REQUEST FOR A
LETTER OF MAP REVISION
FOR A PORTION OF
TIJERAS ARROYO
ALBUQUERQUE, NEW MEXICO

August, 2021

Prepared by:

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

REQUEST FOR A LETTER OF MAP REVISION FOR A PORTION OF TIJERAS ARROYO ALBUQUERQUE, NEW MEXICO

TABLE OF CONTENTS

Page Number

PURPOSE **1**
LOCATION & TOPOGRAPHIC DATA **1**
EFFECTIVE DATA **2**
HYDRAULIC ANALYSIS **2**
- **Duplicate Effective Model** **2**
- **Corrected Effective Model** **2**
- **Approved CLOMR Proposed Condition** **2**
- **As-Built Condition** **3**

RESULTS **3**
SUMMARY **4**
CONCLUSIONS **4**

FIGURES

Figure 1 ..... Location Map
Figure 2 ..... Effective Flood Insurance Rate Map

APPENDICES

Appendix A ..... FEMA Forms
Appendix B ..... CLOMR 16-06-2447R
Appendix C ..... Duplicate Effective HEC-RAS
Appendix D ..... Corrected Effective HEC-RAS
Appendix E ..... CLOMR Proposed Condition HEC-RAS
Appendix F ..... As-built Condition HEC-RAS
Appendix G ..... Revised FIRM
Appendix H ..... As-Built Plans

PLATES

Plate 1 ..... Corrected Effective Condition Topographic Workmap
Plate 2 ..... As-Built Condition Topographic Workmap

REQUEST FOR A LETTER OF MAP REVISION FOR A PORTION OF TIJERAS ARROYO ALBUQUERQUE, NEW MEXICO

PURPOSE

The purpose of the report as contained herein is in support of a request for a Letter of Map Revision (LOMR) from the Federal Emergency Management Agency (FEMA). The LOMR is for a portion of Tijeras Arroyo as affected by the project referred to as Juan Tabo Hills in the City of Albuquerque, New Mexico. The property lies within a moderately developed area with established developments on the east with Tijeras Arroyo to the north and west. The property is located on FIRM Panel 35001C0367H which can be seen on Figure 2.

A LOMR (Case #13-06-1053P) for Tijeras Arroyo was approved in 2013 for the same reach studied herein. A Conditional Letter of Map Revision (CLOMR), Case #16-06-2447R, was then prepared for the Juan Tabo Hills project using the approved 13-06-1053P LOMR as the base. This new LOMR utilizes approved CLOMR 16-06-2447R as the basis for analysis.

The data included herein is in request of a LOMR for a portion of Tijeras Arroyo. The hydraulic models are included as discussed below. In addition, an as-built detailed hydraulic analysis is included representing the constructed improvements. All data relative to issuance of a LOMR for the arroyo is presented in detail. This analysis serves as formal request for a LOMR from the Federal Emergency Management Agency.

LOCATION & TOPOGRAPHIC DATA

The property is generally located west of Juan Tabo Boulevard, north of Kirland Air Force Base, and south and east of Tijeras Arroyo. The project location can be found on Figure 1.

Topographic data has been obtained through "As Built" construction plans and on-the-ground field survey. The topographic data is on the NAVD 88 vertical datum. The FEMA FIRM is based on the same datum. It should be noted that some information presented herein is located on the NGVD29 vertical datum and a +2.7' adjustment is required to get to the NAVD88 vertical datum.

EFFECTIVE DATA

As previously discussed, a LOMR (Case #13-06-1053P) and CLOMR (Case #16-06-2447R) were previously approved for this portion of the Tijeras Arroyo. The approved CLOMR modeling and post-project topographic work map were obtained for use in this analysis. No changes to the effective discharges are proposed as part of this request so only the approved LOMR/CLOMR hydraulic models are utilized herein.

HYDRAULIC ANALYSIS

All hydraulic modeling performed for this analysis utilizes the Corps of Engineers backwater computation model HEC-RAS v4.1.0. The following represents a summary of the models.

Duplicate Effective Model

As previously discussed, effective model from approved LOMR 13-06-1053P was utilized as the duplicate effective model for this analysis. A floodway run was included with the duplicate effective model. The duplicate effective HEC-RAS model and output can be found in Appendix C. It should be noted that the duplicate effective model is located on the NGVD29 vertical datum.

Corrected Effective Model

The only change made to the duplicate effective model as part of the corrected effective condition was to adjust the vertical datum to be located on NAVD88 to match the current effective FIRM. The entire geometry of the duplicate effective model was increased by 2.7' to change from the effective NGVD29 elevations to be on the NAVD88 datum. Also, the floodway model was revised to include actual stations with Method 1 floodway encroachments to replace the multiple Method 4 encroachments that were included in the effective model. The actual floodway location was not revised as part of the corrected effective model and remains the same as effective. The corrected effective HEC-RAS model and output can be found in Appendix D. The corrected effective topographic workmap can be found on Plates 1 – 3. With no change to water surface elevations, the effective floodplain delineation remains unchanged as well.

Approved CLOMR Proposed Condition

The proposed conditions hydraulic model from approved CLOMR 16-06-2447R is included herein for reference purposes. No additional changes have been made to this approved model.

As-Built Condition

The as-built condition model was prepared using the corrected effective condition model as a base. The only revisions made to this model were to incorporate the as-built grading from the Juan Tabo Hills project along the south overbank of Tijeras Arroyo within the model geometry from Sections 2.9 to 20 and Sections 46 to 51. A floodway run was also prepared for the as-built condition. The floodway limits remain the same as the effective hydraulic model, except for at Section 15. At this location, the floodway was widened in order to show a surcharge of less than 1.0'. The as-built condition HEC-RAS models and corresponding output can be found in Appendix F. The as-built grading plan can be found in Appendix F and the as-built conditions floodplain delineation can be found on Plate 2. A copy of the revised FIRM can be found in Appendix G.

RESULTS

The tables below provide a comparison of the results of each of the models discussed above.

Table 1: Comparison of 100-year Water Surface Elevations

HEC-RAS Station	Effective (ft)	Duplicate Effective (ft)	Corrected Effective (ft)	Proposed (ft)	As-Built (ft)
70	5505.82	5505.82	5508.52	5508.52	5508.52
60	5487.48	5487.48	5490.18	5490.18	5490.18
54	5479.06	5479.06	5481.76	5481.67	5481.67
52	5476.65	5476.65	5479.35	5479.35	5479.35
51	5474.42	5474.42	5477.12	5477.14	5477.14
50	5472.32	5472.32	5475.02	5474.98	5474.98
46	5468.62	5468.62	5471.32	5471.48	5471.48
45	5467.86	5467.86	5470.56	5470.56	5470.56
44	5467.75	5467.75	5470.45	5470.45	5470.45
43.5	Bridge	Bridge	Bridge	Bridge	Bridge
43	5463.96	5463.96	5466.66	5466.66	5466.66
42	5463.67	5463.67	5466.37	5466.37	5466.37
41	5457.47	5457.47	5460.17	5460.17	5460.17
40	5455.23	5455.23	5457.93	5457.93	5457.93
35	5449.01	5449.01	5451.7	5451.7	5451.7
30	5443.75	5443.75	5446.45	5446.45	5446.45
22	5440.42	5440.42	5443.12	5443.12	5443.12
20	5438.06	5438.06	5440.76	5440.76	5440.76
15	5433.39	5433.39	5436.09	5436.08	5434.61

10	5428.36	5428.36	5431.06	5430.64	5431.18
8	5419.33	5419.33	5422.01	5421.51	5422.47
6	5415.92	5415.92	5418.64	5418.21	5418.63
5	5409.6	5409.6	5412.3	5411.79	5412.49
4	5402.89	5402.89	5405.59	5404.92	5406.21
3.5	5397.16	5397.16	5399.86	5399.74	5399.69
3	5390.81	5390.81	5393.51	5393.53	5393.51
2.9	5386.3	5386.3	5389	5389	5389

SUMMARY

Hydraulic analyses have been prepared for Tijeras Arroyo in the City of Albuquerque, New Mexico. Hydraulic models have been prepared for duplicate effective, corrected effective, and as-built conditions. The effective data from Letter of Map Revision Case #13-06-1053P and approved CLOMR 16-06-2447R were obtained and utilized as the basis for this analysis. The effective hydraulic model from the LOMR was utilized to prepare a duplicated effective and corrected effective model. In the corrected effective model, the geometry was adjusted to be on NAVD88 vertical datum by adding 2.7' to all elevations. The as-built condition HEC-RAS model incorporates the as-built grading that was completed as part of the Juan Tabo Hills project along the southern bank of Tijeras Arroyo.

CONCLUSIONS

An as-built conditions hydraulic model has been presented. The model represents the recently constructed improvements to Tijeras Arroyo as part of the Juan Tabo Hills development. The hydraulic analysis that was performed for this LOMR includes duplicate effective, corrected effective, and as-built conditions models for Tijeras Arroyo located in the City of Albuquerque, New Mexico. The corrected effective model was prepared using the effective hydraulic model from LOMR 13-06-1053P as a base. The corrected effective model shows 100-year water surface elevations that match effective prior to being adjusted to NAVD88. The as-built condition hydraulic model results shows increases and decreases in 100-year WSEL due to the as-built Juan Tabo Hills grading along the south overbank of the stream when compared to corrected effective and duplicate effective results. However, all results are within the allowable 1' rise per FEMA regulations. All data necessary to initiate a request for LOMR is contained herein. This report serves as an official request for a LOMR for the project as presented.