CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The site of the proposed Revised Vallejo Marine Terminal LLC (VMT) and Orcem California Inc. (Orcem) project occupies a total of ~~39.1 -32.55~~31.4 acres located at 790 and 800 Derr Avenue in the southwestern portion of the City of Vallejo, California, fronting the Mare Island Strait (see Figures 1-1 and 1-2). These projects are being analyzed as a single project (proposed project). The combined project site is regionally accessible to vehicular traffic from Interstate Highways 80 (I-80) and 780 (I-780) via State Highway 29 (SR-29 or Sonoma Boulevard), Curtola Parkway and Lemon Street, to Derr Avenue. It is also accessible for rail transportation via the Union Pacific rail line network operated by California Northern Railroad ~~rail line network~~ that extends along the Vallejo waterfront, as well as for shipping transportation via the adjoining deep-water terminal that will be redeveloped as part of the VMT component of the project (see Figure 1-2).

2.2 EXISTING PROJECT SITE

VMT owns a majority of the ~~39.1~~ ~~32.55~~31.4-acre project site and has a long-term lease with the City of Vallejo (City) for the remainder of the site (APN 0061-160-230). Orcem would lease a 4.88-acre portion of the site for its proposed operations, while VMT would operate on the remaining ~~34.3~~ ~~27.67~~26.52 acres (Figure 1-3). The Draft EIR included an additional 5.25 acres south of the Orcem Plant and 2.45 acres that was proposed to be created by VMT's Phase 2 rock dike. These 5.25 acres and the Phase 2 rock dike that were part of the original project have been eliminated from the project and are not being evaluated in this Final EIR. VMT could potentially lease additional portions of the site to other operations in the future, which may require subsequent environmental review. The project site is currently secured by a fence which extends around nearly the entire land portion of the VMT Site.

The project site contains the former General Mills deep-water terminal and buildings associated with the former General Mills flour milling plant. The General Mills plant closed in 2004, and the project site has since remained vacant. Table 2-1 identifies the former General Mills buildings and equipment located on the project site, together with their approximate sizes and year of construction. The existing structures listed in Table 2-1 and shown on Figure 2-1 vary in height from one to eight stories, and in footprint size from approximately 300 to 42,500 square feet, comprising a total of approximately 211,460 square feet of floor area.

All of the existing structures on the project site are listed in Table 2-1. As proposed, the following structures would be demolished with implementation of the combined proposed project: (a) structures 1 through 7, located on the Orcem Site and (b) structures 11, 12, and 16 on the VMT Site. Building 11 on the VMT Site would continue to be used for related warehouse and office purposes until such time as it is demolished. Buildings 9, 10, and 13–15 could~~would~~ be used for

office and administrative purposes as part of the VMT component of the project. Structure 8 was removed from the project site in 2012.

Table 2-1
Existing General Mills Structures

Figure Reference	Structure	Type	Footprint (square feet)	Floor Area (square feet)	Year Built	Impacted by Project?
1	Grain Silos and Elevator	Equipment	17,700	17,700	1917	Yes (Orcem)
2	Flour Mill	Building	35,000	134,000	1917	Yes (Orcem)
3	Old Bulkhouse	Building	1,200	1,200	1957	Yes (Orcem)
4	New Bulkhouse	Building	1,100	1,100	1985	Yes (Orcem)
5	Welding Shop	Building	400	400	1985	Yes (Orcem)
6	Pipe Storage	Building	600	600	1985	Yes (Orcem)
7	Forklift Repair	Building	300	300	1985	Yes (Orcem)
8	Mill Run Canopy (structure removed in 2012)	Building	0	0	1986	No
9	Administrative Building	Building	2,100	4,200	1917	No
10	Garage	Building	1,910	1,910	1918	No
11	Warehouse	Building	42,500	42,500	1947	Yes (VMT)
12	Bakery Bulkhouse	Building	4,700	4,700	1992	Yes (VMT)
13	Manager's House	Building	985	1,970	1901–1919	No
14	Manager's Garage	Building	380	380	1950's	No
15	Barn	Building	500	500	1901–1919	No
16	Dock (Wharf)	Structure	0	0	1901–1919	Yes (VMT)
TOTALS			**109,375**	**211,460**		

The entire project site is located within the City's boundaries. VMT also owns a remaining 5.25 acres located outside the City limits, but within the City's Planning Area, which has been excluded from the project site. The entire project site is designated "Employment" in the City's General Plan and the zoning designation is "Intensive Use (IU)" (City of Vallejo 1999 and City of Vallejo 2015).

~~The portion of the project site located outside the City limits is designated "Open Space-Community Park" in the City's General Plan and does not have a City zoning designation (City of Vallejo 1999 and City of Vallejo 2015), although it has historically been a part of, and portions used for industrial purposes within, the General Mills flour milling facility. The 5.25-acre portion of the site that is outside the City's boundaries is designated "Park and Recreation" in the Solano County General Plan (County of Solano 2008), and the zoning designations are RTC-6 (Residential Traditional Community 6,000 square feet) and CR (Commercial Recreation) (County of Solano 2014).~~

The Intensive Use zoning district, as described in Chapter 16 of the Vallejo Municipal Code (VMC), is Vallejo's heaviest industrial district. The regulations for this district distinguish between "Permitted Uses" and "Permitted Uses Subject to A Major Use Permit." As detailed in Chapter 16.34 of the Zoning Code, "General Industrial Uses" are "Permitted Uses" (Section 16.34.020.C.2), whereas "Heavy Industrial Uses" are permitted upon the issuance of a major use permit (Section 16.34.040.B.1) which requires Planning Commission review. VMC Section 16.06.530 (Article V) distinguishes between "General" and "Heavy" industrial uses. It classifies "General Industrial Uses" as consisting of "industrial plants engaged in manufacturing, compounding, processing, assembling, packaging, treatment or fabrication of materials and products." It classifies "Heavy Industrial Uses" as "all other plants" or any such plant which "involves the compounding of radioactive materials, petroleum refining or manufacturing of explosives." The proposed project which includes a marine terminal and a cement processing facility is considered a heavy industrial use and therefore requires a major use permit. In addition, Section 16.57.030A.1 of the VMC requires a major use permit when a commercial or industrial use operates 24 hours per day and when their project site boundary is within 300 feet of a residential zone district. In this instance, the project operations will occur on a 24 hour per day basis and the project site is within 300 feet of a residential zone district.

A substantial portion of the project site was originally held by the State of California and was granted to the City of Vallejo as trustee subject to the Public Trust Doctrine. This portion of the site, in common with other tidelands areas throughout the State of California, must serve statewide public purposes in addition to local public purposes. Allowable uses based on the Public Trust Doctrine include maritime-related commerce, industry, fisheries, and navigation; environmental preservation; and recreation. Non-maritime-oriented commercial or industrial uses, as well as residential uses, are generally not permitted on public trust lands. The site is also designated under the San Francisco Bay Plan for use by a "Water Related Industrial" use.

The project site is bounded by the Mare Island Strait to the west, a steep hillside to the east, rail lines and existing industrial uses to the north, and undeveloped areas to the south that are owned by VMT. Residential uses are located east and southeast from the site. The residential uses include the Bay Village Townhouses to the southeast, Harbor Park Apartments and single-family residences to the northeast, and single-family residences further to the south, beyond the remaining unincorporated VMT lands ~~which are~~ (no longer a part of the project application), along the water front (the Sandy Beach community) which is within the unincorporated area of Solano County just outside the City boundary. The nearest school to the site is Grace Patterson Elementary, located approximately 0.3 mile southeast of the site.

2.3 PROJECT OBJECTIVES

The ~~City and the~~ applicants have identified the following objectives for the proposed Revised VMT and Orcem project:

- Establishment of the VMT Terminal as a key site of multi-modal and intermodal transportation and logistics, thereby enhancing Vallejo's role in the regional and international trade economy and providing a means for locally manufactured products to be transported and distributed, increasing the viability of and the potential for attracting further manufacturing operations to Vallejo.
- Maximize the potential for the manufacture of ground granulated blast furnace slag (GGBFS), a product that helps to meet the needs of the construction industry for high-performance, environmentally favorable concrete and sustainable building materials, by providing for an efficient scale of production at a plant which would operate around the clock as a multi-modal receiving, storage, processing, and distribution facility.
- To provide management and skilled labor employment opportunities for local and regional residents in the construction phases, as well as the long-term operations of commercial and industrial uses on the project site.
- To generate various tax revenues including property taxes and assessments, possessory interest tax, and utility user fees.
- To reestablish and optimize the industrial use of this centrally located marine industrial property through removal of those remaining components of the severely damaged timber wharf and construction of a modern deep-water terminal.
- To maximize accommodations for shipping and receiving of a wide range of products through the VMT Terminal, including loading and unloading of vessels, including deep draft vessels and barges, of up to 70,000 metric tons in size with draft of up to 38 feet through the restructured project. ~~through the Phase 1 Wharf, along with a combination of barge and other smaller vessels through the Phase 2 rock dike.~~ The improvements would help to further develop Vallejo's capabilities for water-based shipping ~~in connection with the Port of Oakland~~.
- To maximize throughput capacity through the implementation of intermodal upgrades designed to optimize cargo handling operations as well as modern design initiatives enabling the most efficient use of the ground area and taking advantage of existing truck, rail, and shipping access for import and export of raw materials and finished products.
- ~~To establish the VMT Terminal as a key site of multi-modal and intermodal transportation and logistics, thereby enhancing Vallejo's role in the regional and international trade economy.~~

- ~~To provide a means for locally manufactured products to be transported and distributed, increasing the viability of and the potential for attracting further manufacturing operations to Vallejo (in addition to Orcem).~~
- ~~To establish an around-the-clock multi-modal receiving, storage, processing, and distribution facility that would maximize the potential for the manufacture of GGBFS, a high-performance environmentally preferable concrete and sustainable building materials.~~
- To reliably provide competitively priced and environmentally preferable cement products and offer GGBFS and non-GGBFS cementing products, in order to provide a complete line of competitive products that meet long-term client and project needs, and to have the ability to respond to potential worldwide shortages of GGBFS supplies, thereby assuring sustainability of Orcem's operation over time.
- To follow the federal Short Sea Shipping Highway Initiative where possible by focusing on short sea shipping opportunities that move cargo by coastal and inland waterway barges, reducing both truck and rail environmental impacts.

2.4 PROPOSED PROJECT

This Environmental Impact Report (EIR) refers to the Revised VMT and Orcem Project as the "proposed project" due to the shared site and the operating characteristics of the site. The Orcem component of the project would be sited on a portion of the VMT property and is highly dependent on VMT for transporting raw materials, and the VMT component of the project would be dependent on Orcem for a certain percentage of its business. However, to effectively analyze impacts from the two operations, it is also important to explain and further discuss the two components of the projects separately.

The Revised VMT component of the project would reestablish industrial uses on a portion of the 27.5267 acres designated as the VMT Site (a portion of the combined ~~39.1~~ ~~32.55~~31.4-acre project site) located at 800 ~~Derr Avenue~~~~Derr Street~~ Derr Avenue. The Revised VMT component would involve the removal of a deteriorated timber wharf and construction of a modern deep-water terminal, including wharf improvements, laydown area, and trucking and rail connections, primarily servicing the import and export of bulk and break-bulk commodities within approximately ~~10.5~~8.05 acres referred to as the VMT Terminal Site (see Appendix B-1). Construction of the terminal would require fill and dredging activities in the water. ~~The VMT component would be constructed in two phases over a period of time. As shown in the Project Phasing Diagram (Figure 2-3),~~ As shown in the Project Timeline Diagram (Figure 2-2), some construction elements, such as demolition of the former General Mills Warehouse Building and connected Bakery Bulkhouse, and construction of rail improvements are tied to market demand

and may therefore take place following completion of the initial ~~Phase 1~~ VMT improvements. ~~These elements would be completed prior to completion of the VMT Phase 2 rock dike.~~ In addition to the construction and operation of this modern terminal, the VMT component would also reuse several of the existing buildings formerly occupied by General Mills. Buildings and structures to remain would be used by VMT for administrative office and commercial office uses consistent with the City's Intensive Use zoning district standards.

As an operational deep draft facility (allowing vessels with a vertical distance between the waterline and the bottom of the ship of up to approximately 38 feet), the VMT Terminal is anticipated to handle a wide range of commodities including the following:

- Feed grains
- Manufactured steel
- Timber/lumber
- Rock, aggregate, ores, and related materials (including granulated blast furnace slag (GBFS), portland cement clinker material (clinker), pozzolan, gypsum, limestone, and related materials used as part of the Orcem project component)
- Project-based break-bulk items (i.e., heavy lift transport, large construction assemblies)
- Other bulk and break-bulk commodities
- Marine construction materials
- Portland cement

Liquid bulk cargos or large-scale container operations would not be handled through the VMT Terminal. In addition, the VMT Terminal would not handle municipal waste, coal, petroleum coke or any other petroleum-based product such as gasoline or crude oil. It should be noted that modifications to the list of commodities that could be handled through the VMT Terminal in the future would be subject to City review and may require an amendment to the applicant's use permit. Such an amendment ~~, which~~ would be subject to a discretionary process and subsequent environmental review under CEQA.

Remaining portions of the severely damaged and decayed wharf structure would be removed as part of the VMT component of the project because the structure is not physically suitable or economically feasible for reuse or repair. The remnants of the old creosote wooden wharf which have undergone repair, replacement, and partial removal over the years have experienced substantial decay over the past century and in the last decade in particular. The new deep-water terminal would be constructed at this location. The wharf would include a concrete pile-supported

structural concrete deck, associated mooring and fender systems for docking vessels, and related improvements for deep-water marine transportation operations.

The Orcem component of the project, located at 800 Derr Avenue, would involve construction and operation of an industrial facility for the production of a high performance, less polluting alternative for the traditional portland cement material used in most California construction projects. The production of GGBFS is considered to be less polluting than the production of portland cement because it is produced using a by-product of iron~~steel~~ manufacturing (GBFS). The Orcem component would involve construction of approximately 73,000 square feet of buildings, equipment, and enclosures, together with outdoor storage areas, on a 4.88-acre portion of the former General Mills plant site leased from VMT. Eight of the buildings and equipment previously used by General Mills within the Orcem Site would be demolished in order to accommodate construction and operation of the proposed GGBFS cement products production facility. The Orcem component would be constructed in phases to coincide with the growth in demand for Orcem's products. Orcem would import most of the raw materials used in the proposed plant via the proposed ~~Phase 1~~ wharf on the adjoining VMT Site. As discussed earlier in Section 2.2, the Orcem component of the project would operate as a General Industrial Use because it does not involve use of radioactive materials, petroleum refining, or the manufacture of explosives, and would not result in high levels of sewage discharge. The proposed Orcem Plant adjoins residential land uses to the east and southeast. However, all equipment and operational areas on the Orcem Site would be located more than 300 feet from the nearest residential zoning district boundary. The Orcem component of the project is proposed to operate on a 24-hour basis.

2.4.1 Construction

2.4.1.1 VMT Construction

Originally, the VMT Terminal was proposed to be constructed in two phases. Phase 2 of the VMT project involved the construction of a rock dike that would have been used for docking barges. The rock dike had a proposed length of approximately 600 wall-feet, running in a northerly direction from the northern edge of the wharf to the shoreline. The Phase 2 dike construction was proposed to require approximately 106,040 square feet of solid fill (approximately 15,800 cubic yards), additional grading fill of approximately 31,561 square feet (approximately 19,580 cubic yards) and dredging of approximately 46,500 cubic yards pursuant to the U.S. Army Corps of Engineers (USACE) permit. Elimination of the Phase 2 improvements has resulted in a reduction in the laydown area used for transloading of goods and materials from 10.5 to 8.05 acres (a reduction of 2.45 acres). Construction of Phase 2 was originally estimated to begin in January 2017 and take approximately 12 months. Phase 2 of the VMT Terminal has been removed from the Revised VMT

Project that is being evaluated in this Final EIR. Therefore, all references to Phase 2 and the associated environmental analysis have been removed from the document.

Figure 2-5 shows the revised site plan.

~~Phase 1~~

~~Phase 1~~ Construction would begin with removing the remnants of the existing wharf and construction of a new wharf, including the installation of approximately eighty-one (81) 24-inch octagonal precast concrete piles and eight (8) 30-inch steel pipe piles which would be driven down to the underlying bedrock layer. The proposed design, shown in Figure 2-3, is a reinforced concrete wharf, comprised of structural concrete caps along pile rows, and a structural concrete deck extending 500 wall-feet along approximately the same line as the existing wharf, with an approximate width of 29 feet. The top elevation of the completed concrete deck would be approximately 11.5 feet above mean lower low water (MLLW).

The remaining elements of the severely damaged creosote timber structure would be removed to accommodate installation of the concrete piles and wharf improvements. Some riprap (rock slope protection) would be required along the land interface of the wharf as well as the slope beneath the wharf as shown in Figure 2-3. Additionally, riprap and engineered fill would be placed shoreward of the eastern edge of the wharf in order to "square out" the land–wharf interface. ~~Phase 1~~Construction of the Revised VMT Project Terminal would require approximately 50,453 square feet of solid fill (approximately 10,300 cubic yards), both engineered fill and riprap as slope protection, to the mean high water line. Additional grading fill, which occurs within the 100-foot Bay Conservation and Development Commission (BCDC) shoreline band, of approximately 100,452 square feet (approximately 10,900 cubic yards) would be needed to bring the laydown area, which would be located directly east of the wharf, to a finished grade of 11.5 feet above MLLW. The laydown area would be used for temporarily storing materials on site. Most of the fill would be placed within the footprint of the existing wharf and shoreward above the mean high water line for site-grading purposes. It is anticipated that the engineered fill would partially consist of on-site recycled concrete made available through the demolition and processing of obsolete structures.

The eight steel pipe mooring piles, 30 inches in diameter, would be driven within the footprint of the existing wharf and along the shoreline to establish mooring points for vessels. On the water side of the wharf, the channel would be dredged to a depth of 38.0 feet below MLLW (approximately 89,800 cubic yards, subject to a permit from the USACE) to accommodate deep draft vessels and barges typically engaged in carrying bulk and break-bulk cargoes, as shown in Figure 2-4. This depth would subsequently be maintained through a USACE Section 10 Maintenance Permit. Beneficial reuse of dredge material would be sought through possible sale or upland disposal on site, or would be deposited at the Carquinez disposal site, following the

guidelines of the San Francisco Bay Long-Term Management Strategy for Dredging. The need for and frequency of future maintenance dredging at the VMT terminal would vary depending on the level of naturally occurring scouring within the Mare Island Strait. Additionally, movements of vessels into and out of the terminal should also naturally displace some sediment build-up. Excluding any emergency dredging needs, which would be allowed under an emergency permit, VMT assumes that maintenance dredging may occur on average for 5 days every 4 years.

~~In addition to the wharf construction, Phase 1 improvements would include installation of a 6,000-square-foot steel maintenance shed, approximately 50 feet wide by 120 feet long, toward the southern end of the site, shown in Figure 2-6. VMT is also proposing to install landscape materials to screen the view of the maintenance shed from residences to the south of the project site. Phase 1 improvements~~

Construction would also include internal roadway improvements, rail improvements, and utility improvements.

The existing 42,500 square foot Warehouse Building (No. 11 in Figure 2-1) and 4,700 square foot Bakery Bulkhouse (No. 12 in Figure 2-1) would be demolished in order to accommodate rail access and an area for transferring (transloading) goods and materials to or from rail cars, and to establish efficient terminal logistics. Prior to its demolition, the existing Warehouse Building would be utilized to accommodate equipment storage and maintenance, as well as other related operations. Following demolition of the existing Warehouse and Bakery Bulkhouse, a new, 7,200 square foot steel storage and maintenance building (approximately 60 feet wide by 120 feet long), would be constructed in the location of the old Warehouse to accommodate VMT equipment maintenance and storage functions.

The on-site construction duration of ~~Phase 1~~the Revised VMT Project component is expected to be 4–6 months, with an anticipated start date of ~~early to~~ early 2018~~mid-2017~~, subject to project approval and permit conditions. Rail improvements are driven by market demands, and could occur within approximately ~~would occur within~~ one year following completion of ~~the~~ initial construction and the initiation of operations. ~~Phase 1 improvements, but prior to the completion of the Phase 2 dike as described in the following section.~~

~~Phase 2~~

~~Phase 2 would involve the construction of a rock dike that would be used to create a location for barges to dock. The rock dike would have a length of approximately 600 wall-feet, running in a northerly direction from the northern edge of the Phase 1 wharf to the shoreline as shown in Figure 2-6. The Phase 2 rock dike would have a finished elevation of approximately 11.5 feet above MLLW. The Phase 2 rock dike improvements would be situated immediately north of and connect diagonally between the Phase 1 wharf and a point on the shore directly opposite the northwest~~

~~corner of the old Warehouse Building. The rock dike would be installed utilizing a riprap dike with fill placed between the dike and existing shoreline, as shown in Figure 2-7. Twelve (12) 36-inch steel pipe mooring piles would be driven at 50-foot intervals along the face of the Phase 2 rock dike. Phase 2 would require approximately 106,040 square feet of solid fill (approximately 15,800 cubic yards) both engineered fill and riprap as slope protection, to the mean high water line. Additional grading fill, which occurs within the 100-foot Bay Conservation and Development Commission (BCDC) shoreline band, of approximately 31,561 square feet (approximately 19,580 cubic yards) would be needed to bring the laydown area to a finished grade of 11.5 feet above MLLW. The solid fill areas created for Phase 2 would be used as a laydown area for dry bulk and break-bulk cargoes. In order to backfill this area, engineered fill, including the beneficial reuse of dredged material mixed with Class 2 aggregate processed from on-site building demolition, would be placed behind the rock dike and allowed to dry over time. It is anticipated that drying time for the soil placed behind the rock dike would require approximately 14 months prior to use.~~

~~Dredging of approximately 46,500 cubic yards would also be required, as shown in Figure 2-8, pursuant to a USACE permit, as part of Phase 2 to establish a berthing depth of 25 feet to 38 feet below MLLW.~~

~~The on-site construction duration for Phase 2 would be approximately 12 months, with an estimated start date of January 2017.~~ During construction, there would be approximately 20 persons working on the site and onboard various construction barges and tugs. Materials would be delivered to and shipped from the VMT Terminal by ~~the completed Phase 1 and 2 Terminal Site by~~ various means including barges, ships, trucks, and rail cars. ~~The VMT Phase 2 improvements would be constructed after the Orcem Phase 1 construction period is complete.~~

2.4.1.2 Orcem Construction

The Orcem component of the project would consist of the following primary construction components: (1) site preparation, including demolition of the seven remaining structures formerly utilized by General Mills situated within the Orcem Site (to be performed by VMT); (2) development of the enclosed mill~~milling plant~~, including major buildings, storage facilities, conveyance systems and processing equipment; (3) construction of ancillary buildings (see Table 2-2 for complete list); and (4) improvement of site infrastructure and supporting facilities, including fire hydrants, stormwater management improvements, and equipment for loading and unloading of rail cars. This work would be commenced concurrently with VMT ~~Phase 1~~construction work as shown in Figure 2-2. Construction of the Raw Materials Storage Building (Building #8 in Table 2-2) would not be commenced until such time as a need for covered storage of raw materials is established under Orcem's Operating Modes 2 or 3 (as discussed below). As detailed in the Orcem Plans, the area where Building #8 is planned would continue to be used for

open storage of GBFS under Orcem operating Mode 1 (involving only the production of GGBFS). ~~Construction will take an estimated 15 months.~~is

Site Preparation

Demolition of the existing buildings and equipment on the Orcem Site is scheduled to take place as part of the ~~initial~~ construction phase. The proposed project involves demolition of the seven remaining former General Mills structures listed in Table 2-1 and identified by number in Figure 2-1. The Flour Mill (map reference no. 2) and silo/elevator (map reference no. 1) buildings identified in Table 2-1 and Figure 2-1, were designed and built in 1917 by the Sperry Flour Company to accommodate processing and storage of grain products, and are of advanced age, have severe physical deterioration, and are structurally unsuitable for accommodation of the extremely large and heavy equipment and materials used in the milling of Orcem products. The remaining five smaller structures on the Orcem Site were more recently constructed to serve specific support functions for the General Mills plant. Reuse of these buildings would be infeasible and cost prohibitive.

Buildings, Storage Facilities and Equipment

Construction of the new Orcem Plant would include 11 separate buildings and major pieces of equipment, as listed in Table 2-2 and shown on Figure 2-6~~9~~. These improvements would provide for a total building area of approximately 73,000 square feet, with a total footprint area of approximately 61,070 square feet. In the final ~~Phase 2~~ configuration, the proposed Orcem buildings and equipment would cover 29% of the site.

Table 2-2
Proposed Orcem Buildings, Equipment, and Major Facilities

Figure Reference	Element	Element Type	Footprint (square feet)	Floor Area (square feet)	Height
1	Processing Mill	Building	5,700	10,200	97' 5"
2	Filter	Building	3,350	12,000	97' 5"
3	Main Fan and Base	Equipment	960	N/A	Varies
4	Workshop and Control	Building	1,950	3,900	38' 0"
5	Two-Story Office	Building	1,450	2,600	23' 5"
6	Outload Silos and Weighbridges	Building	4,400	5,800	62' 8"
7	Storage Silos (3) and Elevator	Building	5,260	N/A	131' 6"
8	Closed Raw Material Storage Building	Building	38,000	38,000	82' 7"
9	Raw Material Storage Areas (2)	Open Area	N/A	N/A	N/A
10	Mill Hopper, Silo, and Conveyor	Equipment	N/A	N/A	Varies
11	Conveyor to VMT Terminal	Equipment	N/A	N/A	Varies
	TOTALS		**61,070**	**72,500**	

The buildings and major facilities presented in Table 2-2 and shown on Figure 2-6 are further described below:

- **No. 1 – No. 3:** The processing plant would consist of the enclosed Processing Mill building (no. 1), the connected Filter Building (no. 2) (which would contain the mill intake, hot air gas generator, and miscellaneous ancillary equipment), the vent stack, and the main fan and base (no. 3).
- **No. 4 Workshop and Control Room Building:** This building would include: (1) the central plant control office, locker room, breakroom, toilets, showers, and related facilities on the second floor; and (2) the light maintenance workshop area and a bathroom on the ground floor.
- **No. 5 Office Building:** This would be a two-story administrative and laboratory office building.
- **No. 6 and No. 7:** The finished product facilities would include two elevators, up to three fully sealed Storage Silos for finished products, the Outload Building with its three Outload Silos and Weighbridges, and the Airslide which would convey the finished product from the Processing Mill and Filter Building to the Storage Silos. The Outload Building would be designed to accommodate enclosed truck loading and weighing for the dispatch of the finished products to market.
- **No. 8 Closed Raw Material Storage Building:** A covered storage area for dry bulk materials requiring covered storage, e.g., portland cement clinker material ("clinker").
- **No. 9 Raw Material Storage Areas:** The two open areas designated for storage of: (a) GBFS material along the easterly side of the Orcem Site; and (b) gypsum, pozzolan rock, and limestone materials within the southern end of the Orcem Site. One area is to the northeast of the Orcem's proposed Buildings 1, 2, and 10 and the second area is to the southeast.
- **No. 10 Mill Hopper, Silo, and Conveyor:** A covered belt conveyor system to transport the raw materials from the Raw Material Storage Areas to the processing plant. This system would include the Mill Feed Hopper, the Raw Material Silo and Elevator, an additional material silo, and the conveyor leading to the Processing Mill and Filter Building.
- **No. 11 Conveyor from VMT Terminal:** The conveyor systems and intake hopper/extractor to be installed within an easement created over a portion of the VMT Site to facilitate the movement of raw materials between the terminal and Orcem Site as part of the Phase 1 and 2 operations.

2.4.2 Operation

2.4.2.1 VMT Operation

The Revised VMT Project Terminal would primarily service dry bulk (such as aggregate) and break-bulk cargoes (such as large transformers). Liquid bulk cargoes, municipal waste, coal, petroleum coke or other petroleum based products, or large-scale container operations will not be handled through the VMT Terminal. While the primary focus of VMT operations would be aggregates, the terminal would be designed to include both shipping and receiving of a wide range of products. As previously noted, modifications to the list of commodities that could be handled through the VMT Terminal in the future would be subject to City review and may require an amendment to the applicant's use permit. Such an amendment would be subject to a discretionary process, and subsequent environmental review under CEQA.

~~through the Phase 1 and Phase 2 facilities, including loading and unloading of vessels through the Phase 1 wharf, along with a combination of barge and other smaller vessels through the Phase 2 dike.~~

The VMT Terminal is anticipated to handle the following commodities:

- Feed grains
- Manufactured steel
- Timber/lumber
- Rock, aggregate, ores, and related materials (including granulated blast furnace slag (GBFS), portland cement clinker material (clinker), pozzolan, gypsum, limestone, and related materials used by Orcem)
- Project-based break-bulk items (i.e., heavy lift transport, large construction assemblies)
- Other bulk and break-bulk commodities
- Marine construction materials
- Portland cement

As mentioned in Section 2.4.1.1 above, the Revised VMT Project component evaluated in this Final EIR no longer includes VMT Phase 2 or the 5.25 acres at the south end of the former site. The following information reflects potential maximum use estimates associated with full implementation of the

Revised VMT Project component. Actual operational volumes may not always reach these maximum levels ~~vary~~.

Movement of Materials

Shipping Facilities

~~Phase 1:~~ The overall volume of cargo handled through ~~Phase 1~~the Revised VMT Project Terminal would be expected to increase over the first several years of operation in response to market demand. Prior to completion of the rail access, cargos offloaded from vessels would be loaded exclusively onto trucks or smaller vessels, which would limit the overall capacity of the terminal due to space limitations. The capacity of the terminal to handle larger volumes of cargo would expand with completion of the rail access and transloading area improvements identified. This EIR considers the Revised VMT Project component to include the rail improvements, which would maximize the capacity of the terminal to allow for up to a total of four deep draft vessels per month and a maximum average monthly cargo of 160,000 metric tons (this volume includes 40,000 metric tons of material associated with Orcem Phase 1, and approximately 63,400 metric tons of material associated with Orcem Phase 2). This volume assumes a 5 to 6 day loading or unloading time per deep water draft vessel.

Terminal operations will also accommodate smaller vessels intended to follow the federal Short Sea Shipping Highway Initiative by focusing on short sea shipping opportunities that move more cargo by coastal and inland waterway barges, thereby reducing the environmental impacts of both truck and rail transportation that may otherwise be used. Such smaller vessels (with a capacity of approximately ~~ranging from~~ 2,000 to 8,000 metric tons) will be moored at the terminal on average for up to one day each, at such times as the larger vessels are not present. These smaller vessels would accommodate movement of up to 48,000 MT monthly (of the total 160,000 MT of throughput) of materials using a maximum average of 3.5 vessels. As noted in Table 2-3, accommodation of both large and smaller vessels may lead to a reduction in the maximum monthly shipping capacity of the Terminal, depending on the efficiency of loading and unloading operations.

During the time that vessels are moored at the facility, 24-hour operations would be conducted for offloading or loading of cargo. Other VMT Terminal operations would be scheduled as two 10-hour shifts per day, six days per week. The VMT Terminal improvements are designed to accommodate both Orcem's Phase 1 and Phase 2 operations. Therefore, the volumes of materials processed through the VMT Terminal would increase as Orcem operations move from Phase 1 to Phase 2. Table 2-3 reflects combined VMT and Orcem volumes.

~~Phase 2:~~ ~~The Phase 2 dike is designed to follow the federal Short Sea Shipping Highway Initiative by focusing on short sea shipping opportunities that move more cargo by coastal and~~

~~inland waterway barges, reducing the environmental impacts of both truck and rail transportation that may otherwise be used. There is the potential for 24-hour work periods during vessel loading and unloading, and other operations occurring within the same business hours as Phase 1. One of the primary functions of the Phase 2 rock dike and its associated additional laydown area would be the enhanced efficiency of transloading of cargos between various modes of transport, such as from barges to trucks and/or trains, or from larger vessels to barges. The additional necessary laydown area to be provided in Phase 2 (see Figure 2-5) would support the transload process, as an inbound Phase 1 wharf cargo could be moved to the Phase 2 laydown area to be reclaimed and loaded onto barges. Alternatively, an in-bound rail cargo could be similarly transloaded to barges. This would allow the Phase 1 laydown area to be open for the discharge of a new inbound cargo.~~

~~As shown in Table 2-3, the completion of the Phase 2 rock dike would provide an expanded land area for operations and would increase the efficiency of the terminal to transload cargo materials. In addition, completion of Phase 2 would also allow a greater percentage of total cargo processed to utilize barges, thereby potentially reducing dependency on truck and train movements.~~

Rail Facilities

The proposed rail transloading improvements (including rail realignment) would be completed based on market demand, and may therefore occur following initial completion of the remaining VMT Terminal improvements~~,~~ and ~~but within approximately one year of~~ initiation of facility operations. The rail transloading improvements would accommodate up to 16 rail cars for loading on site at one time. California Northern Railroad operates trains between the hours of 7:00 a.m. and 6:00 p.m. Other rail operations, including the loading and unloading of rail cars would be limited to the hours of 7:00 AM to 10:00 PM. Existing California Northern Railroad track spurs that adjoin the VMT Site's northern entrance would be used to store rail cars during the loading process. The rail spur area can accommodate up to 77 rail cars at one time. VMT anticipates use of two switch-mobiles or a small locomotive to handle rail car movements on the VMT Site and to and from the California Northern Railroad track spurs adjacent to the site. Material handling equipment such as a mobile hopper (loading equipment) connected to a mobile surge-bin (loading device) via an enclosed transfer conveyor would be used along the realigned rail tracks to accommodate loading and unloading rail cars. Additionally, there would be two Caterpillar 988 front-end loaders (or equivalent) and two to three forklifts to handle cargo movements in the laydown area. ~~A third Caterpillar 988 (or equivalent) would be needed after completion of the Phase 2 construction.~~

Trains would be scheduled to minimize interference along major street routes. Under Federal law, trains are not allowed to operate with rail equipment that has flat or worn wheels. This regulation helps to reduce vibration along train routes. There is a 2 inch wear limit and all rail car wheels are

inspected at Suisun interchange (with Union Pacific), and if not compliant, replaced. The maximum number of anticipated rail cars per day that are associated with the project (including both VMT and Orcem components) are shown in Table 2-3.

Trucking, Circulation, and Access

Trucks would access the VMT Site from ~~Derr Avenue~~~~Derr Street~~Derr Avenue coming from Lemon Street (56% of the project traffic) or Sonoma Boulevard (SR-29) (39% from the south and 5% from the north). The area has a mix of residential and commercial uses. (~~ through a mixed commercial and residential area~~. The area has a mix of residential and commercial uses. ~~They~~ The trucks would travel to the freeway along SR-29 for southbound I-80 traffic, and along Lemon Street for northbound I-80 and eastbound I-780 traffic. The maximum number of anticipated truck trips per day that are associated with the VMT component of the overall project are shown in Table 2-3.

There would be no public access to the VMT Site which is fenced with a security entrance. Because of international freight movements, this site would be secured and subject to Department of Homeland Security rules requiring all workers, including rail engineers and truck drivers with unescorted access to have a Transportation Worker Identification Credential to access the site at all times. Additionally, the VMT Terminal would be a~~n~~ heavy industrial site with rail car, truck, and heavy equipment operations. Access to the planned commercial and industrial uses proposed for reuse of the existing buildings would be subject to the same security clearance and access control limitations.

Table 2-3
Summary of Maximum Material Volumes and Transport Methods –
VMT ~~Phase 1 and Phase 2~~ Volumes (with Orcem Materials Included)

Average Vessels / Month*	Max. Monthly Shipping Cargo (metric tons) (VMT and Orcem)	VMT Trucks/Day	Average Rail Cars/Week (VMT and Orcem)**	Average Unit Trains/Week
7.5	160,000	87	200	2.6 77-car trains

~~**Table 2-3**~~
~~**Summary of Maximum Material Volumes and Transport Methods –**~~
~~**VMT Phase 1 and Phase 2 Volumes (with Orcem Materials Included)**~~

VMT Phase	Vessels / Month*	Max. Monthly Shipping Cargo (metric tons) (VMT and Orcem)	VMT Trucks/Day	Average Rail Cars/Week (VMT and Orcem)**	Average Unit Trains/ Week	Barge Volume (metric tons/month)**
Phase 1	4	160,000	87	200	2.6 77-car trains	0
Phase 2	7.5	160,000	87	200	2.6 77-car trains	48,000

Notes:

* Wharf capacity would be limited to accommodating a combination of up to 4 large deep water vessels and 3.5 smaller vessels on an average monthly basis. The actual number of vessels may be less, depending on loading and unloading times and market demand. This combination of vessel sizes would allow flexibility for cargo types, and may result in a somewhat smaller total volume of cargo handled on a monthly cycle. If only trucks are used to transport bulk materials to or from the site, then only two large deep water vessels would be accommodated per month – one serving VMT and one serving Orcem. This is due to the limited project laydown area and the length of time it would take to load/unload materials from a large deep water vessel and load/unload it onto/out of trucks and/or smaller vessels. When the proposed rail improvements are completed and service becomes available, materials will be able to be moved off site more rapidly. This would allow the VMT facility to accommodate the maximum monthly cargo capacity identified in Table 2-3 above. All figures are averages derived from projected annual volumes. Phase 1 wharf capacity would be limited to accommodating a monthly maximum of four (4) deep water vessels. If only trucks are used to transport materials from the site, then only two vessels would be accommodated per month – one serving VMT and one serving Orcem. This is due to the limited Phase 1 laydown area and the length of time it would take to unload materials from a vessel and load it onto trucks. If the proposed rail improvements are completed by the railroad and service becomes available, materials would be able to be moved off site more rapidly. This would allow the VMT facility to accommodate up to four vessels per month in Phase 1.

Phase 2 would include up to 4 ships and 3.5 barges; all figures are averages derived from projected annual volumes. The construction and operation of the Phase 2 Terminal would allow an expanded operational area for transloading of materials, and the increased efficiency of loading materials from ships to barges (as opposed to exclusive unloading onto trucks and trains).

** The maximum number of project related rail cars per year is 14,400 and this is based on a maximum of 300 rail cars per week. In general, the number of rail cars in any given month and week will fluctuate based on the type of product that is being transported from the project site to market, but the average number of rail cars per month is anticipated to be 800. It should be noted that if 300 rail cars are moved in one week this equates to four 77 car trains per week. The average number of rail cars and unit trains per week are identified in the table above.

Wharf capacity would be limited to accommodating a combination of up to 4 large deep water vessels and 3.5 smaller vessels on an average monthly basis. The actual number of vessels may be less, depending on loading and unloading times and market demand. This combination of vessel sizes would allow flexibility for cargo types, and may result in a somewhat smaller total volume of cargo handled on a monthly cycle. If only trucks are used to transport bulk materials to or from the site, then only two large deep water vessels would be accommodated per month – one serving VMT and one serving Orcem. This is due to the limited project laydown area and the length of time it would take to load/unload materials from a large deep-water vessel and load/unload it onto/out of trucks and/or smaller vessels. When the proposed rail improvements are completed and service becomes available, materials will be able to be moved off site more rapidly. This would allow the VMT facility to accommodate the maximum monthly cargo capacity identified in Table 2-3 above. All figures are averages derived from projected annual volumes.

The maximum number of project related rail cars per year is 14,400 and this is based on a maximum of 300 rail cars per week. In general, the number of rail cars in any given month and week will fluctuate based on the type of product that is being transported from the project site to market, but the average number of rail cars per month is anticipated to be 800. It should be noted that if 300 rail cars are moved

in one week this equates to four 77 car trains per week. The average number of rail cars and unit trains per week are identified in Table 2-3 above.

The trucks associated with the VMT portion of the project will be operational no more than six days per week. The specific days that the trucks will operate will vary depending on the Wharf operations. All cargo and transportation figures presented in Table 2-3 are maximums, with the exception that the number of unit trains per week is expressed as an average, ~~The~~ the use of barges and smaller vessels at the VMT Terminal may result in the potential for a portion of VMT's total truck and rail volumes to be handled by barges, but may also result in an overall reduction in efficiency and total annual cargo throughput. ~~Note that the transition from VMT Phase 1 to Phase 2 operations would result in smaller vessels utilizing the newly opened Phase 2 terminal facilities, and the potential for a portion of VMT's total truck and rail volumes to be handled by barges. It is also possible that goods and materials arriving by barges and other smaller vessels would leave the site by truck or rail (resulting in no net reduction in truck and rail volumes between Phase 1 and Phase 2).~~ Concurrently with establishment of Orcem's Phase 2 operations, the percentage of maximum terminal capacity utilized for import of raw materials serving the Orcem Site would increase (as quantified in Table 2-4 later in this discussion). That portion of the maximum remaining terminal capacity available for VMT import and export would therefore decrease with operation of Orcem Phase 2. Cargos which are not containerized, or do not otherwise release fugitive dust or airborne/soluble toxic materials when handled and stored in the open, would be unloaded using portable equipment onto the paved or aggregate surfaces within the ~~10.5~~8.05-acre VMT Terminal shipping and receiving site area. Existing pavement within these areas would be removed where necessary in order to complete finished elevation grading for stormwater management and to establish permeable surfaces where appropriate. All other cargo received or shipped through the VMT Terminal would be handled through enclosed transport devices. The existing surfaces at the site would be used as temporary laydown areas for the cargo being prepared for loading onto vessels or unloaded for transfer to barge, rail, or trucks. Temporary storage structures could be used if all-weather coverage is warranted.

Parking

A paved parking area for employees would be provided adjoining the existing Administrative Building, with a capacity for 40 vehicles, consistent with peak-period employee and visitor estimates. Ample all-weather surfaced space would also be available to accommodate loading/unloading operations and truck and equipment parking within the VMT Site. This VMT parking area would also be made available to Orcem employees and visitors, as needed, to meet peak demands and satisfy City Code standards. A parking agreement allowing Orcem employees to park on the VMT site will be recorded.

Building Usage

The existing 42,500-square-foot Warehouse and adjoining 4,700-square-foot Bakery Bulkhouse (buildings nos. 11 and 12 listed in Table 2-1 and identified in Figure 2-1), will be used initially for VMT ~~Phase 1~~ support operations, including equipment storage and maintenance; however, these buildings would eventually be demolished as part of ~~Phase 1~~construction in order to accommodate rail access, establish efficient terminal logistics, and provide a more accessible laydown area for barge cargos. An approximately 7,200 square-foot storage and maintenance building would be constructed in the location of the existing Warehouse to accommodate equipment maintenance and storage following its demolition.

The 4,200-square-foot Administrative Building (building no. 9), and 1,910-square-foot Garage (building no. 10), as identified on Figure 2-1, would initially be used as part of the ~~Phase 1~~ VMT administrative and operational support, and may later be used to accommodate a variety of complementary terminal operations, warehousing, office, and general manufacturing uses. These future uses may involve independent long-term leases (as in the case of Orcem) with the potential for minor additions.

~~A small metal-framed equipment storage and maintenance building of approximately 6,000 square feet would be constructed approximately 240 feet south of the Orcem Site at the base of the slope. The internal port access road would be extended south in Phase 1 to allow access to this building by equipment used at the wharf. The area between the maintenance building and the southern Orcem Site boundary may be used to park equipment when not in use at the wharf.~~

Staffing

During vessel loading/unloading operations, ~~there could be up to~~ expected to take place continuously at maximum capacity, a total of 40 individuals would be working on the VMT Site, engaged in cargo loading and offloading, site maintenance operations, and administrative duties. ~~for Phases 1 and 2.~~ The number of workers present on the VMT Site would be reduced ~~D~~during periods when no vessels are being loaded/unloaded by approximately 15 individuals. Additional there would be truck drivers and rail equipment handlers who would enter and exit the site based on operational needs.

2.4.2.2 Orcem Operation

The primary element of the proposed Orcem component of the project is a processing facility for the production of a high performance "green" cement, produced from a recycled material with an order of magnitude less CO_2e (carbon dioxide equivalent) and other polluting air emissions than the traditional portland cement consumed in California annually (see Appendix B-2~~C~~). This green cement is also known in the industry as ground granulated blast furnace slag (GGBFS).

The primary raw material utilized in the manufacture of GGBFS is GBFS, a recycled by-product from the first stage in the production of steel. GBFS would be processed by drying and grinding to produce a very fine powder, to which a small quantity of gypsum/anhydrite would be added, yielding the principal finished product, GGBFS. GGBFS is used in the ready mix and precast concrete industries and in the production of mortars and grouts to improve product performance. GGBFS can be either blended with ordinary portland cement to produce slag-blended cements for sale to concrete producers, or it can be sold alone and then blended with other cement-like materials by concrete manufacturers. GGBFS, as a finely ground powder, is capable of emitting fugitive dust particles if not properly contained within closed processing, storage, and loading facilities. The milling process is accordingly carried out in a closed circuit system under negative pressure (no outlet to the exterior, except through high performance filters).

The Orcem Plant would be capable of operating in three different modes, as follows:

- Mode 1: Import of GBFS (the primary raw material) and production of GGBFS.
- Mode 2: Import of clinker and production of portland cement.
- Mode 3: Import of GBFS and production of GGBFS, and import of portland cement.

The Orcem Plant would be constructed in two major phases to coincide with the growth in demand for Orcem's products. The total throughput of raw materials of the plant in Phase 1 would be up to 500,000 metric tons per year and in Phase 2 would be up to 900,000 metric tons per year. These phases are further broken down into the following production milestones:

- Milestone 1: Import of 120,000 metric tons of primary raw material per year (Phase 1).
- Milestone 2: Import of 240,000 metric tons of primary raw material per year (Phase 1).
- Milestone 3: Import of 360,000 metric tons of primary raw material per year (Phase 1).
- Milestone 4: Import of 480,000 metric tons of primary raw material per year (Phase 1).
- Milestone 5: Import of 760,000 metric tons of primary raw material per year (Phase 2).

Production Process

The Orcem production process would involve the following key steps (refer to Figures 2-6 and 2-7a, 2-7b, and 2-7c):

1. Transport of Raw Materials to the Site

The Orcem Plant would focus on production of GGBFS as the principal finished product, but would also include production of other hydraulic cement products. The principal raw materials processed in the Orcem Plant for the production of GGBFS would be GBFS and gypsum/anhydrite. Other raw materials used in the production of other cement products include clinker, limestone, and pozzolan. Under full Orcem Phase 2 operation, up to 900,000~~760,000~~ metric tons GBFS and other raw materials~~of raw materials~~ would be delivered to the Orcem Plant annually via a combination of shipping, rail, or truck, as described below:

Shipping

- *VMT Terminal:* Various sizes of ships (described below), would dock at the reconstructed VMT Terminal, carrying GBFS, gypsum, anhydrite, pozzolan, and/or clinker. The ships would then be unloaded via an enclosed conveyor system directly to the adjoining Orcem Plant storage facilities. Because of its proximity and based on anticipated capacity and availability, the VMT Terminal is the primary and most economically feasible method of material transport to the Orcem Plant on a long-term basis.
    - *Geared Ships* such as a 40,000-metric-ton bulk carrier with onboard cranes (geared ship). This ship would berth at the VMT Terminal, and raw materials would be discharged from the ship using clamshell grabs fitted to the onboard cranes and deposited into mobile hoppers on the dock.
    - *Self-Discharge Ships* such as a 70,000-metric-ton bulk carrier with onboard reclaim conveyors and a discharge boom with an integral belt conveyor (self-discharge ship). This ship would berth at the VMT Terminal and raw materials would be discharged from the ship via the self-discharge boom into a receiving hopper located on the shore.
- *Port of Richmond:* The Port of Richmond, located approximately 17 miles to the south (and alternatively the Port of Stockton located 60 miles to the west), would serve as an alternative short-term emergency source for delivery of GBFS and clinker, via ships from sources in Asia and around the world. The raw materials would be loaded onto trucks at the port, driven to the plant, and offloaded for storage. This method would only be used in the event that the VMT Terminal is inoperable.

Rail Transport

This would be a third source for delivery of smaller consignments of gypsum, anhydrite, limestone, pozzolan, clinker, and portland cement. This option would provide access to raw material sources in Arizona, Nevada, and California. The existing rail line network extends south along the western edge of the site and would be upgraded as part of the VMT component of the project. Rail cars would be

unloaded via truck transfer and closed pipe to one of the adjoining Orcem material storage areas or the fully sealed Storage Silos (for fine materials such as cement).

Truck Transport

A fourth alternative source for delivery of gypsum, anhydrite, pozzolan, and limestone to the plant is via truck. Most materials delivered via truck would come from sources in California (outside the local area) and Nevada.

Table 2-4
Summary of Maximum Material Volumes and Transport Methods –
Orcem Phase 1 and Phase 2 Volumes

Orcem Phase	Annual Production (metric tons)	Max. Monthly Materials In Via Ship (metric tons)*	Max. Monthly Materials In Via Truck (metric tons)	Max. Monthly Materials In Via Rail (metric tons)	Max.. Trucks Out / Day	Max. Avg. Rail Cars Out / Week**	Average Unit Trains/ Week
Phase 1	< 500,000	40,000	6,600	10,000	130 (2,948 metric tons)	31 (2,8341,451 metric tons)	2.64
Phase 2	900,000	63,400	10,450	10,000	189 (4,286 metric tons)	31 (2,8341,451 metric tons)	2.64

Notes:

* The Orcem maximum monthly shipping volume of 75,000 MT is included as a component of in the VMT Terminal's total 160,000 MTmonthly metric tons identified in Table 2-3. Truck volumes for Orcem materials finished product exports under maximum operations in Phase 2 are estimated at 22.68 MTmetric tons per truck (25 short tons), and assume an average of 17.5 trucking days per month. This represents a daily total of 4,286 MT, a monthly total of 75,000 MT, and an annual total of 900,000 MT, using trucks alone). Rail volumes for Orcem are estimated at 91 MT per rail car, and assume an average of 31 rail cars per week (133 rail cars per month), for a total average of 2,821 MT per week (12,144 MT per month or 145,728 MT per year).

** Orcem rail volumes are based on a maximum 800 rail cars per year and 91 metric tons per car (72,800 MT per year). The Orcem rail cars are included as a component of in the 77-car trains associated with VMT identified in Table 2-3, estimated at 2.6 unit trains per week.

The Orcem maximum monthly shipping volume of 75,000 MT is included as a component of the VMT Terminal's total 160,000 MT identified in Table 2-3. Truck volumes for Orcem finished product exports under maximum operations in Phase 2 are estimated at 22.68 MT per truck and assume an average of 17.5 trucking days per month. This represents a daily total of 4,286 MT, a monthly total of 75,000 MT, and an annual total of 900,000 MT, using trucks alone.

The truck trips associated with Orcem are shown as a maximum daily number. Rail volumes for Orcem are based on a maximum 800 rail cars per year and are estimated at 91 MT per rail car, and assume an average of 31 rail cars per week (133 rail cars per month), for a total average of 2,821 MT per week (12,144 MT per month or 145,728 MT per year) or 2.6 unit trains per week. The Orcem rail cars are included as a component of the 77-car trains associated with VMT identified in Table 2-3.

2. Movement of Materials from Ships to On-site Orcem Plant

The following discussion provides more detail regarding the movement of raw materials from the ships to the Orcem Plant under Orcem Phases 1 and 2.

Phase 1 (up to 500,000 metric tons of throughput annually)

- The discharge rate using either geared ships or self-discharge ships would be an average of 660 metric tons per hour.
- The shipside hoppers, or metal collection bins into which particulate material (such as GBFS) is discharged from docked ships, would have a capacity of 80 metric tons. In Phase 1, the mobile hoppers at the dockside would feed onto a common mobile conveyor system. Raw materials (GBFS and clinker) would be loaded onto a continuous, covered belt conveyor system from the shipside all the way to the storage areas (a distance of up to 1,000 feet). This conveyor system would operate at an average rate of 660 metric tons per hour and would be located within an easement across the VMT Site as shown in Figure 2-5.
- In the case of GBFS, during Phase 1, the covered conveyor would discharge the material in the open storage area. This material would then be consolidated into a managed pile as described below.
- In the case of clinker, during Phase 1, the covered conveyor would discharge the material into the covered Raw Material Storage Building (Building no. 8 as listed in Table 2-2).

Phase 2 (up to 900,000 metric tons of throughput annually)

- In Phase 2 the mobile hoppers at the dockside would continue to feed onto a common mobile conveyor system. Raw materials (GBFS and clinker) would be loaded onto a continuous, covered belt conveyor system from the shipside all the way to the storage areas (a distance of up to 1,000 feet). This conveyor system would operate at an average rate of 660 metric tons per hour, and would be located within an easement area across the VMT Site as shown in Figure 2-5.
- In the case of GBFS during Phase 2, the covered conveyor system would discharge the GBFS in the area of the open stockyard floor. This material would then be consolidated into a managed pile as described below.
- In the case of clinker, during Phase 2, the covered conveyor system would discharge the clinker using an internal conveyor with a belt tripper in the covered Raw Material Storage Building.

3. Storage of Raw Materials

Storage Area for GBFS

GBFS (and other raw materials except for clinker) would be stored in open stockpiles for management in the designated storage areas as shown in Figure 2-6. As the material is naturally coarse and moist (with between 6% and 12% moisture content on delivery), there is no need to take any special precautions with respect to fugitive dust emissions. When stored in a pile over a prolonged period of time, the material has a tendency to harden on the surface through agglomeration to form a crust which seals the stockpile. However, on reclaim, as described below, this material may be less moist and in these circumstances a stockpile water spray system would be in place to prevent fugitive dust emissions.

GBFS Stockpile Management

The GBFS would be transported from the ship to the stockpile by a series of covered belt conveyors. The conveyor would discharge the GBFS in the designated stockpile areas, and the material would be distributed with mobile stacker conveyors to form a maximum height of 40 feet. A front-end loader would move and lift this material as necessary. GBFS would be excavated using the same front-end loader and placed into the reclaim hopper for transport to the processing plant.

Storage Area for Clinker

Clinker would be stored in the designated enclosed storage building. As this material is naturally dry and hygroscopic, there is a need to enclose this stockpile to prevent rainfall and atmospheric moisture damaging the product. The clinker stockpile would be managed as described in the following paragraph.

In Phase 1 and Phase 2 of the Orcem Mode 2 operations, clinker would be transported to the enclosed Raw Material Storage Building by covered belt conveyors from the dockside (see Figures 2-7a, 2-7b, and 2-7c). The horizontal belt conveyor would be fitted with a traveling tripper which would allow the clinker to be discharged at sequential positions along the storage building floor to form a chevron stockpile with a maximum height of approximately 50 feet. The Raw Material Storage building would be equipped with an air filtration system to ensure that any particulate emissions created by either the stockpiling or reclaim process would be captured in the filters, and fugitive particulate emissions would be maintained within agreed permit limits, thereby allowing only clean air to leave the building. Material would be excavated from the face of the stockpile using front-end loaders and placing the clinker into the reclaim hopper of the conveyor feed to the processing plant.

4. Transport of Raw Material from Stockpile Area to the Process Plant

The raw materials would be taken from the stockpile areas and placed into a reclaim hopper of 2,000-cubic-foot capacity at ground level in the storage area. From this point the clinker or GBFS would move by covered belt conveyor to a bucket elevator which would discharge the material into a mill feed hopper with a capacity of 5,000 cubic feet. Alongside this mill feed hopper would be a smaller mill feed hopper with a capacity of 1,500 cubic feet, which would contain limestone and/or gypsum and other raw materials.

The clinker or GBFS would discharge from these mill feed hoppers via weigh belts which would regulate the flow of clinker or GBFS and gypsum/limestone (and other raw materials) onto the inclined covered belt conveyor to the processing plant and ensure that the conveyor feeding the processing plant receives the desired total feed rate of material for processing in the mill, typically between 70 and 100 metric tons per hour.

5. Drying and Grinding Raw Materials

The processing plant would be used to grind (or mill) the raw materials, dry them, and collect the product to capture the finished product. All of the equipment needed for this process would be contained within the Mill and Filter Buildings.

Milling Process

The proposed Orcem Plant would use an electric-powered vertical roller mill (VRM). Raw material is fed to the VRM via an airlock onto the center of a rotating grinding table, where the VRM grinds the raw material to fine powder. The milling process requires high flow of air to pass through the mill. As a result, the material within the mill is subject to a high velocity airflow, which passes up, around, and over the grinding table. The airflow's primary function is to lift ground material particles from the table and convey them into an internal particle size classifier, aka a high efficiency separator, which directs particles as either small enough to meet the finished product or in need of further grinding.

Drying Process

The GBFS enters the mill with a moisture content of between 6% and 12%, but to properly store and transport the finished product the material must be dried to a moisture content of less than 0.2%. The high volume of air required for the milling process is also very effective at drying the material being processed. In some cases, additional heat is required to complete the drying process. In this process, the additional heat would be supplied by a natural gas-fired hot air generator which would preheat the air coming into the VRM to a temperature sufficient to evaporate the excess

moisture during milling. This process does not involve use of a kiln, and maximum temperatures would be below 600 degrees Fahrenheit.

The process air pulled through the mill and internal separator exits the mill with the particles sufficiently small enough to meet the finished product specification entrained. This combined air and finished product stream then enters the main bag filter unit where the finished product is collected on the surfaces of fabric filters and the clean moist air is drawn through the filter unit by an induced draft fan, commonly called the main mill fan.

The outlet of the main mill fan leads to a vertical vent stack where the air leaves the processing plant along with any moisture evaporated from the raw materials. The finished product collected in the main bag filter is transported by an enclosed air-slide conveyor to a bucket elevator which lifts the product and discharges it to the product Storage Silos.

6. Storage, Loading, and Transport of Finished Product

The finished product would be stored in three large sealed finished product Storage Silos, each with a capacity of up to 5,000 metric tons. These Storage Silos would hold the various finished products prior to transport to the loading silos. Each silo would be up to 46 feet in diameter and approximately 140 feet in height.

The bottoms of the large finished product Storage Silos would be aerated to fluidize (the process of converting granular material from a static solid-like state to a dynamic fluid-like state) the finished product powder for discharge. When the finished product is withdrawn from the Storage Silos, it would be transported in enclosed conveyor systems into smaller loading silos of approximately 80-metric ton capacity each for loading of tanker trucks and rail tankers (via tanker truck transfer).

There would be threetwo loading silos configured at the Outload Building for loading tanker trucks. Each loading silo would have its own belowground Weighbridges, or scales, to monitor truck weight as they are loaded. The road transport vehicles would be tractor–trailer configurations, with standard tractors and single or double pneumatic dry bulk tank trailers. The tank trailers (commonly referred to as cement trucks) would be sealed and have loading hatches on top. In order to load the trailers with product, the hatches would be opened, loading bellows would descend, and their nozzle(s) would seal onto the tanks to be loaded. A computer-controlled filling system would be activated, and the tankers would be loaded to the desired level by the control system monitoring the Weighbridge. After the loading process is complete, a bill of lading would be printed for the driver to document that all tanker trucks leave the plant with the prescribed load on board.

Rail tanker cars would be served from the filling facility via tanker truck transfer using the upgraded and realigned California Northern Railroad rail spur line which currently extends into the adjoining VMT Site, running parallel to Orcem's western boundary.

Site Access and Parking

The entrance/exit at the southern end of the Orcem Site boundary, as shown in Figure 2-5, would be used by traffic dedicated to hauling small amounts of raw materials by truck into the on-site raw material storage areas. It would not be used by customer traffic. A dedicated entrance located south of the office building would accommodate a flow of customers and staff separate from the flow of trucks headed to the outload facility. These vehicles would move in a northerly direction and exit the site through the gate located at the northern site boundary. Parking for customers and employees would be provided at both the office building and at the north end of the Processing Mill and Filter Buildings. A total of 20 parking spaces would be provided on the Orcem Site. Additional parking of up to 40 spaces will be made available in the adjoining VMT parking lot for shared use with Orcem (bringing the total available parking to 60 spaces). A parking agreement allowing Orcem employees to park on the VMT site will be recorded.

Staffing

The Orcem Plant would create approximately 100 jobs for the duration of the estimated 15-month construction phase. Once the Orcem Plant is operating, the plant systems would be operated by up to 20 full-time employees, operating in shifts during a 24-hour period, together with up to 20 administrative and sales staff, for a total of up to 40 full-time jobs at the facility (applies to both operational Phases 1 and 2).

2.4.3 Infrastructure

A storage area for an aboveground diesel fuel tank for filling site mobile equipment, together with associated spillage protection systems, would be provided in the surface water drainage network on the VMT Site. An aboveground diesel storage tank with appropriate safety equipment and associated spillage protection systems for fueling of Orcem Site mobile equipment would also be provided adjoining the concrete boundary wall between the GBFS and gypsum storage areas. In addition, a free-draining, permeable stone finish would be provided in the storage areas of the Orcem Site. All other areas, including vehicle roadway and parking areas, and those areas surrounding the Orcem Plant, would be finished with an impermeable asphalt or concrete surface.

An existing 8-inch to 10-inch diameter looped water main currently serves the overall site, delivering raw water for fire protection purposes. This fire protection system would be upgraded as needed with placement of approved fire hydrants, and permanently maintained in accordance with fire department standards to provide sustained water volumes for fire suppression purposes on the entire site.

Landscaping would be provided along the western and northern boundaries of the Orcem Site to partially screen equipment and materials. Potential installation of solar energy facilities would be placed on site to partially offset dependence on external electric power for plant operations and administrative uses. The future installation of solar panels would be subject to City review and approval.

The northern VMT Site boundary (adjoining ~~Derr Avenue~~~~Derr Street~~Derr Avenue) would remain secured with fencing and would continue to be served by the existing gated entrance. A rock jetty would be placed within the alignment of (and replace) the existing fence at the southern end of the VMT Site. A new chain-link fence would be installed along the top of the jetty and extend east to connect with the VMT Site boundary fence. The purpose of the rock jetty and fence is to improve site security by creating a stronger deterrent to trespassers. Perimeter site fencing would be repaired as necessary, as part of an overall effort to enhance site security consistent with marine terminal security requirements. Site lighting would be provided throughout the project site where necessary for safety. All lighting would be shielded or designed to prevent off-site glare.

2.4.4 Public Access and Off-Site Improvements

Public Access Improvements at the Vallejo Marina

Public access is required by BCDC as a condition of the permit approval process for most shoreline developments. As defined by BCDC's law, the McAteer-Petris Act, every proposed development should provide "maximum feasible public access, consistent with a proposed project." Because the project site would be a secured site in accordance with Department of Homeland Security regulations, off-site public access improvements are proposed in lieu of providing direct public access to the waterfront on the project site.

The proposed public access improvements planned within the Vallejo Marina are consistent with the City of Vallejo's Marina Master Plan and policies presented in the San Francisco Bay Plan. The proposed public access improvements would involve installation of a new self-propelled personal watercraft launch within the Vallejo Municipal Marina. Several options for alternative improvements were evaluated by the project sponsors and the City of Vallejo. The improvements selected for evaluation as part of the proposed project would be located just north of the access

ramp to K Dock at the south end of the City of Vallejo Municipal Marina, which is located approximately 2 miles north of the project site. The proposed launch ramp, shown in Figure 2-8, would consist of a pre-cast articulated concrete mat, approximately 10 feet wide by 60 feet long, over a geotextile fabric. The top of the launch ramp would be approximately 8 feet above MLLW, and the bottom of the ramp would be 2 feet below MLLW. The launch ramp would not require any dredging and would be located in an area with ample public parking and restrooms. These improvements must be reviewed by BCDC at the time of the VMT project component's permitting, and are subject to refinement. If additional mitigation is required by BCDC, additional environmental review may be necessary.

Construction of the new personal watercraft launch would include the following components:

1. Prior to the start of construction activities, the work area would be secured with temporary construction perimeter control, and the in-water area would be boomed with a silt curtain to control turbidity.
2. The existing riprap would be removed and stored using an excavator.
3. Grades would be set for correct slope layout and control.
4. The excavator would grade the bottom to the correct elevation and slope for the new ramp design.
5. Base rock would then be placed in the footprint of the new ramp and screeded evenly along the slope.
6. The articulated mat sections would be rigged to an engineered picking frame and placed section-by-section, working from the offshore end of the ramp to the shore connection.
7. The stored riprap would be replaced around the perimeter of the new launch.
8. A poured-in-place concrete apron would be installed between the existing multi-use path and the new launch mat to ensure a smooth transition from the path to the launch.
9. Upon completion of the work, the silt curtain would be removed and the site demobilized.

Dock Removal

BCDC's authority over the water of the San Francisco Bay (Bay) relates primarily to Bay fill. As described in the McAteer–Petris Act, Bay fill (solid fill, pile-supported fill, floating fill, and cantilevered fill) can be approved by the BCDC only for water-oriented uses. When a water-oriented use is approved, compensatory mitigation is typically required as part of permit approval. Because part of the construction of the proposed VMT component of the project includes Bay fill the project could also include mitigation in the form of several off-site alternatives; the required CEQA evaluation for some of these alternative measures may be provided in other documentation

and therefore not included in this EIR. The local mitigation alternative addressed in this EIR as part of the project includes the removal of existing deteriorated dock improvements within the water area shown in Figure 2-9 at the north end of the City's Municipal Marina. Approximately eighty (80) 14-inch-diameter creosote timber piles and deteriorated dock facilities would be removed from this portion of the marina. Removal of the deteriorated dock improvements would reduce the shaded habitat within the marina by 10,338 square feet (0.24 acre), and removal of the timber piles would increase benthic habitat within the marina by 87 square feet. Timber removed from the existing docks and the creosote timber piles would be separated based on recyclability. Recyclable and non-recyclable material would be sent to the closest appropriate facility.

Prior to demolition of the deteriorated dock improvements, the work area would be secured with a temporary debris boom to prevent debris from entering the waters of the Municipal Marina. The entire in-water work area would be surrounded by a silt curtain to control turbidity. The unused section of deteriorated walkway floats would be removed and transported to shore. Upon completion of the in-water work, the silt curtain would be removed and the site demobilized. The equipment proposed for removal of deteriorated dock facilities within the northerly mitigation site includes an excavator equipped with a hydraulic breaker, a debris boom, a silt curtain, and a skiff.

2.4.5 Optional Development Agreement and/or Community Benefits Agreement

As noted in the preceding descriptions, the proposed project calls for a substantial investment in site, access, and equipment improvements over a lengthy period of time, including the following: construction of upgrades to the existing rail line and public roadways serving the site, construction of a new wharf, demolition and reuse of materials from the former General Mills buildings, utility improvements, site drainage improvements, public access improvements (off-site), and construction of a new GGBFS Processing Mill and numerous related buildings and equipment. These improvements require a substantial initial capital investment associated with the entire Revised VMT Project component and the first phase of the Orcem project component, and further subsequent investments related to Orcem's Phase 2 capital improvements. In order to ensure that the property can be developed and operated in accordance with the approved Major Use Permits and that the policies, ordinances, and fees in effect at the time of project approval would apply, the project applicants ~~are proposing~~may propose that the City either: (1) approve a Development Agreement, as provided for under Government Code Sections 65864 through 65869.5, and City Code Chapters 17.10 through 17.20; and/or (2) approve and become party to a contractual Community Benefits Agreement. The Development Agreement and/or Community Benefits Agreement would have a term of up to 15 years and could address a wide range of project and community goals, including but not limited to the following: (1) provide assurances that the project is consistent with applicable local policies, standards, and fees currently in effect, in order to facilitate the substantial capital investment needed to implement the combined project; (2) ensure

that all planned improvements are constructed and operated in a manner consistent with the approved Major Use Permits; (3) provide for annual monitoring and verification of compliance with all applicable Major Use Permit Conditions of Approval and certified Final EIR Mitigation Measures; (4) meet living wage and prevailing wage requirements; (5) meet local hiring goals; (6) job training programs; ~~and~~ (7) participation in funding of identified local improvement needs, and (8) require the applicants to contribute to the maintenance of local roadways.

Figure 2-1 Former General Mills Structures

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~~Figure 2-2 Proposed Annexation~~

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Figure 2-2 Project Timeline Diagram

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Figure 2-3 Revised VMT Project~~Phase 1~~ Platform Sections

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Figure 2-4 Revised VMT Project ~~Phase 1~~ Dredging Plan

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Figure 2-5 Revised VMT Project Site Plan

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~~Figure 2-7 VMT Phase 2 Dike Section~~

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~~Figure 2-8 VMT Phase 2 Dredging Plan~~

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Figure 2-6 Orcem Site Plan

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Figure 2-7a Orcem Site Sections B and C

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Figure 2-7b Orcem Site Sections E, F, and G

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Figure 2-7c Orcem Site Sections A and D

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Figure 2-8 Proposed Public Access Improvements

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Figure 2-9 Proposed Dock Removal

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