CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0106

WASTE DISCHARGE REQUIREMENTS
FOR
TEICHERT AGGREGATES, TEICHERT LAND COMPANY
AND CALVIN AND DELAVANDRA MAST
ESPARTO AGGREGATE PLANT
YOLO COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Board), finds that:

1. Teichert Aggregates submitted a Report of Waste Discharge (RWD), dated 5 May 2003, to treat and dispose of industrial wastewater generated at its Esparto Plant aggregate mining and processing facility. Additional information was submitted on 10 October 2003, 7 January 2004, 20 April 2004, and 9 June 2004.

2. The Esparto Plant is at 27944 County Road 19A near Esparto, and the facility site is in portions of Sections 17 and 18 of T10N, R1W, MDB&M as shown on Attachment A, which is attached hereto and made part of the Order by reference.

3. The facility comprises Assessor's Parcel Numbers 48-210-06, 48-210-10 and 48-210-11. Teichert Land Company and Calvin and Delavandra Mast own the land, and the processing equipment is owned by Teichert Aggregates. The term "Discharger" hereafter applies to all three parties.

4. Order No. 89-114, which prescribed requirements for land discharge of aggregate processing wastewater, was adopted by the Regional Board on 23 June 1989. This Order is no longer adequate because the Discharger wishes to designate all former, existing, and future excavation areas as potential sediment and wastewater discharge areas. Prior to June 2004, the facility included a ready-mix concrete plant that generated wastewater that is a designated waste per Section 13173 of the California Water Code.

Existing Facility and Discharge

5. The Discharger mines sand and gravel from the historical channel of Cache Creek. The current Conditional Use Permit issued by Yolo County allows the Discharger to mine up to 1.2 million tons of aggregate per year. Approximately 20% of the total mass is fine-grained soil (silt and clay), which is removed during aggregate washing.

6. The mining operation will lower the existing land surface an estimated 35 feet (to approximately 135 feet above mean sea level) using dry excavation methods. A dragline is used below the water table to approximately 95 feet above mean sea level). The excavation may ultimately reach approximately 20 feet above mean sea level through use of a dredge.

7. The facility includes former, current, and future gravel pits and extends along the north bank of Cache Creek.

8. Mining is performed above and below the water table using scrapers, excavators, and draglines. The mined ore is transported from the pit to the processing plant via a conveyor belt. After the ore is crushed and washed, it is screened and stockpiled according to product type.

9. The aggregate washing process currently discharges up to approximately four million gallons per day (mgd) of wastewater. Prior to 2004, the wash water was discharged to a series of five settling ponds that are within the 100-year floodplain. As of January 2004, aggregate wash water is discharged directly into the main excavation pit. The pond locations are shown on Attachment B, which is attached hereto and made part of the Order by reference. Settling Ponds 1 through 5, which cover a total surface area of approximately 12 acres, are no longer receiving wash water; however, water is still recycled from Pond No. 5 for aggregate washing. The Discharger proposes to cease discharge of wash water to any pond located within the 100-year floodplain, and has begun recycling water from the main pit for washing aggregate.

10. A supply well near the center of the site supplies makeup water to replace water lost to evaporation or retained in the gravel. No polymers or other flocculants are used in the settling ponds.

11. The RWD provided analytical data to characterize the discharge to the aggregate wastewater ponds. Results for the former settling ponds are based on one sampling event in February 2003 [1]. Results for the water supply well and aggregate wash water samples collected prior to discharge to the settling ponds are results for three sampling events: one in February 2003, one in March 2004, and one in April 2004. Those samples were filtered prior to preservation. The analytical results are summarized below, and are contrasted with limits used to apply the applicable water quality objectives for protection of the beneficial uses of the underlying groundwater.

	Analytical Result by Sample Location (ug/L except as noted)			Water Quality Limit (ug/L except as noted) [2]
Constituent	Wash Water	Former Settling Ponds	Water Supply	
Calcium, mg/L	31	30	44	NA
Magnesium, mg/L	23	24	32	NA
Sodium, mg/L	42	40	48	69
Bicarbonate, mg/L	140	140	240	NA
Carbonate, mg/L	<5	12	<5	NA
Hydroxide, mg/L	<5	<5	<5	NA
Total Alkalinity, mg/L	140	150	240	NA
Chloride, mg/L	44 to 49	43	43	106

[1] These data are similar to settling pond analytical results obtained from 2001 through 2002 except that the earlier samples had higher results for selected metals such as iron and aluminum. However, the earlier samples were not filtered prior to preservation, and are not included in the table.

Constituent	Analytical Result by Sample Location (ug/L except as noted) Wash Water	Former Settling Ponds	Water Supply	Water Quality Limit (ug/L except as noted) [2]
Sulfate, mg/L	23 to 27	22	27	250
Total dissolved solids, mg/L	260 to 351	230	330	450
pH, std. units	7.9 to 8.2	8.7	7.9	6.5 to 8.4
Nitrate as NO_3, mg/L	11 to 16.2	9.4	8.8 to 15.3	45
Hardness, mg/L	170	170	240	NA
Total suspended solids, mg/L	110,000	340	<5	NA
Turbidity, NTU	--	--	--	NA
Aluminum [3]	11 to 28	27 [1]	12 [1]	200
Arsenic [3]	<0.5 to <2	<1	<1	0.004
Barium [3]	65 to 120	58 [1]	130	1,000
Cadmium [3]	<0.1 to <1	<0.25	< 0.25	0.07
Chromium, hexavalent [3]	<1 to 3.5	1.3	3.2	21
Chromium, total [3]	<2 to 3.4	<2	1.5 [1]	50
Copper [3]	0.97 to 2	2.1	2	170
Iron [3]	<50 to 77	48 [1]	<100	300
Lead [3]	<0.25 to <1	0.25 [1]	0.32 [1]	2
Manganese [3]	2.9 to <20	<20	<20	50
Mercury, total	< 0.2	<0.2	< 0.2	1.2
Nickel [3]	0.81 to <5	<5	<5	12
Silver [3]	<1	<1	<1	35
Thallium [3]	< 1	<1	<1	0.1
Zinc [3]	6.4 to 49	18	400	2,000
Total coliform organisms, MPN/100 Ml	120	--	--	<2.2

-- Not analyzed.
NA Not applicable.
[1] Detected below the reporting limit; result is an estimate.
[2] Or the natural background concentration in groundwater, whichever is higher.
[3] Except for the wash water samples, result is for total constituent (only the wash water samples were filtered prior to preservation).

These data indicate that the gravel processing operation has not contributed significant levels of waste constituents to the supply water. However, the pH of the wastewater in the former settling ponds is typically higher than that of the water supply, and may exceed the applicable upper water quality limit for protection of the beneficial uses of groundwater. The RWD states that the pH increase is likely due to exposure of the naturally bicarbonate water to the atmosphere. Monitoring

results for the last three years (prior to any discharge of wash water to exposed groundwater in the main pit) provide evidence of this phenomenon: the former settling ponds' pH was 8.7 and the main excavation pit pond pH has ranged from 8.5 to 8.8 since early 2001. The RWD states that the pH has been observed to decline as the water in the main pit flows into the aquifer, where less oxygen is present and oxygen in the wash water is diffused. Nitrate was typically present in the wash water and former settling ponds at concentrations similar to those in the water supply but lower than the applicable water quality limit. Coliform organisms present in the wash water may be due to the large open water surface of the former wash water settling ponds (from which the wash water is recycled) where windblown soil can fall and wildlife may congregate.

Other Processes and Waste Streams

12. Prior to June 2004, there was a Ready-Mix concrete plant at the site. Operation of the plant and the associated wastewater discharge are discussed in the Information Sheet.

13. Operations at the facility include asphaltic concrete manufacturing. The asphalt plant receives aggregates from the aggregate plant. Heated asphalt oil is blended with the aggregates to produce asphaltic concrete (AC) products. No wastewater is discharged from the asphalt plant.

14. Temporary soil and overburden stockpiles are maintained in unmined portions within the facility boundaries. These materials are maintained for future site reclamation. Sediments from the former settling ponds may also be removed and used for these purposes. The stockpiles are located in areas where runoff does not drain to the main excavation pit or other wet mining pits.

15. Domestic wastewater is discharged to a septic system built in 1987, which consists of a 1,200-gallon septic tank and four 25-foot subsurface leach lines at the location depicted on Attachment B. The septic system is operated under a permit issued by the Yolo County Environmental Health Department.

16. Although a quality assurance lab is maintained at the facility for assessing the physical characteristics of the ore (e.g., silt content), there is no assay laboratory at the facility. No chemical testing or separation techniques are used on-site, and no chemical lab waste is generated.

17. The Discharger stockpiles concrete waste and asphaltic concrete waste. These materials are crushed using a portable recycling plant and used to make road base.

18. A 2,000-gallon above-ground storage tank provides on-site fuel storage. The tank sits on a curbed concrete slab outside of the 100-year floodplain. Motor oil and gear oil are stored within secondary containment areas.

Proposed Changes in the Discharge

19. Although not permitted under WDRs Order No. 89-114, the Discharger began discharging aggregate wastewater directly to the main excavation pit in January 2004, and proposes to continue this practice. Portions of the main pit are currently below the water table at

approximately 160 feet MSL. The former settling ponds (Pond Nos. 1 through 4) will be closed and reclaimed. The last pond in the series, Pond No. 5 (or the "Fresh Water Pond") will continue to be used as a storm water detention pond. A process schematic for the proposed aggregate wastewater system is presented as Attachment C, which is attached hereto and is made part of the Order by reference.

20. The Discharger originally proposed a flow limit of 6 mgd as a monthly average for aggregate wastewater. The RWD presented a water balance for the former wash water settling ponds that showed there would be adequate disposal capacity. Because the Discharger now wishes to discharge aggregate wash water to the main pit instead of the former settling ponds, staff re-evaluated the disposal capacity. Because of the large area of land within the main pit that is available to receive wash water, the facility's true wastewater storage and disposal capacity is far greater than that required for a 6-mgd discharge. Therefore, imposing a minimum freeboard requirement on the current (main pit) and former wash water settling ponds should be sufficient to prevent overflow or berm failure, and no flow limitation is necessary for aggregate washing operations.

21. The Discharger closed the Ready-Mix Plant in early June 2004, and all concrete wastewater discharges have ceased. The Discharger plans to re-open the Ready-Mix Plant later and has stated that concrete wash water will not be discharged to any unlined pond. As described in its 9 June 2004 submittal, prior to re-opening the Ready-Mix Plant, the Discharger will construct an engineered truck wash facility consisting of a lined concrete wash pad and an engineered sump to contain the ready-mix wastewater. The wash pad will be curbed to control runoff. The system will be designed to contain storm water flows generated during the 100-year total annual precipitation event as well as the 100-year 24-hour precipitation event. Wastewater from the Ready-Mix truck wash sump will be recycled through the concrete truck wash system or the concrete plant itself. As discussed in the Information Sheet, it is appropriate to prohibit the discharge of concrete wastewater until the Executive Officer has approved a technical report demonstrating that the Discharger has made the required improvements.

22. A portable rock crushing plant may also be used from time to time. Wastewater from the portable crusher, if any, will also be discharged to the aggregate wastewater system.

23. The Discharger may use a floating dredge to excavate below the water table in the main pit. If a dredge were to be used, it would pump pond water for use in on-board aggregate processing and discharge it directly back to the pond.

Site-Specific Conditions

24. The site is bounded on the north by the West Adams Canal, which transports water diverted from Cache Creek at Capay Dam.

25. The topography of the facility site is disturbed due to ongoing grading and excavation. The ground surface outside of the main excavation pit is at an elevation of approximately 168 feet

above mean sea level (MSL). The base of the main excavation is currently approximately 140 feet MSL with deeper pits that intersect the water table.

26. Soils beneath the facility site are Cache Creek stream channel deposits underlain by the Tehama Formation, which consists primarily of poorly consolidated sands and gravels up to 150 feet thick.

27. The average annual precipitation in the vicinity is 23 inches. Storm water runoff at the Esparto Plant drains towards mined areas, including processing plant areas. All storm water is retained on-site and percolates or evaporates.

28. Most of the processing areas and the former wash water settling ponds are within the 100-year flood plain, as depicted on Attachment B. The Discharger proposes to cease use of former wash water settling pond Nos. 1 through 4, and will discharge wash water only to ponds that are not within the 100-year flood plain.

29. The surrounding land is zoned for agricultural use.

Groundwater Conditions

30. The previous WDRs did not require groundwater monitoring, but the Discharger has been monitoring groundwater quality at the site since 1997. The groundwater monitoring program was established as a California Environmental Quality Act (CEQA) mitigation measure by Yolo County as part of the mining permit requirements to detect groundwater quality degradation associated with mining activities.

31. The Discharger has installed twelve groundwater monitoring wells to monitor the first two hydrostratigraphic zones beneath the site, as shown on Attachment D. Currently, two of the wells and the main pit pond are monitored per the Yolo County mining permit requirements.

32. Wells R1A, R3A, and R4A are screened in the first hydrostratigraphic zone and are typically completed at 36 feet below the surrounding grade. The well logs indicate that a clay layer of varying thickness was encountered from about 36 to 45 feet below grade. The RWD indicates that the first zone is believed to be a perched aquifer of limited areal extent. Portions of the aquitard layer have been, and will continue to be, removed by the mining operation. The Discharger's groundwater monitoring program does not include sampling monitoring wells screened in the first hydrostratigraphic zone.

33. Wells R1B, R2, R3B, R4B, B1, R6, M1, and M2 are screened in the second hydrostratigraphic zone and are typically completed at 54 to 85 feet below grade. Well 649, an active supply well, is approximately 162 feet deep and is screened from 72 to 162 feet below grade. Because of the extended screen length, this well is not suitable for monitoring to detect potential impacts from the discharge.

34. Based on the Discharger's groundwater monitoring data, groundwater in the second hydrostratigraphic unit occurs at approximately 135 to 148 feet MSL with strong seasonal changes

in both elevation and gradient. The groundwater gradient is generally eastward (parallel to Cache Creek) during the winter and north to northeast (away from the creek) during the dry months. The water table elevation may also be influenced by longer-term climactic variations and/or pumping, as in 1990 through 1995, when groundwater levels in the second hydrostratigraphic unit dropped to 110 feet MSL each summer.

35. Water table elevations in the perched zone have typically been more stable, varying between 140 and 150 MSL since 1990. Hydrographs for the shallow wells indicate that the perched zone is subject to seasonal water table variations, but not to the same extent as the underlying aquifer. Because the mining operation will remove the aquitard and all aggregate wash water will be discharged to ponds created by excavation below the aquitard, it is appropriate to monitor groundwater in the second hydrostratigraphic zone to determine compliance with this Order.

36. The second zone monitoring wells designated as R1B and R3B are typically upgradient of the site. Wells R2 and 649 are typically downgradient of the main excavation pit but upgradient of the unmined portion of the site (the Mast parcel). Wells M1 and M2 are typically downgradient of the main excavation pit and are also downgradient of the Mast parcel, which is still in agricultural use. Groundwater analytical data provided in the RWD are summarized below.

	Analytical Result, ug/L except as noted						
	Upgradient Wells		Downgradient Wells				Water Quality
Constituent	R1B [1]	R3B [2]	R2 [3]	649 [3]	M1 [2]	M2 [1]	Limit [4]
Calcium, mg/L	37 to 39	35 to 42	39	62	36 to 76	50	NA [1]
Magnesium, total, mg/L	28 to 30	18 to 21	27	44	30 to 56	37	NA
Sodium, mg/L	28 to 32	36 to 47	39	47	33 to 46	44	69
Bicarbonate, mg/L	210	170 to 236	190	290	220 to 382	270	NA
Carbonate, mg/L	<5	<5	<5	<5	<5	<5	NA
Hydroxide, mg/L	<5	<5	<5	<5	<5	<5	NA
Total Alkalinity, mg/L	210	154 to 210	190	290	220 to 334	270	NA
Chloride, mg/L	32 to 53	36 to 42	39	49	23 to 60	81	106
Sulfate, mg/L	20 to 21	14 to 17	25	34	18 to 46	41	250
TDS, mg/L	280 to 419	243 to 316	300	440	300 to 579	531	450
PH	7.4 to 7.7	7.4 to 8.1	7.6	7.5	7.4 to 8.1	7.9	6.5 to 8.4
Nitrate as NO_3, mg/L	4 to 20	<0.5 to 1.9	5.4	35	12 to 52	11	45
Hardness, mg/L	184 to 220	161 to 190	210	340	224 to 424	268	NA
Turbidity, NTU	<0.5	<0.5 to 17	<0.5	<0.5	<0.5 to 16	<0.5	NA
Aluminum, total	130	<50 to 640	--	--	<50 to 1,000	150	200
Aluminum, dissolved	<50	<50	<50	<50	<50 [3]	<50 [3]	200

	Analytical Result, ug/L except as noted						
	Upgradient Wells		Downgradient Wells				Water Quality Limit [4]
Constituent	R1B [1]	R3B [2]	R2 [3]	649 [3]	M1 [2]	M2 [1]	
Arsenic, dissolved	<1	<1	<1	<1	<1 [3]	<1 [3]	0.004 [7]
Barium, dissolved	120	140	120	310	210 [3]	170 [3]	1,000 [7]
Cadmium, dissolved	<0.25	<0.25	<0.25	<0.25	<0.25 [3]	<0.25	0.07 [7]
Chromium, hexavalent	2.7	2.9 to 16	<1	6.5	6.6 [3]	3.5 [3]	21
Chromium, total	<1 to <50	<1 to 10	<1	7.1	<7 to 12	<10	50
Copper, total	<50	<10 to 52	--	--	<10 to 110	<50	170
Iron, total	190	<100 to	--	--	<100 to	170	300
Iron, dissolved	<100	<100	<100	<100	<100 [3]	<100	300 [7]
Lead, dissolved	<0.5	<0.5	0.32 [5]	<0.5	<3 to <5	<5	2 [7]
Manganese, total	<150	<10 to 39	--	--	<10 to 81	<150	50
Manganese, dissolved	<20	<20	<20	<20	<20 [3]	<20 [3]	50 [7]
Mercury, total	<0.2 to <2	<0.1 to <1	<0.2	<0.2	<0.1 to <1	<2	1.2
Nickel, dissolved	10	6.8	<20	10	11 [3]	<20 [3]	12 [7]
Silver, dissolved	<1	<1	<1	<1	<1 [3]	<1 [3]	35 [7]
Thallium, dissolved	<1	<1	<1	<1	<1 [3]	<1 [3]	0.1 [7]
Zinc, total	<20	<10 to <50	--	--	<10 to 96	<20	2,000
Zinc, dissolved	16	<10	<10	25	<10 [3]	<10 [3]	2,000 [7]
Total coliform organisms [5]	<2	<2	<2	<2	<2	<2	<2.2

[1] Analytical results for 1992 and early 2004.

[2] Analytical results for 1997 through early 2004.

[3] Analytical results for April 2004 only.

[4] Or the natural background concentration in groundwater, whichever is higher.

[5] Reported result is an estimate-detected below reporting limit.

[6] MPN per 100 mL.

[7] All water quality objectives apply to both the total and dissolved concentration.

Based on these data, groundwater concentrations of TDS and nitrate appear to increase across the site in a downgradient direction, and have sometimes exceeded the applicable water quality limit in the downgradient wells. However, the nitrate detections may be due to agricultural land uses.

The increase in TDS may reflect natural variation in constituent concentrations and/or contribution of soluble salts from adjacent agricultural land. Additionally, the site is adjacent to Cache Creek, which contributes high quality recharge to the aquifer. Further study is required to determine background groundwater quality. As discussed in Finding No. 11, the high pH of the main pit pond appears to decline within the aquifer, and coliform organisms detected in the aggregate wash water appear to be adequately filtered by the aquifer materials surrounding the current and former wash water settling ponds.

Because Well 649 is screened substantially deeper that the other monitoring wells and R2 is likely to be demolished as excavation progresses eastward, one or more additional monitoring wells are needed to monitor directly downgradient of the main pit to allow more definitive assessment of the potential for groundwater degradation due to the waste discharge.

Basin Plan, Beneficial Uses, and Regulatory Considerations

37. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.

38. Surface water drainage in the vicinity of the facility is to Cache Creek. The Basin Plan designates the beneficial uses of Cache Creek as municipal and domestic supply; agricultural supply; industrial supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

39. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic, industrial, and agricultural supply.

40. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin. Numerical water quality objectives are maximum limits directly applicable to the protection of designated beneficial uses of the water. The Basin Plan requires that the Regional Board, on a case-by-case basis, follow specified procedures to determine maximum numerical limitations that apply the narrative objectives when it adopts waste discharge requirements.

41. State Board Resolution No. 68-16 does not allow degradation of groundwater quality unless it has been shown that:

    a. The degradation is consistent with the maximum benefit to the people of the State

    b. The degradation will not unreasonably affect present and anticipated future beneficial uses;

    c. The degradation does not cause exceedance of one or more water quality objectives; and

d. The discharger employs best practicable treatment and control of the discharge to minimize degradation.

42. Although it is within the Regional Board's purview to allow a discharger to utilize some or all of the assimilative capacity of groundwater, it is the Regional Board's long-standing practice not to do so unless the discharger has first demonstrated that it would satisfy State Board Resolution No. 68-16. Notwithstanding the apparent low potential for exceedance of water quality objectives, the Discharger has not provided the required demonstration to be allowed to cause groundwater degradation. Therefore, none is authorized.

43. State Board Order No. WQO-2003-0014 upheld the Regional Board's use of numeric groundwater limits to apply the narrative water quality objectives set forth in the Basin Plan. The State Board ruled that numeric groundwater limits must be restricted to those constituents present in the waste, breakdown products of constituents present in the waste, and those that might be leached from the soil beneath the wastewater ponds. The following constituents require monitoring to determine compliance with State Board Resolution No. 68-16.

    a. Inorganic mercury, which was not typically detected in the aggregate wash water, the wash water former settling ponds, the concrete wastewater, or groundwater could be present in the mined formation due to historic upstream discharges. If mercury contaminated sediments are discharged into an organic-rich aquatic environment such as a wetlands or a reclamation pond that attracts wildlife, inorganic mercury could be converted to methyl mercury, which would in turn pose a threat to water quality because there is little potential for vadose zone attenuation beneath the main pit settling pond. The Toxicity objective states that waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological response in human when designated use of the water is municipal or domestic supply. The Public Health Goal for inorganic mercury is 1.2 ug/L, and groundwater beneath the facility is designated as municipal or domestic supply. It is appropriate to require groundwater monitoring for this constituent to allow formal of background groundwater quality.

    b. Nitrate, which was detected in the water supply, aggregate wash water former settling ponds, concrete wastewater and groundwater at concentrations up to 52 mg/L as nitrate, has the potential to degrade groundwater quality because mining activities will involve excavation and washing of materials from land historically used for agriculture and releasing excess nitrate from fertilizer applications directly into the aquifer via the main pit settling pond. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is 45 mg/L as nitrate, and groundwater beneath the facility is designated as municipal or domestic supply. It is appropriate to require groundwater monitoring for this constituent to allow formal of background groundwater quality.

c. Total dissolved solids, which were detected in the aggregate wash water pond at concentrations ranging from 260 to 351 mg/L , has the potential to degrade groundwater quality because there is no potential for vadose zone attenuation beneath the main pit pond. According to Ayers and Westcot, dissolved solids can damage sensitive crops if present in excess of 450 mg/L in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural uses is the narrative Chemical Constituents objective, which is implemented following the "Policy of Application of Water Quality Objectives" in the Basin Plan. It is appropriate to require groundwater monitoring for this constituent to allow formal determination of background groundwater quality.

d. pH ranged up to 8.7 in the aggregate wash water. Although the Discharger has provided monitoring data to support its conclusion that the elevated pH is solely caused by oxygenation of the naturally carbonate wash water and that the pH declines to background levels within the aquifer, there is some potential for groundwater quality degradation because the aggregate wash water is discharged directly to groundwater. According to Ayers and Westcot, pH less than 6.5 or greater than 8.4 can damage sensitive crops if present in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of substances that affect pH is the narrative Chemical Constituents objective, which is implemented following the "Policy of Application of Water Quality Objectives" in the Basin Plan. It is appropriate to require groundwater monitoring for pH to allow formal determination of the range of background pH.

e. Total coliform organisms, which were not detected in upgradient groundwater, were detected in the aggregate wash water and settling ponds at concentrations up to 1,600 MPN/100 mL. Coliform organisms (even if present in the settling pond because of naturally occurring contamination) have the potential to degrade groundwater if the surrounding formation does not provide adequate filtration. Although groundwater monitoring data indicate that there is currently adequate filtration, ongoing excavation may interfere with the filtering properties of the formation or expose portions of the formation that do not provide adequate filtration. The Basin Plan contains a numeric water quality objective for bacteria that applies to groundwater that states: *'In groundwaters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml'*. Since the groundwater is designated for municipal or domestic supply, groundwater monitoring for coliform is appropriate.

Groundwater monitoring for aluminum, barium, chloride, chromium, copper, iron, lead, manganese, nickel, sodium, sulfate, and thallium are not necessary because the reported waste concentrations were less than or equal to the apparent background groundwater quality. Groundwater monitoring for arsenic, cadmium, and silver are not necessary because those constituents were not detected in any waste stream or in groundwater.

44. The Discharger's waste characterization and groundwater monitoring data indicate that the discharge has little potential to degrade groundwater with various inorganic constituents, depending upon the effectiveness of attenuation. However, the existing groundwater monitoring data are not sufficient to allow determination of background groundwater quality or detect potential groundwater degradation. Based on the available data, it is possible that degradation of groundwater will occur from evapoconcentration and natural geochemical processes associated with exposure of groundwater to the atmosphere. It is therefore appropriate to require that the Discharger formally determine background groundwater quality and evaluate whether any of the waste constituents discharged have degraded, or have the potential to degrade, groundwater quality.

45. Section 13267(b) of California Water Code states that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

    The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. R5-2004-0106, are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

46. On 17 December 1996, the Yolo County Planning and Development Department issued a Final Environmental Impact Report (FEIR) for the aggregate mining operation in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.) and the State CEQA Guidelines.

47. The applicable FEIR Mitigation Measures for water quality are:

    a. Implement specific setbacks from the creek bank to prevent pit capture;

    b. Develop and implement specific bank protection plans;

    c. Implement as specific channel bank and levee maintenance program;

    d. Participate in the County's Cache Creek Improvements Program;

    e. Demonstrate through modeling that storm water runoff from the site will not enter groundwater exposed in the main pit; and

    f. Monitor groundwater quality.

48. Implementation of the specific mitigation measures set forth in the FEIR and compliance with waste discharge requirements will mitigate or avoid significant impacts to water quality.

49. The Discharger has filed a Notice of Non-Applicability to terminate coverage under the State Board's Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System (NPDES), General Permit No. CAS 000001, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Associated with Industrial Activities (excluding construction activities).

50. The Discharger maintains a lubricating oil storage area and an above-ground fuel storage tank at the facility site. The Discharger has complied with the Aboveground Petroleum Storage Tank Act by completing a Spill Prevention Control and Countermeasure Plan.

51. The Discharger will continue to implement Reclamation Plan No. ZF# 95-094 to comply with Section 272 of the Surface Mining and Reclamation Act.

52. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste,* as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (hereafter Title 27). The exemption pursuant to Section 20090(b), is based on the following:

    a. The Regional Board is issuing these waste discharge requirements, which implement the Basin Plan;

    b. The Discharger will comply with these waste discharge requirements; and

    c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

53. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

54. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

55. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

56. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that Order No. 89-114 is rescinded and that, pursuant to Sections 13263 and 13267 of the California Water Code, Teichert Aggregates, Teichert Land Company, Calvin and Delavandra Mast and their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of storm water to surface waters or surface water drainage courses from operational areas, areas used to stockpile products and wastes, and areas disturbed by operations is prohibited.

3. Discharge of wastewater from asphalt plant operations is prohibited.

4. Discharge of domestic waste to the aggregate wastewater ponds is prohibited.

5. Discharge of concrete wastewater to any pond or structure other than as described in Finding No. 21 and as expressly approved by the Executive Officer is prohibited.

6. As of **30 July 2004**, discharge of wastewater to former wash water settling ponds 1 through 5 is prohibited.

7. Discharge of waste classified as hazardous, as defined in Section 2521(a) of Title 23, CCR, Section 2510, et seq., (hereafter Chapter 15) is prohibited.

8. Discharge of waste classified as 'designated', as defined in Section 13173 of the California Water Code, is prohibited except as expressly authorized herein.

9. Use of chemical gold recovery methods including amalgamation, cyanide leach, or any other chemical method is prohibited.

10. Discharge or deposit of waste materials at this site other than inert waste as defined in Title 27, CCR, Section 20230 is prohibited.

11. Surfacing of wastewater from the septic tank or leach lines is prohibited.

12. The discharge of industrial wastewater to septic systems is prohibited.

B. Discharge Specifications:

1. Water or process wastewater, if used for dust control or onsite irrigation, shall be used in a manner that will not cause eroded soil or sedimentation in runoff to be discharged to areas not controlled by the Discharger.

2. The discharge shall remain within the designated storage and disposal areas at all times. Additional ponds and slurry deposition areas may be constructed as needed within the confines of the facility site and outside of the 100-year floodplain as defined on Attachments A and B.

3. No waste discharge shall occur within the 100-year floodplain.

4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

5. The ponds shall be managed to prevent breeding of mosquitoes. In particular,
   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
   b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

6. The wastewater system shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

7. Any concrete wastewater system shall be designed to completely contain all wastewater and storm water that contacts the wash pad during the 100-year 24-hour storm event.

8. All stockpiled wastes and products shall be managed to prevent erosion of sediment to surface water drainage courses.

9. Newly constructed or rehabilitated levees or berms that hold back water shall be designed and constructed under the direct supervision of a California Registered Civil Engineer or Engineering Geologist.

10. The freeboard in any pond that receives or has received wastewater shall never be less than two feet as measured vertically from the water surface to the lowest point of potential overflow.

11. The wastewater ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with the historical rainfall patterns.

12. On or about **1 November** of each year, available pond storage capacity shall at least equal the volume necessary to continuously comply with Discharge Specifications B.10 and B.11.

13. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.

14. The Discharger shall comply with all applicable sections of the Aboveground Petroleum Storage Tank Regulations (Section 25270, Health and Safety Code).

15. Septage shall be discharged only to a permitted municipal wastewater treatment or equivalent facility. All transportation of septage or other wastewater shall be performed by a duly authorized service.

C. Groundwater Limitations

The discharge shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than natural background water quality.

D. Solids Disposal Requirements:

1. Collected screenings, sludge, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste,* as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer in the next monthly monitoring report.

3. Disposal of septage shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.

E. Provisions:

1. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision E.2:

   a. By **30 August 2004**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall describe the proposed installation of at least one well immediately downgradient of the main pit excavation pond. The new monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer that the discharge would first affect and to comply with applicable well standards. To justify the depth and screened interval of the proposed well(s), the workplan shall include at least two geologic cross sections of the site based on boring logs, historical topographic maps and/or aerial photos, and excavation observations that depict subsurface stratigraphy, aquitards, well depths and screened intervals the former settling ponds, and the main pit. The workplan shall be consistent with, and include the items listed in, the first section of Attachment E, "*Requirements for Monitoring Well Installation Workplans and a Monitoring Well Installation Reports***."**

b. By **30 August 2004**, the Discharger shall submit certification that the Ready-Mix Pond has been drained of all free liquids. The remaining concrete wastewater may be discharged into the main pit excavation pond if the commingled wastewaters will not cause the groundwater limitations of this Order to be violated.

c. By **30 December 2004**, the Discharger shall submit a *Groundwater Monitoring Well Installation Report* that describes the installation of groundwater monitoring well(s) and contains the items found in the second section of Attachment E.

d. At least **180 days** prior to operation of any future ready-mix concrete plant, the Discharger shall submit a *Ready-Mix Wastewater System Design Report.* The report shall show that the design is consistent with Finding No. 21 of this Order and shall include complete design drawings and construction specifications for the proposed concrete wastewater containment, storage, conveyance, and recycling or disposal system. The design drawings shall include a process flow diagram, site plan, electrical and instrumentation plans, pipeline alignments, structural sections, and details sufficient to show the nature and location of the proposed improvements, the storage capacity of the system, and its materials and methods of construction. The report shall include a narrative description of the system, including a detailed description of how leakage will be prevented and detected.

e. At least **30 days** prior to operation of any future ready-mix concrete plant, the Discharger shall submit a *Ready-Mix Wastewater System Completion Report*. The report shall document completion and operation of the approved design. The report shall include stamped as-built drawings and a narrative report describing the system as constructed. Any deviation from the approved design shall be thoroughly documented and justified.

f. By **30 August 2006**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least six consecutive groundwater monitoring events.

2. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geological sciences, shall be prepared by, or under the direction of, persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with section 415 and 3065 of Title 16, CCR, all technical reports, must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2004-0106, which is a part of this Order, and any revisions thereto as ordered by the Executive Officer.

4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. The Discharger shall submit to the Regional Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.

6. The Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.

7. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, then the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

8. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

9. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

10. The Regional Board will review this Order periodically and may revise requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 9 July 2004.

_____

THOMAS R. PINKOS, Executive Officer

ALO:07/09/04

AMENDED

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0106

FOR
TEICHERT AGGREGATES, TEICHERT LAND COMPANY
AND CALVIN AND DELAVANDRA MAST
ESPARTO AGGREGATE PLANT
YOLO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring wastewater ponds, wastewater in the ponds, and groundwater. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

POND MONITORING

Each pond that receives wash water or other wastewater shall be inspected weekly and monitored as follows:

Parameter	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard	0.1 Feet	Measurement	Weekly	Monthly
Berm condition	N/A	Observation	Weekly	Monthly

WASTEWATER MONITORING

A composite sample shall be obtained from each active wash water settling pond. Each composite sample shall be comprised of at least four equal aliquots obtained from different sampling locations on the same day, and shall be thoroughly mixed in a clean plastic or glass container. At a minimum, the Discharger shall monitor the wastewater in the ponds as follows:

Constituent/Parameter	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow, influent	gpd	Meter reading	Daily	Monthly
Mercury, total	mg/L	Composite	Monthly	Monthly
Nitrate (as NO_3)	mg/L	Composite	Monthly	Monthly
pH	std.	Composite	Monthly	Monthly
Total dissolved solids	mg/L	Composite	Monthly	Monthly
Total coliform organisms	MPN/100 ml	Composite	Monthly	Monthly

GROUNDWATER MONITORING

The Discharger shall monitor groundwater quality using the following monitoring wells until the Groundwater Monitoring Workplan required pursuant to the Provisions of the Waste Discharge Requirements has been approved and fully implemented: R1B, R3B, R2 (until demolished), and M1. After that time, the Discharge shall monitor groundwater quality using those four wells and any other wells that have been installed in accordance with an approved workplan.

Prior to construction of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. Once installed, all new wells shall be added to the MRP, and shall be sampled and analyzed according to the schedule below.

Groundwater elevations shall be measured prior to purging. Each well shall be purged of at least three well volumes until pH and electrical conductivity have stabilized prior to sampling. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated based on surveyed wellhead elevations and used to determine groundwater gradient and direction of flow. Groundwater samples shall be collected using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Depth to groundwater	0.01 Feet	Measurement	Quarterly
Groundwater elevation	Feet	Calculated	Quarterly
Gradient	Feet/feet	Calculated	Quarterly
Flow direction	Degrees	Calculated	Quarterly
Mercury, total	mg/L	Grab	Quarterly
Nitrate (as NO_3)	mg/L	Grab	Quarterly
pH	std.	Grab	Quarterly
Total dissolved solids	mg/L	Grab	Quarterly

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Total coliform organisms [1]	MPN/100 ml	Grab	Quarterly

[1] Using a minimum of 15 tubes or three dilutions.

CONCRETE WASTEWATER SUMP MONITORING

If the Executive Officer approves use of a concrete wastewater system, the components of that system shall be thoroughly inspected at least once per year. Any engineered sump shall be drained and cleaned prior to inspection. The sump and all pipelines shall be inspected for cracks and leaks, and any damage shall be repaired forthwith.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly Monitoring Reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the Monthly Monitoring Report shall include:

1. Results of pond and wastewater monitoring.
2. A map depicting the locations of all active wastewater ponds, storm water ponds, and the locations where freeboard is measured.
3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format.
4. If requested by staff, copies of laboratory analytical report(s).
5. A discussion of all septage and other off-site industrial waste disposal.
6. A calibration log verifying calibration of all monitoring instruments and devices used to comply with the prescribed monitoring program.

B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Beginning immediately after adoption of this Order, Quarterly Monitoring Reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Monitoring Report shall include the following:

1. Results of groundwater monitoring, including any groundwater elevation and water quality data obtained in accordance with the mining permit issued by Yolo County.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDRs, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum;
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Monitoring Report

An Annual Monitoring Report shall be prepared as the fourth quarter monitoring report. The Annual Monitoring Report shall include all monitoring data required in the monthly/quarterly schedule and shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented in the Quarterly Monitoring Reports, the Annual Monitoring Report shall include the following:

1. The contents of the regular groundwater monitoring report for the last sampling event of the year;

2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. An evaluation of the groundwater quality beneath the wastewater ponds;
4. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;
5. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
6. The results for analyses that are performed annually (as set forth above);
7. A summary of information on the management and disposal of sediments;
8. A forecast of influent flows for the coming year, as described in Standard Provision No. E.4.
9. If applicable, results of the Ready-Mix wastewater system inspection. Describe all problems found, repairs made, repairs needed, and scheduled repair/replacement dates.

A transmittal letter shall accompany each self-monitoring report. The letter shall discuss any violations during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Discharger shall implement the above monitoring program as of the date of this Order.

THOMAS R. PINKOS, Executive Officer

9 July 2004
(Date)

ALO:7/9/04

AMENDED

INFORMATION SHEET

ORDER NO. R5-2004-0106
TEICHERT AGGREGATES, TEICHERT LAND COMPANY
AND CALVIN AND DELAVANDRA MAST
ESPARTO AGGREGATE PLANT
YOLO COUNTY

Teichert Aggregates owns and operates an aggregate mine and processing plant near Esparto. Teichert Land Company and Calvin and Delavandra Mast own the land. The Discharger mines up to 1.2 million tons of sand and gravel from the historical channel of Cache Creek each year. The mined ore is transported from the pit to the processing plant, and is crushed, washed, screened, and stockpiled according to product type.

The aggregate washing process currently discharges approximately four million gallons per day (mgd) of wastewater. Prior to January 2004, the wash water was discharged to a series of five settling ponds from which it was recycled for use as aggregate wash water. Aggregate wash water is currently discharged directly to groundwater exposed in the main excavation pit. Analytical data indicate that the gravel processing operation does not contribute significant levels of waste constituents to the supply water and that the wastewater generally does not contain common constituents at concentrations exceeding water quality objectives. However, the pH in the current and former wash water settling ponds may be higher than the upper limit for protecting the beneficial uses of groundwater.

The asphalt plant receives aggregates from the aggregate plant. Heated asphalt oil is blended with the aggregates to produce asphaltic concrete (AC) products. No wastewater is discharged from the asphalt plant. Prior to June 2004, the Discharger also manufactured up to 50,000 cubic yards of ready-mix concrete per year.

The derivation of key specifications and provisions in the proposed Order is discussed below.

Flow Limitations
The Discharger submitted a water balance for the former wastewater pond system, which showed adequate capacity for proposed wash water flows. Because the large main pit area will now be used for wastewater disposal, the facility's true waste water storage and disposal capacity is far greater than required. Therefore, imposing minimum freeboard requirements on this pond system should be sufficient to protect water quality, and no flow limitation is necessary.

Groundwater Limitations
Groundwater beneath the site occurs at approximately 140 feet MSL with strong seasonal changes in both elevation and gradient. The groundwater gradient is generally eastward (parallel to Cache Creek) during the winter and north to northeast (away from the creek) during the dry months. As stated in the Findings of the proposed Order, the quality of both the aggregate wastewater and upgradient groundwater is generally good. In compliance with State Board Resolution No. 68-16, the Order states that the discharge must not degrade the groundwater. Because background groundwater quality has not been formally determined, Provision E.1.f requires that the Discharger complete a formal determination of background quality after eight quarters of monitoring.

Because all aggregate wash water will be discharged directly to groundwater exposed in the main excavation pit, it is appropriate that the Discharger demonstrate that groundwater quality will not be degraded by the discharge through routine monitoring of main excavation pit and the groundwater.

Groundwater Monitoring Workplan
At least one additional groundwater monitoring well is needed to monitor downgradient of the main pit settling pond. Therefore, Provision E.1.a requires that the Discharger submit a Groundwater Monitoring Well Installation Workplan.

Concrete Wastewater Management Requirements
The Ready-Mix Plant that ceased operation in June 2004 is a portable plant that typically produces up to 50,000 cubic yards per year. When it was in operation, the Ready-Mix Plant received aggregates from the aggregate plant. The aggregates, Portland cement, and fly ash were discharged from storage silos into transit mixer trucks via a hopper. Water was added directly to the truck, where mixing takes place. Both the silos and the truck loading area had dust collection systems permitted by the Yolo-Solano Air Quality Management District.

When the plant is in operation, filled transit trucks proceed to the truck wash area near the Ready-Mix Plant. A water hose is used to rinse off the truck exterior. Hydrochloric acid solution is used every day or two to facilitate cleaning of the truck drums. The RWD states that the truck wash produces approximately 1,000 gallons of concrete wastewater per day when operating. The former truck wash pad consists of a 40-foot by 80-foot unpaved area covered in crushed rock. The concrete truck wash area drained to a 20-foot by 65-foot plastic-lined pond approximately 30 feet from the wash pad. The Ready-Mix Pond, which is about three feet deep, also received wastewater from cleaning activities performed at the Ready-Mix Plant.

The RWD provided analytical data to characterize the discharge to the Ready-Mix Pond. Analytical results for filtered and unfiltered samples are presented below, as are numerical limits to apply the applicable water quality objectives for protection of the beneficial uses of the underlying groundwater.

	Analytical Result (ug/L except as noted)		Water
Constituent	Total (Unfiltered)	Dissolved (Filtered)	Quality Limit [1]
Aluminum	--	21	200
Arsenic	--	<1	0.004
Barium	--	190	1,000
Cadmium	--	<0.25	0.07
Chloride, mg/L	190	--	106
Chromium, hexavalent	--	34	21
Chromium, total	--	32	50
Copper	--	2.5	170
Iron	--	<100	300
Lead	--	< 0.50	2

Constituent	Analytical Result (ug/L except as noted) Total (Unfiltered)	Dissolved (Filtered)	Water Quality Limit [1]
Manganese	--	<20	50
Nickel	--	12	12
Nitrate, mg/L	23	--	45
Silver	--	<1	35
Sodium, mg/L	90	--	69
Sulfate, mg/L	89	--	250
Thallium	--	0.69	0.1
Zinc	--	3.5	2,000
Hardness, mg/L as $CaCO_3$	320	--	NA
PH	10.59	--	6.5 to 8.4
Total Alkalinity, mg/L as $CaCO_3$	76	--	NA
Carbonate Alkalinity, mg/L as $CaCO_3$	24	--	NA
Hydroxide Alkalinity, mg/L as $CaCO_3$	53	--	NA
TDS (mg/L)	850	--	450

-- Not analyzed.
NA Not applicable.
[1] Or the natural background concentration in groundwater, whichever is higher.

These data indicate that the Ready-Mix wastewater contains hexavalent chromium, sodium, thallium, chloride, and dissolved solids at concentrations exceeding the limiting water quality objectives. Additionally, the pH greatly exceeds the upper limit recommended for protection of agricultural uses of water. Because there is little, if any, potential for attenuation of these constituents in the vadose zone, the concrete wastewater is a designated waste per Section 13173 of the California Water Code.

As stated in Finding No. 21, the Discharger will construct an engineered truck wash facility consisting of a lined concrete wash pad and an engineered sump to contain the ready-mix wastewater for recycling through the concrete truck wash system or the concrete plant itself. Such a discharge would therefore be exempt from regulation under Title 27 of the California Water Code.

In order to ensure that any concrete wastewater is managed to prevent groundwater degradation in the future, Discharge Prohibition A.5 prohibits discharge of any concrete wash water to any unlined pond and requires that any future discharges of concrete wash water be limited to an engineered sump whose design has been approved by the Executive Officer. Accordingly, Provisions E.1.d and E.1.e specify the contents of technical reports that the Discharge must submit to demonstrate compliance with Discharge Prohibition A.5.

Because of the concern about residual chromium contamination in the vadose zone below the Ready-Mix Pond, it is appropriate to require that the Discharger investigate the nature and extent of residual contamination beneath the pond and monitor groundwater for the waste constituents that pose a threat

to groundwater quality. This will be addressed under a separate enforcement order. However, in order to reduce potential migration of contaminants through the vadose zone beneath the pond, Provision E.1.b requires that the Discharger drain all free liquids from the Ready-Mix Pond.

Response to Discharger's Comments on the Tentative WDRs
This Order incorporates numerous revisions designed to address the Discharger's comments on the tentative WDRs. However, staff could not incorporate all of the requested revisions, sometimes for editorial reasons. Selected requested revisions that were not incorporated into this Order are discussed below.

A. Findings

Finding No. 11. Analytical data for water samples collected from the main excavation pit were not incorporated into the data table because the table summarizes wastewater characterization data, whereas samples from the main pit represent, at most, wash water diluted with an unknown quantity of groundwater. Ina addition some of the main pit water samples were collected before wash water was discharged to the main pit pond, and some were collected after wash water discharge commenced.

The term "addendum" is not used when referring to the RWD, because there have been several documents that amend the RWD in some way (as described in Finding No. 1).

This section of the findings lays the foundation for discussing potential groundwater degradation. To add the proposed conclusory sentence about nitrate in groundwater in this section would be premature and confusing.

Finding No. 36 The Discharger requested that this finding conclude that any increase in TDS in groundwater is the result of natural variation across the site because the observed variations were present before mining commenced. However, the Discharger has not provided a statistical analysis to demonstrate the validity of the statement. It is possible that the claim may be later demonstrated, but without a definitive analysis of the data, the Order can only note the potential for this to be confirmed with further study.

Finding No. 44 The Discharger requested that this finding be deleted and replaced with a statement that Resolution No. 68-16 does not apply because the discharge will not cause significant increases of waste constituents in groundwater. The requested revision was not made because Resolution No. 68-16 applies to all discharges of waste to land and because of the limited analytical data provided by the Discharger. Although staff's analysis of the available data indicates there is little potential for degradation above the applicable water quality limits, additional study is required by the Order to confirm that degradation will not occur. At this time, the Discharger

has not shown that any degradation that might occur would be in the best interest of the people of the State.

Finding No. 45 The Discharger requested that this finding be revised to conclude that there is no indication that the discharge would affect the groundwater quality and that no groundwater limitations are necessary. Based on the Discharger's 9 June 2004 proposal not to discharge concrete wash water to the main pit pond and the limited analytical data submitted to date, it appears that groundwater will not be impacted by the discharge. However, it is still appropriate to monitor the wastewater pond and groundwater for mercury, pH, TDS, nitrate, and coliform organisms to ensure that degradation does not occur. The Discharger has agreed to conduct this monitoring.

Finding No. 46 The Discharger requested that this finding be deleted because that the existing groundwater data are sufficient to determine that further analysis of background groundwater quality is not needed. Although the existing data set may in fact be sufficient to determine background groundwater quality, the actual statistical determination (as required by Provision E.1.f) has not been provided. Considering the apparent variability of background groundwater quality, specific statistically based background groundwater concentrations must be determined to provide a basis for determining whether the discharge complies with the groundwater limitations.

B. Discharge Specifications

Discharge Specification B.1 The Discharger requested that this specification be limited to restricting the use of process wastewater for dust control. The specification was clarified, but still restricts use of plain water for dust control to prevent erosion or sedimentation outside the boundaries of the property controlled by the Discharger.

C. Provisions

The Discharger requested that Provisions E.1.a and E.1.f be deleted as unnecessary. However, as discussed at length in Finding Nos. 33 through 36, at least one new well is needed to monitor groundwater conditions directly downgradient of the main pit pond. As stated above, the background groundwater quality study is essential to determine background groundwater quality so that final groundwater limitations can be determined.

ALO:7/14/04

AMENDED