A black and white photograph of a residential street where the houses and a central palm tree are partially submerged in floodwater. The water level is high, reaching the windows of the houses and the lower branches of the palm tree. The sky is overcast and grey. The text is overlaid in large, white, bold, sans-serif font.

**APPENDIX F -
NO NEGATIVE
IMPACTS ANALYSIS**

MEMORANDUM

TO: Kristina Leal. PE CFM

DATE: 01/09/2023

FROM: Scot Laun

AVO: 43797

EMAIL: slaun@halff.com

SUBJECT: Down Stream Impact for Recommended Pharr Project for RFPG

A no negative impact analysis and review was completed for two recommended FMPs, North Pharr Mitigation Project and Southwest Pharr Drainage Mitigation Project. These projects were analyzed in the 2020 Master Drainage Plan for the City of Pharr but did not explicitly indicate if there were downstream impacts. This memo is to provide the support to show there are no downstream impacts as a result of the proposed projects.

The process used to review the existing analysis was to utilize the flood depth rasters that were created to show the resulting depths of flow for existing conditions and various design storms for the proposed projects. The 1% Annual Chance Storm (100-yr) was used as the downstream impact comparison as per the technical guidelines. The flood depth rasters were created by subtracting the existing ground terrain file from the water surface elevations modeled in the computer simulation. The resulting existing conditions depth raster was then subtracted from the proposed project depth raster to see where they differed. The results of the raster math will show any rise from the proposed conditions.

From the technical guidance, the following requirements for a 2D model are met to establish no negative impacts:

- Stormwater does not increase inundation in areas beyond the public right-of-way, project property, or easement.
- Stormwater does not increase inundation of storm drainage networks, channels, and roadways beyond design capacity.
- Maximum increase of 2D Water Surface Elevations must round to 0.3 feet (< 0.35ft) measured at each computational cell.

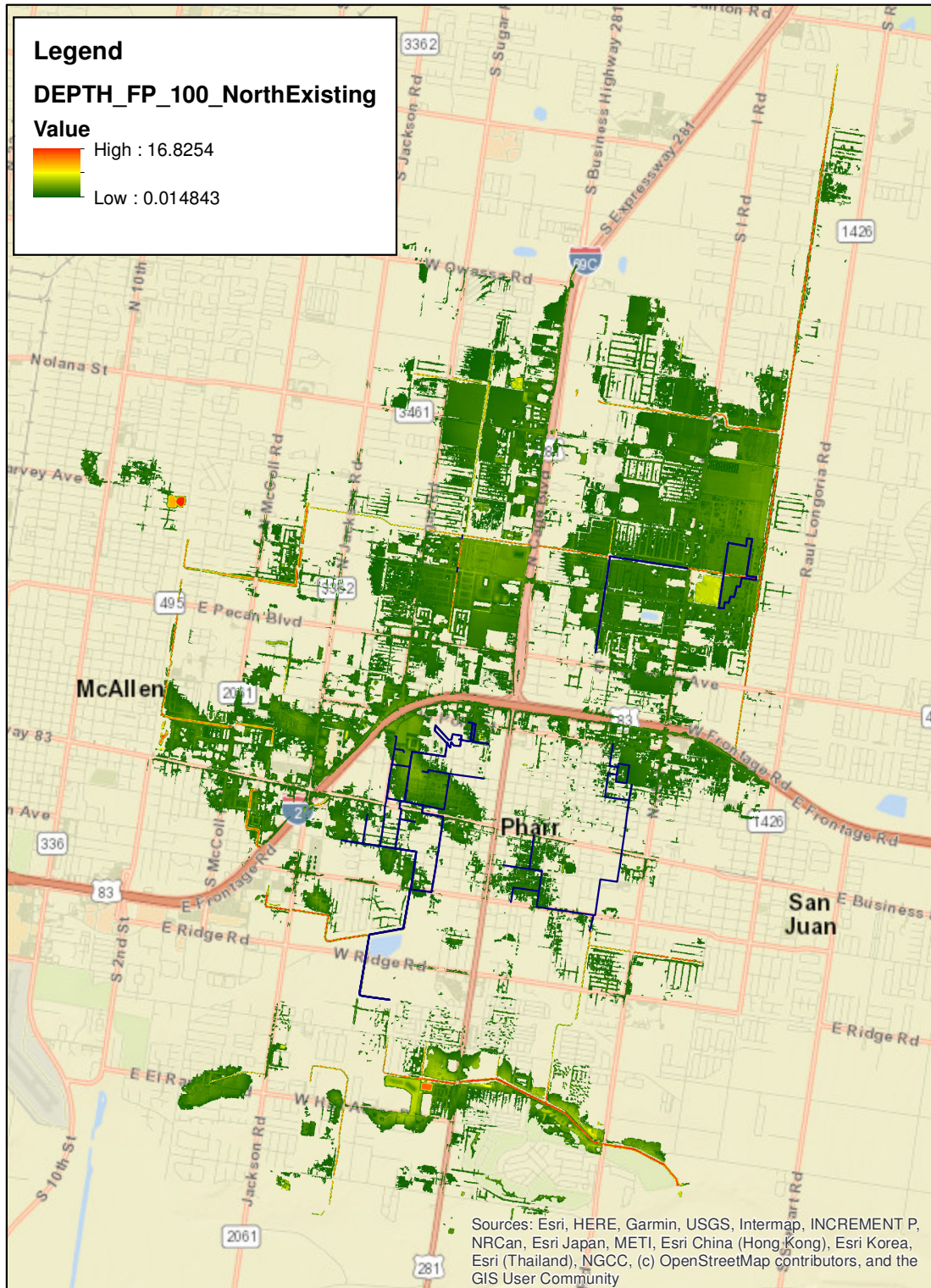
North Pharr Mitigation Project (Project 10)

Proposed project consists of:

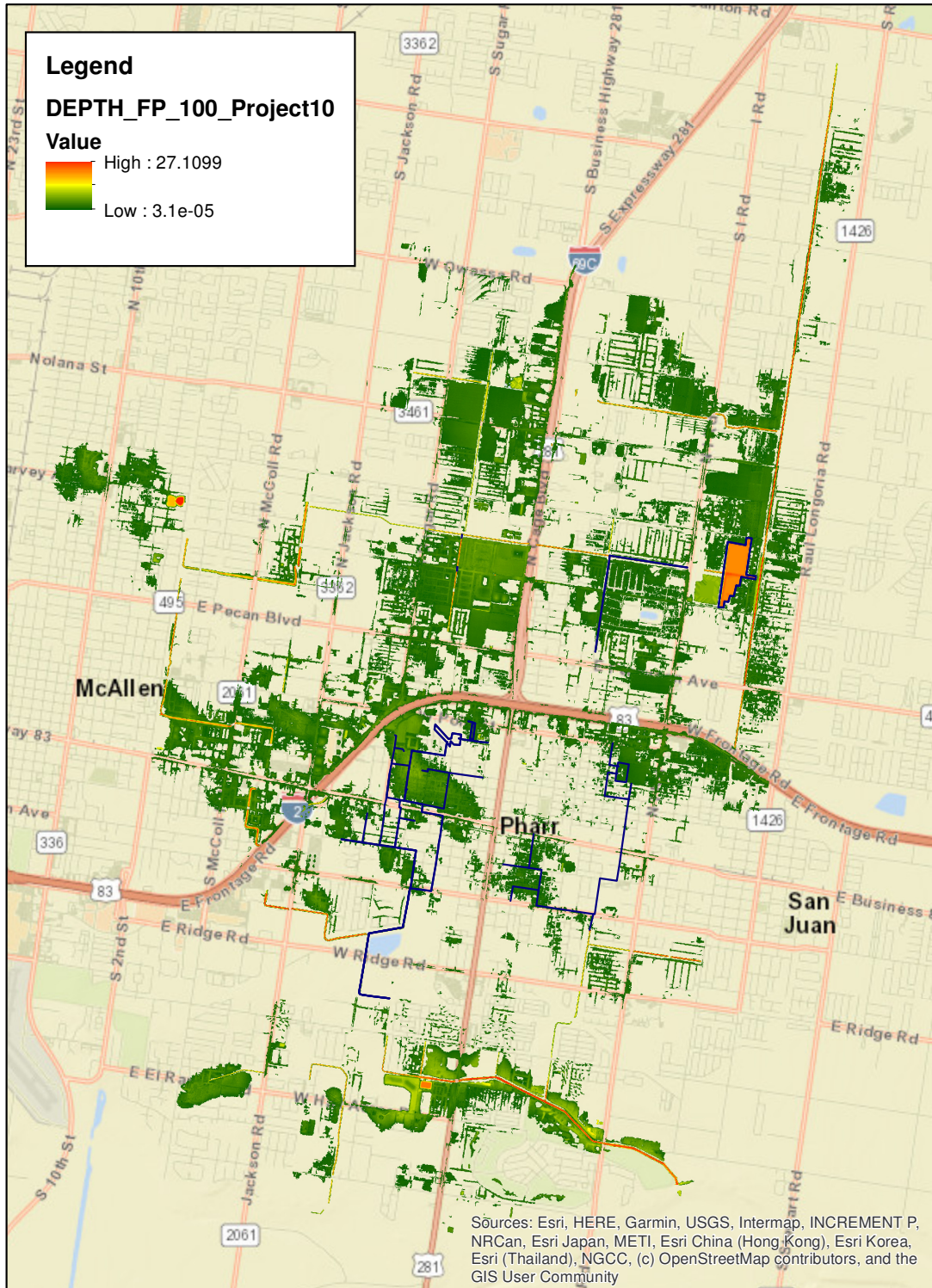
- Construct 3400-linear feet of channel improvements on the ditch running from south to north along North Fir Street
- 2800-linear feet of channel improvements on the Pharr-McAllen Lateral Ditch up to North I road.
- Install culvert improvements, 2 – 8

The results of the flood depth raster analysis show there are no adverse impacts from the proposed project. As evidenced by the following three figures, the only locations that show a rise in WSEL are within the project boundaries of the ditches and detention.

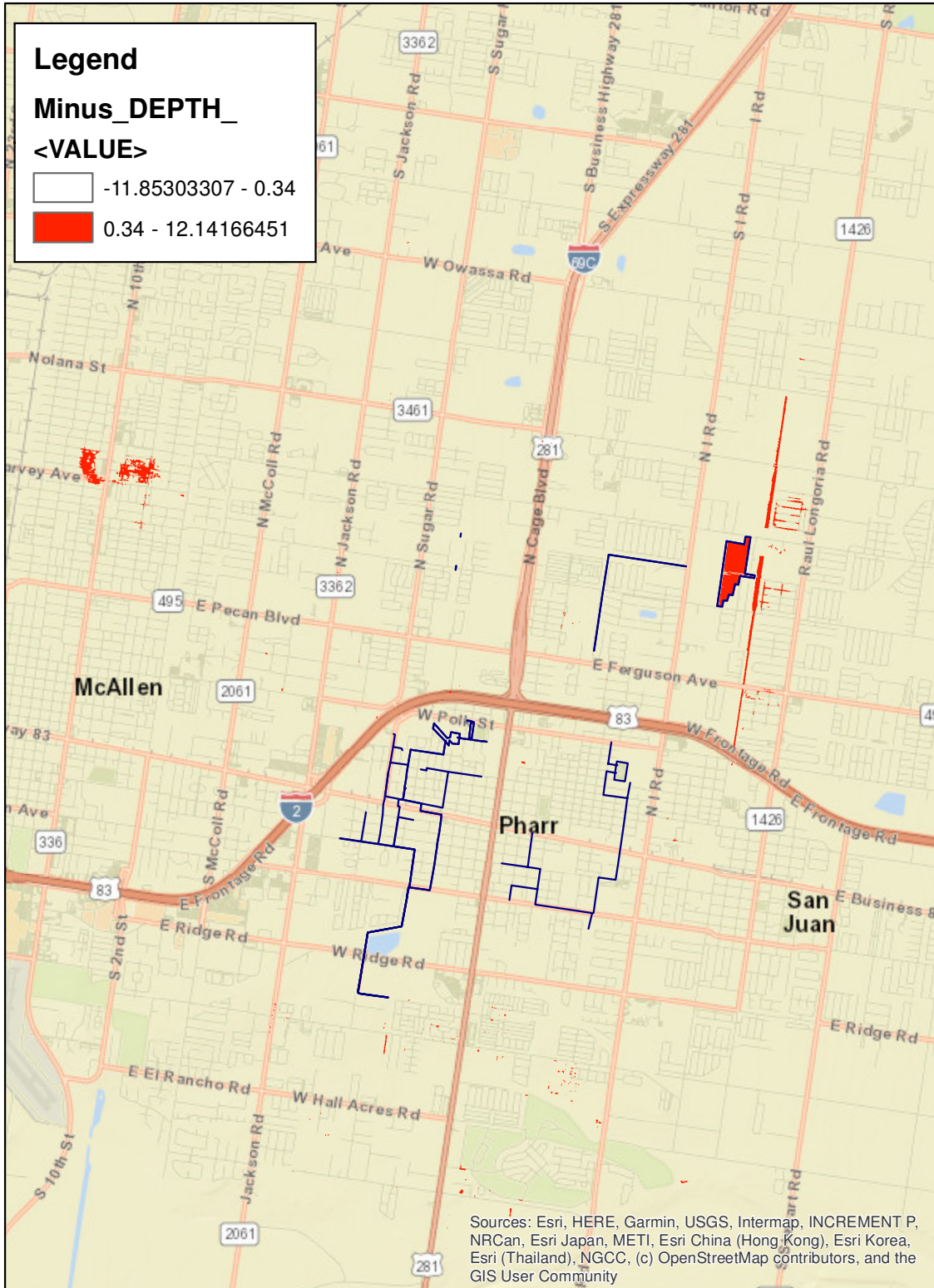
The following figures show the Existing 1% Annual Chance Depth raster, Proposed 1% Annual Chance Depth raster, and the resulting rises identified by the raster subtraction calculation. There is a small smattering of rises (very small rises) scattered about the area, but these few locations are attributed to the modeling stability and are not connected to any rise that would be attributable to the project.



North Pharr Mitigation Project – Existing Conditions 1% Annual Chance Floodplain



North Pharr Mitigation Project – Proposed Conditions 1% Annual Chance Floodplain



North Pharr Mitigation Project –1% Annual Chance Water Surface Increases



100 NE Loop 410, Suite 200
San Antonio, Texas 78216-4741
(210) 798-1895
Fax (210) 798-1896

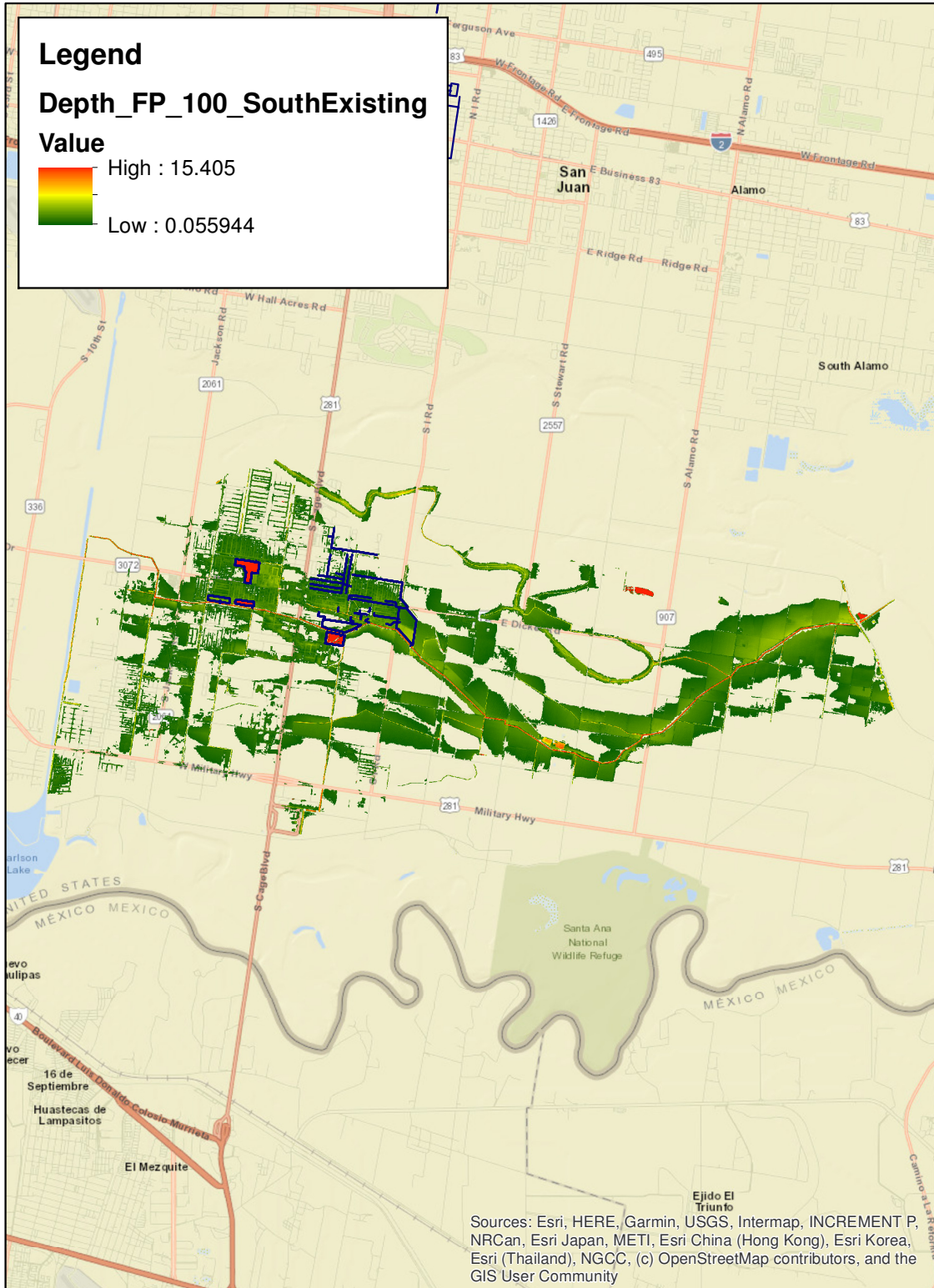
Southwest Pharr Drainage Mitigation Project (Project 4)

Proposed project consists of constructing four regional detention facilities (RDF):

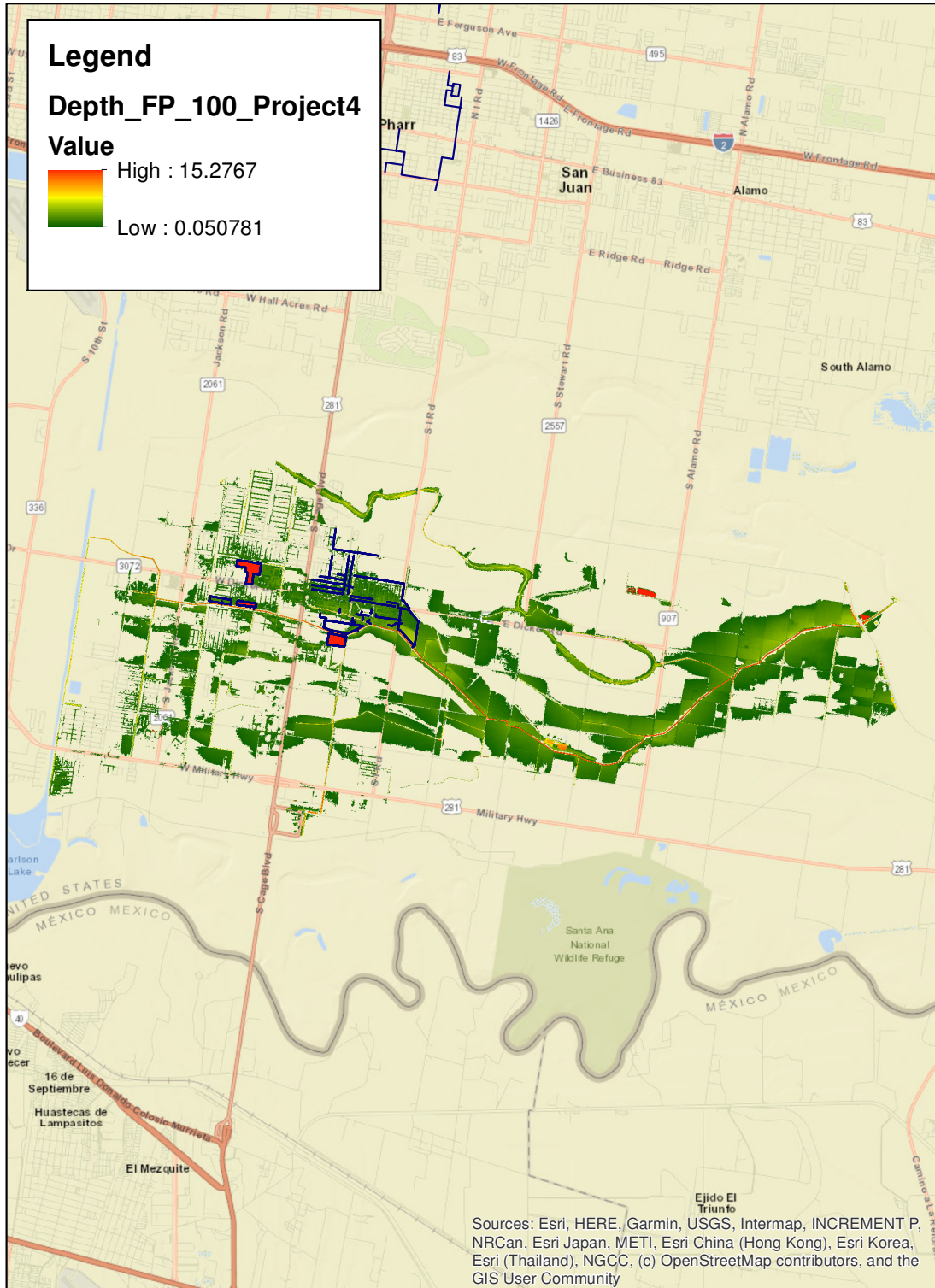
- RDF 1 has a footprint of 19.75-acres and is a lateral detention facility located between Dicker and Thomas Road west of Highway 281 and near Carmen Anaya Elementary.
- RDF 2 has a footprint of 7.4-acres

The results of the flood depth raster analysis show there is no adverse impact from the proposed project. As evidenced by the following three figures, the only locations that show a rise in WSEL are within the project boundaries of the ditches and detention.

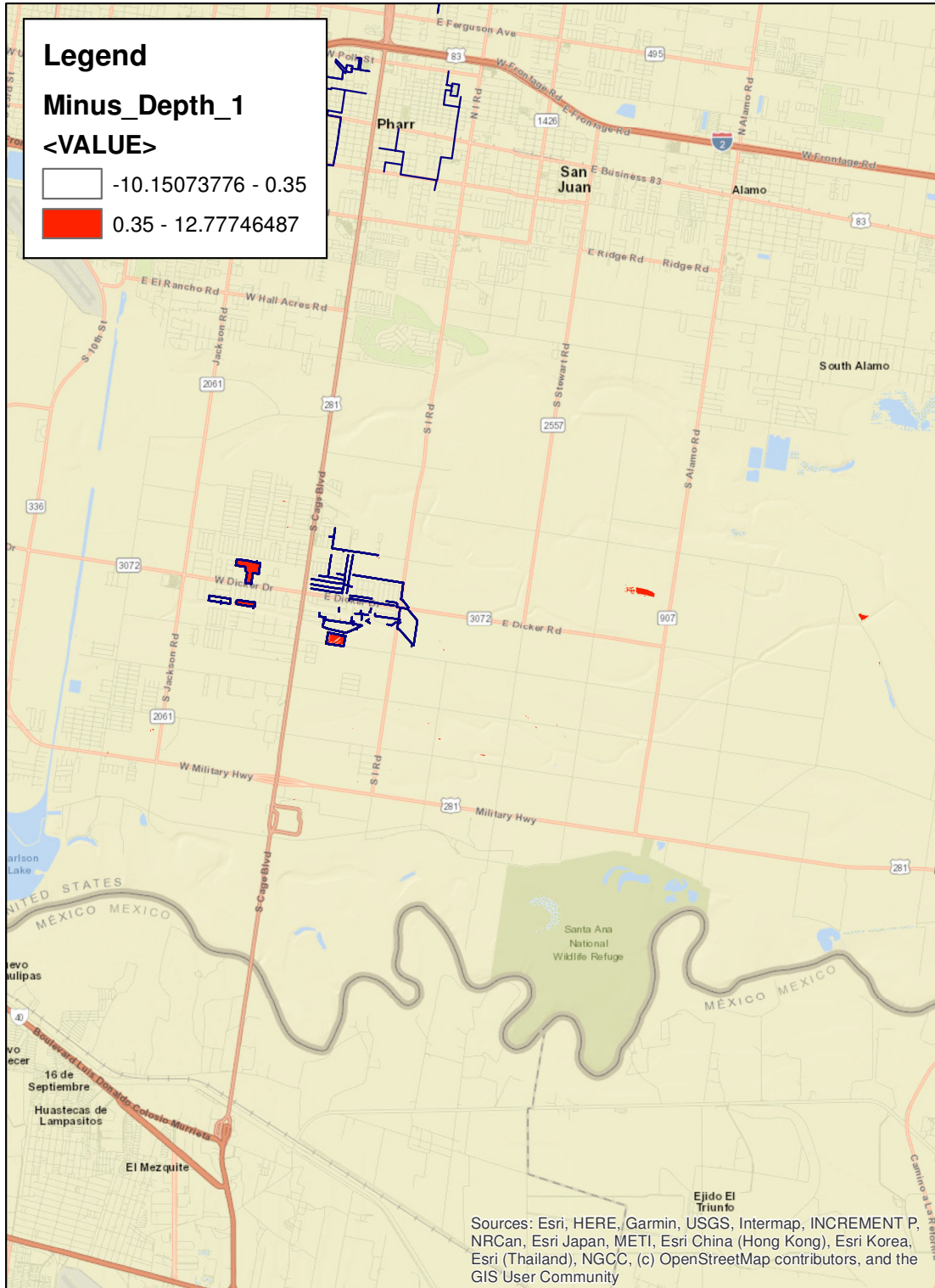
The following figures show the Existing 1% Annual Chance Depth raster, Proposed 1% Annual Chance Depth raster, and the resulting rises identified by the raster subtraction calculation. There is a small smattering of rises (very small rises) scattered about the area, but these few locations are attributed to the modeling stability and are not connected to any rise that would be attributable to the project.



South Pharr Drainage Mitigation Project – Existing Conditions 1% Annual Chance Floodplain



South Pharr Drainage Mitigation Project – Proposed Conditions 1% Annual Chance Floodplain



South Pharr Drainage Mitigation Project – 1% Annual Chance Water Surface Increases