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December 17, 2007

Ms. Annalisa Peace
Greater Edwards Aquifer Alliance, Inc.
1809 Blanco Road
San Antonio, Texas 78212

Subject: Supplemental Environmental Assessment; Flood Protection Project; Comal County, Texas

Dear Ms. Peace:

At your request, I have reviewed the following documents regarding a proposed flood control project in Comal County, Texas:

- SWCA Environmental Consultants, Supplemental Environmental Assessment: Flood Protection Project: Comal County, Texas FEMA-1257-DR-TX, November 2007.
- URS, Final Environmental Assessment: Flood Protection Project, Comal County, Texas FEMA – 1257-DR-TX, May 2004.
- Letter from U. S. Department of the Interior Fish and Wildlife Service to Donald R. Fairley, U. S. Department of Homeland Security, FEMA, and Wayne Lea Department of the Army Corps of Engineers, 21 August 2007.

Comal County proposes to construct a flood detention structure on a tributary to Dry Comal Creek approximately a mile north of Interstate Highway 35 and about three miles southwest of the City of New Braunfels. The watershed area contributing to the creek at the proposed dam location is 3,377 acres. The purpose of the project would be to reduce flooding in the City of New Braunfels.

Flood detention would be achieved by constructing a 1,850-foot long, roller-compacted concrete dam with a crest elevation of 772 feet above mean sea level and a minimum top width of 15 feet. A 100-foot temporary easement surrounding the structure would be required for construction. Staging would occur on a 3.5-acre tract south of the dam. Permanent access would be provided by 16-foot wide roads. Construction would occur over 18 months.

Two 72-inch diameter outlet pipes at the base of the structure would discharge all flows up to 600 cubic feet per second without detention. A 2-year storm event, with incoming channel flow of 1,600 cubic feet per second, would create a temporary reservoir with a surface area of about 3.0 acres and 18 feet deep. During a 100-year storm, water would be detained to a depth of 72 feet, 89.4 acres would be inundated, and the reservoir would require more than 12 hours to drain.

The structure would be constructed on property owned by Holcim International and proposed for a rock quarry. Most of the quarry and all of the flood detention structure would be over the recharge zone of the Edwards Aquifer. Runoff from the site moves into cavernous karst limestone of the Edwards Formation. It discharges from Hueco Springs and Comal Springs.

Water within the Edwards Aquifer would move quickly from recharge points at the site to discharge at Hueco and Comal Springs. Evidence of a direct aquifer connection was provided by diesel fuel detected at Comal Springs after a fuel spill immediately east of the project area.¹ Water from the site could discharge from Comal Springs as soon as 24 hours.²

Pollution and sediment are transported efficiently through the cavernous openings and turbulent flow channels of the Edwards Aquifer. The aquifer is, therefore, particularly sensitive to contamination from the proposed quarry and flood detention activities.

The current project is the second proposed for this site. The first project assumed that Comal County would purchase 600 acres surrounding and upstream of the dam. The landowners are, however, unwilling to sell the property. They have applied for a permit to construct a quarry.³

The Supplemental Environmental Assessment fails to address all of the potential environmental consequences of the proposed flood detention project in the following ways:

1. The geologic description in the original environmental assessment for this site fails to mention the karst nature of the Edwards Formation, over which this project would lie; nor does it discuss its unique sensitivity. The Supplemental Environmental Assessment relies on the geology of the original assessment and provides no additional information.

The peculiar sensitivity of this unique site is indicated in the Geologic Assessment submitted to the Texas Commission on Environmental Quality (TCEQ) as part of the Holcim Quarry Water Pollution Abatement Plan. This geologic assessment documents 66 possible karst features, including two caves, one cave zone, 30 solution cavities, four solution cavity zones, eleven sinkholes and 16 solution-enlarged fractures on the Holcim tract. The assessment includes a disclaimer that all recharge features have not been necessarily identified.

¹ SWCA Environmental Consultants, *Draft Biological Assessment of the Proposed Construction and Operation of the Area 11 Flood Retarding Structure in Comal County, Texas*, prepared for Federal Emergency Management Agency, Denton Texas, February 2004, page 13.

² Letter from U. S. Department of the Interior Fish and Wildlife Service to Donald R. Fairley, U. S. Department of Homeland Security, FEMA, and Wayne Lea Department of the Army Corps of Engineers, 21 August 2007, page 3.

³ Westward Environmental, Inc., Water Pollution Abatement Plan (WPAP) – Supplemental Information; Holcim (US) Inc. – CN601505985; New Braunfels Quarry, Comal County, Texas, sealed by Gary D. Nicholls, P.E., April 5, 2007.

Failure to discuss identified and potential karst recharge features in the near vicinity of the project results in an incomplete picture of the nature of the underlying geology and the sensitivity of the Edwards Aquifer to contamination from the proposed dam construction and operation.

2. The Supplemental Environmental Assessment fails to disclose potential damage to the flood detention project and to water quality from the proposed quarry. Proposed quarry operations will generate significant dust, fine limestone fragments, and sediment. Furthermore, the quarry will remove topsoil and upper levels of the Edwards limestone that currently impede sediment migration into underlying recharge features.

Although the quarry has applied for a Water Pollution Abatement Permit under TCEQ Edwards Rules, these rules were not designed to protect Edwards Aquifer water quality from a quarry operation. Many key provisions, for example, are based on the level of imperviousness. Imperviousness is an excellent measure of potential impacts from residential or commercial building development. It is, however, a very poor measure of impacts from a quarry operation.

Furthermore, the TCEQ Edwards Rules envision projects for which the construction phase is relatively short-term compared to long-term operation of the development. It does not recognize or account for the much more significant pollution impacts from a project that is, essentially, a construction-phase project for its entire, multi-year operational life. Compliance with applicable TCEQ Water Pollution Abatement Permit conditions will not eliminate potential water contamination by the quarry. The quarry permit application requests a waiver from permanent water quality control requirements.

The primary pollution from the quarry would be sediment. Sediment is one of the most widespread water pollutants, second only to pathogens. Thirty-one percent of impaired river and stream miles in the United States are impaired due to sediment contamination. Furthermore, sediment migration from construction sites is typically 10 to 20 times greater than that from agricultural lands.⁴

Failure to address potential sediment from the quarry in the flood detention structure and on the quality of storm runoff released from the structure provides an incomplete picture of the expected consequences of dam construction. The Supplemental Environmental Assessment also fails to discuss the potential migration of this sediment through the Edwards Aquifer, to its discharge at Hueco and Comal Springs, and the sediments impact on endangered species that depend on that spring flow.

In failing to consider the potential for sediment-laden storm runoff from quarry operations, the Supplemental Environmental Assessment also fails to consider possible

⁴ U. S. Environmental Protection Agency, Stormwater Phase II Final Rule Construction Site Runoff Control Minimum Control Measure, EPA 833-F-00-008 January 2000 (revised December 2005), <http://www.epa.gov/npdes/pubs/fact2-6.pdf>, December 15, 2007.

measures to mitigate pollution, including incorporating storm runoff pollutant controls in the flood control design.

3. According to the Supplemental Environmental Assessment, the easement granted to Comal County does not allow Holcim to reduce storage capacity within the inundation area (page 12). This statement does not, however, preclude Holcim from increasing storage capacity—a more expected consequence of the proposed quarrying operations. As quarrying operations change the land topographic contours, the area of inundation might be significantly different than the area indicated in the assessment. Furthermore, Comal County might be culpable for pollution caused by storm runoff infiltration through karst recharge features opened and improperly protected during the quarrying operations.
4. Texas Parks and Wildlife recommend a dam outlet capable of passing the 25-year flood event to ensure periodic overbank flooding downstream.⁵ Limiting protection to events greater than the 25-year flood maintains floodplain and riparian ecosystems while protecting downstream residents from larger floods.
5. I offer these comments on proposed mitigation measures and permits:
 - Condition 1 does not specify whether a sediment basin is required for the construction-phase, or as a permanent control, or both.
 - Condition 3 requires a TCEQ Water Pollution Abatement Plan. The TCEQ Edwards Rules, under which such a plan would be administered, however, is designed to protect the Edwards Aquifer from pollution from development. Construction and operation of a dam is different than typical development projects.
 - On page 9, construction-phase erosion and sediment controls are inadequately described. The locations and lengths and relevant design standards for the controls are not provided.

I appreciate the opportunity to offer these comments. Please let me know if I can be of additional service.

Sincerely,



D. Lauren Ross, P.E., Ph.D.



17 December 2007

⁵ Allen, Danny, Texas Parks and Wildlife Department, letter to Janet Frey, URS Group, Inc, 12 January 2004.