5.3.1.1 Hydrogeology of Recharge Sites

The Partnership conducted an evaluation of the soil characteristics in the target recharge area to better understand permeability within the predominantly semi-confined region. The assessment revealed that much of the area is more characteristic of confined aquifers than unconfined, though there are select areas in which high permeability would allow RIBs or wetlands to be effective recharge means. Additional site-specific analysis will be needed during further phases of work, but these findings highlight two important considerations:

- Much of the beneficial recharge area is likely to be characterized by confined aquifers and soils with low permeability, suitable for recharge wells but not necessarily RIBs or wetlands.
- There are select areas within the target recharge area that exhibit the likelihood of high permeability, and which may therefore be amenable to RIBs or wetlands.

5.3.1.2 Surface Water Reliability

To effectively address low flows during dry periods, source waters must be available when the Santa Fe and Ichetucknee Rivers are in need. For reclaimed water, the source water is almost always available at a constant rate, resulting in a near continuously available flow. Surface water diversion, on the other hand, is dependent on natural variability in river flows, regulatory flow requirements, and climatic conditions for the availability of water, making them a less reliable source. One surface water project in each district from the short list was examined for "reliability," or frequency of availability for withdrawal. The Partnership evaluated intermittent flow availability to calculate an annual average volume of water that could be considered available for potential recharge. More detailed investigations will be needed, but this analysis helped the Partnership understand some of the vulnerabilities of surface water sources.

The North Fork Black Creek source was evaluated in the SJRWMD, and the Lower Suwannee at Branford Source was evaluated in the SRWMD. Different regulatory standards and precedents were applied based on recent examples and discussions with district staff. Because of potential trends in flows, only the past 30 years of gauge flow were used in the analysis.

Lower Suwannee at Branford: Flow availability for this alternative was based on three ecological flow targets on the Suwannee River:

- Critical flow at Branford, to support the sturgeon population, is 3,190 cfs.
- Critical flow at the Wilcox gauge, to provide low salinities to support submerged aquatic vegetation is 6,600 cfs from May to October
- Critical flow at the Wilcox gauge, to support manatee access at the mouth, is 7,600 cfs November to April.

Analysis over the 30-year period of record revealed that a target withdrawal of up to 20 MGD could be available up to 45 percent of the time, resulting in an annual average withdrawal of approximately nine MGD. Results are shown in **Figure 5.4**. It is important to note that there are periods of up to 365 days in which flow criteria are not met, and no source water would be available for the two MFL sites.