

STREAM CROSSING ANALYSIS

STREAM CROSSING NARRATIVE

The proposed development at the Bald Hill Estates site will require a new crossing of Tributary 25, which is a tributary of the Ramapo River and flows in a generally north to south direction through the eastern third of the site. The stream enters the Bald Hill site at the northeasterly property line and exits the site at the southeasterly property line through a twin box culvert.

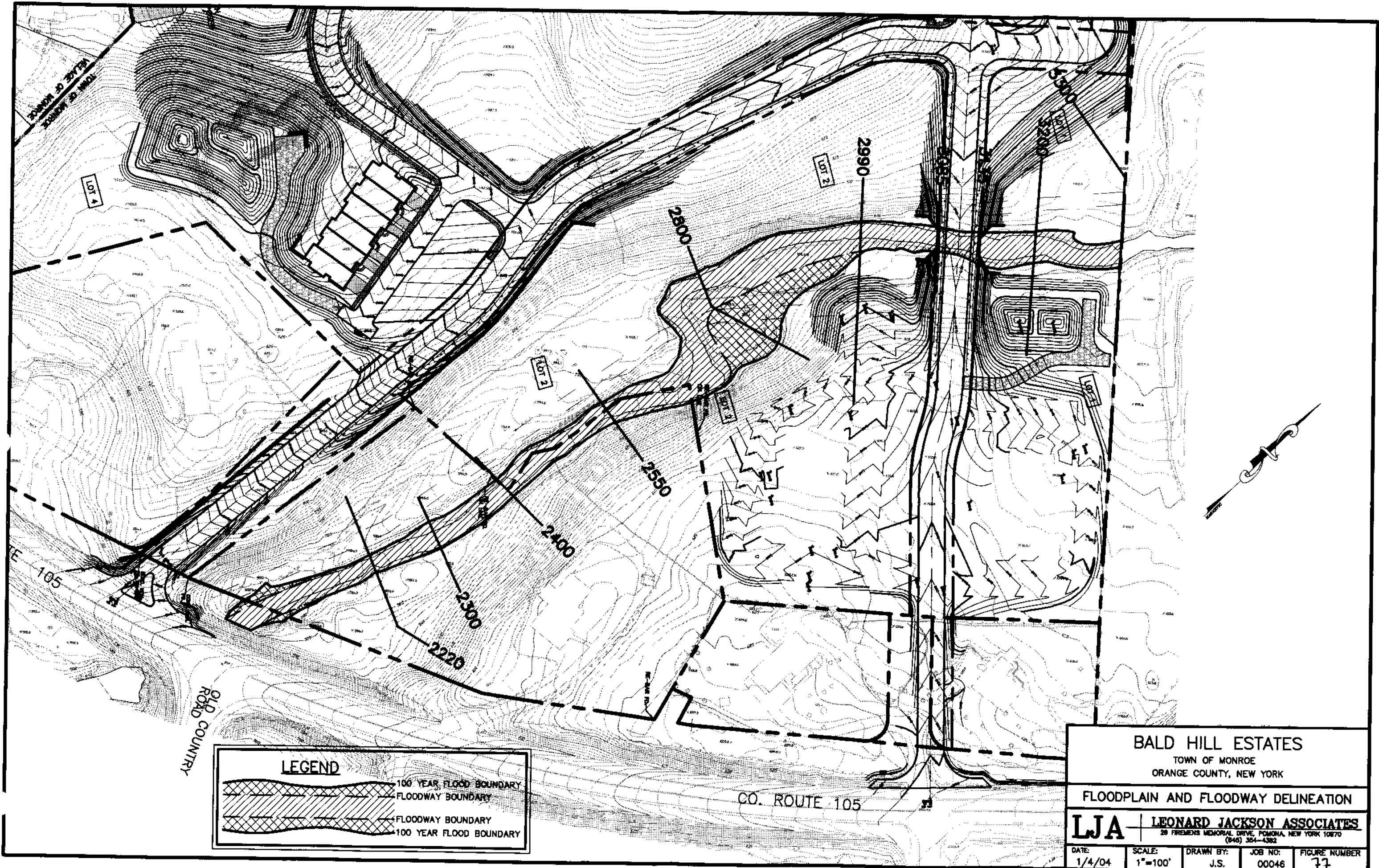
Tributary 25 has been studied by detailed methods by the Federal Emergency Management Agency and has a defined floodplain and floodway. Base flood elevations have been mapped by FEMA and are indicated on the water surface elevation profile and Flood Insurance Rate Map (FIRM) as defined by the Town of Monroe Flood Insurance Study.

Two floodplain models and two floodway models were prepared to determine the hydraulic effect of the construction of a new crossing on Tributary 25. The models were prepared utilizing the United States Army Corps of Engineers (USACOE) hydraulic analysis software HEC-RAS. One floodplain and one floodway model were each prepared for existing conditions and one floodplain and one floodway model were each prepared for the proposed conditions, which includes the proposed stream crossing.

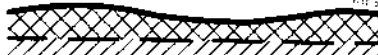
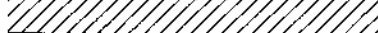


An iterative process was utilized to determine the requisite dimensions of the proposed crossing. Requirements for the crossing consisted of the following: conveyance of the 100-year discharge under low flow conditions through the bridge; zero rise in the floodplain elevation on off-site property; and zero rise in the floodway elevation. An existing conditions floodplain model was compiled utilizing topography that was compiled by aerial photogrammetry. Once the existing conditions floodplain model was compiled, an existing conditions floodway model was prepared that matched the effective floodway limits from the Town of Monroe Flood Insurance Study. The proposed stream crossing was inserted as part of the floodplain and floodway models to create proposed conditions models. To determine the effect on the floodway elevation, the same floodway limits that were determined in the existing conditions model were replicated in the proposed conditions model. The results indicate that the floodplain model yields zero increase in the 100-year floodplain elevation on the adjacent property and zero increase in the floodway elevation.

The stream crossing final design configuration consists of a single 20 foot wide, 9 foot high concrete box culvert including approximately 18 inches of stream material placed on the bottom of the box culvert to replicate natural streambed conditions. The installation of this material results in a culvert which has an effective size of 20 feet by 7.5 feet, resulting in a conveyance area of 150 square feet.

The output of the HEC-RAS models is included as an Appendix to the drainage report. These analyses demonstrate that the installation of the box culvert will cause a minor decrease on the floodplain elevation, well within the requirements promulgated by FEMA, and zero effect on the floodway elevation, as required by FEMA, on Tributary 25.



LEGEND

 100 YEAR FLOOD BOUNDARY
 FLOODWAY BOUNDARY
 FLOODWAY BOUNDARY
 100 YEAR FLOOD BOUNDARY

BALD HILL ESTATES
 TOWN OF MONROE
 ORANGE COUNTY, NEW YORK

FLOODPLAIN AND FLOODWAY DELINEATION

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DATE: 1/4/04	SCALE: 1"=100'	DRAWN BY: J.S.	JOB NO: 00046	FIGURE NUMBER 77
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