

Gentlemen:

I oppose this study's recommendation to allow sand miners to remove sediment from the point bas outside mines. This work is required to comply with the BMPs, that stipulate undisturbed buffer zones between the mines and the river. Other methods to remove sedimentation include:

- Revegetating riverbanks
- Dredging more often where the sand builds up near the mouth of the West Fork
- Dredging a channel through the mouth bar area
- Reinforcing sand-mine dikes to withstand floods
- Leaving more natural green space between mines and the river
- Moving sand mine stockpiles out of floodway/floodplain areas
- Only clearing areas actively being mined
- Decreasing the slope of sand mine dikes

Sincerely,

Alan J Smith



We preserve land along streams for flood control, clean water, and wildlife

8 April 2022

TO: Mr. Matthew Barrett, PE  
Division Engineer  
San Jacinto River Authority  
Email submitted to: [floodmanagementdivision@sjra.net](mailto:floodmanagementdivision@sjra.net)

RE: SJRA Sand Trap Development Conceptual Design Summary

Dear Mr. Barrett,

Thank you for the opportunity to meet with you and learn more about the full scope of the San Jacinto River Authority's Sand Trap Development Conceptual Design Project. And thank you for taking the following comments into consideration as you investigate the feasibility of this concept.

Bayou Land Conservancy (BLC) preserves land along streams for flood control, clean water, and wildlife. A community supported non-profit corporation, our area of conservation focus is the Lake Houston watershed (upper San Jacinto River) which provides about 85% of the drinking water for the Houston metro area. Our work is accomplished through voluntary conservation agreements with willing landowners that provide benefits to the community at large.

The stated purpose of the study was to "assess the feasibility of implementing a pilot project to trap sediment, preferably in coordination with one or more Aggregate Production Operations (APOs), to remove sediment from the West Fork or East Fork of the San Jacinto River." Unfortunately, the purpose of the study does not address the goal that was brought forward in our meeting with you: to address the excessive mouth bar deposition, downstream of US 59, that restricts flood-level flows in the Kingwood community. **We recommend that this stated goal of a long-term solution for managing the mouth bar deposition of sediment, and related flooding, be kept at the forefront as this project moves forward.**

Among its other activities, BLC has been studying the impact of sand and gravel mining in the floodplain of the West Fork of the San Jacinto River since 1995. At the time of initial analysis less than 8% of the river's floodplain had been mined. As of the most recent analysis in 2017, more than 30% had been mined. Community needs dictate this growing industry have greater oversight by state regulators, and BLC has been an active proponent for this oversight, which was implemented through a TCEQ rule change in late 2021 that includes Best Management Practices for industry in the San Jacinto River watershed. We do not believe that in-stream mining, i.e. sediment traps, is consistent with the BMPS set out in this newly published rule.

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[www.BayouLandConservancy.org](http://www.BayouLandConservancy.org)

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Our concerns with the implementation of in-stream mining (sediment trapping) are primarily about impacts on the following:

- 1) **River migration and erosion:** changes in river course, including erosion and deposition of sediment, are naturally occurring processes. Installation of hardscape or mechanical features within the flowing part of the river will have an impact on this natural process and could lead to increased erosion in the area surrounding the facility, increased sediment transport downstream, and destabilization of the stream to the detriment of the surrounding and downstream communities. The US Army Corps of Engineers promotes keeping sediment within the riverine system for these reasons.
- 2) **Water quality:** 85% of the drinking water needs of the Houston metropolitan region are met by Lake Houston, at the receiving end of the San Jacinto River. Instead of occasional turbidity increase during dredging of the mouth bar, sand trapping could create a long-term elevation in turbidity leading to increased water treatment costs for the entire region, transferring the cost to the public from private interests. Additionally, the riverbed contains chemical components that may need to be addressed in water treatment at additional public expense.
- 3) **Accountability:** the governing legislation created by HB1824 does not address the question of accountability should the private interest in the sediment trap fail to protect the public's interest or go out of business without remediating the in-stream mining facility.

Two of the recommendations from the study deserve to be prioritized, and expanded, to provide as much accurate data as possible before sand trapping facilities be considered:

- 1) Evaluate total annual sediment load transported to Lake Houston, including the area downstream of proposed sediment traps, and compare to anticipated trapped sediment loads.
- 2) Perform further geomorphic assessment to address potential downstream instabilities due to removing sediment and to determine appropriate sediment removal volumes.

**Comment:** Keeping in mind the stated goal of a long-term solution for managing the mouth bar deposition of sediment, we encourage SJRA to extensively study the holistic sediment story of the upper San Jacinto River watershed. Previous studies point to Spring and Cypress creeks as the primary sources of sediment relocated during Hurricane Harvey, rather than the West Fork, and we recommend that their contributions be studied as well as the areas downstream of the proposed sand traps. A science-based, peer-reviewed, methodology of assessing the sediment budget of the watershed is imperative before assuming that removing sediment from any single location on the river will have a positive impact on mouth bar deposition. In fact, the stated recommendation above of determining "appropriate sediment removal volumes" assumes that removal is appropriate before that has been proven by a

geomorphic assessment. Without a basis for understanding the sediment budget for the West Fork, including sources and sinks of sediment throughout the area, it's impossible to evaluate (or approve) this project.

Further, we recommend that SJRA consult with Texas Parks & Wildlife Department (TPWD), the Texas Commission for Environmental Quality (TCEQ) and the US Army Corps of Engineers (USACE), to clarify jurisdictional questions brought forward in definitions used in the report, including "gradient boundary" and "ordinary high water mark". These jurisdictional questions should be clarified as part of the holistic sediment study under consideration. Even though HB1824 exempted SJRA and Harris County Flood Control District from any requirement to obtain a permit, pay a fee, or purchase the material taken, in Texas the contents of a river belong to the citizens of the state, therefore we all have an interest in the results of this in-stream mining proposal.

**In conclusion, BLC recommends that extensive further study be undertaken to determine if in-stream mining, i.e. sand traps, will accomplish the stated goal of providing a long-term solution for managing the mouth bar deposition, without creating further instability to the river system and negative impacts to the surrounding and downstream communities.**

Thank you for your consideration,

A handwritten signature in black ink that reads "Jill Boullion". The signature is written in a cursive, flowing style.

Jill Boullion  
Executive Director  
[JBoullion@BayouLand.org](mailto:JBoullion@BayouLand.org)

Cc: Dr. Tina Petersen, Harris County Flood Control District

TO: Mr. Matthew Barrett, PE

April 29, 2022

Division Engineer, San Jacinto River Authority

(submitted by mail to: floodmanagementdivision@sjra.net)

RE: SJRA Sand Trap Development Conceptual Design Summary

Dear Mr. Barrett,

As a matter of introduction, I am a Professor Emeritus in the Dept. of Earth and Atmospheric Sciences, University of Houston, where I have been affiliated for over 45 years. During that time my students and I have conducted extensive research on the San Jacinto River (especially resulting from floods) since 1994. It is with that perspective that I offer these comments.

After careful review of the main report and summary document it is my opinion that the project as currently described should not be funded. This is not to say the problem isn't important or that nothing should be done. Rather I believe there are several important questions need to be resolved before any sand mining project could be considered.

- 1) **Effectiveness of sediment removal on the upper bar (ST004):** Removal of sediment at that location will result in downstream erosion for some distance downstream. The problem is the location is so far upstream of the area of concern (sedimentation at the mouth of the delta at Kingwood), that much of the removed sediment may have been replaced by the related downstream erosion. Until such time as the effects of downstream erosion has been modelled, the effectiveness of the location can't be evaluated.
- 2) **Location of sediment removal:** A related problem (to point 1) is where to best remove the sediment to prevent flooding. Clearly the most effective location is at or immediately upstream of the area of excess deposition in the delta. It should also be located downstream of the confluence of Spring and Cypress Creeks, as much (most?) of the sediment load into Lake Houston comes from these two tributaries.
- 3) **Determining the sediment load into Lake Houston:** This is a fundamental question that must be answered; however, the proposed location of the sediment gaging station is flawed. Given previous studies have flagged Spring and Cypress Creeks as the main source of sediment, to not obtain additional sediment load data from those creeks with new gaging stations seems a critical error. In addition, it would be better to have a

station below the Hallet mines but above the confluence of these tributaries if possible. Alternatively, a gaging station at Highway 59 would be appropriate.

- 4) **Problems with calculating sediment transport:** I have numerous concerns about the process by which sediment calculations were made using the Rosgen methodology. I can't go into details in this short comment, except to say the procedure to determine % bedload (a major variable in calculating total sediment transport), was not what is recommended by most agencies (e.g. USGS), i.e. measuring bedload *insitu*. An approximation was used (after Rosgen) of coring the upper point bar; however, the assumption was then made that only gravel is transported as bedload, and all the sand (even medium to coarse grained is part of the sediment load (see figure 10, p. 31 of report). Again, this is inconsistent with numerous studies that medium and coarser sand is typically transported as bedload except during major floods.
  
- 5) **Potential to encourage in-stream sand mining:** There are serious questions as to the location of the mining relative to the bankfull discharge and the Ordinary High Water Mark (OHWM) that needs to be clarified. This should not be construed as an encouragement for future in-river mining and its unacceptable environmental impacts.

**Summary:** These and other concerns have been raised by other reviewers as well. Let me just summarize by saying that the project as presently conceived is of value mainly to operators of APO's, and seems ill-placed to be most effective in reducing flooding in the Kingwood area. I recommend a more holistic approach to dealing with the issues of excess sedimentation (and erosion) in the San Jacinto River Basin in order to address the problems of flooding and increased sedimentation into the Lake Houston Reservoir.

Sincerely



William R. Dupre', PhD, PG

Professor Emeritus, Dept. of Earth and Atmospheric Sciences

University of Houston

wdupre@uh.edu

Sir/madam,

Every manmade lake in the world needs dredging.

So, it demands an ongoing maintenance that slipped through the estimated cost maintenance budget.

Because it is a regional cost/benefit problem one needs to figure out how to stream money on a continuous basis to fix the sediment problem. Between all stakeholders a tax, or budget item, system needs to be developed within all cities, counties, state. That money stream needs to be allocated in a fair above board manner.

This is not a onetime fix and be done. That approach is so wrong.

Howard Buckalew

Matt,

Thank you very much for the opportunity to respond to the Sand Trap Study you have formulated. I think your initial work is excellent and commend you on your data gathering. However, there are a few points I would like you to consider before proceeding.

As you know, my group worked very hard with TCEQ to establish Best Management Practices (BMPs) for Sand Miners in the San Jacinto watershed. This Rulemaking was approved in early 2022 and incorporated into 30 TAC Chapter 311, Subchapter J. Also approved was corresponding Regulatory Guidance document RG 555, implementing the BMP Rules. A key provision of the RG is

:

**2.1.1 Vegetative Buffer Zones** Vegetative buffer zones are continuous undisturbed or planted vegetated areas that surround a development, or land disturbance activity, or that border an intermittent stream or permanent water body. Buffer zones aid in sediment filtration and removal by slowing surface water flow through these areas. Disperse construction site runoff over the entire buffer zone if possible. A minimum 100-foot buffer zone is required adjacent to perennial streams greater than 20 feet wide, 50 feet for perennial streams less than 20 feet wide, and 35 feet for intermittent streams. Measure buffer zones from the stream bank to the nearest area of disturbance at the site.

We had fought very hard to establish these buffer zones (at one time we had proposed buffer zones of 1,500 feet). The very essence of this provision was to KEEP the miners out of the San Jacinto riverbed. Now to go back and allow in-stream mining seems counter-intuitive to me.

Additionally, I am not certain how you would get this buffer zone condition waived. HB 1824 issues a waiver per the Parks and Wildlife Code, Sec. 86.017. However, it does not address TCEQ regulation at 30 TAC Chapter 311(J), which was implemented AFTER HB 1824 was passed. You need to have your staff look at the interaction between the two conflicting provisions.

Before proceeding, I would suggest looking closely at Bob Rehak's *Holistic* approach to reducing sedimentation, as outlined in one of his recent articles:

- Revegetating riverbanks

Dredging more often where the sand builds up near the mouth of the West ForkMatt,

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- Decreasing the slope of sand mine dikes

<https://reduceflooding.com/2022/03/27/sjra-seeks-public-input-on-sediment-trap-proposal/>

Yours truly,  
William McCabe  
Lake Houston Area Grassroots Flood Prevention Initiative

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Yours truly,  
William McCabe  
Lake Houston Area Grassroots Flood Prevention Initiative

To Whom It May Concern:

I have read the executive summary and conducted a cursory review of the full report. It is not clear to me, and likely any layperson, why the report prefers the In-Channel Trap over the Out-Of-Channel Trap considering the In-Channel option appears to be significantly more expensive in terms of total dollars and cost per cubic yard of silt (Table 10, Page 27). The full report is very technical and may explain the reasons for the In-Channel option but the executive summary should present the alternatives in a very succinct manner that can be easily understood.

I suggest the summary say something like, "although more extensive study is needed to quantify the costs and benefits of the various options, the initial analysis indicates the In-Channel option is superior for these reasons..."

The reasons should address total initial cost, long-term operation/maintenance costs, efficacy of removing silt, ease of obtaining federal/state permits and funding, etc. The summary report should include a 10 to 30 year cost/benefit table showing total funding requirements using some reasonable discounting assumptions. Each of the reasons can be more extensively described in the full report, but the summary should reference the section/page numbers where the explanations are located.

Please contact me should you have any questions or comments related to my suggestions.

Regards,

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Randolph (Randy) C. Moravec

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**From:** Robert Rehak <brehak@mac.com>  
**Sent:** Friday, April 29, 2022 3:58 PM  
**To:** Flood Management Division  
**Subject:** Public Input On Sand Trap Proposal from ReduceFlooding.com

## Overview/Purpose

SJRA says the *purpose* of the sediment trap study was to assess the feasibility of implementing a *pilot* project to trap and remove sediment from the West OR East Fork of the San Jacinto. The study only assessed locations where one or more Aggregate Production Operations (APOs) could partner with the the SJRA. They restricted the study this way to reduce costs; the SJRA does not have a source of funding to clean out sand traps and would rely on sand miners.

## Initial Concerns

The decisions to:

- Define the study objective as *sediment* reduction, not *damage* reduction and...
- Only consider locations near sand mines...

...give me mixed emotions about this project.

## Pros

On one hand, I look at this and say, "It's a pilot project. Try it and see if there's a benefit." Sediment IS a problem and they believe they can remove up to 100% of the annual sediment load (from the West Fork).

## Cons

On the other hand, the study authors, Freese & Nichols (F&N) claimed (in the San Jacinto River Basin Master Drainage Study) that of all the sediment coming into Lake Houston, two thirds comes from Spring and Cypress Creeks while [only 13% comes from the West Fork upstream of US59](#).

Perhaps that's because they're using model inputs from a sediment gage at I-45 located 8.5 miles *upstream* from most of the large West Fork sand mines ([page 34, paragraph 3 of full study](#)).

Also, in their discussion of downstream sedimentation mitigation ([page 51, paragraph 3 of full study](#)), F&N says that their evaluation was confined to areas where natural processes rather than breeches of sand mine ponds likely contributed to sediment deposition. To see how limiting that is, [see the photos of sand mine breeches and their results in this post](#).



*The “Mouth Bar,” a giant sand bar that blocked the West Fork of the San Jacinto, backing the river up into Kingwood and Humble. Thousands of homes and businesses flooded behind this blockage. The above-water portion has since been removed, but most of the underwater portion remains.*

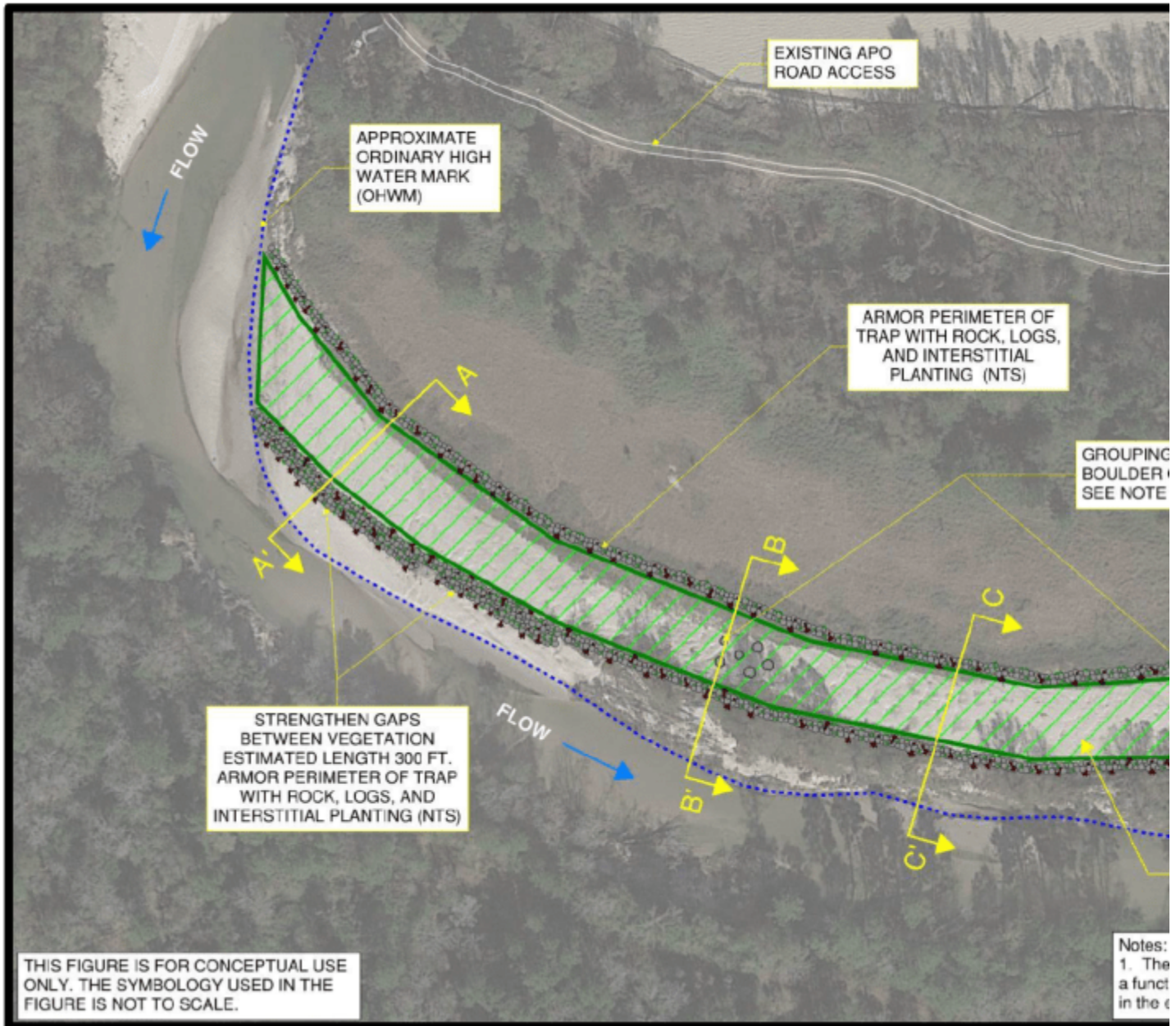
In the entire 246-page F&N study and the three-page summary, the word “damage” occurs only once...in relation to *erosion* damage, NOT *flood* damage.

It appears that F&N did not even look at creating sand traps where they were most needed, in the headwaters of Lake Houston, because of cost and logistical considerations. Yet the Army Corps, City of Houston, and State of Texas are spending \$200 million to dredge that area. One wonders whether SJRA should have looked harder for partners to clean out the traps.

Finally, if sediment traps only work financially near sand mines, the “solution” will not work on other tributaries that F&N alleges contribute 5X more sediment than the West Fork. They just don’t have the sand mines that the West Fork has.

### **Nature of Proposed Solution**

Five years after Harvey, we have a conceptual design and a recommended location: rock-lined channels cut through one or two point bars at the West Fork Hallett mine.



*Page 8 of the F&N study shows this schematic of the recommended solution.*

The shot below shows the same area in real life. To put the magnitude of the proposed solution into perspective, the solution would cover a little more than an acre. But sand mines like Hallett cover 20 square miles on the banks of the West Fork between US59 and I-45.



*2021 photo of sand bar outside Hallett mine that would have a narrow channel cut through it to trap sand.*

## **My Biggest Fears**

My biggest fears with the proposed pilot study are that it:

1. Asks people to chose from a limited menu.
2. Could divert attention from better solutions that would reduce flood risk faster in the headwaters of Lake Houston.
3. Might make the public think the problem is solved.
4. Could open the door to river mining and further destabilize the riverine environment.
5. Is not a transferrable solution.

For a pilot study, that last point is troubling.

Also, F&N worries that removing too much sediment from the West Fork could create a “hungry-water” effect that increases erosion downstream. But they have no way of *directly* measuring how much sediment the West Fork transports. Or what percentage they would remove. That’s because they’re relying on a sediment gage upstream from the sand mines. This introduces an element of risk in the pilot study.

### Recommendations Should Be Based on a *Holistic* Examination of Alternatives



*Note lack of vegetation on this steep-sided, eroding bank of Hallett mine on West Fork in foreground.*

Before moving forward with the pilot study, I suggest a more holistic examination of additional alternatives that might have a greater impact on reducing flood damage, not just sedimentation. Examples include, but are not limited to:

- [Revegetating riverbanks](#)
- [Decreasing the slope of sand mine dikes.](#)
- Reinforcing sand-mine dikes to withstand floods (like [HCFCD does with detention ponds](#))

- Leaving more natural green space between mines and the river
- Moving sand mine stockpiles out of floodway/floodplain areas
- Only clearing areas actively being mined
- Dredging more often where the sand builds up near Lake Houston
- Dredging a channel through the West Fork mouth bar area

Bob Rehak

[ReduceFlooding.com](http://ReduceFlooding.com)