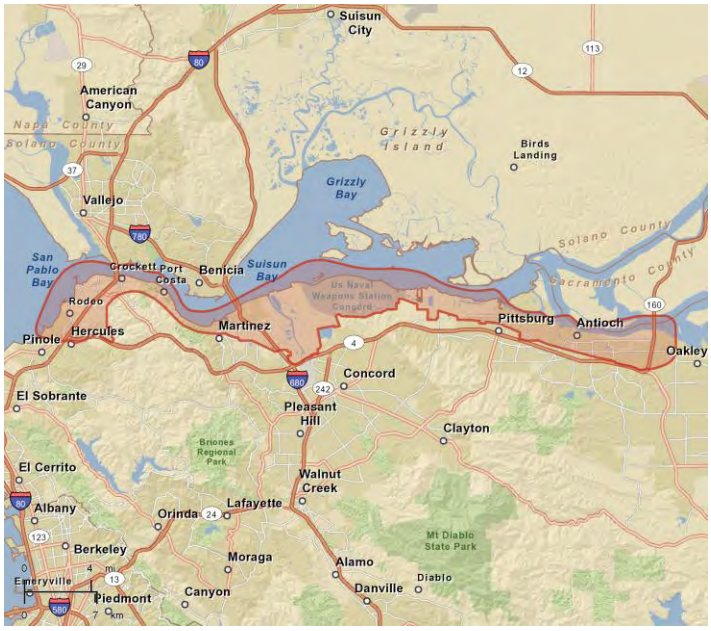
TECHNICAL MEMORANDUM #1
CONTRA COSTA COUNTY NORTHERN WATERFRONT INITIATIVE MARKET ASSESSMENT

TO:	Rich Seithel, Chief, Annexations and Economic Stimulus Programs Patrick Roche, Principal Planner, Advanced Planning
FROM:	Gary Craft, Kevin Stichter, Michael Fischer, Monica Isbell, and Chiranjivi Bhamidipati
SUBJECT:	Economic Overview and Current Profile of Industrial and Maritime-Related Development within the San Francisco Bay Area and Contra Costa County (Task 1)
DATE:	August 19, 2013

This Memorandum presents the results of Task 1 of the Market Assessment for the Northern Waterfront. Information from Task 2 addressing transportation infrastructure is also included. The purpose of this memo was to provide an overview of the industrial and maritime-related development market conditions and identify and review key trends that could potentially impact the relative economic competitiveness of Contra Costa County's Northern Waterfront. In summary, goods movement dependent industries and infrastructure play a vital role in the local economy and the economic health of the Northern Waterfront.

I. BACKGROUND

Figure 1: Northern Waterfront Study Area



The Northern Waterfront Study Area (see map at right) is approximately one mile wide and 55 miles long and contains 63.86 square miles. The Study Area includes six cities, several unincorporated communities, and a variety of unincorporated pockets of land (developed and undeveloped) that are located in the county. Within the Northern Waterfront there is a wide range of land uses from industrial, commercial, residential, marinas, public, and recreational uses, to natural habitat, open space, and wildlife refuges.

Northern Waterfront Initiative

In early 2013, the County Board of Supervisors launched an initiative to engage stakeholders along the waterfront from both the private and public sectors who are concerned with its economic future; wherein, the stakeholders could share information and exchange ideas about the emerging trends and issues affecting the waterfront with a specific focus on how maritime and landside transportation influences the waterfront's current and future economic prospects. The primary objective of the Northern Waterfront Initiative is to promote economic development along the county's working waterfront.

Northern Waterfront's Historical Role

Historically, the Northern Waterfront has attracted major industrial users due to its proximity to water that provided easy access for marine transportation. Industrial development came early to Contra Costa County, appearing along the waterfront beginning around the 1860s. [1] Coal was discovered in 1859 in the hills south of Antioch. Several years later copper ore was discovered near Antioch and smelting works were built. Deep water access allowed for the shipping of various commodities including grain and other agriculture products. Port Costa became a major grain port for merchant sailing ships with warehouses and waterfront wharves. Antioch and Pittsburg also were important shipping points for grain (wheat and barley) during the 1860s and 1870s.

By the early 1900s some forty factories had opened along the Sacramento River, including C&H Sugar, Standard Oil of California, Union Oil, Redwood Manufacturers Company, and Hercules Powder Works. The first manufactures to come to Contra Costa County were powder and dynamite works serving the mining industry. Chemical plants entered the picture at the turn of the century, as demand for sulfuric acid, chlorine and ammonia fertilizers increased with advances in chemistry and industrial agriculture. Oil refineries were built along the waterfront beginning with Union Oil in 1896; Standard Oil followed in 1901, and four others came in soon thereafter, making Contra Costa one of the leading refining centers in the United States. Crude oil for refining came by pipeline, ship, and rail tank cars from the San Joaquin Valley and Ventura fields. Other major industries included food processing and steel.

By 1920, the Northern Waterfront accounted for over half the tonnage on San Francisco Bay. By 1940, Contra Costa was the largest manufacturing center in California in terms of the value of its industrial output. During World War II the Concord Naval Weapons Station was a major munitions ship loading facility. Following the war, other industrial plants were built. For example, DuPont built and operated a petro-chemical manufacturing plant near Oakley for more than forty years from 1956 to 1997.

Ports and maritime shipping have played an important role in the trade and commerce of the region. Seaports constitute the hub around which the maritime sector operates, serving as gateways between their hinterlands and overseas markets to which they are linked by commerce. Consequently, waterfront locations have attracted manufacturing and processing industries that want to take advantage of low-cost inbound transportation of raw materials for production and outbound shipments of finished products to both export and domestic markets. Transport of bulk cargo required that manufacturing be done near the port in order to reduce transportation costs. This resulted in the building of large-scale industrial facilities and warehouses with port facilities handling the intermodal transfer of cargo between ships, barges, trucks, and railroads. The Northern Waterfront has followed this historical development pattern.

Although manufacturing employment has declined, the 50-mile stretch of shoreline from Hercules to Oakley remains an important economic asset to the region. Given its waterfront setting, with deep-water channels and marine terminals, proximity to two Class 1 railroad lines, electric generating capacity, industrial zoned land, and other assets, Contra Costa's Northern Waterfront offers a number of key advantages for industrial development.

General neglect and declining investment over the past several decades has reduced the Northern Waterfront's ability to remain competitive as a working waterfront. The physical development of the area which began over 100 years ago was based on a different platform for manufacturing and distributing goods, one which was well-suited to the infrastructure and building types of the time. **Today, the main challenge is to figure out ways to adapt and revitalize this older infrastructure and develop the Northern Waterfront into a 21st century model for environmentally-and economically sustainable industrial development.**

[1] Walker, Richard A. "Industry Builds Out the City: The Suburbanization of Manufacturing in the San Francisco Bay Area, 1850-1940", 2004

II. Overview of Industrial and Maritime-Related Development Market Conditions in the San Francisco Bay Area and Contra Costa County

Bay Area Industrial Sector[2,3]

The San Francisco Bay Area has a large diversified economy with a Gross Regional Product (GRP) of $535 billion, making it the 19th largest economy in the world. As a major population center, the Bay Area regional economy is highly dependent on the production, movement, and consumption of goods and services. Goods producing components of the economy include agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing. Combined, the goods producing industries make up 14.3% of the region's jobs, with manufacturing being the biggest single component, accounting for almost 66% of the goods producing sector's employment.

Overall, manufacturing is the 5th largest employment sector in the Bay Area. There is a slightly higher concentration of manufacturing employment in the Bay Area than the national average. Although many manufacturing companies do not physically produce products in the region, they do design and develop products locally. While employment in manufacturing is declining as a share of Bay Area employment, its share is falling faster in the rest of the country.

Table 1 on the following page shows the major industry sectors and their employment concentrations in the Bay Area, Contra Costa County, and the Northern Waterfront. Manufacturing employment is heavily concentrated along the Northern Waterfront, 2.2 times greater than the national average. The Northern Waterfront also has a greater concentration of manufacturing employment than either the Bay Area or Contra Costa County. Location quotients (LQ) were used to measure the relative concentration of employment by industry within the Bay Area compared to its counterpart in the national economy. LQ coefficients greater than 1.0 denote a higher-concentration of employment for an industry within the region than the national average, which may indicate a possible competitive advantage. Location quotients greater than 1.25 may also indicate that the industry is producing more than can be consumed by the local economy and is serving a larger export market. These export oriented industries bring new dollars into the local economy, typically pay higher wages, and have high job multipliers which support employment growth in other sectors.

Much of the Bay Area economy is focused on the technology sector. Biotech and medical instruments are one of the strongest growth sectors in the regional economy. While much of the pharmaceutical component of this sector involves research and development with more of the manufacturing occurring overseas, the precision instrument sector is a growth sector with highly-skilled manufacturing jobs still available in the region. This sector also provides synergies with other precision instrument manufacturing businesses not connected to the biotech sector, as well as with the new clean energy technology development and manufacturing sectors. Medical instrumentation is one of the leading export products shipped from the Bay Area. Biotech companies producing advanced medical products continue to expand their high-tech manufacturing facilities in the Bay Area creating demand for specialized and highly controlled goods movement. Several biotech companies are located along the Northern Waterfront in Hercules' North Shore Business Park including Bio-Rad Laboratories, Bay Bioanalytical, and Eureka Genomics.

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2 Bay Area Council Economic Institute, *"The Bay Area: A Regional Economic Assessment"*, October 2012

3 Bay Area Council Economic Institute, Bay Area Economic Profile," Innovation and Investment: Building Tomorrow's Economy in the Bay Area", March 2012

Table 1: Bay Area Economic Profile

			Employment Concentration (National LQ)		
NAICS Code	Industry Description	Bay Area Employment	Bay Area	Contra Costa	Northern Waterfront
11	Agriculture, forestry, fishing and hunting	19,140	0.62	0.26	0.17
21	Mining, quarrying, and oil and gas extraction	1,912	0.09	0.53	0.38
22	Utilities	7,096	0.50	1.86	1.95
23	Construction	140,258	0.97	1.33	1.56
31-33	Manufacturing	311,594	1.01	0.58	2.20
42	Wholesale trade	116,884	0.80	0.57	0.63
44-45	Retail trade	321,701	0.84	1.10	0.73
54	Professional and technical services	362,677	1.78	1.21	1.31
55	Management of companies and enterprises	62,843	1.21	1.09	0.44
56	Administrative and waste services	179,981	0.87	0.92	0.18
61	Educational services	86,471	1.28	1.02	0.64
62	Health care and social assistance	331,649	0.76	1.03	0.36
48-49	Transportation and warehousing	68,995	0.64	0.50	0.01
51	Information	122,044	1.76	1.25	1.78
52	Finance and insurance	121,324	0.84	1.36	0.65
53	Real estate and rental and leasing	54,271	1.08	1.29	2.42
71	Arts, entertainment, and recreation	54,903	1.07	1.18	0.48
72	Accommodation and food services	297,399	0.98	0.94	0.36
81	Other services	173,143	1.47	1.49	1.75
92	Government	450,700			
Total, all industries		**3,310,952**			

Source: Bureau of Labor Statistics, ESRI, California Employment Development Department

The shipment of crude oil and refined petroleum products also play a key role in the regional economy. California ranks third among U.S. states in refining capacity with several of the State's largest refineries located along the Northern Waterfront. Transportation of crude oil to the region and the movement of finished petroleum products to distributors and retailers is an important part of the Bay Area's goods movement. Crude oil comes from three major sources: 1) pipelines from major producing regions in the Central Valley and Southern California; 2) vessels from Alaska; and 3) ships from overseas producers. Seaports that handle crude oil along the Northern Waterfront serve the four refineries located in Richmond (Chevron), Rodeo (ConocoPhillips), Martinez (Shell), and north Concord (Tesoro). Finished products are distributed by rail or tank truck. The refinery process is continuous, forcing accumulation of inventory in tank farms; several of which are located in terminals near the refineries. Tank trucks make deliveries of refined petroleum products, such as gasoline, to service stations throughout the Bay Area and Northern California.

Locally, manufacturing is important to Contra Costa County's economy, employing more than 16,680 workers, making it the 7th largest employment sector with average wages well above the median household income. In 2012, the manufacturing sector accounted for 30% ($20.3 billion) of the county's overall GRP of $67 billion. Five manufacturing subsectors (food processing, petroleum refining, biotechnology, metal processing and fabrication, and electronic components) account for 78.5% of all manufacturing employment in Contra Costa County. The Northern Waterfront is home to many of these industrial firms.

Using the IMPLAN input-output model (a widely accepted economic impact analysis tool) we can analyze the effect that different sectors have on the regional economy as a whole. For a specified region, the input-output model accounts for all dollar flows between different sectors of the economy. Using this information, IMPLAN models the way a dollar injected into one sector is spent and re-spent in other sectors of the economy, generating waves of economic activity, or so-called "economic multiplier" effects. The model uses national industry data and county-level economic data to generate a series of multipliers, which in turn estimate the total economic implications of economic activity.

The IMPLAN input-output model shows that the manufacturing sector and goods movement industries play a significant role in the Bay Area economy. Over 50% of regional economic output is attributable to goods movement dependent industries. Table 2 below from the ongoing (2013) Caltrans' *Bay Area Freight Mobility Study* indicates that Contra Costa County has a higher percentage share of total output than the Bay Area, although the County's share of total employment is lower. This is likely driven by the high valued refinery and other manufactured products along with significant process automation in large-scale manufacturing.

Table 2: Bay Area Region and Contra Costa County Economic Profiles, 2011

	Output, 2011 ($ millions)				Employment, 2011			
Industry	**Bay Area**	**% of Total**	**Contra Costa**	**% of Total**	**Bay Area**	**% of Total**	**Contra Costa**	**% of Total**
Agriculture, Farm, and Forestry	3,652	0.4%	176	0.1%	23,435	0.5%	1,552	0.3%
Wholesale trade	28,210	2.9%	1,990	1.3%	138,633	3.2%	10,437	2.2%
Manufacturing	365,895	37.7%	89,528	58.1%	324,551	7.5%	21,506	4.5%
Construction	27,615	2.8%	3,701	2.4%	196,063	4.5%	26,433	5.6%
Retail trade	33,348	3.4%	4,024	2.6%	399,830	9.3%	52,146	11.0%
Utilities	10,389	1.1%	2,259	1.5%	12,940	0.3%	2,395	0.5%
Rail transportation	481	0.0%	24	0.0%	1,158	0.0%	49	0.0%
Truck transportation	3,277	0.3%	458	0.3%	23,878	0.6%	3,309	0.7%
Water transportation	1,317	0.1%	264	0.2%	2,301	0.1%	427	0.1%
Air transportation	5,799	0.6%	19	0.0%	17,692	0.4%	73	0.0%
Other transportation	7,412	0.8%	1,014	0.7%	60,244	1.4%	9,051	1.9%
Warehousing and storage	730	0.1%	33	0.0%	7,930	0.2%	375	0.1%
Mining	2,179	0.2%	1,165	0.8%	4,580	0.1%	2,145	0.5%
Goods Movement Industries Sub-Total	**490,304**	**50.5%**	**104,656**	**68.0%**	**1,213,235**	**28.1%**	**129,898**	**27.5%**
Government (Federal, State, and Local)	48,249	5.0%	4,543	3.0%	431,120	10.0%	45,553	9.6%
Services	432,537	44.5%	44,778	29.1%	2,665,856	61.8%	297,383	62.9%
TOTAL - All Industries	**971,091**	**100%**	**153,976**	**100%**	**4,310,212**	**100%**	**472,835**	**100%**
Goods-Movement Industries % Total	**50%**		**68%**		**28%**		**27%**	

Source: IMPLAN, 2011

Manufactured Goods Exports Help Drive the Regional Economy

The National Association of Manufacturers[4] notes that manufacturing in California accounts for 11.2% of the total Gross State Product (GSP) in 2011 with total overall output of $229.9 billion, which is

[4] National Association of Manufacturers, *"California Manufacturing Facts"*,

significantly higher than in any other state. More than 60% ($138 billion) of that output was exported. As one of the nation's top exporting regions, the Bay Area ranks second only to the New York–New Jersey metropolitan area in the value of its exports, with overseas sales exceeding all U.S. states except Texas. Global demand for the Bay Area's products helps drive regional economic growth. [5] In 2011, the Bay Area's exports of goods totaled over $52 billion, comprising 30% of California's total exports. The region's exports are led by technology, including computers and electronic equipment; transportation equipment; machinery; miscellaneous manufactured products; and chemicals.

International trade is a growing component of the Bay Area economy. Seaports handle the vast majority of cargo tonnage. Air cargo typically handles high-value or time-sensitive goods, most notably telecommunications hardware, electronic equipment, perishable commodities, pharmaceutical products, emergency shipments, overnight packages, and business documents.

Maritime trade is measured primarily by weight (revenue tonnage) or containers (TEUs). These measurements can reflect different types of cargo: dry bulk (loaded or unloaded via conveyor belts), liquid bulk (shipped in tanks, such as petroleum or vegetable oil), neo-bulk (such as automobiles, scrap and steel, or newsprint), break bulk (handled in packaged units), and general cargo (shipped in containers).

Bay Area Maritime Trade

The Bay Area ranks as the fourth largest exporting region in the U.S. in terms of tonnage. While the Port of Oakland handles 82% of the region's maritime trade, the Bay Area's ports at Richmond, Benicia, San Francisco and Redwood City, plus the inland port at Stockton, also handle significant maritime trade. The Port of Stockton is the primary Northern California port for bulk cargo, with the remainder handled at San Francisco and Redwood City. Richmond and Benicia handle mostly automobiles and trucks. Although it is a substantial maritime center, Northern California handles only 10.7% of West Coast tonnage, which primarily passes through the Port of Los Angeles (31.9%) and the Port of Long Beach (25.6%). In 2011, 3,826 vessels arrived at regional berths. Most of the arrivals were bulk cargo vessels (50.6%). Table 3 shows the total tonnage by type of vessel. Containerized cargo, which is primarily processed through the Port of Oakland, accounts for over 50% of vessel capacity. Table 4 on the following page shows the revenue tonnage handled by Northern California ports in 2012.

Table 3: Bay Area Port Calls by Vessel Capacity

Type of Vessel	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bulk	**86,588,739**	**94,840,739**	**93,674,227**	**101,538,679**	**111,160,037**	**97,719,248**	**91,510,743**	**79,122,480**	**73,018,412**	**92,334,215**
Tanker	**50,865,570**	**56,559,876**	**51,557,617**	**56,985,135**	**59,832,518**	**58,669,560**	**59,750,198**	**53,997,464**	**52,493,372**	**57,357,988**
Product Tanker	21,057,192	16,251,367	14,329,000	16,385,435	19,967,792	18,791,387	16,280,736	17,876,635	17,076,283	18,615,198
Crude Tanker	29,808,378	40,308,509	37,228,617	40,599,700	39,864,726	39,878,173	43,469,462	36,120,829	35,417,089	38,742,790
Dry Bulk	**26,586,337**	**29,370,287**	**30,187,620**	**31,987,827**	**37,583,252**	**25,868,894**	**22,090,499**	**19,896,129**	**16,503,764**	**30,129,051**
Roll-on/Roll-off	**2,037,025**	**2,021,269**	**3,727,249**	**3,494,877**	**5,926,036**	**5,696,214**	**5,263,864**	**2,659,485**	**2,358,228**	**2,629,892**
Vehicle	767,241	1,050,766	1,363,280	1,613,983	3,830,199	3,839,339	3,023,497	1,365,283	1,478,985	1,804,918
Gas Carrier	**810,522**	**680,451**	**914,313**	**864,771**	**886,722**	**1,093,348**	**782,636**	**647,529**	**455,216**	**714,646**
Combination	**546,099**	**394,254**	**224,604**	**0**	**473,213**	**0**	**0**	**0**	**0**	**0**
General Cargo	**5,743,186**	**5,814,602**	**7,062,824**	**8,206,069**	**6,458,296**	**6,391,232**	**3,623,546**	**1,921,873**	**1,207,832**	**1,502,638**
Container	**89,200,270**	**89,092,849**	**94,764,782**	**101,207,703**	**110,671,648**	**115,246,470**	**106,823,108**	**111,545,607**	**107,517,330**	**134,467,878**
All Types	**175,789,009**	**183,933,588**	**188,439,009**	**202,746,382**	**221,831,685**	**212,965,718**	**198,333,851**	**190,668,087**	**180,535,742**	**226,802,093**

Source: U.S. Department of Transportation, Maritime Administration based on information from Lloyd's Marine Intelligence Unit

[5] Bay Area Council Economic Institute, "International Trade and the Bay Area Economy: Regional Interests and Global Outlook 2012–2013", March 2013

Table 4: Revenue Tonnage, Northern California Ports, 2012

	TOTAL TONNAGE				CONTAINERS			
Port	Total	% Change From 2011	% Loaded	% Discharged	Total (TEUs)	% Change From 2011	% Loaded	% Discharged
San Francisco	861,828	18.90%	0.00%	100.00%	34	-17.10%	0.00%	100.00%
Redwood City	1,001,989	41.20%	2.40%	97.60%	--	--	0.00%	0.00%
Oakland	30,304,966	0.10%	55.70%	44.30%	1,762,661	0.50%	55.40%	44.60%
Richmond	1,485,379	31.90%	1.20%	98.80%	--	--	0.00%	0.00%
Crockett	582,144	-17.50%	0.00%	100.00%	--	--	0.00%	0.00%
Benicia	1,098,499	27.30%	0.00%	100.00%	--	--	0.00%	0.00%
Port Chicago	67,018	13.90%	24.40%	75.60%	3,939	14.10%	24.40%	75.60%
Stockton	1,812,777	-16.10%	61.30%	38.70%	--	-100.00%	0.00%	0.00%
West Sacramento	326,688	-1.00%	25.70%	74.30%	--	-100.00%	0.00%	0.00%
Eureka	32,502	-30.20%	94.90%	5.10%	--	0.00%	0.00%	0.00%
Area Total	**37,573,790**	**1.50%**	**48.30%**	**51.70%**	**1,766,634**	**0.50%**	**55.40%**	**44.60%**

	GENERAL CARGO				LUMBER & LOGS			
Port	Total	% Change From 2011	% Loaded	% Discharged	Total	% Change From 2011	% Loaded	% Discharged
San Francisco	22,221	-48.70%	0.00%	100.00%	--	--	0.00%	0.00%
Redwood City	--	--	0.00%	0.00%	--	--	0.00%	0.00%
Oakland	16,774	-5.50%	58.70%	41.30%	--	--	0.00%	0.00%
Richmond	--	--	0.00%	0.00%	--	--	0.00%	0.00%
Crockett	--	--	0.00%	0.00%	--	--	0.00%	0.00%
Benicia	--	--	0.00%	0.00%	--	--	0.00%	0.00%
Port Chicago	55	-63.10%	0.00%	100.00%	--	--	0.00%	0.00%
Stockton	166,486	-49.50%	25.40%	74.60%	--	--	0.00%	0.00%
West Sacramento	272,938	-9.20%	30.80%	69.20%	--	--	0.00%	0.00%
Eureka	--	0.00%	0.00%	0.00%	32,502	-30.20%	94.90%	5.10%
Area Total	**478,474**	**-30.80%**	**28.50%**	**71.50%**	**32,502**			

	AUTOMOBILES AND TRUCKS				BULK CARGO			
Port	Total	% Change From 2011	% Loaded	% Discharged	Total	% Change From 2011	% Loaded	% Discharged
San Francisco	--	--	0.00%	0.00%	839,029	23.30%	0.00%	100.00%
Redwood City	--	--	0.00%	0.00%	1,001,989	41.20%	2.40%	97.60%
Oakland	322,955	-27.20%	77.10%	22.90%	--	--	0.00%	0.00%
Richmond	964,513	37.70%	0.00%	100.00%	520,866	22.40%	3.30%	96.70%
Crockett	--	--	0.00%	0.00%	582,144	-17.50%	0.00%	100.00%
Benicia	1,098,499	28.90%	0.00%	100.00%	--	-100.00%	0.00%	100.00%
Port Chicago	--	--	0.00%	0.00%	--	--	0.00%	0.00%
Stockton	--	--	0.00%	0.00%	1,646,291	-10.00%	64.90%	
West Sacramento	--	--	0.00%	0.00%	53,750	84.90%	0.00%	
Eureka	--	--	0.00%	0.00%	--	--		
Area Total	**2,385,967**	**19.50%**	**10.40%**	**89.60%**	**4,644,069**	**5.80%**	**23.90%**	

Source: Pacific Maritime Association 2012 Annual Report

Northern Waterfront Ports

The Northern Waterfront primarily handles bulk cargo via private marine terminals, with crude oil and petroleum products being the dominant commodities. Most of the incoming and outgoing vessels are arriving and/or departing from berths in Martinez, followed by Rodeo. Table 5 shows the number of arrivals in 2012 by Port, Berth, and Vessel Type in the Northern Waterfront.

Commodity Flows

To better understand the movement of goods into and out of the Bay Area a rudimentary commodity flow analysis was performed using the U.S. Federal Highway Administration's Freight Analysis Framework version 3[6] (FAF3) database. FAF3 uses data from the 2007 Commodity Flow Survey[7] (conducted as part of the U.S. Economic Census) and additional sources, and provides estimates for tonnage and value by region of origin and destination, commodity type, and mode for 2007, the most recent year, and forecasts through 2040. FAF v3.4 is the most recent version of FAF3 that was released on January 10, 2013. This release includes provisional estimates for 2011, and the forecasts included are adjusted taking into account the 2008-2009 global recession. There are a few limitations of using the FAF data in the context of the Study Area as follows: (a) the *Study Area* is encompassed by a larger San Francisco Bay Area FAF origin/destination zone that includes the major ports at Oakland and Richmond and most industries in the Bay Area region, therefore, commodity flows are not geographically very specific to the Study Area; (b) the level of detail for a commodity is a two-digit Standard Classification of Transported Goods[8], hence commodity descriptions cannot precisely indicate the stage in the value chain or the industry producing them; and (c) the forecasts may not take into account some recent trends, such as increased transport of oil and petroleum products for refining by rail[9].

Figure 2 shows 2011 outbound commodity flows in tonnage and value for the Bay Area FAF zone. Some of these commodities by weight, such as crude petroleum, non-metallic minerals, base metals and basic chemicals are likely imported through the existing marine terminals in the Study Area, and other commodities by weight, such as gasoline, coal (not elsewhere classified, or other coal and petroleum products), chemical products and fuel oils are likely produced by existing industries in the Study Area. Some of these commodities by value, such as textiles and leather and crude petroleum are likely imported through the existing marine terminals in the Study Area, and other commodities by value, such as electronics, precision instruments, machinery, pharmaceuticals, gasoline, miscellaneous manufacturing, chemical products and base metal articles are also likely produced by existing industries in the Study Area.

[6] http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/
[7] http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/index.html
[8] http://www.census.gov/svsd/www/cfsdat/cfs071200.pdf
[9] http://www.eia.gov/todayinenergy/detail.cfm?id=12031

Table 5: 2012 Northern Waterfront Arrivals by Port, Berth, & Vessel Type

Foreign Arrivals PORT/BERTH	BERTH CODE	BULK CARRIER	ORE CARRIER	CHEMICAL TANKER	CHEMICAL/ OIL TANKER	CRUDE OIL TANKER	PRODUCT TANKER	Total
RODEO		**0**	**0**	**4**	**4**	**1**	**9**	18
OLEUM LOWER DOCK	ROD3	0	0	1	3	1	6	11
SELBY	ROD8	0	0	3	1	0	3	7
CROCKETT		**7**	**0**	**0**	**0**	**0**	**0**	7
C&H SUGAR	CRM1	7	0	0	0	0	0	7
MARTINEZ		**0**	**0**	**0**	**10**	**8**	**22**	40
SHELL/EQUILON LOWER	MRZ2	0	0	0	1	0	1	2
SHELL/EQUILON UPPER	MRZ3	0	0	0	0	4	14	18
AMORCO TERMINAL TESORO	MRZ5	0	0	0	1	4	3	8
AVON TESORO UPPER BERTH	MRZ8	0	0	0	8	0	4	12
PITTSBURG		**19**	**0**	**0**	**0**	**0**	**0**	19
POSCO	PBG4	19	0	0	0	0	0	19
ANTIOCH		**3**	**2**	**0**	**0**	**0**	**0**	5
GYPSUM DOCK	ANZ2	3	2	0	0	0	0	5
Subtotal		**29**	**2**	**4**	**14**	**9**	**31**	**89**

U.S. Intercoastal Arrivals PORT/BERTH NAME	BERTH CODE	BULK CARRIER	CATAMARAN TUG	TANK BARGE	CHEMICAL/ OIL TANKER	CRUDE OIL TANKER	PRODUCT TANKER	NON SPECIFIC TANKER
RODEO		**0**	**0**	**19**	**4**	**2**	**5**	**1**
OLEUM LOWER DOCK	ROD3	0	0	5	1	2	3	1
OLEUM CENTER DOCK	ROD4	0	0	1	0	0	0	0
OLEUM UPPER DOCK	ROD5	0	0	10	0	0	0	0
SELBY	ROD8	0	0	3	3	0	2	0
CROCKETT		**0**	**3**	**0**	**0**	**0**	**0**	**0**
C&H SUGAR	CRM1	0	3	0	0	0	0	0
MARTINEZ		**0**	**0**	**52**	**14**	**58**	**11**	**1**
SHELL/EQUILON LOWER	MRZ2	0	0	19	0	0	1	0
SHELL/EQUILON UPPER	MRZ3	0	0	21	1	17	1	0
AMORCO TERMINAL TESORO	MRZ5	0	0	0	1	41	6	1
MARTINEZ TERMINAL	MRZ6	0	0	9	4	0	1	0
AVON TESORO UPPER BERTH	MRZ8	0	0	3	8	0	3	0
PITTSBURG		**1**	**0**	**0**	**0**	**0**	**0**	**0**
BAY BULK	PBG3	1	0	0	0	0	0	0
Subtotal		**1**	**3**	**71**	**18**	**60**	**16**	**2**

Bay Area Intercoastal Arrivals PORT/BERTH	BERTH CODE	TANK BARGE	CHEMICAL TANKER	CHEMICAL/ OIL TANKER	CRUDE OIL TANKER	PRODUCT TANKER	TOTAL	
RODEO		**23***	**0**	**1**	**0**	**1***	25	
Oleum Barge Dock	ROD2	1	0	0	0	0	1	
OLEUM LOWER DOCK	ROD3	4	0	1	0	1*	6	
OLEUM UPPER DOCK	ROD5	9*	0	0	0	0	9	
SELBY	ROD8	9*	0	0	0	0	9	
MARTINEZ		**66***	**1**	**2***	**1**	**3***	73	
SHELL/EQUILON LOWER	MRZ2	6*	1	1*	0	1*	9	
SHELL/EQUILON UPPER	MRZ3	4	0	0	1	0	5	
MARTINEZ TERMINAL	MRZ6	46*	0	1*	0	1*	48	
AVON TESORO LOWER BERTH	MRZ7	2	0	0	0	0	2	
AVON TESORO UPPER BERTH	MRZ8	8*	0	0	0	1*	9	
Subtotal		**89***	**1**	**3***	**1**	**4***	98	

*Numbers either contain or are vessels that moved from one berth to another within the same port

** Arrivals from unknown ports are not included in the above tables.

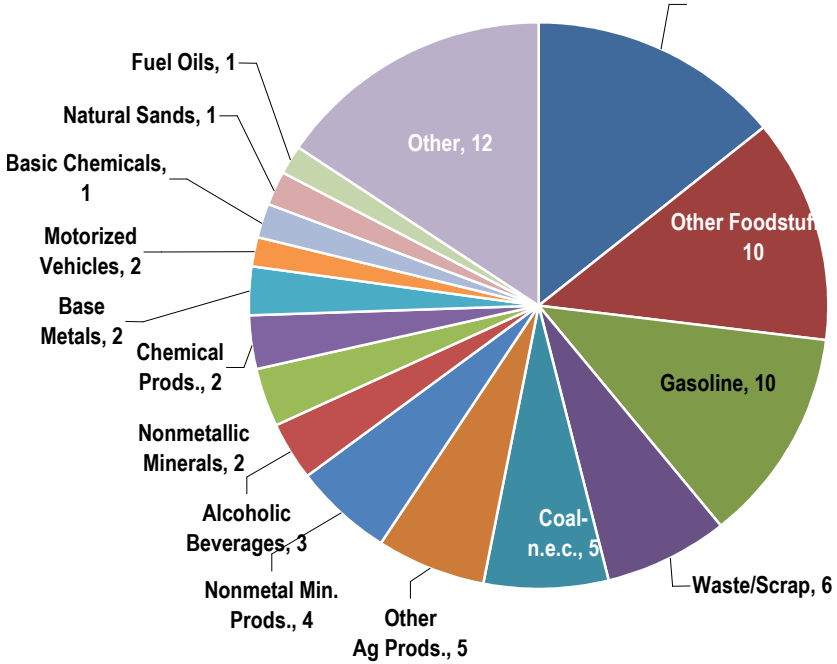
Source: San Francisco Marine Exchange

Figure 3 shows 2035 forecast outbound commodity flows in tonnage and value for the Bay Area FAF zone. Comparing the 2035 forecast with the flows by weight to that in 2011, it is noted that basic chemicals (compounded annual growth rate or CAGR of about 3.7%), natural sands (3.4% CAGR) and chemical products (3.1% CAGR) are likely to see high growth. In addition, moderate growth in tonnage is likely to be seen in non-metal mineral products (2.7% CAGR) and gasoline (2.2% CAGR).

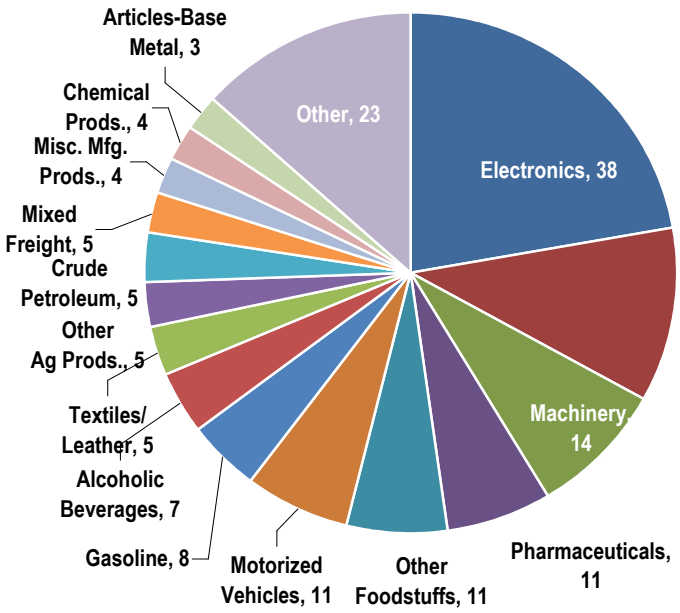
Comparing flows by value from 2011 to projected flows in 2035, a majority of the products are likely to see high compound annual growth rates, such as precision instruments (7.8%), pharmaceuticals (6.6%), and machinery (5.0%). Other commodity flows with high growth rate in value include miscellaneous manufacturing (4.7%), mixed freight (4.5%), textiles and leather (4.1%), and chemical products (3.3%). Due to the existing mix of industries, marine terminals and vacant lands for industrial development, the Study Area is well-positioned to absorb the projected growth of most of these commodities. However, mixed freight consists mainly of containerized cargo, and in the absence of marine terminals in the Northern Waterfront to handle this commodity, the international flows would continue to originate at the Port of Oakland.

Figure 2: Outbound Commodities from the Bay Area FAF Zone, 2011

Thousands of Tons

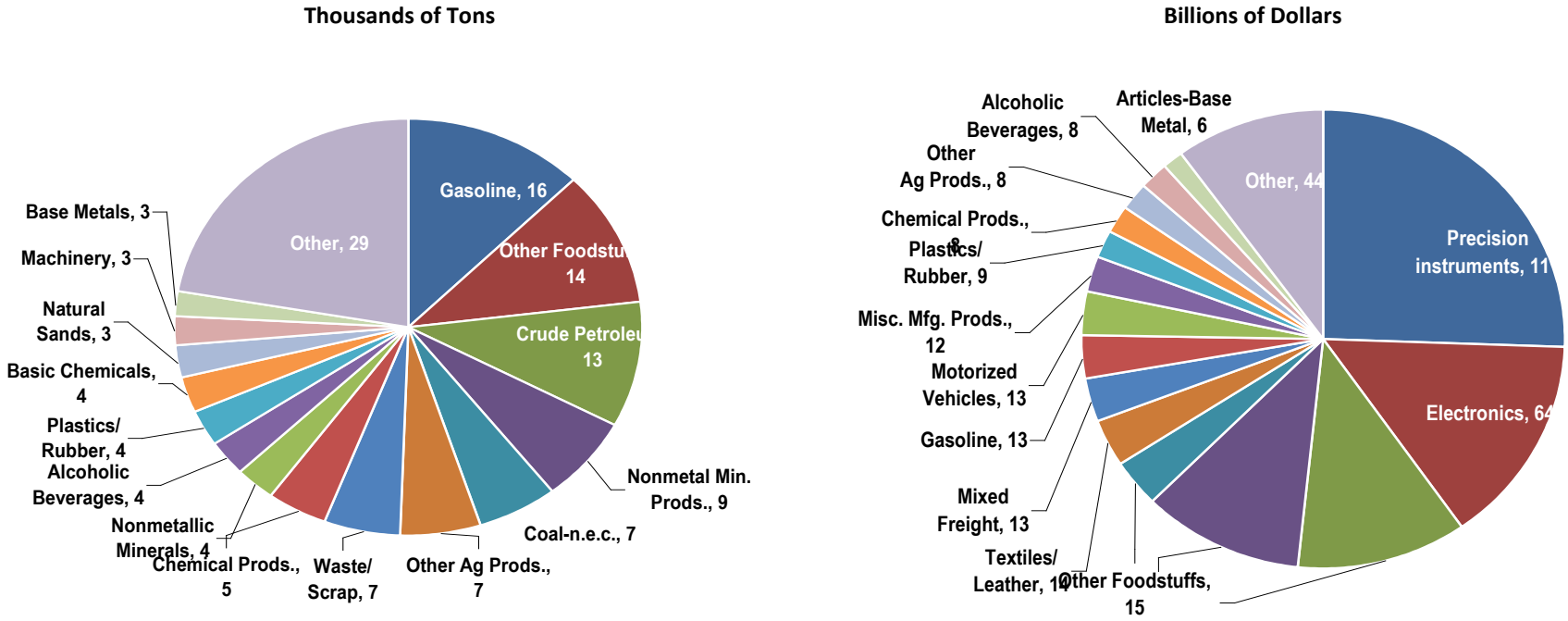


Billions of Dollars



Source: FHWA, FAF 3.4.

Figure 3: Outbound Commodities from the Bay Area FAF Zone, 2035



Source: FHWA, FAF 3.4.

Bay Area Trading Partners

The key U.S. trading partners for the outbound commodity flows from the Bay Area by weight and value that are also likely to originate from the Study Area are summarized in Table 6 below:

Table 6: Major Trading Partners of Key Outbound Commodities by Weight and Value from the Bay Area, 2011

Key Outbound Commodity by Weight	Key Trading Partners
Crude petroleum	94% Rest of CA, 3% WA, 3% UT, <1% Other
Non-metallic minerals	89% Rest of CA, 6% UT, 5% Other
Base metals	65% Rest of CA, 6% TX, 5% WA, 4% IL, 3% CO, 3% UT, 3% OR, 2% NY, 2% TN, 7% Other
Basic chemicals	69% Rest of CA, 5% WA, 5% TX, 4% MA, 3% NJ, 2% MI, 11% Other
Gasoline	100% Rest of CA, <1% Other
Coal not elsewhere classified (or other coal and petroleum products)	34% Rest of CA, 18% TX, 4% IL, 3% LA, 3% MI, 3% MT, 3% PA, 3% NY, 2% AL, 2% FL, 2% OH, 2% AR, 22% Other
Chemical products	55% Rest of CA, 12% TX, 10% WA, 5% UT, 5% NV, 3% OR, 2% MI, 8% Other
Fuel oils	92% Rest of CA, 8% NV, <1% Other

Key Outbound Commodity by Value	Key Trading Partners
Textiles and leather	34% Rest of CA, 8% TX, 5% SC, 5% NY, 4% UT, 4% IL, 3% FL, 3% WA, 3% CO, 2% PA, 2% TN, 2% IN, 2% OR, 2% MS, 2% NJ, 2% IA, 2% VA, 17% Other
Crude petroleum	94% Rest of CA, 3% WA, 2% UT, <1% Other
Electronics	22% Rest of CA, 18% TX, 7% FL, 5% NY, 5% AK, 4% NV, 4% AZ, 3% TN, 2% IN, 2% IL, 2% CO, 2% WA, 2% MA, 2% MN, 2% GA, 2% PA, 16% Other
Precision instruments	12% TX, 10% Rest of CA, 8% IN, 7% FL, 7% AK, 6% WI, 4% IL, 4% WA, 3% UT, 3% AZ, 3% NV, 3% KY, 2% PA, 2% NJ, 2% ID, 2% CO, 2% NY, 2% OH, 2% NC, 2% MI, 2% MD, 13% Other
Machinery	33% Rest of CA, 13% AK, 11% TX, 4% WA, 4% OR, 3% MI, 3% PA, 3% OH, 2% NY, 2% LA, 2% IL, 2% UT, 2% NV, 16% Other
Pharmaceuticals	41% KY, 28% Rest of CA, 7% TX, 4% HI, 3% NJ, 2% AK, 2% FL, 14% Other
Gasoline	99% Rest of CA, 1% NV, <1% Other
Miscellaneous manufacturing	20% Rest of CA, 7% TX, 7% VA, 6% WA, 5% MI, 5% FL, 4% UT, 4% MN, 4% AZ, 4% IL, 3% NY, 3% MA, 3% PA, 3% CO, 2% KS, 2% OH, 2% AL, 2% GA, 2% WI, 14% Other
Chemical products	36% Rest of CA, 16% TX, 7% AK, 6% WA, 4% MI, 4% OR, 3% NV, 3% NJ, 2% NY, 2% VA, 2% UT, 16% Other
Base metal articles	43% Rest of CA, 14% TX, 4% CO, 3% WA, 3% MI, 3% NY, 3% UT, 3% OR, 2% IL, 2% NV, 2% KY, 2% AZ, 2% OH, 15% Other

Source: FHWA, FAF 3.4.

FAF3 data shows that there are other important exports that are currently handled at the other Bay Area ports, including electronics, precision instruments, machinery, waste and scrap, agricultural products (except cereal grains, animal feed, and forage products), meat and seafood, alcoholic beverages, metallic ores and coal. Some of these commodities would require intermodal handling capabilities, nevertheless, there are opportunities to increase the exports handled at the marine terminals in the Study Area.

The Obama Administration, through the 2010 National Export Initiative, has made it a top priority to improve the conditions that directly affect the private sector's ability to export - working to remove trade barriers abroad, helping firms and farmers overcome hurdles to entering new markets, and assisting with financing. Under this favorable setting, it should be possible to develop new and/or better cargo handling capabilities at the marine terminals.

The industries in the Northern Waterfront utilize various raw materials and semi-processed containerized, bulk and liquid bulk commodities that are imported through the Port of Oakland, imported through the marine terminals in the Study Area, or shipped domestically by truck and rail. Input commodities sourced internationally and domestically are dependent on the dynamics of input commodity prices and global transportation and logistics costs as well as the specific requirements of a company's supply chain.

Export commodities handled at the marine terminals in the Northern Waterfront are limited primarily to oil and refined petroleum and petro-chemical products.

III. Current Profile of Goods Movement Sector in the Bay Area

Goods movement is critically important to Bay Area businesses. Over 37% of Bay Area economic output is related to goods movement dependent industries. Goods movement is of a high level of importance to these industries and their operations and location decisions and typically exhibit frequent inbound and outbound freight vehicle trips. Collectively, these industries spend approximately $6.6 billion on transportation services.

Regional Employment in Goods Movement Related Industries

The goods movement industry includes businesses that make up the freight movement, warehouse, and distribution sector of the regional economy. Table 7 on the following page depicts the number of employees in the various goods movement related industries in Contra Costa County, Bay Area, and neighboring counties. According to the U.S. Census Bureau, more than 26,600 workers were employed in goods movement related businesses in the Bay Area in 2011. Another 23,487 jobs were located in the Sacramento area and northern San Joaquin Valley.

A number of distribution and logistics companies have relocated from the Bay Area to the Central Valley around Stockton, Lathrop, Tracy, and Patterson. Growth of distribution centers in San Joaquin and Stanislaus Counties – due to lower costs in those locations – is increasing truck congestion on Interstate 580. Distributions firms comprise about 80% of all firms in new industrial districts, and 90% of these firms are reported to have moved from the Bay Area. This large-scale relocation seems rational, owing to their requirements for large buildings with complex networks of conveyors and the ability to expedite in-and-out cargo flows.

Table 7: Number of Employees in Goods Movement-Related Industries

NAICS Code	Industry Description	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma	Bay Area Total	Sacramento	San Joaquin	Stanislaus
482	Rail Freight and intermediate goods movement										-			
483	Marine Cargo & Shipping	1,343	250								1,593	19		
484	Trucking & Freight Movement	5,646	1,165	142	317	786	104	1,330	2,717	963	13,170	2736	7,991	2,491
486	Pipeline		100								100	50	56	200
4882	Support for Rail		89	-	-						89	19	132	50
4883	Support for Marine		251			147					398		28	
4884	Support for Freight Trucking	1,407	445		60	266	3,007	456	118	68	5,827	734	392	147
493	Warehousing & Storage	2,094	408		483	258	335	982	756	191	5,507	1,111	5,886	1,529
	All Goods Movement-Related Industries	10,490	2,708	142	860	1,457	3,446	2,768	3,591	1,222	26,684	4,669	14,451	4,367

Source: 2011 County Census Patterns

Goods Movement Infrastructure

Bay Area goods movement infrastructure includes maritime, highway, rail, air, and pipelines as described below:

MARITIME INFRASTRUCTURE

Major ports fronting on San Francisco Bay include the ports of San Francisco, Oakland, Redwood City, and Richmond. Contra Costa's Northern Waterfront includes ports and marine terminals fronting onto San Pablo Bay, Carquinez Straits, Suisun Bay, and the Sacramento-San Joaquin River. The river ports also include the Port of West Sacramento (79 nautical miles from the Golden Gate Bridge through the San Francisco Bay and the 30-foot deep Sacramento Ship Channel) and the Port of Stockton (75 nautical miles inland through the Bay, the San Joaquin River, and the 35-foot deep Stockton Ship Channel). The River Ports are alive and well, broadening their base away from their heavy dependence on construction materials by developing new export and import operations. Information on dredging projects can be found in Appendix 4.

Port of San Francisco - Born out of the Gold Rush, the Port of San Francisco is responsible for managing 7-1/2 miles of shoreline along San Francisco Bay. The waterfront became an industrial area of finger piers, railroad terminals, and warehouses. With the outbreak of World War II, San Francisco became a military logistics center; troops, equipment and supplies were shipped out and the shipbuilding and ship repair industries flourished. Today, San Francisco has redefined its mission which includes cruise and cargo shipping, ship repair, commercial and sport fishing, ferry and excursion operations and other services such as covered storage, on-dock rail, lay-down space, modern cargo terminals, and a foreign trade zone. The Port of San Francisco has a naturally deep water harbor and handles all types of cargo including rolling stock, project cargo, and break bulk cargo. The cargo terminal has five berths, on-dock rail, cold storage facilities, paved cargo staging areas, and covered storage. In 2008, the Port of San Francisco served 53 cargo vessels carrying a total of almost 1.2 million tons of cargo, including over 1.1 million tons of imports and 27.5 thousand tons of exports. Imports included 79.5 thousand tons of break bulk, and almost 1.1 million tons of dry bulk cargo. Exports included 27.5 thousand tons of liquid bulk cargoes. The Port of San Francisco also welcomed a total of more than 173.9 thousand passenger visits on 59 vessel calls.

Port of Oakland - The Port of Oakland includes marine terminals, maritime support areas, and intermodal rail facilities. The Port has 20 deep-water berths equipped with 35 container cranes and a network of local roads that link it to warehouses, rail yards, and interstate freeways. The Port has ten container terminals and two intermodal rail yards served by the Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) Railways. Local roads connect to Interstate Interstates 80, 880, 580, and 980. The Port handles almost all of the containerized goods traveling through Northern California, and it is the fourth busiest port for containerized cargo in the U.S. Asia accounts for over half of the international trade in the Port of Oakland, and Europe, Australia, New Zealand, and the islands of the South Pacific account for significant cargo traffic. Over 17% of the trade handled in the Port of Oakland is domestic and military cargo.

The Port of Oakland exported about $14.5 billion in 2011, including cargoes destined for Japan (almost $3.3 billion), China (over $2.4 billion), South Korea (more than $1.2 billion), and Taiwan ($1.0 billion). Exports through the Port of Oakland in 2011 were also bound for Hong Kong, Australia, Germany, the United Kingdom, India, and Singapore. In 2011, the Port of Oakland exported about $14.5 billion of goods, served 2,121 cargo vessels and handled over 2.3 million TEUs of containerized cargo. The Port also handles bulk and break bulk general cargo that includes roll-on/roll-off cargoes, heavy-lift items, and steel products.

Port of Redwood City - The Port of Redwood City is the only deep-water port in South San Francisco Bay. Located strategically between the Port of San Francisco and California's Silicon Valley, the Port of Redwood City is the fastest-growing "small bulk" port in California, specializing in dry bulk, neo-bulk, and specialized cargoes. In 2008, the Port of Redwood City handled a total of 1.5 million tons of cargo. The Port handles general, liquid, dry bulk cargos including cement, scrap metal, and petroleum products. The Port of Redwood City also operates a 190-berth marina that can accommodate vessels up to 50 feet long.

Port of Richmond - The Port of Richmond is located approximately nine miles northeast of the Golden Gate Bridge on the eastern shore of San Francisco Bay. The port encompasses five city-owned terminals and ten privately owned terminals for handling bulk liquids, dry bulk materials, metals, vehicles and break bulk cargoes. The port's access channel, the Richmond Harbor Channel, was recently deepened from 35 to 38 feet. In 2008, the port handled 19 million short tons of cargo, primarily in the form of liquid petroleum. In recent years, the port has expanded its dry bulk, break bulk, and containerized cargo handling capabilities and has increased its automobile processing facilities. It ranks number one for ports of San Francisco Bay in vehicles and liquid bulk. In addition to these, the port can also handle dry-bulk, break bulk, and containers. The port is served by a sophisticated rail network served by four major rail companies.

Port of Benicia - The Port of Benicia is a privately owned and operated port located in Solano County 24 miles from the Golden Gate Bridge. The Port specializes in handling bulk goods such as agricultural products and motor vehicles. There is direct port access to I-680 and I-780 interstate freeways; UP Rail service; a dockside water depth of 38 feet and a 2,400 foot deep water pier. The port also has an oil terminal for the Valero oil refinery at Benicia

Port of West Sacramento - The Port of West Sacramento has five 600-foot berths, a score of transit sheds, warehouses, and commodity handling facilities, trucking facilities accessible to nearby freeways, and railroad connections to both BNSF and UP. The port currently handles almost 1 million metric tons per year, 70% imports and 30% exports of bulk and break bulk cargo. Because the decreased level of construction activity has dramatically affected imports of bulk cement, the port's two new import cement terminals are operating at only 10% of capacity. However, imports of wind turbines are increasing. The port is also gearing up for a new import (sugar-based ethanol) with a new storage and distribution facility. The port will soon be adding two new exports: wood pellets produced in a new $60 million plant built by the German firm, Enligna; and ferrous scrap to be processed by a proposed $50 million shredding plant. The port will be dredging the 43-mile-long Sacramento Ship Channel from 30 to 35 feet. It has been a long time in coming, but local funding has been secured through state bonds and port funds.

Port of Stockton - The Port of Stockton provides berthing space for 17 vessels, more than one million square feet of dock side transit sheds, and seven million square feet of warehousing for bulk and general cargo. It has connections to both UP and BNSF railroads. Currently, the U.S. Army Corps of Engineers is studying the deepening of the Stockton ship channel from 35 to 40 feet. In 2008, the port handled 4.3 million metric tons of cargo, of which more than 80% was imports, including cement, liquid fertilizer, anhydrous ammonia, and substantial quantities of pipeline and construction steel. Recently, some of those imports, largely construction materials, have been affected by the dramatic downturn in construction activity. Rice exports have increased and imports have included shipments of wind turbine components from China and Vietnam. The port is trying to reduce its reliance on the construction industry and, instead, focus on food and energy. Toward that end, the port is completing

Phase One of its cold storage facility to provide chilled and frozen foods for local markets. They are expecting to develop an import/export food terminal and have been making contacts in Chile.

Northern Waterfront - The Northern Waterfront is located between the Port of Richmond on the west and the ports of West Sacramento and Stockton on the east. Along this stretch of the river from the Carquinez Straits to Suisun Bay and the Delta there are a number of marine terminals and wharfs (see Table 8 on the following page). These facilities are privately owned and serve primarily the adjacent manufacturing operations including:

- C&H sugar refinery in Crockett;
- Tesoro and Shell at Martinez and Phillips 66 in Rodeo;
- Mirant power plant, Dow chemical plant, and the USS-POSCO's steel-coil processing plant in Pittsburg.

Table 8 and Table 9 on the following pages include physical characteristics of the various maritime facilities in the Northern Waterfront. Most of these facilities are marine oil terminals which are the lifeline of the area refineries. Tankers loaded with crude oil enter marine terminals along the Northern Waterfront where the crude is then sent to refineries for processing via pipelines running under or adjacent to a wharf. Finished products like gasoline and diesel are often loaded and shipped out through the same terminals.

Table 8: Northern Waterfront Port Facilities, Marine Terminals, and Wharfs

Port Facility/ Location	Port Name	Owner/Operator	Purpose of Facility	Commodities Handled	Berthing Distance/ Depth
Conoco Phillips Oil Refinery Marine Terminal Rodeo		Conoco Phillips	Receipt of crude oil and shipment of refined petroleum products; occasional bunkering of vessels.	• Petroleum and Petroleum Products • Crude Petroleum • Gasoline, Jet Fuel, Kerosene • Distillate, Residual & Other Fuel Oils • Lube Oil & Greases	2,517 feet
Nustar Energy Crockett Terminal Selby		Carquinez Strait	Receipt and shipment of petroleum products	• Petroleum and Petroleum Products • Crude Petroleum • Gasoline, Jet Fuel, Kerosene • Distillate, Residual & Other Fuel Oils • Lube Oil & Greases	850 feet
C&H Sugar Company Berths 1 Through 5 Crockett		California & Hawaii Sugar Company	Receipt of unrefined sugar and plant supplies; occasional shipment of packaged refined sugar.	• Other Agricultural Products; Food and Kindred Products	2,815 feet
Shell Martinez Marine Terminal Martinez Refinery Wharf Martinez		Carquinez Strait	Receipt and shipment of crude oil and petroleum products.	• Petroleum and Petroleum Products • Crude Petroleum • Gasoline, Jet Fuel, Kerosene • Distillate, Residual & Other Fuel Oils • Lube Oil & Greases	2,624 feet
Tesoro Amorco Marine Terminal Martinez		Tesoro Refining and Marketing Company	Import facility for crude oil serving the Golden Eagle Refinery	• Crude Petroleum • Petroleum and Petroleum Products	982 feet
Pacific Atlantic Terminals Martinez		Suisun Bay Channel	Receipt and shipment of crude oil and petroleum products.	• Petroleum and Petroleum Products • Crude Petroleum • Gasoline, Jet Fuel, Kerosene • Distillate, Residual & Other Fuel Oils • Lube Oil & Greases	1,000 feet
Tesoro Avon Marine Terminal Martinez		Tesoro Refining and Marketing Company	Receipt and shipment of petroleum products by tanker and barge	• Petroleum and Petroleum Products • Crude Petroleum	350 feet
Bay Area Bulk Terminal Pittsburg		Koch Carbon, Inc.		• Petroleum Pitches, Coke, Asphalt, Naptha and Solvents	750 feet

USS-Posco Industries Pittsburg Wharf Pittsburg		**USS-Posco Industries**	Receipt of semi-finished steel by vessel and barge.	• Primary Iron and Steel Products (Ingots,Bars,Rods,etc.) • Primary Non-Ferrous Metal Products • Fabricated Metal Prods	891 feet
Dow Chemical Co Pittsburg Plant Wharf Pittsburg		New York Slough	Receipt and shipment of caustic soda.	• Other Chemicals and Related Products	672 feet
Fulton Shipyard Pier Antioch		San Joaquin River	Mooring vessels for conversion, outfitting, and repair.	• Sand, Gravel, Stone, Rock, Limestone, Soil, Dredged Material	525 feet
Georgia-Pacific Corp Antioch Plant Wharf Antioch		San Joaquin River	Receipt of gypsum rock by self-unloading vessel.	• Sand, Gravel, Stone, Rock, Limestone, Soil, Dredged Material	780 feet
Forestar Dock Antioch	Sacramento, Stockton	Forestar	Receipt of miscellaneous dry bulk commodities.		
Contra Costa Power Plant Antioch		NRG		•	150 feet
Kie-Con Kiewit Wharf Antioch		Kiewit Pacific		•	
Diablo Service Corp Pittsburg Wharf Pittsburg		San Joaquin River	Receipt of caustic soda by barge; shipment of petroleum coke by vessel.	• Coal,Lignite & Coal Coke • Gasoline, Jet Fuel, Kerosene • Distillate,Residual & Other Fuel Oils; Lube Oil & Greases • Petroleum Pitches, Coke, Asphalt, Naptha and Solvents	1,154 feet
Pacific Gas & Electric Co Delta Power Plant Wharf Contra Costa Pittsburg		San Joaquin River	Occasional receipt of fuel oil by tanker, occasional shipment by barge.	• Gasoline, Jet Fuel, Kerosene • Distillate, Residual & Other Fuel Oils • Lube Oil & Greases	1,224 feet
Anchorage 27 Contra Costa Pittsburg		Suisun Bay Channel		• Sand, Gravel, Stone, Rock, Limestone, Soil, Dredged Material	
Pittsburgh Pittsburg		San Joaquin River		• All Manufactured Equipment, Machinery and Products	
Defense Fuel Supply Center Ozol Wharf Ozol		Carquinez Strait	Not used.		880 feet

Source: Contra Costa County, CA, *Port Facilities, Wharfs, and Docks,* http://seaport.findthedata.org/

World Port Source, *California Ports,* http://www.worldportsource.com/ports/index/USA_CA.php

Table 9: Physical Characteristics of Maritime Facilities in the Northern Waterfront

Name of Marine Terminal	Commodities Handled/ Purpose of Facility	Berthing Distance (Largest/Total)	Depth (Min/Max)	Deck Height (Min/Max)
Conoco Phillips - Rodeo Oil Refinery Port	Receipt and shipment of crude oil and petroleum products; occasional bunkering of vessels.	1,375 ft / 2,517 ft	20 ft / 40 ft	17 ft / 17 ft
Shore Terminals, LLC. Selby Marine Terminal	Mooring tugs and small craft	545 ft / 545 ft	13 ft / 30 ft	9 ft / 9 ft
Nustar Energy, Crockett Terminal Port Facility	Receipt and shipment of crude oil and petroleum products; occasional bunkering of vessels.	N/A	N/A	N/A
California and Hawaiian Sugar Co Port Facility	Receipt of unrefined sugar and plant supplies; occasional shipment of packaged refined sugar.	2,815 ft / 2,815 ft	33 ft / 34 ft	12 ft / 12 ft
Defense Fuel Supply Center Ozol Wharf Port Facility	Not Used Currently.	880 ft / 880 ft	40 ft / 40 ft	8 ft / 8 ft
Martinez Refining Co Martinez Refinery Wharf Port Facility	Receipt and shipment of crude oil and petroleum products.	750 ft / 2,624 ft	45 ft / 45 ft	15 ft / 15 ft
Tosco Refining Co., San Francisco Area Refinery at Avon, Amorco Lower Wharf. Port Facility	Not Used Currently.	982 ft / 982 ft	40 ft / 40 ft	15 ft / 15 ft
Pacific Atlantic Terminals Port Facility	Receipt and shipment of crude oil and petroleum products.	1,000 ft / 1,000 ft	40 ft / 40 ft	17 ft / 17 ft
Tosco Refining Co., San Francisco Area Refinery at Avon, Barge Wharf. Port Facility	Shipment of petroleum products by barge.	350 ft / 350 ft	18 ft / 18 ft	19 ft / 19 ft
Pacific Gas & Electric Co Delta Power Plant Wharf Port Facility	Occasional receipt of fuel oil by tanker, occasional shipment by barge.	1,070 ft / 1,224 ft	23 ft / 23 ft	14 ft / 14 ft
Diablo Service Corp Pittsburg Wharf Port Facility	Receipt of caustic soda by barge; shipment of petroleum coke by vessel.	1,154 ft / 1,154 ft	35 ft / 35 ft	12 ft / 12 ft
USS-Posco Industries, Pittsburg Dock. Port Facility	Occasional mooring of tugboats.	400 ft / 400 ft	25 ft / 25 ft	13.5 ft / 13.5 ft
Dow Chemical Co Pittsburg Plant Wharf Port Facility	Receipt and shipment of caustic soda.	672 ft / 672 ft	40 ft / 40 ft	20 ft / 20 ft
Fulton Shipyard Pier Port Facility	Mooring vessels for conversion, outfitting, and repair.	525 ft / 525 ft	16 ft / 16 ft	14 ft / 14 ft
Georgia-pacific Corp Antioch Plant Wharf Port Facility	Receipt of gypsum rock by self-unloading vessel.	780 ft / 780 ft	31 ft / 31 ft	11 ft / 11 ft
Gaylord Container Corp., California Mill Wharf. Port Facility	Receipt of miscellaneous dry bulk commodities.	N/A	N/A	N/A

Source: http://seaport.findthedata.org

RAIL INFRASTRUCTURE

The Bay Area's rail freight activity is concentrated in the East Bay, with major UP facilities in Oakland (Alameda County) and BNSF facilities in Richmond (Contra Costa County). Richmond Pacific (formerly Parr Terminal Railway) performs local switching for both major railroads in the Richmond area. The San Francisco Peninsula and the San Jose area are served by local freight trains. Napa County is served by the California Northern, a short-line operator. Unlike other areas, particularly in the eastern U.S., there are no short line railroads in the area, except for the California Northern in Napa. Solano County receives service from UP, and has smaller facilities in Suisun/Fairfield.

Rail employment is concentrated at major facilities (freight yards), which also serve as the base for right-of-way and equipment maintenance and for local administrative functions. There are also sales and marketing representatives in major cities, but they cover wide market territories. The replacement of local dispatching by regional dispatching centers and the replacement of regional marketing and sales personnel with national customer service centers have both led to a reduction in regional staffing.

Rail transport of fuel components, such as ethanol and liquefied petroleum gas, into and out of California is becoming a more significant part of the state's fuel supply system. Although a disruption in rail service, particularly in the case of ethanol, could have serious short-term impacts on fuel supply, the rail transport system appears to be functioning effectively.

The market presence of the rail industry at Bay Area locations is limited by geography related to California's location on the western edge of the country with a sparsely populated region immediately to the east and an ocean to the west. Most markets within California are too close for rail service to establish a strong competitive position from the Bay Area, and those markets are dominated by the trucking industry.

The trend over the last decade has been for the Class I railroads to shift their focus to "hooking and hauling" long trains rather than providing switching and transport service to customers with small volumes of rail cars and intermodal marine containers. More frequently, the Class I railroads are moving long unit trains of either rail cars or intermodal marine containers from one origin to one destination without interim stops to disassemble the train. This increases freight velocity and improves the profitability of the railroads. Under this new operating model, businesses in the Northern Waterfront may find it challenging to obtain rail service unless their volumes are large and consistent.

TRUCKING INFRASTRUCTURE

Trucking infrastructure in the Bay Area consists of several major highway corridors: Interstates 80, 580 and 880, and U.S. Highway 101. In terms of volume, these major highway corridors carry more than 80% of the truck freight in the Bay Area. Other highway corridors play supporting roles to these major goods-movement corridors.

The East Bay has three of the heaviest truck corridors in the region. The I-880 corridor carries the highest volume of truck traffic in the region and is among the highest truck volume of any highway in the state. The I-580 corridor is the primary connection between the Bay Area and the national interstate truck network. A substantial share of Bay Area domestic trade is with Southern California, the San Joaquin Valley and other West Coast destinations, and most of this trade uses I-580 as a connector. This corridor experiences the second-highest volume of truck traffic in the region, most of it long-haul in nature and involving the heaviest trucks. Increasingly, regional distribution centers have located in the San Joaquin Valley and trucks providing goods to the Bay Area use this corridor for access. I-80 carries the third-highest truck volume in the region, serving primarily as a connector to the transcontinental truck network.

On the west side of San Francisco Bay the U.S. 101 corridor acts as a gateway corridor at the southern end of the region, with modest truck volume between Salinas and San Jose with truck volume increasing substantially from San Jose to San Francisco, where the corridor serves as a primary access route to San Francisco International Airport and intraregional goods movement.

AIR FREIGHT

Airfreight is moved by all cargo airlines, the aircraft of the integrators (FedEx and UPS), and in the bellies of passenger aircraft at San Francisco International Airport (SFO), and Oakland International Airport (OAK) and San Jose International Airport (SJC). These airports handle a mix of domestic and international cargo.

PIPELINE INFRASTRUCTURE

Pipelines running across the region serve the needs of the refiners and liquid bulk shippers.

Role of Goods Movement System

The Bay Area's goods movement system serves three major roles: 1) as an international trade gateway, 2) a domestic trade gateway, and 3) a means for regional urban goods movement. These roles are described more fully below.

A. International Trade Gateway: The Bay Area has three of the most important international trade gateways in the nation - the Port of Oakland, SFO and OAK - that serve this region's economy and link industries in California and across the nation to trading partners in the Pacific Rim and elsewhere. In 2011, the San Francisco Customs District reported two-way trade valued at $119.1 billion moving through the region's international gateways. This makes the Bay Area the second most critical trade gateway in California, the third most important gateway on the West Coast, and 10th largest international trade gateway in the U.S. (in terms of value of two-way trade). In 2011, international trade represented 17.5% of total freight movement in the region in terms of tonnage and 31.1% in terms of value. By 2035 these shares are expected to grow to 23.6% and 40%, respectively.[10] Freight moves primarily via ocean and air between the San Francisco Bay Area and foreign countries.

Many of the leading exports shipped from the Port of Oakland are agricultural and prepared food commodities produced in the San Joaquin Valley and Central Coast regions of California, fostering a strong trade link between the Bay Area and these Northern California regions. Other export commodities, such as wine, medical instruments, and electronics, are products of critical Bay Area industries. Imports handled by the Port of Oakland are a mix of supplies to critical industries (e.g., machinery, plastics) and consumer products consumed in California and other states in the Southwestern U.S.

Air cargo is another major source of international trade activity in the region. While OAK is the busiest overall cargo airport in the region, SFO is the leading airport for international trade and is the second busiest airport in California and fourth busiest in the U.S. for international air cargo because of its proximity to major Asian trading partners and the large number of international passenger flights that provide belly cargo services. Beneficial cargo owners[11] (BCO) use international air cargo service primarily for low-weight, high-value, and/or time-sensitive commodities such as specialty agricultural products, electronic components, pharmaceutical products, and medical instruments.

[10] San Francisco Bay Area Freight Mobility Study, prepared for California Department of Transportation by Cambridge Systematics, Inc., July 2013, which derived its freight flow data from the Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF) Version 3.4 database. It should be noted that FAF's definition of the Bay Area region is slightly different than the Metropolitan Transportation Commission (MTC) boundaries and includes the following counties: Alameda, Contra Costa, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Francisco, San Mateo, Solano, and Sonoma.

[11] Beneficial cargo owner is defined as the shipper/seller/supplier or the consignee/buyer/receiver who controls transportation and logistics decisions based on the negotiated terms of sale.

B. Domestic Trade Gateway: The San Francisco Bay Area is a major domestic trade gateway with strong ties to other regions in California, as well as the rest of the U.S. In 2011, 46.1% of freight movement by tonnage in the region moved between the Bay Area and other parts of the U.S., but in terms of value, almost 60% of freight movement was interregional trade. By 2035, domestic trade with other parts of California and the U.S. is expected to grow to 48% by tonnage and almost 62% by value. This is an indication of the importance of the Bay Area's freight system to California and the nation.[12]

Domestic trade provides a market for goods produced by Bay Area industries. Leading commodities traded with the rest of the nation include electrical machinery, equipment, warehouse and distribution activity and food products. Domestic trade is also important to the Bay Area economy because local industries and consumers obtain goods from the rest of the nation. The significance of the Bay Area consumer markets are indicated by the balance in trade of goods between the Bay Area and the rest of the U.S. The commodity flow data demonstrates that the region is a net importer of goods. In 2011, approximately 28.1% of freight flows by tonnage and 32.3% by value were inbound as compared to 18.0% inbound by tonnage and 27.3% by value. These patterns of net importing grow slightly more pronounced in 2035. The major commodities inbound to the region are a mix of consumer products and inputs to major Bay Area industries. [13]

By tonnage, major commodities shipped into the Bay Area from elsewhere in the U.S. include non-metallic minerals, crude petroleum, construction materials, and food products. The region relies on its links to the northern San Joaquin Valley for much of the warehouse and distribution infrastructure that supports this trade in consumer products. The goods movement connection between these regions is critical to the health of both economies. The Bay Area's high-technology and petroleum products manufacturing sector produces products that are traded throughout the nation.

During the past two decades, the Bay Area has experienced a shift in the local economy away from many of the traditional goods movement-oriented industry sectors to Professional Services, Health Care, Educational Services, and Other Services. Despite this trend, the Bay Area continues to have major goods movement-oriented sectors which are reflected in the types of products moving outbound from the region. In terms of tonnage, petroleum products represented 27% of the region's outbound tonnage, which shows the importance of the petroleum refining sector to the Bay Area. In terms of the value of products leaving the region, high-value products are the mainstay of the regional economy. Electronic products, biotech and medical instruments, and wine are among the top products traded by the Bay Area with other states.[14]

Domestic trade is conducted over a network of interstate highway corridors (I-80, I-580 to I-5, and U.S. 101 are major gateway corridors), railroad mainlines of two Class I rail carriers - the UP and BNSF - and through three major airports - SFO, OAK, and SJC. Trucks carry the largest share of domestic trade in terms of both tonnage and value. Several of the region's major freight corridors provide critical truck access to domestic markets. I-580/I-205 is the primary domestic highway corridor in the region and experiences high truck volumes. As warehouse and distribution facilities have moved out of the region to locations in the San Joaquin Valley with less expensive land and lower cost labor, the I-580/I-205 corridor has become a major lifeline for distribution of consumer products in the region. This corridor is also critical as a connection between the Bay Area and I-5. Other important domestic highway corridors include I-80 and U.S. 101. Air cargo also plays a role in the region's domestic trade system as well. OAK is the region's busiest air cargo airport and handles the majority of the region's domestic air cargo. Integrators - UPS and FedEx - maintain facilities at OAK, which is the reason for the high volume of domestic airfreight moving through this airport.

[12] Ibid.
[13] Ibid.
[14] Ibid.

C. Platform for Urban Goods Movement: Being a large population center that is also a popular travel and tourism destination, the San Francisco Bay Area is heavily dependent upon urban goods movement within the region to make consumer products, food, packages and parcels available to households and businesses.

Local distribution and service activity comprises an important component of the Bay Area goods movement economy in terms of tons moved, value of product, and traffic impacts on the region's roadways. Approximately 46% of all the tonnage transported through the Bay Area moves entirely within the nine-county region. The major economic activities include warehousing and distribution of goods from warehouses to retailers and consumers, movement of construction materials to support the housing and commercial real estate markets, and local parcel and courier services. Measured in terms of value, commodities such as food, construction materials and consumer electronics comprise an extremely large fraction of what moves into and within the area. In addition, traffic from service vehicles (for example, trash and waste collection) generates a significant amount of local goods movement activity.

Urban goods movement is conducted almost exclusively by trucks and includes a much higher share of smaller trucks than are used for long-haul, intercity, interstate movements. Urban goods movement also involves high volumes of package and parcel pickup and delivery that support the large service sector in the Bay Area, beyond the freight transportation demand created by the traditional goods movement-dependent economic sectors.

One measure of the importance of urban goods movement in the Bay Area is the large share of total commodity flows in the region that are intraregional. In 2011, 53.9% of total freight flows by weight and 40.4% by value are intraregional flows. These shares are projected to decline only a small amount by 2035 – 52.0% and 38.1% by weight and value, respectively.[15]

Changes in the Bay Area economy also contribute to the growing importance of local urban goods movement. Shifts away from manufacturing towards the service sector, especially professional, technical, and information services, equates to a higher level of small package movements via the integrators and less emphasis on long-haul movements of manufactured products. Another key driver of the urban goods movement in the Bay Area is the strength of the local tourism and travel industry. Between 1990 and 2011, the Accommodation and Food Services and the Arts, Entertainment, and Recreation industries increased their combined share of Bay Area employment from 9.4% to 11.7%.[16] These industries generate local truck movements with food, laundry, and other general supplies that must operate in dense urban centers. Products from construction trades and related industries such as gravel and sand operations rank among the top commodities moving in the Bay Area by weight.

The supply chain for consumer products is critical to the Bay Area and also creates a strong link with the San Joaquin Valley since many of the distribution centers for these products are located there. This supply chain covers the movement of consumer goods from a foreign supplier through warehousing and distribution centers to local retailers. The supply chain is typical for "big box" retailers such as Wal-Mart, Target, Home Depot, and others in the wholesale sector. The commodities cover a wide range of consumer merchandise and retail goods, including clothing, household goods, building hardware, and electronics. These commodities are usually transported in intermodal containers via container vessels into the Port of Oakland and then to inland distribution facilities in locations such as Tracy and Stockton via truck or rail for eventual redistribution to Bay Area retailers, as well as to markets throughout Northern California and as far away as Denver and Salt Lake City.

[15] Ibid.
[16] Ibid.

IV. Transportation and Infrastructure Related Projects Aimed at Improving Goods Movement in the San Francisco Bay Area/Northern California and Contra Costa County

Thirty-two transportation projects have been identified on the Metropolitan Transportation Commission's and the Association of Bay Area Governments 2013 One Bay Area Plan Projects lists that would improve goods movement infrastructure in the Northern Waterfront and vicinity.

The new M-580 barge service/marine highway linking the Port of Oakland and the Port of Stockton through the Carquinez Strait and the San Joaquin River Delta (M-580 Marine Highway) designed to avoid the growing highway congestion on the I-580/I-205 corridor has the potential to serve the region's industrial commodities and raw material BCOs with reliable transportation that is less expensive than truck or rail.

V. Key Transportation and Infrastructure Issues that Affect the Northern Waterfront's Trade Area

A Reconnaissance Survey of transportation infrastructure and operational issues was conducted by Cambridge Systematics on September 4, 2013 to identify key transportation issues affecting the Northern Waterfront. Transportation issues affecting the Northern Waterfront include road surfaces, curves, vertical clearances, and overhead obstructions are identified in the Appendix 1. Figures 5 thru 10 in Appendix 2 show key Truck and Rail Routes in and around the Northern Waterfront.

VI. Key Planned Industrial and Maritime-Related Development Projects in the San Francisco Bay Area/Northern California and Contra Costa County

Planned industrial and maritime-related development projects in the San Francisco Bay Area include continued development of Alameda Naval Air Station in Alameda and Mare Island in Vallejo, both of which have waterfront access. Planned industrial and maritime-related development projects include:

Mare Island (Vallejo): The 650-acre property now is home to 95 businesses occupying about 3.2 million square feet of commercial space. Fifty historic buildings on the base have been readied for tenants. The developer, Lennar Mare Island is marketing 500,000 to 1 million square feet of space for occupancy, one-third for offices and two-thirds industrial. Kennedy Wilson has been tapped to be the exclusive leasing agent for 1 million square feet of commercial space being developed on Mare Island. On June 10th, 2013, U.S. Congressman Mike Thompson organized and led a summit on economic revitalization of Mare Island. Potential tenants include Minnesota-based Enclos, a specialty contractor for building facades, which plans to open a 50,000-square-foot assembly plant on Mare Island. The facility will employ more than 40 full-time workers. Enclos chose Mare Island as a central location to minimize shipping distances for construction materials to projects in the Bay Area and Pacific Northwest, thus meeting the company's carbon footprint and sustainability goals. Enclos designs and installs custom facades for large-scale building projects worldwide. Local projects currently under construction include the new Stanford Hospital, UCSF Medical Center at Mission Bay, San Francisco General Hospital and expansion of the San Francisco Museum of Modern Art. Another firm, LDK Concept, manufactures photovoltaic products proposes to either buy or take part in a long-term lease to build a solar farm on Mare Island to assemble and distribute solar panels which would be built in China.

Alameda Naval Air Station (Alameda): The City of Alameda is managing the planning and development for Alameda Point – part of the former Naval Air Station Alameda – to create a strong employment and commercial base with a mix of open space, recreational, residential, and retail uses. Over 100 businesses, leasing 1.8 million square of space and employing more than 1,000 workers, are currently located there. The site benefits from the large industrial buildings and adjacent deep water access. Available space currently for lease includes seven buildings totaling 363,118 square feet for manufacturing, warehouse, and flex-space uses. PM Realty Group has been retained as the leasing agent. Industries that may be suitable for new light industrial, research and development (R&D), and business park/campus development as well as the reuse of existing buildings include specialty manufacturing, specialty food production, specialty beverages (wine, beer, and sprits production), artisan goods/small-scale urban manufacturing, and marine-related industries.

Oakland Global (Oakland): A public-private partnership between the City of Oakland, local developer California Capital & Investment Group, and ProLogis, an international warehouse developer is in process of redeveloping 300 acres of the former Oakland Army Base adjacent to marine terminals to create state-of-the-art distribution buildings and expansion of the rail intermodal system. This development may also attract other industrial uses that may benefit from being close to a thriving port, such as manufacturing, assembly, and R&D facilities. The project will convert underused land with obsolete infrastructure into a modern trade, cargo and bulk goods center with new logistics facilities, improved rail access and a marine bulk terminal – increasing the export volume of California's products and delivering more goods inland. In addition to city, state and private investment, the Port of Oakland, California Transportation Commission, and the federal government have contributed funding for the $500 million project.

Forestar Waterfront Site (Antioch): Negotiations are underway for the acquisition and development of this property.

WesPac Energy (Pittsburg): The proposal covers developing a facility to unload crude oil from ships and rail cars, store it in giant round tanks, then send it through pipelines to local refineries. The original plan called for imported crude oil to be delivered by ships to a marine terminal. The revised project will be able to offload an average of 242,000 barrels a day of crude oil or partially refined crude oil from both ships and rail cars.

790 Derr Street (Vallejo): Vallejo Marine Terminal partnership is planning to create an international shipment center on the former General Mills plant site. The plan is to integrate rail, truck, and ship/barge transportation for moving products like lumber, grain and steel. Entities from China, Japan, Canada and Mexico have expressed interest in using a transportation terminal to bring cargo into the U.S. and ship product from the U.S. primarily to the Asian market. Plans include rehabilitating and leasing a 44,000 square-foot warehouse. The General Mills Plant includes a group of nine primary buildings and several small ancillary structures. Of the nine major buildings in the industrial area, seven are directly related to the storage and manufacture of grain products -the mill building, the mill head facility, the grain elevator and silos, the warehouse, and three bulk houses. The site has waterfront access and is served by rail.

VII. Factors Affecting or Influencing Industrial and Maritime-Related Development

A number of trends and issues potentially impact industrial and maritime-related development in the northern waterfront. Key issues include:

Adoption of Advanced Manufacturing Processes

Manufacturing firms that are still alive today most likely have adopted "advanced manufacturing" processes and technologies in order to remain competitive. A study[17] of the advanced manufacturing sector in Contra Costa County found that, while the manufacturing sector in general was declining, advanced manufacturing firms expected to grow and expand over the next five years.

Trends such as globalization of the supply chain, mass customization, shortening of product lifecycles, low inventory, and quick response requirements makes industry more dependent on efficient goods movement infrastructure and services. Manufacturing innovations will displace many of today's traditional manufacturing processes, replacing labor-intensive manufacturing processes with automated processes. Although the increasing automation of the manufacturing sector will likely lead to the continued decline of this sector as a share of Gross Domestic Product (GDP) and employment, a strong manufacturing sector will continue to complement a strong service sector, supporting communications, engineering, medicine, and other professional services. [18]

Manufacturing Resurgence and Reshoring

A study released by the NAIOP Research Foundation [19] in early June 2013 concludes that the reshoring trend of manufacturing industries returning from offshore to the U.S. will stabilize the loss of manufacturing jobs over the next decade. Certain industries will add jobs while others shed them. "Rising wages, increasing global transportation costs and political instability abroad are all factors affecting the decision to remain [in] or return to the United States."

Between 1979 and 2009, manufacturing declined as a result of both technological displacement and the rise in production in countries where wages were lower. Off-shoring of production facilities was also hastened by technological improvements that made transportation of the produced goods very affordable. As a result, the manufacturing industry experienced a mass exodus of production outside of the U.S. to more cost effective countries, and the U.S. manufacturing industry suffered significant job losses during those years.

Since 2009, U.S. manufacturing industries have recorded rises in both total production output and employment. This trend includes both the resurgence and the "reshoring" of manufacturing jobs in the U.S. Two main reasons for the return of manufacturing jobs to the U.S. have been the continued rise in wages in countries like China, as well as the steady rise in transportation costs.

Industries most likely to grow or reshore in the U.S. in the coming decade are those which manufacture products that are less labor intensive and more capital intensive, while more labor intensive products tend to be moved offshore. These trends are expected to continue during the next decade. Boston Consulting Group projects that the "sectors most likely to return [to the U.S.] are transportation goods, electrical equipment/appliances, furniture, plastics and rubber products, machinery, fabricated metal products, and computers/electronics." [20]

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[17] Contra Costa County Workforce Development Board, *"Advancing Manufacturing in Contra Costa County"*, June 2013

[18] Institute for Defense Analysis, "Emerging Global Trends in Advanced Manufacturing", March 2012

[19] NAIOP Research Foundation, *"Stabilization of the U.S. Manufacturing Sector and Its Impact on Industrial Real Estate"*, June 2013

[20] Boston Consulting Group, "*Made in America, Again: Why Manufacturing Will Return to the U.S."*, August 2011

Table 10: Industrial Site Selection Criteria

FIGURE 29 — Corporate Survey 2012*

Site selection factors	Very Important %	Important %	Minor Consideration	Of No Importance %
Labor				
Availability of skilled labor	53.9	35.5	7.1	3.5
Availability of unskilled labor	10.0	32.9	33.6	23.6
Training programs	18.0	36.7	33.1	12.2
Labor costs	42.6	48.2	5.7	3.5
Low union profile	47.1	26.4	11.4	15.0
Right-to-work state	45.8	26.8	13.4	14.1
Transportation/ Telecommunications				
Highway accessibility	57.0	33.1	6.3	3.5
Railroad service	27.1	16.5	21.2	35.3
Accessibility to major airport	17.4	35.5	30.4	16.7
Waterway or oceanport accessibility	5.9	14.0	25.0	55.1
Availability of advanced ICT services	49.3	35.8	11.4	3.6
Finance				
Availability of long-term financing	31.9	31.2	20.6	16.3
Corporate tax rate	35.7	43.6	11.4	9.3
Tax exemptions	32.6	42.8	15.2	9.4
State and local incentives	33.1	38.0	21.1	7.7
Other				
Available buildings	41.7	36.7	14.4	7.2
Available land	18.7	40.3	22.3	18.7
Occupancy or construction costs	35.3	47.5	11.5	5.8
Expedited or "fast-track" permitting	29.2	38.0	22.6	10.2
Raw materials availability	19.3	30.4	25.9	24.4
Energy availability and costs	35.3	46.0	12.2	6.5
Environmental regulations	31.2	39.9	18.8	10.1
Proximity to major markets	32.1	40.1	18.2	9.5
Proximity to suppliers	15.8	39.1	30.8	14.3
Inbound/outbound shipping costs	26.7	37.0	18.5	17.8
Proximity to technical college/training	15.3	35.0	27.7	21.9
Quality-of-life factors				
Climate	18.6	36.4	37.9	7.1
Housing availability	15.8	54.0	23.0	7.2
Housing costs	19.4	47.5	25.9	7.2
Healthcare facilities	19.4	50.4	25.2	5.0
Ratings of public schools	21.6	41.7	29.5	7.2
Cultural opportunities	10.8	38.1	41.0	10.1
Recreational opportunities	11.0	41.9	38.2	8.8
Colleges and universities in area	17.4	44.2	33.3	5.1
Low crime rate	31.4	47.9	18.6	2.1

*All figures are percentages and are rounded to the nearest tenth of a percent.

The industries projected to require additional manufacturing space include fabricated metals, plastics, non-metallic mineral, furniture, and wood products. Industries projected to decrease their use of manufacturing space are computer and electronic products, chemical products, apparel, electrical products, and textiles.

"The reshoring trend will not be felt evenly across the United States. Companies will select strategic locations that decrease transportation costs and locate closer to consumers and skilled labor. The opportunity for real estate is for regions with expanding industries to be prepared with skilled workforces to fulfill the job demand and facilitate the development of the necessary infrastructure and buildings."

Site Selection Considerations [21]

A company's location can be a contributing factor to its success. In selecting a site various factors must be considered as depicted in Table 10. Factors that drive site location include access to key inputs, suppliers, customers, skilled labor, multimodal transportation systems, and the presence of industry clusters, (including competitors and suppliers) which vary depending on the nature of the company's products or services. In general, critical factors to consider when selecting a plant site include:

1. Access to raw materials, resources, and other key inputs;
2. Proximity to major markets;
3. Availability and cost of land/space;
4. Transportation infrastructure and logistics;
5. Availability and cost of skilled labor;
6. Financial incentives;
7. Availability and cost of utilities (water, electricity, and increasingly advanced Information Communication Technologies (ICT) infrastructure);
8. Environmental impacts (air and water pollution, noxious odors, noise, etc.) and effluent disposal;
9. Local community considerations (cost of living, school system, presence of higher education);
10. Business climate including taxes and legal restrictions.

Regions which are leading the U.S. in manufacturing prosperity share several traits in common, including a diversified manufacturing base, positive business climate, flexible incentive packages, outstanding work force development programs, and highly proactive local and state governments that support manufacturing.

[21] Area Development Magazine, *"27th Annual Survey of Corporate Executives: Changing Site Selection Priorities"*, found online at: www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2013/27th-Corporate-Executive-RE-survey-results-37376241.shtml, August 17, 2013

Loss of Industrial Lands

A report on Bay Area Goods Movement for the Metropolitan Transportation Commission [22] found that "development trends and regional growth forecasts indicate increased demand in the Bay Area for goods movement services concurrent with a reduction in affordable, close-in location options for goods movement businesses. Regional Smart Growth policies would intensify development pressures on goods movement industries. These forces are affecting the efficiency of the freight transportation system in the Bay Area and raising important economic, transportation, and land use policy issues." Industrial lands in the Northern Waterfront face similar pressures. As industrial lands get converted to other uses, the remaining sites become more valuable.

Maritime Industrial Development Factors

Primary factors for maritime commercial development with an emphasis on industrial/port uses for industrial developers to pursue maritime related industrial development projects are shown in Table 11. If a commercial development or manufacturing firm has everything in the "Pro" list, it will proceed with development of the project.

Table 11: Maritime Industrial Development Factors

	Pro	Con
Market	Positive Rent Growth Trend Low Vacancy Rates High deal velocity Limited Product Available land	Negative Rent Growth High or increasing Vacancy Rates Low deal velocity High Supply of product Limited amount of land for development
Regulatory	Federal, State, County, or City incentives "Pro-Growth" attitude	Increased regulations Multiple regulatory agencies Development fees "Not in my backyard" attitude Increased zoning restrictions
Economic	Positive economic indicators Improving foreign economies Declining construction costs Positive economic outlook	Negative economic indicators Depressed foreign markets Increasing construction costs Negative economic outlook
Physical	Deep water access - 35' depth Nearby rail service Flat topography Close to freeway/access	Limited water depth No rail access Steeply sloped topography Poor freeway access

Public Policy and Regulatory Environment

According to the California Manufacturing and Technology Association "there is growing evidence that US manufacturing firms are increasingly expanding operations. However, data shows that California's share of these expansions is slim. . . . Some maintain that factors driven by state policy are the primary reasons why businesses decide to locate or expand operations outside of California. These factors include tax rates, costs of regulations, infrastructure, and access to skilled workers at reasonable cost."[23] According to the CMTA survey, manufacturing companies do not stay in California because the state has a great business climate or ranked highly in important site location factors. The majority of companies that stayed did so because the state provided a close proximity to customers and suppliers or they were a small business that made a lifestyle choice to stay in-state. The bottom line from the respondents is that California is not a competitive place for a manufacturing company. Costs,

[22] Hausrath Economics Group, *"A Land Use Strategy to Support Regional Goods Movement in the Bay Area"*, September 2004

[23] California Manufacturing and Technology Association, *"2012 Business Expansion and New Site Survey: Why Companies Do and Don't Choose California"*, June 2012

regulations, permitting delays, a lack of incentives, high labor costs, and a high tax rate among other factors make it very difficult for manufacturers to do business in California.

While California does not rank highly on most business friendly surveys, it continues to attract manufacturing firms looking to expand, ranking 16th in the nation. Three-fourths of the state's expansions/new sites occur in a few regions, one is the Bay Area (particularly Santa Clara County and Alameda County) and Southern California led by Los Angeles, San Bernardino, San Diego, and Orange counties.

VIII. Summary of Key Trend Implications

The major trends affecting economic development along the Northern Waterfront present both challenges and opportunities. Although manufacturing employment has declined, the 50-mile stretch of shoreline from Hercules to Oakley remains an important economic asset to the region. Given its waterfront setting, with deep-water channels and marine terminals, proximity to two Class 1 railroad lines, electric generating capacity, industrial zoned land, and other assets, the county's Northern Waterfront offers a number of key advantages for industrial development.

Capturing Emerging Opportunities: The resurgence and reshoring of manufacturing, along with global economic growth and the emergence of new industries in clean technology, energy efficiency, alternative energy, and other sectors present opportunities to capture relocating or expanding industrial firms.

Critical factors for industrial site selection involve more than just the availability and cost of real estate or fast-tracking development permits. Local governments must act expeditiously to address a number of challenges including investment in key infrastructure, development of a skilled workforce with advanced manufacturing skills, review and update existing industrial zoning to encourage the development of advanced manufacturing facilities and industrial parks, fast-track building permits and project approvals, provide investment incentives, build advanced telecommunications infrastructure, and actively market the region as a location for advanced manufacturing.

Transportation costs remain an important consideration in location strategy. Businesses look at where they procure raw materials cost-effectively when determining the best location for expansion or establishment of new facilities. Their existing customer and supplier base impacts operations and also can be a prominent factor in where to locate. How these costs change based on proximity to suppliers, warehouses and customers is an important consideration. Industry is also reliant on water for all levels of production. It is used as a raw material, solvent, coolant, transport agent, and energy source.

Overcoming Challenges Due to Decades of Neglect: The Northern Waterfront is suffering from general neglect and the lack of investment in facilities and infrastructure. Most of the industrial real estate was built for 20th century industrial businesses that required large footprint buildings. Today's advanced manufacturing firms are more nimble and are focused on accessing smaller, modern spaces. In addition to this shift in demand, there is a shortage of desirable industrial space aggravated by the conversion of industrial space to commercial and residential uses creating an opportunity for preserving and modernizing industrial real estate along the northern waterfront for existing and new emerging industries.

Conclusion: The Northern Waterfront continues to offer a number of key advantages for industrial development. Investment in infrastructure improvements including a transportation system that can efficiently move goods and freight not only within the region, but domestically and even internationally, will be necessary to support new industrial development. As companies grow and expand they need to efficiently transport raw materials and finished goods within the region and to external markets. The availability and cost of skilled labor and modern facilities are also important.

IX. Northern Waterfront's Role and Function in Providing for Industrial and Maritime-Related Space and Facilities in the San Francisco Bay Area

The role of Contra Costa's Northern Waterfront has not changed much since the turn of the century. Many of the companies that located here around the early 1900s are still in operation. However, some of the older industrial areas have been in decline, are vacant or underutilized, or are being converted to other uses. Although the area is in transition, many of the assets are still here as the Northern Waterfront seeks a new role in the 21st century global economy.

Carquinez Bridge looking east along the Northern Waterfront

Current Conditions

Today the industrial areas along the Northern Waterfront include oil refineries, petro-chemical manufacturing, steel fabrication, sugar processing, recycling facilities, wastewater treatment plants, and electric power generating facilities. These existing industries represent the core from which to build a more vibrant and diversified regional economy that continues to innovate and attract new emerging industries including advanced manufacturing, clean technology, alternative energy, recycled materials processing, food processing, green building products manufacturing, electronic components, precision instruments, machinery, and transportation equipment.

Many of the traditional heavy manufacturing industries consume large quantities of bulky raw materials as inputs to the manufacturing process that are transported by water or rail. These heavy industries typically require large factories covering large land areas, need major utilities (gas, power, water), generate heavy truck traffic for supplies and/or shipments of finished products, and produce environmental impacts that are part of the overall manufacturing process.

In the Bay Area very little land exists that is zoned for heavy industrial use apportioned in large parcels with rail and water access. Various studies have documented the loss of industrial lands in other parts of the Bay Area creating an opportunity for preserving and modernizing industrial real estate along the Northern Waterfront for existing and new emerging industries.

Role of Northern Waterfront

The Northern Waterfront is uniquely positioned to support the attraction and expansion of large-scale manufacturing facilities given its waterfront access with deep-water channels and marine terminals, proximity to two Class 1 railroad lines, and large parcels of industrial zoned land. Manufacturing employment is heavily concentrated along the Northern Waterfront with existing industry clusters in several manufacturing subsectors. Major employers include Shell, Dow Chemical, USS-POSCO, C&H Sugar, Bio-Rad, Tesoro, Phillips 66, Henkel Corporation, Parker-Hannifin Corporation, Cemco Steel, Rhodia, and United Spiral Pipe. Development of the Port of San Francisco's Foreign Trade Zone #3, which was recently expanded to include Contra Costa County, can serve as a location for international businesses looking to establish or expand their presence in the U.S. market.

Target Industries

The Northern Waterfront could support several manufacturing sectors including:

Heavy Industry: typically includes oil refining, chemicals, plastics, steel production, industrial machinery, vehicles for mass transit which require very large capital investment in machinery and huge plants. Heavy industry generally involves large-scale manufacture of capital goods that are used in the production of other goods or products, or the processing of raw materials. Heavy industries typically include:

1. Chemicals
2. Plastics
3. Steel
4. Petroleum refining
5. Industrial machinery
6. Mass transit (railways, airlines, shipbuilders)

Emerging Industries: centered around new products or technologies that are designed or developed in Silicon Valley or by Bay Area research laboratories that have a competitive advantage and are considered future growth industries in the biomedical, energy, communications technology, advanced materials, water technology, and other technology sectors.

Clean Technology: which includes a diverse range of products, technologies, and market segments energy storage (fuel cells, advanced batteries), energy efficiency (lighting, building materials, HVAC), alternative transportation fuels, water purification, emissions controls, biodegradable materials, natural pesticides, waste processing, recycled materials, and green building products.

Alternative Energy: technologies that generate power from renewable resources include wind, solar, geothermal, marine/tidal, and co-generation.

Supply Chain Vendors/Suppliers: producing intermediate products or materials for use by other local industries.

Staying Competitive Through Collaboration

The opportunity is now emerging for the Northern Waterfront to regain its role as a leading manufacturing location in California. Local governments should protect and develop these lands in order to strengthen their existing industrial base. In order to promote economic development local jurisdictions should collaborate in developing a strategic action plan for the Northern Waterfront and aggressively implement and market it.

The challenge will be how best to adapt and develop the Northern Waterfront into a 21st century model for environmentally-and economically sustainable industrial development.

Appendices

Appendix 1

Reconnaissance Survey

September 4, 2013

Road Infrastructure and Operational Issues

Photos and information regarding road infrastructure and operational issues is based on Cambridge Systematics' Quick Reconnaissance Survey of the Study Area conducted on September 4, 2013.

1. Hercules – John Muir Parkway / Alfred Nobel Drive: The roadways connect an industrial park that houses business units such as the Hercules Business Center, Bio-Rad, a life sciences company, and a few other businesses to SR-4 freeway; and is in excellent condition. With the development of proposed intermodal transit center (ITC), the area is likely to see growth and strong commercial space development. On the ramp connecting John Muir Parkway to SR-4 freeway, there is low clearance due to a height restriction of 14'3" as seen in the photo below. Similarly, there is low clearance due to height restriction of 14'9" on Sycamore Avenue due to a multilevel grade separation with the railroad bridge and I-80 bridge structure, very close to the intersection of Willow Avenue and Sycamore Avenue. Although Caltrans considers a legal truck to be limited to 14 feet, these low clearance situations could result in unsafe conditions for trucks.

View along John Muir Parkway near ramps to SR-4 and I-80 – Vertical Clearance Issue

Hercules Business Center

Bio-Rad

2. Rodeo – San Pablo Avenue / Cummings Skyway: The roadways connect the businesses of Phillips 66 Rodeo Refinery, Air Liquide - Rodeo Hydrogen Plant and NuStar marine oil terminal and storage facilities to I-80. As shown in Figure XX below, the ride quality on San Pablo Avenue can be improved; currently the road surface is slightly uneven, likely due to the impact loads of the oil carrying trucks. Oil pipelines cross over San Pablo Avenue providing a vertical clearance of 16 feet. Cummings Skyway is a highly curvy and steep roadway used by industries both in Rodeo and Crockett to access SR-4, this roadway contains a long truck climbing lane. Cummings Skyway provides a vertical clearance of just 14'11" above SR-4 as seen from the photograph of the ramp below in Figure XX. The low clearance may result in unsafe conditions for trucks.

Along San Pablo Avenue near Refinery Road – Road Surface and Vertical Clearance Issues

Phillips 66 Rodeo Refinery

NuStar storage facilities

Along Cummings Skyway – Curvy and Steep and Vertical Clearance Issue

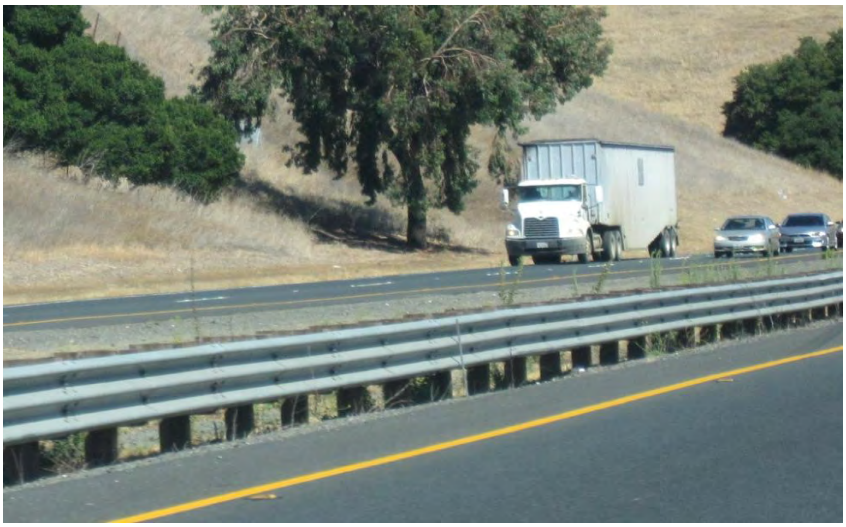
3. Crockett – Dowrelio Drive / Wanda Street (Extension) / Pomona Street or Rolph Avenue / Crockett Boulevard / Cummings Skyway: The first set of roadways connects the businesses of California and Hawaiian Sugar Company to I-80, while the second set of roadways connects it to SR-4. Both sets of roadways are in very good condition. However, Crockett Boulevard like Cummings Skyway is a highly curvy and steep roadway but has a limited (small) section of truck passing lane. The issues identified earlier with Cummings Skyway also affect the access to the businesses in Crockett.

Along Crockett Boulevard – Curvy and Steep

C&H Sugar Company in Crockett

4. SR-4 between east of Cummings Parkway and exits to City of Martinez: SR-4 in this section is a two-lane freeway in each direction, in the eastbound direction, a steep up grade is followed by a steep down grade. There are currently no additional truck passing lanes. Due to the grade, queues are sometimes developing in the traffic behind slow-moving trucks.

Along SR-4 between east of Cummings Skyway and exits to City of Martinez – Rolling Terrain and Queuing Issue



5. Martinez – Shell Avenue / Marina Vista Avenue (west of Shell Avenue) / Alhambra Avenue and Shell Avenue / Marina Vista Avenue (east of Shell Avenue): The first set of roadways connects the businesses of Shell Refinery/Chemicals and other industries, Pacific Atlantic Marine Terminal to SR-4, while the second set of roadways connects them to I-680. Both sets of roadways are in very good condition. On Shell Avenue, there is low clearance, which may result in unsafe conditions for trucks. Berrellessa Street, Ferry Street, Marina and Vista Avenue have public at-grade crossings. In particular, Ferry Street connects Martinez Regional Shoreline Park with Martinez downtown.

Along Shell Avenue – Vertical Clearance Issue and Along Marina Vista Avenue – At-Grade Crossings Issue

Shell Refinery

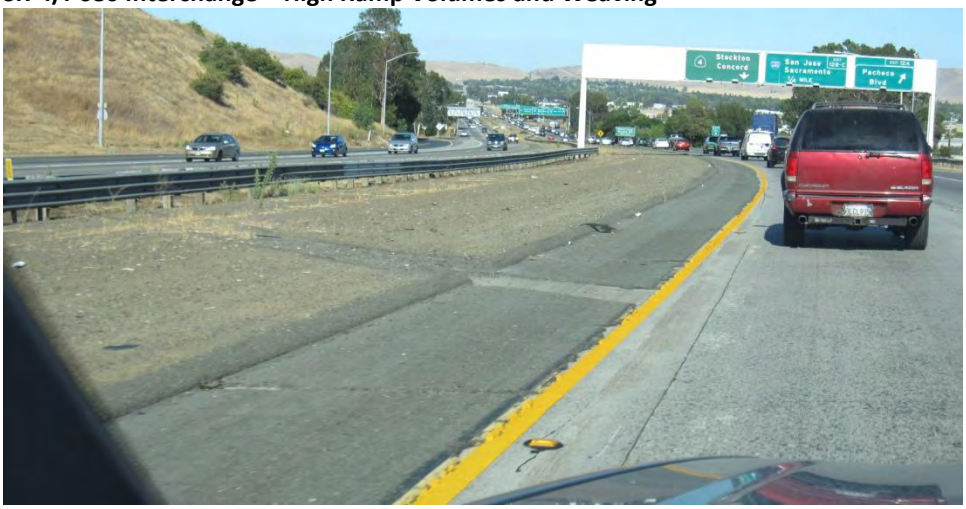
6. Near Martinez – Imhoff Drive / Solano Way / Arnold Industrial Way and Waterfront: The first set of roadways connects the business of Tesoro Amorco Marine Terminal & Golden Eagle Refinery to SR-4, while the second roadway connects it to I-680. The roadways are in fair to good condition. On Imhoff Drive, there is a public at-grade crossing with a poor road surface.

Along Imhoff Drive – Road Surface and At-Grade Crossing Issues

Tesoro Golden Eagle Refinery

7. SR-4/I-680 interchange: The weaving distances on SR-4 at the interchange with I-680 appear to be short, and the weaving traffic volumes in the eastbound direction are very high during the P.M. peak hours.

SR-4/I-680 Interchange – High Ramp Volumes and Weaving



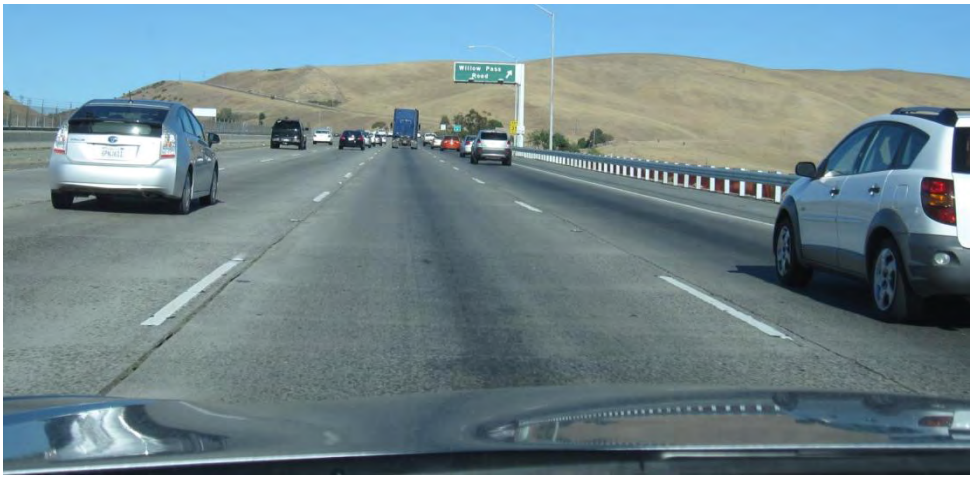
8. Near Concord – Port Chicago Highway and Arnold Industrial Way: The roadway connects Military Ocean Terminal Concord (MOTCO) to SR-4. The condition of Port Chicago Highway leading to the military facility is excellent. There is an at-grade crossing on the roadway. Arnold Industrial Way, located near the Port Chicago Highway / SR-4 interchange holds several small-scale businesses and a plenty of commercial and storage space for rental.

Along Port Chicago Highway

MOTCO

9. SR-4 between east of Port Chicago Highway and exits to City of Bay Point: SR-4 in this section is a three mixed lanes and one HOV-lane freeway in each direction, in the eastbound direction, a steep up grade is followed by a steep down grade. Due to the grade, trucks would move slowly.

Along SR-4 between east of Port Chicago Highway and exits to City of Bay Point – Rolling Terrain

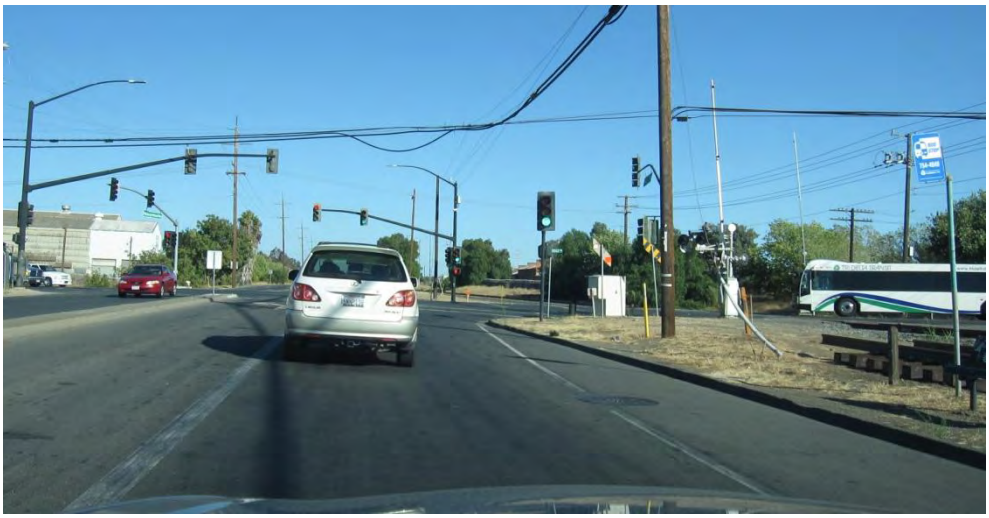


10. Pittsburg – Pittsburg-Antioch Highway / Railroad Avenue and Pittsburg-Antioch Highway / Loveridge Road: Both sets of roadways connect multiple industries including Dow Chemical Company, Koch Carbon Inc, USS Posco Industries, Air Liquide America Corp., Biozone Laboratories Inc (a pharmaceutical preparation manufacturing company), several metal processing and fabrication manufacturing (e.g., California Expanded Metals Co., CEMCO) and miscellaneous manufacturing companies to SR-4. The roadways are in fair to good condition. The traffic on SR-4 near the interchanges with Railroad Avenue and Loveridge Road is under jam condition in the eastbound direction during the P.M. peak hours. The particular intersection of Loveridge Road and Pittsburg-Antioch Highway is resulting in very long queues on Pittsburg-Antioch Highway, at this location the highway consists of a single lane in each direction.

Along SR-4 eastbound near interchange with Railroad Avenue – Traffic Jam Condition

Along Railroad Avenue – Road Surface Issue

Along Pittsburg-Antioch Highway – Loveridge Road intersection

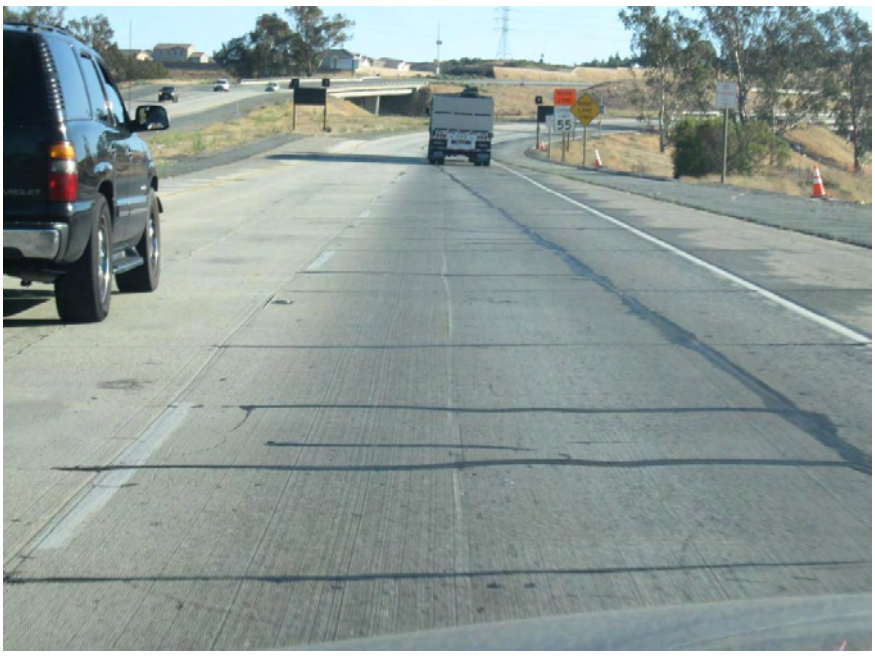


Koch Carbon Inc.

CEMCO

11. Antioch – Wilbur Ave: The roadway connects a variety of businesses including Cemex, and Georgia Pacific Gypsum to SR-160. The roadways are in fair to good condition. The ride quality on SR-160 can be improved. The particular intersection of Loveridge Road and Pittsburg-Antioch Highway is resulting in very long queues on Pittsburg-Antioch Highway, at this location, the highway consists of a single lane in each direction.

Along SR-160 – Road Surface Issue



Along Wilbur Ave – At-Grade Crossing Issue

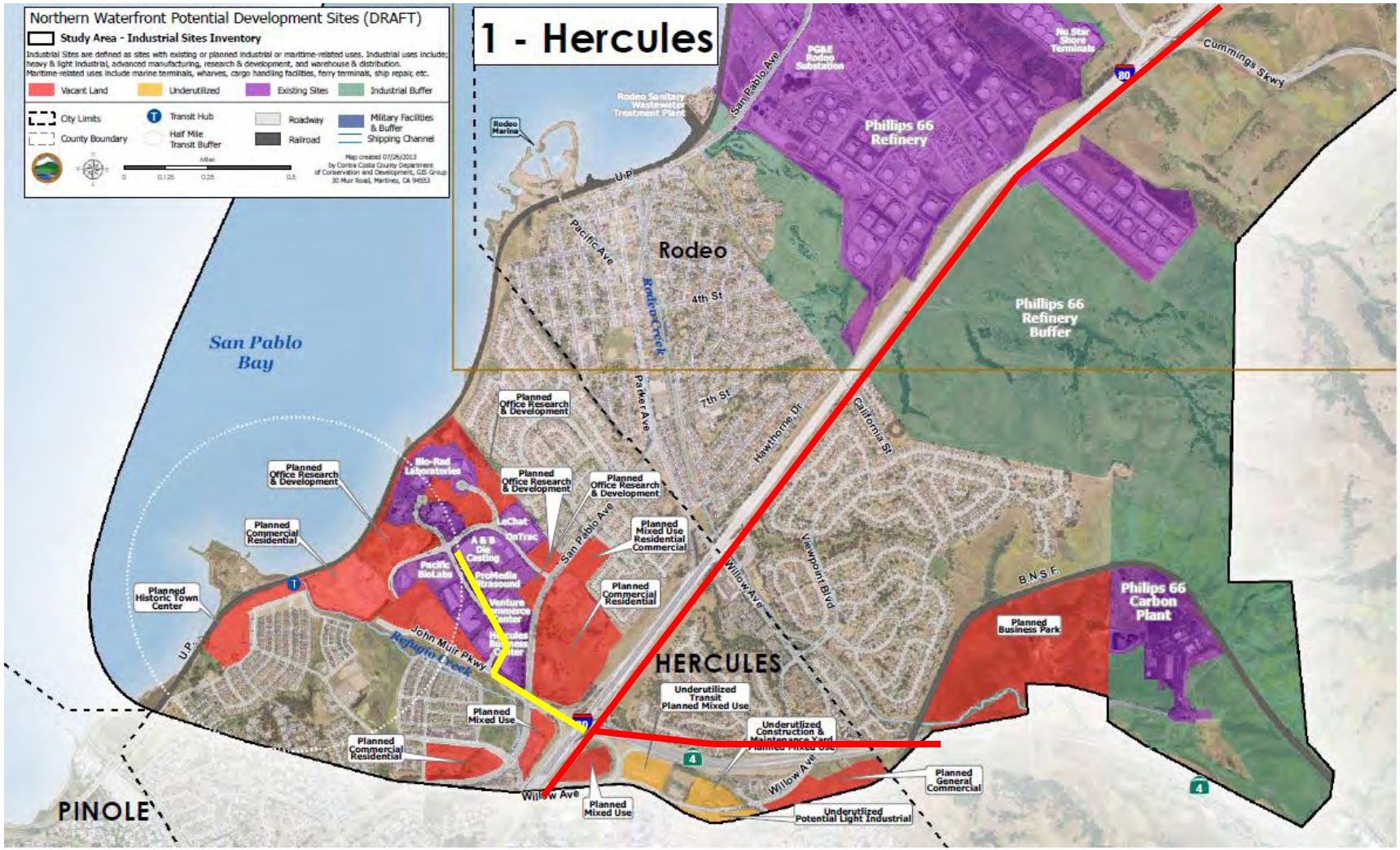
CEMEX

12. County-wide - SR-4 Widening: There are frequent disruptions in traffic in both eastbound and westbound directions due to narrow lanes and speed reductions at work zones for SR-4 widening.

Along SR-4 – Traffic Disruptions Issue due to SR-4 Widening

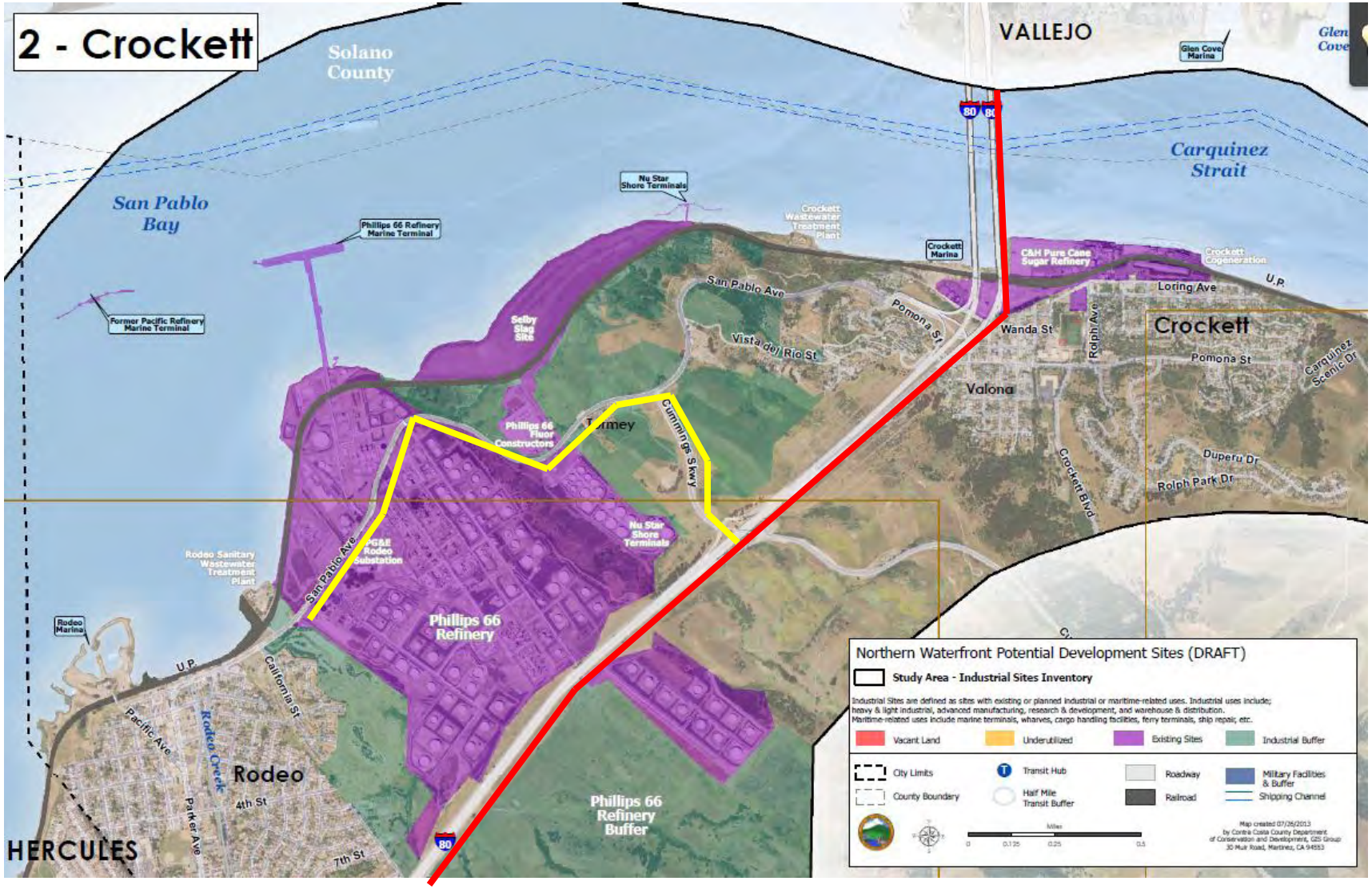
Appendix 2

Figure 5: Industries, Truck Routes and Rail Routes in and around the Cities of Hercules and Rodeo



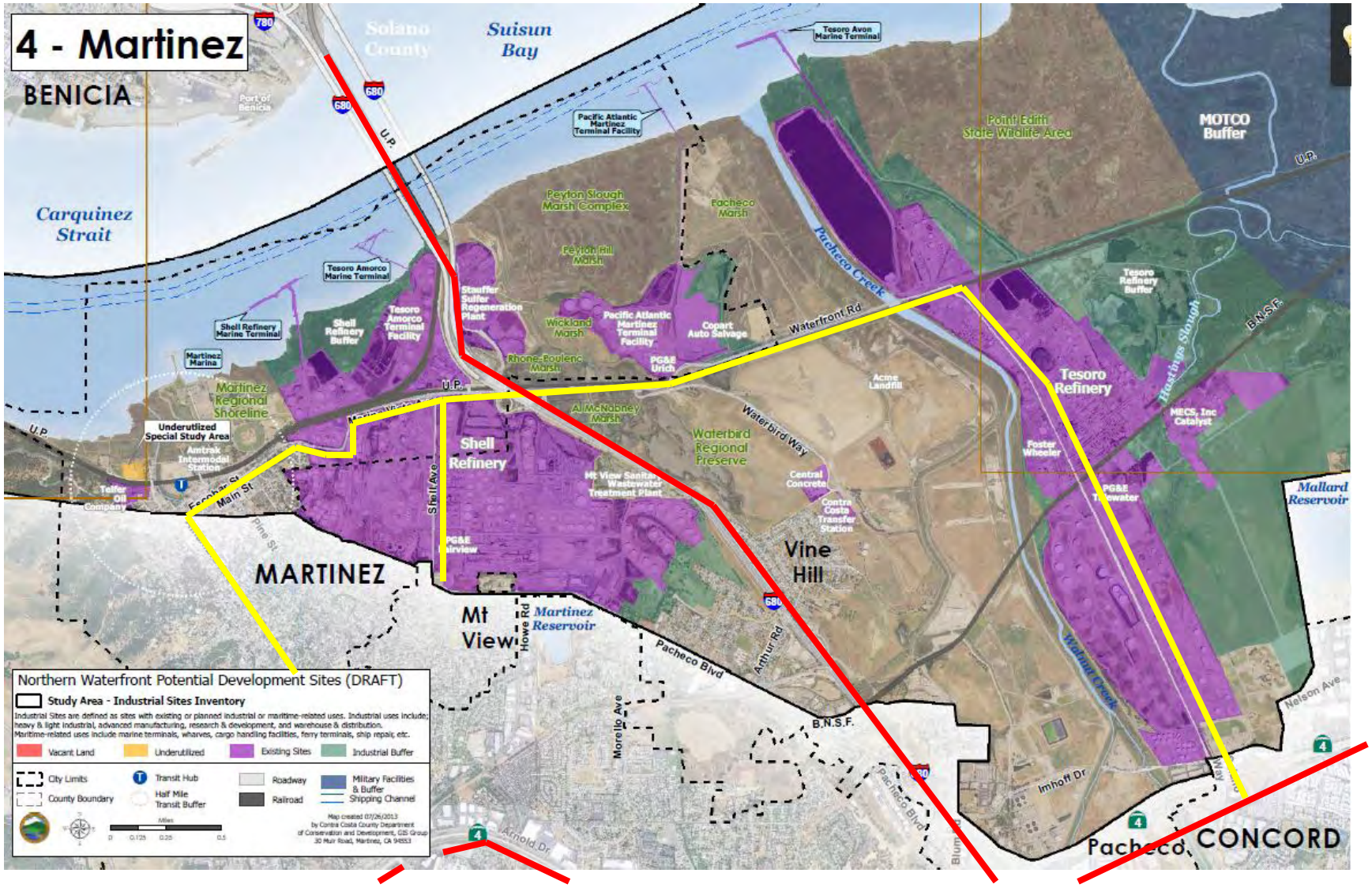
Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Figure 6: Industries, Truck Routes and Rail Routes in and around the City of Crockett



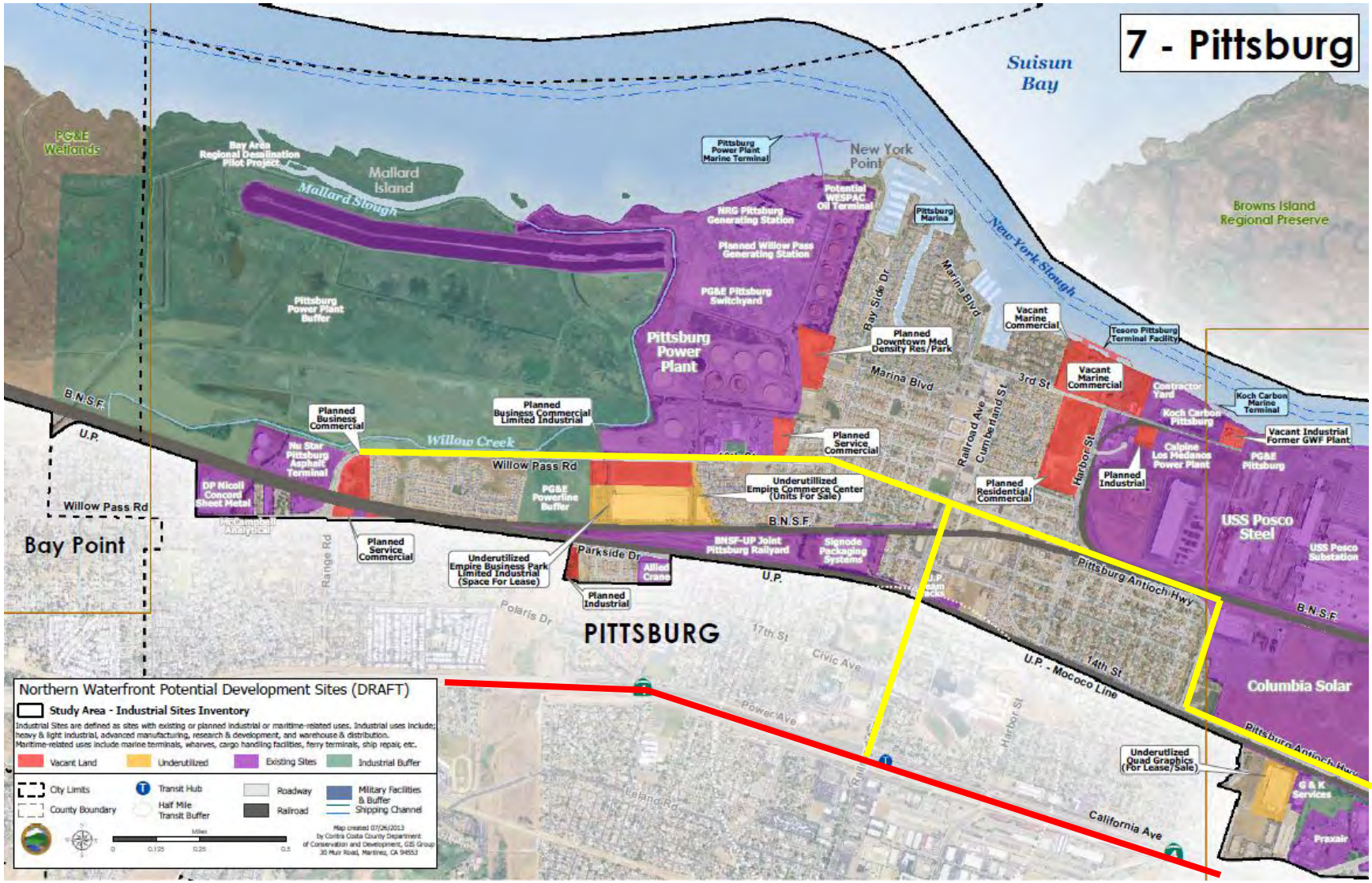
Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Figure 7: Industries, Truck Routes and Rail Routes in and around the City of Martinez



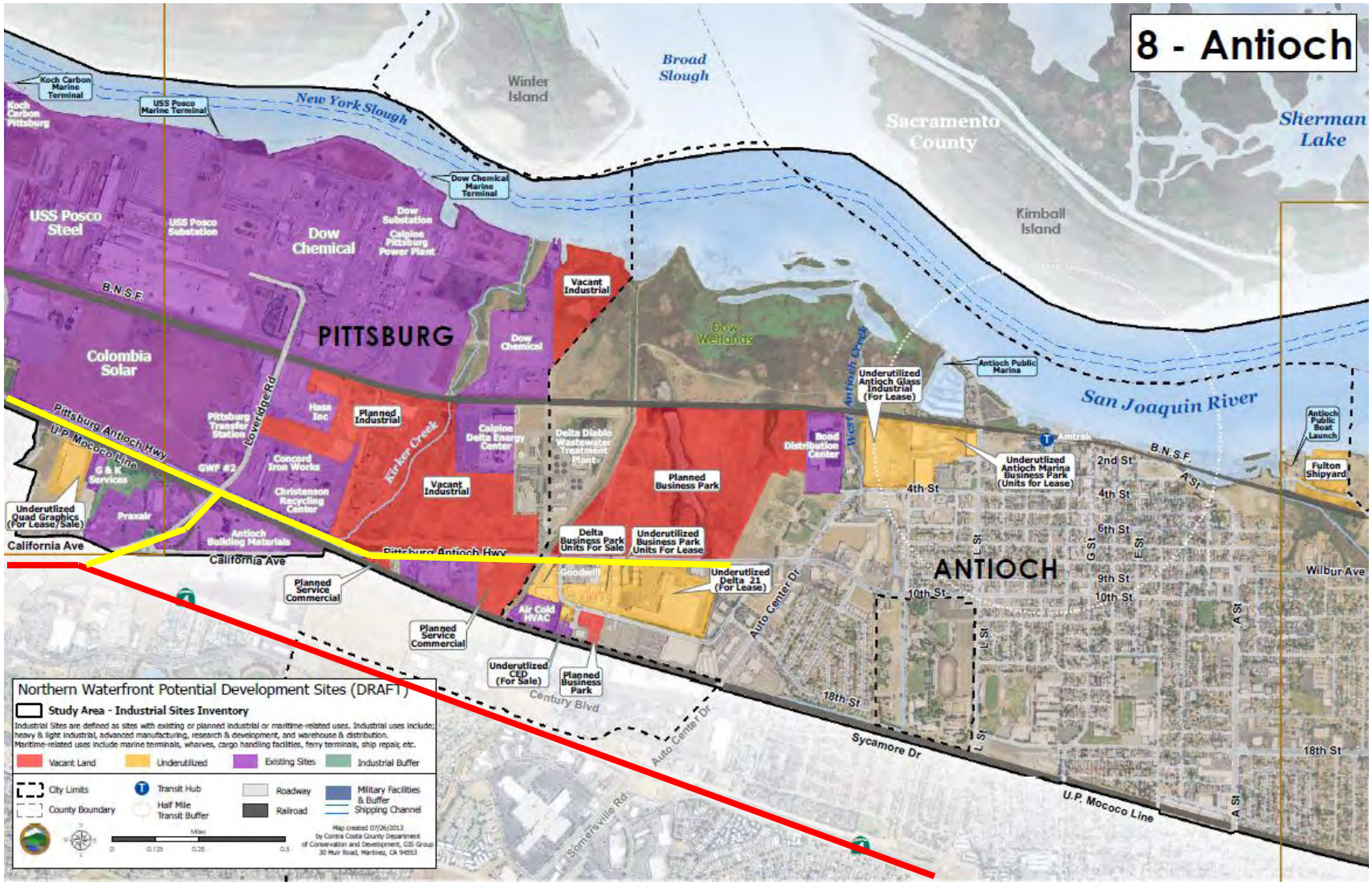
Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Figure 8: Industries, Truck Routes and Rail Routes in and around the City of Pittsburg



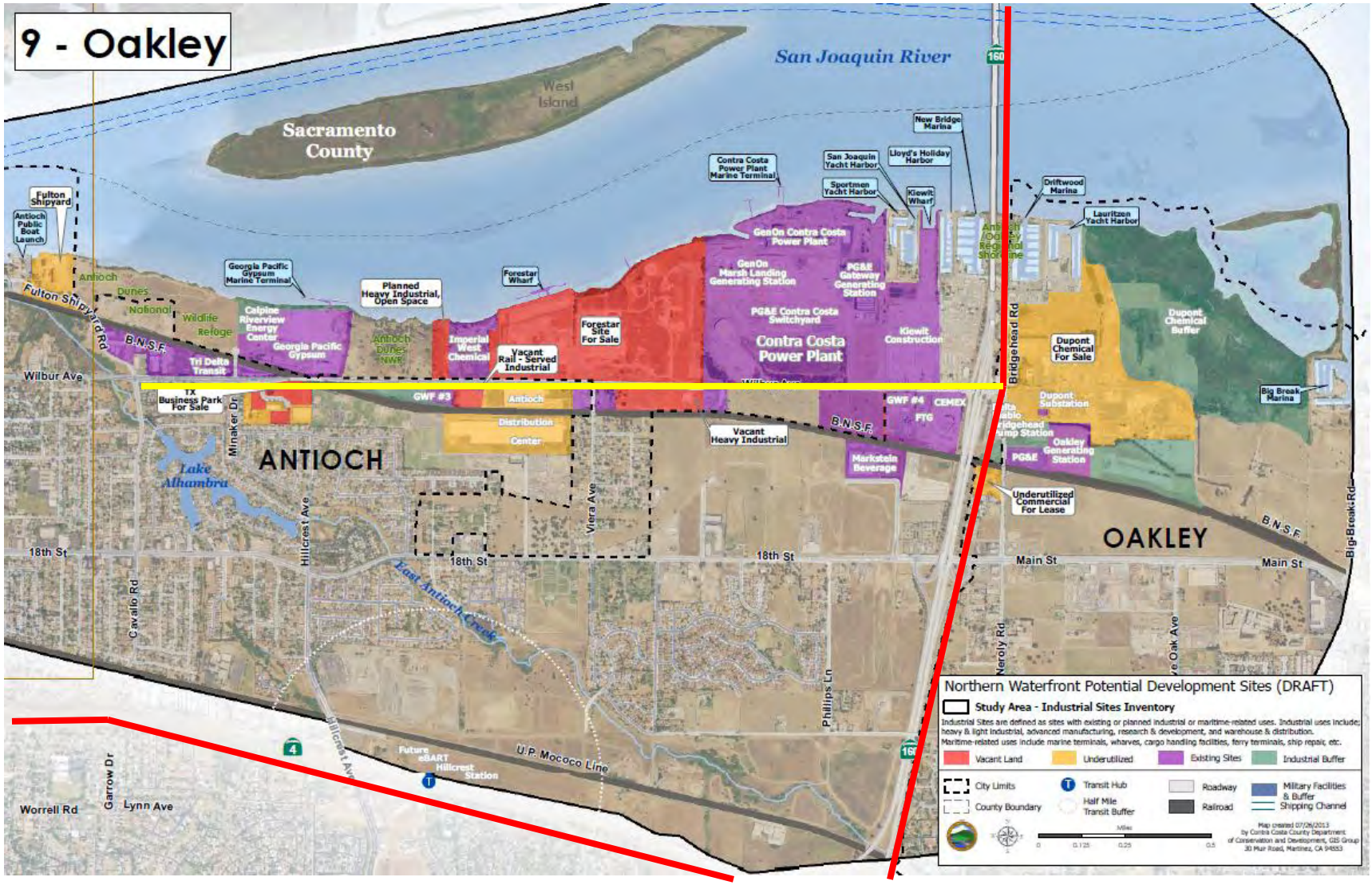
Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Figure 9: Industries, Truck Routes and Rail Routes in and around City of Antioch



Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Figure 10: Industries, Truck Routes and Rail Routes in and around the City of Oakley



Source: DRAFT Contra Costa County Northern Waterfront Development Sites Map; Cambridge Systematics' Quick Reconnaissance Survey conducted on September 4, 2013.

Appendix 3
Potential Highway Projects

Table 12: Highway Transportation Projects for Study Area

RTP ID	Project Title	Project Description	Mode	Total Escalated Cost ($ million)
21205	Improve I-680/Route 4 interchange (includes connecting northbound I-680 to westbound State Route 4, connecting eastbound State Route 4 to southbound I-680, and widening SR-4 between Morello and SR-242)	Improves the I-680/SR 4 interchange, which consists of freeway to freeway direct connectors for NB I-680 to WB SR 4 movement (Phase 1) and the WB SR 4 to SB I-680 movement (Phase 2), and widening SR-4 between SR-242 and Morello from 2 lanes to 3 lanes per direction (Phase 3). The 2-lane direct connectors will replace a single lane loop ramp and a single lane diagonal ramp, respectively. Will eliminate weaving between the I-680 and Pacheco Blvd. ramps by constructing two loop ramps and two direct connection flyover ramps.	Freeway to freeway interchange	$205
21214	Widen Wilbur Avenue over Burlington Northern Santa Fe Railroad from 2 lanes to 4 lanes	Widen Wilbur Avenue from 2 lanes to 4 lanes over Burlington Northern Santa Fe Railroad	Major Arterial	$16
22350	Improve I-680/Route 4 interchange Phases 4 and 5 (includes connecting southbound I-680 to eastbound State Route 4, connecting westbound State Route 4 to northbound I-680, and constructing HOV flyover ramps from westbound State Route 4 to I-680 southbound from I-680 northbound to eastbound State Route 4)	Provides additional improvements to the 3-level interchange constructed in phases 1, 2 and 3. Phase 4 will connect SB I-680 to EB SR4. Phase 5 will connect WB SR4 to NB I-680. Phase 6 will construct HOV flyover ramps from WB4 to I-680 SB and from I-680 NB to EB4.	Freeway to freeway interchange	$221
22352	Construct Direct Access Ramps along I-680 in the vicinity of Norris Canyon Road	Includes construction of an overcrossing, widening of median, construction of new HOV-only on- and of-ramps in both the northbound and southbound directions and modifications to the local street network.	Local interchange	$102
22390	Reconstruct State Route 4/Willow Pass Road ramps in Concord	Reconstruct the SR 4/Willow Pass Road ramps in Concord to facilitate smart growth development projects on the Concord Naval Weapons Station.	Local interchange	$35
22400	Conduct environmental and design studies to create a new alignment for SR239 and develop corridor improvements from Brentwood to Tracy - project development	Environmental and design study to construct a new State Route connecting SR4 to Interstates 205/580 near Tracy. Route alignment is not yet defined.	Expressway	$30
22602	Construct auxiliary lane on I-680 in both directions between Sycamore Valley Road in Danville to Crow Canyon Road in San Ramon	Provide an auxiliary lane on I-680 in both directions between Sycamore Valley Road in Danville and Crow Canyon Road in San Ramon.	Freeway	$34

RTP ID	Project Title	Project Description	Mode	Total Escalated Cost ($ million)
22604	Improve safety and operations of Vasco Road from Brentwood to Alameda County line - Phase 2 (includes potential realignment)	Construct safety and operational improvements (including potential realignment) on Vasco Road from Brentwood to Alameda County line	Major Arterial	$61
22607	Widen and extend major streets, and improve interchanges in east Contra Costa County	Funds future widening projects to major streets and interchange improvements such as Armstrong Rd extension, Arnold Road Extension, Pittsburg-Antioch Highway widening, Sellers Avenue Widening.	Major Arterial	$45
22610	Widen and extend major streets, and improve interchanges in west Contra Costa County	Funds future widening projects to major streets and interchange improvements such as Truck Climbing lane on Cumming Skyway, San Pablo Ave Safety Improvements, Arlington Ave Traffic Calming, Pittsburg Ave extension.	Major Arterial	$45
94046	Improve interchanges and parallel arterials to Route 4	Improves interchanges and parallel arterials to Route 4 through a variety of geometric or other improvements.	Major Arterial	$32
94048	Improve interchanges and parallel arterials to I-80	Provides ability to implement low cost arterial improvements that do not affect regional air quality conformity analysis. Specific projects to be determined.	Major Arterial	$23
98115	Widen Ygnacio Valley/Kirker Pass Roads from 4 lanes to 6 lanes from Michigan Boulevard to Cowell Road	Widen arterial from 4 to 6 lanes.	Major Arterial	$15
98126	Improve interchanges and arterials parallel to I-680 and Route 24	Includes improvements to ramp merges, diverges, or storage, improving ramp and overcrossing channelization, traffic operational improvements and arterial calming. Projects are to be determined based upon more detailed analysis.	Major Arterial	$32
98133	Widen Pacheco Boulevard from 2 lanes to 4 lanes between Blum Road to Arthur Road	Widen Pacheco Blvd. from 2 to 4 lanes from Blum Road to Arthur Road. This project upgrades this 2-lane rural highway segment to a 4-lane arterial.	Major Arterial	$58
98198	Improve safety and operations on Vasco Road in Contra Costa and Alameda counties	Includes safety improvements to Vasco Road in Contra Costa County.	Major Arterial	$45
98222	Construct freeway-to-freeway direct connectors between Route 4 Bypass and Route 160	Provides freeway-to-freeway direct connectors from westbound Route 4 Bypass to northbound Route 160, and from southbound Route 160 to eastbound Route 4 Bypass.	Freeway	$53
98999	Widen Route 4 from Somersville Road to Route 160 including improvements to interchanges	Widens Route 4 from 4 to 8 lanes (3 mixed flow lanes + HOV in each direction) including auxiliary lanes and a wide median for mass transit from Somersville Road to Hillcrest Avenue and from 4 lanes to 6 lanes (3 mixed flow in each direction) from Hillcrest to SR160.	Freeway	$442

RTP ID	Project Title	Project Description	Mode	Total Escalated Cost ($ million)
230202	Widen Route 4 Bypass from 2 to 4 Lanes from Laurel Road to Sand Creek Road	Convert a 2-lane expressway to a 4-lane freeway from Laurel Road to Sand Creek Road.	Freeway	$20
230203	Construct Route 4 Bypass interchange at Sand Creek Road	Convert 2-lane expressway to a 4-lane freeway and construct an interchange at Sand Creek Road. With respect to the interchange, State Route 4 Bypass will cross over Sand Creek Road with loop for westbound Sand Creek Road to eastbound State Route 4 Bypass and diamond ramps on east side and northeast quadrant.	Freeway	$35
230205	Widen Route 4 Bypass from 2 to 4 lanes from Sand Creek Road to Balfour Road	Convert 2-lane expressway to 4-lane freeway from Sand Creek Road to Balfour Road.	Freeway	$22
230206	Construct Route 4 Bypass interchange at Balfour Road (Phase 1)	State Route 4 Bypass will cross over Balfour Road with a loop for eastbound Balfour Road to westbound State Route 4 Bypass, and diamond ramps in all 4 quadrants.	Freeway	$46
230236	Widen Pittsburg-Antioch Highway from 2 lanes to 4 lanes	Widen existing 2-lane arterial roadway to 4-lane arterial with turning lanes at appropriate locations.	Major Arterial	$15
230249	Construct grade separation underpass at Lone Tree Way and Union Pacific Railroad	Construct a grade separation underpass under the Union Pacific Railroad. Underpass consists of a 6-lane crossing and includes utility relocation.	Major Arterial	$19
230274	Widen Main Street to 6 lanes from Route 160 to Big Break Road	Widen Main Street from State Route 160 to Big Break Road from 4-lanes to 6-lanes.	Major Arterial	$13
230291	Construct northbound truck climbing lane from Clearbrook Drive in Concord to crest of Kirker Pass Road, includes 12-foot dedicated truck climbing lane, bike lane and 8-foot paved shoulder	This project will add NB truck climbing lane from Clearbrook Drive in the City of Concord to a point 1,000 beyond the crest of Kirker Pass Road. The addition will include a 12-foot dedicated truck climbing lane and a Class II bike lane within an 8-foot paved shoulder.	Major Arterial	$10
230306	Improve safety on Alhambra Avenue by adding second southbound lane from Walnut Avenue to south side of State Route 4, includes signal modifications	The project adds a second southbound Alhambra Avenue lane from Walnut Avenue to the south side of Highway 4. Signal modifications are included.	Major Arterial	$3
230538	Widen Bailey Road lanes and shoulders	Widen Bailey Road to 12-ft lanes and 4-ft shoulders.	Major Arterial	$6

RTP ID	Project Title	Project Description	Mode	Total Escalated Cost ($ million)
230597	Implement I-80 Integrated Corridor Mobility Project (includes the installation/upgrade of corridor management elements along the I-80 corridor (Phase 1) and along parallel and connecting arterials (Phase 2) to allow sharing of real-time traveler information among public agencies and the public)	The project limits are along the Interstate 80 corridor from the Carquinez Bridge (Contra Costa County) to the San Francisco Bay Bridge Toll Plaza (Alameda County), including parallel and connecting arterials. The Interstate 80 Corridor Mobility Project will install new and upgrade existing corridor management elements along the Interstate 80 (I-80) corridor (Phase 1) and along parallel and connecting Arterials (Phase 2) to allow sharing of real-time traveler information among public agencies and the public.	Major Arterial	$28
230693	Local streets and roads operations and maintenance	Transportation projects including street and road maintenance.	Collector	$4,943
240355	Add an eastbound mixed-flow lane on Route 4 from the lane drop 1,500 feet west of Port Chicago Highway to east of Willow Pass Road (west) on-ramp	Add a mixed-flow lane on eastbound SR4 from the lane drop 1,500 feet west of Port Chicago Highway on-ramp to Willow Pass Road (West) on-ramp.	Freeway	$34
240624	Implement I-80 Integrated Corridor Mobility (ICM) Project Operations and Management - Local Portion – Maintenance	I-80 Integrated Corridor Mobility (ICM) Project Operations and Management - Local Portion - Maintenance in Contra Costa; This project will implement Adaptive Ramp Metering (ARM) and Active Traffic Management (ATM) strategies will be employed to reduction congestion and provide incident management capabilities.	Freeway	$3

Source: Metropolitan Transportation Commission's and Association of Bay Area Governments' 2013 One Bay Area Plan Projects List.

Appendix 4
Dredging Projects

There are a number of projects planned or underway to improve the waterway system in the region that will have direct benefit to businesses in the Northern Waterfront.

1. Suisun Bay Channel - Operations and Maintenance Project

"Sponsor: U.S. Army Corps of Engineers (USACE). This is 100 percent federally maintained, because no local sponsor has been identified.

Status: Suisun Bay is dredged annually to maintain a channel 300 feet wide and -35 feet deep from the Carquinez Strait at Martinez to Pittsburg. Under this project, the dredging continues further upstream to Antioch through the New York Slough Channel, which is dredged every 4 years.

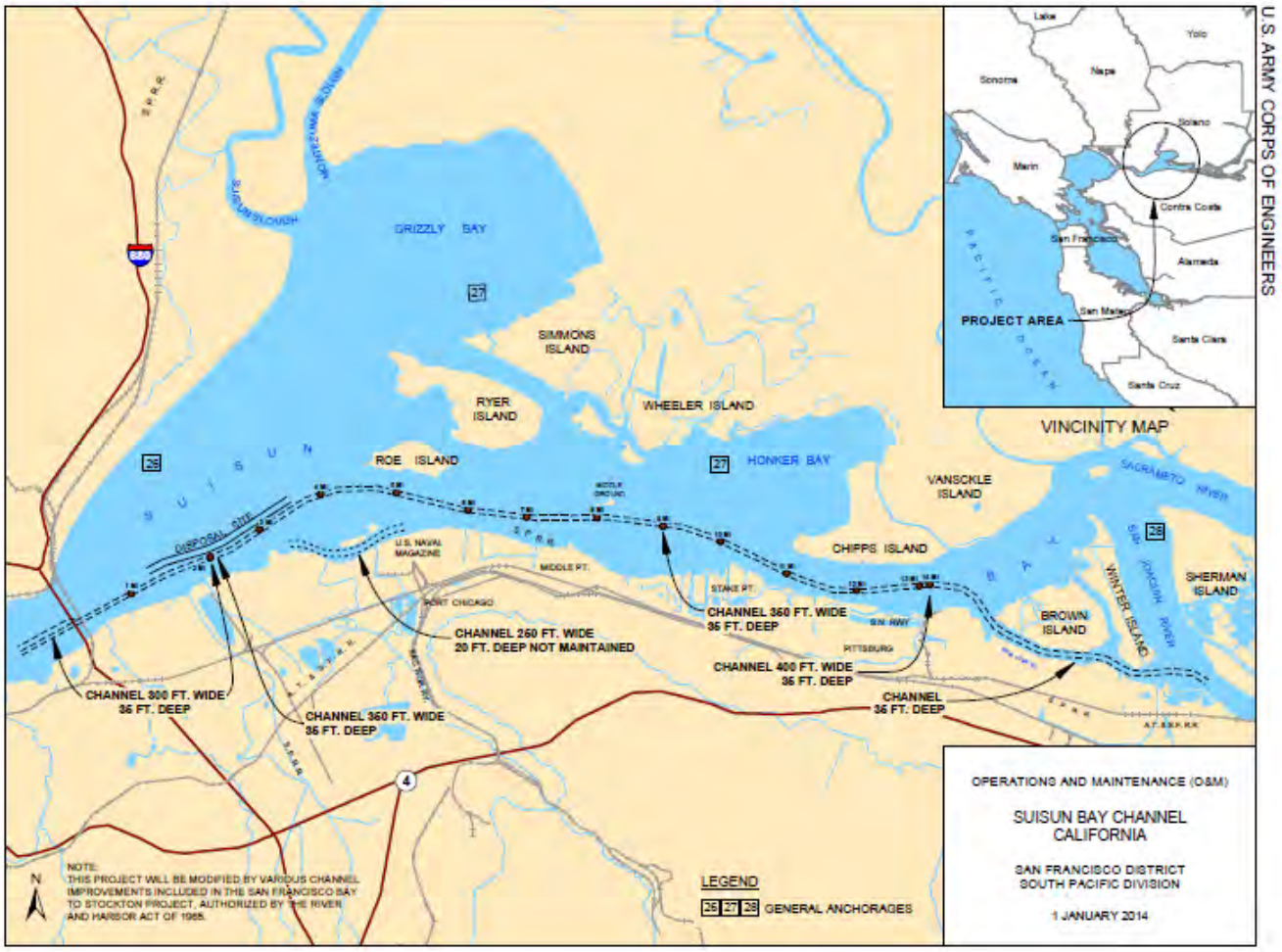
This project is part of the San Francisco Bay to Stockton Ship Channel. The project provides for annual maintenance dredging of (1) the Suisun Bay Channel (main channel), which is 300 feet wide with a depth of 35 feet Mean Lower Low Water (MLLW), from the Carquinez Strait at Martinez to Pittsburg, (2) New York Slough Channel further upstream to Antioch, a distance of almost 17 miles; (3) a channel 250 feet wide with a depth of 20 feet MLLW south of Seal Islands, from the main channel at Point Edith to the main channel again at Port Chicago, at mile 6."

Total funding

TOTAL COST:	N/A
FEDERAL COST:	N/A
NON-FEDERAL COST:	N/A
TOTAL FEDERAL COST THROUGH FY 2013:	N/A
ARRA FUNDS:	$ 0
FY 2014 BUDGET:	$2,026,000

http://www.spn.usace.army.mil/Missions/ProjectsandPrograms/ProjectsbyCategory/ProjectsforNavigableWaterways/SuisunBayChannel.aspx

Suisun Bay Channel Dredging Plan



NOTE: THIS PROJECT WILL BE MODIFIED BY VARIOUS CHANNEL IMPROVEMENTS INCLUDED IN THE SAN FRANCISCO BAY TO STOCKTON PROJECT, AUTHORIZED BY THE RIVER AND HARBOR ACT OF 1965.

SAN FRANCISCO DISTRICT SOUTH PACIFIC DIVISION

JANUARY 1, 2014

2. Current USACE Dredge Projects in San Francisco Bay along the Northern Waterfront

According to the USACE, "A number of ongoing dredging projects are underway in the Bay Area. These activities include dredging of channels that are currently used by ferry vessels. These projects are briefly discussed below.

Navigation Projects

Concord Naval Weapons Station Channel Deepening

Sponsor: TRANSCOM Military Command

Status: USACE has been tasked with the evaluation and potential construction of a deep draft navigation channel (-42 feet MLLW) to accommodate the current and future fleet of container ships. Design and construction are contingent upon modeling results and testing to determine impacts

San Francisco Bay to Stockton

Sponsor: Contra Costa County

Status: Two phases of this project have already been implemented. Implementation of an additional phase, consisting of deepening the main channel in Suisun Bay to -45 feet MLLW, and providing a maneuvering area for a petroleum terminal and a turning basin at Avon, is delayed pending analysis of environmental impact concerns to the Delta."

3. San Francisco-to-Stockton (Suisun Bay/New York Slough) Maintenance Assessment District

What follows is a letter that discusses the recommendation to reintroduce the San Francisco-to-Stockton (Suisun Bay/New York Slough) Maintenance Assessment District.

"CONTRA COSTA COUNTY
DEPARTMENT OF CONSERVATION & DEVELOPMENT
651 Pine Street, N. Wing - 4th Floor
Martinez, CA 94553
Telephone: 335-1290 Fax: 335-1300

TO: Transportation Water and Infrastructure Committee (Supervisor Mary N. Piepho, Chair; Supervisor Karen Mitchoff)
FROM: John Greitzer, Delta & Navigation staff
DATE: September 6, 2011
SUBJECT: Maintenance assessment district for dredging and other navigation projects in Contra Costa ship channels

RECOMMENDATIONS: (1) Advise staff as appropriate; and (2) consider passing this report along to the full Board of Supervisors with a recommendation to pursue restarting the San Francisco-to- Stockton (Suisun Bay/New York Slough) Maintenance Assessment District.

ATTACHMENTS:

None. DISCUSSION

County staff seeks the Committee's feedback on the concept of restarting a now-expired assessment district that generated revenue for dredging-related work in the San Francisco-to-Stockton Ship Channel. Created as a five-year maintenance assessment district in 1999 in partnership with the Port of Stockton, the district expired after 2004. The district charged an annual assessment to property owners along the shipping channel. All of the property owners were private industries except for the Concord Naval Weapons Station. The funds were specifically to finance the construction or establishment of a disposal site where dredged material from the shipping channel could be dumped.

A potential site was identified on Sherman Island. However, the site was never established due to liability concerns on the part of the state and federal governments. In the end, no disposal site was ever created, so most of the assessments -- approximately $2.3 million -- remains in the assessment district account. The Department of Conservation and Development manages the account.

Since the district expired in 2004, all of the industrial properties have turned over to new owners. The only assessed property owner still remaining is the U.S. government, owner of the Concord Naval Weapons Station (the portion of the Naval Weapons Station along the water remains in military use; it is not part of the Concord Community Reuse Project).

Given the dredging and other navigation needs in the San Francisco-to-Stockton Shipping Channel, staff seeks the Committee's concurrence in beginning an effort to restart the assessment district, with a broader scope of projects to be funded. These ultimately should be determined by the participants in the assessment district, but candidate projects could include channel deepening, dredging beyond what is budgeted by the Army Corps of Engineers, creation of the dredging disposal site, and construction of the Avon Ship Turning Basin, to name a few.

The original assessment district also funded up to $25,000 annually in administrative costs for DCD staff. Likewise, the new district should be formulated to cover the staffing costs of managing the district.

The original assessment district covered only the Suisun Bay Channel and New York Slough, an approximately 20-mile segment between the Benicia-Martinez Bridge and the Antioch shoreline. Staff suggests a new

assessment district should extend further westward to include the Pinole Shoal Channel, another key dredging area located just west of Mare Island and Rodeo.

Following are the first few steps staff will take, if the Board authorizes staff to pursue the project.

- discuss the concept with the Port of Stockton, which is the County's long-standing partner in navigation issues in the ship channel (and with whom the County has a joint powers agreement on navigation issues);
- discuss the concept with the U.S. Anny Corps of Engineers, which performs dredging and deepening of the ship channels;
- discuss the concept with other local jurisdictions as needed, depending on the expected geographical boundaries of the assessment district;
- identify and contact the industries that own property along the channel, and the Concord Naval Weapons Station, to discuss the concept and get their input; and
- determine whether there is enough interest and support to proceed.

If there appears to be enough support to create the assessment district, the County would then hire a maritime engineer to produce the legally required Engineer's Report. This document analyzes potential projects, costs, revenues and defines the boundaries of the assessment district.

A ballot election would need to be held, consistent with state law. The district would be created if it is approved by enough property owners representing a majority of the total acreage within the district boundary. As noted earlier, all property owners are industries or the U.S. government; no residential parcels are included.

Staff suggests that if the assessment district is reinstated, staffing be turned over to the Public Works Department, since navigation projects are engineering-oriented and the Public Works Department has experience working with the Army Corps of Engineers on flood control projects."