

**From:** Vaughan, Warren  
**Sent:** Monday, July 28, 2008 9:39 AM  
**To:** Potts, Jim [<mailto:JPotts@hkminc.com>]  
**Subject:** FW: Amsterdam-Churchill Development

Jim - a few things: 1) below in this email is my thoughts on how the sewer question breaks down. Take a look at that if you don't mind and let me know if it makes sense; 2) see below for Bill's email to me; 3) see attached for DEQ's inspection.

Thanks again for your help.

- I. What we know (or at least what we know we don't know) about the sewer system, part I:
  - The sewer was approved in the mid '70's;
  - The original calculations set a certain limit on what the lagoons could absorb;
  - Assuming the original calculations were correct, the numbers tell us that we should be about at capacity;
  - There are three lagoons, but only two of them are full right now.
- II. What we know (or at least what we know we don't know) about the sewer system, part II:
  - There is a certain volume currently contained in the lagoons (this is based on the amount of water in the cells, along with evaporation rates and detention times);
  - There are about 827 people hooked into the system;
  - There is no flow meter showing exactly how much water is going into the lagoons, so DEQ has to do some math to determine approximately how much volume should be in the ponds. The numbers they use are 100 gallons per day per person, which is slightly higher than the US average (85 gpd), but less than the MT average (135 gpd);
  - If they do the math, there should be about 30 million gallons per year that go into the ponds. When measured, the ponds show there are only 10 million gallons per year in the ponds. 20 million gallons per year are missing.
- III. Given that, there are two big possibilities (and a third outlandish one):
  - The calculations could be wrong and the people in AC pee a lot less than other people, don't water their lawns, or do some other serious water conservation; or
  - The lagoons are leaking; or Evaporation in AC is significantly higher than anywhere else and doesn't obey normal laws of physics.
- IV. Given those questions, the following could be policy options for the plan:
  - State it as plan policy that every new subdivision hook up to the existing sewer district;
  - State that, given our two possibilities listed above, any new subdivision hooking up to the district should either do, or help fund, an inventory of the existing facilities to figure out which of the possibilities above are true and/or happening (this could start as installing a flow meter to exactly measure how much is going into the lagoons, as well as putting a few test wells downstream to test for water quality);

- Line out possible options for the sewer district to follow IF there is a problem with the existing system OR if the system has to be upgraded or repaired.

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