CENWO-PM-AE (Kaux)

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
106 SOUTH 15TH STREET
OMAHA NE 68102-1618

03 APR 2008

April 1, 2008

Hydrologic Engineering Branch

Mr. Tom Keith, Vice President
EDAW Inc.
240 East Mountain Avenue
Fort Collins, Colorado 80524

Dear Mr. Keith:

This letter is in response to your written correspondence dated February 11, 2008, regarding the Recreation Mitigation Plans for the Chatfield Reallocation Study, dated December 2006 and August 2007. We are providing further guidance on the three questions that were asked in the written correspondence. Our response is based on the proposed Reallocation Study.

a. Can fill material be obtained from below the conservation pool elevation?
b. Can material excavated at the marina and swim beach be disposed of below the conservation pool elevation?
c. Is it possible to deviate from COE policy to allow appropriately designed buildings to be placed lower than the 10-year water surface elevation?

The current existing conservation pool elevation is 5432.0 feet mean sea level (ft msl). Due to our ongoing Chatfield Reallocation Study, two alternatives: 1) the 5437.0 ft msl alternative and 2) the 5444.0 ft msl alternative are considered when addressing your questions.

In response to Question a: Fill material may be obtained from below the conservation pool. Excess material must either be placed back within the conservation pool or entirely removed from the reservoir.

In response to Question b: The elevations of the marina and the swim beach were not provided in the letter or identified in the Mitigation Plans. If the elevations of the excavated material are located below the conservation pool elevation (5437 ft. msl or 5444 ft. msl) then the excavated material may be disposed of below the conservation pool elevation or entirely offsite. Based on Northwestern Division Regulation (NWDR) 1110-2-5, fill placed below the conservation pool must be balanced by an equal or greater volume of cut from below the conservation pool elevation. This requirement is valid for either the 5444 ft. msl conservation pool or the 5437 ft. msl conservation pool alternatives. Whenever possible, the elevation of excavated material is always at or below the added fill.

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In response to Question c: Based on NWDR 1110-2-5, structures are not allowed below the 10-year flood pool elevation. Functionally dependent facilities may be constructed between the 10-year and 50-year flood pool elevations. This would include restroom buildings, shower facilities, concession stands, first aid stations, shade structures, information kiosks, day use shelters, and group shelters. These structures must be open floodable, wet floodproofed structures which are structures that are necessary for carrying out, or related to, authorized project purposes and are susceptible to frequent flooding and prolonged inundation. These structures must remain structurally sound throughout periods of flooding and be capable of sustaining all forces associated with flooding. The structures should require no more than flushing with a hose to become operational after the flood event has passed. No water damageable materials are allowed.

According to the Initial Mitigation Plan (plan), dated December 2006, the size of the marina store and restaurant are approximately 4,500 square feet. The plan also indicates that the marina will float above the 5444 ft. msl elevation. We are requesting additional information on the planned construction of the marina store and restaurant in order for us to determine if the structure will be constructed in accordance with NWDR 1110-2-5.

Based on the Chatfield Reallocation Project hydrologic study, pertinent pool elevations at Chatfield Reservoir are as follows:

	Existing (5432 ft. msl pool)	Reallocated (5437 ft. msl pool)	Reallocated (5444 ft. msl pool)
a. Conservation Pool Level	5432.0	5437.0	5444.0
b. 10-Year Pool Level	5444.5	5448.2	5453.7
c. 50-Year Pool Level	5456.0	5458.9	5463.7
d. 100-Year Pool Level	5481.0	5483.1	5486.4
e. Spillway Crest Elevation	5500.0	5500.0	5500.0
f. Maximum Pool Level	5521.6	5521.6	5521.6

It should be noted that these elevations are different from the results of the model simulation studies performed for the Chatfield Reallocation Study. The hydrologic analysis was reevaluated to insure that the revised pool elevations for the reallocation of storage in Chatfield Reservoir are consistent with those defined in NWDR 1110-2-5. The pool elevations defined in NWDR 1110-2-5 for Chatfield Reservoir were derived from both historical pool elevations and modeled results. This differs from the hydrologic analysis for the Chatfield Reallocation Study which was based on modeled results only and results were not adjusted for historic pool elevations. To account for this, the reallocated pools of 5437 ft. msl and 5444 ft. msl were adjusted by assuming

that the reservoir would be operated similar to what has been observed historically. This results in a rise in the 10-year and 100-year pool elevations and a reduction in the 50-year pool when compared to modeled only values from the Chatfield Reallocation Study. The primary reason for this difference is the model simulation studies included a maximum release of 5,000 cfs while actual historical releases have not exceeded 3,350 cfs.

As defined in NWDR 1110-2-5, any campground or recreational activities located below the maximum reservoir elevation of 5521.6 ft. msl must have an evacuation plan. Flood insurance is required for all insurable structures located below the 5521.6 ft. msl elevation. As stated in 44 Code of Federal Regulations (CFR) 59.1, "Structure for insurance purposes, means: A building with two or more outside rigid walls and a fully secured roof that is affixed to a permanent site."

As stated in NWDR 1110-2-5, any floatable structure or material must be adequately anchored to prevent it from being dislodged due to buoyancy and/or swift currents. A floating object could get drawn into the intake structure and potentially cause loss of control of the project. Floating objects could get swept over the spillway, creating the potential for serious damage to structures or property downstream. Also, floating objects could become lodged in the spillway, thereby increasing the pool elevation and risk of overtopping and/or failure.

If the conservation pool elevation is raised based on the results from the Reallocation Study, many trees may be inundated periodically or permanently. A maintenance program must be developed to remove any dead trees from the inundated areas. The dead, woody vegetation pose a damage threat if they become dislodged.

The Omaha District has the responsibility of maintaining the integrity of this project to function as an integral part of a flood control system, to ensure wise use of the reservoir flood pool, and to provide for public safety and welfare. Future requests for similar construction activities within our Corps operated reservoirs will require review for compliance with all Omaha District policies.

Sincerely,

John J. Bertino Jr., P. E.
Chief, Engineering Division

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