Memo **Date: August 7, 2014 page 1 of 2**

To: Francine Locke, Director, OEMS From: Jerry Roseman M.Sc.I.H. President, OHCS, Inc. & Director of Environmental Science and Occupational Health & Safety for the PFT H&W Fund/Union

Re: IEQ Evaluation at Lawton E.S. **Inspection** Date: August 8, 2014

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**1.0 Background**

On Friday 8/7/14 Brian Joseph and I conducted a joint IEQ-related site visit at Lawton E.S. as a result of a PFTH&WF/U-H&S/OHCS request to PSD-OEMS. The assessment was performed subsequent to: [1] ongoing concerns and questions received by PFTH&WF/U-H&S/OHCS about the repetitive history of mold, moisture and air quality deficiencies at Lawton E.S.; and [2] as a follow-up to the multi-year history of IEQ-related problems at this location.

Beginning in at least 2010, dozens of on-site evaluations, sampling data collection, and other assessments have had to be conducted by PSD and PFTH&WF/U H&S/OHCS representatives because of the ongoing and serious nature of the problems detected. Unfortunately, continuing and major problems are still present at Lawton E.S..

An abbreviated evaluation and current problem summary, from our 8/7/14 inspection, is provided below. However, it is noted that in order to generate a comprehensive and representative picture of all relevant health and safety, and related, issues it is necessary to include data, reports, recommendations, and documentation from Brian J. [OEMS], FMS and CPO representatives and others from the PSD who have been involved in evaluating HVAC system[s] and other building conditions related to IEQ at Lawton and who are responsible for responding to, and correcting, damaged and deficient systems and conditions.

**2.0 Issue/Problem Summary**

1. The 08082014 IEQ Dashboard documents a total of 45 IEQ and related deficiencies 15% of which are “repeat” deficiencies and 25% of which have remained “open” for as much as two [2] years and with no dates provided by which repair or other needed work will be conducted.

2. Water damaged/stained ceiling tiles were observed in rooms 207, 209, 211, 213, 217, 218, 219, 220, 222, 224, and the hallway outside of 218 - these findings likely indicate roof or related water intrusion problems [all should be characterized as “repeat” problems];

3. The CUV [#209] in room 220 has a missing front panel – posing a safety hazard. This condition has reportedly been present, documented and was on the original “punch list” of items in 2008 but without being addressed to date;

4. CUVs in rooms 224 and 226, in addition to some other locations, have been leaking causing water intrusion and damage to the classrooms 112 and 114 below. In room114, the leak from the CUV above also caused a fault in the electrical circuit to one of the room lights – these conditions have reportedly been present for 2 – 3 months;

5. Computer display[s] and control system data responsible for the operation and function of the HVAC systems at Lawton are not working as designed and/or as necessary to effectively operate the system – several different and specific failures were described to us during our inspection;

6. The alarm/status displays associated with the exhaust fan system operation for all classroom HVAC components in the new addition indicated that all of the exhaust fans had failed and were no longer operational. Additionally, the digital control displays associated with the exhaust fan system, designed to provide information necessary to operate the systems have all failed – this condition has reportedly existed for 2-3 years;

7. Insufficient training for, and information and understanding about, the function, operation and maintenance of all HVAC system components, elements and control technologies has been made provided to FMS representatives. Detailed written information, training and expertise about many aspects of system operation and control including but not limited to thermal control, differential pressure, CO2 and, perhaps, other sensors, used to control temperature, fresh and recirculated air flows and volumes, specific operation of CUV and other HVAC system dampers, exhaust fans and other components has not been made readily available, and/or regularly updated sufficient to ensure being able to adequately address ongoing mechanical system problems and inefficiencies that result in health and safety and educational impacts on building occupants;

8. The situation/condition of the HVAC supply-exhaust system in the new gym is deficient reportedly because of the lack of proper installation of necessary fresh air/air circulation provided to this space following the sealing of windows [windows had previously been operable to facilitate the introduction of some fresh air];

9. A major, systemic problem at Lawton [new addition] is reportedly related to the design and installation of the HVAC-CUV systems and hardware that has made condensate lines almost completely inaccessible to building maintenance personnel such that they can not effectively or promptly clear clogged condensate lines; and

10. Routine, and/or preventive HVAC-CUV system maintenance on system components in the new building is more time-consuming and challenging to accomplish because of the design and installation of the HVAC-CUVs. Activities including filter changing and coil cleaning are necessary to be done on a monthly – semi-annual basis to ensure smooth and efficient system operation; however, given the realities of the Lawton mechanical systems and the too limited PSD resources, effective and necessary maintenance tasks as required are unable to be successfully performed;

*\*\* Please note that the summary above should not be considered as a fully comprehensive listing of all problems.*

**Preliminary Recommendations**

Given the above PFTH&WF/Union-H&S/OHCS is providing the following informational request[s] and preliminary recommendations/action items:

**Action Item 1** - Promptly [prior to 9/2014] assess and repair all leaks [including from, but not limited to, piping, roofing, and HVAC systems] and replace all water damaged and stained ceiling tiles and other impacted building materials;

**Action Item 2** - Promptly [prior to 9/2014] repair CUVs by clearing drain lines and condensate components, and affecting mechanical repairs in rooms 224 and 226 – and elsewhere - as necessary to ensure they are operating properly and will continue to do so. Also repair/replace the front CUV [209] panel in room 220;

**Action Item 3** - Promptly [prior to 9/2014] assess and evaluate the roofing system to identify and repair all leaks;

**Action Item 4** - Promptly [prior to 9/2014] arrange and/or begin to conduct a systematic and comprehensive review of all HVAC system design, operational and related deficiencies, using information included on, and accessible from, IEQ Dashboards, FMS Work Order system information, data and experience of the FACs and B.Es and any other relevant evaluations, assessments and actions conducted to date [include CPO and design information].

This activity should be coordinated and conducted jointly with PFTH&WF/Union-H&S/OHCS representatives and a written detailed informational summary report to be developed and shared with all stakeholders and occupants including PFTH&WF/Union-H&S-OHCS representatives. This report should identify all currently existing problems including “root cause” issues and specific remedial recommendations and implementation time frames should be clearly presented;

**Action Item 5** - As part of the HVAC system review described in recommendation #4 above, specifically assess the adequacy and provision of fresh air to ensure compliance with ASHRAE, EPA, NIOSH and other relevant guidelines sufficient to maintain measured CO2, temperature and humidity levels within accepted limits;

**Action Item 6** - Specifically assess and repair all non-functioning exhaust fan system components, controls and display devices sufficient to ensure proper operation. This work should be completed prior to the 09/2014 start of school;

**Action Item 7** - Immediately arrange to restart a “Tailored Environmental Intervention” [TEI] and an "Environmental Action Team” [E.A.T.] approach as jointly discussed, developed and previously employed by PSD-OEMS at Webster, Lowell, Lawton, as well as at some other locations.  To facilitate effective and open communication and to ensure coordinated and efficient action, the E.A.T. should be composed of a working committee, to include but not be limited to, representatives from PSD OEMS, FMS, CPO, school Principal, occupants and PFTH&WF/Union-H&S-OHCS representatives;

**Action Item 8** - Written, detailed informational summaries about the operation, design, and function of the existing HVAC systems in conjunction with conducting effective site/system specific education and training for the school B.E., and FMS mechanics, in order to ensure that they have a sufficient level of knowledge, expertise and ability to properly operate, maintain and repair the existing systems.  The B.E. assigned to this location should be formally trained in the operation, hardware, and control technologies and methods for the mechanical systems;

**Action Item 9** - Conduct a critical review of the design-build history at Lawton, with a special focus on HVAC systems. The major purpose of this effort is part of an urgent “lessons learned” type approach to better understand what has gone wrong and why with new system installation and operation. This review should be jointly conducted with PFTH&WF/Union-H&S/OHCS representatives and information shared and communicated to ensure implementation of a best practices approaches moving forward