Business and Industry

The assessment of key business and industries in the project area focused on commercial and industrial land uses. While the types of uses considered in this chapter are broad, all provide jobs to people living both within and outside of the county, help drive local and regional economies, and support the research, development and production of critical goods. In addition, the many commercial land uses in the project area provide necessary services to local residents that would need to either travel to find what is needed or go without. The temporary closure or permanent loss of businesses and industries in the project area would have widespread consequences both within the county and well beyond. Assessment

Commercial Land Uses

Commercial land uses provides goods and services that are critical to the day-to-day functioning of neighborhoods and communities. Community members tend to shop and access services (e.g., banks, auto service, grocery shopping, medical and dental services) near where they live and work. For community members with limited mobility, or those that do not have a car and rely on public transit, proximity to goods and services is especially important. Commercial land uses of all kinds are also a source of local jobs, and they contribute to the social cohesion of a neighborhood or community.

A variety of commercial land uses were assessed[1], including stores, supermarkets, auto repair and gasoline stations, medical and dental offices, banks and other financial institutions, restaurants, offices and small commercial businesses of all kinds. Many of these commercial uses, including supermarkets and medical offices, are limited in the project area, and community members have to travel by car or on public transit to obtain needed goods or services. The cost of owning a business varies significantly across the county. For example, retail and office space is more expensive in West and Central County where there is above-average rental prices and low vacancy rates. East Contra Costa on the other hand has the lowest retail rental prices in the East Bay with much higher vacancy rates and difficulty filling units.

KEY ISSUE STATEMENT

Access to commercial facilities may be disrupted due to a flood event, which can have far-reaching consequences on local communities, including workers being unable to report to work, and necessary goods and services becoming unavailable to community members. Most commercial buildings are not designed to withstand flooding, and even those not directly at risk will be vulnerable if roads that provide access are flooded, or if power, water or wastewater services are disrupted. Even temporary closure of

[1] Commercial land uses were evaluated based on the County Assessor's Parcel data.

commercial uses can have significant social and economic impacts on neighborhoods and communities, and can impede a speedy recovery after a flood event.

EXPOSURE TO CURRENT AND FUTURE FLOODING

In the area assessed[2] there are a total of 277 parcels with designated commercial land uses at risk from flooding. Almost half of these are located in Martinez and most of the remainder are in Richmond (58 parcels) and Rodeo (55 parcels).

The majority of commercial uses at risk are within the current 100-year floodplain (229 parcels), and most of these are commercial stores (excluding supermarkets). Fifty-nine parcels already at risk of flooding may also experience more frequent or extensive flooding in the future due to sea level rise. Watershed-specific hydraulic modeling is, however, needed to improve the understanding of the impact that higher Bay water levels could have on flood risks within and beyond the existing 100-year riverine floodplain boundary.

A total of 36 parcels with designated commercial uses not currently within the 100-year floodplain are at risk of flooding as sea level rises, and most of these are office buildings. Some of these parcels may currently be protected from the 100-year flood by the existing shoreline while others may be at a distance from either the Bay shoreline or creek and channel banks and therefore beyond the extent of current flooding. Only six additional parcels are located in low-lying adjacent areas that may not be directly flooded with 6 feet of sea level rise, but could be impacted by stormwater system backups or failures as sea levels rise.

Commercial parcels located the current 100-year floodplain that could also be exposed to sea level rise.

Commercial Parcels	Current 100-year Flood only	100-year Flood + Sea Level Rise (cumulative count)					
		1'	2'	3'	4'	5'	6'
Auto repair, new car sales, service centers, car washes, mini lubes, etc.	24	24	24	24	24	25	29
Boat harbors/marinas	14	14	14	14	14	14	14
Motel, hotel, mobile home parks	4	4	4	4	4	5	7
Financial, medical, dental and other office buildings	42	42	42	42	42	42	47

[2] Commercial parcels assessed are those located between Richmond and Bay Point up to ½ kilometer inland from the area inundated by 6 feet of sea level rise. This area represents the portion of the Contra Costa ART project area that is most likely to be directly impacted either by coastal flooding or by increased riverine flooding as sea level rises.

Restaurants, drive thru and inside service	6	6	6	6	6	6	7
Recreational facilities	3	3	3	3	3	4	4
Commercial stores (not supermarkets), shopping centers, multiple and commercial	75	75	75	75	75	75	89
Vacant	23	23	23	23	23	26	32
Total	**191**	**191**	**191**	**191**	**191**	**197**	**229**

Commercial parcels that could also be exposed to sea level rise or are located in adjacent low-lying areas.

Commercial Parcels	Sea Level Rise (cumulative count)						Low-lying, adjacent to 6 feet SLR
	1'	2'	3'	4'	5'	6'	
Auto repair, new car sales, service centers, car washes, mini lubes, etc.	0	0	0	2	3	3	0
Boat harbors/marinas	2	2	3	3	6	6	0
Motel, hotel, mobile home parks	0	0	0	1	1	1	1
Financial, medical, dental and other office buildings	0	0	0	0	2	5	0
Restaurants, drive thru and inside service	0	0	0	1	2	3	0
Recreational facilities	0	0	0	0	0	0	0
Commercial stores (not supermarkets), shopping centers, multiple and commercial	0	0	0	2	6	11	2
Vacant	0	0	0	1	4	7	3
Total	**2**	**2**	**3**	**10**	**24**	**36**	**6**

ASSET DESCRIPTION

The majority of commercial uses at risk of flooding are identified in the assessor's data as commercial stores (102), one of which is a shopping center (in Bay Point) and 11 that are multiple and commercial (miscellaneously improved). Of the 52 parcels identified as office buildings, one is a dental office in Rodeo and four are medical offices in Martinez. There are also four banks included in the office subcategory (all in Martinez). Most of the automobile related parcels are identified as auto repair facilities,

although six are service stations and one is a new car business (in Martinez). A total of 42 parcels are identified in the assessor's data as vacant, however this number may not accurately reflect the current number of commercial parcels without a business use.

In addition, 20 parcels at risk are boat harbors located on the shoreline (see Parks and Recreation Chapter for a discussion of public marinas) and six of the eight "motel, hotel, mobile home parks" parcels comprise the two mobile home parks in the project area (see Housing Chapter for a discussion of mobile homes). The four recreational parcels include the Richmond Rod and Gun Club, the Martinez Gun Club, and Rithel Park in Crockett.

Richmond

There are 58 commercial parcels identified at risk of current or future flooding in Richmond. Sixteen of these are boat harbors/marinas, most of which are in the Brickyard Cove neighborhood. The remained of commercial uses are stores, office buildings and restaurants that are mostly located along the southern Richmond shoreline, to the south of I-580.

Rodeo

There are 55 commercial parcels identified at risk of current or future flooding clustered in Downtown Rodeo along Parker and San Pablo Avenues. Six of these are auto repair garages, 20 are commercial stores (excluding supermarkets), five are office buildings, and 12 are vacant. In addition, two of the parcels are associated with the Rodeo Marina, and five comprise the mobile home park.

Port Costa

There are 10 parcels with designated commercial uses in Port Costa that are within the current 100-year floodplain. This includes four vacant parcels, one hotel, and five commercial stores. Commercial uses are not shown at risk from sea level rise, although the Port Costa shoreline is protected by the UP rail line, which is neither constructed nor maintained to provide flood protection.

Hercules

There are four vacant commercial parcels in Hercules within the 100-year floodplain of Rodeo Creek. One of these parcels, located on Bayfront Boulevard, is also at risk from 5 feet of sea level rise. Although these parcels are identified in the assessor's data as

vacant, they are part of the Hercules Waterfront (also referred to as Hercules Bayfront), a 40-acre transit-oriented, mixed-use, traditional neighborhood project.

Martinez

There are 128 commercial parcels identified at risk of flooding clustered in Downtown Martinez. The majority of these commercial uses are within the 100-year floodplain of Alhambra Creek and are not shown to be at risk from sea level rise. Watershed-specific hydraulic modeling of Alhambra Creek are needed, however, to improve the understanding of what impacts higher Bay water levels could have on flood risks within and beyond the existing 100-year riverine floodplain. Commercial uses at risk includes 20 automobile related businesses (mostly auto repair garages), 58 commercial stores, 29 office buildings, 4 medical/dental offices, and 4 banks. There are also eight vacant parcels, one recreation parcel (the Martinez Gun Club), and two restaurants at risk.

VULNERABILITIES

INFO1: Commercial uses are privately owned, and there is often a lack of publically available information about the specific goods or services provided, number of employees or, and the flood vulnerability of buildings or structures on site.

GOV1: Commercial uses may be owned and operated by property owners that may not have the capacity to engage in local planning, or by renters that have little control over improvements to the property where they business is located.

FUNC1: Commercial uses rely on outside infrastructure and services provided by public and private agencies, including roads, electricity, water, and wastewater. Disruption of road access, power, water or wastewater services can impact the commercial use, which either may need to be closed or if open may not be accessible to customers.

FUNC2: Commercial uses providing medical and dental services are critical because loss in these services could have significant impacts on community members; in particular those that are mobility limited or rely on public transportation.

FUNC3: Commercial uses that provide local neighborhoods and communities with goods and services that are otherwise limited are particularly important as if they have to close or go out of business due to flooding residents will either have to do without or travel to find replacement goods and services.

PHYS1: Most commercial uses are vulnerable to flooding because the buildings and structures were not designed to withstand flooding nor are constructed of waterproof or non-corrodible materials.

PHYS2: Some commercial entities use or store hazardous materials including paints, cleaners, oils, batteries, pesticides, asbestos, and medical waste, which if not stored properly or not elevated above possible flood waters could be released during a flood.

PHYS3: Many buildings rely on electric or mechanical components, such as fans, boilers, and pumps that cannot function if wet and are often located below grade or on the ground floor.

PHYS4: Commercial uses with unprotected at- or below-grade entrances are at risk of damage if flooded. This is particularly an issue for garages or warehouses with large roll up doors.

PHYS4: Commercial uses that rely on power but that do not have back-up power generation and fuel supplies are more vulnerable to disruption and loss of goods stored on site.

CONSEQUENCES

Society and Equity: Disruption of commercial uses that provide medical and dental services, other critical services, or goods and services that are locally limited could have significant consequences on neighborhoods and community members, particularly those who rely on public transportation or have limited mobility. The disruption or closure of commercial uses can have significant consequences for employees, as loss of access to the workplace can cause lost wages and jobs. This will be particularly true for small business owners that might not be able to afford costs associated with closures and/or recovery from damages. Community members may lose access to goods and services they rely on, impacting neighborhood function and community resilience. Flooding of facilities that store hazardous materials can result in public health or environmental impacts if contaminants are released into floodwaters.

Environment: Flooding of facilities that store materials such as pharmaceuticals, petroleum products, cleaners, pesticides or toxics can impair water quality if released into the Bay, river systems, or near-shore habitats.

Economy: Commercial uses provide Contra Costa County with economic benefits that include jobs for residents, services to communities, and tax revenue to the cities and the county. Damage or disruption of commercial uses could result in significant costs of replacement or repair of buildings, equipment, and goods stored onsite. Flooding of commercial uses could cause temporary or permanent jobs loss for hundreds of workers, resulting in lost business revenues, employee wages, and fees or taxes.

Industrial Land Uses

The Industrial Sector as described in the Contra Costa County General Plan includes industrial activities such as processing, packaging, machinery repair, fabricating, distribution, warehousing and storage, research and development, and similar uses as well as metalworking, chemical or petroleum product processing and refining, heavy

equipment operation and similar activities. Industrial lands are diverse and include many different types of manufacturing, warehouse and light industrial sites, each with different characteristics designed to support different business operations[3]. For example, heavy industrial sites typically have buildings designed to house specialized equipment needed for manufacturing, while light industrial sites where light assembly operations take place have less extensive physical plant and space requirements.

Countywide there are a number of large and concentrated industrial land uses, many of which are used for heavy industry. Within the project area there are 482 industrial land use parcels, the majority of which are used for light industry (300 parcels)[4]. Additionally there are 115 parcels of heavy industrial (which comprise the bulk of the industrial land use acreage due to their large size), 50 industrial parks parcels, and 17 research and development parcels.

Chemical and petroleum refining is the most concentrated heavy industry in the county, and accounts for the most of the manufacturing jobs (see Energy Sector chapter for a discussion of refineries in the project area). A number of these large firms are located along the shoreline as these industries are often associated with marine terminals, rail, pipelines, or other modes of bulk goods transport. These facilities house an array of specialized equipment, and generally require high capacity power, ventilation, pressurized air or water lines, and access via local streets and roads to highways and interstates.

In addition to these heavy industrial land uses there are light industrial facilities where manufacturing activities such as processing, packaging, distribution, and machinery repair occurs. Light industrial uses also include research and development facilities focused on product development, some of which are also considered “flex space” as they have office space, retail showrooms, or small warehouse uses. Flex space facilities are used by a variety of industries, including information technology, electronics, and biotechnology.

Lastly, industrial parks have multiple types of facilities onsite, usually including a mix of light or heavy industrial, warehouse, and flex space uses. One of the largest industrial parks in the project area is located on Waterfront Road in Martinez, and is currently used by Copart Salvage Auto Auctions as an automobile storage and auction facility.

KEY ISSUE STATEMENT

While the four refineries in the project area comprise the majority of the industrial acres at risk of flooding, light industrial land uses comprise the majority of parcels at risk. About half of these light industrial parcels are not current in the 100-year floodplain and therefore property owners and site operators may not be aware of the flood risk they

[3] Technical Memorandum #2, Contra Costa County Northern Waterfront Initiative Market Assessment, September 6, 2013.

[4] Industrial land use subclasses based on the county assessor’s parcel data.

may face in the future, and may not have facilities or site operations that can be made resilient to flooding either on or off site.

EXPOSURE TO CURRENT AND FUTURE FLOODING

Of the 428 industrial parcels in the project area a total of 277 parcels (approximately 5,934 acres[5]) are at risk from current and/or future overland flooding or from street or site flooding that could occur if stormwater systems are unable to drain or are under capacity.

A total of 128 parcels (4,853 acres) of industrial lands are at least partially within the 100-year floodplain[6]. Approximately two-thirds of these (83 parcels totaling over 4,600 acres) are at risk of more frequent or extensive flooding due to sea level rise, and the majority of these will be at risk with only 1-2 feet of sea level rise.

There are 45 parcels totaling 214 acres within the 100-year floodplain that are not shown to be directly at risk of sea level rise; however, watershed-specific studies are needed to understand the potential for sea level rise to impact the frequency or extent of flooding both within and beyond the current floodplain.

Industrial parcels located partially of fully with the current 100-year floodplain that could also be exposed to sea level rise.

Industrial Parcels	Current 100-year Flood only	100-year Flood + Sea Level Rise (cumulative count)					
		1'	2'	3'	4'	5'	6'
Heavy industrial	6	43	50	58	61	62	64
Industrial Park	8	9	9	9	9	9	10
Light industrial	31	41	43	45	50	52	54
Research and Development	0	0	0	0	0	0	0
Total Parcels	45	**93**	**102**	**112**	**120**	**123**	**128**

There are 137 parcels totaling 1,012 acres of industrial lands not currently at risk of flooding that could be exposed to sea level rise. These parcels are either protected from the 100-year flood or are at distance from either the Bay shoreline or creek and channel

[5] Because parcel acres is not reported for all records in the county assessors data acreage was calculated based on parcel area using the geometry function in ArcMap. Calculated numbers are similar but not identical to the acreage reported in the Assessors data. Therefore acreages are approximate.

[6] Industrial land use information based on the Contra Costa Assessor's parcel data. Parcels were counted as exposed if any portion of them intersected with the current 100-year floodplain or the inland extent of sea level rise. Site-scale analyses are needed to better understand how flooding could affect the developed portion of these parcels, some of which are quite large.

banks and therefore beyond the extent of current flooding. Most of these parcels are light industrial land uses (95 of the 137), however the 20 heavy industrial parcels comprise the majority of acreage at risk (740 acres).

An additional 12 light industrial parcels totaling 70 acres are within low-lying areas adjacent to the inland flood extent from 6 feet of sea level rise. While potentially not at risk of overland flooding, industrial sites within these low-lying, adjacent areas could be flooded by backups in the stormwater or flood management systems. Further investigation of the capacity and condition of the stormwater conveyance system both on and off site will be needed to determine the potential for localized flooding to occur during storm events as sea levels rises.

Industrial parcels that could also be partially or fully exposed to sea level rise or that are located in adjacent low-lying areas.

Industrial Parcels	Sea Level Rise (cumulative count)						Low-lying, adjacent to 6 feet SLR
	1'	2'	3'	4'	5'	6'	
Heavy industrial	0	0	2	10	15	20	0
Industrial Park	0	0	0	1	10	13	0
Light industrial	1	1	3	26	60	95	12
Research and Development	0	0	0	5	7	9	0
Total Parcels	1	1	5	42	92	137	**12**

As many industrial parcels are large and located directly on the shoreline the analysis conducted for this assessment could over-estimate the exposure of industrial lands in the project area. In addition, the acreage calculations do not discount the portion of parcels that are water rather than land, as is the case for three parcels owned by Chevron USA Inc. in Richmond and one owned by Tosco Corporation (Conoco Phillips 66) in Rodeo. Importantly, the analysis does not fully reflect the potential impacts of current or future flooding on site operations. Site-based analyses are needed to understand what facilities or infrastructure are within the portion of the industrial site at risk of flooding. In addition, a better understanding of the vulnerability of the off-site assets or services the industrial land relies on, including roads, power, water and wastewater services, is needed in order to fully understand the vulnerability of operations on site.

ASSET DESCRIPTION

The majority of industrial land uses at risk are clustered in Richmond and Martinez, with a small number of industrial parcels at risk in San Pablo, Hercules, Rodeo, Crockett and Bay Point. Fifty-one of the industrial parcels at risk from current and/or future overland flooding or street or site flooding are owned and operated by the four refineries in the project area (see Energy Chapter for more information about the refineries in the project area). While the refineries comprise three-quarters of the total industrial land area at risk (approximately 4,459 acres), they represent only 20% of the parcels with industrial land uses in the project area. The majority of these other parcels are used for light industry by a diversity of individual property owners and site operators. About half of the light industrial parcels at risk from sea level rise are not in the current 100-year floodplain. These parcels are likely more vulnerable because property owners and site operators may not be aware of their flood risk, and therefore may not have considered the need for planning and capital improvements to protect their properties from flood damage.

Richmond / North Richmond

The majority of industrial land uses at risk are clustered in the City of Richmond and in unincorporated North Richmond (186 of the 277 parcels). These include heavy industry and research and development parcels associated with Chevron's Richmond Refinery. Two of Chevron's larger parcels are identified as vacant and are currently mostly undeveloped and one, which sits under the Richmond-San Rafael Bridge approach, is mostly open water.

There is a cluster of mixed industrial land uses at risk associated with the seaport and related industries south I-580 between West Ohio Avenue and West Cutting Boulevard and to the west of South Garrard Boulevard. The remaining parcels at risk are mostly light industrial parcels associated with the West County Landfill, including the West County Resource and Recovery Center, and parcels near Parr Boulevard and the Richmond Parkway.

San Pablo, Hercules, Rodeo and Crockett

There are four light industrial parcels in San Pablo that are within the existing 100-year floodplain but not shown to be directly at risk from sea level rise. In Hercules, Bio-Rad Laboratories (designated light industrial) is shown to have a portion of the site within an area that is low-lying and adjacent to flooding that could occur with 6 feet of sea level rise. As the developed portion of the parcel is fairly high above the Bay, it may not be the case that the stormwater drainage system could be impacted, however further investigation may be warranted. In addition, a very small undeveloped, portion of a 3.5 acre industrial park on Linus Pauling Drive is shown to have within the 100-year floodplain. Three heavy industrial parcels in Crockett associated with C&H Sugar are shown at risk. All three parcels are within the 100-year floodplain, and the main factory

site is also shown at risk of 1 foot of sea level rise. The other two parcels are under the I-80 Bridge approach (including the wastewater treatment plant), and are low-lying and could be impacted by nuisance flooding with 6 feet of sea level rise.

The five industrial parcels at risk in Rodeo are owned by Tosco Corporation and comprise the Conoco Phillips 66 refinery site. Approximately half of one of the smaller parcels (44 acres) is open water.

Martinez

Of the 68 industrial parcels at risk in Martinez, 23 comprise the Tesoro Martinez Refinery and eight comprise the Shell Martinez Refinery. The remainder of the parcels is a mixture of heavy and light industrial sites, with a small number of light industrial uses clustered in downtown Martinez and on Pacheco Boulevard near the I-680 interchange, and a cluster of industrial park designated parcels on Commercial Circle near the Mallard Reservoir. The exception is one of the largest industrial parks (74 acres) in the project area located on Waterfront Road. This parcel will be at risk from as little as one foot of sea level rise and is currently used by Copart Salvage Auto Auctions as an automobile storage and auction facility.

Bay Point

Five heavy industrial parcels are located on Nichols Road on the bayward side of the Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) rail lines. These parcels, owned by General Chemical West as part of the Bay Point Works, are within the current 100-year floodplain and are at risk from 1 to 4 feet of sea level rise depending on their proximity to the shoreline. In addition one industrial parcel on the Port Chicago Highway (Premark Packaging LLC) is within the 100-year floodplain and may be at additional flood risk as sea levels rise.

VULNERABILITIES

INFO1: Industrial land uses are privately owned, and therefore there is often a lack of publically available information about the types of facilities on site and their potential vulnerabilities to flooding, including: the location and capacity of the site drainage systems; the number and types of connections to off-site critical services that are necessary to maintain operations; and the status of current flood protection, particularly for sites located on the shoreline.

GOV1: Although industrial property owners and site operators may have engaged with public agencies on reducing flooding and other risks through existing regulatory programs, planning for sea level rise will require additional, non-regulatory collaboration and partnerships between the public and private sector to ensure that multi-benefit

shoreline solutions are advanced that balance economic, environmental and social equity goals.

FUNC1: Many industrial land uses rely on off-site utilities connections (e.g., power, telecommunications, water supply, and wastewater treatment or discharge) that may be vulnerable to impacts. These connections with off-site services can be critical to maintaining operations, in particular for those facilities that need water in their manufacturing processes.

FUNC2: Industrial land uses rely on roads, rail lines and terminals, pipelines, airports and marine terminals to ensure materials and supplies are imported, goods produced are exported, and employees can get to/from work. Many of these transportation systems, which are owned and operated by others, are vulnerable to flooding and their disruption could impact operations at industrial facilities of all types.

FUNC3: Because heavy industrial land uses need large amounts of land, have specific operational facility needs, and are dependent on fixed infrastructure for goods movement (e.g., marine terminals, pipelines and rail lines), these land uses can be difficult, if not impossible, to relocate.

FUNC4: Many industrial processes are continually operating and would need adequate warning time to fully or partially shut down in advance of storm-related flooding.

PHYS1: Buildings, infrastructure and other facilities associated with industrial sites that are not currently with the 100-year floodplain are unlikely to have been constructed to be waterproof or corrosion resistant. Especially vulnerable operations are those that rely on electric or mechanical components, such as fans, boilers, and pumps that cannot function if they are flooded or exposed to salt water.

PHYS2: Buildings, infrastructure and other facilities associated with an industrial site that have at-grade or below-grade entrances, or below-grade or ground level sensitive equipment, are vulnerable to flooding.

PHYS3: Many industrial land uses generate or store hazardous substances that could have public health or environmental impacts if released into groundwater or surface waters. While many of the industrial sites in the project area are regulated under the California Accidental Release Prevention Program or Industrial Safety Ordinances (see section below) others are not and are therefore subject to less stringent reporting and contingency planning requirements.

PHYS5: Industrial land uses that rely on off-site power, and do not have adequate back-up supplies and systems in place, for example on-site generators and enough fuel, are more vulnerable to disruption.

CONSEQUENCES

Society and Equity: The disruption or closure of industrial land uses can have significant consequences for employees as loss of access to the workplace can cause lost wages. Loss of these facilities may also have consequences on the people within the county and the region, as the industrial land uses within the county produce and provide a number of critical goods and products used in many other sectors. Unexpected flooding of facilities that store hazardous materials can also result in public health impacts in nearby communities.

Environment: Unexpected flooding of facilities that store hazardous materials can impair water quality, natural habitats and species, if released into the Bay or near-shore habitats.

Economy: Industrial land uses provide Contra Costa County with economic benefits that include jobs for residents, goods and products needed in other parts of the region, and tax revenue to the cities and the county. Damage or disruption of industrial facilities could result in high costs due to lost productivity, as well as the replacement or repair of buildings, specialized equipment, and goods stored onsite. Temporary or permanent closures of industrial operations of all kinds could have broad economic impacts throughout the region, particularly if heavy industrial facilities such as the refineries are damaged or their connections to goods movement infrastructure is disrupted.

Hazardous Materials Sites

Hazardous materials sites generate, treat, or transport materials that, because of the quantity, concentration, physical or chemical characteristics pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment[7]. Hazardous materials sites are typically industrial or commercial land uses, although there are some institutional facilities and utility service providers that use or generate smaller quantities of hazardous wastes.

The Hazardous Materials Programs is one of Contra Costa Health Services core programs. The Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) is the Certified Unified Program Agency (CUPA) for all businesses within the county, and administers regulatory programs including the Hazardous Materials Business Plan Program, the California Accidental Release Prevention (CalARP) Program, and the Industrial Safety Ordinance (ISO).

Facilities in three of CCCHSMP's programs were assessed to determine the types and numbers of hazardous material sites that could be at risk from current and future flooding. These three programs were selected because geospatial data identifying the location of these sites was available from CCHS; the materials these sites handle could

[7] http://cchealth.org/hazmat/business-plan/

pose a risk to human and environmental health if released during a flood; and many of the sites within these three programs are located on the shoreline.

- The Hazardous Materials Business Plan Program requires businesses that handle hazardous materials in reportable quantities to submit an annual hazardous materials business plan (reportable quantities are equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity). Businesses are required to submit a revised plan if there are changes in the ownership, address, amount, type or handling of hazardous materials, and the plan is shared with the local fire agency in which the business operates.
- The California Accidental Release Prevention Program (CalARP) requires that businesses handling more than a threshold quantity of a regulated substance develop a Risk Management Plan with a detailed engineering analysis of the risks and mitigation actions to prevent an accidental release[8]. While CalARP is a statewide program, it is implemented at the local level, in this case by CCCHSHMP. The county determines the level of detail required in the Risk Management Plans, reviews submitted plans, conducts facility inspections, and provides the public access to information about these sites[9].
- The county also administers the Industrial Safety Ordinance (ISO), which was established to expand on CalARP Program requirements for petroleum refineries and chemical plants. The ISO only regulates sites that are within unincorporated areas of the county or within the City of Richmond[10]. There are nine ISO facilities in the project area, two of which are in the City of Richmond.

In addition to regulatory hazardous materials programs, Contra Costa County has a Community Warning System to alert the public if there is a release of hazardous materials that could impact health and safety. The warning system is coordinated between CCHSHMP, the Office of the Sheriff, and some of the larger industrial facilities (e.g. Chevron) that have authority to activate nearby sirens. The county also has a Hazardous Materials Commission that develops policy recommendations regarding storage, use, and management of hazardous materials and hazardous waste11 and a Hazardous Materials Ombudsman to responds to questions and concerns from the public. Lastly, CCHSHMP chairs the Hazardous Materials Interagency Task Force, which is a coalition of agencies that voluntarily cooperate to enhance public and environmental health and safety. CCHSHMP also co-chairs the Contra Costa County Enforcement Task Force, where local, state, and federal agencies coordinate regulatory and enforcement actions to address problems in the areas of public safety and environmental protection.

[8] http://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/california-accidental-release-prevention
[9] http://cchealth.org/hazmat/rmp/
[10] http://cchealth.org/hazmat/iso/facilities.php
[11] http://cchealth.org/hazmat/hmc/

KEY ISSUE STATEMENT

Flooding of hazardous materials sites could result in a release of materials stored onsite, and could cause significant impacts to public health and the environment. Facilities may be particularly vulnerable if hazardous materials are stored at- or below-grade, are improperly contained, or if there is not enough time to safely shut down operations in advance of a storm event. Managers and owners of sites not currently in the floodplain may not be aware of the flood risks, and therefore may not be planning, preparing or operating in a manner to reduce the impacts of flooding should they occur.

EXPOSURE TO CURRENT AND FUTURE FLOODING

There is a total of 1,287 Hazardous Materials Business Plan sites located in the project area, a total of 329 are at risk from current and/or future. A total of 226 Hazardous Materials Business Plan sites are at least partially within the 100-year floodplain[12]. Approximately one-third of these (76 sites) are at risk of more frequent or extensive flooding due to sea level rise. There are 140 sites within the 100-year floodplain that are not shown to be directly at risk of sea level rise; however, watershed-specific studies are needed to understand the potential for sea level rise to affect the frequency or extent of flooding both within and beyond the current floodplain.

An additional 103 Hazardous Materials Business Plan sites are not currently at risk of flooding but could be exposed to sea level rise. These sites may are either protected from the 100-year flood or are at distance from either the Bay shoreline or creek and channel banks and therefore beyond the extent of current flooding. Most of these sites will be exposed to 5-6 feet of sea level rise.

There are a total of 18 CalARP sites within the project area, 9 of which are also ISO sites (see Energy Sector chapter for a discussion of refineries in the project area which are regulated by ISO). Three of the CalARP, and eight of the ISO sites are at least partially within the 100-year floodplain[13] and are at risk of more frequent or extensive flooding due to sea level rise. Two CalARP sites (the Bollman Water Treatment Plant in Martinez and the Safeway Beverage Plant in Richmond) are within the 100-year floodplain but are not shown to be directly at risk of sea level rise; however, watershed-specific studies may be needed to understand the potential for sea level rise to impact the frequency or extent of flooding both within and beyond the current floodplain.

[12] Hazardous materials sites based on CCHSHMP information and the Contra Costa Assessor's parcel data. As some of these sites are large, site-scale analyses may needed to better understand how flooding could affect the developed portion of the site, and in particular where materials are generated or stored.
[13] Hazardous materials sites based on CCHSHMP information and the Contra Costa Assessor's parcel data. As some of these sites are large, site-scale analyses may needed to better understand how flooding could affect the developed portion of the site, and in particular where materials are generated or stored.

Four CalARP and one ISO site (Air Liquide Hydrogen Plant in Rodeo) that are not currently at risk of flooding could be exposed to sea level rise of 4-5 feet. These sites are either protected from the 100-year flood, or are at distance from either the Bay shoreline or creek and channel banks and therefore beyond the extent of current flooding. Most of these sites will be exposed to 5-6 feet of sea level rise.

Additional hazardous materials sites could be located within low-lying areas adjacent to areas that might flood as sea level rises. These sites are in particular risk of flooding due to failure of the stormwater system to adequately handle additional capacity or drain effectively. Due to resource constraints hazardous materials sites located in low-lying areas were not identified, however many of the sites were included in the commercial and industrial land uses assessment which did enumerate the number of parcels in low-lying areas (see above).

Hazardous Materials Sites located partially of fully with the current 100-year floodplain that could also be exposed to sea level rise.

Hazardous Materials Sites	Current 100-year Flood only	100-year Flood + Sea Level Rise (cumulative count)					
		1'	2'	3'	4'	5'	6'
Hazardous Business Plan	140	153	156	163	180	212	216
CalARP	2	4	5	5	5	5	5
CalARP + ISO	0	5	5	8	8	8	8
Total	**142**	**160**	**164**	**174**	**191**	**223**	**227**

Hazardous Materials Sites that could also be partially or fully exposed to sea level rise.

Industrial Parcels	Sea Level Rise (cumulative count)					
	1'	2'	3'	4'	5'	6'
Hazardous Business Plan	0	1	1	13	70	103
CalARP	0	0	0	3	4	4
CalARP + ISO	0	0	0	0	1	1
Total	**0**	**1**	**1**	**16**	**75**	**108**

ASSET DESCRIPTION

Sites in the Hazardous Business Plan Program are mostly clustered in Martinez, Rodeo, and Richmond. There are many different facilities in this program, and in the project area this includes those associated wastewater treatment, gas and electric distribution (substations), auto repair, trucking, and various commercial or industrial uses.

Hazardous material sites regulated by CalARP and ISO are associated with heavy industrial shoreline uses, and in particular the four refineries in Richmond, Rodeo, and Martinez, the Crockett Co-Generation Plant, and General Chemical West Bay Point Works. Many of these sites are located on large parcels, with only a portion of the facilities or operations potentially at risk from current and/or future flooding. The vulnerability of these sites will vary depending on the type of hazardous materials generated or treated, and how and where it is stored. Even if these sites are not directly flooded, in many cases the roads, rail line and utilities serving them will be, which could cause disruption of operations, including the treatment and transportation of hazardous materials.

VULNERABILITIES

INFO1: Most hazardous materials sites are privately owned, and there can be a lack of publically available information needed to inform assessments of vulnerability. The Contra Costa Health Services Hazardous Materials Program does make information available to the public about Hazardous Business Plan, CalARP and ISO, including amount of materials stored on site, and if storage occurs below grade about underground storage tanks. However, there is limited information about the flood prevention or protection measures in place, in particular for the smaller Hazardous Business Plan sites.

GOV1: In Contra Costa, the CalARP and ISO sites have a high level of compliance with hazardous material inventories and contingency planning requirements. However, there are more hazardous material sites not addressed in this assessment that use, generate or transport smaller quantities of hazardous materials, and the number and diversity of other sites may result in differing levels of compliance with operational and regulatory requirements.

GOV2: Because of the number and concentration of heavy industrial land uses in the project area there is already coordination among the multiple entities that have a role in responding to hazardous materials emergencies. However, the number and locations of hazardous materials sites, and the potential extent of flooding that could occur during a large storm may stress available resources, and could require a greater degree of coordination and contingency planning.

GOV3: Current emergency planning and response for many hazardous material sites does not require consideration of future flood risk. For CalARP and ISO stationary sources, there is a requirement to look at external events as part of a Hazard Review or

Process Hazard Analysis, including flooding. As past flooding that was very improbable becomes a possibility, as sea levels rise stationary source will need to consider the risk of flooding, the safeguards that are in place, and how to reduce the risk to an acceptable level.

PHYS1: Industrial facilities containing hazardous materials are not generally designed to withstand flooding, and are difficult and costly to relocate.

PHYS2: Flooding during a storm event could cause releases of hazardous materials if they are not well contained, improperly stored, at ground level, or are difficult to move. If wastewater holding ponds flood contaminants could be released, and if holding tanks are compromised their contents could be released.

PHYS3: Facilities with hazardous materials stored below ground could be vulnerable to rising groundwater.

CONSEQUENCES

Society and Equity: The flooding or other disruption of hazardous materials sites can expose communities to substances harmful to human health and safety.

Environment: The flooding or other disruption of hazardous materials sites can have significant environmental impacts. The release of persistent and mobile hazardous materials can have long-lasting and far-reaching consequences on wildlife and habitats, and can affect water quality.

Economy: Facilities that generate, treat, or transport hazardous materials are usually job sites, and their disruption or closure can result in lost wages and larger-scale economic impacts. Additionally, flooding of hazardous materials sites can strain local emergency resources and can result in high cleanup and recovery costs.