

F. HYDROLOGY AND WATER QUALITY

This section describes the existing hydrological setting for the project site, including runoff, drainage, and water quality, based on available information included with the application, review of a preliminary geotechnical evaluation, environmental investigation reports, other published materials, and a site reconnaissance. Based on the information reviewed, this section identifies impacts that may result from project development, and provides mitigation measures to reduce potential impacts to a less-than-significant level, if feasible.

1. Setting

The existing conditions at and near the site related to hydrology and storm drainage are described below.

a. Climate. The climate of the Oakland area is characterized as dry-summer subtropical (often referred to as Mediterranean), with cool wet winters and relatively warmer dry summers. The annualized average high temperature is 67.0° Fahrenheit (F); the average low is 52.0° F. The mean annual rainfall in the vicinity of the project site, for the period between 1970 and 2006, is approximately 23.5 inches, the majority of which occurs from November through April. During the period of record, annual rainfall has varied from 10.0 inches (1976) to 41.1 inches (1998), with a one-day high of 4.7 inches of precipitation on January 4, 1982.¹ Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur at a frequency of about once every three years.²

(1) Runoff and Drainage. The project site is relatively flat, ranging in elevation from about 65 to 78 feet above mean sea level (relative to the National Geodetic Vertical Datum [NGVD]). There are no U.S. Geological Survey (USGS) “blue line” creeks or streams crossing the project site.³ Based on mapping of regional historic drainage conditions, no historical watercourses cross the site; the nearest named creek is the Broadway Branch of Glen Echo Creek, which is approximately 0.4 miles to the southeast of the site. Broadway Creek has been placed in underground culverts parallel to Broadway, passing under Mosswood Park before joining with Glen Echo Creek, leading to Lake Merritt. Glen Echo Creek is approximately 0.6 miles to the south and Temescal Creek approximately 0.5 miles to the

¹ Western Regional Climate Center, 2007, *General Climate Summary, Oakland Museum, Ca.* Website: www.wrcc.dri.edu July 9.

² Brown, William M. III, 1988, *Historical Setting of the Storm: Perspectives on Population, Development, and Damaging Rainstorms in the San Francisco Bay Region*, in *Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region, California*, Stephen D. Ellen and Gerald F. Wiczorek, Eds., U.S. Geological Survey Professional Paper 1434.

³ United States Geological Survey, 1959 (photo revised in 1980), Oakland West, Topographic Quadrangle.

northwest, both of which have been largely culverted. An underground storm main is aligned below Telegraph Avenue leading to a junction near the Highway 580 and State Route 24 interchange, and from there northwest till emptying into San Francisco Bay.⁴ The irregularly shaped, 8.2-acre project site consists of an approximately 5-acre BART parking lot, and commercial and residential uses along Telegraph Avenue and West MacArthur Boulevard. Based on observation made during a July 2007 site reconnaissance, impervious surfaces cover approximately 90 percent of the site with minimal ornamental landscaping around the perimeter of the BART parking lot and relatively small areas of landscaping on the adjacent parcels. Runoff on the impervious portions of the site is directed by sheetflow primarily towards curbside storm drains. The storm drains lead to city-maintained storm mains, located in adjacent streets and feeding the main along Telegraph Avenue.⁵

b. Flooding. In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally-backed flood insurance available to communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The Federal Emergency Management Agency (FEMA) manages the NFIP. FEMA is the agency responsible for conducting floodplain studies and publishing Flood Insurance Rate Maps (FIRMs) that delineate flood hazard areas. The City of Oakland is a participating community in the NFIP, and therefore all new development must comply with the minimum requirements of the NFIP.⁶ Based on FEMA mapping, the project site is not located in the 100 or 500-year flood zone.⁷

The project site is not located within a mapped dam failure inundation hazard zone, and therefore would not be expected to be susceptible to flooding hazards associated with catastrophic dam failure.⁸

c. Water Quality. The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses at the site and within the watershed, and the composition of geologic materials in the vicinity. The State Water Resources Control Board and Regional Water Quality Control Boards regulate water quality. The project site is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Water

⁴ Sowers, Janet M., 1993 (revised 1995 & 2000). *Creek and Watershed Map of Berkeley & Oakland*, Oakland Museum of California.

⁵ Sowers, Janet M., 1993 (revised 1995 & 2000), op. cit.

⁶ City of Oakland, 2004. *General Plan, Chapter 6, Safety Element*. November.

⁷ Federal Emergency Management Agency (FEMA), 1982, *FIRM # 0650480015B OAKLAND, CTY/ALAMEDA CO*, September 30.

⁸ Association of Bay Area Governments, 1995, *Dam Failure Inundation Hazard Map for North Oakland*, accessed 07/09/07 at: gis.abag.ca.gov/website/dam_inundation/viewer.htm.

Board), which is responsible for implementation of state and federal water quality protection policies in the Bay Area. The Water Board implements the Water Quality Control Plan (Basin Plan),⁹ a regulatory and policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region, including the San Francisco Bay and groundwater.

(1) Stormwater Quality. The National Pollutant Discharge Elimination System (NPDES) program (established through the Clean Water Act) regulates runoff water quality; the NPDES program objective is to control and reduce pollutant discharges to water bodies. The Water Board administers the NPDES program. The Water Board has conveyed responsibility for implementation of stormwater regulations in the vicinity of the project site to the Alameda Countywide Clean Water Program (ACCWP). The ACCWP maintains compliance with the NPDES permit and promotes stormwater pollution prevention. State and federal statutes and regulations mandate compliance with the NPDES Permit.

Participating agencies (including the City of Oakland) must comply with the provisions of the countywide NPDES permit by ensuring that new development and redevelopment mitigate water quality impacts to stormwater runoff both during construction and operation periods of projects. Recent changes to the permit held by the ACCWP are detailed in Water Board Order R2-2003-0021 (NPDES Permit No. CAS0029831). Projects that propose to create (or in the process of redevelopment, add or replace) more than 10,000 square feet of impervious surfaces are subject to these regulations. The proposed project would create more than 10,000 square feet of new impervious surface, and therefore would be required to meet all the terms of the permit, including (but not limited to) the following requirements of provision C.3:

- **Numeric Sizing Criteria for Pollutant Removal Treatment Systems.** The project must include source controls, design measures, and treatment controls to minimize stormwater pollutant discharges. Treatment controls must be sized to treat a specific amount – about 85 percent – of average annual runoff (in the Bay Area this is equivalent to about the 1-inch storm).
- **Operation and Maintenance of Treatment Measures.** Treatment controls often do not work unless adequately maintained. The permit requires an operations and maintenance (O&M) program, which includes: (1) identifying the properties with treatment controls; (2) developing agreements with private entities to maintain the controls (e.g., incorporation into CC&Rs or homeowners association duties); and (3) periodic inspection, maintenance (as needed), and reporting.
- **Limitation on Increase of Peak Stormwater Runoff Discharge Rates.** Urbanization creates impervious surfaces that reduce the landscape's natural ability to absorb water

⁹ San Francisco Bay Regional Water Quality Control Board, 1995 (revised 2004). *Water Quality Control Plan*, November 17.

and release it slowly to creeks. These impervious surfaces increase peak flows in creeks and can cause erosion. This potential impact to creek systems is termed “hydrograph modification” or “hydromodification.” Depending on location, some projects must evaluate the potential for this to occur and provide mitigation as necessary. The potential for hydromodification is discussed further below.

Projects disturbing more than 1 acre of land during construction are required to file a Notice of Intent (NOI) with the Water Board for coverage under the State NPDES General Construction Permit for discharges of stormwater associated with construction activity. Sites less than 1 acre and not part of a larger project are not required to file the NOI under the General Construction Permit. However, projects less than an acre are still required to prevent erosion and sediment loss and other potential sources of water pollution resulting from construction by incorporating construction controls using Best Management Practices (BMPs).¹⁰ The ACCWP Stormwater Quality Protection Plan (Plan) requires that all new construction implement Construction Site Field Controls; the Plan also requires that BMPs be designed and implemented to reduce potential impacts to surface water quality during the construction of the project.¹¹

(2) City of Oakland Public Works. The City of Oakland Public Works Agency, Environmental Services Division, offers the following recommendations¹² to manage site stormwater. These recommendations are specifically designed to enhance and ensure the protection of water quality by reducing or eliminating the sources that contribute to the degradation of water quality. In addition, methods for treatment and managing runoff that prevent erosion, minimize transport of sediment, and encourage onsite infiltration are included. The City of Oakland encourages the use of these recommendations as plan elements within a proposed project to fulfill requirements as mandated by countywide ACCWP NPDES permit and City of Oakland Conditions of Approval requirements.

- Pre-design the project with specific programming criteria and standards that must be met in the management of stormwater.
- Use design elements and site utilization that will minimize alterations and ecological impacts to the watersheds and/or water features.
- Designers should refer to the Bay Area Stormwater Management Agencies Association’s *Start at the Source*, a design guidance manual for stormwater quality protection. It is

¹⁰ Alameda Countywide Clean Water Program, 2000 (revised 2002). *Developers, Contractors and Builders*, accessed at www.cleanwaterprogram.org on October 31, 2006.

¹¹ Alameda Countywide Clean Water Program 2003. *Stormwater Quality Management Plan 2001-2008*. February 19. Accessed at <http://www.cleanwaterprogram.org> on October 31, 2006.

¹² City of Oakland Public Works Agency, 2008, *Strategy 1.5: Manage Site Water*, Environmental Services Division. Accessed on 01/09/2008 at: <http://www.oaklandpw.com/Page368.aspx>.

recommended to use biologically based stormwater management features such as swales; sediment control ponds, pools, and wetlands along drainage courses; and infiltration basins to retain and treat stormwater on-site.

- Minimize hardscapes and use permeable surface materials to retain stormwater on-site.
- Design pavements and locate them in such a manner as to reduce stormwater velocity across pavements and to facilitate water infiltration into the soil.
- Capture rainwater from impervious areas of the building for groundwater recharge or reuse in the building.
- Design drainage to keep water away from the building.
- Design roof drainage to direct water to dry-wells, cisterns, or into landscape infiltration/detention areas.
- While preparing the Stormwater Pollution Prevention Plan for the project, identify appropriate stormwater pollution prevention measures and BMPs to reduce pollutants in stormwater discharges from the site both during construction and after construction is completed.
- Specify systems that retain and treat stormwater on the site. For erosion and sediment control BMPs and their design, refer to the *California Stormwater Best Management Practice Handbook for Construction Activity*.
- Prevent soil erosion before, during, and after construction by controlling stormwater runoff and wind erosion. Consider silt fencing, sediment traps, construction phasing, stabilization of slopes, and maintaining and enhancing vegetation and groundcover.
- Do not grade in the winter.
- Protect hillsides using adequate erosion control measures such as hydro seeding, erosion control blankets, and/or sedimentation ponds to collect runoff.
- Monitor all erosion control measures before, during, and after a storm.
- Educate the occupants, and train the operations and maintenance staff on the stormwater management strategies and systems.
- Provide an operating manual for stormwater management.

(3) Groundwater Quality. The Basin Plan identifies groundwater underlying the project site as having the following beneficial uses: municipal and domestic water supply, industrial water supply, and agricultural water supply. Based on existing regional studies, numerous water supply wells were once located in the vicinity of the project site. A 1910 map shows several wells in the vicinity of the project site.¹³ The proposed project is within

¹³ Figuers, S., 1998, *Groundwater Study and Water Supply History of the East Bay Plain, Alameda, and Contra Costa Counties*, June 15.

an area that is now serviced by the East Bay Municipal Utility District (EBMUD) for its water source. There was no information available that indicated that there are any existing private or public wells still in use within the project area.¹⁴

A preliminary geotechnical investigation prepared for the project notes that based on site-specific test, previous investigations in the vicinity, and site topography, groundwater is expected at a depth of approximately one to seven feet below the ground surface (bgs).¹⁵ The potential for the presence of contamination in the underlying groundwater associated with historic industrial activity is discussed in Section IV.I, Hazards and Hazardous Materials, of this DEIR.

d. Regulatory Setting. The following describes the City of Oakland regulatory setting as it relates to hydrology.

(1) Oakland General Plan Objectives and Policies. The following and policies pertaining to hydrology and water quality are from the Oakland General Plan Safety Element or Open Space, Conservation, and Recreation (OSCAR) Element:

- Policy FL-1: Enforce and update local ordinances, and comply with regional orders, that would reduce the risk of storm-induced flooding.
- Policy FL-2: Continue or strengthen city programs that seek to minimize the storm-induced flooding hazard.
- Policy FL-3: Seek the cooperation and assistance of other government agencies in managing the risk of storm-induced flooding.
- Policy FL-4: Minimize further the relatively low risks from non-storm-related forms of flooding.

The OSCAR includes the following Hydrology objective and policies:

- Policy CO-5.1: Encourage groundwater recharge by protecting large open space areas, maintaining setbacks along creeks and other recharge features, limiting impervious surfaces where appropriate, and retaining natural drainage patterns within newly developing areas
- Policy CO5-2: Improvements to Groundwater Quality. Support efforts to improve groundwater quality, including the use of non-toxic herbicides and fertilizers, the enforcement of anti-litter laws, the clean-up of sites contaminated by toxics, and on-going monitoring by the Alameda County Flood Control and Water Conservation District.

¹⁴ Department of Water Resources, 2007, Well Search Results, http://wdl.water.ca.gov/gw/hyd/nearbysearch_CF.cfm accessed July 13.

¹⁵ Geomatrix, Inc., 2004, *Preliminary Geotechnical Evaluation, Proposed MacArthur BART Transit Village, Oakland, California*, Prepared for Aegis Realty Partners, Oakland, Ca., 18 November, Project No. 9923.000.

(2) **City of Oakland Municipal and Planning Codes.** Some applicable chapters and amendments of the City of Oakland Municipal and Planning codes regarding Hydrology and Water Quality include:

- Chapter 13.16.010, City of Oakland Creek Protection Storm Water Management and Discharge Control Ordinance. The Oakland Municipal Code prohibits activities that will result in the discharge of pollutants to Oakland's waterways (including the storm water system) or the damaging of creeks, creek functions, or habitat. The ordinance requires the use of standard Best Management Practices to prevent pollution or erosion to creeks and/or storm drains. Additionally, a creek protection permit is required for any construction work on creek side properties.
- 13.16.020 Purpose and intent. The purpose of this chapter is to ensure the future health, safety, and general welfare of city citizens by:
 - A. Eliminating non-storm-water discharges to the municipal separate storm sewer;
 - B. Controlling the discharge to municipal separate storm sewers from spills, dumping or disposal of materials other than storm water;
 - C. Reducing pollutants in storm water discharges to the maximum extent practicable;
 - D. Safeguarding and preserving creeks and riparian corridors in a natural state;
 - E. Preserving and enhancing creekside vegetation and wildlife;
 - F. Preventing activities that would contribute significantly to flooding, erosion or sedimentation, or that would destroy riparian areas or would inhibit their restoration;
 - G. Enhancing recreational and beneficial uses of creeks;
 - H. Controlling erosion and sedimentation;
 - I. Protecting drainage facilities; and
 - J. Protecting the public health and safety, and public and private property.

The intent of this chapter is to protect and enhance the water quality of our watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the federal Clean Water Act. (Ord. 12024 § 1 (part), 1997)

- Chapter 15.04, Oakland Amendments to the California Model Building Codes. This chapter of the Oakland Municipal Code shall be known as the "Oakland Amendments of the 2001 edition of the California Building Standards Code, Part 2 (California Building Code), Part 4 (California Mechanical Code), and Part 5 (California Plumbing Code), and the 2004 edition of the California Building Standards Code, Part 3 (California Electrical Code)." These amendments expand on or supersede the requirements of the California Model Building Code and will be applicable to the proposed project. Buildings and structures regulated by this Code shall be so arranged, assembled, installed, maintained and of sufficient size and so protected as to reduce and minimize all egress, fire, safety, and health hazards.

Amendments to the City of Oakland Municipal and Planning Codes extend or supersede existing codes to further ensure the future health, safety, and general welfare of the public. The applicable amendments that pertain to this project include, but are not limited to:

- 15.04.780 CBC Appendix Chapter 33 deleted and replaced. Delete CBC Appendix Chapter 33 and insert Ordinance 10446 C.M.S., Erosion and Sedimentation, with revisions as follows: Section 3304 – Grading, Excavation and Fills.
- Chapter 15.04.780, Section 3304 – Grading, Excavation and Fills. The Grading Ordinance requires a permit for projects that exceed certain criteria. Subsection 3304.2 defines the terms under which a grading permit will be required. A partial list of criteria under which a permit would be required includes:
 - The volume of excavation or fill will exceed 50 cubic yards provided the vertical distance between the top and bottom of excavation or fill will exceed 5 feet at any location
 - An excavation or fill exceeding 5 cubic yards within 15 horizontal feet of any property line if the bottom of such excavation is below a line descending at a rate of slope of two to one from the existing ground surface at such property line
 - The volume of excavation or fill will exceed 500 cubic yards on a parcel or contiguous parcels
 - Grading, clearing or grubbing, or land disturbance activity that involves an area of one (1) acre or more.

The project as proposed includes 10 parcels totaling of approximately 8.4 acres. The majority of the site is occupied by a sub-grade parking lot, but also includes several buildings to be demolished. Construction of five new buildings is proposed along with development of internal streets and other improvements. The buildings would be up to 65 feet in height with a single sublevel of parking garages.

(3) City of Oakland Uniformly Applied Development Standards. The City's Standard Conditions of Approval relevant to this impact topic are listed below for reference. The conditions of approval will be adopted as requirements of the proposed project if the project is approved by the City to help ensure no significant impacts (for the applicable topic) occur, as a result they are not listed as mitigation measures.

COA HYDRO-1 (same as COA GEO-1): Erosion and Sedimentation Control Plan. *Prior to any grading activities.*

- a) The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee.

The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.

Ongoing throughout grading and construction activities.

- b) The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.

COA HYDRO-2: Stormwater Pollution Prevention Plan (SWPPP). *Prior to and ongoing throughout demolition, grading, and/or construction activities.* The project applicant must obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project applicant must file a notice of intent (NOI) with the SWRCB. The project applicant will be required to prepare a stormwater pollution prevention plan (SWPPP). At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project applicant shall submit a copy of the SWPPP and evidence of approval of the SWPPP by the SWRCB to the Building Services Division. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. After construction is completed, the project applicant shall submit a notice of termination to the SWRCB.

COA HYDRO-3: Post-Construction Stormwater Pollution Management Plan. *Prior to issuance of building permit (or other construction-related permit.* The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued to the Alameda Countywide Clean Water Program. The applicant shall submit with the application for a building permit (or other construction-related permit) a completed Stormwater Supplemental Form for the Building Services Division. The project drawings submitted for the building permit (or other construction-related permit) shall contain a stormwater pollution management plan, for review and approval by the City, to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable.

- a) The post-construction stormwater pollution management plan shall include and identify the following:
- All proposed impervious surface on the site;
 - Anticipated directional flows of on-site stormwater runoff; and
 - Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and
 - Source control measures to limit the potential for stormwater pollution; and
 - Stormwater treatment measures to remove pollutants from stormwater runoff.
- b) The following additional information shall be submitted with the post-construction stormwater pollution management plan:

- Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and
- Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures.

All proposed stormwater treatment measures shall incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and shall be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures shall be included on the landscape and irrigation plan for the project. The applicant is not required to include on-site stormwater treatment measures in the post-construction stormwater pollution management plan if he or she secures approval from Planning and Zoning of a proposal that demonstrates compliance with the requirements of the City's Alternative Compliance Program.¹⁶

Prior to final permit inspection. The applicant shall implement the approved stormwater pollution management plan.

COA HYDRO-4: Maintenance Agreement for Stormwater Treatment Measures. *Prior to final zoning inspection.* For projects incorporating stormwater treatment measures, the applicant shall enter into the "Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement," in accordance with Provision C.3.e of the NPDES permit, which provides, in part, for the following:

- The applicant accepting responsibility for the adequate installation/construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the project until the responsibility is legally transferred to another entity; and
- Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary. The agreement shall be recorded at the County Recorder's Office at the applicant's expense.

¹⁶ Alternative Compliance Programs: Under the terms of the Municipal Stormwater permit granted by the Water Board, participating agencies may establish a program under which a project proponent may request alternative stormwater compliance. A proponent must show the impracticability of on-site treatment and commit to treating off-site an equivalent surface area, pollutant load or quantity of stormwater runoff; or, provide other equivalent water quality benefit, such as stream restoration or other activities that limit or mitigate impacts.

2. Impacts and Mitigation Measures

This section analyzes the impacts related to hydrology and water quality that could result from implementation of the proposed project. This subsection presents criteria of significance, which establish the thresholds for determining whether a project impact is significant. The latter part of this subsection presents less-than-significant impacts, the potential significant hydrology and storm drainage impacts associated with the proposed project, and mitigation measures to reduce the impacts to a less-than-significant level.

a. Criteria of Significance. The project would have a significant impact on the environment if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or proposed uses for which permits have been granted).
- Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters.
- Result in substantial flooding on- or off-site.
- Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems.
- Create or contribute substantial runoff which would be an additional source of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, that would impede or redirect flood flows.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a substantial risk of loss, injury or death involving flooding.
- Result in inundation by seiche, tsunami, or mudflow.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a Creek, river or stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site.

- Fundamentally conflict with elements of the City of Oakland Creek Protection (OMC Chapter 13.16) ordinance intended to protect hydrologic resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water or capacity; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) substantially endangering public or private property or threatening public health or safety.

b. Less-than-Significant Impacts. The following is a discussion of less-than-significant hydrology and water quality impacts associated with the proposed project.

(1) **Erosion.** The project site is largely covered with impervious surfaces (pavement and buildings). Currently, most of the rainfall at the site encounters the impervious surfaces, travels by sheetflow to collectors set into the paved areas, adjacent buildings and to curb drains at the periphery of the site, and from there into the City-maintained storm drain system. During the demolition, clearing, grading and construction of the proposed project, activities such as excavation, soil stockpiling, soil disturbance and construction operations may result in circumstances exposing soil to rainfall, running water due to dewatering operations, and/or soil wetting for the purpose of dust control. These conditions would result in mobilization of soil and sediment, and the resulting erosion could be carried to stormwater drains or off-site to public streets and sidewalks, or adjacent properties.

The City of Oakland Municipal Code Chapter 13.16 and Section 15.04.780 require that a project applicant prepare a grading plan for the proposed project if during project construction the volume of the excavated fill material would exceed 50 cubic yards and involve depths of excavation that exceed five feet, the project applicant must prepare a grading plan, erosion and sedimentation control plan, and drainage plan.

1. The required plan shall include drainage, erosion, and sediment control measures and incorporate construction Best Management Practices (BMPs) to prevent pollutants from entering the storm sewer to the maximum extent practicable.
2. The grading plan shall discuss existing, temporary, and final drainage facilities. Erosion and sediment control must combine interim and permanent measures to minimize erosion, storm water runoff, and sedimentation. Such measures, at a minimum, shall include provision of filter materials at the catch basin to prevent debris or dirt from flowing into the storm drain system. According to the City Public Works Agency, such filter materials shall be applied to batch basins within private areas. As proposed by the project, filter protection at catch basins and inlets will include filter fabric covering the

grates, straw bales or wattles circling the inlet, or some combination of these and/or other measures.

3. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.

Compliance with City's Erosion and Sedimentation Control Plan Standard Condition of Approval (see COA HYDRO-1 on page 318) and this Grading Permit requirement would ensure less-than-significant erosion impacts.

(2) Water Quality Standards. Activities proposed by the project would include two phases that could result in impacts to water quality, construction and operation. These two phases are described below.

Construction Period. The proposed project would require demolition, remediation, excavation, grading and construction, all of which require temporary disturbance of surface soils. During the construction period, grading and excavation activities would result in exposure of soil to runoff, and the discharge of dewatered groundwater from excavations, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated areas on the project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation and pollutants in stormwater. The potential for chemical releases is present at most construction sites given the types of materials used, including fuels, oils, paints, and solvents. Once released, these substances could be transported to San Francisco Bay in stormwater runoff, dewatering effluent, wash water, and dust control water, and could potentially reduce water quality. Deposition of sediments from the project could impact aquatic habitat and other beneficial uses of receiving waters.

Compliance with the City's Stormwater Pollution Prevention Plan Standard Condition of Approval (see COA HYDRO-2 on page 319), Grading Permit requirements and the NPDES General Construction Activity permit administered by the State Water Resources Control Board and the City of Oakland Municipal Code section 13.16.100¹⁷ would be required. These programs and ordinances require that the City and/or its designated contractors mitigate potential construction-period water quality impacts for applicable projects. The City and/or its designated contractors would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP incorporates construction period Best Management Practices (BMPs) and Post-Construction Storm Water Management methods including Site Planning Controls, Non-Storm Water Management, and Maintenance, Inspection and Repair of structural controls in perpetuity. Compliance with existing

¹⁷ City Of Oakland Creek Protection, Storm Water Management and Discharge Control Ordinance.

regulations would result in this potentially significant impact being reduced to less than significant.

Operation Period. The proposed project would result in the construction of new buildings and streets. Sources of urban pollutants, including spills and leaks associated with automobiles, would accompany this new development. These sources may contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff discharged to receiving waters. Runoff from landscaped areas may contain residual pesticides and nutrients. Runoff eventually enters San Francisco Bay, a water body listed as impaired by the Water Board. The Water Board has designated San Francisco Bay as water quality impaired for several pesticides (chlordane, DDT, diazinon, and dieldrin), dioxin compounds, exotic species, furan compounds, mercury, PCBs, and selenium,¹⁸ and the Water Board has determined that the assimilative capacity of the San Francisco Bay for these pollutants has already been exceeded.

Most contaminants that have been identified as causing the water quality impairment of the Bay are unlikely to be used at the proposed project site. Each of the pesticides (chlordane, DDT, diazinon, and dieldrin) has been banned for non-agricultural use and is therefore not available for legal use at the component sites. The source of the dioxin and furan compounds has been identified as atmospheric deposition. The proposed project would not alter the rate of atmospheric deposition, and therefore not change the current loading rate of these compounds. The proposed project would not introduce exotic species to the Bay or increase the impact of existing exotic species. Mercury would not be used at the site and this project would not be expected to generate discharges of this contaminant. The selenium impairment has been caused by industrial point sources, natural sources, and exotic species; increases in selenium loading would not be expected based on the proposed land uses.

The existing NPDES program requires that any project creating 10,000 square feet of new impervious surface or more treat runoff prior to discharge using BMPs. The amount of runoff that is typically required to be treated is about 80 to 85 percent of the total average annual runoff from the site (depending on whether a volume-based or flow-based method is used). In general, passive, low-maintenance BMPs (e.g., grassy swales, porous pavements, and stormwater planters) are preferred. Under the existing programs, the City would ensure that the project design includes features and operational BMPs to reduce potential impacts to surface water quality associated with operation of the project to the maximum extent practicable. Compliance with the terms of the City's Post-Construction Stormwater Pollution Management Plan Standard Condition of Approval and Maintenance Agreement for Stormwater Treatment Measures Condition of Approval (see COAs HYDRO-3 and HYDRO-4

¹⁸ RWQCB, 2003, op. cit.

on pages 319 to 320) associated with regulatory agency-approved plans, as detailed above, would ensure that this impact would be less than significant.

(3) City of Oakland Creek Protection, Storm Water Management and Discharge Control Ordinance. The City of Oakland's Stormwater Ordinance was updated in 1997 to provide new and stronger provisions to safeguard and manage creeks. It is now called the "Creek Protection, Stormwater Management and Discharge Control Ordinance," and includes permitting guidelines for development and construction projects taking place on a creekside property. The nearest creek or riparian corridor to the project site is the Broadway Branch of Glen Echo Creek, which is approximately 0.4 miles to the southeast of the site. The project site is not a Creekside Property as defined by the ordinance.

Nevertheless, projects exempt from the Creek Protection Permit requirement are subject to comply with the remaining portions of the ordinance and must incorporate site design/landscape characteristics which maximize infiltration (where appropriate), provide retention or detention, slow runoff, and minimize impervious land coverage (i.e., use hydrologic source controls) to the maximum extent practicable. This would be ensured by compliance with the terms of the City's Creek Protection, Stormwater Management and Discharge Control Ordinance.¹⁹

(4) Hydromodification. On March 14, 2007, the Water Board issued Order No. R2-2007-0025 (NPDES Permit No. CAS0029831), an amendment revising Order No. R2-2003-0021. This order adopts the revised hydrograph modification management provisions and includes by reference the ACCWP countywide Hydrograph Modification Management Plan (HMMP) of May 15, 2005.²⁰ The HMMP standard is intended to ensure that new projects in Alameda County, including within the City of Oakland, do not increase erosion. A new development or redevelopment project in which the combined amounts of impervious surface created and replaced totals 1 acre or more is required to comply with the Water Board Order's hydromodification standard and the ACCWP HMMP unless it falls into one of several exempt categories.

Examples of exempt projects include single-family homes; transit village redevelopments; and sidewalks, bicycle lanes, trails, bridge accessories, guardrails, and landscape features associated with streets, roads, highways, or freeways. Exemptions are also provided for projects in areas near the Bay that are tidally influenced or subject to sediment deposition, and projects served by hardened stormwater conduits. The proposed project site is not within an area mapped as being susceptible to hydromodification and is serviced by

¹⁹ Oakland Municipal Code, 2008, Chapter 13.16 C Creek Protection, Stormwater Management and Discharge Control Ordinance. Accessed 1/11/2008 at: <http://bpc.iserver.net/codes/oakland/>.

²⁰ The Alameda County Public Works Agency, 2005. *Hydrograph Modification Management Plan*. ACCWP, 15 May.

hardened stormwater conveyance; hence, the proposed project is exempt from the HMMP requirements.

(5) Depletion of Groundwater Resources. The proposed project may remove groundwater during the construction phase as part of the dewatering activities for foundation construction. The site-specific geotechnical report recommends the installation of a foundation system consisting of either: (1) mat foundations; (2) driven concrete piers; or (3) rammed aggregate piers (Geopiers). Subsurface mat foundations may result in construction period dewatering being necessary; however, once installation and water proofing are completed, dewatering activity would no longer be necessary.²¹ In addition, the site is served by local water utility services, and local groundwater would not be used as a water supply source. Therefore, removal of groundwater resources associated with the proposed project would be transitory and not expected to significantly impact the local or regional use or availability of groundwater.

(6) Flood-Related Hazards. According to the most recent FEMA mapping for the project site, the proposed project is not located within the 100- or 500-year flood hazard zone, and therefore, no placement of housing or other structures in a flood hazard zone would occur at the site. Additionally, the project site is not located within a mapped dam failure inundation zone.

(7) Alteration of the Course of a Stream or River. Drainage patterns at the site would be locally modified and the amount of impervious cover is expected to change; however, no waterways cross the project site and the project would not alter the course of an established stream or river. This is a less than significant impact.

(8) Coastal Hazards, Including Seiche. The location of the project site, at an elevation of greater than 65 feet NGVD, would be expected to provide adequate protection from tsunamis, extreme high tides, seiche, and sea level rise, all of which tend to present hazards for sites at elevations lower than ten feet NGVD.^{22,23,24,25,26} This is therefore a less-than-significant impact.

²¹ Geomatrix, 2004, op. cit.

²² Houston, J. R., Garcia, A. W., 1975, Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound, Technical Report H-75-17, November.

²³ Ritter, J., Dupre, W., 1972. Maps Showing Areas of Potential Inundation of Tsunamis in the San Francisco Bay Region, California, Department of the Interior, U.S. Geological Survey, Misc. Field Studies, MF480.

²⁴ United States Army Corps of Engineers, 1984. San Francisco Bay Tidal Stage vs. Frequency Study, October.

²⁵ U.S. EPA, 1995. The Probability of Sea Level Rise, EPA 230-R-95-008, October.

c. Significant Impacts. The City's Standard Conditions of Approval require that regulations and specifications set forth under the applicable NPDES, City of Oakland Creek Ordinance, and City of Oakland Grading Permit requirements to be implemented for the proposed project. Based on the information and analysis in this section and adherence to these requirements, the project will not result in any significant impacts related to hydrology or water quality from the proposed project.

d. Cumulative Hydrology and Water Quality Impacts. The geographic area considered for the hydrology and water quality cumulative analysis consists of the area within the City of Oakland whose storm sewers discharge to the San Francisco Bay.

Stormwater runoff entering the storm sewers within the project's geographic area discharge to the San Francisco Bay. The stormwater contains urban-type pollutants from past, present and existing projects in the sewered area, which have contributed to impairment of the quality of the San Francisco Bay. Applicable stormwater regulations have become progressively more rigorous since the adoption of the Federal Clean Water Act in 1977, with the derivative requirements imposed and enforced by the State Water Resources Control Board and Regional Water Boards through the NPDES permitting process. Stormwater runoff from past, present and existing development is treated in accordance with NPDES requirements. These requirements have resulted in polices and regulations, incrementally strengthened by a series of amendments and adopted by Water Board Orders, mandating greater levels of protection to water quality for past, present, existing and current projects. Recently approved, currently pending and future projects, including the proposed project, would continue to discharge stormwater during construction and operation of these projects. However, these future projects, replacing existing land uses, would be subject to current and any subsequent NPDES permitting requirements, which are periodically updated and amended to further reduce pollutant loading in the stormwater runoff. Therefore, no significant adverse impacts are expected from cumulative conditions because stormwater runoff quality would be expected to cumulatively improve.

²⁶ A seiche is a standing wave in an enclosed or partly enclosed body of water. Earthquakes may induce seiche in lakes, bays, and rivers. More commonly, wind-driven currents or tides cause seiche. The highest seiche recorded in San Francisco Bay is approximately 4 inches, and resulted from the 1906 San Francisco Earthquake.

