

## Issue 6.

### Inadequate Air Release Valves (ARV ), Likelihood of Air Locks and Loss of Service:

The CRS islands are low lying above sea level and the terrain quite flat.

To help prevent gas pockets from forming in pressure sewer mains, it is recommended that the pipe be laid on a continuously rising slope toward the terminus, but that is not possible in the CRS.

The current design places ARVs at visibly high points such as bridge or culvert crossings but ignores the very long stretches of very low flow pipe laid at a nearly flat but wavering elevation in which gasses will undoubtedly form. A review of the plans will show thousands of feet of pipe with no ARVs at all. Clusters of residential cul de sacs will be seen where many of the homes are vacant about half of the year and flows are minimal. The specified E-One progressive cavity grinder pumps spurt only a few gallons of waste water into the force mains at each very short run cycle (typically under one minute), so scouring velocities will in many instances never be achieved. There will certainly be accumulations of grease, solids and gas. As gas accumulates, the head pressure is artificially increased and the flow rate becomes even less, aggravating the problem. In most cases, the collection areas have no ARVs at all. Each pumping cycle in an optimally full pipe will only replace the volume in about 50 feet of pipe. Especially with the very warm soil conditions, one may reasonably expect air locks to form with subsequent loss of service.

### Design and Specification Guidelines for Low Pressure Sewer Systems (1981) DEP (incorporated by reference 62-604.300 (j) F.A.C.) states on page I-22:

*“ Gas accumulations in pressure mains can increase the dynamic head resisting the PU. [pumping unit]”, and*

*“Locations with lesser slopes, where long downstream pipe volumes are in excess of that which would be expected to be pumped during one continuous pumping cycle may require air release valves.”, and*

*“Adequate preventive measures should be taken to avoid the accumulation of gases and air in pressure sewer mains. These include: .....3. Proper design to prevent undue retention*

*time of wastes in pressure sewer where biological and chemical activity may produce gases.”*

