SHORT-LINE FEASIBILITY STUDY DRAFT

Prepared for:

CONTRA COSTA COUNTY DEPARTMENT OF CONSERVATION AND DEVELOPMENT

Prepared by:

R.L. BANKS & ASSOCIATES, INC.

SEPTEMBER 28, 2020

Table of Contents

Figures and Exhibits

Executive Summary

Background

As a result of the 2014 Northern Waterfront Economic Development Initiative, a Contra Costa County-led effort to create jobs along its waterfront, the Contra Costa County Department of Conservation and Development declared the need to commission a study that focused on the feasibility of a short-line railroad in the Northern Waterfront.

The study will determine the feasibility of operating a short-line railroad in the Study Area, a corridor along Wilbur Avenue in Antioch and Oakley that includes a BNSF railroad line and several parcels with potential rail and waterfront access. The study includes:

- an Assessment of Existing Conditions,
- a Market Analysis, and
- Findings and Conclusions regarding the Feasibility of Operating a Short-Line Railroad.

Assessment of Existing Conditions

The existing conditions assessment evaluates elements related to: 1) engineering feasibility, 2) environmental concerns, 3) commercial/economic development conditions, and 4) the transportation system as it relates to goods movement.

Engineering Feasibility

Five parcels in the Study Area, which previously enjoyed rail service, have the most potential to be developed into businesses that could benefit from rail access in the future. A cost estimate was developed to determine the cost to re-establish rail service between the BNSF mainline and the property line of each of these parcels.

Environmental Analysis

An Environmental Due Diligence Review showed that soil and water contamination areas in four of the five parcel are being remediated, allowing the sites to be redeveloped in the future. An Ecological Evaluation determined that many sensitive bird and flower habitats in the Study Area would need to be studied in more detail before development could occur.

Commercial/Economic Development Analysis

Interviews, first, with economic development staff from Contra Costa County, the City of Antioch, and the City of Oakley, and second, with existing businesses and private stakeholders, resulted in identifying only one new potential rail customer- Amports, Inc.

Transportation Analysis

A goods movement analysis determined that most of the businesses within the Study Area are utilizing trucks to move both their inbound and outbound shipments. There is an excellent highway system close

to the Study Area that provides trucks with efficient movement of goods thorough the Bay Area.

Two Class 1 railroads serve Contra Costa County: the Burlington Northern-Santa Fe (BNSF), whose Stockton Subdivision mainline bisects the Study Area, and the Union Pacific Railroad (UP), whose Tracy Subdivision, which connects the City of Martinez with the City of Lathrop, runs just south of the Study Area, parallel to State Route 4 (SR 4).

Ports and maritime activities still play an important goods movement role in Eastern Contra Costa County. A number of parcels in the Study Area have active maritime facilities.

Market Analysis

The market analysis evaluated the following: 1) Customer Types, 2) Land Development Opportunities, 3) Short-Line Railroad Operators, and 4) Relationships with Class I Railroads.

Customer Types

The waterfront along the Study Area, with its access to rail, highways and waterways, could potentially provide businesses the ability to handle the following commodities:

- Dry bulk, such as cement, lumber, recycled materials, coal, petroleum coke and ores,
- Break bulk, which includes individually bagged, boxed, drummed or palletized dry goods,
- Hazardous liquid bulk, such as crude oil, ethanol, liquefied natural gas,
- Non-hazardous liquid bulk, such as cooking oils, wine and juice, and
- Roll on/roll off vehicles, including automobiles, trucks, construction and farm equipment.

Land Development Opportunities

Five formerly rail-served sites were evaluated in detail in regards to their ability to provide rail access to businesses interested in shipping or receiving freight by rail. Amports, Inc. is planning to develop a maritime transload facility for new vehicles from Asia at the former Forestar Parcel. NorthPoint Development Company is planning to construct a primarily truck-served warehouse and distribution center at the Contra Costa Logistics Center in Oakley. The three remaining vacant parcels, Fulton Shipyard, Kemwater and NRG, are going through environmental cleanup and are for sale. The NRG parcel is of particular interest because it has an active heavy rail spur connected to BNSF and offers waterfront access.

Short-Line Railroads

A short-line railroad is a small or mid-sized railroad company that operates over a short distance relative to larger, national railroad networks. Of the 21 short-line railroads operating in California, five would potentially be well-suited to the unique rail transportation conditions and opportunities in the Study Area:

1) Genesse & Wyoming, Inc.,
2) Omnitrax, Inc.,
3) Watco Transportation Services,
4) Sierra Northern Railway, and

5) San Francisco Bay Railroad.

Class I Railroads

If deemed more efficient and economically advantageous, BNSF may engage a short-line railroad or rail switching contractor to provide switching services that it normally would undertake itself. However, BNSF has stated that "it would not likely support a separate, short-line railroad operation in the Study Area," since at the present time, sufficient rail business exists in close proximity to the Study Area and enough growth potential for it to provide direct rail service without engaging a short-line railroad operator to act in an intermediary capacity.

The cost of building a new rail connection from the UP mainline to the Study Area is estimated to be $34.2 million and would be difficult to justify, given that the BNSF mainline is located adjacent to the waterfront parcels with rail access readily available.

Findings and Conclusions

Several major obstacles make the feasibility of a new, independent, short-line operation unlikely, to service the Study Area, including:

- BNSF's position that it would not likely support a short-line railroad operating in the Study Area, as it would be providing direct rail shipping service to Amport, Inc. and potentially to other businesses in the Study Area that desire rail shipping service,
- The challenges to constructing an independent rail corridor that would traverse through several parcels in the Study Area or along Wilbur Avenue, and
- The very large capital investment needed to construct a new rail corridor to connect the Study Area with the UP mainline.

Recommendation

BNSF has communicated a desire to assist in the development of rail served businesses in the Study Area as part of this study. It has already been in discussions with several potential rail customers looking at moving to the Study Area. Contra Costa County, the City of Antioch and the City of Oakley should establish an on-going dialogue with the BNSF Economic Development office in San Bernardino, CA. These communications will allow all entities the ability to stay informed and coordinate on potential development opportunities that would be mutually beneficial in attracting new businesses to the Study Area.

1 Introduction

1.1 Project Purpose

As a result of the larger 2014 Northern Waterfront Economic Development Initiative, a Contra Costa County-led effort to create jobs along its waterfront, the Contra Costa County Department of Conservation and Development determined that a study that focused on the feasibility of a short-line railroad in the Northern Waterfront as one of the actions to advance the economic development of the overall waterfront.

The intent of the study is to determine the feasibility of operating a short-line railroad in the Wilbur Avenue Corridor ("Study Area"). This study consists of four parts, including:

- Part 1: Introduction;
- Part 2: Assessment of Existing Conditions and Environmental Due Diligence and Ecological Evaluation;
- Part 3: Market Analysis; and
- Part 4: Findings and Conclusions.

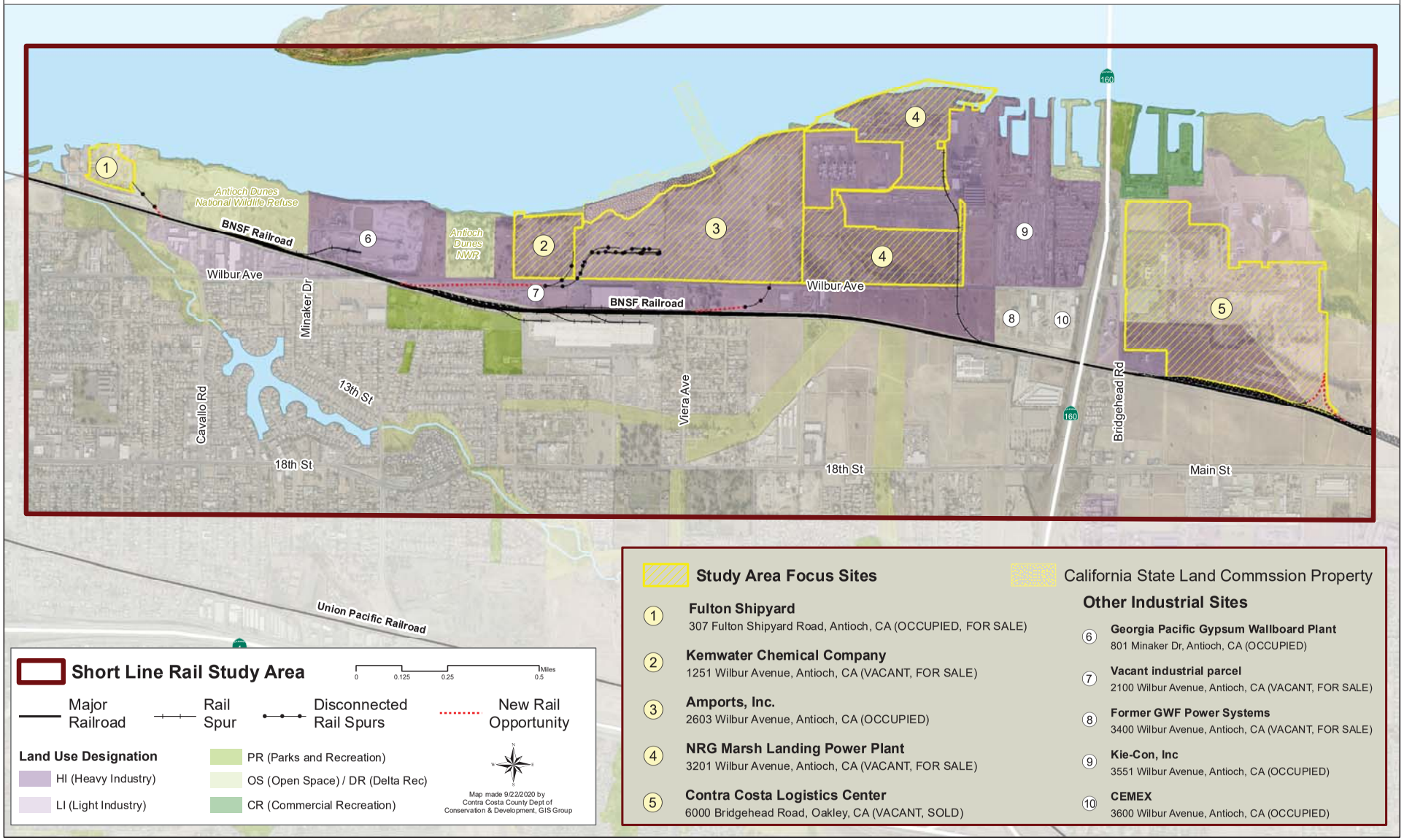
1.2 Historical Content

Eastern Contra Costa County once played a significant role in providing jobs and economic development, especially with its waterfront, deep-water channels and proximity to two major railroads. Since the early 1900's, manufacturing began to move to Eastern Contra Costa County. The availably of inexpensive land and labor as well as access to the waterfront, combined with the development of better highway and railroad access, facilitated the economic development of Eastern Contra Costa County. However, beginning in the 1990's, manufacturing began to decline in the area as a result of stricter environmental laws, forcing many companies to install expensive pollution control devices, making their plants less competitive. The cost of doing business in Eastern Contra Costa County kept increasing, forcing manufacturing plants along the waterfront to close, leaving behind vacant brownfield sites requiring soil remediation before the land could be redeveloped.

1.3 Study Area

The Study Area (Figure 1) encompasses an area approximately one-mile wide, extending between the San Joaquin River on the north and East 18th Street on the south, and three and one-half miles long, extending between the Fulton Shipyard in the City of Antioch and the Contra Costa Logistics Center, just east of State Route 160 (SR 160) in the City of Oakley. It includes the jurisdictions of Contra Costa County, the City of Antioch and the City of Oakley. The Study Area includes Wilbur Avenue, the main east/west roadway, and the Burlington Northern Santa Fe Railway (BNSF), a Class I (major) railroad, both of which traverse the entire length of the Study Area. Wilbur Avenue provides good truck access to SR 160 and State Route 4 (SR 4). The Study Area includes a mix of residential, commercial/industrial and agricultural land. Within this area are vacant former industrial parcels of land that have the potential to host industrial development or reuse. These parcels of land have access to the San Joaquin River and have existing rail connections, both active and inactive, to the BNSF rail line. Approximately one mile south of the Study Area is an inactive rail line owned by another Class I railroad, the Union Pacific Railroad (UP).

Figure 1 - Study Area Map



1.4 Existing Conditions

An overview of the existing conditions was first conducted virtually to become better acquainted with the Study Area. The overview helped determine which areas in particular needed to be included in the site visit.

A number of vacant parcels along Wilbur Avenue were identified as having the potential of being served by rail. In particular, five of these parcels were originally rail-served at one time and could easily be re-connected to the BNSF mainline (Exhibit A). In the City of Antioch, there are four vacant parcels of land north of Wilbur Avenue that have the potential of being served by rail. Also, there are two vacant parcels located south of Wilbur Avenue and adjacent to the BNSF Mainline. These two parcels do not currently have rail access, but could easily become be connected due to the close proximity to the BNSF mainline. In the City of Oakley, there is one parcel at the former DuPont site, now known as the Contra Costa Logistics Center. Each of these parcels was evaluated for their potential to be used as rail-served developments.

2 Assessment of Existing Conditions

2.1 Purpose

Part 2 presents a summary of the "Assessment of Existing Conditions" Technical Memorandum. The purpose of this section is to provide a more detailed assessment of the existing conditions in the Study Area to determine if a short-line railroad is feasible. Key components of the assessment evaluate elements related to: 1) commercial/economic development conditions, 2) engineering feasibility and cost, 3) environmental concerns and 4) the transportation system as it relates to goods movement. Each component evaluates the issues and concerns related to the potential operation of a short-line railroad and the improvements that would be required to allow rail access to the Wilbur Avenue Corridor.

A meeting was held at the City of Antioch City Hall with public works staff from Contra Costa County, the City of Antioch and the City of Oakley to get information on the existing engineering conditions/concerns within the Study Area. A site visit was also conducted by an engineering team to evaluate the following:

- Feasibility of constructing a rail corridor to connect to each of the five vacant parcels of land that once enjoyed rail service and
- Cost to reconstruct the rail infrastructure to provide these parcels with the ability to be served by rail.

The following businesses were also contacted to assess the need for rail service:

- Fulton Shipyard – 307 Fulton Shipyard Road, Antioch, CA;
- Former Kemwater Chemical Company – 1251 Wilbur Avenue, Antioch, CA;
- Amports, Inc. (under construction) – 2603 Wilbur Avenue, Antioch, CA;
- Former NRG Marsh Landing Power Plant – 3201 Wilbur Avenue, Antioch, CA;
- Kie-Con, Inc. – 3551 Wilbur Avenue, Antioch, CA;
- CEMEX – 3600 Wilbur Avenue, Antioch, CA and
- Contra Costa Logistics Center (under construction) – 6000 Bridgehead Road, Oakley, CA.

The following vacant parcels also were identified as potential locations for new rail-served customers in the Study Area:

- A vacant 4-acre industrial parcel - 2100 Wilbur Avenue, Antioch, CA and
- Former GWF Power Systems 9-acre parcel - 3400 Wilbur Avenue, Antioch, CA. This parcel is currently going through the planning approval process to develop a cannabis manufacturing and distribution warehouse development.

A summary of these assessments are described in the following sections.

2.2 Commercial/Economic Development Analysis

Two sets of interviews were conducted to identify opportunities to meet the needs of new, potential, rail-served customers and other redevelopment opportunities in the industrial portions of the Study Area. The first set consisted of an interview with economic development staff from Contra Costa County, the City of Antioch and the City of Oakley. As detailed in Figure 2, the second set of interviews consisted of interviews with existing businesses and private stakeholders. These interviews only identified one new rail shipper, Amports, Inc. It will be utilizing rail to ship new automobiles to their final destinations. This was not surprising given that most of the existing businesses in the Study Area fall into the truck-served category. In addition, many of the existing businesses located adjacent to the BNSF mainline are not utilizing the rail access available outside their doors.

Figure 2
Summary of Existing Businesses and Private Stakeholder Interviews

Stakeholder	Activity in Study Area
BNSF Railway	Rail operator in Study Area
NorthPoint Development	Developer of Contra Costa Logistics Center in Study Area
Amports, Inc.	Builder of new automotive transloading facility in Study Area
Cushman & Wakefield	Realtor handling disposition of 3201 Wilbur Ave. (ex-NRG parcel)
Summit CFS	Logistics provider considering acquiring 3201 Wilbur Ave. for marine transloading
Kie-Con, Inc.	Manufacturer of concrete products in Study Area
CEMEX	Producer of cement in Study Area

2.3 Engineering Analysis

There are five parcels within the Study Area that enjoyed rail service in the past. With the exception of the NRG Marsh Landing spur, the other four rail connections were disconnected from the BNSF mainline due to lack of use. The engineering team determined that the parcels which previously enjoyed rail service have the most potential to be developed into businesses that could benefit from rail access in the future. The engineering analysis only evaluated the cost of re-establishing rail service from the BNSF mainline to the property line of each of these parcels. The cost of re-establishing rail service to the subject parcels is expressed in Figure 3.

Figure 3
Cost to Re-Establish Rail Service to Previously Rail Served Parcels

Name	Address	Cost to Re-Establish	
Fulton Shipyard	307 Fulton Shipyard Road, Antioch, CA	$	355,000
Kemwater Chemical Company	1251 Wilbur Avenue, Antioch, CA	$	1,037,880
Amports*	2603 Wilbur Avenue, Antioch, CA	$	765,536
NRG Energy, Inc.**	3201 Wilbur Avenue, Antioch, CA	$	-
Contra Costa Logistics Center	6000 Bridgehead Road, Oakley, CA	$	220,800

* Cost to rebuild the rail connection to the east end of the Amports parcel.

** Because the spur into the NRG Parcel is still in place and serviceable, there would be no additional cost to re-establish rail service to this parcel.

2.4 Environmental Analysis

A desktop environmental constraints assessment was performed, consisting of two parts, an Environmental Due Diligence Review and an Ecological Evaluation. The Environmental Due Diligence Review consisted of reviewing environmental databases, historical aerial photograph imagery, topographic maps and fire insurance maps to provide a ranking of sites that may pose potential concerns in connection with future development. The Ecological Evaluation included a review of U.S. Fish and Wildlife Service (USFWS) and Department of Fish and Wildlife (CDFW) databases.

The results of these reviews are described below.

2.4.1 Environmental Due Diligence Review

The Study Area is a historically agricultural and industrial area with documented impacts to soil and groundwater, particularly between the San Joaquin River and the BNSF railroad tracks. The environmental desktop assessment revealed that soil and ground water contamination exists within the Study Area. Due to the potential these impacts could have on future developments, additional investigations may be required during the design phase to identify the potential for special soil and groundwater handling requirements during construction. Construction would also require oversight by State and local regulatory agencies.

2.4.2 Ecological Evaluation

Ecological wetlands and critical habitats of threatened or endangered species are present throughout the Study Area. A variety of threatened and endangered species and other special-status species also may be present throughout the Study Area. A formal jurisdiction determination/wetland delineation and focused biological surveys would be required to determine the potential impacts of the proposed project on sensitive biological resources.

The complete Assessment of Environmental Due Diligence Review and Ecological Evaluation can be found in the "Assessment of Existing Conditions" Technical Memorandum.

2.5 Transportation Analysis

Local distribution and service activity comprises an important component of the Contra Costa County goods movement economy in terms of tons moved, value of products and traffic impacts on the region's

roadways. Measured in terms of value, commodities such as construction materials, manufactured goods and consumer electronics comprise a large amount of what moves into and within the Study Area. Urban goods movement is conducted almost exclusively by trucks and includes a high volume small delivery and 5-axle trucks used in long-haul intercity and interstate movements. Changes in the 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 integrators and less emphasis on long-haul movements of manufactured products.

Compared to the rest of the Bay Area, Eastern Contra Costa County features lower land costs, lower wages and good access to highways, rail and maritime service. Having direct access to three separate transportation modes makes the vacant parcels in the Study Area much more desirable than most other locations in the area. To better understand the how each of the transportation modes improves access to the Study Area, the goods movement system in Eastern Contra Costa County was examined in more detail.

2.5.1 Highways and Local Roads

There are two State highways, State Route 4 (SR 4) and State Route 160 (SR 160), in close proximity to the Study Area (Figure 4).

Two major surface street truck routes provide access to these State highways, East 18th Street and Wilbur Avenue. The following routes are designated as Routes of Regional Significance by the Contra Costa Transportation Authority:

- SR 4, between Interstate 80 in Hercules and the San Joaquin County Line;
- SR 160, between SR 4 in Antioch and the Sacramento County Line;
- East 18th Street, between A Street and SR 160 and
- Wilbur Avenue, between A Street and SR 160[1].

The SR 4 highway corridor is a major east-west route approximately 31 miles in length, providing interregional commercial travel between the Central Valley and the Bay Area.

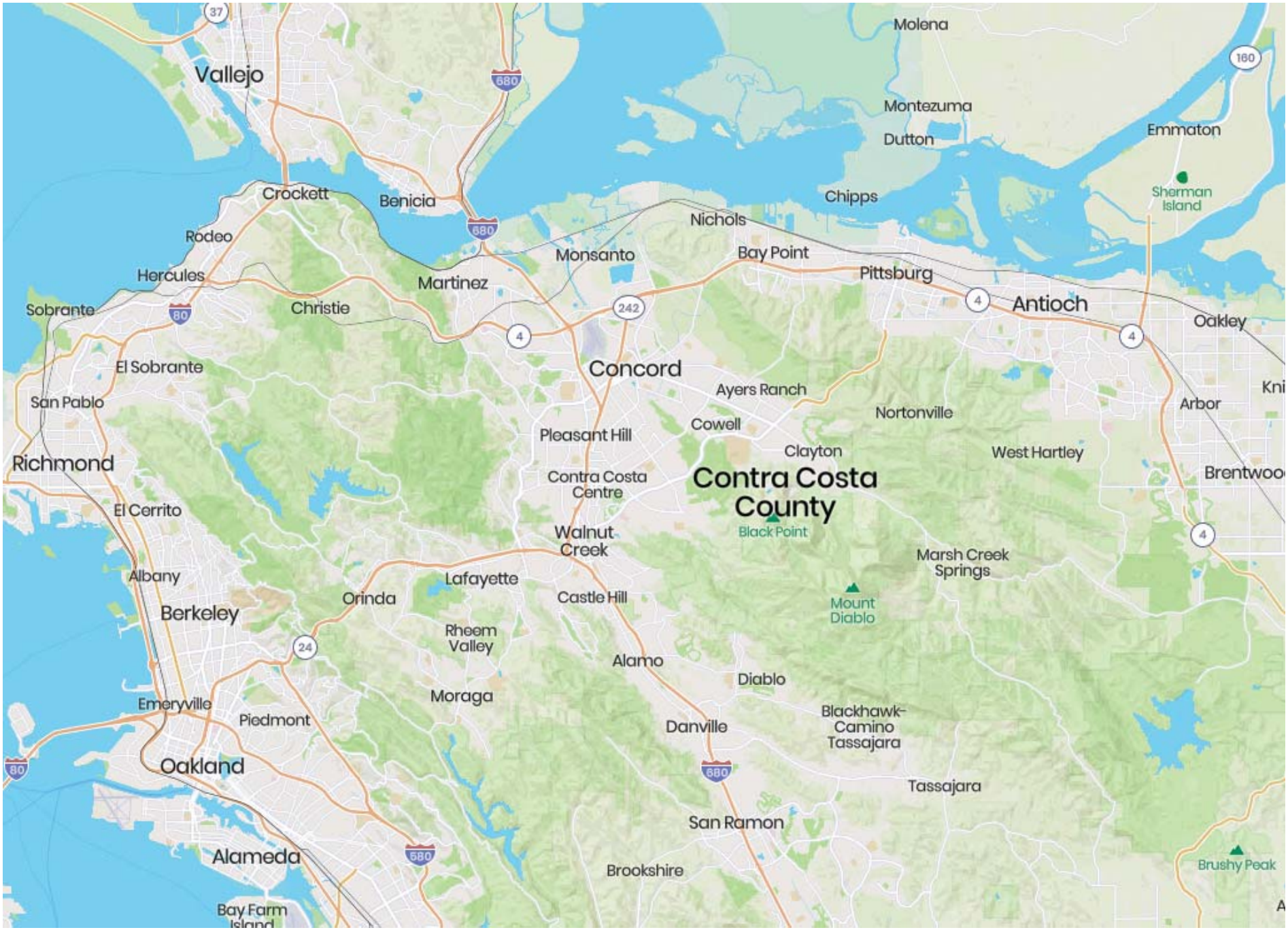
The SR 4 corridor serves local and intercity truck and heavy automobile travel in surrounding communities such as Hercules, Martinez, Concord, Pittsburg, Antioch, Oakley and Brentwood. Additionally, it provides access to Interstate 680 in Concord and Interstate 80 in Hercules, a major east-west interstate commerce route. SR 4 also connects to Interstate 5 in Stockton, a major north-south interstate commerce route. Truck and heavy vehicle traffic make up four to seven percent of the daily vehicle trips along the SR 4 Corridor[2].

SR 160 is a minor north-south route approximately 50 miles in length. It connects SR 4 in the City of Antioch with Business Interstate 80 in the City of Sacramento. Because the highway follows the Sacramento River, there are truck length restrictions on this route, eliminating most 5-axle trucks from us-

1 East County Action Plan for Routes of Regional Significance, Contra Costa Transportation Authority, September 2017, p.10.

2 SR-4 Integrated Corridor Analysis, Contra Costa Transportation Authority, July 2012, p. 5.

Figure 4
Contra Costa County Transportation System Map



ing this route. Most long-haul trucks use Interstate 680 in Concord or Interstate 5 in Stockton to make north-south movements to/from Eastern Contra Costa County. Trucks using this route constitute only 11 percent of the total average daily traffic volume.

In contrast, truck volumes along SR 4 make up a significant portion of total traffic near the Study Area. Many of the 5-axle trucks are making longer distance trips between the Bay Area and the Central Valley. For SR 4, the average daily 5-axle truck volume is 2,531 trucks or 43 percent of total truck volume. The next highest truck volumes are the 2-axle pickup and delivery van type at 2,440 per day or 42 percent of all trucks.

Additionally, there is an extensive network of arterial roadways and local streets that provide access to SR 4 and serve local travel throughout the corridor3. Within the Study Area along Wilbur Avenue, 5-axle trucks also make up a significant portion of the total truck volume at 377 trucks per day or 50% of all truck volumes. This indicates that most of the businesses within the Study Area are utilizing trucks to move both their inbound and outbound shipments[3].

2.5.2 Rail

The railroad infrastructure in the Bay Area was initially constructed to provide a more efficient transportation system to move inbound freight from seaports in San Francisco and Oakland to points inland. During the industrial development era of the late 1800's, more and more manufacturing facilities were constructed in the Bay Area, further increasing the demand for low-cost transportation of raw materials and finished goods. The rail system continued to expand with connections to Los Angeles, Portland and the rest of the national rail network. This network of railroads increased the Bay Area's ability to grow into becoming the largest manufacturing region in Northern California.

Manufacturing reached its peak during the mid-1900's as businesses began to merge and manufacturing began moving off shore. Railroads today are seeing resurgence in growth by utilizing a very different business model. Trucks have made significant progress in gaining business by providing faster connections to localized markets. Today, railroads are generally only able to compete with trucks on a move that is greater than 500 miles. Many of the current businesses in Bay Area ship and receive goods from markets that are too close for railroads to compete against in terms of timely delivery and flexibility. However, railroads still hold an advantage when moving heavy bulk commodities and cargo long distances.

The trend over the last decade has been for Class 1 railroads to shift their focus to "hooking and hauling" long trains rather than providing switching and other "retail" transport service to customers with small volumes of rail cars and intermodal marine containers[4]. The adoption of that strategy has increased freight velocity and improved the profitability of the railroads though it has reduced rail volumes compared to what they would have been. Furthermore, this operating model puts rail customers at a disadvantage when it comes to getting timely local switching services.

There are two Class 1 railroads serving Contra Costa County, the BNSF and the Union Pacific Railroad (UP). Each railroad serves the Ports of Oakland, Richmond and Stockton. The UP exclusively serves the

3 2013 Daily Truck Traffic Database, Department of Public Works, City of Antioch.
4 Contra Costa County Northern Waterfront Initiative Market Assessment, April 2013, p. 22

Ports of San Francisco, Redwood City and Benicia. In addition, BNSF serves a United Parcel Service intermodal Yard in the City of Richmond. BNSF Railway's Stockton Subdivision mainline bisects the Study Area. BNSF is the nation's second largest Class 1 railroad, connecting the Bay Area with the national railroad system, moving freight to/from the cities of Chicago, Kansas City, Dallas and Houston. The rail system provides an important link between the Bay Area and the rest of the national rail system. The BNSF also hosts ten daily Amtrak San Joaquin trains between the Bay Area and Bakersfield.

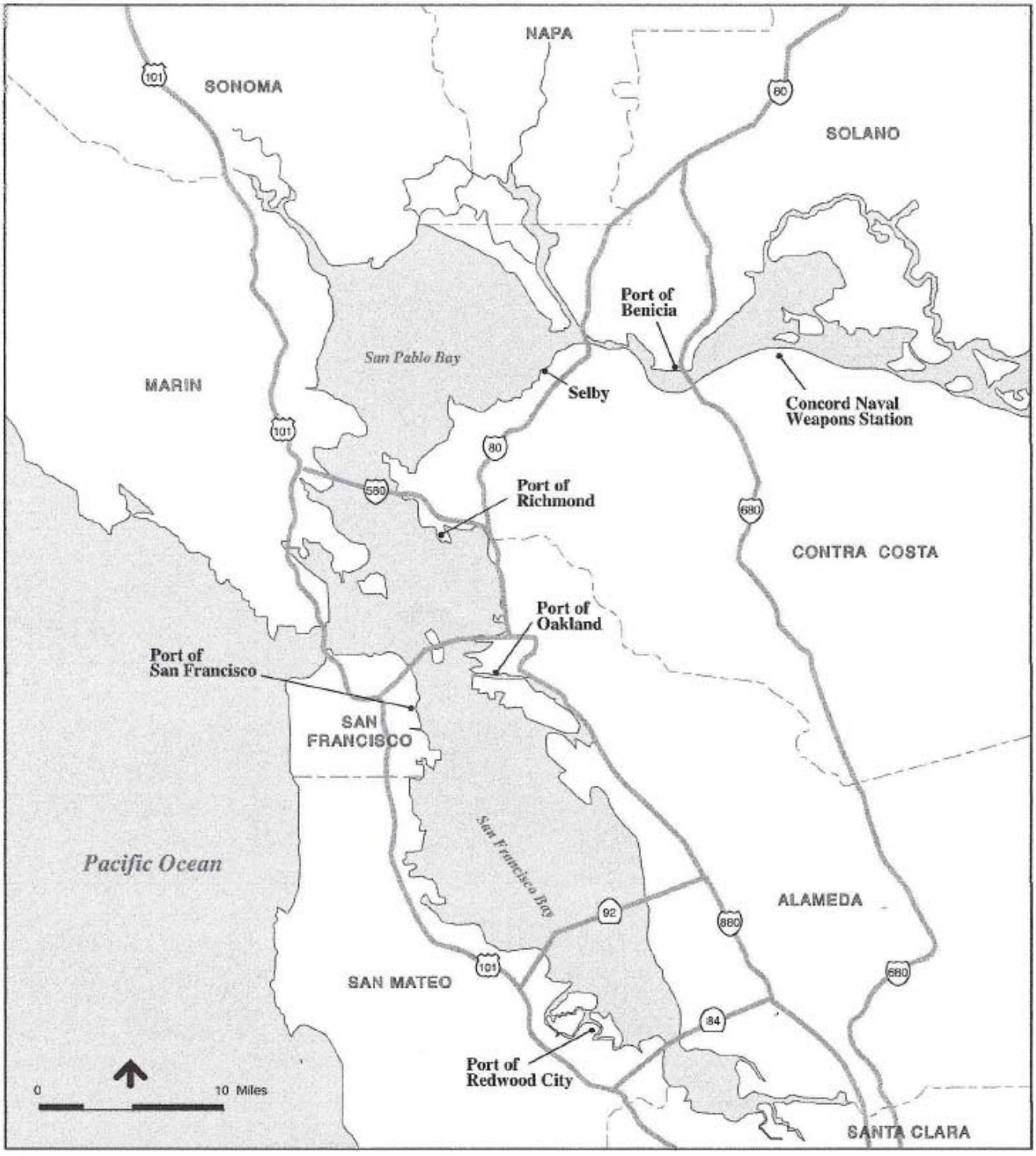
Paralleling SR 4 just south of the Study Area is the Union Pacific Railroad's (UP) Tracy Subdivision, connecting Martinez with Lathrop. Currently the line only hosts local freight movements between Martinez and Pittsburg, but could be used in the future as a freight or passenger rail connection to/from Tracy if rail demand warranted it.

2.5.3 Maritime

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 (Figure 5). The Port of Stockton is the primary Northern California port handling bulk cargo, with the remainder handled at San Francisco, Richmond and Redwood City. In 2011, 3,826 vessels arrived at regional berths. Most of the arrivals were bulk cargo vessels (50.6%). Containerized cargo, which is primarily processed through the Port of Oakland, accounts for over 50% of vessel capacity.

Ports and maritime activities still play an important goods movement role in Eastern Contra Costa County. Maritime facilities are still are being used at the Fulton Shipyard to repair vessels. The Georgia Pacific Gypsum Plant still receives import cargo ships of bulk gypsum manufactured into wallboard for building construction and the Kie-Con Wharf utilizes its waterfront facility to transport large concrete bridge structural members to parts of the Bay Area, Hawaii and Guam. The wharf at the Amports parcel will be used for a proposed automotive transload facility, and the NRG Marsh Landing wharf also has the potential of being developed into maritime transload operation because of its good access to rail and highways.

Figure 5
San Francisco Bay Area Seaport Map



2.6 Findings and Conclusions

There are five parcels north of Wilbur Avenue that were formerly connected to the BNSF tracks. The rail connections could easily be restored if any of these five businesses were interested in re-establishing a rail option. There are two vacant parcels south of Wilbur Avenue that could easily be connected to the BNSF tracks.

The soil and water contamination issues at a number of parcels have already been identified and are in the process of being cleaned up. The only outstanding issue is to evaluate the impacts any new development would have on the ecological habitats in the Study Area.

Based on interviews conducted by R.L. Banks and Associates and a field review of the Study Area, most businesses are utilizing trucks for transporting inbound and outbound shipments of goods. Because of the nature of these businesses primarily serving Northern California customers, it is unlikely the rail option would be utilized.

The Study Area features excellent highway, rail and water access. These connections provide many opportunities for businesses looking for multiple transportation modes to expand business potential. SR 4 provides excellent connectivity to the rest of the Bay Area and the Central Valley. The BNSF provides direct long haul rail service between the Bay Area and the transportation hubs in Chicago, Kansa City and Dallas. The Study Area also has a waterfront that includes a number of active wharves and inactive wharves that can easily be put back into service.

3 Market Analysis

3.1 Purpose

Part 3 presents a summary of the "Marketing Analysis" Technical Memorandum. The purpose of this section is to conduct a marketing analysis to identify opportunities for the freight rail mode to serve new customers and to determine the feasibility of a new short-line railroad service in the Study Area. The analysis evaluated the following elements: 1) Potential Customer Types, 2) Potential Land Development Opportunities, 3) Potential Short Line Operators, and 4) Relationships with Other Railroads.

3.2 Potential Customer Types in the Study Area

To illustrate the potential types of businesses that could be interested in developing property along waterfront in the Study Area, an evaluation of the various seaports in the San Francisco Bay Area was undertaken. Examples of Northern California automobile transload operations can be seen at the Port of San Francisco, the Port of Richmond and the Port of Benicia. The import and export of bulk commodities also play a major role at port facilities throughout the Bay Area region. However, these ports are constrained by the existing size of their facilities and will not be able to accommodate all of the maritime transload growth necessary to meet the Bay Area's future demand. Many of the jobs that have traditionally operated near seaports as service activities related to port operations are moving further east to take advantage of lower land and business expenses to remain competitive. The waterfront parcels in the Study Area offer new opportunities for maritime-related businesses to move to a more favorable location or take advantage of better rail transportation rates because of the location's close proximity to highway and rail access. This capability is a big advantage in attracting new businesses to the Study Area.

The waterfront along the Wilbur Avenue Corridor, with its accessibility to rail and highways, could potentially provide businesses the ability to handle the following types of commodities:

- Dry bulk, such as cement, lumber, recycled materials, coal, petroleum coke and ores;
- Break bulk, which includes individually bagged, boxed, drummed or palletized dry goods;
- Hazardous liquid bulk, such as; crude oil, ethanol, liquefied natural gas;
- Non-Hazardous liquid bulk, such as cooking oils, wine and juice and
- Roll on/roll off vehicles, including automobiles, trucks, construction and farm equipment.

A shipper survey was conducted of existing businesses in the Study Area showed that existing businesses currently being served by trucks would not change if the rail option was available to them. Most of these businesses receive raw materials and ship their finish products to Northern California markets by truck. Despite the fact that many of the existing businesses are located along the BNSF mainline, many choose to ship by truck because it is the most cost-effective mode to handle its specific transportation needs.

The one exception is the Georgia Pacific (GP) Gypsum Wallboard Plant in Antioch. GP receives bulk gypsum by barge from Mexico and manufactures gypsum wallboard panels for commercial and residential use. The finished products are shipped out by truck and rail depending on the most efficient and cost effective transport mode available. However, because GP is located between two parts of the Antioch Dunes National Wildlife Refuge, it would not be possible to construct an independent rail line to connect to this plant without utilizing a portion of the BNSF right-of-way.

There are five vacant parcels in the Study Area that at one time had rail service and could easily be reconnected to the BNSF mainline (See Exhibit A). An engineering team conducted a field review to determine the cost of reconnecting each parcel.

In terms of new developments in the Study Area, Amports, Inc. is planning to develop a maritime transload facility at the former Forestar Parcel. This operation will unload ships of new vehicles from Asia and transport them by truck and rail to their final destinations. In addition, NorthPoint Development Company is planning to construct the Contra Costa Logistics Center, a warehouse and distribution center at the former DuPont Parcel. This planned development will be mostly truck served, with a rail option available to any tenant requiring this mode option. The three remaining vacant parcels are going through environmental cleanup and are for sale. The NRG parcel, in particular, has generated some interest from potential buyers looking for a maritime transload site. Businesses that were interviewed expressed an interest in this parcel of land because of the waterfront access that would allow for bulk commodity transloading onto and off ships. Given the fact that many existing Bay Area maritime transload operations are at or near capacity, the Study Area is in an ideal location at which to attract these types of businesses.

3.3 Potential Land Development Opportunities in the Study Area

Many businesses that locate near waterfront property generally need rail service because of the heavy bulk commodities associated with waterfront transload operations. The vacant parcels evaluated for land development opportunities all have good truck access via Wilbur Avenue to SR 4 and SR 160. The BNSF mainline crosses the Study Area just below Wilbur Avenue, allowing easy rail access to potential business opportunities along the waterfront. A field investigation of the Study Area revealed the following conditions: there are five rail spurs that provide rail access to vacant parcels within the Study Area (Figure 1).

As discussed in Section 2.3 – Engineering Analysis, rail access for four of the five parcels is still in place and only requires re-establishing the rail infrastructure to the BNSF mainline. The fifth parcel, the NRG Marsh Landing Generating Station, has an existing rail spur that is still serviceable and does not need any upgrading. This makes all five parcels attractive for future business development. The sites investigated, from west to east, include:

3.3.1 Fulton Shipyard, 307 Fulton Shipyard Road, Antioch, CA

This 10-acre parcel is currently being used to store equipment and is for sale. Two rail tracks inside the property provide access to the ship yard building and an outside construction yard. This parcel is separated from the rest of the parcels in the Study Area by the Antioch Dunes National Wildlife Refuge, complicating the ability to connect this parcel to the other parcels via rail except via BNSF's right-of-way. Once this parcel is remediated, it would be a very desirable property to a business needing rail access. There is an existing 525-foot wharf available that provides easy access to/from ships.

3.3.2 Kemwater Chemical Company, 1251 Wilbur Avenue, Antioch, CA

This 18-acre parcel is currently being used to support what appears to be a metal recycling facility. This 18-acre parcel once had a rail connection with the BNSF but it has been dismantled. The street crossing is still in place but 2,009 feet of new rail and ties would have to be replaced to restore the connection to the BNSF mainline. Access is available to the San Joaquin River but a wharf would need to be constructed if a potential business is interested in developing a maritime transload facility.

3.3.3 Amports (formerly the Forestar Site), 2603 Wilbur Avenue, Antioch, CA

This 110-acre parcel was the site of the former Gaylord Container Corporation, which manufactured pulp and paper products. The Forestar Parcel is currently under a 20-year lease with Amports, Inc., a global auto logistics company that receives new automobiles by ship and arranges for transportation by truck or rail to its final destination. The site once enjoyed two rail connections. One of the rail connections is located along the western border of the property and is connected to the same dismantled rail spur that served the Kemwater Chemical Company. This parcel is already going through the environmental and State Land Commission approval process to become a maritime transload facility. Once this project receives the necessary approvals, construction is expected to begin in late 2020.

3.3.4 NRG Marsh Landing Generating Station (Contra Costa Power Plant), 3201 Wilbur Avenue, Antioch, CA

This 86-acre parcel is the site of a former coal-fired power plant. The plant was shut down in 2013, after NRG Energy, Inc. opened its new state-of-the-art natural gas power plant adjacent to the old facility. The total available land available to develop is comprised of the 39-acre former Marsh Landing Power Plant and an adjacent 47-acre undeveloped parcel. Due to the heavy rail cars that once brought petroleum coke to this power plant, there is an existing heavy rail connection to the BNSF mainline that is still serviceable. No additional rail work would be necessary at this location to begin shipping by rail again. There is a 150-foot wharf available on this parcel providing easy access to/from ships. Once the old power plant is removed, this parcel would make an ideal maritime transload facility.

3.3.5 Contra Costa Logistics Center (formerly known as the DuPont Site), 6000 Bridgehead Road, Oakley, CA

This 345-acre parcel is the location of the former DuPont Chemical Manufacturing Oakley Plant. The parcel is the largest parcel available to develop in the Study Area. A wye rail connection is still in place but will need to be extended back into the property to serve any new businesses requiring rail access. This site underwent corrective action through the Resource Conservation and Recovery Act. Remediation was completed in 2020. This parcel does not have direct access to the San Joaquin River because approximately 200-acres along the northern portion are designated as an environmentally sensitive area.

3.4 Short-Line Railroads

3.4.1 Overview of the Rail Industry

A company's ability to use rail is just one part of its ultimate decision to actually utilize rail service. The growing inclination of businesses to consider rail results from changes in the economics of transportation nationally. Four discernable trends suggest a growing role to be played by freight rail in the near future:

- Demands on existing surface transportation infrastructure have never been greater;
- Large railroads are enjoying a period of relative prosperity;
- The relatively high cost of fuel, until very recently due to Covid-19 and
- Increasingly stringent environmental regulations and resistance of property owners to new highway construction in urban settings limiting the amount of highway expansion possible and focusing attention on alternatives to private motor vehicles.

With respect to such matters, rail competes extremely well, with a reputation for having a "light environmental footprint" when compared with highways. The very fact that rail development must follow rail alignments reduces the potential for sprawl. Greater use of the rail mode has proved to be one area where environmentalists and economic developers have found significant common ground.

3.4.2 Benefits of Using Short-Line Railroads

A short-line railroad is a small or mid-sized railroad company that operates over a short distance relative to larger, national railroad networks. Short-line railroads generally exist for one of three reasons: 1) to link two industries requiring rail freight together (for example, a coal mine and a power plant; 2) to interchange revenue traffic with other, usually larger, railroads or 3) to operate a tourist-oriented, passenger train service. Some short-lines exist for all three of these reasons. In general, short-line railroads provide many benefits to shippers. Among them are:

- When a Class I carrier's service deteriorates, they offer alternative rail options if they connect to multiple Class I carriers;
- They are a means to gain competitive rates when they connect to multiple, Class I carriers;
- They provide quality and timely service;
- They make decisions at the local level and
- They provide links to local communities and companies.

3.4.3 Potential Short-Line Railroad Operators in the Study Area

In California, there are 21 short-line railroads and 7 switching and terminal railroads, of which five are publicly owned. Of the 21 short-line railroads in California, there are at least five potential operators that would be well suited to the unique conditions and opportunities associated with rail transportation in the Study Area. These operators are very familiar with railroad industry operating standards and agreements with Class I railroads, businesses and public agencies. These operators are:

1) **Genesee & Wyoming, Inc. (GWRR)**, headquartered in Darien, CT. This short-line railroad company operates 113 short-line and regional freight railroads in 42 U.S. states and four Canadian provinces, including six short-lines in California: the Central Oregon & Pacific Railroad (CORP), the California Northern Railroad (CFNR), the San Joaquin Valley Railroad (SJVR), the Ventura County Railroad (VCRR), the San Diego & Imperial Valley Railroad (SDIY) and the Arizona & California Railroad (ARZC). GWRR is experienced with waterfront transload operations; it works in close coordination with publicly-owned seaports and rail ferry services at forty seaports world-wide.

2) **OmniTRAX, Inc. (OmniTRAX)**, headquartered in Denver, CO. OmniTRAX is experienced with barge terminal and transload operations. In California, OmniTRAX operates the Stockton Terminal & Eastern Railroad (STE) in Stockton.

3) **Watco Transportation Services (Watco)**, headquartered in Pittsburg, KS. This short-line railroad company operates 43 short-line railroads in 23 states. Watco is experienced with seaport and transload operations in many of its short-line railroad operations in the U.S. In California, Watco operates the Pacific Sun Railroad (PSRR) in San Diego County.

4) **Sierra Northern Railway (SERA)**, headquartered in Woodland, CA. SERA operates a railroad between West Sacramento and Woodland, including the maritime transload facility at the Port of Sacramento. The railroad also serves rail customers between Sonora, Oakdale and Riverbank, including the 170-acre Riverbank Industrial Complex. SERA interchanges traffic with both the Union Pacific Railroad and the BNSF Railway. In addition, it is the contract railroad operator at the Department of Defense's Concord Naval Weapons Station, located a few miles west of the Study Area.

5) **San Francisco Bay Railroad (SFBR)**, headquartered in San Francisco, CA. This short-line railroad has been in operation since 2000 and operates over five miles of track in San Francisco, serving the maritime transload facility at the Port of San Francisco. The railroad provides all of the switching services supporting the automobile and bulk commodity transload shipments at the Port of San Francisco.

3.5 Class I Railroads

3.5.1 BNSF Railway

BNSF has a long history of partnering with short-line railroads. Currently, BNSF has 209 short-line railroad partners in 27 states. BNSF, as a common carrier, has an obligation to serve businesses that require rail service near its rail system. In most cases, BNSF's prefers providing direct rail service to its customers. However, if deemed more efficient and economically advantageous, BNSF may engage a short-line

railroad or rail switching contractor to provide the necessary switching services it normally would undertake itself.

BNSF has stated that "it would not likely support a separate, short-line railroad operation in the Study Area." BNSF's position, at the present time, is that there exists sufficient rail business in close proximity to the Study Area and enough growth potential for it to provide direct rail service without engaging a short-line railroad operator to act in an intermediary capacity. However, those decisions could change and will be made on a case-by-case basis as it evaluates each proposed business opportunity. The final decision will be made based on what makes the most economic sense to BNSF and the potential rail customer.

3.5.2 Union Pacific

Paralleling SR 4 south of the Study Area is the Union Pacific Railroad's (UP) Tracy Subdivision, connecting Martinez with Lathrop. Currently, the line only hosts local freight movements between Martinez and Pittsburg, CA. To access this rail line as a rail alternative, a major financial undertaking would be necessary. Building a rail connection between the UP and the Study Area would require purchasing a two-mile long, 50-foot right-of-way corridor to construct this new rail connection. The only opportunity to construct a new rail corridor would be adjacent to SR 160. It would require preparing a California Environmental Quality Act (CEQA) document and hiring an engineering firm to develop the plans and estimated cost to construct the new rail connection. In addition, the new rail corridor would have to cross the BNSF mainline near Wilbur Avenue, which would require extensive negotiations with BNSF, who would resist enabling a competitor to access a market it traverses. This crossing likely would require the construction of a rail-to-rail grade separation to avoid conflicts with BNSF freight traffic and the busy Amtrak San Joaquin passenger rail service.

Figure 6
Cost to Construct a New Rail Line Connecting the Union Pacific with the Study Area

Item	Quantity		Cost
Right-of-Way Acquisition	2 miles	$	2,000,000
Construct Track Infrastructure to NRG	2 miles	$	2,000,000
Install Mainline Switch	1	$	150,000
Construct Grade Separation	1	$	30,000,000
Total Cost		**$**	**34,150,000**

The cost of building a new rail connection to the UP to/from the Study Area (Figure 6) would be hard to justify given the BNSF mainline is located adjacent to the waterfront parcels with rail access readily available. Any business wanting to utilize the UP would be faced with a very large capital investment and only attain the ability to access the UP on a branch line offering only limited weekly service today. Meanwhile BNSF can provide much better service because it has ready access to each parcel in the Study Area.

4 Findings and Conclusions

4.1 Feasibility of Establishing a New Short-Line Railroad

Short-Line railroads have the ability of provide low cost rail service to make shipping by rail an attractive option. The five formerly rail-served parcels of industrial property along the waterfront in the

Study Area still have the potential to attract new businesses and create new jobs. However, several major obstacles make the feasibility of a new independent short-line rail operation unlikely, including:

- **Amports Shipping Operations:** Upon completion of the interviews and the field investigation, R.L. Banks and Associates determined the former Forestar Parcel is under a long-term lease by Amports to develop a marine transload facility to unload vehicles from Asia and ship them by truck and rail to their final destinations. In addition, Amports has already made arrangements for BNSF to directly provide the necessary rail service to its facility.
- **BNSF Railway Unlikely to Support a Short-Line Railroad Operation:** The biggest drawback for a short-line railroad operation is the inability to operate without a Class I railroad partner. As mentioned in Section 3.5.1, BNSF has stated that "it would not likely support a separate, short-line operation" in the Study Area. At the present time, BNSF's position is there exists sufficient rail business in close proximity to the Study Area and enough growth potential for BNSF to provide direct rail service without engaging a short-line railroad operator to act in an intermediary capacity. Because BNSF will be providing direct long haul rail service for Amports, it will have the ability to give very favorable rail rates to Amports that a short-line railroad operator would not be able to match. Similarly, BNSF can provide very efficient and cost-effective service at a lower cost to the other potential rail customers in the Study Area.
- **The Ability to Construct an Independent Rail Corridor to Connect Each of the Rail-Served-Parcels:** A field investigation led to RLBA's determination that it was not possible to install an independent rail connection to the Fulton Shipyard because it is located west of the Antioch Dunes National Wildlife Refuge and can only be accessed by the BNSF mainline. BNSF's opposition to a short-line operation in the Study Area blocks the ability of any new alignment to access BNSF's mainline.

  The Amports facility lies in the middle of the Study Area, between the Kemwater and NRG Parcels. A discussion was held with Amports regarding the possibility of constructing a rail connection across its property. Amports stated it was not willing to allow any other railroad operations on its property because it needed all the available to space to conduct its business at that site. This eliminated the possibility to construct an independent rail corridor to connect the Kemwater parcel to the NRG Parcel.

  An inquiry was made of the City of Antioch regarding the possibility of constructing a rail connection on the north side of Wilbur Avenue. The City was unable to accommodate a 50-foot wide strip of land in which to construct a railroad because it needs all of the available right-of-way to accommodate a planned expansion of Wilbur Avenue to four lanes. This eliminated the option to construct an independent rail corridor along Wilbur Avenue to connect the Kemwater Parcel with the NRG Marsh Landing Parcel.

  The engineering team also investigated the possibility of constructing a rail line to connect the NRG Parcel to the Contra Costa Logistics Center. The only way this could be accomplished would be by utilizing an existing highway undercrossing. However, this undercrossing also hosts the SR 160 highway interchange, and there is insufficient land available to accommodate a rail line and the highway facility at this location.

- **The Ability to Connect the UP to the Study Area:** Building a rail connection between the UP and the Study Area would require purchasing a two-mile long, 50-foot right-of-way corridor to construct this new rail connection. The estimated cost to construct the new rail connection is $34.2 million. This crossing likely would require the construction of a rail-to-rail grade separation to avoid conflicts with BNSF freight traffic and the busy Amtrak San Joaquin passenger rail service. The expensive initial capital costs to build this connection would be hard to justify connecting to a branch line railroad with limited weekly service. The service and cost would not be competitive to what BNSF can offer businesses that ship directly through them.

  Since BNSF desires to serve rail shippers in the Study Area directly and the cost to connect the Study Area to the UP would be very costly, a short-line railroad operation would not be cost competitive at the present time.

- **Recommendation:** BNSF has a desire to assist in the development of rail served businesses in the Study Area. It has already been in discussions with several potential rail shippers looking at moving to the Study Area. Contra Costa County, the City of Antioch and the City of Oakley should establish an on-going dialogue with the BNSF Economic Development office in San Bernardino, CA. This will allow all entities the ability to stay informed and coordinate on potential development opportunities that would be mutually beneficial in attracting new businesses to the Study Area. The rail business climate is dynamic and can change over time. What might not be possible today may become a reasonable alternative in the future. R.L. Banks and Associates can help facilitate those discussions with BNSF or other railroad companies, if necessary.

EXHIBIT A
SITE MAPS

FIGURE A-1
FULTON SHIPYARD

FIGURE A-2
KEMWATER

FIGURE A-3
AMPORTS

FIGURE A-4
NRG

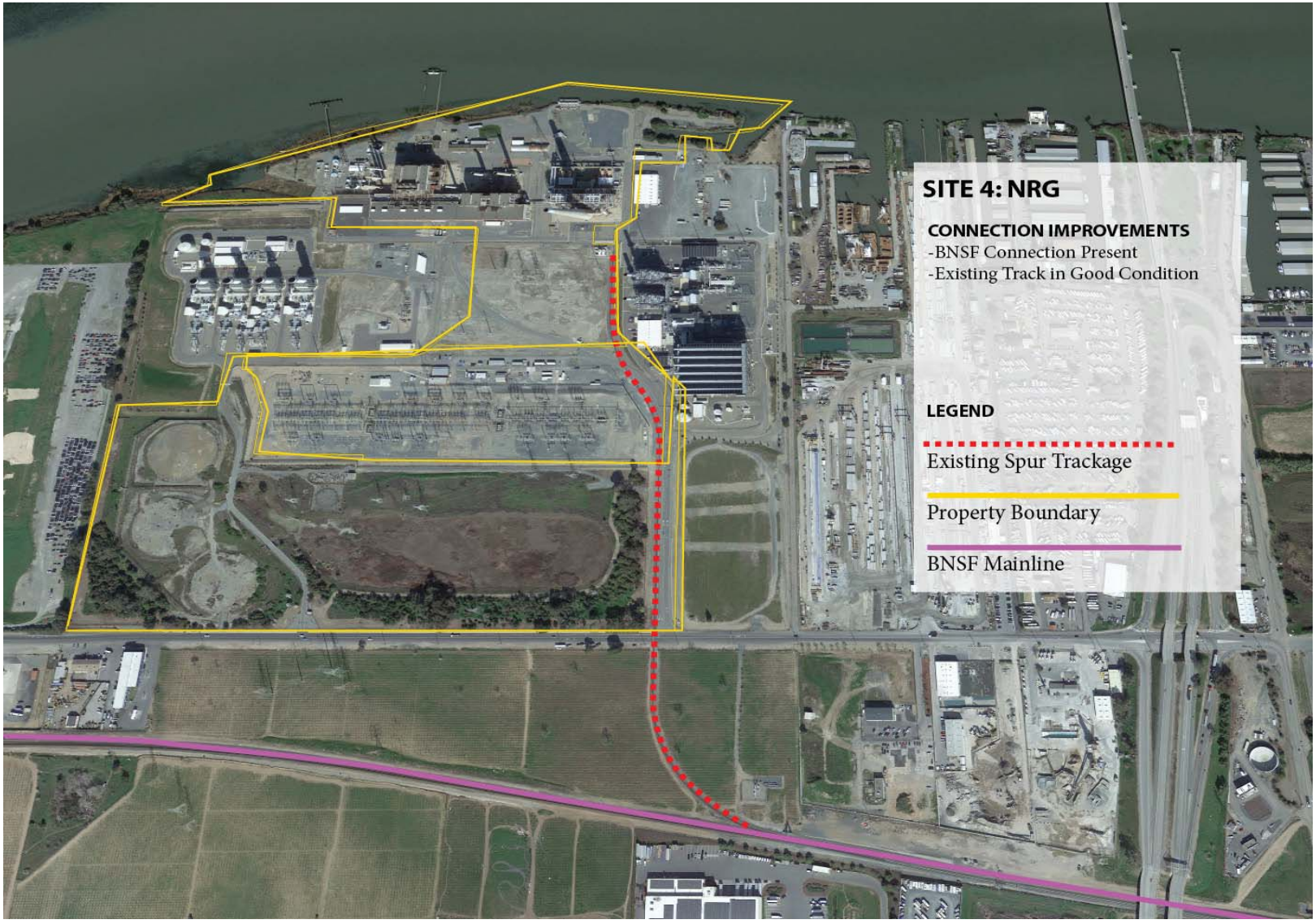


FIGURE A-5
CONTRA COSTA LOGISTICS CENTER

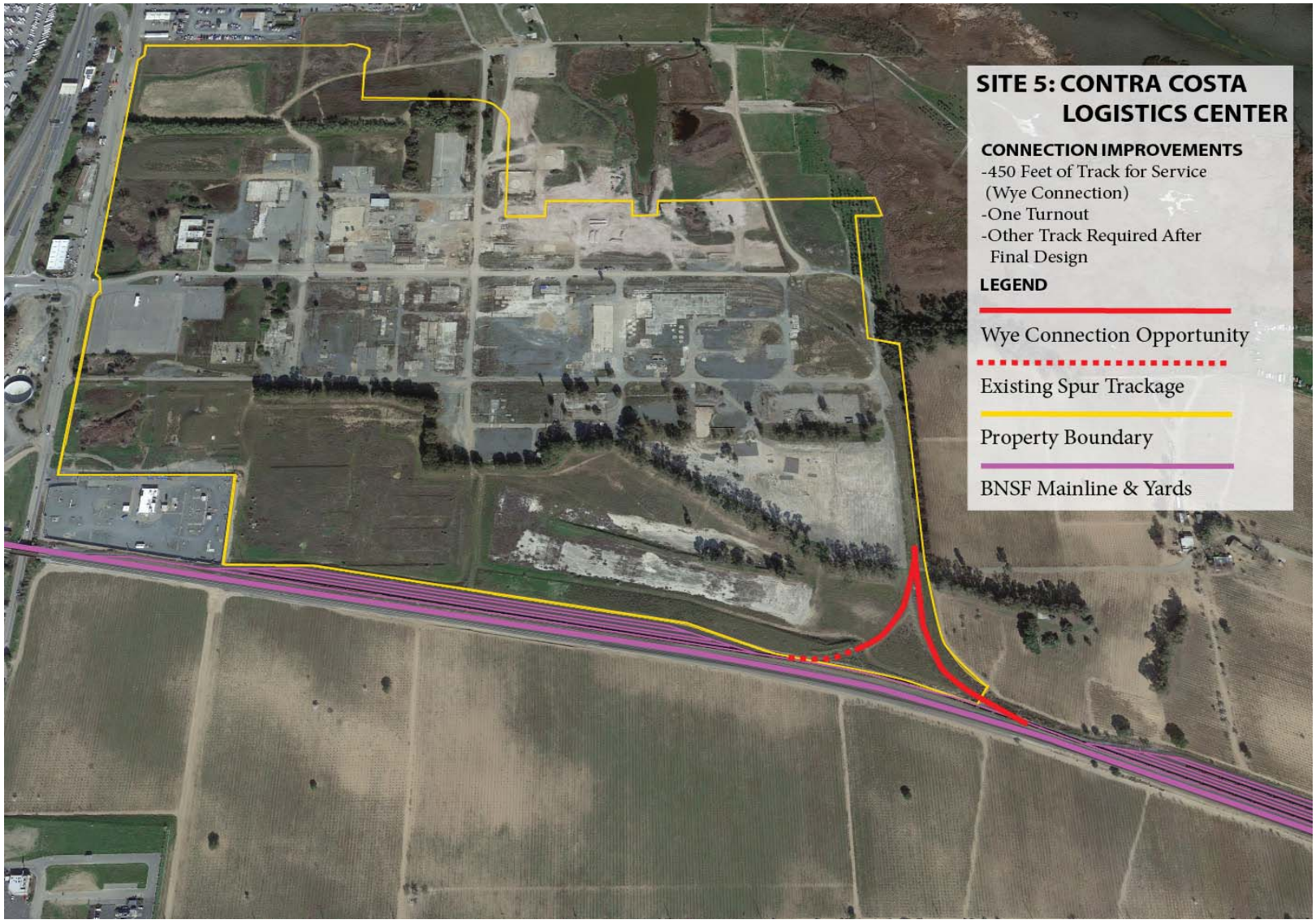


EXHIBIT B
ASSESSMENT OF EXISTING CONDITIONS

R.L. BANKS & ASSOCIATES, INC.
ECONOMICS | ENGINEERING | SERVICE PLANNING

December 12, 2019

SUBJECT: TASK #3 TECHNICAL MEMORANDUM – ASSESSMENT OF EXISTING CONDITIONS

This Memorandum presents the results of Task 3, Assessment of Existing Conditions. The purpose of this memo is to provide an overview of the existing conditions in the Study Area, so as to provide a sound foundation on which to make well-informed decisions. The assessment includes engineering, environmental, commercial and transportation concerns.

Introduction

Eastern Contra Costa County once played a significant role in providing jobs and economic development, especially with its waterfront, deep-water channels and proximity to predecessors of today's BNSF Railway (BNSF). Since the early 1900's, manufacturing began to move to Eastern Contra Costa County to take advantage of inexpensive land, access to the waterfront and cheap labor. The area was very desirable as its location enabled businesses to take full advantage of regional, national and international markets. Agricultural land was transformed into shipbuilding, paper and chemical manufacturing, as well as electrical generation. With plenty of land, a skilled workforce and close proximity to the growing markets further west in the East Bay, Eastern Contra Costa County thrived. With the development of better highways and a nearby railroad to connect to the national rail network, the area provided many advantages to businesses looking to find a more economical climate than in the rest of the Bay Area.

These advantages led to the development several large manufacturing industries; such as DuPont Chemical and Kemwater Chemical, Gaylord Paper, Fiberboard Kraft Pulp and the Fulton Shipyard. However, beginning in the 1990's, manufacturing began to decline in the area as a result of stricter environmental laws, forcing many companies to install expensive pollution control devices making their plants less competitive. The cost of doing business in Eastern Contra Costa County kept increasing, forcing manufacturing plants along the waterfront to close, leaving behind vacant brownfield sites requiring soil remediation before the land could be redeveloped. As a follow up to the January 2014, "Revitalizing Contra Costa's Northern Waterfront" Study, the Contra Costa County Department of Conservation and Development has commissioned a feasibility study of developing a short-line railroad along the Wilbur Avenue Corridor in Eastern Contra Costa County. Wilbur Avenue is a sub-region of the Northern Waterfront, a larger area within Contra Costa County identified as a focus for economic development.

Purpose

The purpose of this study is to determine if a short-line railroad is feasible along the Wilbur Avenue Corridor. The intent is to explore the possibility of improving rail access to the vacant former industrial parcels along the Wilbur Avenue Corridor, increase their attractiveness to potential businesses looking for

WASHINGTON, D.C. AREA OFFICE
2107 Wilson Boulevard, Suite 750 | Arlington, VA 22201 | Tel: 703.276.7522 | Fax: 571.223.5217 | www.rlbadc.com

rail-served parcels to relocate to and bring new jobs to Eastern Contra Costa County. The short-line railroad would be a component of the Northern Waterfront Economic Development Initiative, a Contra Costa County-led effort to create jobs.

Existing Conditions

The City of Antioch with a population of approximately 113,000 in 2019 encompasses approximately 50 square miles, including the area of its jurisdictional boundaries as well as its sphere of influence. It is the second largest city in Contra Costa County after Concord. The City is situated between the San Francisco Bay Area and the Central Valley. State Route 4 (SR 4) Corridor is a critical east/west corridor connecting the San Joaquin Valley and the Bay Area for commute, recreational and commercial traffic. It also serves a significant level of locally generated demand from the cities along the route. SR 4 bisects the City of Antioch and provides a freeway connection to the west for travel to/from Concord, Martinez and other parts of the Bay Area and connections to the east for travel to/from Stockton and other parts of the Central Valley. The City has experienced several decades of growth as a predominately residential community. With the exception of the northeastern and waterfront portions of the City, residential areas, particularly, single-family detached residential, are the most prominent land use in the City. Commercial uses are distributed throughout the City along major thoroughfares and in higher concentrations on 18th Street and A Street corridors. The area along the northeast corner of the City is dominated by active and inactive industrial lands that reflect the City's industrial roots and the potential for a resurgence of industrial users and accompanying jobs, while balancing existing open space.

The Study Area encompasses an area approximately one mile wide extending between the San Joaquin River on the north, and East 18th Street on the south and three and one-half miles long extending between the former Fulton Shipyard in the City of Antioch and the former DuPont Chemical Plant at Live Oak Avenue in the City of Oakley. It includes the jurisdictions of Contra Costa County, the City of Antioch and the City of Oakley. Within the City of Antioch are a number of sites with existing industrial uses or the potential for industrial development or reuse. Recently, large land development firms saw the value of these vacant waterfront properties and began buying them for future development. In addition, on July 26, 2018, the City of Antioch passed a city ordinance creating a cannabis overlay over most of the industrial area along Wilbur Avenue Corridor. The overlay extends between the Fulton Shipyard and State Route 160, excluding the residential areas and the Antioch Dunes National Wildlife Refuge The overlay allows cannabis companies to apply for a conditional use permit for all facets of the cannabis industry to conduct business within the overlay.

Engineering

One in-person meeting was held with public works officials from Contra Costa County and the City of Antioch to determine what engineering issues/barriers might be encountered by developing a short-line railroad along the Wilbur Avenue Corridor.

Public Works officials pointed out that the City of Antioch is planning to enlarge Wilbur Avenue to four lanes in the future to accommodate the projected increase in traffic along the corridor. This will include

all of the necessary drainage and safety requirements that go along with roadway expansion projects. Currently the city is not experiencing congestion along the Wilbur Avenue Corridor but is interested in knowing the potential trip generation that these new developments will create so it can plan the necessary infrastructure to accommodate this growth. One concern that was raised was the potential of trains blocking Wilbur Avenue, especially during peak travel periods. Officials also pointed out that any new developments in the Study Area should be required to pay for any necessary street improvements to accommodate the traffic impacts along Wilbur Avenue.

An onsite engineering physical inspection of the Study Area was conducted by R.L. Banks & Associates (RLBA) to determine the feasibility and associated costs of reactivating rail service to five, previously rail-served sites and the potential that additional rail construction could facilitate bringing rail service to other vacant parcels of land. Each available parcel along Wilbur Avenue was investigated and an engineering estimate was developed to restore rail service between the BNSF main line and the associated rail entrance points of the properties. The five sites where engineering estimates were developed on site maps with a description of each rail connection:

- **Site 1: Fulton Shipyard, 307 Fulton Shipyard Road, Antioch.** The Fulton Shipyard parcel enjoys existing rail infrastructure within the property limits of the shipyard. Inside the property, two rail tracks still provide access to the shipyard erection building and a construction yard. The rail is light weight and should be replaced to handle the heavier rail cars in service today. Outside the property line, the mainline turnout and the single track between the BNSF main line and the property line, has been removed. The existing track also crosses an entrance to a parcel of property which is not rail-served. Installation of an at-grade, motor vehicle crossing would be necessary to achieve ingress and egress to the adjacent property. Passive crossing protection with grade crossing signs (cross bucks) at facing street quadrants would be sufficient. The cost to remove and dispose of the existing track which is not suitable for reuse, net of salvage value, was reflected in the cost estimate. The cost to implement the improvements above is $178,808. The estimate includes track construction cost between the BNSF right-of-way line and the entrance to the shipyard property. Note that the BNSF would have to relocate a signal case, install a mainline turnout and construct track to its northern right-of-way line at an estimated cost of $176,000, bringing the total project cost to $354,808.

- **Site 2: Kemwater Chemical Company, 1251 Wilbur Avenue, Antioch.** The Kemwater parcel was previously rail served with a track over 2,000 feet in length from the BNSF mainline. The majority of the track has been removed up to a point just south of Wilbur Avenue where the track apparently split to serve two separate parcels. The reactivation of Site 2 from the BNSF right-of-way line to the southerly property line will require construction of 2,009 feet of new track, installation of 128 feet of concrete grade crossing and installation of new active grade crossing protection. The estimated cost of the aforementioned items would be $1,037,880. Included in the estimate is funding of new grade crossing protection across Wilbur Avenue in the event the existing equipment cannot be reused or upgraded. Also, contingencies allow for the removal of track considering its disposal cost and salvage value as the existing track is not suitable for reuse. The BNSF will have to restore a section of roadbed, install a mainline turnout and construct track to its northerly right-of-way line at an estimated cost of $225,000, yielding a total project cost of $1,262,880.

- **Site 3: Amports (formally Forestar), 2603 Wilbur Avenue, Antioch.** This parcel was the location of a large corrugated paper manufacturing plant owned by the Gaylord Container Corporation. It had two rail connections, one at southwest corner (3A) and one at the southeast corner (3B) of the property. Access to the southwest corner of the property was along the same rail spur that connected to the Kemwater parcel. The engineering team conducted inspections of both rail connections. However, during an on-site interview with Amports, Inc., the team was advised that it only wished to utilize the rail connection at the southeast corner of its property and did not wish to reactivate the western rail connection. Therefore, an engineering estimate to restore the Amports rail connection to the BNSF mainline was only provided for the southeast connection (3B). There is evidence of two connections at this site and RLBA is in agreement with lessor that the southeast connection provides the best alignment geometry for the type of rail cars that will be operating into this parcel. The southeast rail connection is comprised of a turnout and grade crossing. The turnout should be replaced with a standard track section and the grade crossing should be reconstructed. The track work proposed from the northerly right-of-way line of the BNSF to the property line north of Wilbur Avenue will require construction of 684 feet of track and installation of 44 feet of concrete grade crossing. The estimated cost of the aforementioned items is $615,536. Included in the estimate is funding of new grade crossing protection in the event the existing equipment cannot be reused or upgraded. Also, contingencies cover the cost of track removal, considering both disposal costs and salvage values as the existing track is not suitable for reuse. The BNSF will have to install a mainline turnout and track to its northerly right-of-way line at an estimated cost of $150,000, resulting in a total project cost of $765,536.

- **Site 4: NRG Energy, Inc., 3201 Wilbur Avenue, Antioch.** The NRG site still has an existing rail spur between the former Marsh Landing coal-fired power plant and the BNSF mainline. The rail spur features heavy rail to accommodate the prior loaded coke trains that used to supply the Marsh Landing Power Plant with fuel to generate electricity. No additional track work will be required at this location.

- **Site 5: Oakley Logistics Center (formally DuPont Chemical Company), 6000 Bridgehead Road, Oakley.** BNSF provided rail service to DuPont by use of a wye connection to facilitate switching from both the easterly and westerly directions. Because of the large amount of rail traffic that operated into and out of this facility, there is a rail storage yard just west of the wye. The cost to re-construct the wye connection to the Oakley Logistics Center property line is estimated at $210,800. The design of rail service to the parcel depends on the location of rail-dependent customers. The cost of BNSF track upgrades to the northerly right-of-way line would be approximately $10,000, resulting in a total estimated project cost of $220,800.

Environmental

A desktop environmental constraints assessment was performed, consisting of two parts, an environmental due diligence review (Part 1) and an ecological evaluation (Part 2). The Part 1 environmental due diligence review consisted of reviewing environmental databases, historical aerial

photograph imagery, topographic maps and fire insurance maps to provide a ranking of sites that may pose potential concerns in connection with future development. The Part 2 ecological evaluation included a review of U.S. Fish and Wildlife Service (USFWS) and Department of Fish and Wildlife (CDFW) databases.

The methodologies and findings for the desktop reviews are described below.

Part 1: Environmental Due Diligence Review

The environmental due diligence review consisted of a focused desktop assessment intended to identify facilities or issues with a high likelihood of environmental liabilities that could represent constraints for the proposed project. The standard environmental database records were reviewed in an attempt to identify facilities of concern. Historical aerial photographs, topographic maps, and Sanborn maps were reviewed to assess the potential for environmental impacts associated with historical land uses.

Findings

Historical Records

The earliest documented industrial use in the Study Area was by the California Distillery Company, which was depicted on an 1884 fire insurance map in the northwest corner in the vicinity of the current location of the Fulton Shipyard. Sparse residential development is depicted throughout the Study Area, and historical records indicate the area was in use for agricultural purposes by the early 1900s. By 1926, the Fulton's Shipyard is depicted on a fire insurance map and residences are also depicted to the south of the ship yard down to Wilbur Avenue.

By 1953, the area between the San Joaquin River and Atchison Topeka & Santa Fe Railroad, (predecessor to the BNSF Railway), began a transition towards industrial use. The 1953 topographic map depicts numerous sand pits and industrial buildings, including an oil tank farm, along the shoreline. The 1959 aerial photograph shows the operations of the former DuPont Chemical Company (operated from 1956 to 1999), the former Contra Costa Power Plant (operated from 1953 to 2013), the former Gaylord Container Corporation (operated from the 1940s to the 1990s), and Georgia Pacific Gypsum (continues to operate), among other industrial operations and deep sea harbors. By 1968, a reservoir (Lake Alhambra) was constructed along an unnamed stream near the southwest corner of the Study Area, and by 1976, the Antioch Bridge was constructed across the Antioch River.

Historical topographic maps depict a number of features of environmental concern, including sewage disposal and industrial waste ponds in the current Antioch Dunes Wildlife Refuge area in the 1970s. Throughout the 1960s, 1970s, and 1980s, industrialization of the waterfront continued, and areas south of Wilbur Street in the western portion of the Study Area transitioned from agricultural to dense residential and commercial land uses. Agricultural use of the southeastern portion of the Study Area persists to the present day.

Database Search

Environmental Risk Information Systems (ERIS) Incorporated was contracted to complete a search of regulatory databases in an effort to identify potential environmental concerns within the search radius defined by ASTM E1527-13. The search results yielded 1,155 individual records within the Study Area. The full database search report will be included in the Appendix of the Short-Line Feasibility Study.

A review was performed on each of the potential environmental concerns listed in the database. It should be noted, that although the database listings individually do not pose significant environmental issues with the potential to impact the proposed project, they cumulatively represent an area with a long history of industrial use. Many of the legacy historical industrial operations continue to operate and have not been subject to activities, such as property transfers, that would typically trigger environmental investigations.

The presence of soil and groundwater contamination throughout the Study Area is well- documented. Due to the potential for these impacts to affect future development of the parcels along the Wilbur Avenue Corridor, additional investigations may be required during design to identify the potential for special soil and groundwater handling requirements during construction. This may result in additional project costs, worker safety considerations and coordination with and oversight by regulatory agencies such as the Regional Water Quality Board and the Department of Toxic Substances Control. To the extent practical, adjusting the proposed railroad alignment outside of the most heavily impacted areas may reduce project costs.

Part 2: Ecological Evaluation

A desktop study of publicly available mapping resources was conducted to identify potential ecological constraints within the Study Area, including the extent of jurisdictional waters and wetlands, sensitive biological species, critical habitat for threatened and endangered species and other environmentally sensitive features.

Findings

The Study Area includes a mix of developed rural and industrial areas and undeveloped areas with the potential for industrial reuse or development. Designated open space areas and parks, including the Antioch Dunes National Wildlife Refuge, Alhambra Lake, and the Antioch Youth Sports Complex are also present. The northern portion of the Study Area overlaps the San Joaquin River and associated wharf, marina, harbor and tidal wetland areas.

Jurisdictional Waters and Wetlands

The Study Area is within the Sacramento-San Joaquin Delta of Contra Costa County, an expansive inland river delta and estuary formed by the confluence of the Sacramento and San Joaquin Rivers. The mapped

wetlands are concentrated around the San Joaquin River and associated wharf, harbor and marina areas, with some additional wetlands further south throughout the Study Area. The mapped wetlands include tidal wetlands, non-tidal wetlands, and freshwater pond habitats.

Endangered, Threatened, and Endangered Species

The Sacramento-San Joaquin Delta area provides habitat for various Federal and State-listed threatened and endangered species, as well as California rare plants. The Study Area includes highly sensitive biological areas that contain various threatened, endangered, rare and endemic species, including mammals, birds, reptiles, amphibians, fishes, insects, crustaceans, and plants. Most of these species are limited to certain habitat types and known occurrences are concentrated within the northern portion of the Study Area within open waters, wetlands, and undeveloped areas such as the Antioch Dunes National Wildlife Refuge. To fully determine potential impacts to protected species, the proposed project will require site-specific biological surveys to identify suitable habitats and the likelihood of the presence or absence of protected species within the proposed project area.

Migratory and Nesting Birds

In addition to the threatened and endangered species listed above, various species of migratory and nesting birds may be present within the Study Area during certain times of the year. Migratory and nesting birds are protected under the Migratory Birds Treaty Act of 1918 and the Bald and Golden Eagle Protection Act of 1940. Actions must be taken to avoid or lessen impacts to migratory or nesting birds.

Conclusions

Part 1 – Environmental

The Study Area is a historically agricultural and industrial area with documented impacts to soil and groundwater, particularly between the Joaquin River and the BNSF railroad tracks. Numerous sites throughout the Study Area are currently undergoing voluntary and mandated cleanups. A detailed environmental investigation of the final project area would be necessary in order to plan for environmental issues that may be encountered during construction and could result in increased costs, additional worker safety considerations, and coordination with regulatory agencies.

Part 2 – Environmental Due Diligence Review

Ecological Wetlands and critical habitats for threatened or endangered species are present throughout the Study Area. A variety of threatened and endangered species and other special-status species may also be present throughout the Study Area. A formal, jurisdiction determination/wetland delineation and focused biological surveys would be required to determine the potential impacts of the proposed project on sensitive biological resources. If focused biological surveys determined that the project would have impacts on sensitive ecological resources, consultation with regulatory agencies including, but not limited to, the USFWS (Federal endangered species), National Oceanic and Atmospheric Administration Fisheries (Federal endangered fish species), U.S. Army Corp of Engineers (Federal jurisdictional waters)

and CDFW (State endangered and special-status species and the State jurisdictional waters) would be required to assess permitting and mitigation requirements.

Commercial/Economic Development

RLBA conducted interviews to identify opportunities to meet the needs of new potential rail-served customers and other redevelopment opportunities in the industrial portions of the Study Area. A full list of interviews and attendees is featured in Exhibit A.

A telephone interview was conducted with economic development officials from Contra Costa County, the City of Antioch and the City of Oakley. The interview was designed to identify the goals, concerns and visions of stakeholders regarding the Study Area and identify opportunities that could benefit from having a short-line railroad provide service to the Study Area.

Key results of the interview with economic development staff are listed below:

- Contra Costa County adopted the Northern Waterfront Strategic Plan in January of 2019. The goal is to attract and preserve jobs;
- There is a cannabis overlay over much of this area, or green zone, approved by the Antioch City Council in 2018. The area covers the heavy industrial zoned areas from the San Joaquin River to east 18th street, covering the area's railroad and spur lines. Any and all cannabis business is allowed within the green zone, from production through extraction to dispensaries, although dispensaries are not forecasted to be the most prevalent use. The current zoning in the majority of the corridor is M2-Heavy Industrial;
- In the City of Oakley, there has been significant change since 2014. The cleanup process of the Oakley Logistics Center is slated to be completed in 2021. The developer is working with the city to obtain entitlements to develop this property and making final decisions on the development aspects of this proposed new development.
- In the City of Antioch, the Fulton Shipyard is a small industrial park where an inactive rail spur exists. Inside the property line, there are two railroad tracks, one leads into the existing building and the second provides a loading track alongside the building. This shipyard property is on the market but it is contaminated from the original shipyard operation and is listed by the EPA a superfund site.
- Also in the City of Antioch, there is a 10-acre parcel for sale with an existing building on-site at 3400 Wilbur Avenue that could potentially be developed into a rail served business. The parcel is on the south side of Wilbur Avenue adjacent to the BNSF mainline.
- A very small part of the Study Area, between Maritime Way and SR 160, lies in the unincorporated portion Contra Costa County. This area was the subject of an unsuccessful

attempt to annex by the City of Antioch a few years ago.

Six additional interviews were conducted by RLBA with BNSF officials, existing industries in the Study Area and prospective rail-served customers. The interviews were designed to:

1) Introduce the concept of starting a short-line railroad service in the Study Area;
2) Identify the goals, concerns and visions of perspective users of the short-line railroad service and
3) Identify opportunities to provide rail service to businesses located within the Study Area.

The following companies were interviewed:

1) BNSF Railway - BNSF was glad to hear the county is conducting a short-line railroad study as a coordinated effort. It is willing to work with the economic development staff in Antioch, Oakley and Contra Costa County to help with the development of these parcels. BNSF has held discussions with NorthPoint Development regarding the Oakley Logistics Center (DuPont) and Amports (Forestar) regarding their proposed projects. BNSF also is aware of a potential buyer for the former NRG March Landing Power Plant Site and has had discussions with Cushman & Wakefield, the real estate company handling the sale of this parcel.

2) NorthPoint Development - NorthPoint is a large commercial development company based in Kansas City MO. The company has developed similar light manufacturing and distribution centers in 21 states. NorthPoint plans to construct a 2 million square-foot complex at the former DuPont Site in the City of Oakley. The new development will be called the Oakley Logistics Center. Five buildings are scheduled to be built and will feature; warehousing, distribution, e-commerce fulfillment and light manufacturing.

3) Amports, Inc. – Amports is a global automotive logistics company. It operates an auto transload facility across the delta in in the City of Benicia on the Union Pacific Railroad. Amports has signed a twenty-year lease with the owners of the Forestar parcel. It is currently going through the environmental process and working with the State Lands Commission to obtain a permit to rebuild the wharf in conjunction with a roll-on-roll-off auto transload facility. Amports has filed the necessary permits and expects to start construction on the wharf site in 2020. Once the wharf is completed, it will begin constructing a rail connection and a rail yard on its property. Amports will be off-loading new vehicles imports from Asia and shipping them by truck and rail to their final destinations.

4) NRG parcel – Cushman & Wakefield is the commercial realtor handling the sale of the NRG property (Marsh Landing Power Plant) and is working with potential buyers interested in developing a marine transload facility on this site. The waterfront access and the existing rail spur into this site, makes it a very attractive site for businesses looking for water access with a rail connection.

5) Summit CFS – A logistics company based in Oakland is looking for a site that has rail and water

access to develop a marine transload facility. One of the sites they are looking at is the NRG property. They are interested in bring in ore by rail and exporting by ship.

6) Kie-Con, Inc. – Kie-Con is a manufacturer of pre-stressed, pre-cast concrete products. Its customers are generally located in the San Francisco Bay Area and Nevada. While its products are shipped primarily by truck, it also uses barges to ship oversize shipments to California, Hawaii and Guam. Kie-Con makes its own concrete on site. Its customers are not located far enough away to make rail service a viable option.

7) CEMEX – The Antioch Concrete Plant receives its raw materials from local sources, aggregate from Clayton and cement from Pleasanton by truck. The plant produces concrete which is delivered by truck to local construction sites in Contra Costa County. CEMEX generally provides concrete to customers located in Contra Costa County and therefore, does not have a need for rail service.

Transportation

Transportation plays an integral role in moving people and goods to and through the Study Area. Trucks make up a significant number of vehicle movements along the Wilbur Avenue Corridor. Within the Study Area, there are two major east west roadways, Wilbur Avenue and East 18th Street. The majority of the land adjacent to Wilbur Avenue is zoned heavy industrial. In contrast, the majority of the land adjacent to East 18th Street is zoned residential. Along the far eastern section of the Study Area lies one north-south route, State Route 160, connecting Eastern Contra Costa County with Sacramento County.

Goods Movement Analysis

Local distribution and service activity comprises an important component of the Contra Costa County goods movement economy in terms of tons moved, value of product and traffic impacts on the region's roadways. 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 construction materials, manufactured goods, and consumer electronics comprise a large amount of what moves into and within the Study 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 high volume small delivery and 5-axle trucks used in 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 Contra Costa County[1].

Changes in the economy also contribute to the growing importance of local urban goods movement. Shifts away from manufacturing towards the service sector, especially professional, technical, and

[1] Contra Costa County Northern Waterfront Initiative Market Assessment, Croft Consulting Group, August 2013.

information services, equates to a higher level of small package movements via integrators and less emphasis on long-haul movements of manufactured products. 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 Contra Costa County by weight.[2]

Highways

The State Route 4 (SR 4) highway corridor is an east-west route approximately 31 miles in length, providing interregional commercial travel between the Central Valley and the Bay Area. The SR 4 corridor serves local and intercity truck and heavy automobile travel in surrounding communities such as Hercules, Martinez, Concord, Pittsburg, Antioch, Oakley and Brentwood. Additionally, it provides access to Interstate 680 in Concord and Interstate 80 in Hercules, a major east-west interstate commerce route. SR 4 also connects to Interstate 5 in Stockton, a major north-south interstate commerce route. Truck and heavy vehicle traffic make up four to seven percent of the daily vehicle trips along the SR 4 Corridor .[3]

The SR 4 Corridor is designated as a basic route on the National Highway System (NHS). It is functionally classified as both an Urban Principal Arterial and as expressway-freeway in different segments due to changes in access along the route. The SR 4 corridor is on the Surface Transportation Assistance Act (STAA) and the State Highway Extra Legal Load (SHELL) network. SR 4 is a designated Route of Regional Significance in the Countywide Transportation Plan. Additionally, there is an extensive network of arterial roadways and local streets that provide access to SR 4 and serve local travel throughout the corridor.[4]

Within the Study Area, the following routes are also designated as Routes of Regional Significance by Contra Costa County:

- SR 4, between Willow Pass and the San Joaquin County Line;
- SR 160, between SR 4 and the Sacramento County Line;
- East 18th Street, between A Street and SR 160 and
- Wilbur Avenue, between A Street and SR 160[5].

Truck Volumes

Truck volumes along SR 4 in the City of Pittsburg make up a significant portion of the traffic volumes near the Study Area. Many of the 5-axle trucks are making longer distance trips between the Bay Area and

[2] 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.
[3] SR-4 Integrated Corridor Analysis prepared for Contra Costa Transportation Authority by Atkins, July 2012, p 5.
[4] ibid
[5] 2017 Countywide Comprehensive Transportation Plan: Volume 1, Contra Costa County Transportation Authority, September 2017.

the Central Valley. SR 4 average daily 5-axle truck volume is 2,531 trucks or 43 percent of the total truck volume. The next highest truck volumes are the 2-axle pickup and delivery van type at 2,440 per day or 42 percent of all trucks.

Within the Study Area along Wilbur Avenue, 5-axle trucks also make up a significant portion of the total truck volume at 377 trucks per day or 50% of all truck volumes. This indicates that most of the businesses within the Study Area are utilizing trucks to move both their inbound and outbound shipments[6].

Rail

Parallel to SR 4 is the BNSF Railway, the nation's second largest Class 1 railroad. The BNSF's Stockton Subdivision connects the Bay Area with the national railroad system, moving freight to/from the cities of Chicago, Kansas City, Dallas and Houston. Rail transport provides a critical link between the Bay Area and the Central Valley. BNSF facilitates the movement of goods through its rail facilities at the Port of Oakland to support the movement of international freight and a railyard at Richmond to support the movement of bulk commodities serving domestic markets. There is also a United Parcel Service intermodal facility in Richmond that originates and terminates high priority intermodal trains using the BNSF mainline between the Bay Area and the rest of the United States. The BNSF also hosts ten daily Amtrak San Joaquin trains between the Bay Area and Bakersfield.

Paralleling the BNSF is the Union Pacific Railroad's (UP) Tracy Subdivision, connecting Martinez with Lathrop. This 58-mile long railroad line, also known as the Mococo Line, once provided an alternative route for freight moving between the Bay Area and the Central Valley. However, it would be difficult to construct a connection between the Study Area and UP because of the lack of available right-of-way and the cost estimated to approximately $2 million per mile. Currently the line only hosts local freight movements between Martinez and Pittsburg, but could be used in the future as a freight or passenger rail connection to Tracy if rail demand warranted it. Currently, UP does not have plans to reopen this route to support freight or passenger trains any time in the near future.

The market presence of the rail industry at Bay Area locations is limited by its geography. Most markets within California are too close for rail service to establish a strong competitive position from the Bay Area and so those markets are mostly served by the trucking industry. The trend over the last decade has been for Class I (large) 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[7]. In recent years, shippers have been utilizing short-line and industrial switching companies to perform the switching tasks that Class I's used to perform. The Class I's have moved to what is known in the industry today as Precision Scheduled Railroading, with a focus on 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. However, this new operating model puts shippers at a disadvantage for getting timely switching services.

[6] City of Antioch, Public Works Department, "Daily Truck Traffic Report", 2013.

[7] Contra Costa County Northern Waterfront Initiative Market Assessment prepared by Craft Consulting Group, April 2013, p 22.

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.

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 handling bulk cargo, with the remainder handled at San Francisco and Redwood City. In 2011, 3,826 vessels arrived at regional berths. Most of the arrivals were bulk cargo vessels (50.6%). Containerized cargo, which is primarily processed through the Port of Oakland, accounts for over 50% of vessel capacity.

Bulk commodities also play a major role in the other port facilities throughout the Bay Area region. The Port of San Francisco handles two main commodities, automobiles and dry break bulk cargo of mainly sand and aggregates to support Bay Area construction projects[8]. The Port of Richmond handles a wide range of liquid and dry bulk commodities, including metals and automobiles[9]. The Port of Benicia handles large shipments of new vehicles that arrive by ship from Asia, as well as liquid fertilizer[10]. The Port of Redwood City handles bauxite, aggregate, gypsum and recycled scrap metal.[11] However, these port facilities are constrained by their existing port boundaries and will not have the ability to handle the future projected growth in Bay Area maritime transload shipments. The lack of space for future transloading facilities has already pushed some businesses to look for opportunities in East Contra Costa County to meet this need.

Ports and maritime activities still play an important goods movement role in Eastern Contra Costa County. Maritime facilities are still are being used at the Fulton Shipyard for vessel repair, the Georgia Pacific Gypsum Plant still receives import cargo ships of bulk gypsum that is manufactured into wallboard for building construction and the Kie-Con Wharf utilizes its wharf to transport large concrete bridge structural members to parts of the Bay Area, Hawaii and Guam. The wharf at the Forestar parcel will be used for an automotive transload facility and the NRG Marsh Landing wharf also has the potential of being developed into maritime transload operation because of its good access to rail and highways. Table 1 shows the existing terminals and wharfs in the Study Area.

[8] Source: Port of San Francisco Maritime Cargo Services, https://sfport.com/cargo-services
[9] Source: City of Richmond Port Operations Overview, http://www.ci.richmond.ca.us/323/Overview
[10] Source: Port of Benicia ,https://www.ssamarine.com/locations/port-of-benicia/
[11] Source: Port of Redwood City, https://www.redwoodcityport.com/tenants

TABLE B-0
EAST CONTRA COSTA COUNTY MARINE TERMINALS

Table 1
East Contra Costa County Marine Terminals and Wharfs[12]

Port/Facility Location	Purpose of Facility	Commodities Handled	Berthing Distance (Feet)
Fulton Shipyard Pier	Vessel Repair and Marine Transloading	Sand, Gravel and Dredged Material	525
Georgia-Pacific Wharf	Marine Transloading	Gypsum	780
Forestar Dock	Marine Transloading	Currently Not in Use	750
NRG Marsh Landing	Marine Transloading	Currently Not in Use	150
Kie-Con Wharf Kiewit Pacific	Marine Transloading	Sand, Gravel, Limestone and Concrete Products	250

Feasibility of Introducing a New Rail Entity into the Study Area

Engineering Perspective

An engineering evaluation of the Study Area found five existing rail spurs that could serve four, vacant parcels. With the exception of the rail spur into the NRG parcel, which was found to be still connected to the BNSF mainline, the other, four connections would have to be rebuilt using the existing rail right-of-way. Estimates of rebuilding these rail connections are discussed in the Engineering section on pages 3 and 4.

There are two sets of scenarios that would allow a short-line railroad to operate within the Study Area. First, because the Study Area is along the BNSF Railway, it would have first priority in determining whether or not it would provide rail service to the new businesses. However, If BNSF determined that it was not cost-effective to provide switching services to the new business; it would work with a short-line operator or a contract switching operator to provide the necessary switching services.

Second, the only way a short-line railroad could operate within the Study Area independently of the BNSF right-of-way would be to construct its own rail infrastructure to connect with the businesses along Wilbur Avenue. This is problematic in several ways. In the first scenario, the Fulton Shipyard is isolated from the rest of the potential businesses because it is located on the west side of the Antioch Dunes National

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

Wildlife Refuge. This means that the only opportunity to serve this potential business independently would be if an interested party purchased a rail right-of-way easement from BNSF to connect the Fulton Shipyard with the rest of the Study Area.

Under the second scenario, Kemwater, Amports and the NRG parcels could be served together by a contiguous short-line railroad. However, when interviewed, Amports stated it is not interested in allowing any other entity the ability to build rail infrastructure through its property. It is only interested in having one dedicated rail connection on the eastern end of its property to connect with the BNSF mainline. This means that without that connecting all of the vacant parcels in the Study Area would not be possible without the cooperation of the BNSF Railway.

Environmental Perspective

The main issue preventing an independent, short-line railroad from constructing a rail connection to the Fulton Ship Yard, would be its inability to encroach on the Antioch Dunes National Wildlife Area. Without access to construct a rail line along the BNSF right-of way through this section of the Study Area, there would be no way for a short-line operator to serve a potential business at the Fulton Ship Yard.

Commercial/Economic Development Perspective

Interviews were conducted with existing businesses and no new potential rail customers were found among them. That finding is not surprising in that the engineering field investigation team noted that most of the existing businesses in the Study Area fall into the truck-served category. In addition, many of the existing businesses located adjacent to the BNSF mainline are not utilizing the rail access available outside their doors. Currently, the only new business that has been identified as wanting to utilize rail service is Amports. Fifty percent of its import automobile business from Asia will utilize rail because the final destinations will be to the Midwest and East Coast. Significant amounts of revenue will be generated by this type of business and BNSF has the ability to provide timely rail service directly from Antioch to their final destinations.

Exhibit A: Short-Line Railroad Feasibility Study Interviews

Economic Development Interview
August 5, 2019

Attendees

- Robert Sarmiento, Project Manager, Contra Costa County
- Amalia Cunningham, Economic Development Manager, Contra Costa County
- Kwame Reed, Economic Development Director, City of Antioch
- Dwayne Dalman, Economic Development Director, City of Oakley
- Tom Messer, Western Region Manager, R.L. Banks & Associates

Public Works Interview
August 22, 2019

Attendees

- Robert Sarmiento, Project Manager, Contra Costa County
- Monish Sen, Senior Traffic Engineer, Contra Costa County
- John Blank, Public Works Director, City of Antioch
- Scott Buenting, Project Manager, City of Antioch
- Junming Li, Junior Engineer, City of Antioch
- Lee Meadows, P.E. Director, Rail Engineering, R.L. Banks & Associates
- Tom Messer, Western Region Manager, R.L. Banks & Associates

Potential Shipper Interviews

- August 1 Jed Momot, Project Manager, North Point Development, Kansas City, MO
- August 13 Jim Triplett, Senior Vice President, Amports, Inc., Benicia
- August 21 Scott Bertrand, Director, Cushman & Wakefield, Walnut Creek (NRG Property)
- August 26 Jerry Phillips, Logistics Manager, Summit CFS, Inc., Oakland
- September 16 Deborah Halderman, Regional Manager, Cemex. Pleasanton
- September 16 Jamie Vrduzco, Senior Business Manager, Kie-Con, Antioch

BNSF Railway Interviews

- August 9 Larry Cole, Director Short-Line Development, Fort Worth, TX
- August 14 Jennifer Fitzgerald, Regional Manager, Economic Development, San Bernardino
- November 8 Larry Cole, Director Short-Line Development, Fort Worth, TX
- November 22 Jennifer Fitzgerald, Regional Manager, Economic Development, San Bernardino

WASHINGTON, D.C. AREA OFFICE
2107 Wilson Boulevard, Suite 750 | Arlington, VA 22201 | Tel: 703.276.7522 | Fax: 571.223.5217 | www.rlbadc.com

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
1	Y	C & J FAVALORA TRUCKING INC 2590 WILBUR AVE, ANTIOCH	HAZNET
2	Y	L TARANGO 2570 WILBUR AVE, ANTIOCH	HAZNET
5	Y	1887 SANTA FE AVE, ANTIOCH	CDL
9	Y	JT Tours /PG&E 2600 WILBUR, ANTIOCH	CERS HAZ, CONTRACO CUPA, HAZNET
11	Y	1779 WILBUR AVENUE, ANTIOCH	HMIRS: surface release of 100 gallons of corrosive cleaning compound during truck unloading in 1994.
13	Y	RICHARD AND LAWRENCE LOPEZ 1470 VIERA LANE, ANTIOCH	CDL, HAZNET
14	Y	KIEWIT POWER CONSTRUCTORS CO 2925 WILBUR AVE, ANTIOCH	CONTRACO CUPA
14	Y	NRC 2925 Wilbur Ave, Antioch	ERNS, CHMIRS; reported release of No. 2 fuel oil during cleaning of fuel oil tanks in 2010.
15	Y	Homesite Services, Inc. 2400 WILBUR AVE, ANTIOCH	CERS HAZ, CONTRACO CUPA, HAZNET
16	Y	1495 VIERA DRIVE, ANTIOCH	CDL
17	Y	GENESIS MFG CO 2275 WILBUR LN, ANTIOCH	CONTRACO CUPA
18	Y	CANNED FOODS INC 2180 WILBUR LN, ANTIOCH	HAZNET
19	Y	SILGAN CONTAINERS 2200 WILBUR LANE, ANTIOCH	HIST MANIFEST, HAZNET, TRIS, CHMIRS, CERS TANK, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HIST MANIFEST, ICIS, RCRA LQG, RCRA SQG Forklift punctured paint drums, release was cleaned up
20	Y	A-1 IRON WORKS 2400B WILBUR AVENUE, ANTIOCH	EMISSIONS, FINDS/FRS
21	Y	StonCor Group Inc 2240 WILBUR LN, ANTIOCH	CERS HAZ, CONTRACO CUPA
22	Y	IFCO SYSTEMS/ CHEP RECYCLE PALLET 2276 WILBUR LN, ANTIOCH	FINDS/FRS
23	Y	AMERICAN ROOFING INDUSTRIES 2300 WILBUR LN, BUILDING B, ANTIOCH	EMISSIONS, FINDS/FRS, HAZNET
24	Y	1500 VIERA, APT B, ANTIOCH	CDL
25	Y	LOUISIANA-PACIFIC CORP SAN JOAQUIN MILL E WILBUR AVE, ANTIOCH	FINDS/FRS
28	Y	AIKEN UNDERGROUND INC/DNG 3000 WILBUR AVE, ANTIOCH	CONTRACO CUPA, DELISTED HAZ, FINDS/FRS, HAZNET, RCRA NON GEN
29	Y	1588 VIERA AVE, ANTIOCH	CDL
30	Y	SMITH'S INDUSTRIAL WELDING INC 2501 VINE LN, ANTIOCH	CONTRACO CUPA
31	Y	1966 VINE LANE, ANTIOCH	CDL
33	Y	BAY COUNTIES PITCOCK PETROLEUM 3050 WILBUR AVE, ANTIOCH	CERS TANK, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET, RCRA NON GEN
34	Y	AT&T MOBILITY - ANTIOCH 2300 WILBUR AVE, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS, HAZNET, RCRA NON GEN
38	Y	48 Forty Solutions 2276 WILBUR AVE, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS
39	Y	FAMILIAN PIPE & SPLY #87 2270 WILBER AVE, ANTIOCH	HAZNET
40	Y	CONSTRUCTION ENGINEERING SVCS 1671 VINEYARD DR, ANTIOCH	CONTRACO CUPA, HAZNET
42	Y	PACIFIC GAS & ELECTRIC 3201 WILBUR AVE, ANTIOCH	EMISSIONS, ERNS ERNS listings are associated with sheens in storm drains and a release of sodium hydroxide from a tote onto a parking lot.
44	Y	2260 Wilber Ave, Antioch	CHMIRS: a fuel tank on a rig was punctured and diesel was released to the ground surface with 10 gallons entering a storm drain in 2008.
45	Y	DRILL TECH DRILLING & SHORING, INC 2200 WYMORE WAY, ANTIOCH	CERS TANK, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET, RCRA NON GEN
47	Y	PURRFECT COLOR 1771 VINEYARD DR, ANTIOCH	HAZNET

TABLE B-1
REGULATORY DATABASE LISTINGS

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
50	Y	KEN MACIA 2251 WYMORE WAY, ANTIOCH	HAZNET
54	Y	DISPATCH SERVICES INC 2180 WILBUR AVE, ANTIOCH	HAZNET
55	Y	ANTIOCH DISTRIBUTION CENTER 2140 WILBUR AVE, ANTIOCH	HAZNET
56	Y	TRINITY PROPERTY CONSULTANTS LLC 2100 WILBUR AVE, ANTIOCH	HAZNET
58	Y	SUN CHEMICAL 1781 VINEYARD DR, ANTIOCH	CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET
59	Y	SPORTSMEN YACHT CLUB 2045 WILBUR AVE, ANTIOCH	CONTRACO CUPA, HIST MANIFEST, HAZNET
60	Y	WILBUR AVE W PWR PLNT SITE III	FINDS/FRS
62	Y	AMERICAN MEDICAL RESPONSE 1791 VINEYARD DR, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS
63	Y	GWF POWER SYSTEMS,LP (SITE 3) 2000 WILBUR AVENUE, ANTIOCH	EMISSIONS, ICIS
64	Y	1969 WILBUR AVE, ANTIOCH	HIST MANIFEST, HAZNET
65	Y	ALMOND ORCHARD 2101 E. 18TH STREET, ANTIOCH	The facility is an almond orchard. Soil sampling was completed and no contaminants were detected above residential cleanup goals. The property entered the VCP and received closure in 2005.
68	Y	REDDING PETROLEUM INC 2800 E 18TH ST, ANTIOCH	DELISTED TNK
72	Y	BRIDGEWATER EQUIPMENT 3200 WILBUR AVE, ANTIOCH	HAZNET
73	Y	LINCOLN ANTIOCH 1760 WILBUR AVE, ANTIOCH	HAZNET
76	Y	DELTA POWER PLANTNA SLUDGE DISP	FINDS/FRS
79	Y	B J'S TOW 3235 18TH ST E, ANTIOCH	CONTRACO CUPA, HAZNET
80	Y	ARROW HEAD TOWING, INC 3245 E 18TH ST, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS, HAZNET, RCRA NON GEN
81	Y	IN-N-OUT CYCLE SERVICE 3255 E 18TH ST, ANTIOCH	HAZNET
82	Y	MAHONEY'S RADIATORS 3257-3261 E 18TH ST, ANTIOCH	HAZNET, CERS HAZ, CONTRACO CUPA, FINDS/FRS, HIST MANIFEST
84	Y	RIVERTOWN MOTORSPORTS 3265 18TH ST E, ANTIOCH	CONTRACO CUPA, DELISTED HAZ, FINDS/FRS, HAZNET
85	Y	HILLCREST PROPERTIES, LLC 1541 JACOBSEN ST., ANTIOCH	HAZNET
86	Y	A-1 TUNE & REPAIR 3275 E 18TH ST, ANTIOCH	CERS HAZ, CONTRA CUPA, FINDS/FRS
87	Y	WRECK-LESS COLLISION CENTER LLC 3277 18TH ST E, ANTIOCH	CONTRACO CUPA, DELISTED HAZ, EMISSIONS, FINDS/FRS, HAZNET, RCRA NON GEN
88	Y	LOMA ALVERADO 1545 LIPTON ST, ANTIOCH	HAZNET
89	Y	KAMPS PROPANE 3285 18TH ST E, ANTIOCH	CONTRACO CUPA, FINDS/FRS, HAZNET
90	Y	PIPELINE SEGMENT T-215-13 HYDROSTATIC TEST ANTIOCH	FINDS/FRS
91	Y	GWF POWER SYSTEMS LP 1900 WILBUR AVE, ANTIOCH	TRIS
92	Y	SAN JOAQUIN YACHT HARBOR 3307 WILBUR AVE, ANTIOCH	DELISTED TNK
93	Y	1545 SANDY WAY, ANTIOCH	CDL
94	Y	KIEWIT PACIFIC CO 3203 WILBUR AVE, ANTIOCH	HAZNET
95	Y	NRC 3301 Wilbur Ave Berth 401, Antioch	CHMIRS: release of diesel fuel from a vessel's bilge
96	Y	RELIABLE MOBILE AUTOMOTIVE 3291 18TH ST E, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS, HAZNET, RCRA NON GEN
97	Y	DYNAMIC AUTO BODY 3295 18TH ST E, ANTIOCH	CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET

TABLE B-1
REGULATORY DATABASE LISTINGS

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
98	Y	ARB INC 3225 WILBUR AVE, ANTIOCH	HAZNET, RCRA NON GEN, FINDS/FRS
98	Y	PG&E Gateway Generating Station 3225 Wildur, Antioch	CHMIRS: releases of petroleum into secondary containment and ammonia vapors
99	Y	CALIFORNIA ORGANICS INC 3305 18TH ST E, ANTIOCH	CONTRACO CUPA
101	Y	NRC 3307 Wilber Ave., Antioch	CHMIRS (sunk vessel), CONTRACO CUPA, ERNS, HAZNET
102	Y	Contra Costa Hazmat 1523 Marshall Street, Antioch	CHMIRS: sodium hydroxide at a residence
104	Y	DILLINGHAM CONSTRUCTION 3302 WILBUR AVE, ANTIOCH	HAZNET
105	Y	GWF POWER SYSTEMS LP 3400 WILBUR AVE, ANTIOCH	TRIS, AST, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HIST MANIFEST, ICIS, HAZNET, CHMIRS (contained in storm drain)
108	Y	1651 DRIVE IN AVE, ANTIOCH	CDL, CERS HAZ, FINDS/FRS, HAZ NET
109	Y	KIE-CON, INC 3551 WILBUR AVE, ANTIOCH	CERS TANK, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET, RCRA NON GEN
110	Y	GARY NEWLY 1202 AZEVEDO ST, ANTIOCH	HAZNET, CERS HAZ, CONTRACO CUPA, EMISSIONS
111	Y	CUPERTINO TOWING 1020 APOLLO CT, ANTIOCH	FINDS/FRS, HAZNET
112	Y	MARKSTEIN SALES COMPANY 1645 DRIVE IN WY, ANTIOCH	CONTRACO CUPA, FINDS/FRS, ICIS
113	Y	SOUTHERN ENERGY CALIFORNIA, CO 1456 WILBUR AVENUE, ANTIOCH	EMISSIONS, ERNS, FINDS/FRS, HIST CHMIRS, HHSS, HIST TANK, ICIS
114	Y	PACIFIC GAS & ELECTRIC 1450 WILBUR AVE, ANTIOCH	HAZNET
115	Y	TIM G WRIGHT 1651 DRIVEIN AVE, ANTIOCH	HAZNET
116	Y	DAVID PEREIRA 1429 JACOBSEN ST, ANTIOCH	HAZNET
119	Y	F T G CONSTRUCTION MATERIALS, INC 3500 WILBUR AVE, ANTIOCH	CERS HAZ, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET, RCRA NON GEN
120	Y	Minex Engineering Corp. 1000 APOLLO CT STE G, ANTIOCH	CERS HAZ, CONTRACO CUPA, FINDS/FRS, HAZNET, RCRA NON GEN
121	Y	JIM DEVRIES 465 FLEMING LANE, ANTIOCH	FINDS/FRS, RCRA NON GEN
122	Y	CEMEX CONSTRUCTION MATERIALS 3600 WILBUR AVE, ANTIOCH	Regulatory
123	Y	Burger King #11622 3605 E 18TH ST, ANTIOCH	CERS HAZ, CONTRACO CUPA
124	Y	K HILLCREST FUELMART 1801 HILLCREST AVE, ANTIOCH	DELISTED TNK
126	Y	NORMAN P OLSEN JR WELDING 3660 WILBUR AVE, ANTIOCH	CONTRACO CUPA, FINDS/FRS
127	Y	ANTIOCH GAS & CARWASH 3629 E 18th St, Antioch	UST
128	Y	NEXTEL OF CALIFORNIA INC SITE ID: CA-2186 415 FLEMING LANE, ANTIOCH	EMISSIONS, FINDS/FRS
129	Y	MICHAEL NORDHAUSEN 1213 JACOBSEN ST, ANTIOCH	HAZNET
130	Y	BNSF Railway Company 3665 WILBUR AVE, ANTIOCH	CERS HAZ, CONTRACO CUPA, DELISTED HAZ, FINDS/FRS, HAZNET, RCRA NON GEN
131	Y	RIVER MARINE REPAIR 450 FLEMING LN, ANTIOCH	CONTRACO CUPA, HAZNET
132	Y	3625 E 18TH ST, ANTIOCH	CDL
132	Y	KMART #4762 3625 18TH ST E, ANTIOCH	CONTRACO CUPA, FINDS/FRS, HAZNET, RCRA NON GEN
133	Y	ANTIOCH GAS & CARWASH 3629 E 18TH ST, ANTIOCH	CERS TANK, CONTRACO CUPA, EMISSIONS, FINDS/FRS, HAZNET, DELISTED TNK
134	Y	CALIFORNIA DFG-DELTA BASE 6400 BRIDGEHEAD RD, ANTIOCH	HAZNET
136	Y	Contra Costa FD Hillcrest Ave & South Lake Drive, Antioch	CHMIRS: petroleum release to storm drain during car washing at residence

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
137	Y	KIE-CON INC 1150 WILBUR AVE., ANTIOCH	HHSS, HIST TANK
138	Y	HARRISON INDUSTRIAL SERVICESNA INC. 1000 APOLLO COURT UNITS F & E, ANTIOCH	FINDS/FRS
140	Y	JOHN MILLER 112 E LAKE DR, ANTIOCH	Regulatory
141	Y	Bridgehead Marine Services 30 FLEMING LN, ANTIOCH	Regulatory
142	Y	LOS MEDANOS RV 6313 BRIDGEHEAD RD, ANTIOCH	Regulatory
144	Y	SHELL 5545 BRIDGEHEAD RD, ANTIOCH	Regulatory
145	Y	5751 BRIDGEHEAD RD, ANTIOCH	Regulatory
146	Y	CUTINOS FEED & TIRE CENTER 500 MAIN ST, OAKLEY	Regulatory
147	Y	Former Pissigoni Towing 590-5904 Main Street, Oakley	FED BROWNFIELDS
148	Y	DRIFTWOOD MARINA 6338 BRIDGEHEAD RD, ANTIOCH	DELISTED TNK + CHMIRS (releases to surface water associated with boating incidents)
149	Y	OAKLEY BUILDERS SUPPLY 800 MAIN ST, OAKLEY	CONTRACO CUPA
150	Y	City of Antioch East 13th at Giovanni St, Antioch	CHMIRS: sewage line blockage and release
151	Y	OAKLEY STERNDRIVE & ENGINE REPAIR 6001 BRIDGEHEAD RD, OAKLEY	CONTRACO CUPA
152	Y	PACHECO BROTHERS GARDENING, INC 6344 BRIDGEHEAD, ANTIOCH	HAZNET
154	Y	Delta Diablo Sanitation District Bridgehead at Wilbur Ave, Antioch	Regulatory - sewage issues
154	Y	LINCOLN PROPERTIES 4650 WILBUR AVE, ANTIOCH	CONTRACO CUPA
156	Y	Verizon Wireless Bridgehead Road BRIDGEHEAD RD, ANTIOCH	CERS HAZ
157	Y	85 S LAKE DR, ANTIOCH	CDL
158	Y	CONTRA COSTA GENERATING STATION, LLC 5950 BRIDGEHEAD RD, OAKLEY	Regulatory
160	Y	DUPONT AUTOMOTIVE SYSTEMS 6004 BRIDGEHEAD RD, OAKLEY	Regulatory
162	Y	VERIZON WIRELESS BRIDGEHEAD ROAD BRIDGEHEAD RD, ANTIOCH	FINDS/FRS
164	Y	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION ANTIOCH BRDG TLL PLZ, ANTIOCH	FINDS/FRS
165	Y	1221 MILLER ST, ANTIOCH	CDL
166	Y	1001 WILBUR AVE, #C, ANTIOCH	CDL
166	Y	1001 WILBUR AVE, ANTIOCH	CDL
167	Y	ALLSTAR FINANCIAL CORP 1000 WILBUR AVE, ANTIOCH	HAZNET
169	Y	5751 BRIDGEHEAD RD, #15, OAKLEY	CDL
172	Y	SANDY POINT MOBILE HOME PARK ,	FINDS/FRS
173	Y	12565 Oakley 914 MAIN ST, OAKLEY	Regulatory
174	Y	1X FOWLER & UNDERWOOD 901 WILBUR AVE, ANTIOCH	Regulatory
176	Y	B N S F RAILWAY CO 5549 BRIDGEHEAD RD, OAKLEY	HAZNET + CHMIRS (vandals attempted to steal petro from a train and released hydraulic fluid on a parking lot)
180	Y	Del Conte's Landscaping 6344 BRIDGEHEAD RD, OAKLEY	CERS HAZ
182	Y	Gilroy Energy Center LLC, for the Riverview Energy Center 795 MINAKER DR, ANTIOCH	Regulatory
189	Y	BP 07126 5440 BRIDGEHEAD, OAKLEY	Regulatory
190	Y	CA State Parks DBW - Oakley Field Office 75 LAURITZEN LN, OAKLEY	Regulatory
192	Y	EASTERN CC TRANSIT AUTHORITY 801 WILBUR AVE, ANTIOCH	Regulatory
194	Y	PAUL DAVIS 701 WILBUR AVE, ANTIOCH	HAZNET
195	Y	29 S. LAKE COURT, ANTIOCH	CDL

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
196	Y	CHEVRON #93801 5433 NEROLY RD, ANTIOCH	DELISTED TNK
197	Y	29 SOUTH LAKE DR, ANTIOCH	CDL
202	Y	22 SO. LAKE DR., ANTIOCH	Regulatory
203	Y	FLOOD, TIM 15 S LAKE DR APT C, ANTIOCH	HAZNET
204	Y	YVETTE SCHUARTZBERG 10 ALHAMBRA COURT, ANTIOCH	RCRA NON GEN
204	Y	CLARK, DOUG 11 ALHAMBRA CT, ANTIOCH	HAZNET
205	Y	PATRICK J. TUNNEY 14 S LAKE DR APT 1, ANTIOCH	HAZNET
206	Y	DOUG LOVEJOY 10 S LAKE DR STE 4 & 10, ANTIOCH	HAZNET
207	Y	CONOCO INC 135 LAURITZEN LN, ANTIOCH	HAZNET
209	Y	COUGHRAN, JACK RENTAL PROPERTY 620 WILBUR AVE, ANTIOCH	Regulatory
211	Y	City of Antioch/ PGE 600 Wilbur Ave., Antioch	CHMIRS: sewage overflow and transformer failure, contained and stopped
214	Y	Verco Decking, Inc 607 WILBUR AVENUE, ANTIOCH	CERS HAZ
215	Y	RAYMOND BREWER 64 W LAKE DR, ANTIOCH	HAZNET
216	Y	1X BATTAGLINI, DAVID 540 WILBUR AVENUE, ANTIOCH	HAZNET
217	Y	DUTCH PRIDE GAS & FOOD 507 E 18TH ST, ANTIOCH	Regulatory
218	Y	YE, JIA 4 W LAKE PL, ANTIOCH	HAZNET
219	Y	RITTER MFG INC 521 WILBUR AVE, ANTIOCH	Regulatory
220	Y	LLOYD'S HOLIDAY HARBOR 553 WILBUR AVE, ANTIOCH	CONTRACO CUPA
221	Y	WESTERN SAND AND BRICK 545 WILBUR AVENUE, ANTIOCH	Regulatory
222	Y	526 AMBER DRIVE, ANTIOCH	CDL
223	Y	ARTHUR ANDERSON 33 W LAKE DR, ANTIOCH	HAZNET
224	Y	REBELLO RACING 511 WILBUR AVE STE A5, ANTIOCH	Regulatory
227	Y	PG&E 931 Cavallo Rd., Antioch	CHMIRS: release of oil from transformer struck by vehicle. Fluid contained and cleaned up.
230	Y	Contra Costa County Hazmat 415 Wilbur Ave, Jim Holiday Marina (909-917-7736), Antioch	CHMIRS: sunken vessel released oil
231	Y	ANTIOCH DAILY LEDGER DISPATCH 1650 CAVALLO ROAD, ANTIOCH	EMISSIONS
232	Y	RODREGOUS, ALBERT 825 FULTON SHIPYARD RD, ANTIOCH	CONTRACO CUPA
233	Y	CAROLOLA MANPOWER 1315 MAIN ST, OAKLEY	Regulatory, completed Phase I ESA with brownfields grant in 2005
235	Y	MELLO'S SHEET METAL 1241 MAIN ST, OAKLEY	DELISTED TNK
236	Y	1700 CAVALLO RD., ANTIOCH	Regulatory + ERNS: improper asbestos removal from abandoned building
238	Y	DUKE WILSON PAINT & SUPPLY 1725 CAVALLO RD, ANTIOCH	Regulatory
239	Y	THE SKI CLINIC 801 FULTON SHIPYARD RD, ANTIOCH	Regulatory
240	Y	OAKLEY BUILDERS SUPPLY 800 MAIN ST, OAKLEY	Leak reported from gasoline UST in 1987. LUST case closed in 1997.
241	Y	JUNIORS AUTO BODY 729 FULTON SHIPYARD RD, ANTIOCH	Regulatory
242	Y	324 NASH AVE, ANTIOCH	CDL

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
243	Y	FRESCHI SERVICE EXPERTS 715 FULTON SHIPYARD RD, ANTIOCH	Regulatory
244	Y	1324 NOIA AVE, ANTIOCH	CDL
245	Y	DELTA DIABLO SANITATION DISTRICT 724 FULTON SHIPYARD RD, ANTIOCH	HAZNET
246	Y	Delta Diablo Sanitation District 725 Fulton Shipyard Rd., Antioch	Regulatory + CHMIRS: sanitary sewer release
247	Y	DELTA SCRAP & SALVAGE, INC. 1371 MAIN ST, OAKLEY	CERS HAZ
247	Y	DELTA SCRAP & SALVAGE, INC 1371 MAIN ST, OAKLEY	Regulatory + completed Phase I ESA in 2005 with brownfields grant (orchards, storage sheds, scrap yard, residential)
248	Y	City of Antioch Behind 221 Wilbur Ave., Antioch	CHMIRS: residential sewage release
249	Y	CITY ANTIOCH WASTE WATER TREATMENT FACIL 425 FULTON SHIPYARD RD, ANTIOCH	Regulatory
251	Y	212 CREST AVE, ANTIOCH	CDL
252	Y	ALFRED & MARYANNE MACHADO 1325 LOUIS DR, ANTIOCH	HAZNET
253	Y	NRC 291 Fulton Shipyard Rd, Antioch	CHMIRS: unknown sheen from a boat ramp
254	Y	221 WILBUR AVE #26, ANTIOCH	CDL
255	Y	KIMBALL ELEMENTARY SCHOOL 1310 AUGUST WY, ANTIOCH	Regulatory
256	Y	CITY OF ANTIOCH 225 FULTON SHIPYARD RD, ANTIOCH	HAZNET
259	Y	1X MCDANIELS, JOHN 1540 MAIN ST, OAKLEY	HAZNET
260	Y	137 WILBUR AVE, APT 16, ANTIOCH	CDL
262	Y	JILL UECKERT 129 PLEASANT PL, ANTIOCH	HAZNET
263	Y	Delta Diablo Sanitation Dist. 115 Wilber Ave, Antioch	CHMIRS: sewage release
265	Y	210 FULTON SHIPYARD RD, ANTIOCH	CDL
265	Y	CANNERY COVE MARINA 111 FULTON SHIPYARD RD, ANTIOCH	CONTRACO CUPA
266	Y	112 EAST 6TH, ANTIOCH	CDL
267	Y	CARDYN GRAY 104 E. 16TH ST, ANTIOCH	RCRA NON GEN
268	Y	FUHRER PAINT WERKZ 3257 E 18TH ST, ANTIOCH	Regulatory
268	Y	PECKHAM, DONALD 3215 18TH ST E, ANTIOCH	Regulatory
269	N	BOB BLY 1187 A MAIN ST, OAKLEY	HAZNET
270	N	EAST BAY AUTOHAUS 1241 MAIN ST, OAKLEY	Regulatory
271	N	1189 E MAIN ST, OAKLEY	CDL
271	N	HARDCASTLE RV CENTER 1189 MAIN ST, OAKLEY	Regulatory + completed Phase I ESA in 2005 with brownfields grant (buildings, sheds, concrete sump)
272	N	CORNER OF EAST 18TH ST & PHILLIPS RD, ANTIOCH	CDL
273	N	McDonald's #12525 914 Main Street, Oakley	ALT FUELS
274	N	Priv Citz 3031 East 18th, Max Old House Restaurant, Antioch	CHMIRS: gray water
275	N	132 E 7TH, ANTIOCH	CDL
276	N	United Site Services - Antioch 2625 E 18TH ST, ANTIOCH	Regulatory
277	N	ANTIOCH TIRE & WHEEL 63 E 18TH ST, ANTIOCH	Regulatory
278	N	SYDNEYS AUTO SALES AUTO REPAIR 85 18TH ST E, ANTIOCH	Regulatory
279	N	PRECISION BRAKE AND FRONT END 225 E 18TH ST, ANTIOCH	Regulatory
281	N	ABBEY VET HOSPITAL 405 E 18TH STREET, ANTIOCH	Regulatory

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
282	N	Lucky #223 111 E 18TH ST, ANTIOCH	Regulatory
283	N	Meineke Car Center # 2661 411 E 18TH ST, ANTIOCH	Regulatory
284	N	515 E 18TH ST, #212, ANTIOCH	CDL
285	N	GOLDEN HILLS COMMUNITY CHURCH 525 E 18TH ST, ANTIOCH	HAZNET
286	N	HUDSON SERVICE STATION 61 18TH ST E, ANTIOCH	CONTRACO CUPA
287	N	ADVANCED CAR CARE 725 18TH ST E, ANTIOCH	CONTRACO CUPA
288	N	STRICKLY FOREIGN AUTO PARTS 729 E 18TH ST, ANTIOCH	HAZNET
289	N	BRIDGEHEAD CYCLES 2415 18TH ST E, ANTIOCH	Regulatory
290	N	FRMLY LOS MEDANOS RV 901 18TH ST E, ANTIOCH	Regulatory
291	N	CORNERSTONE CHRISTIAN CENTER 1745 E 18TH STREET, ANTIOCH	HAZNET
293	N	BIG O TIRES NO 6 410 E 18TH STREET, ANTIOCH	HAZNET
295	N	BIG O TIRES 412 E 18TH ST, ANTIOCH	Regulatory
296	N	418 E 18TH, ANTIOCH	CDL
297	N	AT&T MOBILITY/A & 10TH STS (82573) 700 18TH ST E, ANTIOCH	CONTRACO CUPA
298	N	OAKLEY HOTEL 123 MAIN ST, OAKLEY	CONTRACO CUPA
299	N	OAKLEY ONE HR CLEANERS 231 MAIN ST, OAKLEY	DRYCLEANERS - outside study area
300	N	Carl's Jr 915 MAIN ST, OAKLEY	Regulatory
302	N	AQUATIC MARINE 501 MAIN STREET, OAKLEY	HAZNET
303	N	Cal Trans 547 Main St (St. Rt. 4) at Ohara Ave, Oakley	CHMIRS: rig hit building, released diesel, contained
304	N	D&K Automotive Repair Inc. 712 E 18TH ST, ANTIOCH	CERS HAZ
304	N	D & K AUTOMOTIVE REPAIR INC 712 18TH ST E, ANTIOCH	Regulatory
305	N	OAK VIEW MEMORIAL PARK 2500 18TH ST E, ANTIOCH	Regulatory
306	N	EVANGELHO RESIDENCE 1840 18TH ST E, ANTIOCH	CONTRACO CUPA
307	N	HOLY CROSS CEMETERY 2200 E 18TH ST, ANTIOCH	CERS HAZ
308	N	ESTATE OF EDWARD PANFILI 3500 E 18TH ST, ANTIOCH	HAZNET
309	N	AT&T 2040 East 18th Street, Antioch	CHMIRS: battery acid release from car
310	N	Andres Auto Shop 3420 E 18TH ST, ANTIOCH	Regulatory
311	N	CITY OF ANTIOCH 3100 18TH ST E, ANTIOCH	CONTRACO CUPA
312	N	Terracare Antioch 2800 E 18TH ST, ANTIOCH	Regulatory
312	N	ENVIROCLEAN INC 2820 18TH ST E, ANTIOCH	CONTRACO CUPA
314	N	WAYNE E SWISHER CEMENT CONTRACTOR INC 2620 18TH ST E, ANTIOCH	AST
317	N	1X ANTIOCH SQUARE 41 E 18th St, Antioch	HIST MANIFEST
318	N	CONSTRUCTION DRILLING EQUIPMENT 2750 E 18TH ST, ANTIOCH	Regulatory

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
319	N	CHEVRON #9-3801 5433 NEROLY RD, ANTIOCH	Gasoline LUST; closed in 2002.
320	N	KAMPS PROPANE INC 1433 MAIN ST, OAKLEY	CONTRACO CUPA
321	N	PG&E ANTIOCH DMO 5400 NEROLY RD, ANTIOCH	Regulatory
322	N	BRIDGEHEAD CHEVRON SS #9-3801 5433 NEROLY RD, HWY 4, ANTIOCH	EMISSIONS
323	N	BRIDGEHEAD CHEVRON #93801 5433 NEROLY RD, OAKLEY	Regulatory
324	N	BALPINDER SANDHU (DBA: 7-ELEVEN #20039) 1101 E 18TH ST, ANTIOCH	Regulatory
326	N	T-MOBILE WEST CORP/BA11597F 1683 MAIN ST, OAKLEY	CONTRACO CUPA
327	N	54 EAST 19TH ST, ANTIOCH	CDL
329	N	RITE AID #5908 20 E 18TH ST, ANTIOCH	Regulatory
332	N	512 PARKER LN, ANTIOCH	CDL
333	N	1905 ALPHA WAY, ANTIOCH	CDL
334	N	STROER & GRAFF INC 1830 PHILLIPS LN, ANTIOCH	CONTRACO CUPA
335	N	TSGT SCOTT LUVISI 1210 ALMOND STREET, ANTIOCH	RCRA NON GEN
336	N	1824 COVELLO RD, #3, ANTIOCH	CDL
337	N	1901 GLENWOOD DRIVE, ANTIOCH	CDL
340	N	1912 CHESTNUT AVE, ANTIOCH	CDL
341	N	Affordable Tire Center 11 WILBUR AVE, ANTIOCH	Regulatory
342	N	DETROIT AUTOMOTIVE 2 WILBUR AVE, ANTIOCH	CONTRACO CUPA
343	N	1916 CHESTNUT AVE, ANTIOCH	CDL
345	N	B & M TEAR OFF, INC 5346 ELM LN, OAKLEY	Regulatory
347	N	STAMM, GEORGE 9 6TH ST E, ANTIOCH	CONTRACO CUPA
350	N	1920 BIRCH AVE, ANTIOCH	CDL
352	N	RESIDENCE 1831 PARSONS LN, ANTIOCH	Regulatory
354	N	A'S AUTO REPAIR MUFFLER 901 A ST SUITE A, ANTIOCH	CERS HAZ
354	N	A'S AUTO REPAIR MUFFLER 901 A ST, ANTIOCH	CONTRACO CUPA
355	N	1906 CAVALLO RD, ANTIOCH	CDL
356	N	1211 A ST, APT 7, ANTIOCH	CDL
357	N	SOLLY'S A-10 900 A ST (AKA & FILED UNDER 9, ANTIOCH	Regulatory
357	N	DUARTES TIRE SERVICE 914-A-ST., ANTIOCH	Regulatory
358	N	ANTIOCH CONVALESCENT HOSPITAL 1210 A ST, ANTIOCH	RCRA NON GEN
359	N	UNOCAL SS# 3946 1601 A ST, ANTIOCH	Regulatory
360	N	AUTOZONE #3366 1623 A ST, ANTIOCH	CONTRACO CUPA
361	N	BOARDWALK INVESTMENT GROUP 615 A ST, ANTIOCH	CONTRACO CUPA
362	N	TACO BELL 31531 1706 A ST, ANTIOCH	CONTRACO CUPA
370	N	COSMOPROF BEAUTY 1840 A ST, ANTIOCH	RCRA NON GEN
371	N	LAMOTHE CLEANERS 1860 A ST, ANTIOCH	DRYCLEANERS with no listed releases
372	N	DOLLAR GENERAL #14729 20 10TH ST W, ANTIOCH	RCRA NON GEN

TABLE B-1
REGULATORY DATABASE LISTINGS

Table 1
Regulatory Database Listings
Northern Waterfront Short Line Railroad Study

Map Key	In Study Area	Listed Entity/Location	Database/ Discussion [1]
375	N	TONY VALENCIA 1930 GLENWOOD DRIVE, ANTIOCH	RCRA NON GEN
377	N	PACIFIC BELL/ANTIOCH WF001 100 W 20TH ST, ANTIOCH	DELISTED TNK
379	N	STROER & GRAFF INC 5305 LIVE OAK AVE, OAKLEY	Regulatory
380	N	ANTIOCH RECAP, LP 1945 AND 1949 CAVALLO RD, ANTIOCH	RCRA NON GEN
381	N	A STREET CLEANERS 2008 A ST, ANTIOCH	DRYCLEANERS with no listed releases
382	N	ANTIOCH RECAP, LP 35-107 WEST 20TH STREET, ANTIOCH	RCRA NON GEN
383	N	GEORGE STAMM WAREHOUSE 505 B ST, ANTIOCH	CONTRACO CUPA
384	N	WHEEL WORKS #240714 2024 A ST, ANTIOCH	Regulatory
385	N	JEANIE ROUNSAVILLE 2101 DENNIS DRIVE, ANTIOCH	RCRA NON GEN
387	N	RICK'S WELDING CO 5300 LIVE OAK AVE, OAKLEY	Regulatory
388	N	AT&T California - WF001 100 W 20TH ST, ANTIOCH	Regulatory
389	N	PG&E ANTIOCH SERVICE CENTER 2111 HILLCREST AVE, ANTIOCH	DELISTED TNK
390	N	R PERFORMANCE TRANSMISSION 5299 NEROLY RD, OAKLEY	CONTRACO CUPA
393	N	AL'S AUTO REPAIR 5290 NEROLY RD, OAKLEY	CONTRACO CUPA
394	N	KEEP U NEAT CLEANERS 2028 A STREET, ANTIOCH	DRYCLEANERS with no listed releases
395	N	KING'S AUTO REPAIR 5295 NEROLY RD, OAKLEY	Regulatory
397	N	AMERICAN MOTORCYCLE REPAIR 5293 NEROLY RD, OAKLEY	Regulatory
398	N	TNT AUTO REPAIR 103 WALTER WY, ANTIOCH	Regulatory
399	N	OAKLEY COLLISION AUTO BODY LLC 5289 NEROLY RD, OAKLEY	Regulatory
400	N	SOLAR SWIM & GYM 111 15TH ST W, ANTIOCH	CONTRACO CUPA
401	N	DELTA ROD CUSTOM 153 10TH ST W, ANTIOCH	CONTRACO CUPA
403	N	Mote's automotive inc 130 RAILROAD AVE, ANTIOCH	DELISTED HAZ
405	N	Antioch Middle School 1500 D ST, ANTIOCH	DELISTED HAZ
406	N	NEW OAKLEY RD ES LIVE OAKE AVE/OAKLEY RD, OAKLEY	The 19-acre site was historically used for agricultural purposes. A site assessment was completed and the site received a no further action closure.
417	N	A-1 TRANSMISSION SERVICE 2504 DEVPAR CT STE A, ANTIOCH	DELISTED HAZ

Notes:

Acronyms are defined in the database search report.

TABLE B-2
DATABASE LISTINGS INDICATIVE OF RELEASE

Table 2
Database Listings Indicative of Release
Northern Waterfront Shortline Railroad Feasibility Study

Map Key	In Study Area	Listed Entity/Location	Description	Risk Category
3	Y	FORMER GAYLORD CONTAINER CORPORATION 2603 WILBUR, ANTIOCH	The 80.11-acre site was used for pulp and paper manufacturing involving the Kraft bleach process from the 1940s-1990s. Clarifiers, a fuel oil AST, recovery boiler, high density tanks, and a pump house remain at the site. Groundwater and soil were impacted by ACM, dioxins/furans/lead, petroleum, PCBs, and PAHs. The site was enrolled in the VCP in 2004 (was previously investigated under CERCLA, but did not qualify for the NPL). The cleanup is still ongoing. Outstanding activities include a remedy selection for arsenic associated with a black liquor pond and remedial monitoring. PCE was also a primary COC in groundwater and has been addressed with ISCO, although monitoring remains underway. Cleanup of wetlands soils was also completed in 2015.	Medium
7	Y	PIONEER AMERICAS (former KEMWATER) 2151 WILBUR AVE., ANTIOCH	The facility received a Cleanup and Abatement Order in 1997 for groundwater contamination and is an open Cleanup Program site. Groundwater is contaminated with copper, ammonium, and other organic and inorganic compounds. Four source areas have been identified; two are being remediated by excavating and treating soil. The most recent regulatory correspondence in 2018 requested additional groundwater sampling and an update of the site conceptual model.	Medium
66	Y	CONTRA COSTA POWER PLANT 3201 WILBUR AVE, ANTIOCH	The facility has been subject to RCRA Corrective Action and remediation. Multiple investigations and closure activities have taken place since 1986. The facility did not quality for the NPL; however, PG&E entered a Corrective Action Consent Agreement to remediate 56 AOCs and SWMUs in 2011. The most recent action was approval of a groundwater investigation in 2018. The impacted media include groundwater, sediments, soil, and surface water and the COCs include metals, petroleum, PCBs, and PAHs. Migration of contaminated groundwater is under control as of June 2019 and completion of a corrective measure implementation work plan is scheduled for September.	Medium
111	Y	RECREATIONAL TRACT 1030 APOLLO COURT, ANTIOCH	The Gaylord Recreational Tract was used for agriculture beginning in the early 1900s. In the 1970s, wastewater from the paper mill was applied to the land. Crankcase oil was applied for dust control. Dioxin-containing road base was inadvertently installed as park of a parking lot in 1995 during site redevelopment. Dioxins, furans, metals, petroleum, PAHs, pesticides, and herbicides were detected in soil. The site entered the VCP and received closure in 2005 with a land use restriction and capping requirement. Annual O&M reports are required.	Medium
125	Y	GEORGIA-PACIFIC GYPSUM LLC 801 MINACKER RD, ANTIOCH	The facility is listed on the CERCLIS database, but did not quality for the NPL and was archived. Listed for several releases of petroleum and potassium hydroxide that were contained. The facility is listed as a SQG of hazardous waste and as a solid waste/landfill facility that accepts inert construction/demolition waste. The facility is also listed on the MINES database for a mine that was closed in 1982. Although the facility is not listed on databases indicative of impact to the environment, it is a legacy industrial facility that continues to operate. It has not been subject to property transfers or other activities that would trigger an environmental assessment, and there is an elevated potential for environmental impact given the historical operations.	Medium

TABLE B-2
DATABASE LISTINGS INDICATIVE OF RELEASE

Table 2
Database Listings Indicative of Release
Northern Waterfront Shortline Railroad Feasibility Study

Map Key	In Study Area	Listed Entity/Location	Description	Risk Category
153	Y	DUPONT ANTIOCH/ CHEMOURS OAKLEY 6000 BRIDGEHEAD RD, ANTIOCH	Chemical manufacturing began at the facility in 1956 with production of anti-knock compounds and chlorofluorocarbons. Titanium dioxin production was added in 1963. All operations ceased in 1999. The facility is an open cleanup site under RCRA Corrective Action (did not qualify for the NPL and was deferred to RCRA). Portions of the facility (western and eastern development areas) were released from regulatory oversight in 2006; the northern and southern development areas and wetlands remain under mandated cleanup actions. Soil, groundwater, surface water, and sediment are being handled as discrete RFI activities. Groundwater is contaminated with PCE, TCE, other VOCs, and SVOCs and is being remediated with a pump and treat system and permeable reactive barrier. There are three separate plumes. Soil is contaminated with Freon 113, metals, petroleum and VOCs. Land use restrictions are in place (no residential use, soil management requirements, no drilling, no interference with the monitoring wells/reactive barrier walls/phytoremediation systems, vapor barrier requirement) and the target cleanup levels will be for commercial use. Three ponds and three basins that were used to treat and store wastewater are under post-closure monitoring. A prospective purchaser entered the VCP in 2019.	Medium
155	Y	PG&E ANTIOCH GAS TERMINAL 5900 BRIDGEHEAD RD, OAKLEY	PGE began operating the natural gas transmission site in 1942. Evidence of release beneath a 10,000-gallon AST was identified in 2005. BTEX and petroleum impacts to soil and groundwater have been identified. Remediation has involved excavation, biosparging. An additional site assessment was completed in 2018 to evaluate whether petroleum impacts are present on other areas of the site. The facility has received a conditional no further action (land use controls, including excavation and development notification requirements) and the case is eligible for closure although it remains open.	Medium
257	Y	FULTON SHIPYARD 307 FULTON SHIPYARD ROAD, ANTIOCH	The 10.4-acre parcel was a ship building/repair facility from 1918 to 1999. A remedial investigation was implemented in 2016 when the shipyard was sold. COCs include: metals, petroleum, PAHs and PCBs in soil; metals, petroleum, and PAHs in groundwater; and metals, PAHs, PCBs, and tributyltin in sediment. The investigation of the site is still underway. The response action is led by DTSC and the site is on the CORTESE list (i.e. state Superfund); the facility is not on the NPL.	Medium
363	N	NK GAS 1800 A ST, ANTIOCH	A release was identified during a gasoline UST closure in 1998. The LUST case remains open and assessment and interim remedial action is ongoing. The case file notes that previous remediation has been ineffective at reducing hydrocarbon concentrations in the source area and there is concern about pulling a CVOC plume from a nearby site. A second closed LUST case is also associated with the facility. The facility is adjacent to the study area to the south (i.e. upgradient) and it is likely that the plume has migrated into the Study Area.	Medium
4	Y	ANTIOCH PAVING COMPANY 2540 WILBUR AVE, ANTIOCH	Closed LUST case. Release of solvent/non-petroleum hydrocarbon discovered during tank closure in 1994. Cleanup completed in 2000.	Low
6	Y	INDUSTRIAL LOT WITH RAILROAD SIDING 2600 WILBUR AVENUE, ANTIOCH	The 10.28-acre parcel is undeveloped with the exception of railroad sidings and concrete pads. The parcel historically was used by the former Gaylord mill and a 50 foot high, 175 foot diameter AST was used to store fuel oil and possibly black liquor. The parcel was also used for an experimental sludge composting operation. Motor oil and diesel impacts were identified and the parcel was enrolled in the VCP. The case received closure on the basis that there are no risks to human health or the environment.	Low

TABLE B-2
DATABASE LISTINGS INDICATIVE OF RELEASE

Table 2
Database Listings Indicative of Release
Northern Waterfront Shortline Railroad Feasibility Study

Map Key	In Study Area	Listed Entity/Location	Description	Risk Category
32	Y	LLOYD'S HOLIDAY HARBOR RTE 1, ANTIOCH	LUST discovered during closure of gasoline tank in 1991. Soil was impacted, case closed in 1997.	Low
32	Y	LAURITZEN YACHT HARBOR RTE 1, ANTIOCH	Two gasoline LUST cases: one identified from inventory control, one identified during tank closure. Both cases are closed. Facility is also noted to have been impacted by the former DuPont site.	Low
61	Y	INDUSTRIAL LOT WITH TANK WILBUR AVENUE, ANTIOCH	The 3.78-acre parcel is enrolled in the VCP and includes a 48 foot high by 150 foot diameter tank that was used to store Bunker C fuel oil for the former Gaylord mills. Soil impacts were identified; the case received closure in 2006.	Low
70	Y	GWF POWER PLANT - ANTIOCH 1900 WILBUR AVENUE, ANTIOCH	The facility is an active steam electrical power plant that combusts petroleum coke. A diesel spill from a buried pipe occurred in 1992. The release was remediated (excavation, free product removal, in situ biological treatment) and the CLEANUP SITES case received closure in 2012.	Low
74	Y	IMPERIAL WEST CHEMICAL CO 1701 WILBUR AVENUE, ANTIOCH	The facility has reported releases involving chlorine/ sodium hypochlorite/sulfuric acid and is an SQG with a history of violations.	Low
77	Y	PECKHAM PROPERTY 3215 18TH ST E, ANTIOCH	Closed gasoline LUST case	Low
78	Y	VINEYARD TRACT E. 18TH STREET, ANTIOCH	The parcel has been used for agricultural purposes since the early 1900s, including a vineyard. Fly ash and other materials from the former Gaylord East Mill were managed on a portion of the property. The parcel was entered into the VCP and received closure in 2005.	Low
139	Y	NEW BRIDGE MARINA INC 6325 BRIDGEHEAD RD, ANTIOCH	Facility had a LUST case in 1998 that was discovered during closure of a gasoline UST. Release was cleaned up and the case was closed in 2009. Numerous releases from sinking vessels are also listed.	Low
186	Y	Arco 5540 Bridgehead, Oakley	A release was identified during removal of a gasoline UST in 1993. The LUST case was closed in 2003.	Low
226	Y	ROMI'S LIQUOR 418 E 18TH ST, ANTIOCH	Gasoline release identified by subsurface monitoring in 1991. LUST case was closed in 2010.	Low
294	N	A & A MARKET (FORMER) 407 MAIN ST, OAKLEY	Release discovered in 1987 during removal of gasoline UST. LUST case closed in 1997.	Low
328	N	PACIFIC GAS & ELECTRIC 5400 NERLOY, OAKLEY	According to the clean up sites database, a leak was reported in 2001 and groundwater was impacted with VOCs. Case was closed in 2010. The brownfields database also indicates that PCBs were historically detected at the site. The facility is adjacent to the study area to the south.	Low
331	N	HILLCREST VALERO 1801 Hillcrest Ave, Antioch	Release discovered in 2003 during removal of gasoline UST. LUST case closed in 2018. Remediation included excavation, pump and treat and SVE.	Low
344	N	PERCY'S RADIATOR 901 A ST, ANTIOCH	Release discovered in 1990 during removal of diesel UST. LUST case closed in 2013.	Low
348	N	HICKMOTT CANNERY (FORMER) 5TH & B ST, ANTIOCH	The facility is a former cannery and has a LUST case that was closed in 2016 with petroleum-impacted groundwater left in place. The facility is a cleanup site with inactive status. Methane and hydrogen sulfide are present at levels warranting remediation and are likely due to a combination of landfilled cannery waste and sewage releases, and the property is not currently in suitable condition for redevelopment. The facility is outside the study area approximately 0.25 miles west.	Low
349	N	WALTER HANSEN TRUST 1809 A STREET, ANTIOCH	The facility is an open cleanup sites case and has chlorinated hydrocarbon-impacted groundwater. The case was opened in 2007 and is in verification monitoring. The case is associated with a release from a UST in 1997 (LUST case also remains open) as well as PCE impacts from a former dry cleaner. The responsible party does not have sufficient funds to complete the remediation and is completing indoor air sampling to assess whether there are immediate threats to human health. The facility is located approximately 1/8 mile west of the Study Area.	Low
351	N	UNOCAL #3946 1601 A ST, ANTIOCH	A release was identified during removal of a gasoline UST in 1989. The LUST case was closed in 2014.	Low

TABLE B-2
DATABASE LISTINGS INDICATIVE OF RELEASE

Table 2
Database Listings Indicative of Release
Northern Waterfront Shortline Railroad Feasibility Study

Map Key	In Study Area	Listed Entity/Location	Description	Risk Category
364	N	SILVERA PROPERTY 900 A ST, ANTIOCH	A release was identified during a gasoline UST closure in 1996. The LUST case remains open and remediation is ongoing. The facility received an NOV in 2019 for failure to submit timely groundwater monitoring reports and to operate the onsite remediation system (the pump and treat system has not operated since 2018) in accordance with its Cleanup and Abatement Order. The facility is approximately 1/8 west of the study area.	Low
376	N	CONTRA COSTA AUTO SALVAGE 1731 MAIN ST, OAKLEY	Identified as a federal brownfields site that requires cleanup due to surface water impacts. The facility was an auto repair shop, dismantler, and scrapyard. The site was remediated by the City of Oakley and received VCP closure in 2010 for MTBE and petroleum impacted soil and groundwater.	Low
379	N	J & M Enterprises 5337 Live Oak Avenue, Oakley	Petroleum, PAHs, and VOCs were identified in soil at the facility, which was used for illegal auto crushing. The facility is approximately 1/8 mile south of the study area.	Low
386	N	A STREET EXTENSION A STREET EXTENSION, ANTIOCH	A UST and impacted soil were identified during road construction. The LUST case received closure in 2014.	Low
392	N	RAIN FOR RENT 5301 LIVE OAK AVE, OAKLEY	Petroleum LUST case was opened in 2005 and closed in 2008.	Low
402	N	CHEVRON TAOC A STREET 2205 A STREET, ANTIOCH	The facility was historically part of the Old Valley Pipeline and the TAOC pipeline. Crude oil was identified in the soil at 2008 and the facility is on the cleanup sites list. The case remains open with additional investigation planned. The facility is 1/4 mile southwest of the study areas.	Low
404	N	NELLA OIL #252 TEXACO 2310 A STREET, ANTIOCH	A gasoline release was discovered and the facility is an open LUST cleanup site. The facility is 1/4 mile southwest of the study area.	Low
408	N	CHEVRON #9-4585 2413 A ST, ANTIOCH	A gasoline release was discovered and the LUST case received closure in 2017.	Low
409	N	CYPRESS SQUARE SHOPPING CENTER 2025 MAIN STREET, OAKLEY	The facility has a closed cleanup sites case. DCA and DCE were present in groundwater.	Low
412	N	BIG BREAK MARINA 100 BIG BREAK RD, OAKLEY	A gasoline release was discovered and the LUST case received closure in 1997.	Low
413	N	PG&E ANTIOCH SERVICE CENTER 2111 HILLCREST AVE, ANTIOCH	A release was identified during a tank closure and the LUST case received closure in 1992.	Low
414	N	KMEP HILLCREST RELEASE HILLCREST AVENUE AND SUNSET DRIVE, ANTIOC	The release is approximately 0.25 miles south of the area and is identified on the cleanup sites database for a sleeve repair failure that resulted in a release of diesel under Hillcrest Avenue. The pipeline has been repaired, but groundwater, soil and soil vapor were impacted. It is unlikely that this release represents a concern for the study area based on distance and the nature of the release.	Low
415	N	DISCOUNT LIQUOR STORE 39 ROSSI AVE, ANTIOCH	Closed LUST case outside the study area.	Low
416	N	ANCHOR GLASS 1400 WEST 4TH STREET, Antioch	This facility is listed as an open land disposal site with chromium and heavy metals contamination. The facility is outside the study area and unlikely to impact the proposed project based on distance and the nature of the contamination.	Low
418	N	OAKLEY ROAD METERING SITE OAKLEY RD. & PHILLIPS LN., ANTIOCH	A site screening was conducted at this facility (used for handling natural gas well liquids until the mid 1970s) and soil and groundwater were determined to be contaminated with hydrocarbons, BTEX, and PCBs. This facility is located 0.5 miles outside the study area and is unlikely to represent a concern for the proposed project.	Low
419	N	MAGNET HIGH SCHOOL SITE DEER VALLEY ROAD/LONE TREE WAY, ANTIOC	The facility received a No Further Action determination in 2005 after being investigated for OCP, arsenic, and methane impacts. The facility is located within the active Brentwood oil field.	Low
420	N	ANTIOCH RADIATOR EXCHANGE 908 WEST SECOND ST., ANTIOCH	The facility was investigated under the Targeted Site Investigation Grant from EPA and referred to the City of Antioch for follow up. The facility was formerly used for automotive repairs since 1926. Lead, PCBs, the TPH were identified above screening levels in soil. TPH and BTEX were identified in groundwater near a former LUST.	Low
421	N	MAYBERRY SLO MOORING A , ANTIOCH	The facility participated in the DTSC Site Cleanup Program and received an NFA in 2014.	Low

TABLE B-3
ENDANGERED, THREATENED AND RARE SPECIES

Table 3
Endangered, Threatened and Rare Species
Northern Waterfront Short Line Railroad Feasibility Study

Common Name	Scientific Name	Status
Mammals		
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, FP, SE
San Joaquin Kit Fox	*Vulpes macrotis mutica*	FE, ST
Birds		
California black rail	*Laterallus jamaicensis coturniculus*	ST
California clapper rail	*Rallus longirostris obsoletus*	FE, SE
California Ridgway's rail	*Rallus obsoletus obsoletus*	
California least tern	*Sterna antillarum browni*	FE, SE
Swainson's hawk	*Buteo swainsoni*	ST
Reptiles		
Giant garter snake	*Thamnophis gigas*	ST, FT
Amphibians		
California Red-legged frog	*Rana draytonii*	FT
California tiger salamander	*Ambystoma californiense*	FT, ST
Fishes		
Delta smelt	*Hypomesus transpacificus*	FT, SE
Longfin smelt	*Spirinchus thaleichthys*	FC, ST
Steelhead – Central Valley DPS	*Oncorhynchus mykiss irideus* pop. 11	FT
Insects		
Delta green ground beetle	*Elaphrus viridis*	FT
Lange's metalmark butterfly	*Apodemia mormo langei*	FE
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE
Valley elderberry longhorn beetle	*Desmocerus californicus*	FT
Crustaceans		
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE
Plants		
Antioch dunes evening-primrose	*Oenothera deltoids* ssp. *howellii*	FE, SE
Big tarplant	*Blepharizonia plumosa*	SR, RPR 1B.1
Colusa grass	*Neostapfia colusana*	FT, SE
Contra Costa goldfields	*Lasthenia conjugens*	FE, SR, RPR
Contra Costa wallflower	*Erysimum capitatum* var. *angustatum*	FE, SE
Delta mudwort	*Limosella australis*	SR, 2B.1
Delta tule pea	*Lathyrus jepsonii* var. *jepsonii*	SR, RPR 1B.2
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	SR, RPR 1B.1
Hoover's cryptantha	*Cryptantha hooveri*	SR, RPR 1A
Keck's checker-mallow	*Sidalcea keckii*	FE
Mason's lilaeopsis	*Lilaeopsis masonii*	SR, RPR 1B.1
Mt. Diablo buckwheat	*Eriogonum truncatum*	SR, RPR 1B.1
Soft bird's-beak	*Cordylanthus mollis* ssp. *mollis*	FE, SR
Suisun Marsh aster	*Symphyotrichum lentum*	SR, RPR 1B.2

Notes:

FC – Federal Candidate
FE – Federally Endangered
SE – State Endangered
SR – State Rare

Table 4
Migratory and Nesting Birds
Northern Waterfront Short Line Railroad Feasbility Study

Common Name	Scientific Name	Status
Burrowing owl	*Athene cunicularia*	SSC, BCC
Common yellowthroat	*Geothlypis trichas sinuosa*	BCC
Golden eagle	*Aquila chrysaetos*	Vulnerable
Lawrence's goldfinch	*Spinus lawrencei*	BCC
Loggerhead shrike	*Lanius ludovicianus*	SSC
Nothern harrier	*Circus cyaneus*	SSC
Nutttal's woodpecker	*Picoides nuttallii*	BCC
Oak titmouse	*Baeolophus inornatus*	BCC
Song sparrow	*Melospiza melodia*	BCC, SSC
San Clemente Spotted towhee	*Pipilo maculatus clementae*	BCC, SSC
Wrentit	*Chamaea fasciata*	BCC
Yellow-billed magpie	*Pica nuttalli*	BCC
Yellow warbler	*Dendroica petechia*	SSC

Notes:

BBC – United States Fish and Wildlife Service Bird of Conservation Concern

SSC – California Department of Fish and Wildlife Species of Special Concern

TABLE B-4
MIGRATORY AND NESTING BIRDS

FIGURE B-1
SITE LOCATION MAP

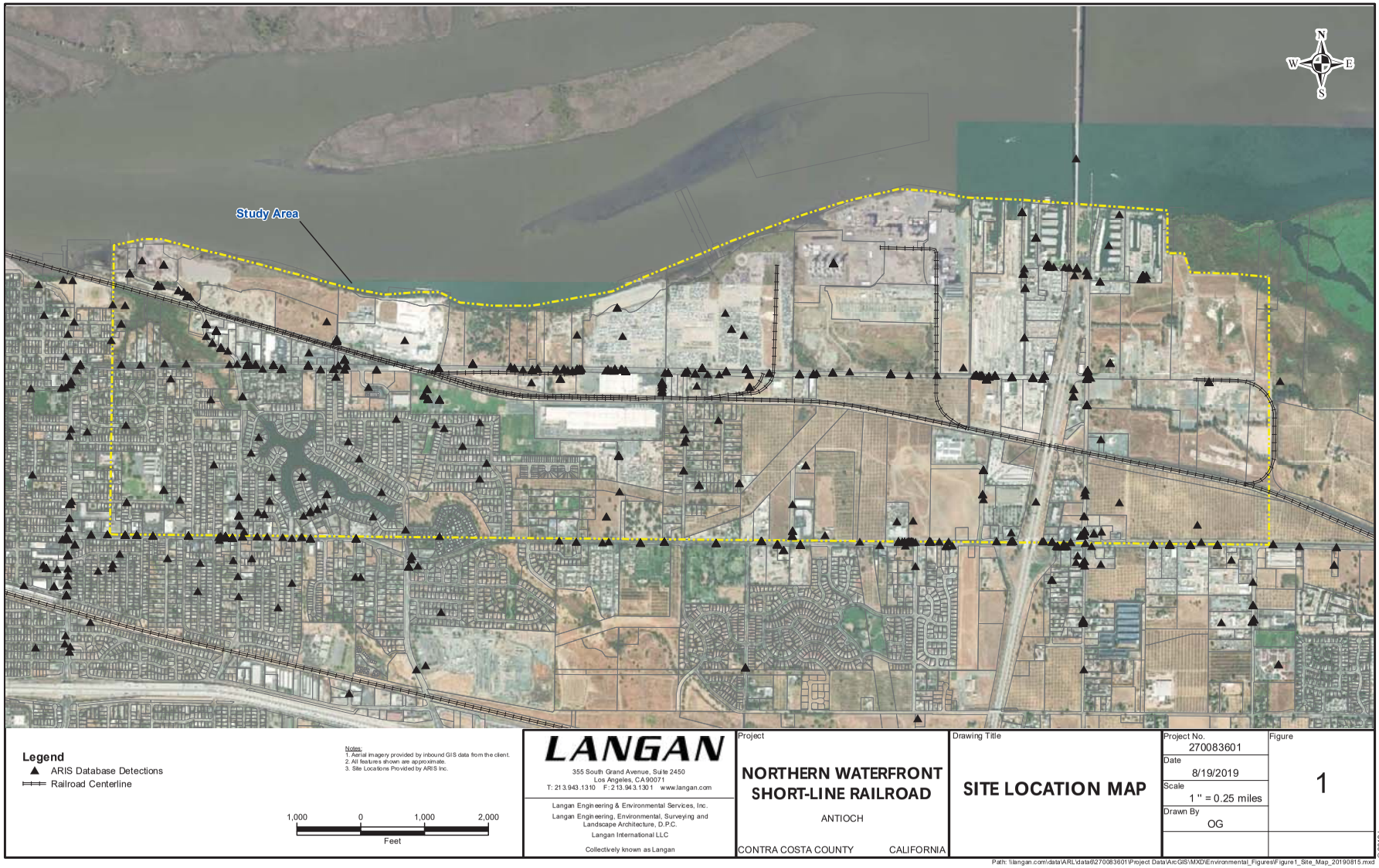


FIGURE B-2
MEDIUM RISK DATABASE LISTING

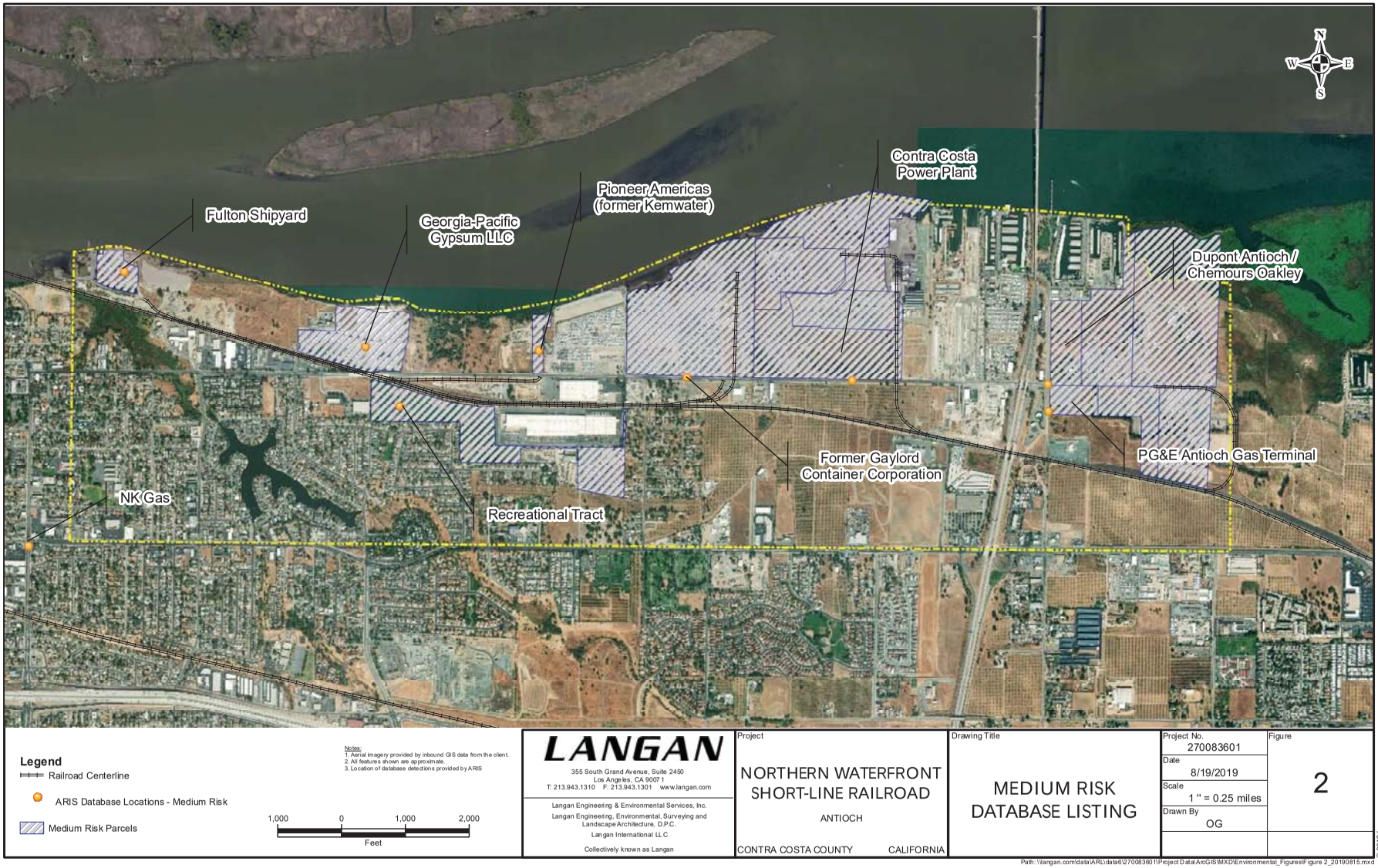


FIGURE B-3
NATIONAL WETLANDS INVENTORY MAP

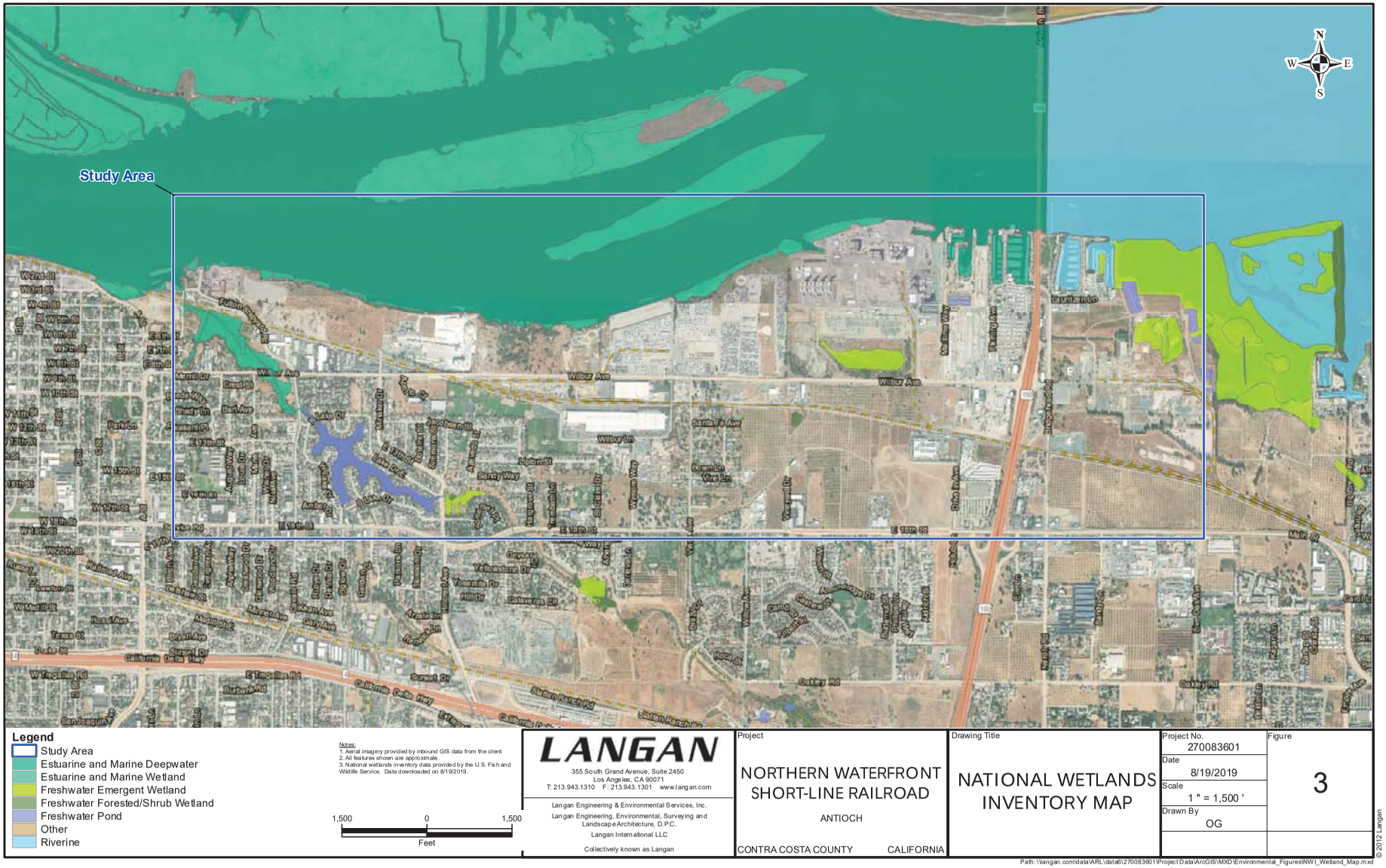


FIGURE B-4
REGIONALLY OCCURING SPECIAL-STATUS SPECIES

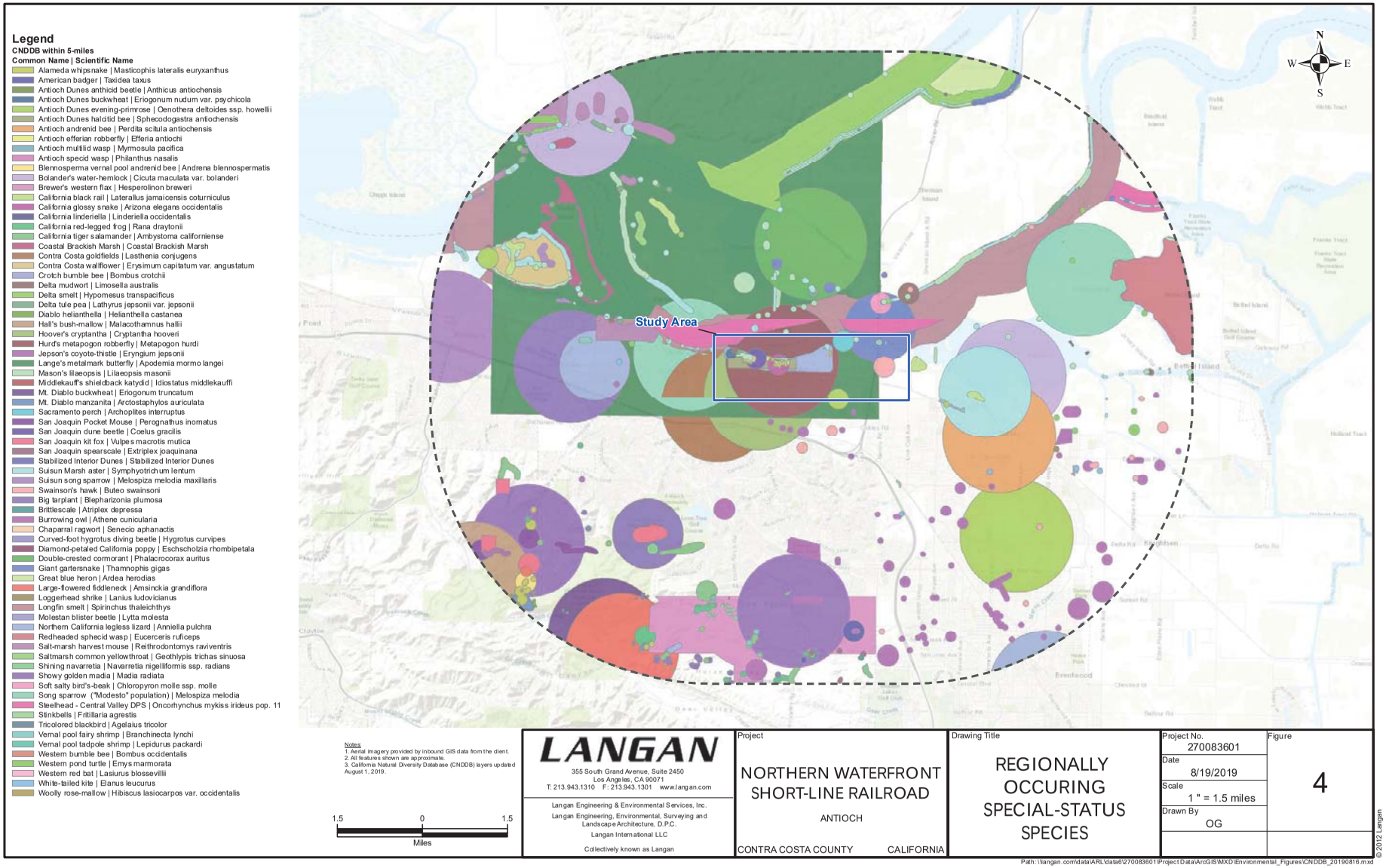


FIGURE B-5
USFWS CRITICAL HABITAT

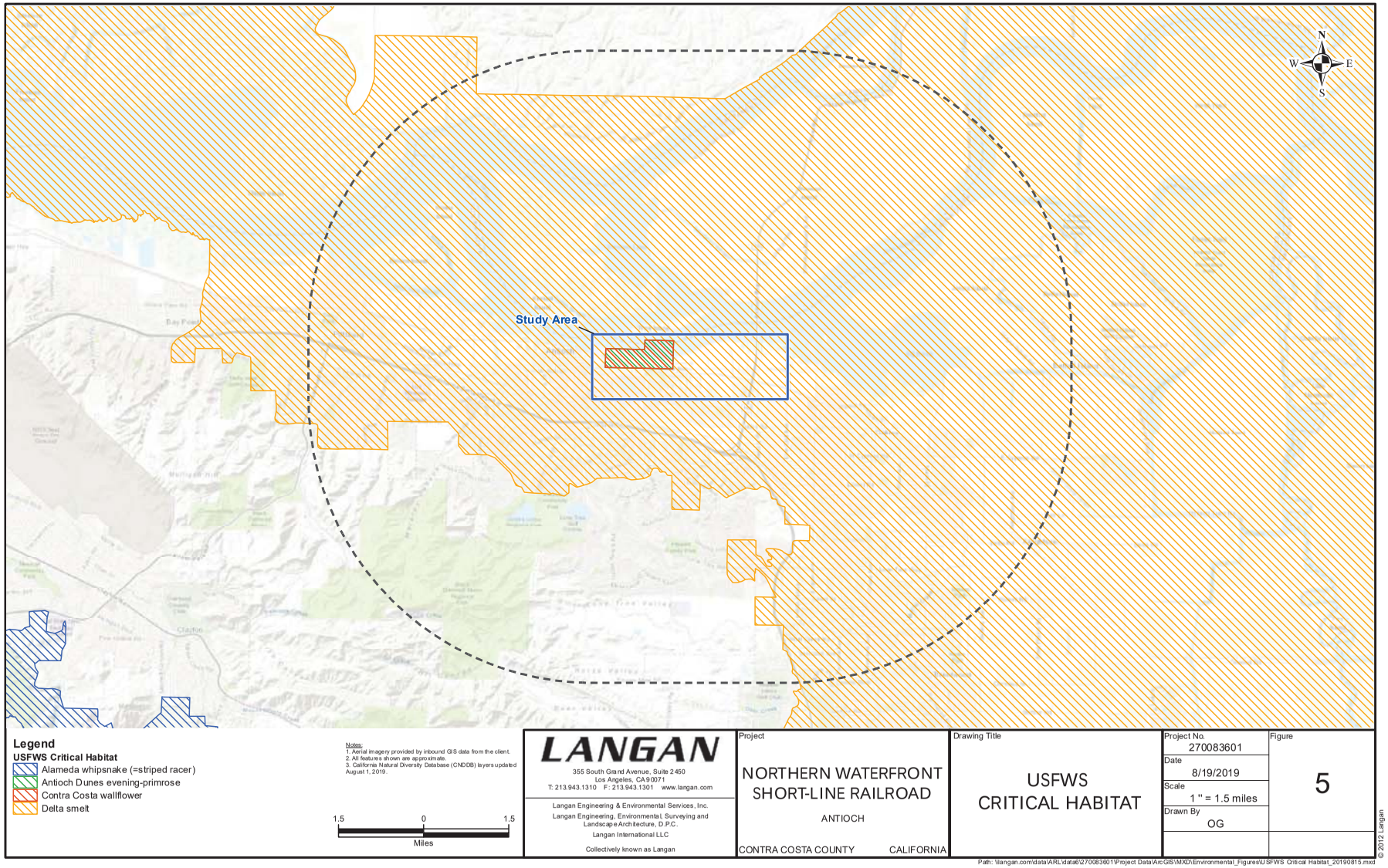


EXHIBIT C
MARKET ANALYSIS

R.L. BANKS & ASSOCIATES, INC.
ECONOMICS | ENGINEERING | SERVICE PLANNING

May 4, 2020

SUBJECT: TASK #4 TECHNICAL MEMORANDUM – MARKET ANALYSIS

This Technical Memorandum incorporates information developed in Task #3, the Assessment of Existing Conditions Memorandum, to describe the current environment in the Study Area. The purpose of Task #4 is to conduct a marketing analysis to: 1) identify opportunities for the freight rail mode to serve new customers and 2) determine the feasibility of a new short-line railroad service in the Study Area.

Introduction

To illustrate the potential types of businesses that could be interested in developing property along waterfront in the Study Area, an evaluation of the various seaports in the San Francisco Bay Area was undertaken. Additionally, based on guidance from economic development officials, a telephone survey was conducted of the businesses in the Study Area that could be potential rail shippers.

Based on interviews conducted in Task #3 with economic development officials, public works officials, BNSF Railway (BNSF) officials and businesses potentially interested in utilizing new short-line railroad service, several potential land development opportunities were evaluated. A list of short-line railroad operators was developed that are best suited to the unique opportunities associated with the Study Area. BNSF officials also were consulted to obtain a better understanding of the considerations that govern its decisions in regards to allowing a short-line railroad operation in the Study Area.

Opportunities for Freight Rail Served Customers

Seaports play a major role in distributing both import and export commodities in the Bay Area. Through the utilization of transload facilities, commodities can be transferred efficiently between ships, trucks and railcars. For example, a logging company will transport harvested trees by truck to a transload facility to load onto ships for export. Import liquid bulk commodities such as fertilizer are transferred from ships to trucks or rail tank cars. The goal is to get a load on or off ships with a minimal amount of handling. The import and export of new vehicles is also handled in a similar way where the ship and the truck or rail facility are in very close proximity to each other allowing for a quick transfer between modes.

Good examples of maritime transload operations can be seen throughout the Bay Area at niche ports such as the Ports of; San Francisco, Redwood City, Richmond and Benicia. Examples of Northern California automobile transload operations can be seen at; the Port of San Francisco, the Port of Richmond and the Port of Benicia. The import and export of bulk commodities also play a major role at port facilities throughout the Bay Area region. However, these ports are constrained by the existing size of their facilities and will not be able to accommodate all of the maritime transload growth necessary to meet the Bay Area's future demand. In 2012, Bay Area ports had a surplus of civilian break bulk, dry, liquid, and neo-bulk cargo berths, as measured by vacant berths. However, cargo forecasts indicate that seven new

WASHINGTON, D.C. AREA OFFICE
2107 Wilson Boulevard, Suite 750 | Arlington, VA 22201 | Tel: 703.276.7522 | Fax: 571.223.5217 | www.rlbadc.com

TABLE C-1
COMMODITIES HANDLED AT BAY AREA PORTS

bulk cargo berths will be needed by the year 2020 to accommodate expected growth in bulk cargoes[1]. The waterfront parcels in the Study Area offer new opportunities for maritime related businesses to move to a more favorable location or take advantage of better rail transportation rates because of its close proximity to highway and rail access.

Table 1[2]
Commodities Handled at Bay Area Ports

Port	Vehicles	Dry Bulk	Liquid Bulk	Container
San Francisco	146,203 units	- Sand - Aggregate		- Cotton - Newsprint
Redwood City		- Sand - Aggregate - Scrap Metal - Gypsum		
Richmond		- Petroleum Coke	- Vegetable Oil - Molasses - Tallow	- Steel - Lumber
Benicia	1,500,000 units	- Petroleum Coke		

The Ports of San Francisco, Redwood City and Benicia only have access to the Union Pacific Railroad (UP). If a shipper desired to use the BNSF for transport to its final destination, the transportation cost would be higher than if they had direct access to the BNSF. This is precisely the reason why Amports has chosen to develop an automotive transload facility at the former Forestar site in Antioch and why other businesses are looking for sites in the Study Area also. Its operation at the Port of Benicia only has access to the UP and shippers' look for opportunities to gain access to more than one railroad in order to obtain the best transportation rates possible.

These ports have been able to capture bulk commodities that do not fit into the larger Port of Oakland's containerized business plan. The waterfront along the Wilbur Avenue Corridor, with its accessibility to rail and, highways, can potentially provide businesses the ability to handle the following group commodities:

- Dry Bulk, such as; cement, lumber, recycled materials, coal, petroleum coke and ores;
- Break Bulk, which includes individually bagged, boxed, drummed or palletized dry goods;
- Hazardous Liquid Bulk, such as; crude oil, ethanol, liquefied natural gas;
- Non-Hazardous Liquid Bulk, such as cooking oils, wine and juice; and
- Roll On/Roll Off Vehicles, including automobiles, trucks, construction and farm equipment. This is the most efficient transload operation because it only requires laborers to drive vehicles on or off a ship.

[1]Source: San Francisco Bay Area Seaport Plan, January 2012, p 15, https://www.bcdc.ca.gov/seaport/seaport.pdf
[2] Source: San Francisco Bay Area Seaport Plan, January 2012, https://www.bcdc.ca.gov/seaport/seaport.pdf

Many of the jobs that have traditionally operated near seaports as service activities related to port operations are moving further east to take advantage of lower land and business expenses to remain competitive. These activities include; warehousing and distribution centers, value-added product assembly for imported goods, bulk commodity transloading, light manufacturing and trucking. These companies are searching for available land with good rail and highway access. Because all five vacant sites in the Study Area are located along the waterfront, they also have the potential to be developed into maritime transload or mode transfer facilities. This capability is a big advantage in attracting new businesses to the Study Area.

Potential Land Development Opportunities in the Study Area

The majority of businesses in the Study Area rely on trucks because their raw materials are sourced in California and the destination for their finished products is in Northern California. Therefore trucking is the most time and cost sensitive mode of transportation. However, the vacant parcels along the north side of Wilbur Avenue had a greater potential to utilize rail because of the opportunities to develop maritime transload facilities. Many maritime transload facilities depend on rail service because they typically handle heavy bulk commodities which are more economical to move by rail.

The BNSF mainline crosses the Study Area just south of Wilbur Avenue allowing for easy rail access for potential business opportunities. Many businesses that locate near waterfront property generally have a need for rail service because of the heavy bulk commodities associated with maritime transload operations. A field investigation of the Study Area was conducted to determine the potential for each parcel being served by a short-line railroad operation. The inspection team investigated all of the vacant parcels in the Study Area and reported the following:

There are two vacant industrial parcels for sale on the south side of Wilbur Avenue and despite the fact they do not have rail spurs, they still have to the potential of being rail served because they are located alongside the BNSF mainline. A vacant parcel with no buildings is located at 2100 Wilbur Avenue. This parcel is currently being used as a parking lot for large trucks. The second vacant parcel is located at 3400 Wilbur Avenue, the site of the former GWF Power Systems Company. This parcel has two vacant buildings on the site which could be easily be turned into a warehouse or truck/rail transload operation.

On the north side of Wilbur Avenue, there are five parcels that have the most potential for rail service because they each had rail connections in the past (Exhibit C). In four of the five parcels, the rail connections have been dismantled because the companies that used to ship by rail are no longer in business. The NRG parcel still has a serviceable rail spur with heavy rail because of the heavy rail cars that used to serve this former power plant. Each of these parcels has good truck, rail and maritime access for future business development. These five sites were investigated by the engineering team and the results of the investigation are listed below:

Fulton Shipyard, 307 Fulton Shipyard Road, Antioch. This 10-acre parcel is currently being used to store equipment and is for sale. Two rail tracks inside the property provide access to the ship yard building and an outside construction yard.

- Engineering Analysis - This parcel is separated from the rest of the parcels in the Study Area by the Antioch Dunes National Wildlife Refuge. Because this is a protected national wildlife habitat, it would not be possible to construct a separate rail connection to the rest of the parcels in the Study Area. The only access available would be to negotiate an agreement with BNSF to either share its rail tracks or obtain an easement to construct a separate track within the existing right-of-way. Otherwise, the only way to provide rail access to this parcel would be to re-install the original rail connection and BNSF would be the only rail carrier that would be able to provide service. The estimated cost to re-install a rail connection to this parcel is $354,808.

- Environmental Analysis - In 2016, when this parcel was sold, a remedial investigation was implemented. The property was found to have soil and groundwater contamination and is listed on the CORTESE list (i.e. State Superfund). The investigation is being led by the Department of Toxic Substances Control and is still underway[3].

- Commercial/Economic Development Analysis - Once this parcel is remediated, it would be a very desirable property for a business that has a need for rail access. Located within the property boundary is; an enclosed shop facility, overhead crane, two lead railroad tracks providing access to a construction yard and the shop complex and an existing wharf. The types of businesses that would be interested in this parcel would be steel fabricators, commercial/industrial machinery repair, truck repair and rolling stock manufacturing. This wharf is in excellent condition and would make this parcel very attractive for a maritime transload facility.

- Transportation Analysis -There is an existing 525-foot wharf available that provides easy access for ships. In addition, good truck access is available via Wilbur Avenue and A Street to State Route 4 and State Route 160 via Wilbur Avenue. The existing BNSF rail connection can easily be rebuilt making for a very desirable rail/truck dual-mode connection. Having both truck and rail access allows shippers the ability to use one mode or another in order to obtain the best transportation rates.

Former Kemwater Chemical Company, 1251 Wilbur Avenue, Antioch. This 18-acre parcel is currently being used to support what appears to be a metal recycling facility.

- Engineering Analysis - This parcel once had a rail connection to the BNSF, but it has been dismantled. The street crossing is still in place but 2,009 feet of new rail and ties would have to be replaced to restore the connection to the BNSF mainline. The estimated cost to re-install a rail connection is $1,262,880.

- Environmental Analysis - Four groundwater contamination sites were identified at this location. The contamination sites are being remediated by excavating and treating the soil. The

[3] Langan Engineering and Environmental Services, Inc. (Environmental Risk Information Services, Table 2, Database Listing Indicative of Release, 2019), p 2

remediation process is on-going[4].

- Commercial/Economic Development Analysis - This parcel would make an ideal location for a small business requiring rail service and/or waterfront access. The types of businesses that would be interested in locating here would include liquid and dry bulk and break bulk commodities, waste recycling, scrap metal, and warehousing.

- Transportation Analysis - Access is available to the San Joaquin River, but a wharf would need to be constructed if a potential business is interested in developing a maritime transload facility. There is good truck access via Wilbur Avenue and State Routes 160 and State Route 4. The only transportation concern is the estimated $1.2 million cost to restore the rail connection to the BNSF mainline located approximately one mile to the west. This additional cost could make the rail alternative less desirable than using trucks. There is good truck access via Wilbur Avenue and A Street to State Route 4 and Wilbur Avenue to State Route 160.

Amports (formally the Forestar Site), 2603 Wilbur Avenue, Antioch. This 110-acre parcel was the site of the former Gaylord Container Corporation which manufactured pulp and paper products. Raw materials were brought in by barge and unloaded at the existing wharf. Finished products were shipped out by truck and rail. The site is currently under a 20-year lease with Amports, Inc., a global auto logistics company that receives new automobiles by ship and arranges for transportation by truck or rail to its final destination.

- Engineering Analysis - The site once had two rail connections. One of the rail connections is located along the western border of the property, is also connected to the same dismantled rail spur that serves the Kemwater Chemical Company. A discussion with Amports revealed that it does not plan to rebuild the western connection because that location does not fit into the overall design of the proposed vehicle transload facility. Instead, the company plans to rebuild a former connection at the eastern end of the property because it has the necessary land available to construct a larger radius curve to accommodate the 89 to 145-foot automobile rail carriers that will be serving this parcel. In order for this parcel to gain rail access again, a new connecting track between the property line and the BNSF mainline would need to be constructed, at an estimated cost of $354,808.

- Environmental Analysis - Groundwater contamination was identified on this parcel in 2004. Ground water contamination and wetland soil remediation is being addressed. The site is still being monitored to ensure the remediation process complies with State environmental requirements[5]. Amports is in the process of preparing an environmental document and obtaining the necessary permits from the State Land Commission to build a larger wharf capable of accommodating vehicle-carrying ships.

[4] Langan Engineering and Environmental Services, Inc., (Environmental Risk Information Services, Table 2, Database Listing Indicative of Release, 2019), p 1
[5] Ibid

- Commercial/Economic Development Analysis - This parcel is already going through the environmental and State Land Commission approval process to becoming a maritime transload facility. Once this project receives the necessary approvals, construction is expected to begin in 2020. The next phase of development will include construction of a rail and truck transload facility which will allow new vehicles to be loaded onto trucks and rail cars for final delivery in California or other parts of the United States. At full build out, Amports expects to process 150,000 to 175,000 vehicles per year and provide 150 full and part time jobs.

- Transportation Analysis - There is a 750-foot wharf available for easy access by ship. Amports plans to rebuild this wharf to accommodate larger ocean going vessels and develop an automobile transload facility. The land is mostly level with the ability to easily reconstruct a rail connection and develop a truck and rail transload facility. This location is ideal for a marine, truck and rail transload operation having good access to State Route 4 and to State Route 160 via Wilbur Avenue.

NRG Marsh Landing Generating Station (Contra Costa Power Plant), 3201 Wilbur Avenue, Antioch. This 86-acre parcel is the site of a former coal-fired power plant. The plant was shut down in 2013, after NRG Energy, Inc. opened its new state-of-the-art natural gas power plant adjacent to the old facility. The total available land available for development is comprised of the 39-acre former Marsh Landing Power Plant and an adjacent 47-acre undeveloped parcel.

- Engineering Analysis - Due to the heavy rail cars that once brought petroleum coke to this power plant, there is an existing heavy rail connection to the BNSF mainline that is serviceable and is still connected to the BNSF mainline. No additional rail work would be necessary at this location in order to begin shipping by rail again.

- Environmental Analysis - This parcel has gone through several pollution investigations since 1986. In 2018, a groundwater, surface water and soil investigation noted further remediation was necessary to clean up the entire parcel. Mitigation of contaminated groundwater was found to be under control as of June 2019 and a corrective measure implementation work plan was scheduled to begin in September 2019[6].

- Commercial/Economic Development Analysis - This parcel also enjoys excellent potential as a manufacturing facility, given its close proximity to an adjacent electricity generating facility. This nearby power generating station eliminates the cost of installing the necessary electrical infrastructure to bring in power from another location. There is also an existing wharf making this parcel desirable for a maritime transload facility. Discussions with the realtor handling the sale of this parcel indicated interest by three businesses looking for marine transload facilities in the Bay Area. Other uses would include light manufacturing, wet and dry bulk and break bulk commodities, waste recycling and warehousing.

[6] Ibid

- Transportation Analysis -There is a 150-foot wharf available for easy access by ship. Once the old power plant is removed, this parcel would make an ideal maritime transload facility. This parcel has many benefits including; on-site electrical power, an existing wharf, good access to State Route 4 and State Route 160 via Wilbur Avenue and an excellent rail connection, making this location the best parcel in the Study Area for multi-modal transportation access.

Oakley Logistics Center (formally known as the DuPont Site), 6000 Bridgehead Road, Oakley. This 345-acre parcel is the location of the former DuPont Chemical Manufacturing Oakley Plant. The parcel is the largest parcel available for development in the Study Area.

- Engineering Analysis - A wye rail connection is still in place, but will need to be extended back into the property to serve any new business requiring rail access. The wye connection was installed to allow the railroad to access the site from either the east or the west. There is also a small railroad yard just west of the wye connection for rail car storage. The estimated cost to re-install a rail connection to the BNSF mainline is estimated to be $220,800

- Environmental Analysis - This site is undergoing corrective action under the Resource Conservation and Recovery Act. The northern and southern development areas and wetlands remediation activities will remove and/or treat impacted sediment, soil, and groundwater at the site in order to eliminate or reduce potential exposures and hazards at the site[7]. As the remediation is completed, the remediated areas will be ready for development. Full remediation is expected by 2021.

- Commercial/Economic Development Analysis - The North Point Development Firm, located in Kansas City, Missouri, is in the process of purchasing this property. The company plans to develop 143 acres along the southwest portion of this parcel as part of the Oakley Logistics Center. The remaining 232 acres will remain as a green space. The proposed development includes the construction of five warehouses to serve as a regional warehouse and distribution center. The planned warehousing and distribution center has been approved by the City of Oakley. The 2-million square foot light industrial, warehouse, distribution, e-commerce fulfilment, and light manufacturing center will be provide a an estimated 1,900 new jobs.

- Transportation Analysis - This parcel does not have direct access to the San Joaquin River because approximately 200-acres along the northern portion are designated as an environmentally sensitive area. However, there is direct access to State Route 160 and State Route 4 and the BNSF Railway, making it an ideal location for shippers desiring good truck and rail access. There is rail infrastructure within the BNSF right-of-way that includes an existing wye connection, and a nearby rail storage yard. Rail infrastructure could be extended into the parcel to whatever location rail service is desired. The proposed Oakley Logistics Center is planned to be a predominately a truck-served facility with the rail option available to any tenants desiring rail service.

[7] Langan Environmental services, Inc., (Environmental Risk Information Services, Table 2, Database Listing Indicative of Release, 2019), P.2

Opportunities for Freight Rail Served Customers Findings and Conclusions

While conducting the field investigation an evaluation was conducted to determine if a short-line rail corridor could be constructed to connect all five vacant parcels on the north side of Wilbur Avenue. The results of that evaluation are listed below:

1. The Fulton Shipyard parcel is completely isolated from the rest of the vacant parcels in the Study Area. In between this parcel and the Kemwater Parcel lies the Antioch Dunes National Wildlife Refuge. It would not be possible to construct a railroad through this protected area.

2. A discussion was conducted with Amports regarding the possibility of constructing a railroad to connect the Kemwater Parcel with the NRG Parcel. Amports stated it would not be willing to allow any other railroads to cross through its property because it needs all of the available land for its own operation. This position by Amports essentially extinguishes any possibility to construct a separate rail corridor in the Study Area to connect all the remaining parcels.

3. There field investigation also determined there was no way to connect the Oakley Logistics Center parcel with the rest of the Study Area due to the inability to cross underneath State Route 160. The existing highway under crossing is not wide enough to accommodate a railroad track due to space constraints.

As a result of these three findings, the only possible way to connect the vacant parcels in the Study Area is by obtaining either an easement from BNSF to construct a separate track alongside of its mainline or negotiate a trackage rights agreement to allow a short-line railroad to operate on its mainline within the Study Area.

Feasibility of a New Short-line Railroad in the Study Area

A company's ability to use rail is just one part of its ultimate decision to actually utilize rail service. The growing inclination of businesses to consider rail results from changes in the economics of transportation nationally. Four discernable trends suggest a growing role to be played by freight rail in the near future.

First, demands on existing surface transportation infrastructure have never been greater. While public attention is focused on the steadily increasing number of motor vehicle miles being driven every year, equally profound effects are being manifested on the railroad infrastructure. Demand for railroad trackage is manifest in the fact that Class I railroad freight train miles traveled throughout the United States have increased, from 375 million in 1991 to 465 million in 2017.

Second, large railroads are enjoying a period of relative prosperity. A number of factors including deregulation, mergers and other industry restructuring trends result in railroads that are better poised to meet future challenges than in past decades. Short-line railroads increasingly are the rail freight industry's point of contact with local customers, so the financial condition of those regional and local lines will have

a major effect on economic development.

Third, is the relatively high cost of fuel. Combined with growing congestion, a chronic shortage of drivers, and increased fuel costs changes the relative formula for using trucks as opposed to rail. While the congestion encountered by more and more truck movements is an obvious problem, the impact of rail efficiency is even more far-reaching. An industry "rule of thumb" is that one rail car carries a load equivalent to four trucks. The very nature of rail adds even more efficiency; metal wheels moving along metal tracks generate less resistance than rubber tires moving on pavement. All told, a gallon of fuel will move a ton of freight much farther on rail than on a highway.

Fourth, increasingly stringent environmental regulations and resistance of property owners to new highway construction in urban settings limit the amount of highway expansion possible and focuses attention on alternatives to private motor vehicles. Dozens of cities, large and small, have examined the feasibility of one or more rail passenger technologies to ease roadway congestion, benefit the environment, and support revitalization of urban cores. Similarly, governments at all levels are increasingly studying the effect of truck movements on highway capacity and the advantages of diverting at least some of those loads to rail.

With respect to such matters, rail competes extremely well, with a reputation for having a "light environmental footprint" when compared with highways. For instance, for every ton of goods moved one kilometer, freight rail emits one-third the nitrogen oxide and carbon monoxide and one-tenth the volatile organic compounds and diesel particulates emitted by heavy trucks. The very fact that rail development must follow the rail alignments reduces the potential for sprawl. Greater use of the rail mode has proved to be one area where environmentalists and economic developers have found significant common ground.

Short Line Railroads

A short-line railroad is a small or mid-sized railroad company that operates over a short distance relative to larger, national railroad networks. Short-line railroad generally exist for one of three reasons: 1) to link two industries requiring rail freight together (for example, a coal mine and a power plant; 2) to interchange revenue traffic with other, usually larger, railroads or 3) to operate a tourist passenger train service. Some short lines exist for all three of these reasons.

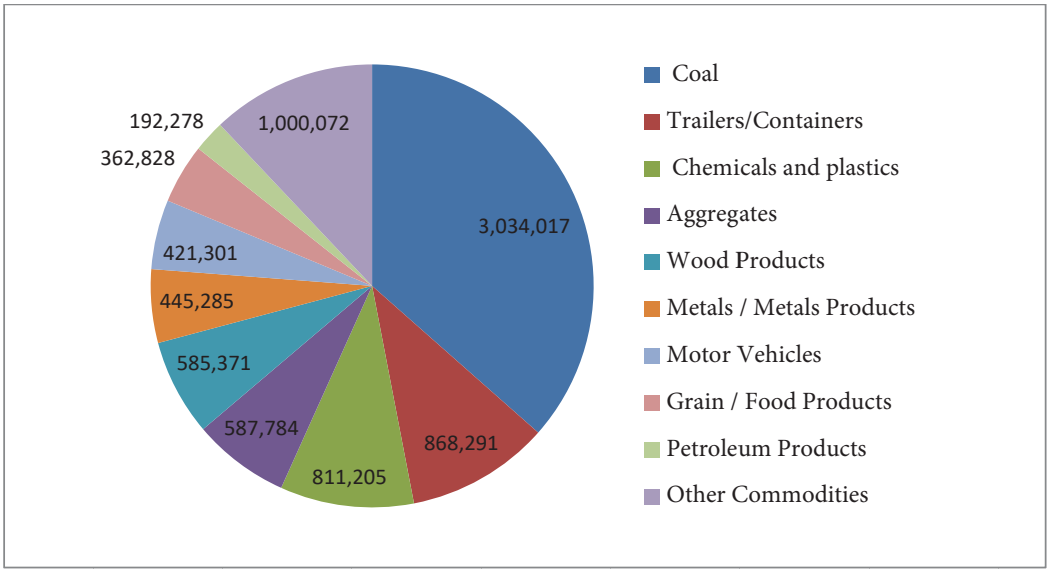
In general, short-line railroads provide many benefits to shippers. Among them are:

1. When a Class I carrier's service deteriorates, they offer alternative rail options if they connect to multiple Class I carriers;
2. They are a means to gain competitive rates when they connect to multiple Class I carriers;
3. They provide quality and timely service;
4. They make decisions at the local level; and
5. They provide links to communities and companies.

Another factor that makes short-line railroads attractive is the decision-making process that the smaller

railroads enjoy. Decisions affecting both costs and revenues are made at the local level, where tradeoff issues are best understood. Frank Turner, a former President of American Short-Line Railroad Association (ASLRRA), said that "small railroads are an essential part of the national rail network, linking many small towns and rural communities to the system and providing competitive options for rail shippers." Smaller railroads help smaller communities and vice versa. Those links allow shippers options and gain them access to Class I carriers. An ideal location for short line and regional railroads is a town with a link from a short-line railroad to two or more Class I carriers, providing a good incentive for businesses to set up satellite facilities or to relocate to that town.

Table 2
Types of Commodities Handled by Short-Line Railroads in the United States in 2015[8]



In California, there are 21 short-line railroads and seven switching and terminal railroads, of which five are publicly owned. A switching and terminal railroad is a freight railroad company whose primary purpose is to perform local switching services or to own and operate a terminal facility.

Of the 21 short-line railroads in California, there are three potential operators that would be well- suited to the unique conditions and opportunities associated with rail transportation in the Study Area. These operators are very familiar with railroad industry operating standards and, agreements with Class I railroads, businesses and public agencies. They are all familiar with the Federal and State safety regulations and have worked closely with cities and counties to ensure that safety is their first priority. Each of the five short-line railroad operators have many years of experience operating maritime and land based transload operations in California. They are known for their professionalism in providing quality service to meet their customers' needs.

[8] American Shortline Railroad Association, Member Survey, 2016

These short-line railroad profiles are described below:

1) **Genesse & Wyoming, Inc. (GWRR) Darien, CT.** This short-line railroad company operates 113 short line and regional freight railroads in 41 U.S. states and four Canadian provinces, including six short lines in California, including the **Central Oregon & Pacific Railroad (CORP)**, the **California Northern Railroad (CFNR)**, the **San Joaquin Valley Railroad (SJVR)**, the **Ventura County Railroad (VCRR)**, the **San Diego & Imperial Valley Railroad (SDIY)** and the **Arizona & California Railroad (ARZC)**. G&W is experienced with waterfront transload operations; it works in close coordination with publicly-owned seaports and rail ferry services at forty seaports worldwide.

2) **OmniTRAX, Inc. (OmniTRAX) Denver, CO.** This short-line railroad company operates 23 short-line railroads 22 short-line railroads in 12 U.S. states and one Canadian province. OmniTRAX is experienced with barge terminal and transload operations. In California, OmniTRAX operates the **Stockton Terminal & Eastern Railroad (STE)** in Stockton.

3) **Watco Transportation Services (Watco), Pittsburg, KS**. Watco is the largest short-line railroad operator in the U.S. operating 41 short-line railroads in 23 states. Watco is experienced with seaport and transload operations. In California, Watco operates the **Pacific Sun Railroad (PSRR)** in San Diego County. Commodities handles include; corn, soy, lumber, plastic pellets, beer, paint and waste for recycling.

4) **Sierra Northern Railway (SERA), Woodland, CA.** SERA operates a railroad between West Sacramento and Woodland, including the maritime transload facility at the Port of Sacramento. The railroad also serves rail customers between Sonora, Oakdale and Riverbank, including the 170-acre Riverbank Industrial Complex. SERA interchanges with Union Pacific Railroad (UP) and BNSF Railway (BNSF) in West Sacramento and BNSF in Riverbank. In addition, it is the contract railroad operator at the Department of Defense's Concord Naval Weapons Station, located a few miles west of the Study Area.

5) **San Francisco Bay Railroad (SFBR), San Francisco, CA.** This short-line railroad that has been in operation since 2000 and operates over five miles of track in San Francisco and serves the maritime transload facility at the Port of San Francisco. The railroad provides all of the switching services for the automobile and bulk commodity transload shipments at the Port of San Francisco.

BNSF Railway

BNSF has a long history of partnering with short-line railroads. Currently BNSF has 209 short-line railroad partners in 27 states. BNSF's goal is to provide the best service to its customers through its railroad operations, sometimes partnering with short-line railroad operators who share BNSF's vision. BNSF, as a common carrier, has an obligation to serve businesses that require rail service near its rail

system. A common carrier is legally bound to carry all passengers or freight as long as there is enough space, the fee is paid, and no reasonable grounds to refuse to do so exist[9]. Because BNSF owns and operates a railroad that runs through the Study Area and originally provided the rail access to the vacant parcels along the waterfront, it has first priority in determining how potential new shippers would be served.

BNSF uses an internal review process to evaluate each potential new customer that is interested in shipping by rail. This process involves analysis by each of the affected rail groups (e.g. network planning, service design, operations, economic development, specific commodity groups, short-line development, etc.) that will be impacted by any new shipper. The extensive evaluation process involves over 200 factors. In most cases, BNSF's prefers providing direct rail service to its customers. However, if more efficient and economically advantageous, BNSF may engage a short-line railroad or rail switching contractor to provide the necessary switching services it would normally undertake itself.

BNSF was asked to review Tech Memo #4, the draft Marketing Analysis. After reviewing the Tech Memo, BNSF stated "it would not likely support a separate, short-line railroad operation." in the Study Area. BNSF's position; at the present time, is that there exists sufficient rail business in close proximity to the Study Area and enough growth potential for BNSF to provide direct rail service without engaging a short-line railroad operator to act in an intermediary capacity. However, those decisions could change and will be made on a case-by-case basis when it evaluates each proposed business opportunity. The final decision will be made on what makes the most economic sense to BNSF and the potential shipper.

Union Pacific

In addition to the possibility of utilizing the BNSF right-of-way, the field investigation team looked at the feasibility of constructing a rail line from the UP branch line near State Route 4 and State Route 160, just south of the Study Area. In order to access this rail line as an alternative rail corridor, a major financial undertaking would be necessary. The only opportunity to construct a new rail corridor would be adjacent to State Route 160. It would require preparing a California Environmental Quality Act (CEQA) document and hiring an engineering firm to develop the plans and estimate to construct the new rail connection. This option would require purchasing approximately two miles of right-of-way at an estimated cost of $2 million per mile. Once the new rail line approached Wilbur Avenue, it would have to cross the BNSF mainline. BNSF would most likely require this new rail line to be grade separated to avoid any delays on its own mainline. The estimated cost of a grade separation is $20 to $30 million. However, this option would only provide rail access to one potential business at the NRG Parcel.

Feasibility of a New Short-line Railroad in the Study Area Findings and Conclusions

Given BNSF's position in regard to supporting a short-line railroad operation, it is very unlikely that BNSF would agree to any option that involves utilizing its railroad right-of-way. This essentially eliminates any opportunity to work with BNSF on accessing its right-of-way or gaining trackage rights

[9] *West's Encyclopedia of American Law, edition 2*. From https://legal-dictionary.thefreedictionary.com

through the Study Area. Conversely, building a connection to the Union Pacific would require very expensive upfront capital costs. These initial costs would make it difficult to obtain enough return on investment to justify this major rail construction project.

A short-line railroad cannot operate without a Class I railroad partner. BNSF has stated it would most likely not support a short-line railroad operation in the Study Area. Therefore BNSF cannot be relied on to help facilitate a short-line railroad operation in the Study Area. The UP option will only get the rail line access to the NRG parcel because the other potential rail served parcels are isolated. It would not be possible to construct an independent rail line to connect to the remaining parcels within the Study Area due to obstructions at the Antioch National Wildlife Refuge, the Amports property, and State Route 160 undercrossing. Therefore, it would be difficult to justify the large expense required to provide rail access to the Study Area for just one shipper. In addition, the new short-line railroad would have a difficult time providing cost competitive rates and service because BNSF could provide the same service at a much lower rate. Based on the overall rail evaluation performed in the Study Area, a short-line railroad operation would not be feasible.