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TECHNICAL MEMORANDUM

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Subject: Evaluation of Runoff from Mitchell Canyon Road to DA71A Storm Drains
Clayton Quarry

This technical memorandum provides a summary of additional hydrology calculations prepared to address questions from the County's EIR preparer regarding the potential impact to existing storm drains along Mitchell Canyon Road near Diablo Downs Drive from the proposed Reclamation Plan Amendment for the CEMEX Clayton Quarry in Contra Costa County, California. The specific CEQA Appendix G criterion addressed by this additional analysis is Hydrology and Water Quality criterion c(iii), which addresses whether the project would "*substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff*."

This technical memorandum presents a summary of the findings of the additional analysis. The approach and calculation methods used for this additional analysis are consistent with those presented in the Hydrology and Water Quality Evaluation Report, May 2020, CEMEX Clayton Quarry, Clayton, Contra Costa County, California, prepared by EMKO Environmental, Inc. (referred to herein as the "May 2020 Hydrology Report")

The stormwater conveyance features within County Drainage Area 71A (DA71A) are shown on Figure 1. They include several drop inlets on Mitchell Canyon Road that are connected by a 15-inch reinforced concrete pipe (RCP). The 15-inch RCP connects to an 18-inch RCP at the intersection of Diablo Downs Drive and Mitchell Canyon Road. The 18-inch RCP discharges to Mitchell Creek. Based on hydrology information and procedures developed

by the Contra Costa County Flood Control and Water Conservation District (CCCFCD), the design storm event for the relatively small watershed area of the DA71A stormwater conveyances has a 10-year frequency, as discussed in the May 2020 Hydrology Report. The existing capacity of the 15-inch RCP in DA71A is 18 cubic feet per second (cfs) based on the CCCFCD parameters and methods (see Section 4.1 of the May 2020 Hydrology Report). The capacity of the 18-inch RCP is much higher due to the larger diameter and the steeper slope along Diablo Downs Drive compared to Mitchell Canyon Road. Therefore, the 18 cfs capacity of the 15-inch RCP is the limiting factor in DA71A.

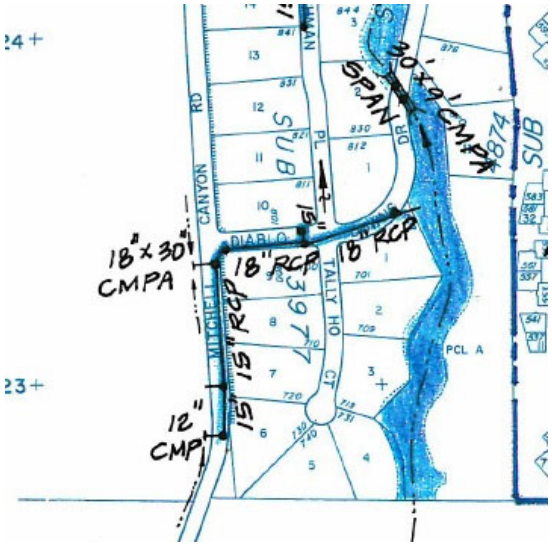

Figure 1. DA71 Storm Drains East of CEMEX Site

Under existing conditions, runoff to the drop inlets along Mitchell Canyon Road that enters the 15-inch RCP in DA71A, for a storm even with a 10-year recurrence interval, includes 9 cfs from watershed M2 on the project site, plus the runoff from Mitchell Canyon Road. The area of watershed M2 is shown on the CEMEX Clayton Quarry Reclamation Drainage Plan, prepared by Spinardi and Associates (May 2020). Under proposed project conditions, runoff to the 15-inch RCP in DA71A would include 9 cfs from watershed M2, the runoff from Mitchell Canyon Road, and 4.2 cfs from the outlet structure from the Quarry Lake. Outflow from the Quarry Lake would not occur until the reclaimed mining excavation fills with water, which is projected to occur 158 years after mining ceases (see Table 10 in the May 2020 Hydrology Report).

To assess whether the project would create or contribute runoff water which would exceed the capacity of existing stormwater drainage systems, per the CEQA Appendix G criterion, the runoff from Mitchell Canyon Road must be known. The runoff from Mitchell Canyon Road to the DA71A drop inlets for the 15-inch RCP is calculated using the same CCCFCD parameters and methods that were used for the calculations presented in the May 2020 Hydrology Report. The Spinardi and Associates Reclamation Drainage Plan identifies drainage divides on Mitchell Canyon Road approximately 175 feet north and 1,380 feet south

of Diablo Downs Drive. Thus, the total length of the contributing watershed on Mitchell Canyon Drive is approximately 1,555 feet.

The area of Mitchell Canyon Road that drains to the DA71A drop inlets for the 15-inch RCP includes the following:

- Approximately 175 feet of the west side of Mitchell Canyon Road and the drainage ditch on the west side of the road north of Diablo Downs Drive. The east side of this segment of the road drains to Diablo Downs Drive and does not contribute stormwater to the 15-inch RCP.
- Approximately 675 feet on both sides of Mitchell Canyon Road plus the drainage ditch on the west side to the south of Diablo Downs Drive; and
- Approximately 705 feet of the west side of Mitchell Canyon Road and the drainage ditch on the west side of the road located to the south of the Diablo Downs neighborhood. The east side of this segment of the road drains by sheet flow directly to Mitchell Creek and does not flow to the DA71A storm drains.

The total area of Mitchell Canyon Road that drains to the 15-inch RCP in DA71A is approximately 0.92 acres, as indicated on Figure 2. The maximum elevation of this segment of road is 604 feet above mean sea level (ft msl), at the southern drainage divide, and the minimum elevation is 556 ft msl at the lowest drop inlet. The time of concentration based on these values is 8.5 minutes.

Using the Rational Method as described by CCCFCD (see discussion in the May 2020 Hydrology Report), the total runoff from Mitchell Canyon Road from the design storm event is 1.8 cfs. Table 1 summarizes the parameters used in the Rational Method calculation.

TABLE 1

Peak Storm Runoff from Mitchell Canyon Road to 15-inch RCP

CCCFCD Rational Method Parameters

East Rim AccessRoad			Tc =	7.4	min
Runoff Calc		Q(cfs) = C x f x i(in/hr) x A(acres)			
	C	f	i	A	Q
10-yr	0.9	1	2.19	0.92	1.8

C = Runoff coefficient
F = Frequency factor
i = Rainfall intensity at time of concentration
A = Area of contributing watershed(s)
Q = Peak runoff at the time of concentration

Figure 2. Area of Mitchell Canyon Road Draining to 15-inch RCP in DA71A

Table 2 provides a comparison of the runoff components under existing conditions and project conditions relative to the capacity of the existing 15-inch RCP in DA71A.

TABLE 2

Comparison of Peak Runoff to 15-inch RCP

Existing vs Project Conditions

Area	Peak Runoff From 10-Year Storm Event	
	Existing Conditions	Project Conditions
M2 Watershed	9	9
Mitchell Canyon Road	1.8	1.8
Quarry Lake	0	4.2
Total	10.8	15
15-inch RCP Capacity	18	18

As shown in Table 2, the peak runoff from a 10-year storm event to the drop inlets that enter the 15-inch RCP in DA71A is 10.8 cfs under existing conditions and would be 15 cfs under Project conditions. While the peak runoff from the Project is higher than that under current conditions, it is less than the 18 cfs capacity of the 15-inch RCP. The comparison provided in Table 2 demonstrates that the Project would not create or contribute runoff water which

would exceed the capacity of the existing stormwater drainage systems. Furthermore, the additional flow from the Quarry Lake would not provide an additional source of polluted runoff because CEMEX would be obligated to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board, which would require that the discharge meet applicable water quality standards, or otherwise demonstrate through a Report of Waste Discharge that the flow from the Quarry Lake would not violate water quality standards. Therefore, routing the outflow from the Quarry Lake, once the reclaimed mining excavation fills with water, to DA71A would not result in a potentially significant impact, per the applicable CEQA Appendix G criterion.