From: **Jeanne Zokovitch Paben** <jeanne.pabenlaw@gmail.com>
Date: Fri, Jan 24, 2025 at 2:23 PM
Subject: Comments on Lockheed's 2024 RASR from RES, FOCUS' Independent Consultant - Timely Response Requested
To: Sellers, Robert <Robert.Sellers@floridadep.gov>, Bland, Mike <Mike.Bland@floridadep.gov>

Dear Bob and Mike,

Please find attached comments from RES, the independent scientific consultant that advises Family Oriented Community United Strong, Inc. the community-based organization of Tallevast residents, on the status of Lockheed's cleanup in Tallevast and associated concerns or risks to residents. Laura Ward and Wanda Washington, Co-Executive Directors of FOCUS have asked that I provide this to you. In December we sent you a similar letter from Ramboll, the consulting firm paid by Lockheed pursuant to its Consent Order with the State. As you can see Dr. Powell and RES Consultants share similar concerns about Lockheed's investigation and cleanup. These were further addressed in our email which accompanied Ramboll's letter. We would appreciate FDEP's consideration of this letter, that FDEP provide to us the notes or other documents from Lockheed Martin meetings or teleconference referenced in the letter as they are not in OCULUS, and we would appreciate a community meeting with FDEP to address the ongoing failures of the cleanup after ten years of operation. Please let us know when you are able to do that.

Sincerely,
Jeanne

Corporate Headquarters
6575 West Loop South, Suite 300
Bellaire, TX 77401
Main: 713.520.5400

January 23, 2025

Mrs. Laura Ward, Executive Director
Mrs. Wanda Washington, Executive Director
FOCUS
PO Box 28
Tallevast, FL 34270-0038 la1law@aol.com
washingtonwd@aol.com

Subject: **Independent Review of 2024 Remedial Action Summary Report**
Lockheed Martin Tallevast Site (Former American Beryllium Company Site)
1600 Tallevast Road
Tallevast, Manatee County, Florida Project
Number PRJ108482

Dear Mrs. Ward and Mrs. Washington:

RES Florida Consulting, LLC (RES) is pleased to submit this letter outlining the findings and our resulting opinions from review of the Remedial Action Status Report (RASR) dated October 31, 2024, for the Lockheed Martin Tallevast (former American Beryllium Company) site ("the Facility"). The Site consists of both the Facility and the surrounding area where groundwater is impacted by the chemicals of concern.

INTRODUCTION AND BACKGROUND

RES' understanding of the project is based on litigation support provided to FOCUS as part of an administrative challenge on the Site Assessment Report (SAR) and Remedial Action Plan (RAP) and RAPA Addenda (RAPA) that were prepared in response to the contamination caused by the former operation of the Facility. The RAP and supporting RAPA documents were approved by Florida Department of Environmental Protection (FDEP) and since that time, Lockheed Martin has proceeded with remediation implementation. At the conclusion of the administrative challenge, the administrative law judge suggested that once the remediation system operated for a period of five years, FDEP would, and FOCUS could, evaluate the system performance and address potential issues that were raised at that time. FOCUS members reviewed the October 29, 2019 RASR, which contained an initial updated five year groundwater model and noted that Lockheed Martin stated that the groundwater recovery and treatment system was meeting or advancing the remedial action objectives, except for the hydraulic control along the southeastern capture zone boundary in the Upper Surficial Aquifer System (USAS). FOCUS observed that the plume maps showed substantial contamination migration beyond what had been predicted by Lockheed Martin. These concerns prompted FOCUS to request that we review the RASRs that had been prepared to date to assist the community in understanding the technical issues and deficiencies that were contained within the reports and evaluate how those issues may be affecting the community. Since that time, we have provided on-going support to FOCUS to compile information and opinions regarding the ongoing remediation progress and regulatory reporting.

Recently, Lockheed Martin issued a Remedial Action Summary Report (RASR) dated October 31, 2024, that summarizes the remedial activities conducted from September 1, 2023, through August 31, 2024. Appendix H of the 2024 RASR, includes a copy of a *Five Year Modeling Update and Report* dated October 24, 2024, prepared by Tetra Tech, Inc. Some of the

recommendations outlined in the RASR are reported to be based upon a teleconference held on October 16, 2024, between Lockheed Martin and FDEP. We were not able to locate meeting minutes or other documentation of that teleconference on OCULUS. **We recommend that FOCUS request a copy of the meeting minutes be provided to them.**

The focus of this letter is to outline our concerns, including several that have been previously presented but continue to be unaddressed and possibly resulting in the spread of the plume and rebound from EWPARM.

RESULTS OF 2024 RASR REVIEW

Dynamic sampling techniques used for extraction wells during EWPARM may mask contamination, causing rebound over time. Despite our repeatedly expressed concern regarding Lockheed Martin's sampling techniques, dynamic samples continue to be collected from extraction wells to represent contamination concentrations in groundwater as if they are monitoring wells. During EWPARM, Lockheed Martin pumps extraction wells for prior to dynamic sampling. Based on the data collected from the extraction wells, decisions were made to remove the extraction wells from service or EWPARM. We note that Lockheed Martin had to restart EWPARM for EW-2102 because of rebound of TCE experienced at nearby monitoring well MW-35. This is indicative of a continued source in that area that was not documented, likely due to the dynamic sampling methods used during EWPARM. **We recommend conducting four quarterly sampling events of the extraction wells and associated monitoring wells using quiescent sampling methods until two events determine that both the extraction wells and associated monitoring wells are below GCTLs for the last two consecutive quarterly sampling events prior to discontinuing EWPARM. This would include collecting samples after ordinary well purging for sampling, but at least two months after any pumping from extraction wells in EWPARM. This is consistent with the RAP and industry standards and would assess whether representative (static) groundwater conditions meet GCTLs.**

Consistent with the 2018 model, the 2023 model continues to predict contamination outside of the capture zone. Concerns in the area north and west of the site became apparent and were raised during our review of the 2018 groundwater model because it forecasted that contamination existed outside of the predicted capture zone in the northwest plume in the USAS. This finding in 2018 was not discussed in the narrative of the RASR at the time. However, FOCUS brought this to FDEP's attention and requested that an independent review of the model be conducted. This conflict between the model and the capture zone boundary estimates was never addressed by Lockheed Martin or FDEP.

Lockheed Martin reportedly updates the model on a biennial basis, so FOCUS has requested that Lockheed Martin present the incremental model updates since 2019. This request was never acknowledged by Lockheed Martin or FDEP. In Appendix H of the 2024 RASR, Lockheed Martin presents a report of the model update for the period from 2019 to 2023, but none of the incremental updates are provided or referenced. It provides only one snapshot of data, only that of August 2023. Lockheed Martin's text in the RASR merely states that the model was conducted, and the report is provided in the appendix but does not provide any summary or conclusion associated with the model report.

Additionally, Figure 2-9 *Locations of infiltration galleries, extraction trenches, surface waters, and drainage features, 2024 model* shows that neither the six-acre stormwater pond associated with the Manatee County Transit facility, nor the five-acre pond associated with the Amazon warehouse were included in the updated model. The Amazon facility pond is located within the capture zone and in proximity to the underassessed leading southeast edge of the plume. The transit facility pond is located outside of the estimated capture zone, but at a similar distance to other surface water features that were considered in the 2024 model. In contrast, reference wetland 3 (RW-3) that Lockheed Martin removed from the wetland management plan due to it being permitted to be impacted by development remains part of the modeling analysis. **We recommend rerunning the model including the correct surface water features in the area to ensure the most accurate data is used to predict the plume configurations and capture zones.**

It is also important to note that the updated model report shows that the southeast edge of the capture zone does not reach the extent of the 1,4-dioxane plume in the USAS (PZ-USAS-19). This area that was never properly assessed has been a vocal concern of the community dating back to the approval of the 2009 RAPA and it has still not been sufficiently addressed. Lockheed Martin indicates in the 2024 RASR that based on a teleconference with FDEP, a limited groundwater monitoring event will be conducted in this area in December 2024 to evaluate 1,4-dioxane concentrations and that the results will be provided to FDEP in a separate letter report. Lockheed Martin recommends including PZ-USAS-17 and PZ-USAS-18 in the 2025 annual and semi-annual monitoring events. We have requested additional assessment in this area in the past and therefore concur that it is necessary and appropriate. We appreciate this additional assessment being conducted in this area. However, Lockheed Martin states that the 1,4-dioxane plume associated with PZ-USAS-19 is delineated horizontally and vertically. We remain concerned that the horizontal delineation relies on monitoring wells located 600 feet (east) and 1,000 feet (west) away, and therefore, cannot be considered sufficient for knowing where the contamination is, forecast its migration path or confirm the extent of the capture zone. **USAS monitoring wells closer to PZ-USAS-19 are needed to properly characterize this area of contamination. The groundwater elevations in the monitoring wells and piezometers in this area should be monitored to confirm the capture zone.**

Further, the vertical delineation of 1,4-dioxane at PZ-USAS-19 is based on a LSAS monitoring well that is located about 300 feet northwest (upgradient) of PZ-USAS-19, meaning that there is no deeper monitoring well either downgradient or below PZ-USAS-19. We insist that even with the additional sampling being proposed, the area is not properly assessed. **Deep monitoring wells closer and southeast of PZ-USAS-19 are needed to properly characterize and delineate this area of contamination. Previous efforts in this area have not been successful in delineating or controlling the plume, and it continues to spread. Urgent action should be taken to stop and recover the contamination spread.**

Because of Hurricane Debby, Manatee County required that Lockheed Martin temporarily cease discharge of the groundwater recovery system to the POTW. The remediation system was temporarily shut down on August 3, 2024, and resumed operation on August 7, 2024. This impacted the ability of the system to capture the plume. Lockheed Martin indicates that there was an estimated precipitation total of 15 inches in Manatee County, resulting from the storm. Three weeks after the storm, on August 27, 2024, Lockheed Martin field personnel collected groundwater elevation measurements. Maps from that event show the contamination plume extending beyond the capture zone in both the northwest and southeast areas. It is expected that with the lack of pumping and heavy precipitation this severe weather event may have exacerbated plume spread. These are two areas that we have repeatedly expressed concern about the system being insufficient to recover and treat the plume. Understandably, the RASR does not report on effects of Hurricane Helene or Milton on the system because these hurricanes occurred after the reporting period of the RASR. **FDEP should require an interim assessment of the impact of these storms, report any system outages that may have occurred and remedial measures to abate the impact. With the increased frequency of severe storm events, Lockheed Martin should prepare a severe event response plan to include resilient remedial and reporting strategies.**

The 2024 RASR map includes an estimated capture zone from a February 2024 event to show a pre-hurricane and more ordinary condition. However, Lockheed Martin shows the February 2024 groundwater contour to demonstrate that the capture zone extends further south, but not as far as the southeast area of plume documented by PZ-USAS-19 even under ordinary conditions. The capture zone in that area is inferred because of a lack of monitoring well coverage further south. We note again that the 2023 model shows the capture zone in the southeast to fall short of where contamination is documented. Because of the lack of historical assessment in that area, insufficient elevation data south of the capture zone, and with inconsistencies between the model and Lockheed Martin's predictions, the groundwater recovery system has been shown to be inadequate to prevent the contamination from migrating to the southeast. **We recommend that groundwater elevation measurements for monitoring wells MW-259, MW-260, MW-261, PZ-USAS-18, PZ-USAS-19 be added to the regular elevation monitoring schedule so that Lockheed Martin can depict a proper capture zone (not an estimated, dashed line) in the downgradient area of plume spread.**

We have also repeatedly pointed out that there is insufficient information to substantiate the capture zone boundaries, more broadly. In several additional cases, the groundwater elevations within the capture zone within the USAS are at lower elevations than those from inside the capture zone. There are numerous locations where there are no datapoints to estimate the capture zones at all. The RASRs simply indicate that capture boundaries shown on figures are estimated using data from monitoring wells, stilling wells, and piezometers, and by applying professional judgment. It is unclear how these "inferred" capture zones can be estimated without data to support them. The RASRs continue to lack sufficient rationale to justify why the capture zones do not match groundwater elevations. **We urge an independent expert review of the potentiometric figures and the groundwater model to confirm the extent of the estimated capture zones and to determine additional data points necessary to substantiate the estimated capture zone configuration.**

In the northwest area, more than two million gallons of groundwater have been recovered from EW-2011, EW-2012 (extraction wells closest to the plume). While EW-2011 has shown a decrease of 1,4-dioxane concentrations since 2013, concentrations of 1,4-dioxane in samples collected from EW-2012 have shown little net improvement over time. Additionally, the groundwater concentrations of 1,4-dioxane for the two indicator monitoring wells in that area, MW-108 and MW-109, have gone from 6.6 micrograms per liter (µg/L) to 5.2 µg/L and 12 µg/L to 13 µg/L since 2009. Review of this data suggests that the model is correct in estimating that the plume is not being properly recovered in that area and that a more aggressive and focused remedial strategy is appropriate. **This supports our previous and current request to have the model independently reviewed and the remedial action strategy re-evaluated.**

Private monitoring wells have been eliminated from monitoring without justification and recent data demonstrates why private wells should continue to be monitored. As discussed in previous RASR review letters, the number of private wells being monitored has been reduced from eight private wells as of 2012 down to two. In the 2024 RASR, it is reported that a concentration of 1,4-dioxane was identified above the GCTL for the first time in private well 7561/7571 15th St E. The well was resampled in September and the result was below the GCTL. Lockheed Martin recommends increasing sampling frequency to quarterly beginning in December 2024. Lockheed Martin indicates that they have attempted to contact the property owner to discuss the results, abandonment of this well and having the property connected to public water supply and that they will continue efforts to contact the property owner. **All private wells in proximity to the contamination plume should be removed from service and properties connected to public water supply, especially because they are not being monitored.**

To remind you, Lockheed Martin eliminated monitoring nearly all the private wells and when FDEP requested that they provide justification for removal of private wells from monitoring, incorrect and confusing information was provided. Only two private wells are being monitored, PW-7 (one of the original wells in the RAP) and PW-132. Also, one of the private wells that is no longer being monitored is PW-38 which was only sampled one time and displayed a 1,4-dioxane concentration of 95 ug/L – about 30 times the GCTL - and it was never sampled again. It was abandoned without rationale and never replaced or discussed further. Lockheed Martin has yet to provide sufficient justification and rationale for why all active private wells are not being monitored and if they were abandoned why they were not replaced with monitoring wells. **In the absence of a rationale for removing these private wells from monitoring and not being abandoned, they should be monitored as was agreed by both Lockheed Martin and FDEP.**

The reference wetland should be outside of the influence of the capture zone. The 2024 RASR includes a brief discussion of AECOM's August 29, 2024, Wetland Monitoring Report (WMR) for the period of June 2023 through June 2024 but does not append the report as it has in all of the previous RASRs. This WMR includes the annual assessment of Target Wetland (TW)-6 that occurred in June 2024, wetland water level data for the reporting period for TW-6, one instance of water level monitoring at the newly identified Reference Wetland (RW-6) which was formerly known as TW-2. RW-6 is located within the inferred capture zone for the USAS and therefore it is not appropriate to use as a reference wetland. If the wetlands are being influenced by the groundwater recovery system and there is no wetland outside of the influence of the recovery system being monitored, then designated RW-6 cannot be used to evaluate the system's impact on wetlands.

Considering the changes in the groundwater recovery system that have occurred without any reference wetland monitoring, it is of utmost importance to monitor a reference wetland in conjunction with the target wetland. A previous wetland report stated that plans to abandon the monitoring wells at reference wetlands RW-1 and RW-2 were thwarted due to overgrown vegetation. **We, therefore, recommend that one of these two wetlands be selected as a reference wetland, and the water level monitoring continue.** Please see our November 5, 2024, letter outlining our review of the 2024 Wetland Monitoring Report.

ADDITIONAL HISTORIC CONCERNS YET TO BE ADDRESSED

Several areas of concern that we raised during our review of previous RASRs remain unaddressed. Without Lockheed Martin conducting further evaluation of these areas of concern, we are unable to assess their impact to the community and Lockheed Martin is unable to determine if adjustments to the remediation system or other measures should be implemented.

Potential exposure pathways in the residential area continue to be unassessed. Despite repeated requests from the community and FDEP, Lockheed Martin continues to avoid assessing potential shallow groundwater impacts in the residential neighborhood located immediately south and east of the source property in the apparent downgradient direction of the shallow plume movement. There is no well moratorium for this area nor any other deed restrictions preventing people from contacting the shallow water table in the USAS. Additionally, undetected contamination in the shallow groundwater could be a source of vapor encroachment into homes and cause community exposure to volatile contaminants of concern.

While this has been discussed in previous letters, we raise the issue again in this letter to document the lack of response of requests for assessment in this area because it is important for the owners of the private residences to know the groundwater contaminant levels beneath their properties. FOCUS waited patiently back in 2006 for this assessment to occur. When FOCUS raised concerns about the adequacy of the assessment FDEP's general counsel, Larry Morgan, issued a letter to FOCUS, dated November 23, 2006, stating "The Department's decision to accept the SARA III does not preclude additional testing, research, or other activities, which may be required of Lockheed Martin in order to develop and implement an appropriate RAP. Additional testing and other activities to further develop and implement an appropriate RAP are expected." The letter states "By this letter, the Department is representing to you and your clients that a decision not to pursue a Petition for Formal Hearing on the approval of the SARA III will not in any way preclude you or your clients from raising any concerns or disputes about the adequacy of the SARA III in response to a Department approval of a RAP submitted by Lockheed Martin." FOCUS agreed not to challenge the adequacy of the SARA III based on FDEP's encouragement that the concerns about assessment deficiencies would be addressed prior to RAP approval. Community concerns were not addressed prior to issuing RAP approval. Many of the concerns that the community had are still unanswered and not properly studied.

The data that Lockheed Martin provided as evidence of adequate assessment in the area southeast of the Facility was very limited in scope, showed high levels of PCE and TCE in this area, did not include any 1,4-dioxane evaluation, was not in the location of the residences, was collected for a different purpose and is 20 years old.

Additionally, in a February 4, 2021, FDEP memorandum, FDEP commented that there are several hot spots where contaminant concentrations remain quite a bit above the cleanup goals. Undetected hot spots in the shallow groundwater could also be a source of vapor encroachment into homes and cause community exposure to volatile contaminants of concern. Lockheed Martin has not conducted adequate testing in those potential hot spot areas, and the FDEP has not enforced previous mandates to conduct such testing. **We recommend that at least one shallow groundwater sample be collected from each residential property located south of Tallevast Road between the railroad tracks and the golf course. FOCUS can assist Lockheed Martin with obtaining site access agreements with the individual homeowners to facilitate this necessary assessment. Further, all groundwater samples in this area should include samples collected from the top of the water table and tested for all COCs to assist in evaluating potential for contamination exposure through direct contact with the groundwater or via vapor encroachment impacts to the residents of the community. Without knowing the concentrations of contaminants in the shallow groundwater or vapor, the risks of exposure are unassessed.**

Lower Shallow Aquifer System (LSAS) Plume and Capture Zone are still not defined, and the AF gravels is not property assessed**.** Lockheed Martin drew downgradient LSAS plume lines based on data from monitoring wells MW-268 and MW-168, but those wells are essentially 1,700 feet apart, leaving the downgradient area in between them unassessed. **We recommend that at least one LSAS monitoring well be installed between those two monitoring wells to confirm the plume boundaries. This is essential because the "inferred" capture zone in that location is only 500 feet to the south but there are no monitoring wells to provide groundwater elevations to confirm this to be the case.**

Related, the locations where the highest concentrations of 1,4-dioxane, TCE and 1,1-dichloroethene (1,1-DCE) are from monitoring wells on the golf course and the private property to the south. The highest concentrations are measured from dynamic samples collected from extraction wells which, as outlined above, should not be used to define plumes as they are not representative of static groundwater conditions. There are no deeper wells in this area to define the vertical extent of impacts beneath this most contaminated area**. We recommend AF gravel wells be installed in the golf course to delineate the vertical extent of contamination in the area of the highest contaminant concentrations in the LSAS.**

Extraction wells are being used to delineate plume and capture zones. The discussion above focused on the USAS, but the definition of the LSAS plume and capture zones is also concerning because Lockheed Martin has used data from extraction wells EW-3019 and EW-3020 to delineate the western edge of the plume. It was discussed earlier how these dynamic samples should not be used in lieu of monitoring points. The plume is estimated to be very close (about 150 feet) to the capture zone. This is even more egregious because there is no groundwater elevation monitoring data used to substantiate the placement of the capture zone. **We recommend that Lockheed Martin install LSAS monitoring wells to the west of MW-98, EW 3019 and EW-3020 to delineate both the plume and the capture zone in this area.**

We strongly recommend that FOCUS' concerns be taken into consideration by FDEP and Lockheed Martin and addressed and that there be transparency of FDEP communications with Lockheed Martin.

We appreciate the opportunity to offer our professional services to you. If you have any questions concerning our evaluation, please contact us at 954-484-8500.

Sincerely,
RES Florida Consulting, LLC dba E Sciences

Kathryn Eisnor
Senior Scientist

Nadia G. Locke, P.E.
Senior Engineer

Cc: Ms. Jeanne Zokovitch Paben