Meramec River - Valley Park Levee
Fact Sheet

Valley Park Levee Overview

- Valley Park Levee is the single Corps of Engineers project designed and constructed in the 2.16 million acre Meramec River Basin.
- The levee has a protected area of 435 acres which accounts for less than 1 percent of the total mapped floodplain in the basin.
- The levee is 3.2 miles long and was built in several phases from approximately 1994 to 2007, at a total cost of approximately $50 Million.
- The Valley Park Levee was designed and constructed in full compliance with all federal and state laws and regulations and U.S. Army Corps of Engineers' policies in effect at the time of the design.
- The St. Louis District, U.S. Army Corps of Engineers uses the best engineering and economic practices, and the best available hydrologic and hydraulic data.
- Congress gave the U.S. Army Corps of Engineers the authority to determine the design height based on engineering analysis with economic considerations.
- The design height varies along the levee. The height is based on the 100-year flood level, plus 3 feet of "freeboard," and extra height to account for post construction settlement of the levee and its foundations over time.
- Any points that measure higher than this range are either permitted utility crossings or concrete pedestrian walkways over Vance Road and St. Louis Avenue.
- Our 1993 Hydrologic and Hydraulic Analysis showed that the impact of the levee would be less than 0.4 feet for the 100-year event, with no noticeable increase to water surface profiles more than 6 miles upstream of Valley Park.
- St. Louis County, Fenton, Wildwood, and Eureka are not adversely impacted by this increase for the 100-year event, and all communities signed an agreement indicating this fact.
- The levee does not increase flood heights anywhere downstream of Valley Park.

River Gage at Valley Park

- The Valley Park river gage was moved from the 141 bridge to its present location in October 2001.
- The design of the Valley Park levee utilized information at the 141 bridge gage location, so the approximate overtopping stage of 42.6 reported to the National Weather Service for use in the river forecast page was based on the previous location.
- During the flood of December 2015/January 2016, it became apparent the approximate stage was incorrect.
- A measurement was taken during the flood indicating the overtopping stage at the new gage location is 44.1 feet.
- This value was provided to the NWS, and the river forecast page was updated. Accounting for the difference between the two gages, the original approximation of the overtopping elevation was low by 0.12 feet, or about 1.5 inches.

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Project Authorization: The project was authorized as a part of Public Law 97-128, which de-authorized the Meramec River reservoirs/dams; it applied to all communities on the river in St. Louis, Jefferson, and Franklin Counties (by amendment). The text of the authorization is shown here. Note that neither the "FEMA 100-year profile" nor any specific "design height" is mentioned. USACE was authorized to determine the most feasible, economically sound plan.

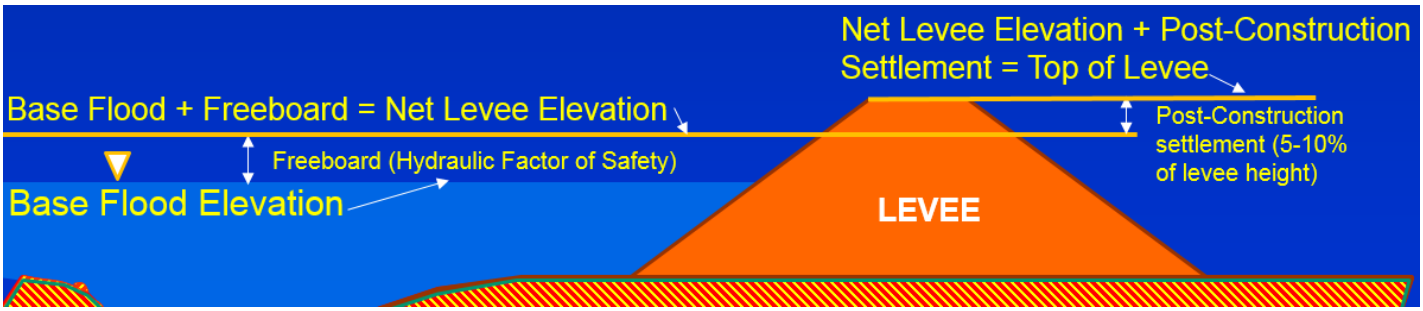
PUBLIC LAW 97–128—DEC. 29, 1981 95 STAT. 1683

(h) The Secretary of the Army, acting through the Chief of Engineers, is authorized and directed to undertake such structural and nonstructural measures as he determines to be economically and engineeringly feasible to prevent flood damage to communities along the route of the Meramec River in Saint Louis and Jefferson Counties, Missouri. Such structural measures shall not include the construction of any dams or reservoirs. There is authorized to be appropriated for those fiscal years which begin on or after October 1, 1982, not to exceed $20,000,000 to carry out the provisions of this subsection.

Hydraulic Design (key details):
USACE completed an updated Hydrologic Analysis and Hydraulic Analysis for the Valley Park Levee Project in 1993. The analyses used additional flood records from the Flood of 1982, and relied on updated technical guidance from Bulletin 17B (an Interagency study on flow frequency). Various levels of protection were studied, and the final project used a "net levee grade" of the USACE 100-year flood level plus 3 feet of "freeboard," which was the standard amount added for a factor of safety at the time of the design. The table below indicates the net levee grade for the USACE Valley Park design, and how it compares to the 1982 FEMA effective profiles. The study also showed that the impact of the levee would be less than 0.4 feet for the 100-year event, with no noticeable increase to water surface profiles more than 6 miles upstream of Valley Park. St. Louis County, Fenton, Wildwood, and Eureka are not adversely impacted by this increase for the 100-year event, and all communities signed an agreement indicating this fact. The levee does not increase flood heights anywhere downstream of Valley Park.

Hydraulic Model	Year of Study	100-year Discharge @ Eureka Gage, Cubic feet per second (CFS)	100-year Flood Elevation		
			Fishpot Creek Flank	Mainline Levee @ Valley Park Gage	Grand Glaize Creek Flank
USACE, Valley Park	1993	161,000	434.3 feet, NGVD 29	432.7 feet, NGVD 29	431.6 feet, NGVD 29
FEMA Effective Map	1982 (still in effect)	139,000	432.0 feet, NAVD 88	430.0 feet, NAVD 88	429.0 feet, NAVD 88

Geotechnical Design (key details): The key "height" component for the geotechnical design of the earthen sections of the Valley Park Levee consisted of post-construction settlement, which was estimated at 5 to 10% of the height of the net levee grade over the existing ground surface. Settlement of levees is discussed in EM 1110-2-1913, "Design and Construction of Levees". Additional material placed above "net levee grade" was up to nearly 4 feet, over the relocated Fishpot Creek section of the Upper Flank Levee. The image below shows how net levee grade and the expected post-construction settlement are estimated. Levee Districts are only allowed to maintain the levee up to the net levee grade.



Note: There are a few isolated higher crown elevations, due to post-construction utility crossings. Isolated high spots on the levee do not control the levee performance; the lowest points on the levee determine whether or not it overtops.

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