

# East Bay Municipal Utility From the District

Snowflake to the Bay



#### El Dorado County

### North Liddle Fork Cost

### From the General Manager



It seems easy. Turn on the tap, and out comes all the fresh water needed for your home, business, or school. EBMUD staff completes thousands of individual tasks daily to bring pure Sierra water

from the mountains to customers in the East Bay. Simple? No. But generations of EBMUD employees, guided by an elected Board of Directors, have diligently made it happen.

This report helps reveal the breadth of work we do to carry out our mission: to run a financially sound, responsible agency. EBMUD keeps rates fair, provides a healthy work environment, gives back to the community, protects the environment and ensures a reliable water supply for future generations. Big projects help meet our goals, but are only part of our story. Our strategic plan prioritizes the maintenance and upgrades of a complex water system that stretches 90 miles from Pardee Reservoir and through the Delta until it reaches a network of facilities in the East Bay. And almost 2,000 employees are part of its implementation every day, bringing water from the snowflake to the Bay.

Reliability is a key driver of our thinking about the future, and much has changed since our last update of our long-term Water Supply Master Plan 14 years ago. EBMUD experts in water supply modeling and environmental protection are gathering input from economic modelers, other specialists, and a community liaison committee to identify water supply and demand options for the next 30 years and beyond. Land use trends, new regulations, emerging issues and other factors will be included to produce a plan that is environmentally, fiscally and operationally sound. It will address global climate change, California's evolving water supply picture, and regional partnerships like the Freeport Regional Water Project, which will come online in 2009 to alleviate dry-year shortages. Whatever the future brings, our commitment is clear: a portfolio of initiatives to ensure a sufficient and healthy water supply for the next generation. Water rationing levels will be achievable for Bay Area residents and businesses in a severe drought, and we will rely on conservation and water recycling and on new alternatives like water transfers, desalination and stored groundwater.

As many experienced managers retire, EBMUD is focused on constantly refreshing the talent we rely on to achieve our goals. A Management Leadership Academy and other developmental training programs prepare employees to be future leaders. The academy cultivates key skills and attributes that prepare workers to compete for management positions, and helps participants achieve results in new leadership roles. New leaders will help support our mission to provide high-quality water and wastewater services.

Last winter was operationally challenging, with our largest water line out of service for seismic improvement, followed by a dry spring and summer. Our customers responded by lowering water demand when it was greatly needed. That conscientious use of water inspires all of us at EBMUD daily, as we keep the water flowing to customer taps.

Dennis M. Sieme

Dennis M. Diemer General Manager

o uu n few

Woodward Reservoir

# Where It All Begins

Before water pours out of EBMUD customer taps in the East Bay, it begins as snow in a 577square-mile watershed on the western slope of the Sierra Nevada. In the spring, snow melts into the Mokelumne River, winding through mostly undeveloped land to Pardee Reservoir near Valley Springs. This pristine water provides 90 percent of EBMUD's supply, with ten percent coming from the local East Bay watersheds.

Normally, our Sierra supply is sufficient. But during water years like 2007, one of the driest in Mokelumne River history, additional sources are needed. To ensure a continued dependable supply, EBMUD's diverse water supply portfolio includes water recycling, conservation, desalination and the upcoming Freeport Regional Water Project for added flexibility in dry years.

#### **Only the Best**

EBMUD's water is carefully managed and protected before it reaches the customer. We ensure that our drinking water not only meets the high standards of the California Department of Health Services and the U.S. Environmental Protection Agency, but surpasses the standards. This year, EBMUD met 100 percent of the state and federal drinking water regulations.

Our internal water quality goals go a step further, and test for even higher standards than those required by state and federal regulations. EBMUD met 98 percent of its own stringent water quality goals and continues to strive to meet them all.

By working with state and federal agencies to develop effective laws and regulations, we continue to assure high-quality drinking water for the people of the East Bay. EBMUD has successfully advocated for lead-free

Solano County Cross-Delt Canal



Carefully managed rangelands protect water quality and reduce fire danger. Rangers monitor and regulate the quantity and location of grazing, keeping cattle from sensitive areas and adjusting grazing during wet seasons to protect water quality.

plumbing products with the passage of Assembly Bill 1953, introduced by former Assembly member Wilma Chan (D-Oakland) and signed into law by Governor Arnold Schwarzenegger in September 2006.

#### Hydropower

EBMUD generates green power (hydropower) from Pardee and Camanche Dams. One benefit of the extremely wet weather during winter 2005/2006 was a boost in electric power production from Camanche and Pardee dams and \$11.2 million in hydropower sales – more than double what was anticipated – which helped keep EBMUD rates low. In fiscal year 2007, net revenue from hydropower sales fell to \$4.4 million, a result of one of the driest winters in years. Though the drop seems large compared to 2006, sales were only slightly less than the forecasted \$4.5 million, resulting in no impact on water rates.

#### **Managing Rangelands**

Fires have always threatened during the dry season, especially where communities brush up to open space. EBMUD works with fire agencies and community groups to maintain clearance around homes and keep vegetative fuels down to minimize fire danger.

Before EBMUD was created, the Mokelumne and East Bay watershed lands were used primarily for grazing. By continuing this historic use, watersheds and neighboring communities are kept more firesafe. Cattle keep grasses at a controllable level, reducing the severity of fires – allowing for a safer and more effective response by firefighters. EBMUD

uses best management practices for livestock grazing to protect sensitive species and habitats and maintain range grasses while protecting soils, biodiversity and water quality.

Grazing experts from UC Davis continue to help us improve our grazing program. Additionally, a new stormwater monitoring program is allowing us to evaluate runoff and water quality in reservoirs and tributaries and better understand the effects of grazing, recreation and wildlife. Results are expected in 2008. Ongoing rangelands monitoring provides valuable information for EBMUD to make wise choices about managing these natural resources in an environmentally responsible way.

#### **Offering Recreation**

EBMUD's beautiful lands provide an excellent water supply and offer a haven for wildlife and for people. Five "upcountry" areas, including Pardee and Camanche in Amador, Calaveras and San Joaquin counties, and three East Bay areas, provide recreation. At Pardee Reservoir the public can fish, boat and camp, and nearby Camanche Reservoir (a flood control reservoir) is open all year for camping, swimming, wind surfing, water-skiing, fishing and picnicking. EBMUD carefully maintains these areas with good roadways, landscaping and amenities to provide a positive experience for visitors. They continue to be popular destinations, with attendance at Pardee, Camanche and the Camanche Hills Hunting Preserve up seven percent this year.

Just west of Camanche Reservoir, visitors to the Mokelumne River Day Use Area can stroll, fish and picnic. At Middle Bar (upstream from Pardee Reservoir), rafters and kayakers can take their boats out of the river after a six-mile float. And more than 30 miles of trails snake through the EBMUD Mokelumne watershed, offering hikers and equestrians a bounty of views. We continue to develop new sections of trail through EBMUD lands. Rugged sections of trail in the Upper Mokelumne Canyon are being built by volunteers and

Waterways and trails in the Mokelumne watershed bring people close to the rugged beauty and storied history of the area. the U.S. Forest Service, adding to a 22-mile stretch of the Mokelumne Coast to Crest Trail already open.



## Caring for EBMUD Land

EBMUD owns 56,000 acres of Mokelumne and East Bay watershed land and also coordinates with cities, counties and other agencies with responsibility for 438,000 acres of adjacent land. Our Sierra foothills and East Bay watershed lands are managed to protect water quality while providing an oasis for wildlife and people. EBMUD is a diligent steward of both watersheds.

#### **Protecting an Oasis**

EBMUD manages about 28,000 acres of the Pardee and Camanche watershed, supporting recreation, grazing, hiking and environmental education. But increased human activity also increases potential water quality and ecological impacts.

Since EBMUD's Land Use Master Plan was completed 30 years ago, community interest in our watershed land increased while EBMUD focused on environmental and water quality protection. A new land use plan is being drafted to provide up-to-date policy and management direction. EBMUD reviewed current uses, weighing potential risks to water quality and the ecological health of the watershed.

A community liaison committee provides input, bringing together neighboring agencies, landowners, representatives from our East Bay service area and others interested in the watershed. EBMUD's conceptualization process identified three land-use scenarios. One prioritizes natural resource protection over community uses, the second focuses on community uses, and the third draws on current land uses with new programs to protect water quality. In late 2007 the EBMUD Board of Directors asked staff to further develop the third alternative. The final Mokelumne Watershed Master Plan will provide strategies and objectives to protect water quality and the environment through watershed restoration, environmental education, public outreach and partnerships with research institutions – with minimal changes to current community uses and

financial impacts to ratepayers. This living document will set direction but allow for ongoing evaluation and modification to achieve objectives.

#### Partnering on the Upper Mokelumne

In addition to EBMUD, many agencies, landowners and neighbors are keenly interested in maintaining a healthy watershed and high water quality for the Mokelumne River. The Upper Mokelumne River Watershed Authority was established by local and regional agencies in Alpine, Amador and Calaveras counties with similar interests. They initiated the Upper Mokelumne River Watershed Assessment and Planning Project in 2005 to involve the community in the planning and stewardship of the local watershed. A Project Advisory Committee (PAC) provides guidance and input, representing regional businesses (including forestry, hydropower, and agriculture), public service agencies, resource managers, water agencies, and recreational, environmental and general watershed interests.

Authority members work to maintain and improve source water quality, identify practices to minimize water quality threats as the watershed becomes more urbanized, and evaluate long-term trends. The \$1.3-million project is partially funded by Proposition 13 and 50 grants of \$800,000. A hydrologic water quality model identifies baseline water quality and estimates future conditions as land-use activities change. The Authority will publish a final report with findings and recommendations in early 2008.

The PAC participants bring a wealth of expertise and diverse interests together to achieve a common goal. They have an expansive understanding of this rural/ semi-rural watershed and factors that can impair water

By managing the land and its fish, animal and plant life, EBMUD's water source is kept clean.



4

quality and they incorporated outreach and good communication to engage interested communities. These efforts by EBMUD and other Authority members benefit the watershed and the communities who have a stake in the river ecosystem's health.

#### **Healthy River, Healthy Fish**

Salmon eggs hatched in cool, shallow gravel beds in the Mokelumne River become young "fry" and "smolts," then journey downriver to the sea, where they spend most of their lives before returning to their native stream. EBMUD's Camanche Dam, built in the early 1960s, covered natural spawning areas above the dam and altered flows and temperatures in the river. To protect the river's health and boost fish populations, EBMUD conducts a variety of programs in and along the river.

At the Woodbridge Irrigation District Dam, salmon swim upriver through fish ladders to spawn naturally, or enter the Mokelumne River Fish Hatchery at the base of Camanche Dam. At a new viewing window at Woodbridge, staff installed a digital imaging system to replace old video equipment. With high-quality images wired to EBMUD offices, biologists review daily records to get an instant glimpse of fish migration. They count and identify each fish by species, sex, size and tags. This year's fall salmon run was 5,861, higher than the long-term average of 4,250 but less than last year's record 16,000 fish. Annual return numbers fluctuate with changing ocean conditions, fish harvest rates and freshwater runoff.

Rivers naturally carry gravel that makes its way to the ocean, but dams block that movement. EBMUD's Mokelumne gravel restoration program entices salmon and steelhead to spawn in the river instead of entering the hatchery. UC Davis models of spawning habitat help determine how much, and where, gravel will provide optimal results. We've placed 900 tons of gravel in the lower Mokelumne below Camanche Dam before each fall salmon run, and this year, with a grant from U.S. Fish and Wildlife, will place 7,100 tons of gravel – the most EBMUD has ever added. We will replace the gravel deficit, then continue with smaller supplements as needed. Annual spawning surveys using GPS (Global Positioning System) and GIS (Geographic Information EBMUD monitors habitat use and migration patterns of juvenile salmon and steelhead by seining at various locations along the river. On this day, a stop during "Take Our Daughters to Work Day" gives girls a first-hand look at fish sampling and river health.

System) identify where salmon and steelhead spawn. Data confirm that 40 percent of natural Chinook salmon spawning occurs in our gravel enhancement sites and that the gravel increases survival.

To gather even more information about fish, a cooperative marking program by the CA Department of Fish and Game, CA Department of Water Resources, U.S. Fish and Wildlife Service, Pacific States Marine Fisheries Commission, U.S. Bureau of Reclamation and EBMUD now tags 25 percent of California hatchery-produced salmon. This year, 1.5 million fall-run Chinook salmon were tagged under this program.

EBMUD won the 2006 Association of California Water Agencies Theodore Roosevelt Environmental Award for Excellence in Natural Resource Management for its salmon restoration program, which guards the health of the fish population and the Mokelumne River ecosystem. It provides sustainable water supplies and hydropower, and encourages local cooperation to protect the watershed. EBMUD works cooperatively with the U.S. Fish and Wildlife Service and California Department of Fish and Game on this award-winning Lower Mokelumne River Partnership program.



5



### Journey Through the Resource

Three Mokelumne Aqueducts bring water to the East Bay 90 miles from Pardee Reservoir, crossing the Sacramento-San Joaquin Delta. EBMUD works with neighbors along the Mokelumne River to protect the health of its ecosystem and is developing water supply projects for added security against drought. In the Delta, we contribute to efforts to strengthen the levees near our aqueducts. Closer to the service area, we work with other agencies to develop desalination and groundwater recharge projects, adding to our growing water supply portfolio.

#### **Diversifying our Water Supply Mix**

The 2007 water year was very dry and resulted in the Board of Directors declaring a water shortage. EBMUD asked customers to voluntarily reduce water use, establishing a goal of 10.000 acre-feet of water conserved between May and September 2007. Throughout the service area, customer demand fell by 6,700 acre-feet, getting us close to the cutback we hoped to achieve.

Crews began construction at the intake facility for the Freeport Regional the Sacramento River, where water will be diverted to provide a dry-year water supply for **EBMUD** customers.

To help meet dry-year needs, the \$900-million Freeport Regional Water Water Project along Project will provide up to 100 million gallons per day (mgd) for EBMUD customers and up to 85 mad for the future needs of our partner, the

Sacramento County Water Agency. Water will be diverted from the Sacramento River near Freeport, pumped 18 miles through six- and seven-foot diameter pipe to the Folsom South Canal where it will travel southward and then be pumped another 18 miles to the Mokelumne Aqueducts near Camanche Dam. Permits and approvals were obtained, and construction work has begun on most of the ten construction contracts needed for this regional project.

Rationing for EBMUD customers during severe droughts absent the Freeport Project would be as high as 67 percent. When completed in late 2009, the Freeport Project and other local supply projects will limit rationing to no more than 25 percent, reducing potential local economic hardship. The positive relationships developed through the Freeport Project have created additional opportunities for regional partnerships. Working together with agencies in Sacramento County, a \$25-million Proposition 50 grant to study future water supply projects in the Sacramento region was obtained, with \$12 million allocated to help fund the Freeport Project.

#### Working Together for Drought Protection

One way to use less potable water from the Sierra Nevada is to produce it locally with desalination. With better technology and by partnering with neighboring water agencies, desalination is becoming more economically viable. Desalination could provide water in emergencies and droughts. and for back-up when facilities require repair. The Bay Area Regional Desalination Project could serve 71 million gallons of water a day for customers of EBMUD. Contra Costa Water District. San Francisco Public Utilities Commission and Santa Clara Valley Water District.

A feasibility study completed in June 2007 evaluated three sites - in east Contra Costa County, near the Bay Bridge in Oakland, and near San Francisco's Oceanside wastewater plant. The study found all three viable, the least expensive being the Contra Costa County site. EBMUD and its partners received a \$1-million grant to study brackish water

### Rich Delta

at the Contra Costa site and expects results from the study by 2009. More detailed work will follow, including environmental review and design, directed by the participating agencies.

#### **Tapping Into Local Water Supplies**

EBMUD's efforts to augment dry-year supplies include the Bayside Groundwater Project in San Leandro/San Lorenzo. We plan to inject surplus water from wet years into an underground aquifer and remove water in dry years. The supplemental supply will be treated, monitored and distributed to customers during droughts. The project design was completed in summer 2007, and completion of the water treatment plant is expected by mid-2009.

#### **Protecting the Lower Mokelumne**

Much of the land along the lower Mokelumne River is owned by private parties. EBMUD works with the landowners and local communities to keep the ecosystem

healthy and enhance habitat. The Lower Mokelumne River Partnership and the Lower Mokelumne River Stewardship Committee include landowners and representatives from federal and state resource agencies and local governments. By working together, fisheries habitat is protected and partners can manage and improve this important resource for mutual benefit.

The partners prioritized restoration efforts along the river corridor and implemented several projects. One completed project, in conjunction with the CA Association of Conservation Districts, protects the Valley Elderberry Longhorn Beetle and streamlines the permitting process for restoration projects. The committee provides technical support for restoration activities, completes spawning habitat improvements and evaluates floodplain management opportunities. EBMUD is a full partner, providing expertise, leadership and technical review of projects.

With \$1.1 million provided by the CALFED Bay-Delta Program, EBMUD is working with the Southeast Sacramento County Agricultural Water Authority, Sacramento County Water Agency, Sacramento Area Flood Control Agency, The Nature Conservancy, San Joaquin County Resource Conservation District, Reclamation District 800 and UC Davis to evaluate potential floodplain improvements in the lower Mokelumne and Cosumnes rivers.

The Cosumnes and Mokelumne Rivers Floodplain Integrated Resources Management Plan is a multi-partner effort to enhance conditions and functions of the lower river's 62,000 acres of floodplain. The plan will guide improvements to floodplain and riparian habitats, flood management, and groundwater recharge. The partners, working with



stakeholders, will develop a flexible, adaptive plan, allowing for revision as studies reveal new information. The partners produced a floodplain characterization report in 2006 that furthers understanding of how the floodplain functions and forms the basis for actions and evaluations of projects. The plan was completed in late 2007.

By consistently maintaining these aqueducts and supporting the maintenance of the fragile levees they cross, EBMUD helps ensure a reliable water supply.



An EBMUD biologist provides technical expertise for Lange Twins Winery. Proponents of sustainable farming, they are converting sections of vineyard along the river to natural riparian habitat.

#### Keeping Our Water Supply Safe

Mokelumne River water flows through the Mokelumne Aqueducts to the East Bay, crossing 15 miles of the Sacramento-San Joaquin Delta. This fragile area contains

land at or below sea level with levees holding back the Sacramento and San Joaquin Rivers.

EBMUD has completed more than \$50 million in projects to protect the aqueducts from earthquakes and levee failures. The levees are owned and maintained by five reclamation districts with limited staff who perform needed maintenance when identified by engineering inspections. Levee maintenance is critical to EBMUD. Because our aqueduct maintenance is entwined with state and reclamation districts' efforts to repair the Delta levees, in the 1990s EBMUD agreed to fund levee improvements. EBMUD pays 90 percent of annual costs of improvements by the reclamation districts. Projects must be approved by EBMUD and are eligible for subsidies by the State Reclamation Board for up to half of project costs. EBMUD pays about \$400,000 in annual assessments and has contributed \$6.6 million towards these projects since 1999.

The State of California's Delta Vision and Delta Risk Management Strategy projects are currently studying the area to guide the long-term management of the Delta region. Because of the importance of EBMUD's aqueducts to our water supply, we are actively engaged in these efforts. Water destined for East Bay taps travels from Pardee Reservoir to the service area, where it is either treated right away or stored in one of five local reservoirs. It takes all of our employees to store, treat, and deliver water, while providing excellent service for 1.3 million customers, protecting the Bay with wastewater treatment, caring for EBMUD lands and planning a secure water supply for the next generation – all in a financially and environmentally responsible manner.



#### **Partners in Business**

Ratepayers make it possible for EBMUD to provide quality water and wastewater services to East Bay communities. We believe in giving back to these communities and promoting local business growth. By stimulating the local economy and utilizing small businesses, we recycle the funds we receive back into the area we serve. Through our Contract Equity Program, EBMUD maintains a creative and robust outreach program. We partner with other agencies and non-profits to inform a wide range of prospective bidders (including underrepresented groups) about contract opportunities, tracking their participation and achievements. EBMUD offers incentives so small businesses can be more competitive with larger companies.

By being involved in the business community, we ensure contract opportunities for numerous businesses. In 2007, EBMUD became a reciprocity partner with the State of California's Small Business Program, which streamlines and simplifies the certification process for small businesses, making it easier for them to do business with us.

#### **Serving Customers**

EBMUD customers have diverse expectations. Some prefer online interaction, some prefer phone service, and some want in-person communication. As technology improves, we continue to expand customer self-service with web and

In addition to talking with representatives in our Contact Center about their account, many customers rely on the expertise of EBMUD staff for questions about water conservation, detecting leaks, water quality, and recreation on EBMUD land. interactive phone systems, while still meeting the needs of customers without access to these systems. By providing multiple pathways, customers choose how to reach us, and EBMUD staff can then quickly answer questions or resolve an issue. Each year, more customers prefer to use self-service systems for routine transactions like purchasing trail permits or paying <image>

EBMUD continually buys supplies needed for our operations. By utilizing small, local businesses to purchase goods and services, we broaden the pool of competitive bidders, lower prices and strengthen the business economy in our communities. their bill. Last year, more than 30 percent of customers paid their bills electronically. When customers use selfservice tools, the number of calls is reduced, and representatives can spend more "live" time with customers on complex issues.

This year, surveys for EBMUD's Contact Center show 95 percent of customers were satisfied with the service they received. For field representatives who work with customers concerned with high bills and possible leaks, EBMUD's service was rated at 92 percent satisfaction.

Good service is the result of having an excellent staff. EBMUD balances the wise use of technology with cultivating employee knowledge and skill. With smart recruitment and selection plus vigorous training, we take time to ensure that representatives are great listeners and thoughtful problem solvers who treat every customer with care.

Our Customer Information System is the engine that develops water bills for revenue and stores customer account data for nearly 400,000 accounts (which translates to 1.3 million people). This system, more than 20 years old, is nearing the end of its life, making it difficult to keep up with changing business needs.

In 2007, EBMUD began a process to replace this customer service software. Changes, though invisible to customers, will provide flexibility to the system as customer expectations and business needs change. The new system also will add efficiency by eliminating some manual processes and peripheral systems and by integrating standalone systems so they can "talk" with each other.

EBMUD is developing expertise to maintain and upgrade the new Customer Information System to ensure an extended system life, and is making certain it is optimally configured to meet our needs. The customization of this software will begin in 2008, and it should be online in 2009. Our goal is first-class service for all customers, at reasonable cost. Efficiency not only provides better service, but helps keep rates low.

#### Savings Through Creative Purchasing: It's a Winning Strategy

Saving money for EBMUD saves money for customers. Being cost-effective has always been part of our business practices. A novel approach to purchasing goods and services builds on this commitment, while providing flexibility for us and our suppliers. Prices are bound to change over the life of multi-year contracts. By agreeing to adjust prices periodically based on raw material market fluctuations, we minimize our prices while protecting the vendor's profit margin. With multi-year contracts, EBMUD helps ensure an uninterrupted supply of materials and avoids the administrative expenses of annual bid processes. In 2007, we reduced purchase prices by \$1,900,000. Even though the consumer price index has risen 35 percent since 1996, material price increases at EBMUD rose by only 22 percent in that same period.

Nationwide, other agencies and professional organizations look to EBMUD for guidance to incorporate similar strategies. The National Institute of Governmental Purchasing gave EBMUD a Presidential Citation for Best Practices for Strategic Planning (one of only three awards presented to public agencies in North America). The National Purchasing Institute recognized EBMUD for innovation, efficiency and leadership with the internationally recognized Achievement of Excellence in Procurement Award. EBMUD is the only water or wastewater agency in the U.S. to be honored with the award eight or more consecutive times.

#### **Green Power**

EBMUD is helping the state of California meet its goal of getting 20 percent of energy from renewable sources by 2010. In March 2007, EBMUD began generating electricity from a 430 kilowatt photovoltaic project (solar), which will generate 10 percent of the total power needs at EBMUD's water treatment plant in El Sobrante. Thanks to a \$1.3-million rebate, project costs were kept down for EBMUD and its customers. As more California utilities bring renewable energy online, we expect the technology to continue improving and costs to go down, making renewable energy even more feasible in the future.

This solar project will provide 10 percent of the power needs for our water treatment plant in El Sobrante. EBMUD continues to look for ways to increase use of renewable energy.



### The Cornerstone of EBMUD Service: A Reliable System

#### Linking for Reliability

Water utilities once relied solely on their own facilities to meet the infrequent demands of emergencies and maintenance outages in their systems. Improved planning and a drive for costefficiency has led to greater regional cooperation among water agencies.

EBMUD and neighboring water suppliers are finishing two projects to connect their systems. These "interties" improve reliability by allowing water to be exchanged after earthquakes, other emergencies, or when major facilities are out of service for maintenance. One intertie connects EBMUD to the City of Hayward and San Francisco's system with a new pump station to move up to 30 million gallons of water per day in either direction. Another intertie links EBMUD and the Contra Costa Water District (CCWD) to allow 60 to 100 million gallons of water per day to be exchanged. These links will provide EBMUD additional operational flexibility during disasters. These intertie construction projects, including operational testing, were completed in summer 2007.

#### **Doing Business After the Big One**

EBMUD faces natural and man-made hazards like earthquakes, computer system failures, power outages, and fires. Our robust emergency preparedness plan is designed to protect lives and quickly restore drinking water and wastewater service. By planning well, we can minimize service disruptions and provide organizational stability, ensuring a quick response and orderly recovery after a disaster.

A business continuity program helps us recover critical functions like responding to customers and paying



employees. EBMUD's program incorporates lessons from Hurricane Katrina, including a management succession plan, employee and vendor contact information and lists of critical equipment and computer needs. Employees were trained and decision-making skills were tested using simulated emergency scenarios. EBMUD also tested an employee emergency notification and e-mail system and evaluated recovery of our customer information and materials management systems. The Business Continuity Program is a working document, to be continually reviewed and improved over time.

#### **Bypassing Danger**

Reinforcing our water system is necessary to protect our families, businesses and homes from earthquake damage. In 1995, EBMUD began a comprehensive seismic upgrade of pipelines, reservoirs and facilities.

This year, EBMUD concluded work on the Claremont Tunnel, a key link in the water system, which serves 800,000 customers west of the Oakland-Berkeley Hills. Studies showed the tunnel was vulnerable where it crosses the Hayward Fault near Tunnel Road in Berkeley, where the earth could shift up to 7.5 feet in a major earthquake, breaking the tunnel and compromising water flow. Engineers found a creative solution: rather than build a new tunnel, renovate the existing 3.4-mile tunnel and build a short bypass tunnel around the fault. This bypass tunnel

The seismic retrofit of the Claremont Tunnel incorporates a novel design that routes water through a highlyreinforced new tunnel. Back in service since spring 2007, the tunnel provides drinking water for 800,000 customers west of the Oakland-Berkeley Hills. will accommodate up to 8.5 feet of fault movement and still convey 130 million gallons per day of water, even after a magnitude 7.0 earthquake.

Operating the water system during two winters with the tunnel idled for construction was a terrific hurdle, because the amount of water EBMUD could treat and deliver was reduced. We operated three water treatment plants (normally idle in winter) at maximum capacity and quickly responded to unforeseen problems, ensuring uninterrupted service. We asked customers to use less water. Those in the most-affected northwest section of the service area responded admirably to EBMUD's requests, and water use decreased enough to hold demand within EBMUD's safe water production capacity.

This year workers completed grouting and repairs of the original tunnel, finished lining the bypass tunnel with concrete and connected it to the original one. The Claremont Tunnel Seismic Upgrade was successfully completed and dedicated in May 2007. The upgrade assures that this water lifeline is ready to serve future generations.

#### **Assuring Dam Safety**

By routinely assessing facilities using the latest information in seismic engineering, EBMUD ensures reliable water service and helps keep communities safe. In 2004, a study of San Pablo Dam, coordinated with the California Division of Safety of Dams, showed some of its soils and foundation are susceptible to liquefaction. In a maximum credible 7.5 earthquake on the Hayward Fault, the dam could slump, allowing water to flow over the top. EBMUD lowered the water behind the dam to protect downstream communities and is designing a long-term solution.

After completing preliminary design and environmental studies last year, EBMUD began final retrofit design. The dam foundation will be improved by mixing existing soil with cement, and a larger downstream buttress will add strength. Soil tests and pilot tests of the proposed ground improvement technologies are helping engineers design seismic upgrades, including the size of the buttress. Design should be completed by spring 2008, with two years of construction to follow. The reservoir will remain in service at a reduced water level throughout construction.

EBMUD uses the latest technologies and information to keep our facilities and communities safe. A new design for seismic upgrades at San Pablo Dam will protect the dam from damage during catastrophic earthquakes.

#### Modernizing EBMUD's System

To provide the best service, EBMUD must continually maintain and improve our water system. For some facilities, especially in the Lamorinda and western Walnut Creek area, the

location and capacity are not adequate for current peak use or for projected increases in demand.

The Water Treatment and Transmission Improvements Program combines more than 20 major upgrades to modernize treatment and move water more efficiently. Improvements will replace aging infrastructure, help meet upcoming water quality regulations and correct operational constraints. Environmental documents for the improvements were certified in December 2006 by the EBMUD Board of Directors.

Certain improvements must be in place before others can begin. EBMUD is coordinating some projects with the work of other agencies. Design has begun on the first projects, including improvements to the Walnut Creek Water Treatment Plant, a reclaimed water pipeline at the Lafayette Water Treatment Plant, construction of a 2.7-million-gallon reservoir near Lafayette Reservoir and a water transmission pipeline in Lafayette and Moraga. Design and construction of these projects is scheduled through 2010. The rest of the improvements will be phased in over the next several years, including work at all of the water treatment plants.



#### **Prioritizing Fixes for Worry-Free Service**

EBMUD has more than 4,000 miles of piping within our 325-square-mile service area. To provide dependable service and save water, we use a database with more than a decade of repair records to identify and schedule pipeline replacements.

Crews replace about eight miles of water mains each year, sometimes upsizing them to meet improved fire flow standards. EBMUD also upgrades fire hydrants and lateral pipelines to customer homes and businesses along the new water main. This year we installed more than 13 miles of pipeline, including new extensions and recycled water lines. The water system also includes 18,000 critical valves and fire hydrants. Crews routinely inspect and test these components to ensure they are accessible and operate correctly. Additionally, we inspect materials kept for emergencies – such as bypass hoses – to be prepared for disasters.

San Joaqui

# Stretching Our Water Supply

An unusually dry winter led the Board of Directors to declare a water shortage in spring 2007, underscoring the importance of water conservation and water recycling to save precious drinking water and supplement our existing supplies.

Turf and landscaping thrive on recycled water, which has organic nutrients not found in drinking water. Numerous City of Oakland parks, including areas around Lake Merritt, will benefit by irrigat-

#### Water Recycling

Water recycling has an increasing role in meeting water supply needs. The award-winning San Ramon Valley Recycled Water Program (SRVRWP), a partnership between EBMUD and ing with recycled water. the Dublin San Ramon Services

District, provided its first full year of irrigation service. Thirty-three EBMUD customer sites now include parks, greenbelts, schools, common areas and the Bridges Golf Course. During a June hot spell, the SRVRWP produced a record-breaking 6 million gallons of recycled water in one day. Design for a recycled water tank in Alamo Creek was timed with construction of a nearby potable water tank, minimizing construction impacts for neighbors. The first phase of the SRVRWP, almost complete, will deliver an average of 0.7 million gallons per day (mgd) to EBMUD customers. The fully operational project will supply 2.4 mgd of recycled water for EBMUD customers in parts of San Ramon, Danville and Blackhawk.

EBMUD also made significant progress on the East Bayshore Recycled Water Project. Construction of a



EBMUD offers financial incentives for a new generation of irrigation controllers that automatically adjust irrigation schedules to weather conditions, preventing watering during rain and applying more water during unexpected hot spells.

1.5-million-gallon storage tank and a tertiary-treatment plant at our Oakland wastewater treatment plant is complete. Crews finished pipeline installation in Oakland and began work in Emeryville. Site training was provided to help new customers safely and efficiently use recycled water. Design and construction of plumbing retrofits

continued, connecting customers to the recycled water system. Initial deliveries of 0.7 mod are expected in late 2007. When completed, the project will provide 2.5 mad of recycled water to portions of Alameda, Albany, Berkeley, Emeryville and Oakland.

customer), Chevron staff reviewed operations to create





conversion of a cooling tower to recycled water, made possible by recent improvements at EBMUD's recycled water plant in North Richmond. This conversion saved 1 mgd of potable water during this critical time and will continue in the future. Additionally, the Instead of using precious drinking water to irrigate, The Bridges Golf Club in San Ramon now keeps the course green and healthy with recycled water.

Richmond Advanced Recycled Expansion (RARE) Water Project will produce up to 4 mgd of highly purified recycled water for Chevron's boilers. EBMUD completed environmental review and public outreach, certified the environmental documentation in May, and finished preliminary design. Cooling tower use plus the new RARE project will enable Chevron to use recycled water for more than half of its needs, making 7 to 8 mgd more drinking water available for other uses.

#### Save a Drip, Add a Drop

We have long assisted businesses and residential customers with saving water through education, technical assistance, financial incentives and research. The Alamo Creek WaterSmart Education Display, part of the Danville Camino Tassajara community, provides water conservation resources and inspiration for new home buyers. The education center





illustrates beautiful examples of water-saving plants and depicts efficient irrigation systems (including drip and weather-based irrigation controllers) to help plan a sustainable backyard landscape.

With EBMUD's help, residents of the newly built community will have access to information on efficient indoor fixtures and appliances to help them meet a defined water budget. The community will also benefit from the use of recycled water to irrigate common area landscaping.

High-efficiency clothes washers use less water, energy, and detergent. With rebates from EBMUD and PG&E, plus savings on utility bills, they are a cost-efficient and environmentallyfriendly choice.

EBMUD's Board of Directors approved minimum indoor and outdoor water-efficiency standards for new residential and business customers and customers requesting meter upgrades. The standards, effective July 1, 2007, require waterefficient, reasonably priced plumbing fixtures, appliances, landscaping, food service equipment and cooling systems. "WaterSmart from the Start" regulations will help new customers save money on water, energy and sewer bills. In 2007 we worked with other Bay Area water agencies to research and provide financial incentives for weather-based irrigation controllers. These timers self-adjust to weather changes and apply just the amount of water plants need, avoiding overwatering.

San Joaquin

Much of EBMUD's water is stored in five East Bay reservoirs before ending up at customers' taps. We monitor and manage the lands surrounding our reservoirs to protect water quality and the environment, and provide opportunities for the public to enjoy these oases through recreation and education. East Bay watershed lands offer unspoiled beauty not always found in other open spaces. Locally, three EBMUD reservoirs are open to the public for boating, fishing, canoeing, picnicking and hiking, and two more offer trail access nearby for hiking and equestrian use.



#### **Historic Swimmers**

In 1855, Dr. W. P. Gibbons was the first to describe California rainbow trout. Their descendants now spawn in San Leandro Creek above EBMUD's Upper San Leandro Dam. These large fish are a rare unhybridized population of native California rainbow trout. Originally ocean-going steelhead, they were isolated in the 1870s when Chabot Reservoir was built, and they now treat the upstream Upper San Leandro Reservoir as if it were the ocean.

The Upper San Leandro Reservoir population is robust, thanks in part to an oxygenation system installed to improve water quality, which also enhances habitat by providing the cool, oxygenated water trout prefer. EBMUD helps remove stream barriers, protects fish habitat from grazing animals,

and monitors the trout to maintain this historic population.

#### Critters and Folks: Balancing Competing Land Uses

EBMUD has 65 miles of trails on East Bay watershed lands. For years, the trail community has envisioned continuous access along the ridges of the East Bay hills. This year, the alignment for a section of the Bay

On "Trail Day," volunteers work with EBMUD Rangers to build a fence using eucalyptus harvested from nearby areas. This gateway leads trail users to a new 7.5-mile segment of Bay Area Ridge Trail (dedicated in fall 2007) through watershed land.



EBMUD's watershed lands offer a place for kids and adults to connect with nature. In addition to fishing, East Bay reservoirs boast popular children's playgrounds, grassy areas for Frisbees and lying in the sun, comfortable picnic sites and scenic trails. Area Ridge Trail through EBMUD watershed lands was finalized and constructed. This 7.5-mile segment connects Sobrante Ridge to "Feeder Trail #1" which extends north to the John Muir National Historic Site. One of the oldest trails in the Bay Area, Feeder Trail #1 was used by people on horseback to travel between Martinez and the Pinole Valley.

The new trail segment is a critical link that will reward equestrians, hikers and runners with sweeping views of San Pablo Bay and Pinole Valley. This protected watershed land is an incredibly rich and biologically diverse area not previously open to the public. EBMUD hopes that access to this land will foster enjoyment, learning and respect for the watershed.

#### Keeping Water Quality Pure

Controlling contaminants before they enter the water is the most economical and effective barrier to protect our drinking water. In fall 2006, EBMUD worked with the East Bay Regional Park District and ranchers who lease grazing land in the Pardee Reservoir watershed, altering wet-season cattle grazing practices to reduce the likelihood of Cryptosporidium and other contaminants entering drinking-water reservoirs. Monitoring and testing during past and future wet seasons will help develop the best long-term methods to protect water quality.

### Protecting the Bay: EBMUD's Wastewater Treatment



Once "raw" water from the mountains is brought to the East Bay, it is treated and distributed to customers who use it in many ways. Then, drinking water becomes wastewater which is again treated, and either recycled or safely released into San Francisco Bay.

The Bay nourishes wetlands and countless communities of plants, animals and marine life. Since 1951, EBMUD has consistently protected public health and the Bay with responsible wastewater treatment. EBMUD's wastewater system serves an 83-square mile area along the east shore of San Francisco Bay (a subset of our water customers). Local communities operate sewer collection systems that channel wastewater to EBMUD intercepting sewers, transporting wastewater to EBMUD's main wastewater treatment plant in Oakland near the base of the Bay Bridge.

San Francisco Bay nourishes countless communities of plants, animals and marine life. Frequent sampling along the shoreline and by boat helps EBMUD monitor and protect this precious northern California resource.

#### **Turning Waste Into Energy**

For several years, EBMUD has worked to convert various waste products into energy with increasing success. A new EBMUD pilot study uses fats, oils, and greases collected from restaurants to create quality biodiesel to fuel EBMUD trucks. This residue is regulated because it often clogs pipes and leads to sewer overflows that can endanger San Francisco Bay. Restaurants are required to collect this material so it can be transported to a wastewater treatment facility or a landfill. At EBMUD's wastewater treatment

plant, a portion of this grease waste becomes biodiesel – and thus helps solve the problem of sewer overflows while producing a green alternative fuel.

For nine months, an EBMUD biodiesel pilot facility has fueled four diesel dump trucks with 20 percent and 100 percent biodiesel mixes produced from waste grease. EBMUD compares performance and maintenance requirements of this fuel with both standard diesel and biodiesel from vegetable oil, and in partnership with the California Air Resources Board, also tests vehicle emissions. If the pilot study confirms the process to be technically feasible and costeffective and also shows improved vehicle emissions, EBMUD may pursue a full-scale facility to fuel our entire diesel fleet



A new pilot program converts fats, oils and greases from restaurant waste to produce a quality biofuel for EBMUD vehicles.

### Protecting the Bay: EBMUD's Wastewater Treatment

#### **Renewing EBMUD's Wastewater Facilities**

Keeping EBMUD's wastewater infrastructure working well requires continual maintenance and renewal and offers the opportunity to explore options for greater efficiencies. A \$9-million project, completed this year, protects downstream treatment equipment and processes from excessive grit in the wastewater stream, while reducing odors and lowering energy costs.

EBMUD also began the first phase of \$50 million in upgrades at the wastewater treatment plant, including installing fixed digester covers and new mixers to reduce odors, improve processing and increase gas production. Improvements to the cogeneration engines, which already produce most of the power needs of the plant, will provide even more of the plant's electricity needs. In the future, EBMUD will expand the cogeneration plant with two



additional 4.5-megawatt gas turbines to utilize increased methane gas production at the plant, increasing total onsite cogeneration to 15 megawatts. This improvement will make the treatment plant fully energy self-sufficient and even provide excess power that EBMUD can sell. EBMUD plans to rehabilitate wastewater pipelines (interceptors) to eliminate corrosion and extend the life of the collection system. We also will replace centrifuges to ensure reliable processing of solid materials. For wastewater customers, these infrastructure improvements ensure reliable service while minimizing rate increases, thanks to EBMUD's use of energy produced at the plant plus increased revenues from waste-to-energy facilities.

EBMUD's improvements at the plant have been challenged by space limitations. With more stringent regulations and plant modernization projects that required more room, it was clear that without additional land, future facilities would have to be built upward, potentially costing customers hundreds of millions of dollars over the next fifty years. Twenty years ago, EBMUD became interested in acquiring U.S. Army Reserve property next to our 50acre wastewater treatment plant. When military bases across the country began to close in the 1990s, a land exchange project was initiated. After a lengthy negotiation, a complex agreement between the U.S. Army and Army Reserve, U.S. Army Corps of Engineers, California Department of Toxic Substances Control, Port of Oakland

**Crushing grapes and** wine-making creates waste. Wineries, such as Kenwood, send this waste to EBMUD's wastewater treatment plant, which offers a sustainable disposal solution that converts these wastes to green energy to power the plant.

and EBMUD was completed. Lead-contaminated soils were removed from the 16-acre property, and master planning is now under way to determine specific land uses. Possibilities include facilities to meet future regulatory requirements,



**EBMUD's pollution prevention** odor control projects. program helps keep targeted pollutants from entering San Francisco Bay, benefiting the environment and people who enjoy life near the Bay.

improvements to increase our energy recovery, or added space to store emergency equipment. EBMUD will take occupancy of the land

following the completed construction of the U.S. Army Reserve's new home at Camp Parks in Dublin, scheduled for 2009

#### Measuring the Health of the Bay

With the newest analytical instruments, it is possible to detect chemical constituents in water in parts per trillion - akin to finding one sheet of dark paper in a stack of white paper 6,000 miles high. This level of detection provides EBMUD chemists the opportunity to measure even the smallest trace amounts of pollutants that make their way to San Francisco Bay. While EBMUD and other wastewater agencies are challenged by meeting increasingly stringent regulations, society is grappling with the ever increasing number of constituents and their potential impacts on Bay waters.

EBMUD is collaborating with industry groups and regulators to develop a "big-picture" approach to water quality improvements for the Bay. Important questions are being raised, Water discharged from wastewater plants, storm sewers and runoff affect the health of the Bay. EBMUD is working through many challenges to protect the Bay for years to come.

including how to prioritize wastewater discharge goals to achieve corresponding levels of environmental benefit at reasonable cost.

Another challenge for EBMUD and Bay Area communities is sewer overflows. During heavy storms, rainwater can find its way into the joints and tiny cracks of sanitary sewer lines owned by homeowners, cities, and sewer collection agencies. These increased flows may exceed the capacity of the sewer lines, resulting in sewage overflows. Wet weather and its impact on the conveyance and treatment of wastewater is an area where EBMUD, regulators and stakeholders are working, through a comprehensive study, to understand what the best long-term solution might be.

The long-term costs of addressing these larger regional infrastructure and potential water quality issues are daunting. The EPA is working with the wastewater industry and stakeholders to identify a long-term solution. One promising solution may be to follow a "watershed approach" and address water quality issues in a prioritized and holistic fashion. In spite of these challenges, EBMUD continues to strive for excellence, maintaining an amazing run of nearly 8 years of 100 percent permit compliance at the wastewater treatment plant. We will continue to work through the challenges of wet weather and discharge regulations to protect the Bay for East Bay residents – now and into the future.



### Strong Financial Performance Rewarded

As with many companies, EBMUD faces rising costs for health care, energy and debt related to capital investments. We continue to examine spending priorities, operational effectiveness, funding strategies and performance targets to help contain these costs. Consistent with these plans, EBMUD ended the year in a solid financial position.

Because of EBMUD's overall strong historical financial performance, Standard and Poor's upgraded the rating on subordinated revenue bonds from AA to AA+ resulting in lower interest costs.

WATER SYSTEM	2007	2006	
During the Year:			
Total Water Production, millions of gallons (MGD)	78,357	77,178	
Average Daily Water Production, MGD	214	211	
Maximum Daily Water Production, MGD	336	311	
Minimum Daily Water Production, MGD	139	131	
At Year End:			
Number of Accounts	381,415	379,827	
Number of Employees	1,640	1,646	
Miles of Water Distribution Pipe	4,110	4,085	
Operating Distribution Storage Capacity, millions of	gallons 774	833	
WASTEWATER SYSTEM			
During the Year:			
Average Daily Wastewater Flow, MGD	67	82	
At Year End:			
Number of Accounts	177,831	177,366	
Number of Employees	261	262	



#### Wastewater System

What We Received:





#### Water System **Income Statement**

#### Wastewater System **Income Statement**











#### Wastewater System Financial Highlights

- Operating revenues and expenses continue to grow at a steady rate over the past ten years with the difference between operating revenues and expenses used to fund debt service and capital improvements.
- Total revenues before capital contributions for the Wastewater System increased 8 percent from \$69 million in 2006 to \$75 million in 2007, mostly from increased wastewater fees, taxes and resource recovery revenues
- Total expenses increased 2 percent from \$70 million to \$72 million primarily due to increases in treatment costs and depreciation expenses.
- Net income was \$3 million, up from last year's loss of \$1 million.
- Cash reserves for the year ended on target at \$16 million.
- The Wastewater System issued \$65 million of new debt primarily to fund replacement and refurbishing of Wastewater Facilities that are over 30 years old. As part of this bond issue, the System's bond rating was upgraded to AA+.

#### Water System Financial Highlights

- Operating revenues and expenses continue to grow at a steady rate over the past ten years with the difference between operating revenues and expenses used to fund debt service and capital improvements.
- Total revenues before capital contributions for the Water System increased 8 percent from \$312 million in 2006 to \$336 million in 2007 mostly from increased water consumption, interest earned on investments and tax revenues.
- Total expenses increased 4 percent from \$316 million in 2006 to \$328 million in 2007 largely due to increases in general administration, recreation, amortization and depreciation expenses.
- Net income was \$8 million compared to last year's loss of \$4 million.
- Cash reserves are \$205 million or \$109 million above the target of \$96 million. These excess reserves will be used to fund future capital improvements.
- The Water System issued \$450 million of new debt to fund infrastructure improvements, water conservation, and the Freeport and Folsom South Canal capital improvements that will provide a supplemental water supply during times of drought. As part of this bond issue, the System's bond rating was upgraded to AA+.

## Mission

In the early 1900s, not one of seventeen different private companies could provide the East Bay with a safe, dependable water supply. Communities fed up with the lack of service dreamed of clear, fresh water from the Sierra Nevada. In 1923, seven cities voted to form a municipal water agency with public accountability, and EBMUD was born.

Today, EBMUD provides water quality that ranks among the best in the world. EBMUD serves Sierra Nevada water to more than 1.3 million people in a 325-square-mile area. A commitment to reliable high-guality water became the cornerstone of EBMUD practices and remains central to its mission today.

Since 1951, EBMUD has consistently protected public health and San Francisco Bay with responsible wastewater treatment and innovative programs to decrease stress on the coastal ecosystem. EBMUD wastewater operations serve about 650,000 people in an 83-square-mile area along the east shore of the Bay.

#### **EBMUD Mission Statement**

To manage the natural resources with which the District is entrusted; to provide reliable high-guality water and wastewater services at fair and reasonable rates for the people of the East Bay; and to preserve and protect the environment for future generations.

In carrying out this mission, we will:

- Exercise responsible financial management
- Ensure fair rates and charges
- Provide responsive customer service
- Promote ethical behavior in the conduct of District business
- Ensure fair and open processes involving the public
- Provide a healthy work environment
- Promote diversity and equality in personnel matters and contracting
- Promote environmental responsibility

Senior Staff

Jvlana D. Collins, General Counsel

Dennis M. Diemer, General Manager

Rema Randle-Jones, Assistant to the General Manager

Michael J. Wallis, Director of Operations and Maintenance

Xavier J. Irias, Director of Engineering and Construction Randele B. Kanouse, Special Assistant to the General Manager

Carol Y. Nishita, Director of Administration

Cheryl A. Farr, Special Assistant to the General Manager

David R. Williams, Director of Wastewater

Alexander R. Coate, Director of Water and Natural Resources

Gary M. Breaux, Director of Finance







East Bay Municipal Utility District 375 11th Street Oakland, CA 94607 1-866-40-EBMUD www.ebmud.com

007	Doord	of D	iventova
007	Duaru	ע וט	rectors

Board Member	Ward
Lesa R. McIntosh	1
John A. Coleman	2
Katy Foulkes	3
Andy Katz	4
Doug Linney	5
William B. Patterson	6
Frank Mellon	7

Board meetings are open to the public and held the second and fourth Tuesdays of each month at 1:15 p.m. in the Board Room, second floor, 375 Eleventh Street, Oakland, California.

#### This is the East Bay Municipal Utility District Fiscal Year 2007 Annual Report (July 1, 2006-June 30, 2007). EBMUD publishes a variety of reports, newsletters, and fact sheets, including the 2007 Comprehensive Annual Financial Report, and the Water Conservation and Water Recycling 2007 Annual Report.

Please visit www.ebmud.com, or call 1-866-40-EBMUD to request a copy of any of our publications.

Dennis M. Diemer, General Manager

Published by the Public Affairs Office

Editor: Andrea Pook

Design: Cuttriss & Hambleton

Photography: John Benson, Paul Cockrell, Getty Images, Ed Gilmore, Saxon Holt, Karen Preuss, Tracey Prever, Steve Proehl, David Sanger, Tom Tracy, Rich Turner, Wardell Photography

Maps/Illustrations: EBMUD Graphic Design

#### Printed on Recycled Paper Dec 2007 6.25M Pub. 117

#### **EBMUD Service Area**





