Town of Moraga	Agenda Item
Ordinances, Resolutions, Requests for Action	11. A.

Meeting Date: March 24, 2021

TOWN OF MORAGA **STAFF REPORT**

To: **Honorable Mayor and Councilmembers**

From: **Shawn Knapp, Public Works Director / Town Engineer**
Mark Summers, Associate Civil Engineer

Subject: **Receive Update on Fifteen Percent Design of the Laguna Creek Restoration Project (CIP 16-201) and Provide Direction to Staff**

Request

The purpose of this agenda item is for the Council to receive the fifteen percent design of the Laguna Creek Restoration Project and provide direction to staff.

Background

The proposed Laguna Creek Restoration Project (Project) is located at the Town-owned Hacienda de las Flores property (Hacienda) at 2100 Donald Drive. The Project consists of removing an underground culvert near the Pavilion building and restoring a natural channel in its place in order to provide improved flood protection for the Pavilion and other adjacent facilities at the Hacienda.

The contributing watershed at this location is about two square miles and includes the neighborhoods of Campolindo, Carol Ranch, and Rheem Valley, among others. Laguna Creek generally flows southward, variably within large underground storm drain pipes or in open channel creeks, eventually discharging into the Upper San Leandro Reservoir.

Upstream of the culvert at the Hacienda, Laguna Creek flows as an open channel creek where it is joined by a tributary creek from Donald Drive. Downstream of this confluence, Laguna Creek flows into an 8-foot diameter corrugated metal culvert (to be removed) near the Pavilion. After traveling through the 240-foot long culvert, the creek "daylights" into an open channeled creek again for about 100 feet before entering a 10-foot by 12-foot rectangular culvert[1] that flows beneath Devin Drive.

[1] Please note this is a correction to previous documents that erroneously described the rectangular culvert crossing under Devin Drive to be 12 by 14 feet. The correct dimension is 10 by 12 feet.

The 8-foot diameter culvert has been subject to flooding over the years as it is not adequately sized to handle large peak flows. For example, during the 2005 to 2006 winter storms, heavy rains caused Laguna Creek to rise and flow over the banks in the vicinity of the Pavilion. This resulted in significant damage to the Pavilion building itself, as well as damage to the wooden footbridge and walkways, a wrought iron gate, more than 200 feet of chain link fence, and the retaining walls, headwalls, wing walls, and banks were washed out and damaged.

On December 5, 2012, the Town entered into a consultant services agreement with WRECO to evaluate alternatives to protect the Hacienda facilities against flood risk from a 100-year flood event. WRECO provided engineering services to assess the existing conditions of Laguna Creek within the Hacienda property and recommendations to protect the Pavilion and adjacent facilities.

On April 23, 2014, the Council received a Hydraulic Study and Alternatives Analysis and presentation[2] from WRECO outlining ten alternatives that were studied to relieve flooding at the Pavilion. The alternatives were:

1. No build
2. Line the inside of the existing culvert with a smooth lining
3. Construct a parallel 9-foot diameter reinforced concrete pipe culvert
4. Construct a 9-foot diameter reinforced concrete pipe culvert and relocate the existing sewer main
5. Replace the existing culvert with a larger 14-ft by 12-ft reinforced concrete box (RCB) culvert
6. Install an upstream detention basin
7. Raise the Pavilion floor elevation above 100-year flood elevation
8. Relocate the entire Pavilion structure outside of the 100-year floodplain
9. Construct a flood wall around the Pavilion
10. Daylight and restore Laguna Creek to contain the 100-year flow within the banks by removing the existing culvert

Only two of the alternatives (Alternatives 5 and 10.) adequately improved the channel capacity to convey the 100-year flow of Laguna Creek and provided flood protection to the Pavilion during the 100-year storm event. WRECO determined that restoring the natural channel (Alternative 10) would have a lower cost than the box culvert (Alternative 5). Additionally, they determined Alternative 10 may be eligible for grant funding as a channel restoration project. Alternative 10 – daylighting and restoring Laguna Creek – was therefore recommended to Council.

Council adopted Resolution 34-2014 to accept the Hydraulic Study and chose the recommendation to restore the natural channel (Alternative 10) based on the study and the presentation. Council directed staff to prepare the recommended natural channel restoration project documentation to be “shovel ready” and to pursue grant funding for the Project.

[2] The Hydraulic Study and Alternatives Analysis, and the WRECO presentation are available for inspection upon request.

Channel Restoration

The Council-preferred Creek Daylighting project generally entails: removing the existing 8-foot diameter pipe; removing a portion of the existing inlet headwall; and restoring an open channel that mimics a natural stream. The project would require relocating an existing sewer main and installing a natural-bottom arch culvert bridge in order to maintain connectivity to the existing Moraga Road entrance. The removal of the culvert and creation of the channel is intended to provide sufficient capacity to convey the 100-year storm event, prevent flooding to the Pavilion building, provide a natural amenity to the public, and restore aquatic and riparian habitat.

Hydrology

As discussed in the 2014 WRECO Hydraulic Study, there are two sources of peak flow data: 1) FEMA; and 2) Contra Costa County Flood Control District (CCCFD). The FEMA peak flow data (last revised in March 2017) are included in the Contra Costa County Flood Insurance Study and were calculated based on approximate methods using data from nearby watersheds. The CCCFD peak flow data were calculated in 1992 and assumed "full buildout of the Town." This means they assumed 100 percent development per the General Plan that was in effect in 1992 and are therefore much higher than the FEMA peak flow rates as shown below:

Recurrence Interval	FEMA	CCCFD
10-year Peak Flow	660 CFS	1,100 CFS
50-year Peak Flow	1,100 CFS	1,560 CFS
100-year Peak Flow	1,300 CFS	1,720 CFS

It is important to note that there is always a great deal of uncertainty associated with peak flow rates. Even with the best of information on past flow rates (which is very rare), future flow rates may deviate significantly. Irrespective of the design flow rate used, there is always a chance that a larger storm will come. The minimum required design flow to meet the grant requirements is the FEMA 100-year flow rate.

The County flows do not account for limitations in upstream capacity. Also, since 1992 the Moraga Open Space Ordinance (MOSO) has limited development in certain areas. For these reasons, staff believes that the 1992 CCCFD data may reflect peak flow rates higher than necessary.

The 10-foot by 12-foot culvert crossing below Devin Drive imposes a constraint on the system. At higher flow rates, the water will back up and create flooding irrespective of the capacity of the new channel.

To deal with these contingencies, the consultants have been directed by staff to design to the extent practicable to the maximum flow rate that would pass through the Devin Drive culvert without backing up and causing flooding. This flow rate is greater than the FEMA 100-year peak flow rate but less than the CCCFD 100-year peak flow rate. Designing for a flow rate greater than this would be futile, and aiming for less would risk the possibility of potential flooding that could have been avoided.

Grant Funding Sources

Town Council provided direction to staff to pursue grant funding. Over the years, staff applied for multiple grants. The Town was successful in being awarded three Project grants[3]:

1. California Natural Resources Agency River Parkways $399,980
2. East Bay Regional Park District Measure WW Urban Creeks $599,743
3. FEMA Hazard Mitigation Grant Program $803,331[4]

The California Natural Resources Agency (CNRA) River Parkways grant was prepared by WRECO, submitted in September 2015, and awarded in June 2018. This grant expires on May 1, 2025.

The East Bay Regional Park District (EBRPD) Measure WW Urban Creeks grant was prepared by staff, submitted in February 2018, and awarded in May 2018. This grant expires on December 31, 2025.

The Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program grant was prepared by WRECO, submitted in November 2017, and awarded in March 2020. The award was based on an estimated Project cost of $1.2 million, with FEMA to fund 66 percent of the total.

FEMA releases funding in phases: Phase 1 – Preliminary Engineering; Phase 2 – Final Engineering; and Phase 3 - Construction. The Town must complete each phase successfully before funds are released for the next phase.

FEMA has approved the Town to proceed with Phase 1, which includes the following tasks:

a. Project Management
b. Field Investigation and Survey
c. Hydraulic Study
d. Biological Resources Study
e. Environmental and technical studies (including preparation of CEQA documentation)
f. Sixty-five percent complete *Plans, Specifications, and Estimates* (PS&E)

Engineering Design Process

A *Request for Qualifications and Proposal* (RFP/Q) was advertised on July 7, 2020, for the Phase 1 preliminary engineering tasks described above.

On November 2, 2020, Council awarded a contract to BKF Engineers (BKF) for $192K. BKF is a full-service consulting engineering firm located in Walnut Creek, specializing in providing a wide range of technical services related to the Laguna Creek Restoration Project. BKF has successfully performed on past projects with the Town.

[3] The grant Application packages are available for inspection upon request.
[4] Only $192K for Phase 1 has been allocated at this time.

In addition to the Phase 1 tasks described above, BKF's contract includes: preparing 15 percent design documents and presenting them at a public meeting to elicit feedback from the community; and providing updates to the Council at the 15 percent, 30 percent and 65 percent progress designs.

At the completion of Phase 1, FEMA will determine whether to fund additional phases of work. Should FEMA agree to fund Phase 2, the Town Council can evaluate the project's merits in order to determine whether to continue with Phase 2. If Council decides to proceed with Phase 2, a design services contract amendment would be issued to BKF to complete the design and prepare construction documentation.

The FEMA Phase 2 project scope will include the following tasks:

a) Obtain necessary environmental permits
b) Coordinate with Utility Agencies for any needed relocation work
c) Complete 100 percent complete Plans, Specifications, and Estimates
d) Provide technical support during Bidding
e) Provide technical support during Construction

Discussion

BKF prepared an initial 15 percent engineering design, and the Town sought public input on the Project by holding a number of Laguna Creek Restoration Project informational meetings via Zoom.

On February 23, 2021, staff held a public workshop. Staff collaborated with BKF and BKF's subconsultant, Restoration Design Group (RDG), to facilitate a discussion of the project and answer questions about the design. Broad-level alternatives were presented relating to:

1. The size and configuration of the bridge as it pertains to the location of an Americans with Disabilities Act (ADA) accessible parking stall
2. The pedestrian trail
3. The aesthetics for necessary vehicular barriers and guard rails

The presentation was given by Town staff, without the consultants, to the Planning Commission on March 2, 2021 and to the Park and Recreation Commission on March 15, 2021.

The views expressed during these meetings are summarized after the detailed descriptions of various elements of the Project below.

1. Bridge and ADA Accessible Parking

Staff recognizes the importance of making this beautiful location accessible to all and is focused on finding the best solution to meet this objective. Attachment A, consisting of Figures A-1 and A-2, shows the two broad-level alternatives for the bridge. Figure A-1 shows the bridge that would be required to facilitate the ADA parking stall in its current location at the side of the Pavilion building. This would require a bridge width of

approximately 55 feet which would be expensive to construct. Another issue with maintaining the ADA parking in its current location is that a portion of the space would intrude into the proposed 5-foot wide trail which runs along the creek and in general it impedes accessibility around the grounds due to spatial limitations.

Relocation of the ADA parking stall was explored to move the stall to the front of the building at a location that would provide equivilant access to the building while removing the existing impediment to free movement around the building. Parks and Recreation Department staff provided input on how users engage with the grounds, including identifying favorite areas for taking wedding photographs. The sightlines from inside and outside the Pavilion were also considered. Additionally, possible future uses of the grounds, such as for outdoor seating, were considered to identify an optimal location for the ADA parking stall. After exploring several locations and configurations, the location proposed in Figure A-2 creates the best possible access while honoring views and preserving grounds that may be utilized in the future.

Relocating the ADA parking stall to this location importantly creates a connection between the new trail and the existing trail on the other side of the drive from the Pavilion Building along with allowing for pedestrian access along the side of the building. It also allows for vehicular access to the Pavilion Courtyard gate, which would facilitate catering and other important activities at the facility. This proposed location also allows for a narrower bridge (35 feet as opposed to 55 feet) that would be more in scale with the surrounding area and cost less to construct. As moving the parking changes the aesthetics of the front of the Pavilion building, input from the public was solicited and direction from the Council is requested.

2. Pedestrian Trail

There is a pedestrian gate at the corner of Devin Drive and Moraga Road leading into the Hacienda de las Flores grounds. Pedestrians can access the grounds from this location by traversing a mulch trail. While the mulch trail provides a natural and rustic aesthetic, it is not easily accessible for wheelchairs, strollers, heeled shoes, or other ambulatory limitations. In an effort to increase accessibility, staff is proposed an option to upgrade the trail to decomposed granite or some other durable surface. Decomposed granite was explored because it would maintain a natural look and provide accessibility.

Since a new decomposed granite trail would constitute a different aesthetic, staff sought the public's input on this change and is presenting it as an alternative for Council to consider.

3. Required Guardrails

Portions of the new creek channel, as well as the vehicular bridge, will require safety barriers or railing. Alternatives for the railing are being presented early in the Project to assist the designers in understanding the broader vision for the facility.

There are currently two types of protective barriers at the site: Upstream (north) of the Pavilion building, there are rustic wooden ranch-type rails adjacent to the foot bridges; and, where Laguna Creek enters the culvert near the Pavilion, there is a headwall consisting of stamped concrete. Both barriers (the wooden rails and the concrete wall)

are visually pleasing and believed to be well-liked by the public. The public's preferences on this item was requested as is direction from Council.

Public Feedback Received

During each of the three meetings, and in a separate email sent by one community member, the preferred options were:

1. To move the ADA accessible parking stall to the front of the building to maintain access, facilitate movement around the building, and allow for a narrower bridge.
2. To have a decomposed granite (or other durable material) trail that is more accessible for wheelchairs, strollers, and heeled shoes.
3. To utilize new guardrails/barriers similar in appearance to the wooden ones used elsewhere on the grounds.

At the Planning Commission meeting, the question arose as to whether increasing capacity at the Hacienda would induce flooding downstream. In other words, by reducing flooding at the Pavilion, would we be pushing the problem onto residences downstream? Generally speaking, in some cases alleviating flooding in one area can increase the flooding in another; in other cases, it could have the opposite effect and reduce flooding downstream.

This question was studied at an earlier stage of the project and it was determined that the change between the existing condition and the proposed restoration would not lead to an appreciable difference in peak flow rates downstream and therefore would neither increase nor decrease the risk of flooding these residences.

Next Steps

Council direction will be incorporated into the Project and an update will be brought back to the Council at the 30 percent and 65 percent design stages to receive additional direction from the Council. FEMA will determine whether to fund the second phase of the project based upon the 65 percent design. Upon notification from FEMA, staff will return to Council to seek direction on how to proceed with the Project.

Alternatives

1. Receive the 15 percent design and direct staff to proceed in accordance with the input received from the public outreach process; or
2. Receive the 15 percent design and direct staff to proceed with modifications and/or with different alternatives; or
3. Receive the 15 percent design and provide other direction for staff.

Recommendation

Receive the 15 percent design and direct staff to proceed in accordance with the input received from the public outreach process.

Report reviewed by: Cynthia Battenberg, Town Manager

Attachments:

A. Bridge Configuration and ADA Accessible Parking Stall Location

Figure A-1: Wide Bridge with ADA Parking in its Current Location

Figure A-2: Narrow Bridge with ADA Parking Moved to Front of Building

ATTACHMENT A

Bridge Configurations and ADA Accessible Parking Stall Locations

Figure A-1
Wide Bridge with ADA Parking in Its Current Location

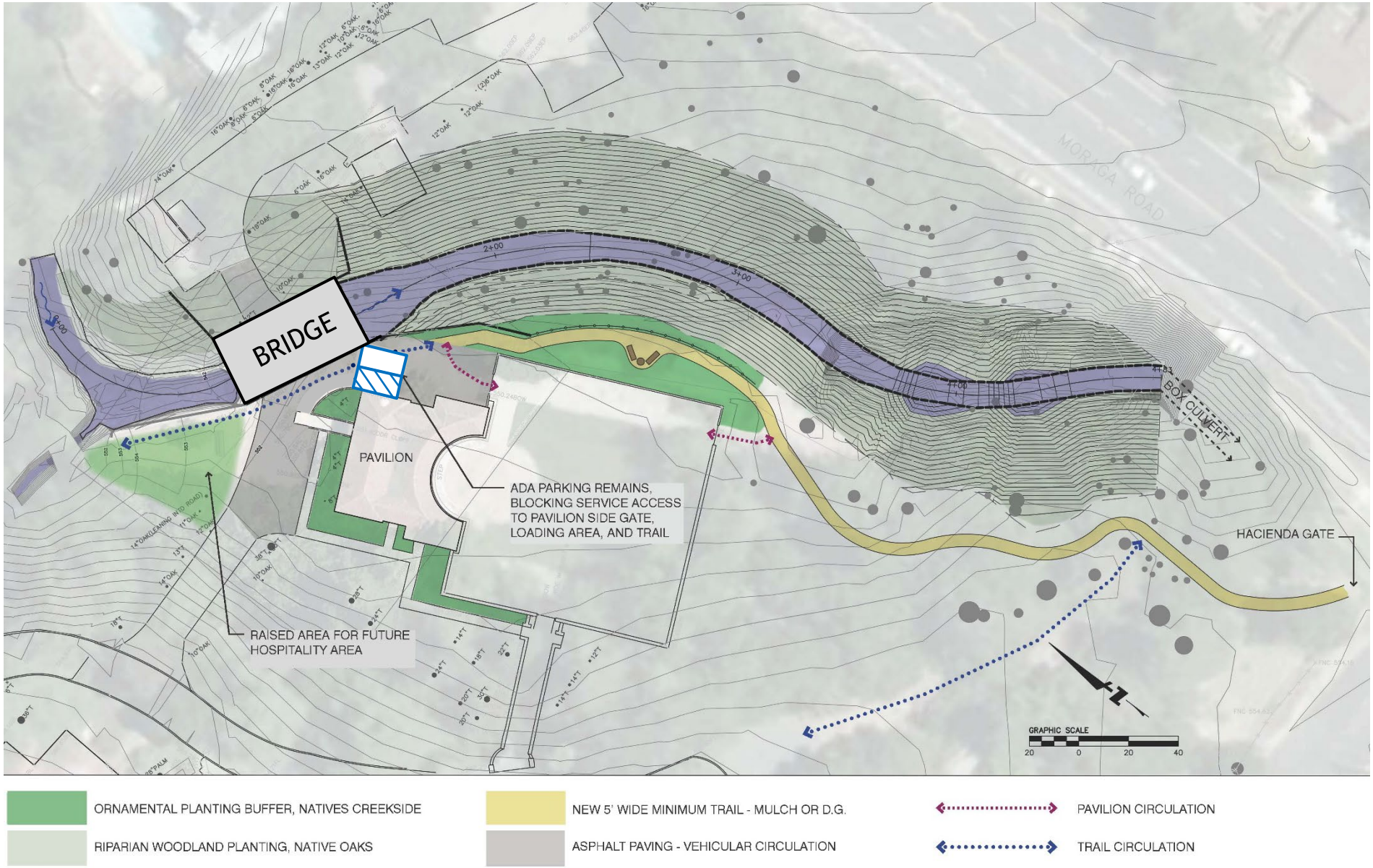

Figure A-2
Narrow Bridge with ADA Parking Moved to Front of Building