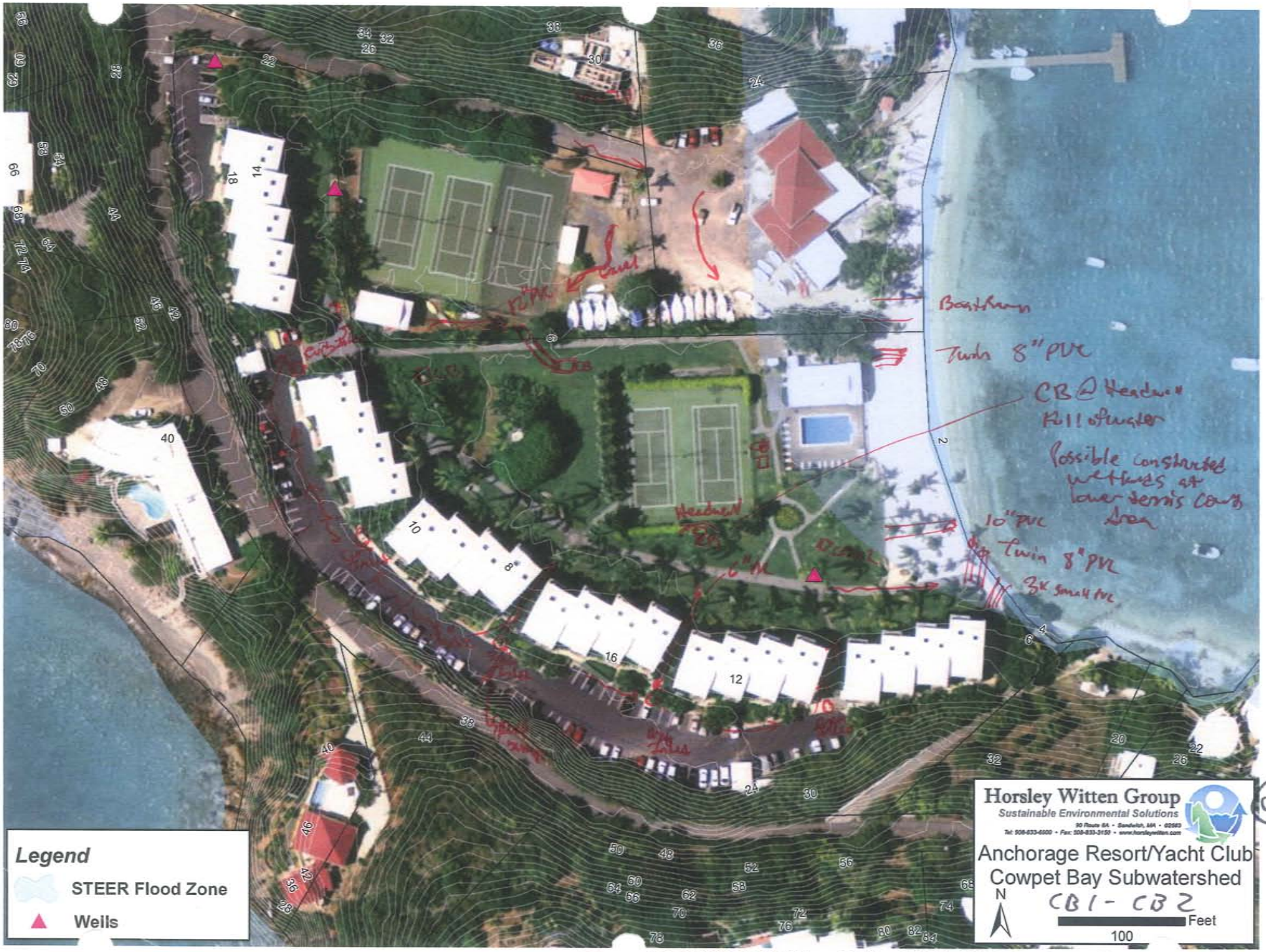

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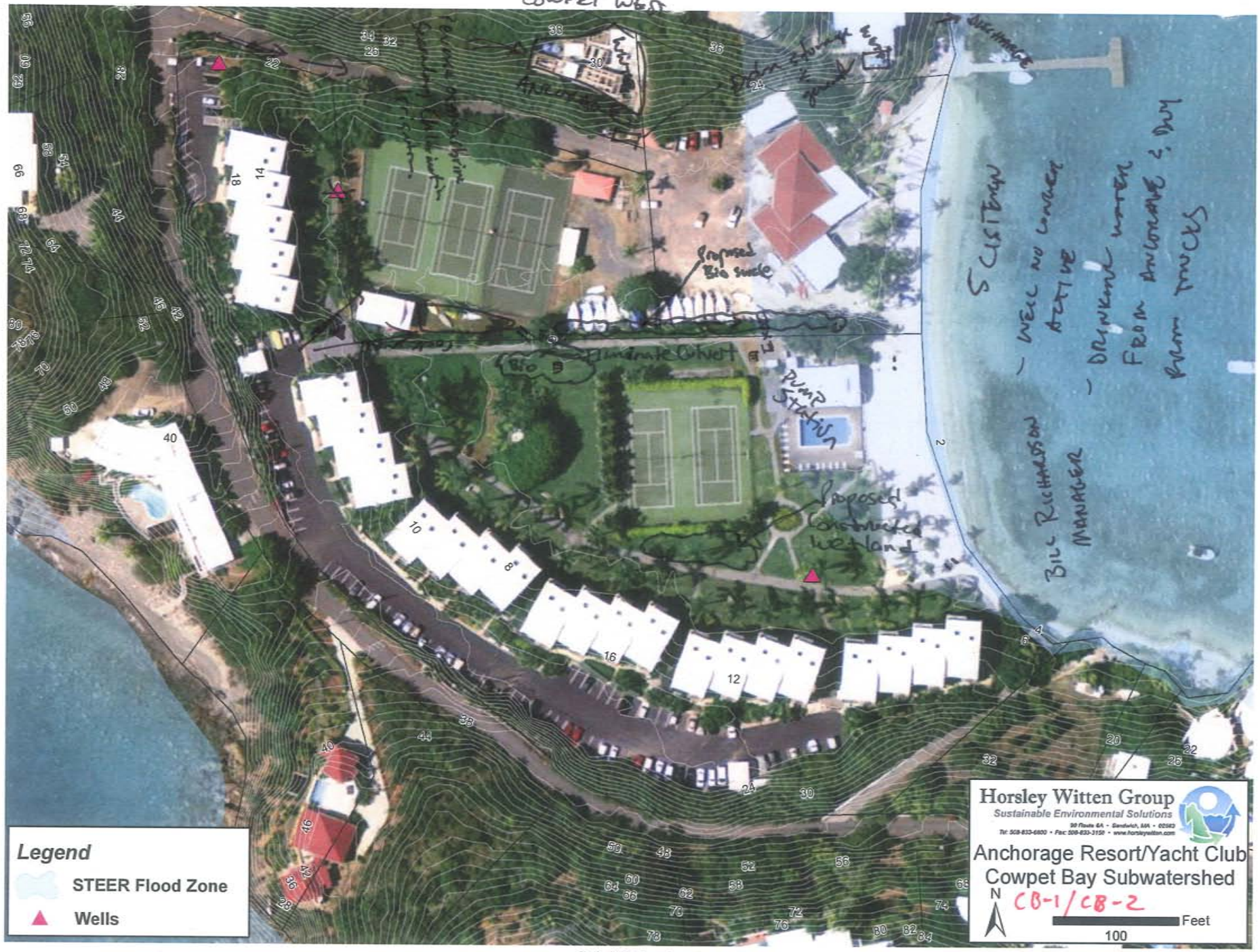
COWPET WEST



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FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: COWPET BAY

Site Name: COWPET WEST (CB-3)

Description of Existing Conditions:

Manager mentioned no issues w drainage
high density condo area, no BMPs
parking lots are used for some residential
vehicle maintenance.

drain inlets and pipes appear to discharge
primarily to "rock channels" on sides of
property

Some room in parking lot islands to
demo a raingarden — or porous pavers
in parking spaces; however this is a
low priority.

Additional Notes and/or Sketch Information:

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FIELD ASSESSMENT NOTES

- [x] Stormwater Retrofit
- [ ] Stream/Wetland Restoration
- [ ] Residential Stewardship
- [ ] Land Conservation
- [ ] Pollution Prevention
- [x] Infrastructure Repair
- [ ] Illicit Discharge
- [x] Other _____

Subwatershed: COWPET

Site Name: ELYSIAN (CB-4)

Description of Existing Conditions:

The east edge of Elysian accepts runoff from Cowpet East down steep concrete channel

Clogged CB at tenis courts. Lower lot drains to curb cut and outlet pipe near restaurant entrance.

½ Upper lot drains to 32" CMP on western property line and discharges at beach. (some photos show open pipe) drainage crosses into Cowpet 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 forbay.

Additional Notes and/or Sketch Information:

highly visible location for signage, part. since discharge pipes are right on the beach.

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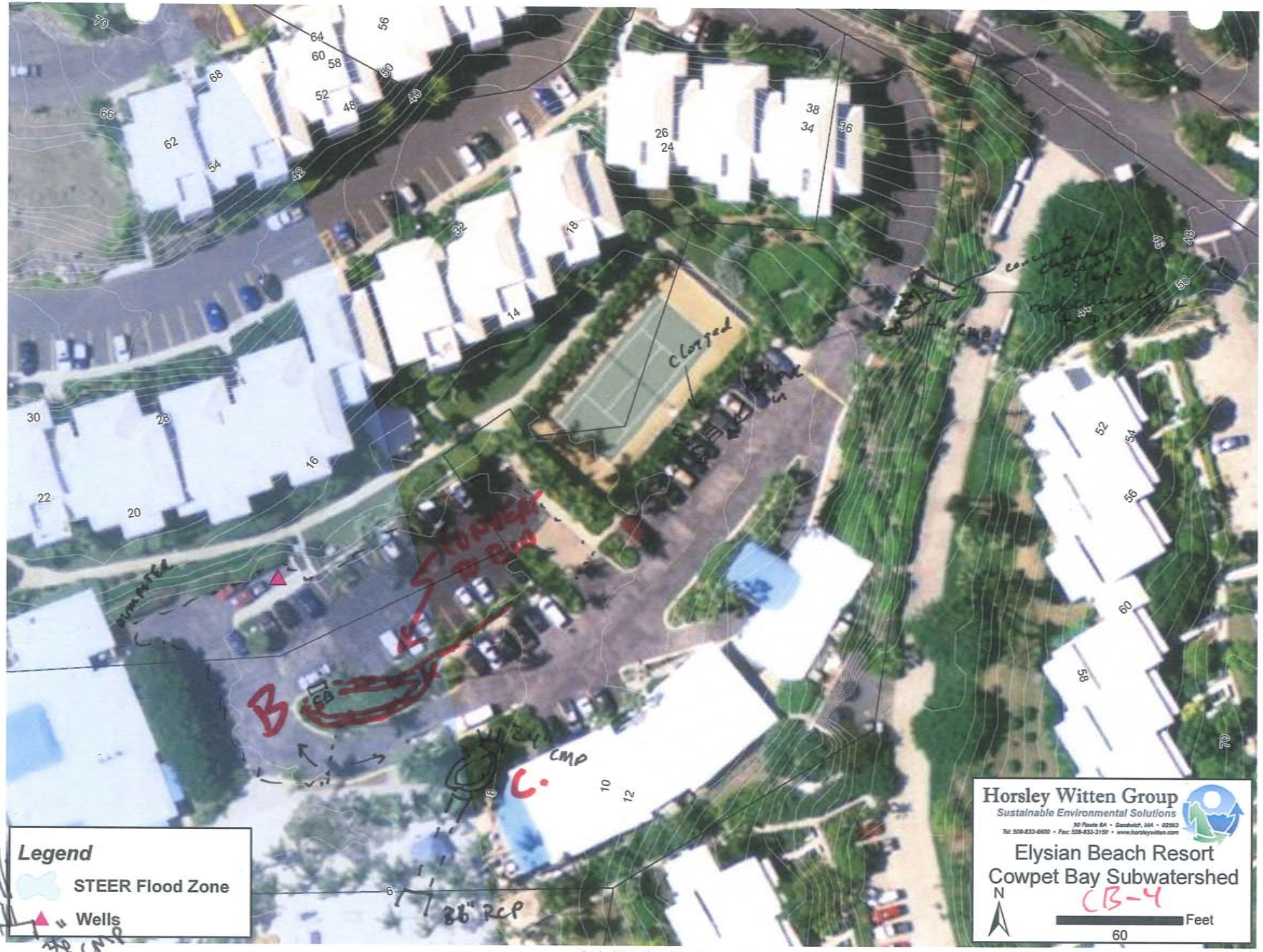

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FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: Cowpet Bay

Site Name: Cowpet Bay East (CB-5) (1)

Description of Existing Conditions:

- Contact - Alan LaPlace
- WWTP (Package Plant) Services All condos
  - discharges approx. 10 gpm (or 14400 gal/day)
- RO facility produces ~20 gpm of potable water
  - ↳ drinking water stored in cisterns
  - ↳ Roof runoff kept in cisterns w/ RO product and all treated w/ chlorine - 9 cisterns total
- WW used for irrigation + toilet flushing
- Beach nourishment (sand) req'd once per year
  - ↳ about 200 tons requested annually
    - ↳ comes from TNT? (company from Bermuda)

All runoff flows downhill to Elysian Beach Resort and is discharged at main outfall near Elysian Restaurant

- RO discharge near restaurant (see photos)
- WWTP across road from Ritz Plant. Same location as Elysian WWTP.

Additional Notes and/or Sketch Information:

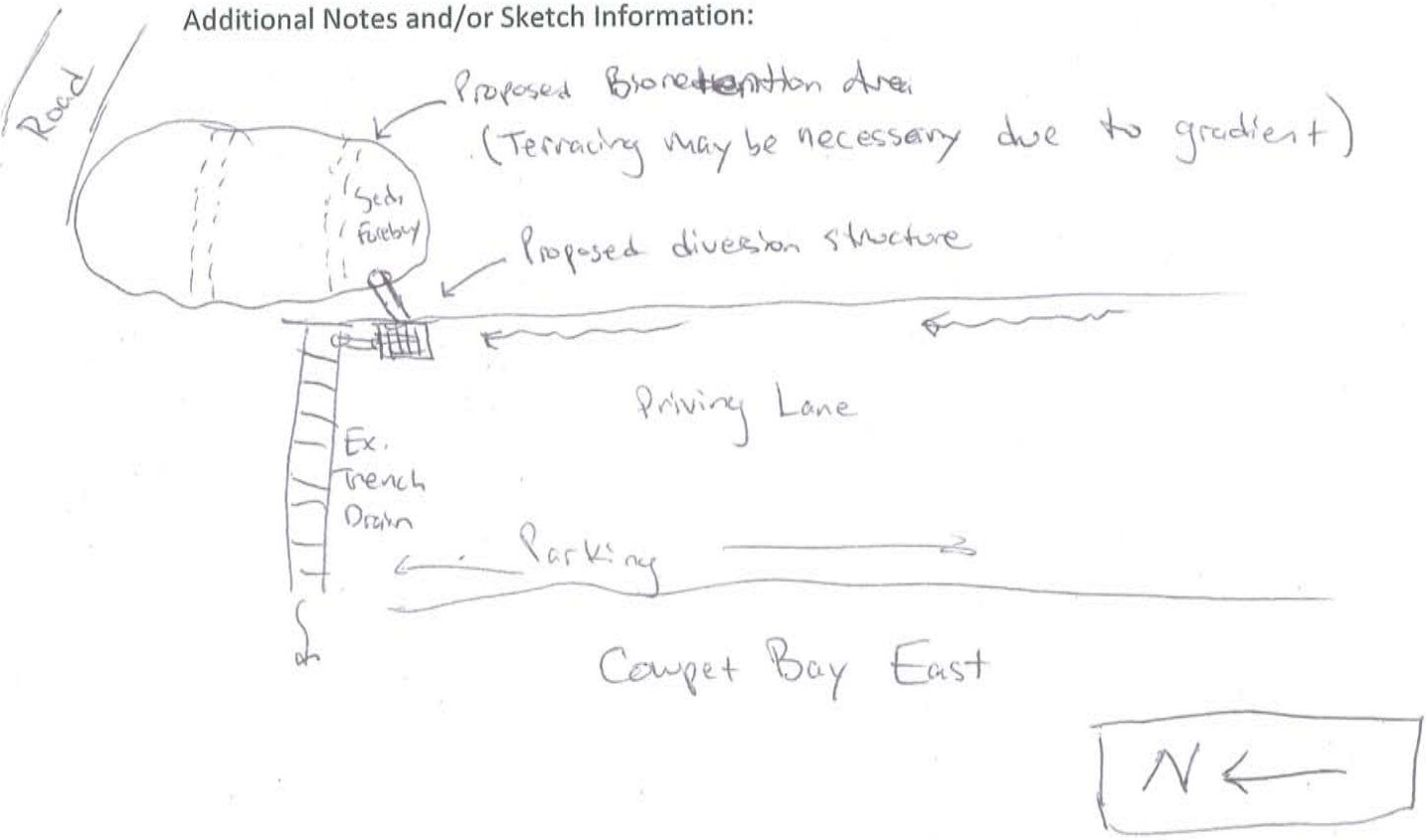
~~Subwatershed: Great Bay~~
~~Site Location: Ritz Carlton~~

Description of Proposed Project: ~~Existing Conditions~~

- ~~Contractor: Mr. Kuhler (GM); Dave Gebo (Dir. of Eng); Lester Nicholas (Asst Eng.); Dudley (Runs WWTP)~~
- ~~Ritz is a Blue Flag rated resort~~
- ~~WWTP~~

- Construct a bioretention area to treat runoff from easternmost parking lot
- Install a curbcut of 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 eastern most parking lot

Additional Notes and/or Sketch Information:



Site Priority: ☐ Love it ☐ Has Potential ☐ Not Likely ☐ Enforcement Needed

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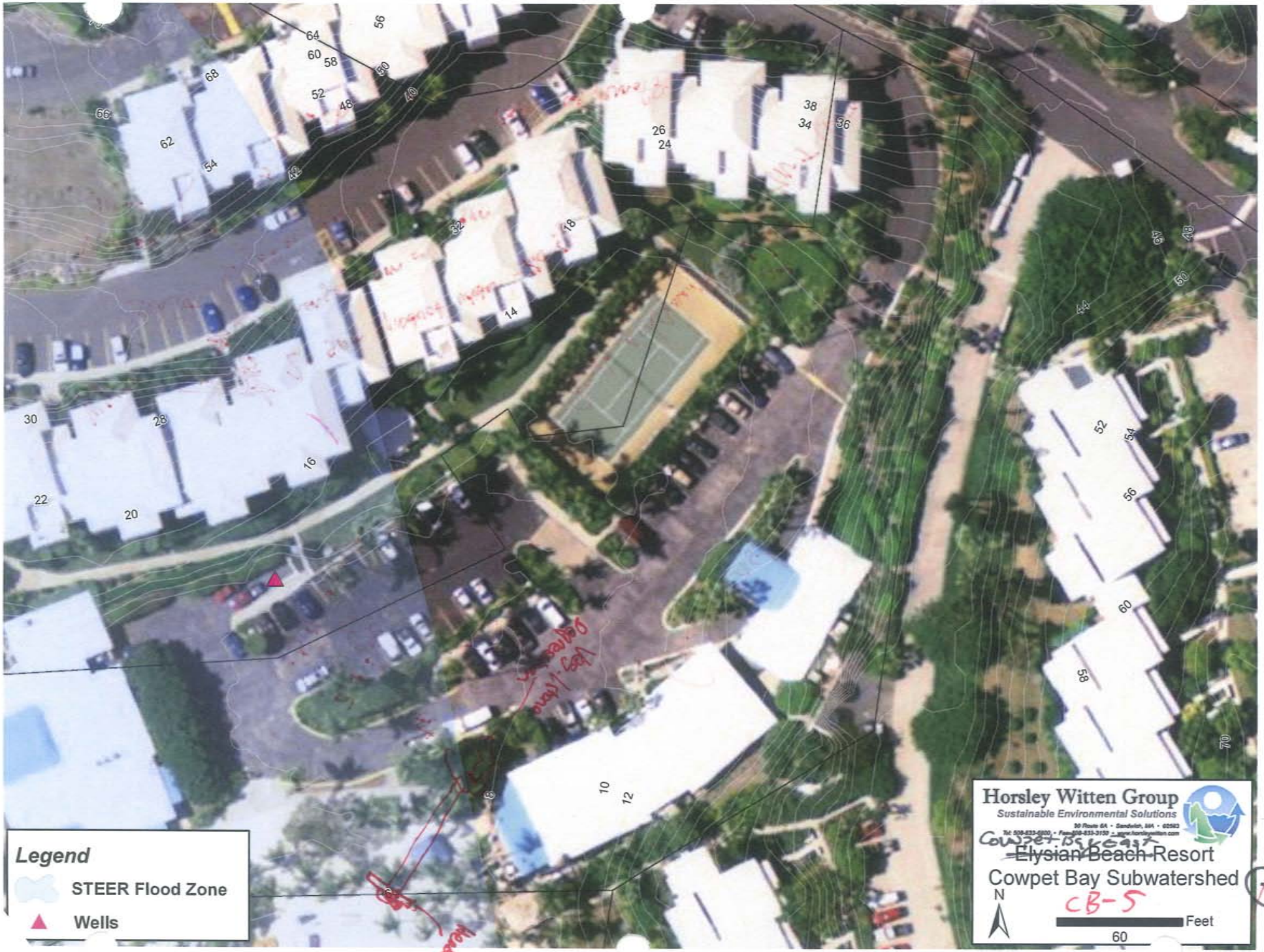

Legend
STEER Flood Zone
Wells
Horsley Witten Group
Sustainable Environmental Solutions
Cowpet Bay Beach
~~Elysian Beach~~ Resort
Cowpet Bay Subwatershed
CB-5
N
Feet
60

Cowpet East

10 gal / min | 60 min / 1 HR | 24 HR / DAY

240 × 60 = 14400 gal/day

WWTP → 20 gpm / product water → RO ?

discharge gpm = 10 gpm

Used for irrigation / toilet flushing

Drinking water { 9 cisterns - filled w/ RO + roof runoff

↳ chlorinated

Beach nourishment - 1/yr time

200 tons - TNT (Bermuda)

FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☐ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: Great Bay

Site Name: Ritz Carlton

GB-2

Description of Existing Conditions:

- Contacts: Mr Kuhler (GM); Dave Gebo (Dir of Eng); Lester Nichols (Asst. Eng); Dudley — (Manager of WW/WT Plants)
- Ritz is a Blue Flag resort
- Treated RO water is used for toilet flushing
- Roof runoff is not used – flows overland to wetlands
- Restaurant often floods out when wetland overtops
  - ↳ nearly every year –
  - ↳ beach erosion is also an issue when pond overtops – no ex. 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: ~~Lester Engineering Dept Supervisor~~

Dudley X 8500 – Ritz Main # – Manager WW/WT Facilities

140,000 gpd capacity – Peak season ~90%

RO plant – clarifies to 500 ppm conductivity

Two Storage Cisterns for RO intake

WW Effluent chlorinated and used strictly for irrigation
↳ Irrigation not supplemented

- 2 Ponds/wetlands receive all runoff / flood yearly (overtop)
- WWPlant runs both hotel and condos

Description of Proposed Project:

- Consider bioretention 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 retrofit – see Site Description memo.

Additional Notes and/or Sketch Information:

Site Priority: ☐ Love it ☐ Has Potential ☐ Not Likely ☐ Enforcement Needed

GB-2. The Ritz-Carlton Resort — Drainage Improvements

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 denention pond/constructed wetland and a few Stormceptor systems, which collect parking lot runoff and discharge to 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

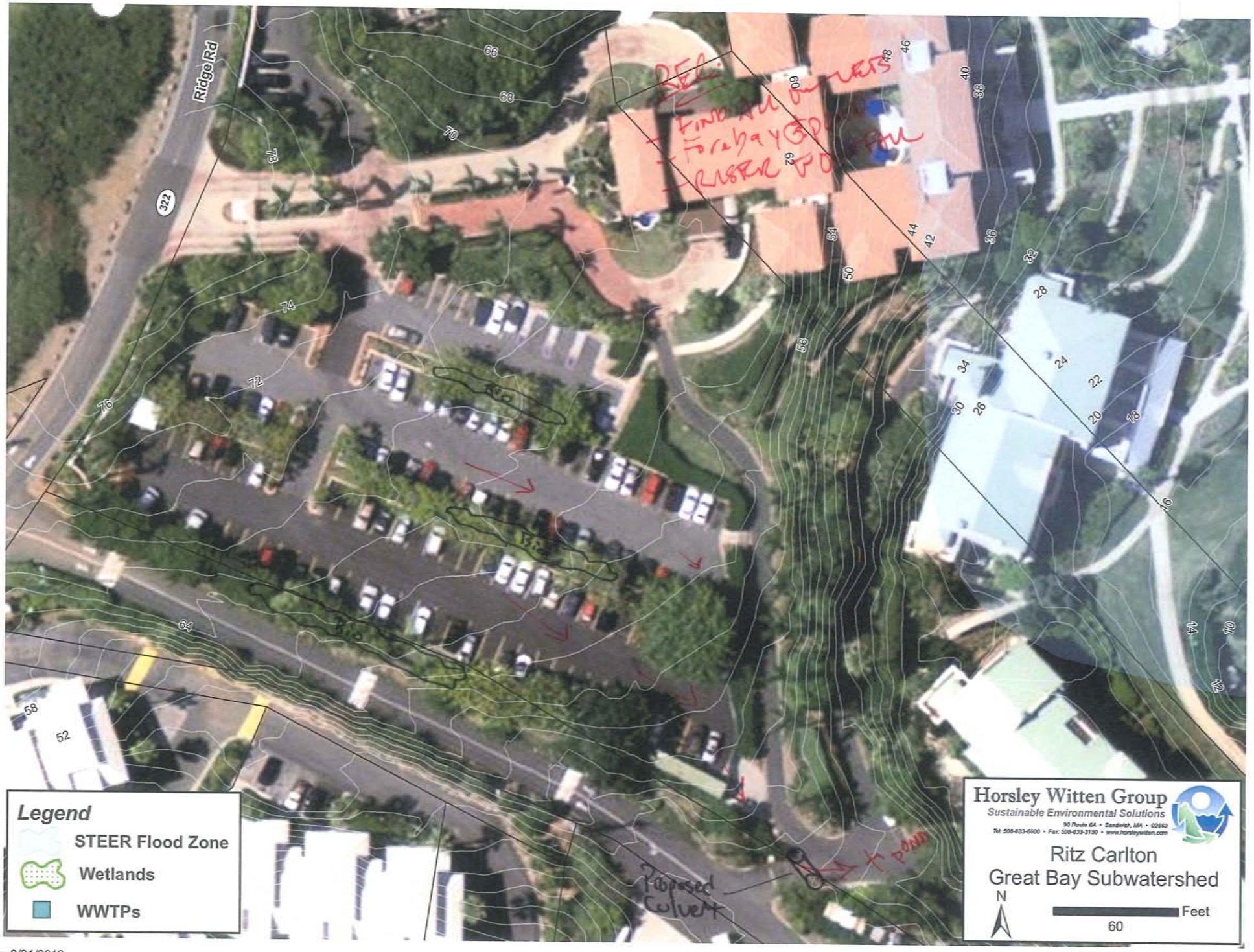
- Complete a topographic survey of the area. Determine if there are any site utility conflicts;
- Contact property owner to gauge project interest, discuss potential funding, and provide input on the design;
- Map existing resource area boundaries and buffers; and
- Check maintenance status of existing BMPs on site to ensure that they are functioning properly and not impacting existing wetlands.

Site ID	Drainage Area (ac)	% Impervious	Design Storm (yrs)	Practice Volume Required (sf)*	Practice Volume Available (cf)*
GB-2	10.5	35	25	5,100	4,900

*Design Treatment Volume: Tv (cf) = (1.25")(I)/12; I = 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.



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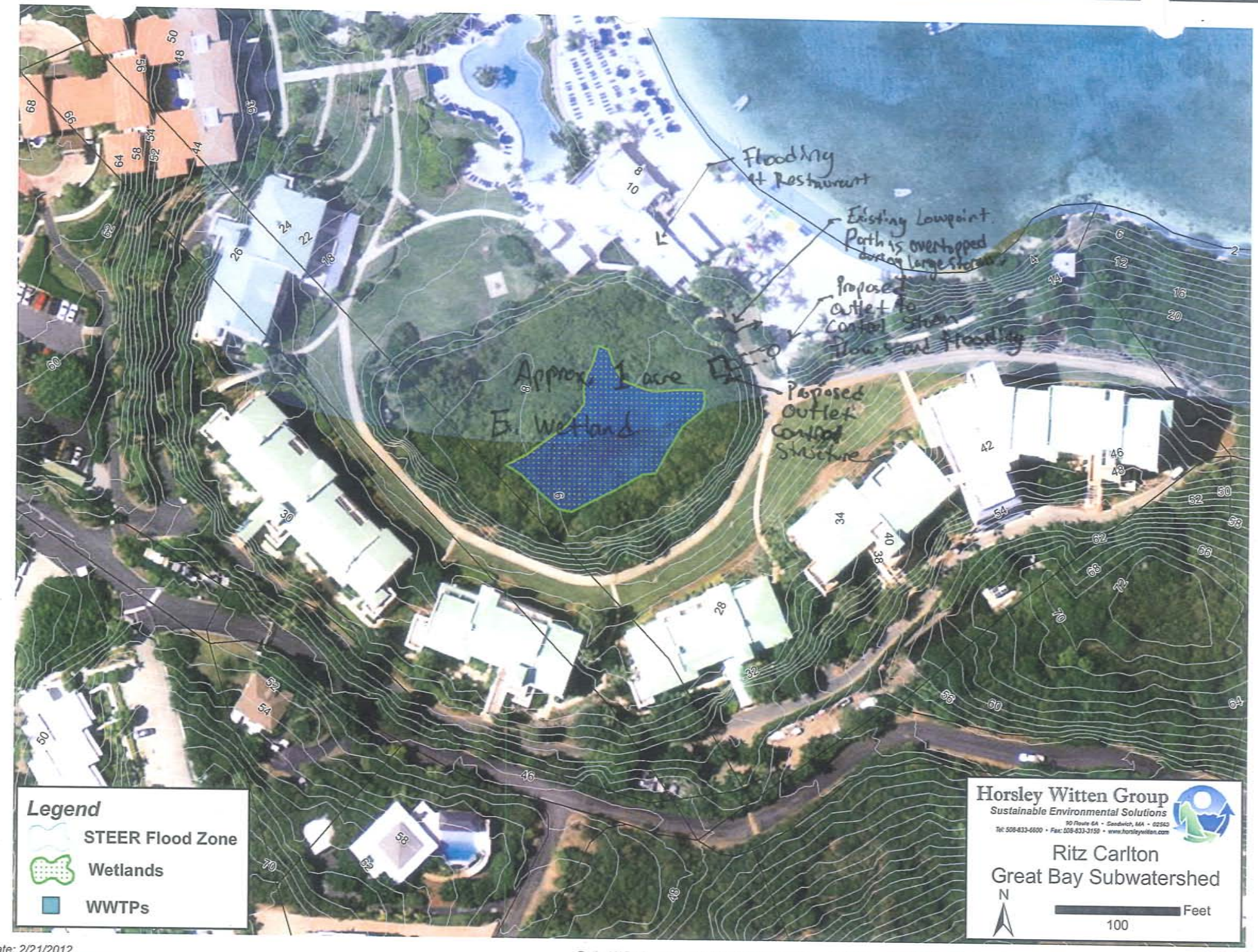

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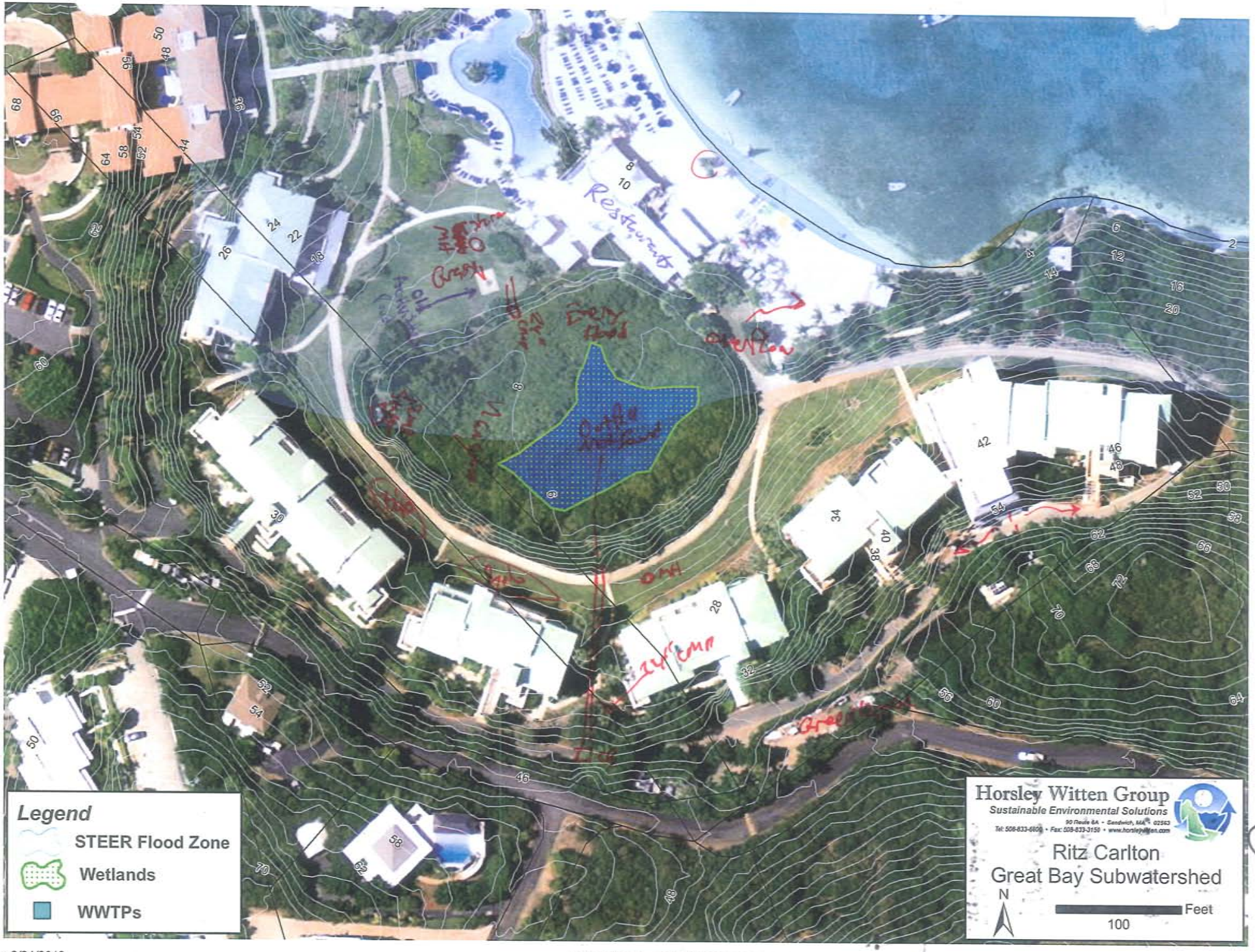

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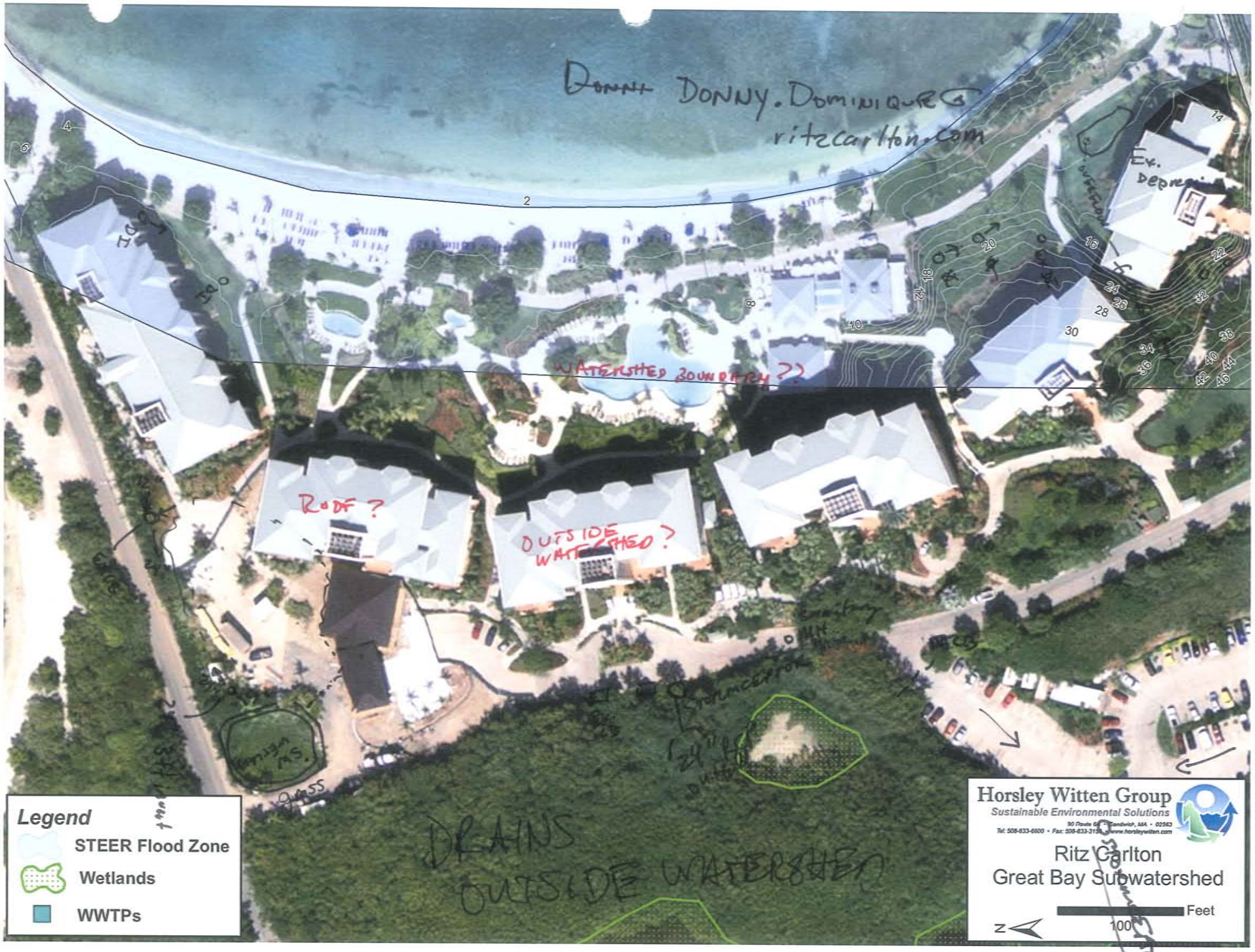
GM Kuhler

- Blueflag Resort
- Cisterns
- 110,000 gpd hotel/condo irrigation
- RO plant
  - potable use/toilets



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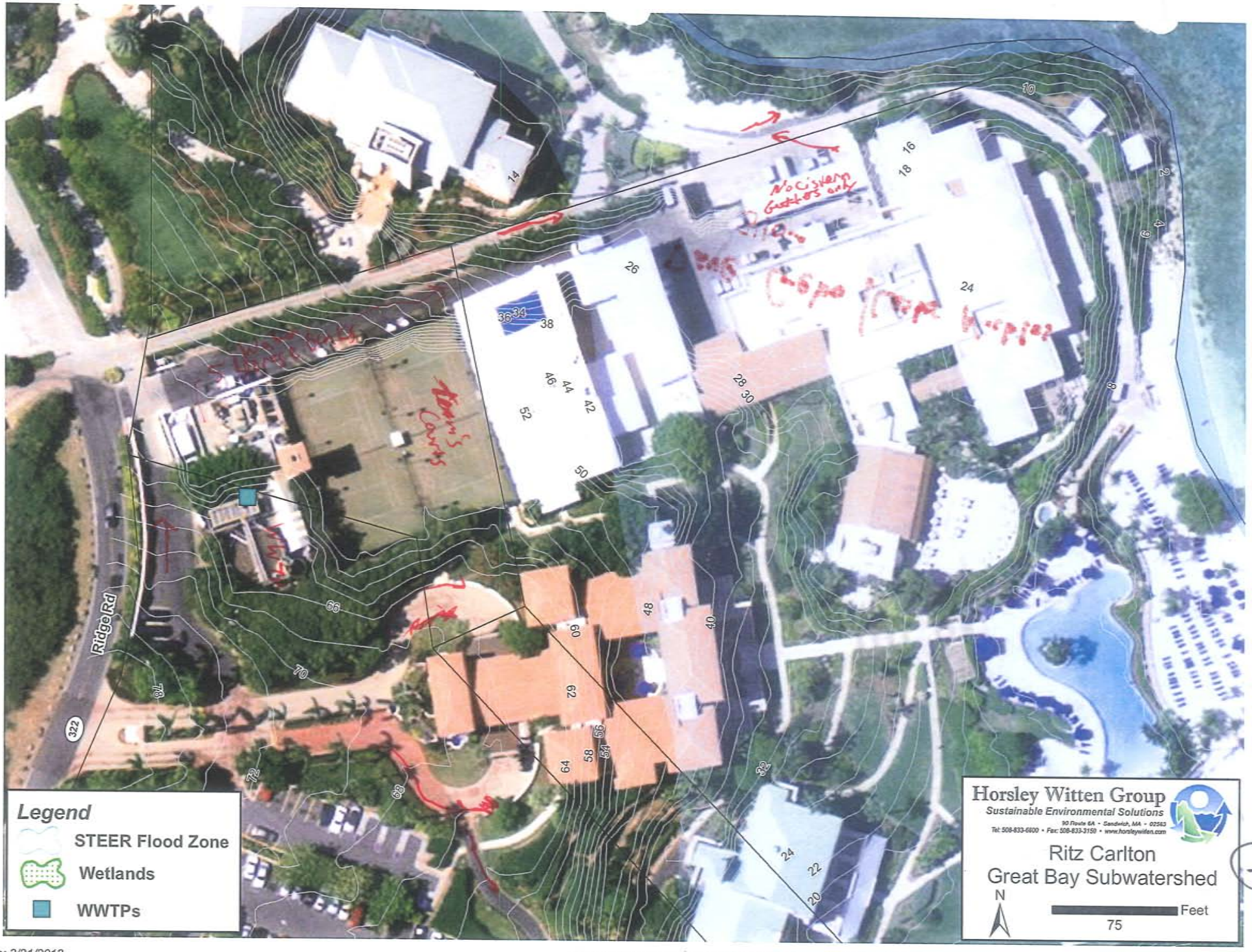

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FIELD ASSESSMENT NOTES

- ☐ Stormwater Retrofit
- ☐ Stream/Wetland Restoration
- ☐ Residential Stewardship
- ☒ Land Conservation
- ☐ Pollution Prevention
- ☐ Infrastructure Repair
- ☐ Illicit Discharge
- ☐ Other _____

Subwatershed: GREAT BAY

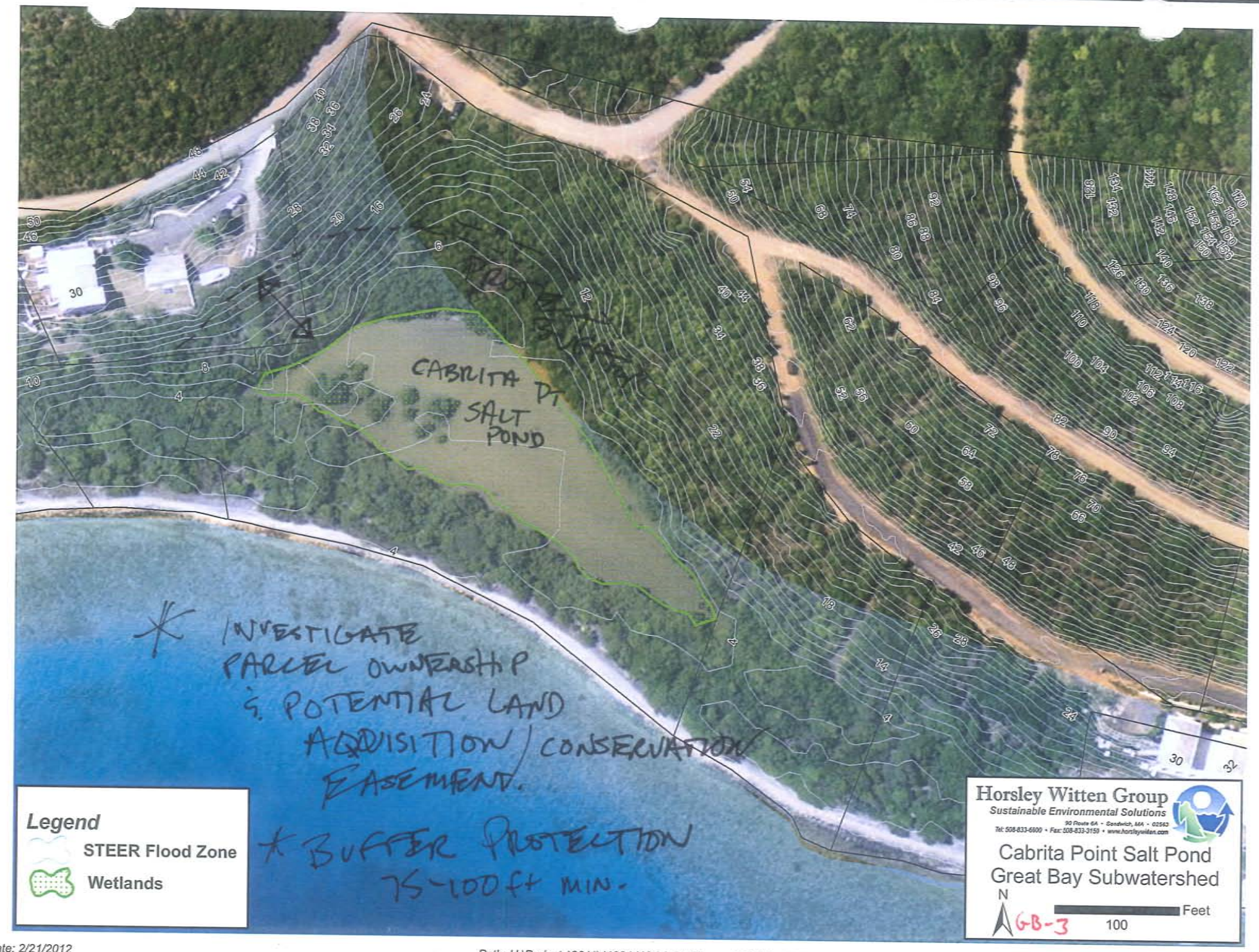
Site Name: CABRILLA PT. SALT POND GB-3

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 req.

Additional Notes and/or Sketch Information:



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