Executive Summary of the Technical Studies on the Flood Mitigation Benefits

of the SJRA Lake Conroe Seasonal Lake Lowering Program (SLLP)

An executive summary, created by the Lake Conroe Association in January 2020, of the 2018 Freese and Nichols (F&N) study which was sponsored by the SJRA is shown on page 2. **The F&N study is cited by the SJRA as the "science" supporting implementation of the SLLP. However, the study clearly concludes "there is no wholesale flood mitigation benefits from lake lowering for downstream areas" compared to maintaining the normal pool level.** The F&N study also **had a major limitation in that the boundary of the study did not go beyond the intersection of I-45** and the San Jacinto river 25+ miles upstream of the Lake Houston area.

To address this limitation and to clarify whether any potential benefit from the SLLP existed at the Lake Houston area the Lake Conroe Association contracted to have an independent review of the F&N study. Both the SJRA and the Kingwood Chamber of Commerce were invited to participate and declined. **The purpose of the study, referred to as the Bleyl study, was to provide an independent and professional review of the F&N study and to use available hydrologic models and data to assess the impact of the lake lowering program as water travels from the Lake Conroe Dam to the Lake Houston area.**

The conclusions of the Bleyl study was that the F&N study methodology was correct but had several limitations. **Bleyl did reach the same conclusion that the SLLP had no wholesale benefit to mitigate downstream flooding at the study boundary at I-45 and San Jacinto river.**

Bleyl then modeled the West Fork watershed using the same assumptions and basic rainfall data as the F&N study and calculated flow rates, water levels, and flooding footprints for both the Lake Conroe normal pool level (201' msl) and also at a starting point of 2' below normal pools (199' msl). It is important to note the difference in water levels at Lake Houston do not relate directly to those that were calculated at the I-45 and SJ river intersection in the F&N study as additional water inflows and drainage occurs along the full watershed. However, by starting at the dam and then ending at the Lake Houston confluence the **Bleyl model does addresses the Lake Houston flood level differences due to a Lake Conroe lowering of 2'.**

The Bleyl study concludes that the difference in the 100- and 500-year storm events on water surface levels at Lake Houston is only **3" out of a water level of 59' (0.4%).** More importantly this minor increase in lake level does not cause any measurable increase in the flooding footprint (spatial extent) in the Lake Houston area. **In other words, lowering Lake Conroe by 2' does not create any measurable reduction in the flood area at Lake Houston and it does not reduce the number of houses or businesses impacted from flood water in the event of a 100 or 500 year rain event. This area will flood during a major rainfall event but lowering Lake Conroe by 2' does not alter the flood area largely caused by the many other water sources.**

Previous Executive summary – the Freese & Nichols study assessed the impact of a 100 and 500 year rain event on the recommended water discharge rate from Lake Conroe with either no lowering from the normal pool level of 201'MSL or a 2' to 3' lowering of the pool level resulting in starting levels of 199'MSL and 198' MSL respectively.

Key Conclusions:

In both cases of a 100 year and 500 year rain event the water level rise at the end point of the study model (the junction of I45 and the West Fork San Jacinto River) showed a decrease of 9-10" in the flood water height due to the lowered lake level of 2' and starting level of 199' MSL.

This 9-10" difference (rounded to 12" in the F&N report) is a reduction in the total estimated flood level of 8 feet in the 100 year storm event and 12 feet in the 500 year storm event.

These 9-10 inches are a very small reduction of total flood rise level in both storm events. Using the exact numbers from F&N the reduction in the 100 year storm event is **9.4%** (9"/ 96" which is 8FT) and for the 500 year storm event is **6.67%** (9.6"/ 144" which is 12 feet).

These reductions of 6-9% of the flood height due to 2 feet of lake level lowering were assessed by F&N as ***"generally not enough to be considered wholesale improvements to the flood hazard and show minimal differences in spatial extent." Direct quote from F&N study*** (note spatial extent means spread of flood water)

Study deficiencies or key factors that further support the lake lowering program offers no material flood improvement downstream of the dam.

The F&N study did not model the flows beyond I45. Lake Houston is another 25+ miles further south and 157 feet lower than Lake Conroe. It would be expected the flood water will spread out and the water height will further decrease as it flows into the southern West Fork watershed. It is reasonable to expect a further reduction of 35-65% or more in the flood water height depending on downstream rainfall.