



CLEAR LAKE CITY WATER AUTHORITY

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July 24, 2023

To: All Persons Interested in the Meeting of the Clear Lake City Water Authority Board of Directors.

Notice is hereby given that the Board of the Clear Lake City Water Authority (The "Authority") will convene at 6:00 p.m. on July 27, 2023, in Special Session open to the public at 900 Bay Area Boulevard within such Authority, such location being the location where a quorum of the Board will be physically present, and by:

Video conference call at: <https://meet.goto.com/455529981>

Phone conference call at: +1 (408) 650-3123 Access Code:455-529-981

Video conference attendance is authorized by Section 551.127, Texas Government Code. At the meeting the following items will be considered and acted on:

1. Comments from the floor (5-minute limitation);
2. Receive and act if needed upon Mr. Larry Dunbar's hydrology study on the impact of having detention at Clear Lake City Blvd. between Highway 3 and Interstate 45, for flood mitigation to the nearby subdivisions in CLCWA;
3. Old and New Business;
4. Consider and act upon adjourning the meeting.

Following the Board's consideration, and action if any, on the above items, the Board will adjourn from Regular Session and reconvene in Closed Session pursuant to §551.071 of the Government Code for the purpose of consulting with its attorney, pursuant to §551.072 of the Government Code to deliberate regarding real property and pursuant to §551.074 of the Government Code to discuss personnel matters.

Jennifer Morrow
General Manager
Clear Lake City Water Authority
(SEAL)



CLEAR LAKE CITY WATER AUTHORITY

Board of Directors' Special Meeting Minutes July 27, 2023

Special Meeting

The Board of Directors ("Board") of the Clear Lake City Water Authority ("CLCWA") convened in Special Session open to the public at 6:00 p.m. (CDT), on Thursday, July 27, 2023, at 900 Bay Area Blvd., such location being the location where a quorum of the Board was physically present and by video conference call at:

Video conference call at: <https://global.gotomeeting.com/join/455529981>
Phone conference call at +1(408)650-3123 Access Code: 455-529-981

Video Conference attendance was authorized by Section 551.127, Texas Government Code.

Roll Call

Roll was called of the members:

Mr. John Branch, President;
Mr. Robert T. Savely, Vice-President;
Mr. W. Thomas Morrow, Secretary;
Ms. Anthea Guest, Director;
Mr. John Graf, Director

Also present were:

Ms. Jennifer Morrow, General Manager;
Mr. Curtis Rodgers, Director of Utilities;
Mr. Samuel Johnson, Attorney, Coats Rose, (by video conference);
Mr. Eddie Streich, Engineer, LAN, (by video conference);
Mr. Larry Dunbar, Engineer, Lawrence G. Dunbar, P.E.;
Ms. Andie Tillman, Recording Secretary.

(A visitor roster copy is on file in the official records of the Authority and identified as Exhibit A.)

1. Comments from the Floor

Mr. Jesus Suarez, a resident of the Bay Oaks Community, conveyed a thank you to the CLCWA in their effort to ensure that the residents were informed and provided the appropriate clarity on flood mitigation in the area.

Mr. Doug Peterson, of Harris County Precinct 2 a liaison for Bay Area Houston, conveyed a thank you to the CLCWA for the technical expertise and assistance provided in monitoring the area's flooding concerns.

2. Receive and act if needed upon Mr. Larry Dunbar's hydrology study on the impact of having detention at Clear Lake City Blvd. between Highway 3 and Interstate 45, for

Mr. Larry Dunbar provided an overview of the detention study requested to investigate the potential for a regional detention pond in the upper portion of the Horsepen Bayou Tributary, identified by HCFCD as B10405, regarding the possible benefit detention may have for flood mitigation to the surrounding area. The area studied for detention is outside of CLCWA boundaries, north of Clear Lake City Blvd and south of Ellington Field between Hwy 3 and I-45, but significant water flows drain into the CLCWA area. Considerations used for the study included the existing maps provided by FEMA indicating the areas designated as being in a 100-yr floodplain (downstream of Hwy 3) and a 500-yr floodplain (widely

flood mitigation to the nearby subdivisions in CLCWA

distributed through the tributary). Additionally, the new NOAA Atlas 14 statistics showing a 30% increase in rainfall averages was used to determine the area within a 100-yr floodplain, from 13.5" to 18" in a 24-hour period. This could result in a sizable portion of area that was previously identified as a 500-yr floodplain to now fall into the 100-yr floodplain designation. The majority (about 1,185 acres) of the land bordered by Hwy 3, I-45, 12554 Hwy 3 and El Dorado Blvd drains into B10405. Detention in the studied area north of Clear Lake City Blvd could potentially benefit the CLCWA with flood mitigation by detaining and reducing the flow of water before it enters CLCWA boundaries.

The HMS hydrology model calculated flows, at various points of the Bayou, resulting from runoff coming along the ground from rainfall. The calculated out-flow rate of B10405A, the upstream most subarea of B10405 that drains along Hwy 3, generates about 1,800cfs as a peak flow rate during an 18" in a 24-hour period rain fall event. The targeted out-flow release rate is no more than 200cfs, per CLCWA standards. The CLCWA requirements are set in an attempt to maintain detention on all new development so that no increase in runoff flow rate results. Other jurisdictions use calculations that allow for what is designated as minimal increases per development, but as more land is developed this could result in a cumulative major increase impacting existing developments downstream.

The proposed peak storage of 1,300 acre-ft capacity would call for a detention area of 166 acres at a depth of 8' that would result in a predicted out-flow of 116cfs for an 18" rain fall event. This would benefit the adjacent area with a decrease in peak flow of 94% and then provide a decreasing benefit downstream. For reference on the area and how it is affected as flows progress downstream; the following are a few points of reference (using the closest streets in line with the area of the Horsepen Bayou Tributary) and the accompanying percentage decreases in peak flow; 49% in line with Loch Creek Ct, 26% in line with Jade Meadow Ct, 15% in line with Jasmin Ridge Ct, 10% in line with Pineloch Dr, and 4-2% in line with the area from Country Ridge Dr to Armand Bayou.

Next a hydraulic model was used to determine how the reduced flows calculated in the hydrology model translate in terms of flooding. It was noted that the flow and water elevation calculations are predicated on the condition that Horsepen Bayou is not in a flood condition (13.5" in a 24-hour period). Due to the CLCWA's higher standard of 1.43 acre-ft per acre for detention on new development the area is greatly assisted in runoff and retention to mitigate flooding, but the standard's set in outside areas surrounding CLCWA have the potential to negatively impact the CLCWA area, of which the setting of such standards is out of the control of the CLCWA.

It was noted that in Mr. Dunbar's experience, the best practice for flood mitigation is detention/retention coupled with drainage improvements. When drainage improvements alone are implemented, it could be of great benefit to the adjacent areas but is less effective downstream. Detention and/or retention can be of benefit to areas both up and downstream. The CLCWA requested this study on the area outside of CLCWA to obtain a wider picture and determine best practices to protect not only property but also the lives of our residents. The CLCWA's main concern is our residents' flooding that not only affects homes, but also our evacuation routes. Even though the impact on flood mitigation with the proposed

detention at the recommended location is not widespread in the CLCWA area, the intersection at Hwy 3 and Clear Lake City Blvd is a major access for evacuation for our residents and the benefit of flood mitigation in that small area impacts everyone in the CLCWA area. It was noted that as little as 2 hours of reduced flooding could be of major benefit during evacuations.

Future research to be considered was discussed including determining the areas of the CLCWA with the most vulnerable population. Research would need to be completed indicating which areas flood the most, what is the cause of the flooding (rain, drainage, storm surges, backflow from area waterways, etc.) what areas have limited evacuation routes, and the areas with the highest frequency of incidents. With limited reference resources available, information would need to be provided by the residents to consolidate a broad picture of what affects the residents directly. The CLCWA monitors the area as a whole and implements strategies and requests studies as issues are determined but is not informed of issues at individual properties.

It was reiterated that CLCWA detention requirements for new development are set so as to result in equal or less runoff than is currently coming off the undeveloped land, but the CLCWA is greatly impacted by the surrounding area's detention requirements which potentially allow for development to result in a higher runoff rate than what is currently coming off the undeveloped land. A reevaluation or reconsideration of detention standards and allowable flow rates by areas surrounding the CLCWA would be of great benefit not only to our residents but to the residents of the surrounding areas as well. The CLCWA greatly appreciates the County Commissioner's concern and efforts in facilitating the exchange of information and research into our and the surrounding area's flooding concerns. A meeting has already been held, spearheaded by the Commissioner's Office, and joining together the CLCWA, CLCWA consultants, Houston Airport System (HAS), and HCFCD to share and discuss research results. The Authority was informed that the hydrology study and the drainage impact analysis from the completion of the Exploration Green Detention Ponds (18" drop in peak water elevation) would be considered and reviewed against in-house engineering models. The main area of concern for the HAS regarding detention near Ellington Field is approval from the FAA as the location is adjacent to a runway and a detention pond could attract birds resulting in damage to or the loss of planes. The HCFCD will additionally look at the impact and plausibility of other options or locations for detention. The proposed CI-023 Channel Conveyance Along Horsepen Bayou project is currently on hold until the review is complete.

Residents of the CLCWA requested clarification and transparency of the models, reasoning, impact expectations, plans, research, and results used by the HCFCD to accept the proposed CI-023 Channel Conveyance Along Horsepen Bayou project. Additionally, the residents want a chance to be heard and considerations made for existing properties as new development is implemented. Additional insight on these matters will be provided at a meeting on August 1, 2023, arranged by the County Commissioner. The Board provided a thank you to the residents that have put their time and effort into inquiring with various entities to add emphasis to the importance of protecting our communities' residents and their property.

A descriptive explanation of how the results of the hydrology model affect flooding levels encompassing a broader view was suggested to finalize the report and make it ready for public distribution. The hydraulic model will be utilized to add the requested detail. As a quick reference, it was noted that a 2% decrease in peak flow would approximately be less than an inch in water elevation reduction.

The Board inquired of Mr. Doug Peterson if any additional assistance could be supplied to support the commissioner's office in its endeavor to address the area's flooding concerns. A line of communication will continue to be utilized.

Mr. Dunbar will work on updating the report as suggested, tentatively to be complete and ready for review by the August 10, 2023, Board Meeting

3. Old and New Business

It was requested to review the plans regarding a solution for leaks that continue to affect an area along Space Center Blvd at the August 10, 2023, Regular Board Meeting

Director Graf informed the Board that the Texas State Energy Conservation Office has assigned Texas Energy Engineering Services (TEESI) to provide the assessment regarding the use of solar panels at CLCWA facilities.

A brief thank you was given to the visitors for taking the time to be a part of this meeting and being involved in the community. The CLCWA appreciates feedback and support on the services we provide whether it is regarding water, sewer, flooding, drainage, infrastructure concerns, getting grants to offset costs, or development.

It was noted that the Exploration Green Ribbon Cutting and Volunteer Appreciation Day is scheduled for September 30, 2023, from 9am-12pm.

4. Meeting Adjourned

President Branch declared the open meeting adjourned at 8:20 p.m.

[Redacted signature]

President, Board of Directors
CLEAR LAKE CITY WATER AUTHORITY

[Redacted signature]

Secretary, Board of Directors
CLEAR LAKE CITY WATER AUTHORITY

(SEAL)



DATE APPROVED: September 13, 2023