

E. INFRASTRUCTURE

P P P

Infrastructure planning in Berkeley can best be characterized as the coordination of infill development and revitalization efforts with the management of an older, deteriorating infrastructure, which has suffered from deferred maintenance. The following discussion describes the sanitary sewer system; storm drain system; water supply; gas, electric and telecommunications; and streets and sidewalks.

1. Setting

a. Wastewater (Sanitary Sewer) System.

(1) Sanitary Sewer Collection System. In Berkeley, sanitary sewage flows toward the San Francisco Bay through a network of pipes, beginning with building connections at the upper laterals, which are privately owned and maintained, and continuing on to the lower laterals and to the sewer mains, which are City owned and maintained. All of the mains connect into the East Bay Municipal Utility District (EBMUD) regional interceptor line, which conveys the sewage south, parallel to the I-80 freeway, to the EBMUD treatment plant, which then discharges the treated effluent into the Bay from a submerged outfall pipe under the Bay Bridge. Within the City of Berkeley there are approximately 400 miles of sanitary sewer mains, with an estimated 28,000 lateral connections. The sewer mains vary in age from 1 to 100 years old, and vary in size from 6 to 48 inches in diameter. However, the system is currently undergoing renovation and replacement, as discussed under subsection (3), below.

(2) Infiltration and Inflow. Storm water infiltration and inflow (I/I) has created significant overflow problems for the Berkeley sewer system.¹ During intense storms, wet weather sewage flow can increase up to 20 times the amount of dry weather flow due to the infiltration and inflow of storm water. In order to reduce strain on the sewer system, 72 manholes were previously equipped with diversions to bypass sanitary sewage into the storm drain system, during periods of intense weather. By

¹ Infiltration refers to storm or groundwater which enters defective pipe joints, or damaged/deteriorated pipes due to offset joints, misalignment, tree roots, cracks and joint mortar deterioration. Inflow refers to storm water that enters the sanitary sewers directly through downspouts, yard drains connected to building laterals, and/or storm drains.

1999, over 50 of these had been corrected and the remainder have corrections underway.² In 1973, a National Pollutant Discharge Elimination System (NPDES) permit for discharge into the San Francisco Bay was issued to EBMUD because the wet weather flow was beyond the capacity of the collection system and treatment plant. The San Francisco Bay Regional Water Quality Control Board (RWQCB) placed the highest priority on the elimination of the by-pass to the storm relief system and untreated overflow, under a cease-and-desist order mandated in 1986. The *East Bay Infiltration and Inflow (I/I) Study* (1985) was completed as a regional effort to reduce excessive wet weather flows into the sanitary sewer system and eventually eliminate the overflow of untreated sewage onto private property, public streets and into the San Francisco Bay. This study, which was completed by the City in concert with the RWQCB, produced a comprehensive 20-year abatement program with specific recommendations for each participating city.

The City's I/I correction program allows for a 20 percent increase in the base wastewater flow for each of the City's 89 sub-basins due to changes in land use or population. The I/I correction program, initiated in late 1987, proposes rehabilitation or replacement of 50 percent of the City's existing system over 30 years; by 1999 over 25 percent had been completed. The program will also provide for 12 miles of new relief sewer by the year 2007. About 10 miles of the proposed 12 miles of new sewer lines had been installed by 1999.³ A 22-mile interceptor line along Adeline Street, completed in 1992, now conveys wet weather flow to EBMUD's storage and treatment facilities.

(3) EBMUD Wastewater Treatment Plant Capacity. Currently, the Main Wastewater Treatment Plant (MWWTP) has the capacity to treat 120 million gallons a day (MGD) during dry weather.⁴ The average dry weather flow is 75 MGD. EBMUD initiated a program to increase the plant's wet weather sustained treatment capacity to

² Yee, Henry, City of Berkeley Engineering Department, July 1999. *Personal communication* with LSA Associates, Inc.

³ Ibid.

⁴ Kirkpatrick, William, EBMUD, Manager of Water Distribution Planning, May 1999. *Written communication* with Andrew Thomas, City of Berkeley Planning Department

320 MGD and a peak wet weather capacity of 415 MGD by use of an 11 million gallon storage basin.⁵ This program has been successfully completed.⁶

⁵ Ibid.

⁶ Yakich, Carl, EBMUD, July 1999. *Personal communication* with LSA Associates, Inc.

(4) University of California. The 1985 I/I Study identified the University system as contributing significant amounts of inflow during wet weather and recommended the central campus area for comprehensive rehabilitation during the first 5 years of the I/I correction program. The rehabilitation of the central campus area began with the rehabilitation of deteriorated sewer mains. The University is currently working to monitor sewer flows, and to make improvements to campus infrastructure. The Campus Sewer System Renewal project includes about 3,100 feet of new and replaced sewer lines to help provide capacity for wet weather flows. The project is expected to be completed in the year 2002.⁷

The University's Long Range Development Plan (LRDP) projects a 3,059,000 gross square foot, or a 24 percent increase, in facilities over the period covered by the LRDP. This amount of growth exceeds the collection system/treatment plant capacity design limit of 20 percent (dry weather flow) which was adopted by the City and EBMUD based on the I/I Study recommendations. The LRDP Environmental Impact Report (1990) recommends measures to mitigate the increased wet weather sewage flow, which were subsequently reflected in a LRDP Mitigation Implementation agreement between the City and University. The Campus Sewer System Renewal project is expected to meet the requirements of this mitigation agreement.⁸

(5) Sanitary Sewer Maintenance. Maintenance of the sanitary sewer system is presently accomplished by the City through a preventative maintenance program, the Management Information Systems (MIS), designed to inventory performance testing, maintenance and repairs, develop models to examine performance, and program future maintenance schedules. Funding for the maintenance and improvement of the system is provided by the General Fund and from hook-up fees paid by new development.

⁷ Lawrence, Jennifer, University of California, Berkeley Planning Department, July 1999. *Written communication* with LSA Associates, Inc.

⁸ *Ibid.*

b. Storm Drain System. Most of the creeks in Berkeley (except in a few locations) have been culverted, forming the basis of the storm drain system layout. Berkeley's original storm drain system is over 100 years old. Prior to 1945, the system conveyed both untreated sanitary sewer and storm water to the San Francisco Bay. The storm drain system was separated from the sanitary system by 1961, with the exception of 72 sewer-to-storm drain bypass installations. These bypass installations served to relieve pressure on the sewer system, which can become overburdened during periods of intense wet weather by infiltration and inflow.⁹

Berkeley has approximately 78 miles of storm drains ranging from 6 inches to 6 feet in diameter, constructed with a variety of materials, including clay, metal, brick-mortar and reinforced concrete. In addition, there are approximately 1,900 catch basins and 4,000 storm inlets/outlets which divert the storm water run-off into the underground mains.¹⁰

A capital improvement program developed by the City maps the entire storm drain system and schedules needed improvements, such as pipe replacements and enlargements. Ongoing maintenance programs include catch basin cleaning, street/sidewalk sweeping, site inspection, testing and monitoring, run-off control from new development, and public information and participation such as catch basin stenciling. Maintenance and improvements of the system are paid for by the General Fund and through hook-up fees paid by new development.

c. Water Supply. Water is provided to the City by EBMUD. EBMUD currently obtains its water from the Mokelumne River watershed. The water passes through the Pardee and Camanche reservoirs, into the Mokelumne aqueduct delivery system (comprised of 65-inch, 67-inch and 87-inch pipes) and then into the Briones, Chabot, Lafayette, San Pablo and Upper San Leandro storage/terminal reservoirs. EBMUD also has a contract with the U.S. Bureau of Reclamation to obtain water from the American River via the Folsom South Canal, but these facilities have yet to be built because of litigation opposing further diversions from the Sacramento River Delta. The total amount of water entitlements by source is: 325 MGD from the Mokelumne River, up to 10 MGD from the terminal reservoirs, and 134 MGD from the contract with the U.S.

⁹ Yee, Henry, City of Berkeley Engineering Department, July 1999. *Personal communication* with LSA Associates, Inc.

¹⁰ Ibid.

Bureau of Reclamation. The dependable supply from sources and the current facilities, with a 25 percent rationing during droughts, is less than 200 MGD.¹¹

¹¹ Kirkpatrick, William, EBMUD, Manager of Water Distribution Planning, May 1999. *Written communication* with Andrew Thomas of the City of Berkeley.

EBMUD faces three major water supply problems: the growing risk of aqueduct failure in the Delta, increasing shortages in dry periods, and increased difficulty in maintaining high quality drinking water. In response, EBMUD has developed a Water Supply Management Program comprised of supplemental water supply, water banking, water conservation and recycling, and watershed improvements, to help accommodate existing and future demand within EBMUD's ultimate service boundary.¹² Recycled water has been identified as a key supplemental water supply. Current usage of recycled water is 14 MGD. EBMUD's goal for this program is to increase recycled water use by 8 MGD by the year 2020, bringing total recycled water usage up to 22 to 23 MGD. EBMUD's Water reuse zones have been identified near treatment facilities that produce recycled water, and the City of Berkeley is located in one of those zones. Berkeley could be served recycled water from EBMUD treatment facilities in Oakland as part of the East Bayshore Recycled Water Project. The East Bayshore Recycled Water Project would provide up to 2.3 MGD of recycled water from EBMUD treatment facilities to Oakland, Berkeley, Albany, Emeryville, and Richmond. The recycled water demands identified by EBMUD in the City of Berkeley include irrigation of medians, golf courses, parks, and schools; toilet flushing; commercial and industrial process water; decorative fountains; and cooling tower water. About 80 to 90 percent of the current bulk of demand for recycled water is for landscape irrigation. Facilities, pipelines, and other support systems for the delivery of recycled water to consumers such as the former Oakland Army Base are currently in the planning phases.¹³

EBMUD's Non-Potable Water Policy 73 (Policy 73) serves to implement recycled water programs. Policy 73 requires that, when non-potable water is available, customers of EBMUD use non-potable water for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health, and not injurious to plant life, fish, and wildlife. When non-potable water satisfying these conditions is made available to the customer, the use of potable water for non-domestic purposes may constitute a waste and unreasonable use of water and is prohibited. This policy was written in order to help ensure the continuation of water services should EBMUD experience shortages or demand that could not be satisfied by existing potable water sources, such as in a drought. EBMUD monitors the enforcement of this policy and fulfillment of its requirements. Customer participation rates for recycled water programs have generally been high.¹⁴

¹² Ibid.

¹³ Ibid.

¹⁴ Harris, Richard, EBMUD Water Conservation Division, July 1999. *Personal communication* with LSA Associates, Inc.

Senate Bill 2095 (SB 2095), which was signed into law in August 2000 and went into effect January 1, 2001, requires local agencies (such as the City of Berkeley) to adopt a recycled water ordinance within 180 days of notification from a local entity that produces recycled water (such as EBMUD). Adoption of such an ordinance by the City of Berkeley would require that the City contact EBMUD regarding new development that would occur within a water reuse zone to determine the feasibility of serving that development recycled water, and whether dual water plumbing should be required. EBMUD will likely provide notification as described in SB 2095 to the City of Berkeley in 2001.

EBMUD's Wildcat Aqueduct serves much of the City with water for municipal supply and fire fighting purposes. Other portions of the City are supplied from facilities in Oakland.¹⁵ The 48- to 52-inch aqueduct consists of large water tunnels, or mains, running in a zig-zag direction from the southeast portion of the City near Roble Court and Parkside Street northwest along Oxford Street, The Alameda, and Colusa Avenue. The mains feed the City's nine water pressure zones, located approximately at every 200-foot elevation change. In the hill areas, the zones are divided more frequently. Although the City as a whole receives an adequate water supply from the aqueduct, the ability to feed water from the central main to smaller mains within each zone and to hydrants has been determined by the City to require improvement.

d. Gas, Electric, and Telecommunications. Natural gas and electric service is provided to City residents and businesses primarily by the Pacific Gas and Electric Company (PG&E), a publicly owned corporation regulated by the California Public Utilities Commission (PUC). As a result of deregulation of the power industry in California in the 1990s, consumers were given a choice of power providers. However, more than 99 percent of energy consumers in the City still buy power from PG&E,¹⁶ who still provides power infrastructure to all consumers. Most of the natural gas service for Berkeley is delivered from the Milpitas storage facility through a pressurized 24-inch transmission gas main which heads north from Hollis Street, along Seventh Street to Harrison Street and then up to Ninth Street.

PG&E provides electricity in the City through 10 substations, each of which operate at either 4 or 12 kilovolts (kv). Service at 12kv is provided from three of these substations, which are located in Berkeley, El Cerrito and Oakland. The remaining seven

¹⁵ Ibid.

¹⁶ De Snoo, Neil, City of Berkeley Housing and Energy Services Division, July 1999. *Personal communication* with LSA Associates, Inc.

substations step voltage down from 12kv to 4 kv to provide 4kv service. An exception is the Grizzly Peak substation, which is served by a 115 kv line and feeds the Lawrence Berkeley Labs and the University campus.

The telephone line network is provided to the City by Pacific Bell. Local service is delivered through a three tiered transmission system of switching facilities (three of which are located in Berkeley, Albany and Oakland), a feeder system, and a distribution system. The switching facilities and feeder system lines are all underground, while the distribution system is only partially underground. Pacific Bell devotes 2 percent of their revenue to undergrounding distribution lines, similar to the provisions of PG&E's Rule 20A.

e. Streets and Sidewalks.

(1) Street and Streetlight Maintenance. The Berkeley street system is comprised of 221 miles of streets. Of this total, 216 miles are improved and maintained streets and 8 miles are unimproved, without sidewalks, and unmaintained. Streetlights and traffic signal maintenance is funded through a City-wide Street Lighting Assessment District.

Since 1985, Berkeley has employed a Pavement Management System (PMS) program, designed by the Metropolitan Transportation Commission (MTC), to help prioritize asphalt street repair, based on a pilot program completed in 1984. The PMS program, based on a computer database of streets in Berkeley, is the principal quantitative tool for establishing street repair priorities in Berkeley, and is intended to extend performance life and prevent accelerated deterioration, thus obtaining the most value from budgeted resources.

(2) Sidewalks and Pathway Network Maintenance. There are approximately 300 miles of concrete sidewalks in Berkeley and approximately 135 paths in the hillside areas of Berkeley. Several of Berkeley's pathways have been designated as historical landmarks. In 1977, the pathways network was inventoried to determine the type of improvements and current condition of each section, and to prioritize future maintenance and improvements. A formal pathway program exists to improve, maintain and promote the system as an open space and circulation system accessible to all citizens. The City began some repairs and improvements in the year 2000.¹⁷ The City also has a program for the installation and maintenance of curbcuts providing ADA accessibility to sidewalks.

¹⁷ Emeziem, Kenneth, City of Berkeley Public Works Department, July 1999. *Personal communication* with LSA Associates, Inc.

f. Draft General Plan Policies. Policies included in the *Draft General Plan* that pertain to, could affect, or could be affected by the City of Berkeley's current infrastructure systems include:

- \$ *Policy LU-15.* Ensure that neighborhoods are well served by basic goods, a diverse supply of community care, services and facilities, including park, school, child care, and church facilities; fire, police, and refuse collection services; and by existing neighborhood commercial areas.
- \$ *Policy LU-16.* Work with the Unified School District and the University of California to establish a network of community service centers including school sites, neighborhood resource centers, and City facilities that offer community services such as child care, health care, and recreational programs.
- \$ *Policy LU-18.* Implement the Downtown Plan and take actions to achieve the three goals of the Plan:
 1. Express and enhance Berkeley's unique social and cultural character in the downtown;
 2. Create an appealing and safe downtown environment, with a comfortable pedestrian orientation; and
 3. Diversify, revitalize and promote the downtown economy.
- \$ *Policy LU-26.* Ensure that new development does not adversely impact existing transportation facilities and services.
- \$ *Policy T-6: Transportation Services Fee.* Ensure that new development does not impact existing transportation services and facilities.
- \$ *Policy T-29: Emergency Access.* Provide for adequate emergency access to all parts of the City and safe evacuation routes.
- \$ *Policy T-30: Infrastructure Improvements.* Facilitate mobility and the flow of traffic on major and collector streets (shown on the Vehicular Circulation Map on the next page), reduce the air quality impacts of congestion, improve pedestrian and bicycle access and speed public transportation throughout the City, by making improvements to the existing physical infrastructure
- \$ *Policy T-47: Disabled Access.* Improve access for the disabled community.
- \$ *Policy T-48: Sidewalks and Pedestrian Paths.* Maintain and improve sidewalks in residential and commercial pedestrian areas throughout Berkeley and in the vicinity of public transportation facilities so that they are safe, clean, attractive, and appropriately lighted.
- \$ *Policy T-52: Pathways.* Develop and improve the public pedestrian pathway system. Improve those pathways dedicated but not improved for public use.
- \$ *Policy H-31: University of California.* Urge the University of California to provide housing for at least 25% of its students at affordable prices and expand housing opportunities for students and staff.

Actions:

- A. Encourage and promote construction of additional housing for students and faculty within walking distance of campus.
 - B. Encourage development of satellite housing near transit more distant from the campus (including other municipalities).
 - C. Encourage multi-generational housing projects.
 - D. Work with the University and private developers and operators of student housing, including non-profits, to increase the supply of affordable housing for faculty and staff.
 - E. Encourage the University to continue to involve residents, community organizations, students, staff, city government and University administrators in long and short-range plans for University housing.
 - F. Work with other jurisdictions to advocate for changes in State legislation that would require the University of California to provide adequate housing for students and minimize housing impacts in the area from the University.
- § *Policy S-5: The City's Role in Leadership and Coordination.* Ensure that the City provides leadership and coordination of the private sector, public institutions and other public bodies in emergency preparedness.
- § *Policy S-9: Pre-Event Planning.* Establish pre-event planning for post-disaster recovery as an integral element of the emergency preparedness programs of the City Council and each of the City departments.
- § *Policy S-12: Utility and Transportation Systems.* Improve the disaster-resistance of utility and transportation systems to increase public safety and to minimize damage and service disruption following a disaster.
- § *Policy S-21: Fire Preventive Design Standards.* Develop and enforce construction and design standards that ensure that new structures incorporate appropriate fire prevention features and meet current fire safety standards.

Actions:

- A. Strengthen performance review and code enforcement programs.
- B. Promote the installation of built-in fire extinguishing systems and early warning fire alarm systems.
- C. Maintain city standards for minimum width and vertical clearance, and ensure that new driveways and roadways meet minimum standards of the Uniform Fire Code or subsequent standards adopted by the City.
- D. Provide adequate water for fire suppression for new development in accordance with city standards for minimum volume and duration of flow.
- E. Establish criteria for the installation of gas shut off valves in new and existing construction, to reduce the risk of post-earthquake fires.

Policy S-21 Fire Safety

Provide fire-prevention and fire-fighting capability to meet the needs of the community.

- A. Construct a new hill area fire station.
- B. Ensure adequate fire fighting personnel to maintain four uniformed fire fighters per engine company.
- C. Continue to improve the water supply for fire fighting to assure peak load water supply capabilities.

§ *Policy OS-9: Public Spaces.* Encourage innovative use of public plazas, sidewalks, and temporary street closures as open space or for recreational or cultural events.

§ *Policy EM-24: Sewer System.* Protect and improve water quality by improving the citywide sewer system.

Actions:

- A. Adequately fund sewer system improvements necessary to maintain water quality in natural areas and reduce public health hazards.
- B. Identify and eliminate illegal roof leader and other illegal connections to the sewer system.
- C. Establish a program for the identification and remediation of faulty laterals on private property. Consider requiring inspection and repair prior as a condition of property transfer.
- D. Identify alternative funding sources for essential infrastructure improvements such as grants, public private partnerships, and special benefit districts.
- E. Ensure that new development pays its fair share of improvements to the storm drainage system necessary to accommodate increased flows from the development.
- F. Coordinate storm sewer improvements with creek restoration projects

§ *Policy EM-26: Water Conservation.* Promote water conservation through City programs and requirements.

Actions:

- A. Encourage drought tolerant landscaping and low flow irrigation systems.
- B. Consider participation in East Bay Municipal Utility District Oakland-Berkeley Recycled Water Project to make recycled water (gray water) available for irrigation and other non-potable uses.

- \$ *Policy EM-27: Creeks.* Whenever feasible, daylight creeks by removing culverts, underground pipes, and obstructions to fish and animal migrations.
- \$ *Policy EM-28: Fresh Water Supply.* Restore a healthy freshwater supply to creeks and the bay by eliminating conditions that pollute rainwater and by reducing impervious surfaces and encouraging swales, cisterns and other devices that increase infiltration of water and replenishment of underground water supplies that nourish creeks.
- \$ *Policy EM-33: Landscaping.* Encourage drought-resistant, rodent resistant, and fire-resistant plants to reduce water use, prevent erosion of soils, improve habitat, lessen fire danger, and minimize degradation of resources.
- \$ *Policy PD-10: City Sponsored Projects.* In public works projects, seek to preserve desirable historic elements such as ornamental sidewalk features, lampposts, and benches.
- \$ *Policy PD-13: Public Schools.* Urge the Berkeley Unified School District to maintain and improve its historic buildings and sites in an architecturally sensitive manner.

2. **Impacts and Mitigation Measures**

a. Criteria of Significance. The *Draft General Plan* would have a significant effect on the City's infrastructure if it would:

- \$ Require the extension or substantial reconstruction of major water and wastewater lines to serve new development (beyond those wastewater system upgrades currently being implemented by the City and University);
- \$ Create substantial demand for water beyond the existing or planned EBMUD water supply, requiring additional water storage capacity;
- \$ Generate wastewater flows that would exceed the existing or planned wastewater treatment, storage and disposal capacity of EBMUD; or
- \$ Generate additional storm water runoff that would exceed the existing or planned capacity of the City's storm drain system and require the construction or substantial expansion of existing facilities.

b0 Infrastructure Impacts and Mitigation Measures. Less-than-significant infrastructure impacts are discussed first in this section, followed by significant impacts.

(1) Less-than-Significant Infrastructure Impacts. As set forth in previous sections of this EIR, less-than-significant impacts are discussed below.

Implementation of *Policies LU-15, LU-16, LU-26, T-6, T-29, T-30, T-47, T-48, T-52, S-5, S-12, S-21, OS-9, EM-26, EM-27, EM-28, EM-33, PD-10, and PD-13* relate to infrastructure but would not be expected to result in adverse environmental impacts. The policies of the *Draft General Plan* would not require the extension or substantial reconstruction of major water and wastewater lines to serve new development, beyond those wastewater system upgrades currently being implemented by the City and the University. The *Draft General Plan* policies would not generate additional storm water runoff that would exceed the existing or planned capacity of the City's storm drain system or require the construction or expansion of existing facilities.

In instances where adequate sewer capacity for proposed development is in question, the City of Berkeley Public Works Department requires developers to bear the costs of sewer system analysis and any necessary improvements, as part of their standard development review process. Additionally, sewer connection fees are required for all development and support a pro-rated share of the impact of development on the system. No significant impacts to wastewater services are expected with implementation of the *Draft General Plan*.

New housing construction would likely result in a small net increase in impervious surfaces, which would increase runoff volumes and velocities. When storm water runoff volumes and velocities are increased, existing storm drainage components that are at or near capacity may be inadequate to convey the additional runoff during peak events, causing localized ponding and flooding. However, existing City requirements for project design and approval that require drainage plans (including hydraulic calculations quantifying potential increases in runoff volumes associated with particular projects) prior to project approval would adequately mitigate this potential impact. This potential impact is also discussed in Section IV. J, Hydrology and Water Quality (Impact HYD-1) in this EIR.

Increased development and population proposed in the *Draft General Plan* are not expected to have a significant impact on gas, electric, and telecommunications services, because the nature of the development to take place will be increased density urban infill development, and would not require the construction of major new trunk lines for these services.¹⁸ Projected demand for these services under the *Draft General Plan* would not significantly exceed planned capacity.

For further discussion of *Policy T-30*, please refer to Section IV.D, Transportation.

¹⁸ De Snoo, Neil, City of Berkeley Energy Office, July 1999. *Personal communication* with LSA Associates, Inc.

Removing culverts and underground pipes that convey storm water to restore creeks to natural conditions, as described in *Policy EM-27*, may result in increased flooding and erosion hazards. For a further discussion of this potentially significant impact, please refer to Section IV. J, Hydrology and Water Quality (Impact HYD-2) in this EIR.

Policy EM-28 addressing storm water runoff is addressed in Section IV.J, Hydrology and Water Quality in this EIR.

Impact INF-1: Establishing pre-event planning for post-disaster recovery (Policy S-9) could result in direct or indirect environmental impacts. (LTS)

Implementation of this policy may result in the relocation or retrofit of existing facilities and structures. Although this type of activity would have a beneficial effect on the City's infrastructure by improving disaster recovery efforts associated with damage to infrastructure systems, it could result in direct environmental impacts from relocation or retrofitting activities. However, these activities would be subject to separate project-specific environmental review, and no additional mitigation would be necessary. Therefore, adoption of this policy would not result in a significant impact.

Mitigation Measure INF-1: None required. (LTS)

Impact INF-2: Improving the City-wide sewer system (Policy EM-24) could result in indirect or direct environmental impacts. (LTS)

Implementation of this policy would result in improvements to the City's sewer system, including elimination of cross connections between the sanitary sewer and storm drain systems, elimination of illegal roof leader connections to the sewer system, and the remediation of faulty laterals on private property. These actions would have a positive effect on the City's sewer infrastructure, but could result in physical environmental impacts. However, individual projects would be subject to separate environmental review. Therefore, adoption of this policy would not result in a significant impact.

Mitigation Measure INF-2: None required. (LTS)

Impact INF-3: Policies encouraging increased commercial development and residential population in the Downtown (Policy LU-18), as well as higher-density housing and commercial development in commercial and mixed use districts, and along transit corridors (Policy H-15), would require the treatment, storage, and disposal of additional wastewater. (LTS)

According to the growth projections in the *Draft General Plan*, the population of the City of Berkeley would increase by about 7,039 people (or 3,380 housing units) from

2000 to 2020. This increase in households would result in the generation of approximately 0.46 MGD (average dry weather flow) based on standard residential generation rates established by EBMUD. The *Draft General Plan* also projects an increase of 3,735 new jobs in Berkeley between 2000 and 2020; this increase would result in the generation of approximately 0.44 MGD (average dry weather flow), based on standard non-residential generation rates established by EBMUD, and based on the assumption of 350 square feet per new job. The combined residential and non-residential wastewater generation would result in approximately a 1.2 percent increase over the current average dry weather flow of 75 MGD to the treatment plant. EBMUD's MWWTP has adequate dry weather capacity to treat the anticipated dry weather wastewater flow increase resulting from increased development and population proposed in the *Draft General Plan*, provided that this wastewater meets the water quality standards of the District's Source Control Division.

If the wastewater flow increase for the *Draft General Plan* project area were to exceed the City of Berkeley's base flow increase allowance for the sub-basins, conveyance and treatment capacity for wet weather flows may be adversely impacted.¹⁹ Wet weather flow is generally considered to be 5 to 12 times greater than dry weather flow.²⁰ As discussed above, EBMUD is currently implementing a program to increase the MWWTP's wet weather sustained treatment capacity to 320 MGD and a peak wet weather capacity of 415 MGD. With these factors in mind, an increase of 1.2 percent wastewater generation would not result in a significant effect. This minimal wet weather projected flow increase for the *Draft General Plan* would be within the 20 percent base flow increase allowance for the influenced sub basins.

Mitigation Measure INF-3: None required. (LTS)

Impact INF-4: Policies encouraging increased commercial development and residential population in areas in the Downtown (*Policy LU-18*), as well as higher-density housing and commercial development in commercial and mixed use districts, and along transit corridors (*Policy H-15*), and additional University housing (*Policy H-31*) could significantly degrade the City's streets. (LTS)

¹⁹ Kirkpatrick, William, EBMUD, Manager of Water Distribution Planning, May 1999. *Written communication* with Andrew Thomas of the City of Berkeley.

²⁰ Yee, Henry, City of Berkeley Public Works Engineering Department, July 1999. *Personal communication* with LSA Associates, Inc.

Construction of new development, including development of University housing, envisioned by the *Draft General Plan* may impact streets in several ways. New construction would result in an increase in heavy-axle traffic, which would potentially damage existing streets. New construction also often requires the installation or re-routing of existing utility lines, which would require street cutting. The City Department of Public Works imposes standard conditions of approval that require pre- and post-construction measurements of street condition, and bond posting by construction crews.

Mitigation Measure INF-4: None required. (LTS)

(2) Significant Infrastructure Impacts and Mitigation Measures.

Implementation of the *Draft General Plan* would result in one potentially significant impact to the existing City infrastructure, related to the criteria of significance listed above.

Impact INF-5: Policies encouraging increased commercial development and residential population in the Downtown (Policy LU-18), as well as higher-density housing and commercial development in commercial and mixed-use districts, and along transit corridors (Policy H-15), and additional University housing (Policy H-31) could create demand for water beyond the planned EBMUD water supply. (PS)

Development under the *Draft General Plan* would increase demand for water in the City by about 0.448 MGD, based on residential water demand rates provided by EBMUD and taking into account the projected residential population increase. Most, if not all, development under the proposed *Draft General Plan* would be required to pay hook-up fees (designed to recover existing and planned capital investments) as well as be responsible for on-site and off-site improvements required to provide water service to individual projects. With the provision of fees designed to recover the existing and planned capital investments, any impacts posed by additional development under the *Draft General Plan* will be at least partially reduced.

Existing water supplies, however, may not be adequate to accommodate existing and future demand within EBMUD's ultimate service boundary for the City of Berkeley if supplemental water supplies are not utilized.²¹ EBMUD has identified recycled water as a key supplemental water supply. *Policy EM-26* in the *Draft General Plan* promotes water conservation through City programs and requirements, including cooperation with EBMUD to make recycled water available for irrigation and other uses.

²¹ Kirkpatrick, William, EBMUD, Manager of Water Distribution Planning, November 9. *Written communication* with Andrew Thomas, City of Berkeley. 2000.

Mitigation Measure INF-5: According to the provisions of SB 2095, the City shall adopt a recycled water ordinance upon notification by EBMUD of the availability of recycled water to serve new development in the City. (LTS)

The purpose of such an Ordinance would be to establish procedures for City cooperation with EBMUD, with respect to approval of new development that would require services from EBMUD. With the adoption of such an ordinance, potential impacts to water supply would be reduced to a less-than-significant level.