

FLOOD REVIEW BOARD

Date: October 26, 2022

Time: 8:30 AM, MDT

Location: Lake Estes Conference Room, 3rd Floor, 200 W Oak St., Fort Collins, and Zoom meeting

Contact: Tina Kurtz, Larimer County Engineering Department

MEETING MINUTES

Staff Present: Tina Kurtz, Caryn Nezat, Traci Shambo, Alan Kee

Staff On Line: Hannah Suppes

Board Members Present: John Hunt, Dr. Chris Thornton, Elisabeth Ervin-Blankenheim, Mike Oberlander, Chad Morris

Board Members On Line: None

Call to Order: Dr. Thornton opened the meeting at 8:35 a.m., MDT

Introductions

Item #1:

Justin Stiles – Short-term Rental at 2372 W Highway 34, Drake - Variance

Applicants Present: Justin Stiles, applicant; Lonnie Sheldon and Dan Barrett, Van Horn Engineering

Ms. Kurtz introduced the project to the Flood Review Board and stated that this is a Variance request for a short-term rental at 2372 W Highway 34, Drake. The applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.E.2. The short-term rental is at the confluence of Dark Gulch and the Big Thompson River within the FEMA floodway. This item was tabled at the August 25, 2022, meeting for the applicant to go back and “include a technical hydraulic model that demonstrates demonstrate the living space for the structure has 18” of freeboard above the newly calculated Base Flood Elevations using a new survey but using FEMA flow of 1,250 CFS. If the model shows that the road is overtopping, the analysis needs to demonstrate that the overtopping flows don’t have adverse impacts on the structure.”

The engineers went back and found the Colorado Hazard Mapping Program (CHAMP) model that was done of Dark Gulch, as multiple tributaries in the Big Thompson Canyon were mapped as part of CHAMP Year 2. They found that the updated 100-yr discharge is 143 cfs vs the FEMA Flood Insurance Study discharge of 1,250 cfs. This flow shows that the 100-yr depth is below the Hwy 34 culvert and the bank



adjacent to the structure. The finished floor elevation is approximately 7.3' above the CHAMP base flood elevation.

Mr. Morris moved to untable this item. Mr. Oberlander seconded. Motion passed 5-0.

Mr. Sheldon mentioned that last time they were focused on the FEMA flow of 1250 cfs vs the CHAMP flow of 143 cfs. He said that the culvert under Hwy 34 will handle 764 cfs, so with the CHAMP flows, there is only about 1.5' of water going through the culvert in the 100-yr event. The channel is 7' deep and with the CHAMP flows it is only a couple feet deep in the 100-yr event.

Mr. Hunt asked if staff verified the discharge Van Horn is getting from the CHAMP model. Staff did not. He wondered if the CHAMP study intended to say that the 143 cfs is the peak for the 100-yr flood or is it the contribution to the Big Thompson 100-yr flood. Staff replied they believed it was the peak. Staff also said that there are floodplain boundaries for the tributaries that were mapped as part of Year 2, but were removed from the final mapping layer. Note – they will be adopted with the Big Thompson Canyon Physical Map Revision.

Mr. Oberlander asked if we are now looking at better data to show that the corner of the structure is now not within the floodplain. The answer was yes. There was a discussion that the culvert would overtop at 1250 cfs, but not at this new discharge.

Motion:

Mr. Oberlander motioned to recommend approval of the short-term rental variance for Justin Stiles at 2372 West Highway 34 to the County Engineer.

Ms. Ervin-Blankenheim seconded the motion.

Further Discussion:

None

Vote:

Mr. Hunt - Yes
Dr. Thornton - Yes
Mr. Morris – Yes
Ms. Ervin-Blankenheim – Yes
Mr. Oberlander – Yes
Mr. Carlson – Absent

Motion passed 5-0.

Item #2:

Berthoud Dale Lane Bridge Improvements – Floodplain Project Review



Applicants Present: Clark Griep, applicant; Lonnie Sheldon, Dan Barrett and Frank Roberts, Van Horn Engineering

Ms. Kurtz introduced the project to the Flood Review Board (FRB) and stated that this is a Floodplain Project Review request for improvements to the Berthoud Dale Lane Bridge. The applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.H.2. This project is approximately 2 miles from Estes Park down W Hwy 34 and is located entirely within the FEMA floodway. The bridge serves 10 residential properties. This project is to replace wooden components on the bridge with steel components, which will not result in a change to the cross-sectional area of the bridge.

Mr. Sheldon said they prepared a cross sectional area comparison. Components are changing a little bit in dimension, but it is still an equal cross-sectional area which would result in a no-rise condition. He mentioned that the bridge made it through the 2013 flood. He said that the current challenge is for septic trucks making it over the bridge.

Dr. Thornton asked who did the structural design. Mr. Sheldon said that the owner had another firm review it, but he was not aware of the structural details. Mr. Hunt said it is important that the Board notes that they are not endorsing the structural design.

Mr. Hunt said that it appears on Figure 2 that the retro-fit appears to be pushing the low chord down a little bit. Mr. Sheldon said that was not the case. Mr. Oberlander noted that the next page shows something different. He said it that the work being done is on top of the low chord line and thinks they are mostly working on the deck above low chord.

Dr. Thornton states that on Figure 2, the plate Mr. Hunt mentioned is an existing condition. It was confirmed that Figure 2 is the existing condition. He said that he understands that the cross-sectional area is the same but wondered if the plate is adding 1 inch or less lower and will this make the pressure flow worse. However, he thinks this type of change would be negligible.

There was a question to the applicant about what happened to the bridge in the 2013 flood. Mr. Griep said that it caught debris, but survived. They lost the hand rails and the approaches remained. The 2013 flood washed out the concrete apron on one side. He said it never got severely plugged but it did have overflow.

Mr. Hunt said that during the flood, access bridges plugged with debris and remained, but there was road damage due to the bridges. The result was that replaced bridges had to provide freeboard over the 100-year flood to minimize future issues reoccurring. However, he said that would be not applicable for this type of repair.

Mr. Oberlander said that the submittal discusses just deck replacement, but the discussion is talking about girders too. He said that a condition should be added that the low chord shall not be changed or lowered, and the applicant should update the material to clarify pre- and post-conditions.



Mr. Roberts stated that as shown in Figure 3, the angle braces will remain the same. He said their goal is to match Figure 3. Mr. Hunt said what he is seeing is a timber that is forming the low chord. Mr. Roberts confirmed that the work will not change the low chord elevations. Mr. Hunt said that the Board condition should be that the applicant submit additional drawings to further clarify what the low chord is doing. Mr. Oberlander said the section view that pairs with Figure 3 would be the drawings that need more details.

Mr. Hunt mentioned that he sees that the existing bridge had only timber for the girders and this is showing the use of steel I-beams to reinforce to give the added strength that is needed. It was noted that the existing does has steel girders.

Mr. Hunt asked what happened to the bridge during the 2013 flood. Mr. Griep said the only thing they lost on the bridge in both 1976 and 2013 floods was the handrails. Mr. Hunt asked if the road approaches were washed out. Mr. Griep said that it did wash out the concrete apron on the lane side and water went down the lane side and took out around 100 feet of the road during the 2013 flood. He said that the bridge did not get clogged.

Mr. Griep said that CDOT did an analysis of the bridge and found some rotten timbers so they are taking out all of the wood on the bridge and relying on the existing 4 I-beams added in 2003. Also, the wood kickers under the I-beams are being replaced with steel kickers.

Mr. Hunt said that he agrees that the work being proposed does not do anything to aggravate hydraulic problems.

Mr. Oberlander said that it could be conditioned on no change to the low chord and that they prepare a cross-section showing no change to the low chord, because the profile view doesn't show it.

There was a discussion of what was being replaced and if it is the same geometry. It is all of the timber on the structure being replaced with steel and the same geometry.

There was a question on whether the concrete would be replaced and the answer was no.

Question on timbers and girders forming the low chord and that the timbers may make it lower than shown in Figure 3. Mr. Roberts said the removal of the timbers does not change the low chord. Mr. Hunt said the Board should request a cross-section to see the low chord and be reviewed by staff.

Ms. Ervin-Blankenheim noted the previously discussed condition that they did not evaluate the structural component of the bridge.

Motion:

Ms. Ervin-Blankenheim motioned to recommend approval of the Floodplain Project Review for Berthoud Dale Lane Bridge improvements to the County Engineer with the following conditions:



1. It shall be understood that the Flood Review Board has not evaluated the structural design and stability of the bridge.
2. Van Horn Engineering shall provide for County Staff review a cross section in the submittal of the proposed condition to match information in Figure 2 that confirms that the existing & proposed conditions related to the steel undergirding will not change the elevation of the low chord.

Further Discussion:

There was a discussion about the Board wanting to see the proposed condition of the deck cross-section to show that the low chord does not change since what is presented is existing. Discussion of the existing angle irons between the I-beams holding them together to make them a pair which are just at intervals and do not go down to the low chord. Mr. Hunt said they don't have enough representation of the proposed conditions to document that the low chord does not change.

Mr. Morris seconded the motion.

Vote:

Mr. Hunt - Yes

Dr. Thornton - Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Absent

Motion passed 5-0.

Item #3:

Water Supply and Storage Company, Larimer County Canal Gate and Culvert Turnout Structure Replacement - Floodplain Project Review

Applicants Present: Levi Stockton and Don Frick, Water Supply and Storage Company

Ms. Kurtz introduced the project to the Flood Review Board and stated that this is a Floodplain Project Review request for replacement of a gate and culvert turnout structure on the Larimer County Canal within the Poudre Zone A Floodplain. The applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.H.2.

This project will be a replacement of an existing gate and culvert turnout structure in the same place with similar size and capacity. The final grade of the canal bank will match the pre-project grade.

The applicant gave a background discussion on the project. It is for two purposes, 1) to flush out silt and sand that goes down the ditch 2) fine tune the diversions from the river. They want to automate the diversions so they are proposing to put in two rubicon gates, which are undershot gates, which are



automated which will adjust the flow depending on what the canal is doing. They are trying to improve efficiency and allow for augmentation back to the river.

Dr. Thornton said it looks like the lowered the water surface. Applicant said that is correct.

Hunt clarifies the project details with the applicant. He thinks they are not filling but they are actually cutting. The applicant was asked if the wing wall is new on left side and that it is not adding any obstruction to floodplain. The applicant said that it was not adding any obstructions. Mr. Hunt noted that for the Board concerns, that they do not appear to be adding fill but just taking away. The applicant agreed.

Dr. Thornton says that he sees it the same way. He said that the velocities coming out appear to be the same leaving culvert so that it should not cause any changes to the existing operation.

Motion:

Mr. Hunt motioned to recommend approval of the Floodplain Project Review for the replacement of the Larimer County Canal gate and culvert turnout structure located in the SE1/4 of the SW1/4 of Sec. 13, Township 8 North, Range 70 West in Larimer County to the County Engineer.

Mr. Oberlander seconded the motion.

Further Discussion:

None

Vote:

Mr. Hunt - Yes

Dr. Thornton - Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Absent

Motion passed 5-0.

Item #4:

Upper Thompson Sanitation District Water Reclamation Facility – Map Amendment (CLOMR)

Applicants present: Chris Bieker, Upper Thompson Sanitation District; Steve Ravel, Carrie Herbolzheimer, Will Creed and Christine Sednek, Merrick Engineering

Ms. Kurtz introduced the project to the Flood Review Board (Board) and stated that this is a Map Amendment request for a Conditional Letter of Map Revision (CLOMR) for the new Upper Thompson Sanitation District Water Reclamation Facility within the Big Thompson floodway and flood fringe. The



applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.G.2.

This project will involve construction of a new water reclamation facility. As part of this project a CLOMR will be required due to work within the floodway consisting of fill in the overbanks for construction, an outfall, the outfall access road and outfall stabilization. The mapping for this CLOMR application will be from Olympus Dam to approximately 3,000 feet downstream of the proposed facility. The effective model for this area is in HEC-2 and was not available, so an existing conditions model and proposed conditions model were done.

Ms. Herbolzheimer opened the PowerPoint on the project. Mr. Ravel reviewed the project background summary is that the existing water treatment facility is outdated, lacking capacity and needs major upgrades so they are building a new water reclamation facility. Ms. Sednek explained that they coordinated with other jurisdictions such as Colorado Water Conservation Board (CWCB) and the County to help understand the status of the current model. They found that they had to use the FEMA model from the 1970's and then used the updated flows and information as part of their design. Ms. Herbolzheimer mentioned that the freeboard requirements were to maintain a 2-foot freeboard for occupied structures and the tanks were to be no lower than the base flood elevation (BFE). The HEC-2 model from FEMA were not able to match the data when rebuilding the model. They scrapped the HEC-2 model and started fresh with existing and proposed conditions and got that approach verified with Terri Fead at CWCB. They started the study about 3000' downstream from the site due to degradation of the channel to help show normal depths to level out to make sure to not get any residual effects from the downstream tie-in affecting the model reach. Since the site is so close to Lake Estes, they ran the model to the top of the reach at lake outlet. The Big Thompson River migrated after the 2013 flood event so the regulatory alignment is different than the actual alignment. The new alignment appears stable. They tried to use the FEMA regulatory cross-sections where they could but they do not make sense in some cases due to the river realignment, so they need to redefine cross sections at these locations. The design is done with Colorado Hazard Mapping Program (CHAMP) flow rates but they designed this in both cases, FEMA and CHAMP. The CLOMR will be submitted under FEMA but by the time of the LOMR, it is expected that it will be CHAMP flow rates. There is a significant change in flow rates between the two with an added 1,200 cfs with the new CHAMP 100-year flows. Downstream of the dam outflow there is a pedestrian bridge, a flume, Mall Road Bridge and a foot bridge on parcel to the south. They think the foot bridge is a break away bridge so it was not included in their model. The bank/berm along the outfall which is modeled as a lateral weir and there is a vertical wall near the go-cart and put-put course, so model includes that as well although it has no impacts to the floodplain but since it is there they included it. In July they did a site visit where they verified topography of features, measured structures in field and updated manning's n based on field visits. She noted that the stream bed is about 5-feet lower so there is added capacity and freeboard under the Mall Road Bridge with existing flows but with CHAMP it will overtop again with the 100-yr and 500-yr flows.

Mr. Ravel discussed the Water Reclamation Facility and noted that it is designed to minimize impacts. He showed a map with the effective versus proposed conditions. The components of the project that



may have impacts to floodplain are 3:1 fill slopes, outfall road and access pad for maintenance of the outfall and the outfall structure itself. The outfall is still currently under design.

The proposed conditions show that no insurable structures are impacted by rises and the rises do not exceed 0.1' of a rise. The rises are limited to the downstream side of Mall Road. Upstream of Mall Road, there is slight decrease. There are no rises at go-cart facility or on the structures in that area. They see similar results using the CHAMP flows. They looked at velocities on fill slopes, outfall pad and the outfall structure. Existing velocities were from 1-3.5 feet per second (fps) on the left bank and project increased the velocities by no more than a couple tenths of a fps. So, there is low potential for erosion at these velocities. They are counting on vegetated slopes for stability. Once they get the outfall design finalized, they will provide adequate erosion protection at the site.

Mr. Hunt said the big aspect is the 5-feet of degradation in channel. The project engineer confirmed that they based what was shown on the new survey which shows the degradation. Mr. Hunt also asked about critical facilities per FEMA's requirements for elevation. Ms. Kurtz confirmed that they did ask CWCB and they had no concerns with the elevations specified of the new structures and tanks.

Dr. Thornton asked if they evaluated any other return periods and velocities for the slope. Yes, they looked at the 50-yr and 10-yr and they were lower velocities.

Mr. Hunt asked that considering the 5-feet of degradation on the channel, is there a chance that it will rebound and fill in? Dr. Thornton added it is unlikely since there is no supply of sediment upstream since it would have to come out of the dam.

Mr. Oberlander confirmed that the Board is evaluating a CLOMR and not a force main design and that the force main will come back through Board for the work and design. Additional work on transmission lines will be reviewed by the Board at future time. There will be a new gravity line, which is not shown on the plans which will be within the floodway but the land will be put back to grade.

Mr. Morris asked about a comparison of the BFEs and to explain the impact to the existing conditions. They answered that most of the impacts are from the 3:1 fill slope. The outfall access is adding a little impact and there is a 0.1-foot water surface elevation increase around outfall pad and access.

The FEMA discharge does not overtop Mall Road, with new CHAMP discharges it will slightly overtop. The facility has been designed to handle the overtopping flows.

Mr. Morris asked if there are any scour protections to ensure that the river alignment does not migrate towards the facility. He said it was just something for them to consider. They said they are internally discussing this issue and it will be considered in the final design.

Mr. Oberlander noted that the internal site plans have different aspects, like landscaping. They noted that they are working on internal changes to the site which do not impact the floodplain. The items



under discussion that were used to evaluate the floodplain, like the fill slopes, will not change and have remained fixed in the plans.

Mr. Hunt points out that CHAMP will change BFEs and these will be affected much more by CHAMP and not the project. Mr. Oberlander pointed out that there will be a favorable outcome due to the new CLOMR/LOMR mapping in some of the areas.

Mr. Morris wanted clarification on the proposed map vs the effective mapping downstream of Mall Road.

Motion:

Mr. Morris motioned to recommend signature of the MT-2 form for the Upper Thompson Sanitation District Water Reclamation Facility Conditional Letter of Map Revision to the County Engineer.

Mr. Hunt seconded the motion.

Further Discussion:

None

Vote:

Mr. Hunt - Yes

Dr. Thornton - Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Absent

Motion passed 5-0.

Item #5:

Approve Minutes from the Board meeting on September 22, 2022.

Motion:

Mr. Oberlander motioned to recommend approval of the minutes.

Ms. Ervin-Blankenheim seconded the motion.

Further Discussion:

None



Vote:

Mr. Hunt - Yes
Dr. Thornton - Yes
Mr. Morris – Yes
Mr. Oberlander – Yes
Ms. Ervin-Blankenheim – Yes
Mr. Carlson – Absent

Motion passed 5-0.

Other items:

- Discussed upcoming agendas

Meeting adjourned at 10:00 a.m., MDT.