

LAND RECYCLING: AN INTRODUCTION

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BASIC POINTS ABOUT ENVIRONMENTAL REMEDIATION

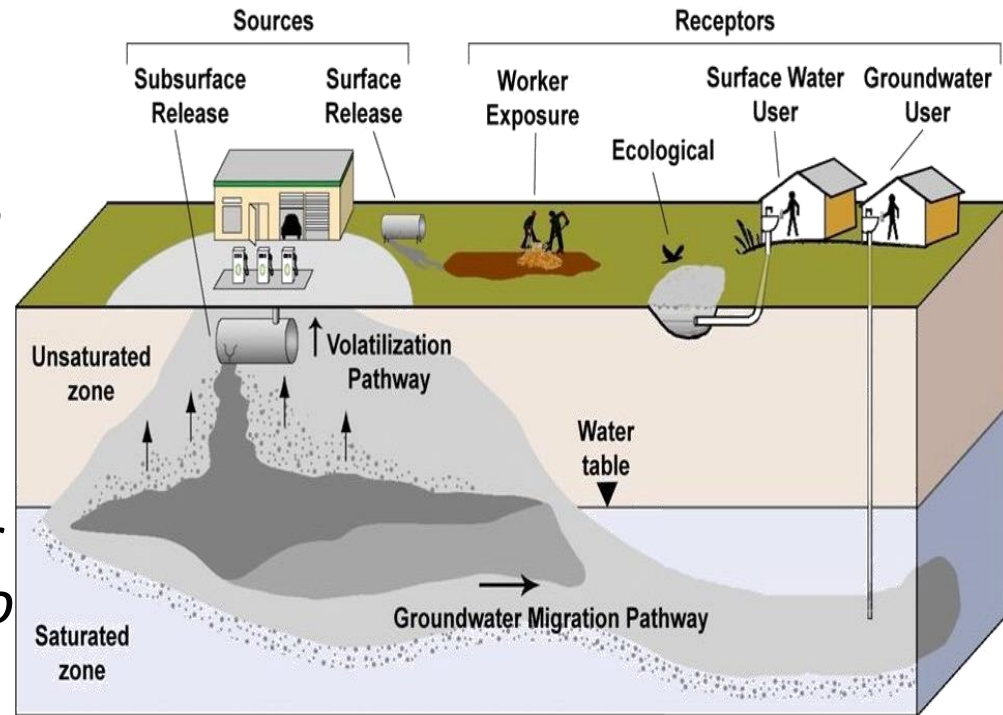
- Site-specific remediation is guided by robust regulatory oversight at the state level. Regulatory agencies provide comments when site-specific project files are submitted.
- Among remediated sites, CCLR is not aware of known adverse health or environmental impacts.
- Clean-up standards are based on conservative, prescriptive numbers or risk assessments.
- If regulatory standards change, site closure is not re-opened except in the case an application for a new project or building on the site.



Risk Assessment

- Required by regulatory agencies in most cases.

“a site-specific characterization of the current or potential threats that may be posed to human health and the environment by contamination migrating to or in groundwater or surface water, discharging to the air, leaching through or remaining in soil, bio-accumulating in the food chain, or other complete and significant exposure pathways identified in the Site Conceptual Exposure Model.”



“what are the risks of leaving contamination in place?”

FROM RISK ASSESSMENT TO RISK-BASED CLEAN-UP

- Remediation plans are developed to minimize risks to human and environmental health.
- Sites are rarely cleaned up to pristine levels.
- Plans and cleanup standards are based upon intended end use.
 - Residential standards/unrestricted use: most conservative standards, used at sites where exposure to soil and groundwater is safe for all occupants and all uses
 - Cleanups are most commonly performed to commercial levels. Commercial levels usually have Engineering and Institutional Controls.



REMEDIATION IS A HIGHLY REGULATED PROCESS

- Two general categories of regulatory involvement:
 - Emergency or state-directed
 - Stop immediate threats
 - Superfund (Federal and state), or corrective action sites
 - Non-emergency
 - Interim cleanup complete; operations and maintenance
 - Voluntary cleanup
 - The Baylands are in this category



REGULATORY INVOLVEMENT

- Remediation is a highly regulated process.
- Closure and cleanup oversight are provided by the following agencies, who meet and confer to determine the lead agency in each case:
 - California Integrated Waste Management Board
 - Department of Toxic Substances Control
 - State Water Resources Control Board
 - Local agency, like fire department or county health department
- Regulatory agencies use current local land use to set cleanup levels
 - Default, conservative cleanup levels exist for all land uses. Site-specific cleanup levels can be established with risk assessments.
 - For example, commercially-zoned property will be set to commercial cleanup standards unless otherwise directed/indicated by a city, or a land use change is contemplated.



REGULATORY INVOLVEMENT AND CLEANUP STANDARDS

- Recall that the most conservative cleanup standard is for residential or unrestricted use. This is for sites where exposure to soil and groundwater is safe for all occupants and all uses.
- On sites not cleaned to residential standards, we focus on protecting human and environmental health by
 - Measures to ensure protection now and in the future
 - Close exposure pathways to people and the environment.
- How? Two tools.
 - Engineering Controls (EC) – construction/design
 - Institutional Controls (IC) – legal and administrative measures to prevent breach of protective measures



MORE ABOUT ENGINEERING AND INSTITUTIONAL CONTROLS

- Engineering Controls (EC) – stop pathways between remaining contaminants and receptors
 - Podium design to close pathways from ground to living areas
 - Caps, subsurface walls and fences to prevent access/exposure
 - Venting systems to disperse vapors; alarms to monitor gases
- Institutional Controls (IC) – governmental and regulatory tools
 - Deed restrictions and zoning to alert planning and building
 - Inspections of engineering controls – annual to five-year schedule
 - Databases and permit process

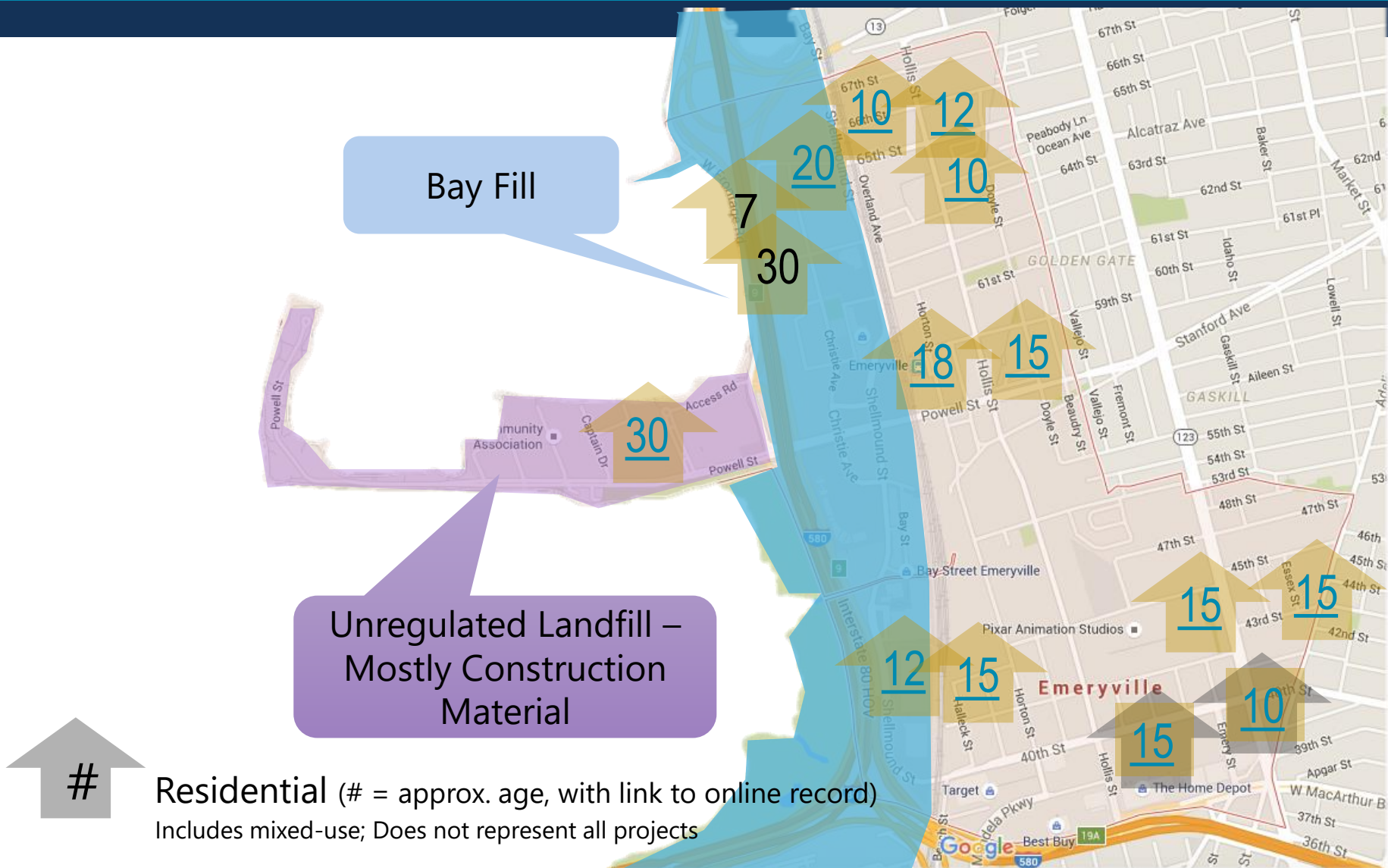


POST-CLEANUP PROCEDURE

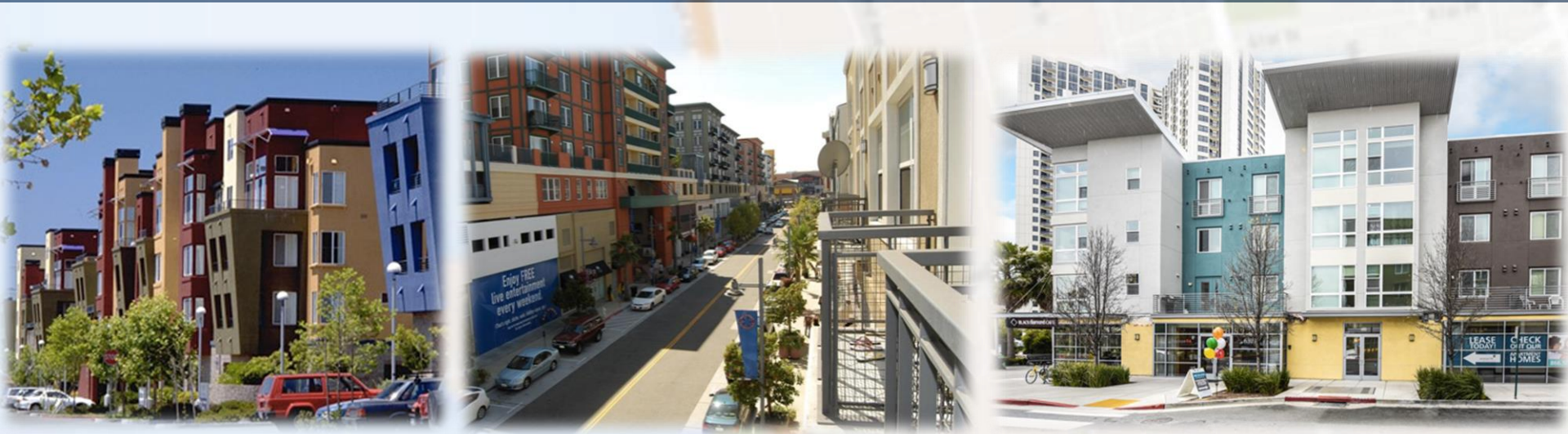
- No Further Action (NFA)/certification/closure
 - Issued when corrective action and operations and maintenance allow for protection of the public and environment
- Reopeners
 - Seldom exercised after NFA/certification/closure
 - When new standards exist, only upon new construction/major renovations (akin to nonconforming use)
 - Change in use of site to more sensitive uses



EMERYVILLE | VARIOUS RESIDENTIAL ON REMEDIATED BROWNFIELDS



EMERYVILLE | VARIOUS RESIDENTIAL ON REMEDIATED BROWNFIELDS



Clockwise from left:

1970's | Watergate – on unregulated dump

1990's | BridgeCourt – railyard

2000's | Bay Street apartments/condos – fill, steel, etc.

~2008 | Avenue 64 – fill, with methane concerns

1980's | Pacific Park Plaza on background

EXAMPLES: FORMER LANDFILLS NEW JERSEY | CARSON CA



North Wildwood New Jersey.
Condominiums on 12 acres, 2005



[Boulevards Project, Carson CA](#)
Approved for residential, 2015

MORE ABOUT REGULATORY INVOLVEMENT

- State regulatory agencies have limited resources for cleanup oversight – not funded by state General Fund
- Cost recovery for site-specific oversight activities
 - Programmatic activities, like General or Specific Plans? Enter into consulting agreement with regulatory agency.
- Developers of enter into regulatory oversight agreements – includes cost recovery and extensive public participation
 - Best as part of project-specific EIR



MORE ABOUT REGULATORY INVOLVEMENT , CONTINUED

- Most cleanups > \$2M require CEQA and public participation
- DTSC assigns public involvement staff
- Risk assessments conducted to address impacts during remediation
 - Impacts from truck traffic, noise, dust



IN SUMMARY

- Remediation is highly regulated by the State of California.
- Remediation plans are communicated to the public, and the public will be involved.
- Sites that are not remediated to residential standards have continuing obligations to demonstrate safety to the public and the environment.
- Site closure is not re-opened except in the case of an application for a new project or building on the site.



Project examples



CENTER FOR CREATIVE
LAND RECYCLING

RECLAIM. CONNECT. TRANSFORM

San Francisco | **Energy to Commercial**

- Coal gasification plant, lead foundry & metal works
- Lead-impacted debris and rubble
 - New office/retail
 - Innovative soil sampling



Oakland | **Parking lot to mixed-use**

- Former gas station and parking lot
- Petroleum hydrocarbon pollution
- 624 housing units (108 affordable, 2014), retail and 478-space BART garage
- [Link](#)



San Pablo | **Railyard to Park**

- Illegal dumping – various contaminants
- Dense residential area



- 2015 – new community sports park with 3 convertible junior league soccer fields, tot lot, vendor kiosks, restrooms, and picnic areas.
- [Link](#)

Fremont | **Railyard to Recreation**

- Surplus railyard
- Caboose, renovated depot and freight buildings, embedded rail tracks, amphitheater, stage, seating areas, and water feature, 2012
- [Link](#)



Sacramento | **Railyard to Residential**

- Surplus railyard
- 72 acre mixed-use infill development, adjacent to college and light rail station, 2015
- [Link](#)



Various | **Approved Railyard Projects**

- [Sacramento](#) – mixed-use residential, commercial, entertainment
- [Truckee](#) – mixed-use downtown extension
- [Taylor Yard](#), LA – mixed-use residential, commercial



San Carlos | Industrial to Hotel



- Chlorinated solvents from AST by metal product manufacturer
- Diesel, oil and benzene
- 204-room Residence Inn by Marriott Silicon Valley (groundbreaking in April 2015)



Sacramento | **Powerhouse to Museum**

- PG&E for auxiliary power source built in 1912
- Shuttered and leased to a salvage yard in 1950s
- Working with 60+ year old non-profit
- Math/Science learning



San Diego | **Gas station to mixed use**

- Cost Recovery
- Regulatory framework assistance
- 151 new housing units, 2000's



Chula Vista | **Urban Transformation**

- Cost Recovery
- Proposed university site



Sunnyvale | **Orchards to Park**



- 5-acre former orchard
- Presence of agricultural chemicals in soil (pesticides, lead and arsenic) and solvents in groundwater



Sunnyvale | **Industrial to Residential**

- 1.7-acre site
- Offsite groundwater impacts
- Obtain expedited regulatory approval for redevelopment under California Land Recycling and Redevelopment Act, 2014
- [Link](#)



Long Beach | **Oil Field/Landfill to Hospital**

- Portions of site were on landfills, oilfields, USTs, dumps
- Expansion of hospital campus, including new pediatric tower and parking structures, 2008, [Link](#)



Colma | **Landfill to Retail**

- Closed landfill
- Active gas collection - network of flexible PVC pipe and perforated collection wells, through pipes placed within the waste to a flare.
- Home Depot and other stores, 1986, [Link](#)



Redwood City | **Landfill to Office Park**

- Closed landfill
- Active gas and leachate collection system
- 20-building office park, 1999, [Link](#)



Milpitas | **Industrial to Residential**

- Manufacturer and tester of transformers
- Soil, soil gas & groundwater impacts
- Cleanup measures integrated into building design, ~2010, [Link](#)



200 Piper Dr

San Francisco | **Affordable Condos**

- Underground storage tank and metal contamination
- 32 townhouses for first-time homebuyers, 2012



Carson | **Landfill to Senior Housing?**

- Closed landfill, remediated and certified for housing
- State 1C funding
- StubHub Stadium below, also on a landfill, [Link](#)

