AECOM

Video Survey Summary of PW-1 (Surface to 1,575 ft bpl)

Date: 7/7/12

Well Number: PW-1

Job Number: 60185432

Town of Davie

Water Treatment & Reclamation Facility

Production Well PW-1

Depth in feet bpl From	To	Observations (Depths in feet below land surface)
0	100	FRP Joint Connection at: 35, 74.
100	200	FRP Joint Connection at: 113, 152, 191.
200	300	FRP Joint Connection at: 230, 269.
300	400	FRP Joint Connection at: 308, 347, 386.
400	500	FRP Joint Connection at: 425, 464.
500	600	FRP Joint Connection at: 503, 542, 581.
600	700	FRP Joint Connection at: 620, 660, 699.
700	800	FRP Joint Connection at: 738, 777.
800	900	FRP Joint Connection at: 817, 856, 895. (Joint connections viewed with sideview camera)
900	1000	FRP Joint Connection at: 934 (Joint connection viewed with sideview camera). Base of 16" ID FRP casing observed at 973 ft bls. Cement sheath observed inside of 16" ID FRP at very base of casing. Good cement just below base of 16" ID FRP casing that extends to 976' bls. Below 976' bls the cement plug used to backfill the pilot hole can be observed along borehole
1000	1100	Cement plug used to backfill the pilot hole can be observed along borehole wall to 1,049' bls. From 1,049' to 1,099' bls, the cement plug used to backfill the pilot hole is void showing an unfilled column along borehole wall. Unfilled column from previously drilled pilot hole terminates at 1,099' bls.
1100	1200	Gauge borehole with moderate vugs. Irregular borehole diameter from 1,165 to 1,176 with increased vugs and dissolution holes
1200	1300	Fairly gauge borehole, moderate vugs with intermittent gaps between layers of laminar bedding planes. Limited areas of possible flow.
1300	1400	Fairly gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes
1400	1500	Gauge borehole, moderate vugs with intermittent gaps between layers of laminar bedding planes. Limited areas of possible flow.
1500	1600	Moderately gauge borehole. Intermittent zones with significant vugs and dissolution holes. Areas of increased potential for flow observed at: 1,510 - 1,513, 1,550 - 1,558 and 1,564 - 1,569. Numerous gaps between layers of laminar bedding planes also observed. Total depth of well observed at approximately 1,575 ft bls

bls = below land surface

FRP = Fiberglass Reinforced Pipe

AECOM

Video Survey Summary of PW-2 (Surface to 1,570 ft bpl)

Date: 8/10/12

Well Number: PW-2

Job Number: 60185432

Town of Davie

Water Treatment & Reclamation Facility

Production Well PW-2

Depth in feet bpl From	To	Observations (Depths in feet below land surface)
0	100	FRP Joint Connection at: 35, 74.
100	200	FRP Joint Connection at: 112, 151, 190.
200	300	FRP Joint Connection at: 229, 268.
300	400	FRP Joint Connection at: 307, 346, 385.
400	500	FRP Joint Connection at: 424, 463.
500	600	FRP Joint Connection at: 502, 5412, 580.
600	700	FRP Joint Connection at: 619, 658, 697.
700	800	FRP Joint Connection at: 736, 775.
800	900	FRP Joint Connection at: 814, 854, 893. (Joint connections at 854 & 893 viewed with sideview camera)
900	1000	FRP Joint Connection at: 933, 962 (Joint connections viewed with sideview camera). Base of 16" ID FRP casing observed at 962 ft bls. Cement sheath observed inside of 16" ID FRP from 948 - 955 ft bls. Although several videos were taked of this interval due to an obstruction that was discovered, and subsequently addressed, during the first video survey, comment observations are made only of the final video of this interval performed on 8/10/12 after obstructions had been removed. Debris which appears to be cement that had previously been sheathed on the inside of the 16" ID FRP is observed on a ledge at 961 ft bls. Although this material is somewhat precariously positioned in the borehole, it does not appear that it will pose a problem to overall production capacity of the well.
1000	1100	Gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes.
1100	1200	Fairly tight borehole through this interval. Zones with increased vugs and moderate disolution were observed from approximately 1,153-1,155 and 1,160-1,163 ft bls.
1200	1300	Fairly tight borehole through this interval with limited areas of possible flow.
1300	1400	Gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes.
1400	1500	Fairly tight borehole through this interval with limited areas of possible flow. A few zones with moderate disolution were observed toward the bottom of this interval at approximately 1,491-1,493 and 1,496-1,499 ft bls.
1500	1600	Moderately gauge borehole. Intermittent zones with significant vugs and dissolution holes. Areas of increased potential for flow observed at: 1,528, 1,534 - 1,542, 1,546-1,547 and 1,561 - 1,564. Total depth of well observed at approximately 1,570 ft bls

bls = below land surface

FRP = Fiberglass Reinforced Pipe

AECOM

Video Survey Summary of PW-3 (Surface to 1,588 ft bpl)

Date: 1/6/12

Well Number: PW-3

Job Number: 60185432

Town of Davie

Water Treatment & Reclamation Facility

Production Well PW-3

Depth in feet bpl		Observations (Depths in feet below land surface)
From	To	
0	100	FRP Joint Connection at: 35, 74.
100	200	FRP Joint Connection at: 113, 152, 191.
200	300	FRP Joint Connection at: 230, 269.
300	400	FRP Joint Connection at: 308, 346, 385.
400	500	FRP Joint Connection at: 424, 463.
500	600	FRP Joint Connection at: 502, 541, 580.
600	700	FRP Joint Connection at: 619, 658, 697.
700	800	FRP Joint Connection at: 736, 775.
800	900	FRP Joint Connection at: 814, 853, 892. (Joint connections at 854 & 893 viewed with sideview camera)
900	1000	FRP Joint Connection at: 931. Base of 16" ID FRP casing observed at 961 ft bls. From 961' to 972' bls the cement plug used to backfill the pilot hole can be observed along borehole wall. Below 972' bls, the cement plug used to backfill the pilot hole is void showing an unfilled column along borehole wall and eventually merges with reamed hole to form one elliptical borehole before the bottom of this interval.
1000	1100	Fairly gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes
1100	1200	Fairly gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes
1200	1300	Fairly gauge borehole, moderate vugs with intermittent gaps between layers of laminar bedding planes. Limited areas of possible flow.
1300	1400	Fairly gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes.
1400	1500	Fairly gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes.
1500	1600	Intermittent zones with significant vugs and dissolution holes. Increased potential for flow observed from 1,532 - 1,563. Total depth of well observed at approximately 1,588 ft bls. PW-3 was backfilled to approximately 1,570 ft after video survey was conducted.

bls = below land surface

FRP = Fiberglass Reinforced Pipe

AECOM

Final Video Survey Summary of PW-5 (Surface to 1,400 ft bpl)

Date: 4/20/12

Well Number: PW-5

Job Number: 60185432

Town of Davie

Water Treatment & Reclamation Facility
Production Well PW-5

Depth in feet bpl From	To	Observations (Depths in feet below land surface)
0	100	FRP Joint Connection at: 29, 68.
100	200	FRP Joint Connection at: 107, 146, 185.
200	300	FRP Joint Connection at: 224, 263.
300	400	FRP Joint Connection at: 303, 342, 381.
400	500	FRP Joint Connection at: 420, 459, 498.
500	600	FRP Joint Connection at: 537, 576.
600	700	FRP Joint Connection at: 615, 655, 694.
700	800	FRP Joint Connection at: 736, 733, 772.
800	900	FRP Joint Connection at: 813, 852, 891. (Joint connections viewed with sideview camera)
900	1000	FRP Joint Connection at: 931 (Joint connection viewed with sideview camera). Base of 16" ID FRP casing observed at 955 ft bls. Good cement just below base of 16" ID FRP casing that extends to 958' bls.
1000	1100	Gauge borehole, moderate vugs with intermittent zones of increased vugs and dissolution holes. A high disolution area with increased potential for flow observed at approximately 1,032 ft bls.
1100	1200	Gauge borehole through this interval with intermittent zones of increased vugs and dissolution holes. A zone with high disolution and potential for flow was observed from 1,144 - 1,149 ft bls.
1200	1300	One zone with moderate disolution was observed at approximately 1,270 ft bls.
1300	1400	Moderately gauge borehole with intermittent zones with significant vugs and dissolution holes. Slight decrease in visiblity from about 1,350 ft bls to bottom. Total depth of well observed at approximately 1,400 ft bls

bls = below land surface

FRP = Fiberglass Reinforced Pipe