RAMBOLL

ENVIRONMENT
& HEALTH

Ms. Wanda Washington

FOCUS
PO Box 28
Tallevast, FL 34270

May 5, 2023

Re: Review of SWFWMD's correspondence/project file, and FDEP's recent response letters for the Tallevast Site, Manatee County, Florida

Dear Ms. Washington,

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At your request I am writing to summarize my observations from further review of site related documents in SWFWMD files, and also recent letters from FDEP responding to our prior comments on the 2022 RASR (dated March 6, 2023) and FDEP's 2022 RASR Review (dated April 5, 2023).

**SWFWMD File Review**

Having recently gained access to SWFWMD's correspondence files online, I have reviewed the SWFWMD files from 2019 to present for the Tallevast Site. Most of the information I found in the files mirrors what we have previously been provided in the files already available through FDEP (OCULUS) and/or directly from Lockheed, but I did notice a few issues and/or new information that warrants commenting as follows.

First, according to a November 17, 2020 email from Paul Calligan to FDEP, Lockheed apparently performed additional ground water modeling to evaluate the effects of leakage from Amazon's new storm water pond on plume movement in the USAS aquifer. Based on this modeling they apparently concluded that lining the pond to prevent leakage would be detrimental to management of the plume and asked that the pond remain unlined. This is presumably to promote water table mounding. It's not clear if this modeling analysis was ever formally submitted to FDEP/SWFWMD as I did not find a reference to any specific report, nor have I seen any modeling details on this topic in the reports I have reviewed.

In a more recent, but related, response to comments from SWFWMD on the 2022 RASR and WMR, Lockheed stated that the leakage from the Amazon pond was helping to control plume movement to an extent that they could now resume use of the RC-7002 infiltration trench along TW-6 to restore the natural level of water in this wetland. I did not find any specific comments or analysis on this observation in the RASR or WMR reports, and my review of the water table mapping in the RASR doesn't indicate any significant localized mounding in the Southeast area. I think it is an open question, therefore, as to what extent leakage from the pond is actually containing the plume, or rather is simply diluting and dispersing it. I have attempted to

contact Paul to see if he and I could discuss this new finding further with the consultant who wrote the RASR report (AECOM). To date there has been no response to this request, so it is an open question that warrants follow-up.

Second, Lockheed apparently does not meter return flows to the aquifer, but rather calculates it as the difference of pumping minus sewer discharge. This approach appears to be acceptable to SWFWMD but metering the flows to the individual galleries (as is already done for pumping wells) would provide more accurate information for control of the GRTS pumping systems.

Third, I noted in various SWFWMD internal communications that when they became aware of the impacts from the lack of recharge to the RC-7002 infiltration gallery near TW-6 post-2019, they wanted to see some form of mitigation to lessen the dewatering of the wetland. These concerns mirrored comments I had expressed in my prior review of the WMR reports. In a similar vein, it appears that SWFWMD wants to see some alternative reference wetland established in the event RW-3 is lost to development, again consistent with my prior comments on this topic.

Finally, I noted several instances where SWFWMD concluded the GRTS continues to operate within the overall permit limits for water withdrawal. These same internal summaries were silent on whether this same conclusion extended to the withdrawal from individual wells, which are also limited by the same permit. As I mentioned in my prior reviews of the RASR, the over-pumping of water from EW-2104, in particular, was a significant factor in the dewatering of the TW-6 wetland. This gallery has been historically pumped well above its permitted limit for a number of years. It is unclear if SWFWMD sees this as an issue, as it appears to be focusing more on the total aquifer pumping in its evaluation of compliance.

**FDEP's RASR Review**

I also have reviewed a recent (March 6, 2023) letter from FDEP to FOCUS, responding to the various points and recommendations I made in my prior comments on the 2022 RASR report. For the most part, FDEP appears to concur with 4 of my 5 recommendations for further investigation and monitoring in various areas of the site, and subsequently communicated their recommendations to Lockheed in their comments on the 2022 RASR (see letter to Paul Calligan from Robert Sellers (FDEP) dated April 5, 2023). These included:

- Continued monitoring for 1,4-D in four USAS piezometers in the Southeast area.
- Installing a new monitoring well in the LSAS near MW-260 to monitor the southern boundary of the LSAS 1,4-D plume; I note here, however, that my original recommendation for a LSAS well at MW-260 is based on the assumption that the level of 1,4-D in this new would be below the GCTL, as AECOM has depicted in their mapping of the 1,4-D LSAS plume. If 1,4-D exceeds the GCTL, then additional wells farther to the south/southeast may be needed to fully define the extent of this area of contamination.
- Conducting a DPT USAS investigation in the residential area south of the Lockheed facility to better define the boundary of the area that is noncompliant with GCTLs. This investigation should be similar in approach to that used in the SE area to define the 1,4-D problem in that area, involving multiple monitoring points, tests from the upper and lower levels of the USAS and testing water samples for both 1,4-D and CVOCs. In the residential area west of the railroad embankment, investigations should also include private properties (if reasonable access is provided by property owners) and not be limited only to the public streets and ROWs. Consideration of any historic data from private well testing in this area may also be instructive in selecting potentially applicable DPT test

sites. I assume as in the past Lockheed will prepare a draft work plan that lays out the particulars of this investigation, and there will be an opportunity to comment before the investigation actually begins; and

- Further investigation of the impact of GRTS pumping on the TW-6 wetland and evaluation of steps to lessen this impact. It is encouraging to see FDEP finally acknowledge that this dewatering of the wetland by pumping the GRTS without replenishment has been problematic. I note here, however, that Lockheed recently restored the use of the RC-7002 infiltration gallery to provide an artificial water supply to the wetland. This should help to alleviate the dewatering concern.

With regard to my fifth recommendation involving further investigations of the GRTS performance in the USAS wells north of the Lockheed facility across Tallevast Road, FDEP stated in its letter to FOCUS that " …*we have also concluded that the reduction in contaminant concentrations in this area appear to have reached a point that would warrant some changes to the remediation system to speed up the cleanup*…" , but it did not indicate what specifically it wanted to see done. The current USAS extraction system in this area is comprised of vertical wells (e.g., EW-2011 and 2012) which have been pumping the USAS to remove 1,4-D since 2013, when the GRTS first began operation. Since that time there has been only marginal improvement in water quality in EW-2011 and no improvement in EW-2012. In fact, 1,4-D concentrations in EW-2012 have increased from the initial 12 ug/L range in 2013 and are now 15-19 ug/L with no discernable downward trend (see 2022 RASR; Table 15). This is not surprising since both wells produce only minimal water from the aquifer and there is no discernable drawdown in nearby monitoring wells. This absence of drawdown also raises concerns about the effectiveness of this pumping in controlling 1,4-D migration into other areas farther to the north. Although FDEP acknowledged this limited progress towards cleanup and stated that changes to the GRTS may be needed in its recent letter to FOCUS, it did not address the issue in its subsequent (April 5, 2023) letter to Lockheed providing review comments on the 2022 RASR. It is unclear, therefore, how or whether FDEP intends to proceed with resolving this concern.

Water level data from multiple years of monitoring demonstrate that the two pumping wells in this area are withdrawing too little water to flush contaminants from the USAS aquifer and to create a depressed water table that would effectively control contaminant migration. This performance could be due to the problems with the original well design (e.g., inappropriate well screen/gravel pack sizing), or subsequent operational problems including but not limited to damage to the well pumps, the deterioration/clogging of well screens over time by sediments or scale, or the clogging of the discharge lines from the wells to the treatment plant. Alternatively, it could also be related to a naturally low permeability of the sediments in the lower USAS aquifer in this area, which could substantially limit how much water can be produced from vertical wells. A stepwise investigation to resolve these questions is warranted potentially including:

- remove the well pumps for inspection, followed by a video survey of the well screens to investigate their current condition.
- well redevelopment by surging and/or chemical treatment to remove any sediment, and floc/scale accumulations.
- pressure testing the discharge lines to be sure they are open and freely flowing.
- if these first three steps are unsuccessful in materially increasing water recovery and drawdown in the aquifer, additional DPT investigations (including sieve analyses of soils

from the screened intervals of USAS extraction wells and nearby areas) to verify the nature of sediments in the lower portion of the USAS, followed by a reexamination of the most effective means to recover the contaminated water in this area.

If a DPT investigation is untaken north of Tallevast Road, additional probes to collect water samples for 1,4-D testing along the northern boundary of the interpreted plume are also warranted, as the current lack of drawdown and the wide spacing of monitoring points to the north raises concerns as to whether the current pumping is actually containing the full extent of the 1,4-D plume in this area. Absent this information, AECOM's depiction of the 1,4-D plume boundary as it relates to the plume boundary and capture zone in this area cannot be reasonably verified.

If you have any questions regarding these thoughts and comments, I would be happy to discuss them with you further.

Very truly yours,

Robert L Powell, PhD, PE
Principal