**Urban Tree Planting and Greenhouse Gas Reductions – Discussion Paper**

Greg McPherson, Ph.D.
USDA Forest Service
Center for Urban Forest Research
Davis, CA

March 7, 2007

Several stories have appeared recently in popular news outlets suggesting that trees are not a solution in the fight against global warming. In a report from Reuters ("Trees take on greenhouse gases at Super Bowl", 30 January 2007), Dr. Ken Caldeira, a Carnegie Institute climate scientist, was reported to say, "It's probably a nice thing to do, but planting trees is not a quantitative solution to the real problem." Dr. Philip Duffy of Lawrence Livermore National Laboratory said, "If you plant a tree ($CO_2$ reductions are) only temporary for the life of the tree. If you don't emit in the first place, then that permanently reduces $CO_2$." Dr. Caldeira had made similar arguments previously in an op-ed in the *New York Times* ("When Being Green Raises the Heat, 16 January 2007).

A *New Scientist* article ("Location is key for trees to fight global warming," 15 December 2006) reports results from a study by ecologist Dr. Govindasamy Bala of Lawrence Livermore National Laboratory. The model developed by Bala and colleagues indicates that, while trees planted in tropical regions have a clear net cooling effect, trees planted in mid-latitudes may absorb so much heat from the sun that they actually contribute to warming.

These stories fail to capture the complexity of the role that city trees play in fighting global climate change. Trees reduce carbon dioxide in the air, thereby reducing the warming "greenhouse" effect of the gas, in two main ways. First, as they grow, they take carbon dioxide out of the air and transform it into roots, leaves, bark, flowers, and wood. Over the lifetime of a tree, several tons of carbon dioxide are taken up (McPherson and Simpson 1999). In fact, trees are the only known feasible way to remove carbon dioxide from the atmosphere. Even if we were able to switch immediately to fuel sources that do not emit carbon dioxide, the current levels in the air are higher than at any time in the past 400,000 years, according to the UN's International Panel on Climate Change, and because of the long "lifetime" of carbon dioxide, will remain so for decades or even centuries.

Second, by providing shade and transpiring water, trees lower air temperature and, therefore, cut energy use, which reduces the production of carbon dioxide at the power plant. Two-thirds of the electricity produced in the United States is created by burning a fuel (coal, oil, or natural gas) that produces carbon dioxide—on average, for every kilowatt hour of electricity created, about 1.39 lbs of carbon dioxide is released (eGRID 2002). It is certainly true, as Dr. Duffy states, that not emitting carbon dioxide in the first place is a good strategy. Lowering summertime temperatures by planting trees in cities is one way to reduce energy use and thereby reduce carbon dioxide emissions.

To address the other claims made above: *Are carbon dioxide and other greenhouse gas reductions from tree planting temporary?* In a sense, yes, greenhouse gas reductions are temporary if trees are removed and not replaced. To achieve long-term reductions, a population of trees must remain stable as a whole. This requires a diverse mix of species and ages so that the overall tree canopy cover remains intact, even as individual trees die and are replaced. Although sequestration rates will level off once an urban tree planting project reaches maturity, the reduced emissions due to energy savings will continue to accrue annually. Dead trees can be converted to wood products or used as bioenergy, further delaying, reducing, or avoiding greenhouse gas emissions.

Dr. Caldeira suggests in the Super Bowl article that tree planting projects are "risky." They may appear more risky than reducing emissions by building solar or wind farms because the tree-related climate benefits are less easy to document and because the 50- to 200-year life span of a tree seems less permanent than a new power plant. This uncertainty can be offset by legally binding instruments such as contracts, ordinances, and easements that guarantee tree canopy in perpetuity. And, of course, trees and alternative energy sources are not mutually exclusive—both have a place in reducing carbon dioxide emissions.

*Will urban tree planting in mid-latitude cities result in zero or even negative climate benefits?* Dr. Bala's study in the New Scientist article describes two main ways trees lower temperature: they remove carbon dioxide from the air, reducing the greenhouse effect, and they release water vapor, which increases cloudiness and helps cool the earth's surface. But because tree leaves are dark, they also absorb sunlight, which increases the temperature near the earth's surface. The difference between trees in tropical latitudes and those in mid-latitudes has to do with the difference in how much sunlight forests reflect compared to other possible surfaces, especially during winter. Snow reflects more sunlight back into the atmosphere than forest vegetation, resulting in less heat trapped near the earth's surface. Large-scale tree planting projects that replace highly reflective surfaces with forests will result in more heat trapped near the ground during winter.

In cities, this fact is less relevant. Asphalt, concrete, and roof surfaces account for 50 to 70% of urban areas, with the remaining area covered by trees, grass, and bare soil. The difference in the solar reflectances, or albedos, of the different urban surfaces is small. Vegetation canopies have albedos of 0.15 to 0.30, the albedo of asphalt is 0.10, that of concrete and buildings is 0.10 to 0.35, and the overall albedo in low density residential areas is 0.20 (Taha et al. 1988). In cities, increasing urban tree canopy cover does not appreciably alter surface reflectance, or increase heat trapping.

At the same time, as described above, a number of field and modeling experiments have found that urban trees reduce summertime air temperatures through evapotranspiration and direct shading (Akbari and Taha 1992, Rosenfeld et al. 1998, McPherson and Simpson 2003). This reduces energy consumption and the emissions related to energy generation.

*Do tree-planting projects give people a "feel-good illusion that they are slowing global warming?"* The climate benefits of trees in mid-latitude cities are not an illusion, although they certainly feel good. Reductions in atmospheric carbon dioxide are achieved directly through sequestration and indirectly through emission reductions. Still, planting trees in cities should not be touted as a panacea to global warming. It is one of many, complementary bridging strategies, and it is one that can be implemented immediately. Moreover, tree planting projects provide myriad other social, environmental, and economic benefits that make communities better places to live. Of course, putting the right tree in the right place remains critical to optimizing these benefits and minimizing conflicts with other aspects of the urban infrastructure.

**References**

Akbari, H.; Taha, H. 1992. The impacts of trees and white surfaces on residential heating and cooling energy use in four Canadian cities. Energy. 17(2):141-149.

Brahic, C. 2006. Location is key for trees to fight global warming. New Scientist. Dec. 15, 2006. http://environment.newscientist.com/channel/earth/dn10811-location-is-key-for-trees-to-fight-global-warming.html.

Caldeira, K. 2007. When being green raises the heat. New York Times. 16 January 2007. http://www.nytimes.com/2007/01/16/opinion/16caldeira.html?ex=1173502800&en=f38494123b1c3df0&ei=5070

eGRID 2002: Emissions and generated resource integrated database. U.S. EPA, version 2.01.

Gardner, T. 2007. Trees take on greenhouse gases at Super Bowl. Yahoo! News. Jan. 30, 2007. http://today.reuters.com/news/articleinvesting.aspx?type=topNews&storyID=2007-01-30T213403Z_01_N30364530_RTRUKOC_0_US-CARBON-SUPERBOWL-TREES.xml

McPherson, E.G.; Simpson, J.R. 1999. Guidelines for calculating carbon dioxide reductions through urban forestry programs. Gen. Tech. Rep. PSW-171. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station.

McPherson, E.G.; Simpson, J.R. 2003. Potential energy savings in buildings by an urban tree planting programme in California. Urban Forestry and Urban Greening. 2(2): 73–86.

Rosenfeld, A.H.; Akbari, H.; Romm, J.J.; Pomerantz, M. 1998. Cool communities: strategies for heat island mitigation and smog reduction. Energy and Buildings. 28:51-62.

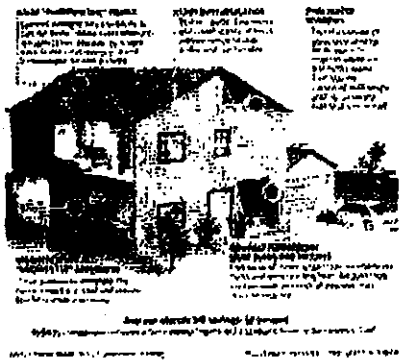
Taha, H.; Akbari, H.; Rosenfeld, A.; Huang, J. 1988. Residential cooling loads and the urban heat island—the effects of albedo. Building and Environment. 23(4):271-283.

The Seattle Times
seattletimes.com

Wednesday, March 21, 2007 - 12:00 AM



# "Zero-energy" homes planned in Issaquah



**By Sonia Krishnan**
*Seattle Times Eastside bureau*

Your future home could come from the recycling bin.

Solar energy would power it.

The best part? Utility bills would be next to nothing.

They're called "zero-energy" homes — homes designed to produce as much electricity as they consume. And in Issaquah, city officials are planning an unusual partnership with a builder to construct King County's first community by 2009.

"This would be the first step in a new paradigm for green development," said Brad Liljequist, sustainable-building and lead urban-design consultant for the Issaquah project.

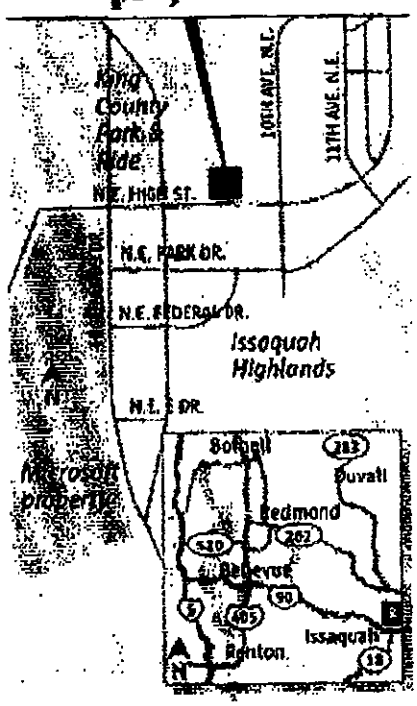
The 10 energy-saving town houses in the Issaquah Highlands will be aimed at the median market.

"We don't want this to be for an exclusive few," he said.

The city's efforts follow in the path of a U.S. Department of Energy program pushing zero-energy home construction. "Building America" began in 1995, with a goal to trim household energy use by 70 percent by 2020.

About 2,000 zero-energy homes have been built around the country since 2003, said Tim Merrigan, senior program manager for the National Renewable Energy Laboratory in Golden, Colo.

**Zero-energy project site**




THE SEATTLE TIMES

Federal and state tax credits, coupled with financial incentives from utility companies, are driving the trend forward, builders say.

While the ultimate goal is to get to zero, most homes end up slashing utility bills 50 percent to 70 percent, Merrigan said.

That's enough to draw increasing numbers of buyers in fast-growing states such as Arizona and California, where residents face some of the nation's highest energy costs. In Washington state, another zero-energy community is planned for Lopez Island, San Juan County.

PREMIER HOMES

This zero-energy community is in Sacramento, Calif. The 10 proposed town houses in Issaquah would have similar energy-efficient features.

The timing seems ripe.

In November, the environmental catchphrase "carbon neutral" was selected as The New Oxford American Dictionary's "Word of the Year." Three months later, a team of international climate scientists declared humans to blame for global warming. And late last month, former Vice President Al Gore's documentary on global warming, "An Inconvenient Truth," won an Oscar.

"You could say it's reached a tipping point," Merrigan said.

Residential buildings in America contributed 21 percent of the country's carbon-dioxide emissions to the environment in 2005, according to the U.S. Department of Energy. Inefficient heating and cooling systems, poor insulation and energy-sucking appliances, such as outdated refrigerators, are mostly to blame for high fuel consumption.

Then there's the "standby factor."

Keeping appliances such as stereos, computers and televisions plugged in all day consumes between 500 and 1,000 kilowatt-hours a year per household, said Alan Meier, scientist for Lawrence Berkeley National Laboratory, who has written on the phenomenon.

That's comparable to about one month of power consumption, he said, and equals at least 700 pounds in carbon-dioxide emissions.

"Standby power is one of the biggest obstacles to achieving a zero-energy home," Meier said.

In Issaquah, staff members say they're undeterred by the challenges. The City Council recently approved $50,000 to study the project. Over the next two years, the city plans to collaborate with a builder and develop the project's design and energy-efficient standards. It will run an educational program for homebuilders and homeowners once the project is built.

The town homes would sit on a half-acre on Northeast High Street in the Issaquah Highlands. The proposed site was donated by Port Blakely Communities, developer of the Highlands, to use as a demonstration tool for future homebuilding, said Judd Kirk, president of Port Blakely.

According to preliminary plans, the homes will range from 500 to 1,700 square feet. The project would:

• Reduce water use by 50 percent over the average household by installing low-flush toilets that use stormwater collected from rooftops and filtered in a nearby tank. This reclaimed water would not be

used for drinking or showering.

• Produce no stormwater discharge through green roofs and permeable pavement.

• Use a "very high percentage" of locally sourced or recycled materials.

• Use highly durable materials, such as metal roofing instead of asphalt shingles and hardwood floors instead of carpeting.

Issaquah is ahead of most cities when it comes to building "green," environmental advocates say. In 2004, for instance, the city hosted tours and seminars on the Built Green Idea Home — a model home in the Highlands — to inspire people about eco-friendly choices.

"We're trying to be responsive to climate change," said David Fujimoto, manager of Issaquah's resource-conservation office. "Our goal is to really push the envelope and encourage new construction to achieve the highest level of environmental performance possible."

Recycled materials play a big role in zero-energy homes. Lumber planks made from wood and plastic bottles are used for decks, doors or window frames. And fibers taken from recycled newspapers are turned into insulation.

Using the latest technology, zero-energy homes are fitted with rooftop solar panels that convert the sun's rays into electricity.

During the Northwest's long summer days, the homes would send extra kilowatts back to the local utility grid. In the dark winter months, the homes would draw on that power. At the end of the year, the home's net energy use should, theoretically, equal zero.

Most zero-energy homes also come with tankless water heaters, energy-efficient appliances, heavy insulation and improved air-conditioning and heating systems.

The intricate systems help keep indoor temperatures stable, said Chuck Murray, energy specialist for Washington State University and a consultant for Issaquah's project.

If homeowners produce more electricity than they use, utility companies are required to credit them for it under Washington's net-metering law. And, under a state law that took effect last year, those who generate solar energy for the power grid could earn up to $2,000 a year in cash reimbursements through 2014.

Zero-energy homebuilders say they're seeing more demand as fuel prices rise.

"When we started doing this four years ago, gas was $1.50 a gallon. Energy efficiency was not in the top five things homeowners were looking for," said John Ralston, vice president of sales and marketing for Premier Homes in Roseville, Calif., near Sacramento.

But sales have taken off so well that an all-solar development is under way in Yuba City, Ralston said.

State-of-the-art-efficiency doesn't come cheap.

The features could tack about $100,000 on to the Issaquah units, Liljequist said. Rebates and tax credits would help offset that, he said. And strides in technology have made solar panels cheaper and easier to work with than in years past.

But most of all, he said, shrinking square footage will keep costs in line.

"Rather than having that extra-large bonus room, we want to put that money towards living more lightly on the earth," he said.

*Sonia Krishnan: 206-515-5546 or skrishnan@seattletimes.com*

# Solar Energy International

Renewable Energy for a Sustainable Future

**Home**

**Workshops**

**Programs**

**Resources**
- SEI Store
- Articles
- Energy Facts
- Newsletter
- Events
- Job Openings
- Solar News
- Kids' Info
- Links

**About SEI**

**Search:**

## Energy Facts

### Energy Consumption

- Though accounting for only 5 percent of the world's population, Americans c percent of the world's energy. *(American Almanac)*
- In 1997, U.S. residents consumed an average of 12,133 kilowatt-hours of el almost nine times greater than the average for the rest of the world. *(Grist f*
- Worldwide, some 2 billion people are currently without electricity. *(U.S. Dep Energy)*
- Total U.S. residential energy consumption is projected to increase 17 percen 2015. *(U.S. Energy Information Administration)*
- World energy consumption is expected to increase 40% to 50% by the year global mix of fuels--renewables (18%), nuclear (4%), and fossil (78%)--is p remain substantially the same as today; thus global carbon dioxide emission increase 50% to 60%.
- Among industrialized and developing countries, Canada consumes per capita energy in the world, the United Sates ranks second, and Italy consumes the industrialized countries.
- Developing countries use 30% of global energy. Rapid population growth, co economic growth, will rapidly increase that percentage in the next 10 years.
- The World Bank estimates that investments of $1 trillion will be needed in th upwards of $4 trillion during the next 30 years to meet developing countries needs alone.
- America uses about 15 times more energy per person than does the typical country.
- Residential appliances, including heating and cooling equipment and water h consume 90% of all energy used in the U.S. residential sector.
- The United States spends about $440 billion annually for energy. Energy cos consumers $200 billion and U.S. manufacturers $100 billion annually.

### Global Warming

- Worldwide, 1995 was the warmest year since global temperatures were first This supports the near consensus among climatologists that emissions of car and other gases are causing global warming. *(Chivilan and Epstein,* Boston C

- On average, 16 million tons of carbon dioxide are emitted into the atmosphe hours by human use worldwide. *(U.S. Department of Energy)*
- Carbon emissions in North America reached 1,760 million metric tons in 199 increase since 1970. They are expected to grow another 31 percent, to 2,31 tons, by the year 2020. *(U.S. Department of Energy)*
- The United States is the world's largest single emitter of carbon dioxide, acc percent of energy-related carbon emissions worldwide. *(U.S. Department of*
- An average of 23,000 pounds of carbon dioxide are emitted annually in each home. *(U.S. Environmental Protection Agency)*
- The transportation sector consumed 35% of the nation's energy in 1990; thi dependent on petroleum.
- Fossil fuels are depleted at a rate that is 100,000 times faster than they are

## Health

- Approximately 30,000 lives are cut short in the U.S. each year due to polluti electricity production. *(ABT Associates study)*
- About 81 tons of mercury are emitted into the atmosphere each year as a re power generation. Mercury is the most toxic heavy metal in existence. *(U.S. Protection Agency)*
- Burning fossil fuels to produce energy releases carbon dioxide and other glol causing gases into the atmosphere. Global warming will increase the inciden diseases (including equine encephalitis and Lyme disease), death from heat blizzards, and floods, and species loss. *(Chivilan and Epstein,* Boston Globe,

## Transportation

- The United States consumes about 17 million barrels of oil per day, of which thirds is used for transportation.
- The United States imports more than seven million barrels of oil per day.
- While the world's population doubled between 1950 and 1996, the number o increased tenfold. Automobile congestion in the United States alone account billion in wasted fuel, lost productivity, and rising health costs. Still, analysts the world's fleet of cars will double in a mere 25 years. *(Worldwatch Institut*
- Americans use a billion gallons of motor oil a year, 350 million gallons of wh polluting the environment. *(Department of Energy and Maryland Energy Adn*
- A car that gets 20 miles per gallon (mpg) emits approximately 50 tons of glc inducing carbon dioxide over its lifetime, while a 40-mpg car emits only 25 t average lifetime of an American car (100,000 miles), a 40-mpg car will also approximately $3,000 in fuel costs compared to a 20-mpg car. *(Natural Resc Council)*

- The cars and trucks reaching the junkyards this year have higher gasoline m average, than the new ones rolling off dealers' lots, for the first time on reco The New York Times, *August 11, 1997)*

## Renewables

- Only 7.5 percent of total U.S. energy consumption came from renewable sou Of that total, 94 percent was from hydropower and biomass (trash and wood *(U.S. Energy Information Administration)*

- For the 2 billion people without access to electricity, it would be cheaper to li panels than to extend the electrical grid. *(The Fund for Renewable Energy Ev*

- Within 15 years, renewable energy could be generating enough electricity to million homes and offset 70 days of oil imports.

## Photovoltaics

- Providing power for villages in developing countries is a fast-growing market photovoltaics. The United Nations estimates that more than 2 million villages without electric power for water supply, refrigeration, lighting, and other bas the cost of extending the utility grids is prohibitive, $23,000 to $46,000 per 1988.

- A one kilowatt PV system* each month:
  - prevents 150 lbs. of coal from being mined
  - prevents 300 lbs. of $CO_2$ from entering the atmosphere
  - keeps 105 gallons of water from being consumed
  - keeps NO and $SO_2$ from being released into the environment

* In Colorado, or an equivalent system that produces 150 kWh per month

## Wind

- Wind power is the fastest-growing energy source in the world. *(Worldwatch*.
- The wind in North Dakota alone could produce a third of America's electricity *Earth Day Guide to Planet Repair)*
- Wind power has the potential to supply a large fraction--probably at least 20 electricity demand at an economical price.
- In 1990, California's wind power plants offset the emission of more than 2.5 of carbon dioxide, and 15 million pounds of other pollutants that would have produced.
- Using 100 kWh of wind power each month is equivalent to:
  - planting ½ acre of trees
  - not driving 2,400 miles

## Solar Thermal

- Research shows that an average household with an electric water heater spe of its home energy costs on heating water.
- Solar water heaters offered the largest potential savings, with solar water-he saving as much as 50% to 85% annually on their utility bills over the cost of heating.
- You can expect a simple payback of 4 to 8 years on a well-designed and pro solar water heater. (Simple payback is the length of time required to recover investment through reduced or avoided energy costs.)
- Solar water heaters do not pollute. By investing in one, you will be avoiding nitrogen oxides, sulfur dioxide, and the other air pollution and wastes create utility generates power or you burn fuel to heat your household water. Wher heater replaces an electric water heater, the electricity displaced over 20 ye more than 50 tons of avoided carbon dioxide emissions alone.

## Alternative Fuels

- Using biodiesel in a conventional diesel engine substantially reduces emissio hydrocarbons, carbon monoxide, sulfates, polycyclic aromatic hydrocarbons, polycyclic aromatic hydrocarbons, and particulate matter.
- Biodiesel:
  - can be used at 100% levels or mixed in any proportion with No. 2 die diesel.
  - Contains no nitrogen or aromatics
  - Typically contains less than 15 ppm sulfur - Does not contribute to sul emissions
  - Has characteristically low carbon monoxide, particulate, soot and hyd emissions
  - Contains 11% oxygen by weight
  - Has the highest energy content (BTUs) of any alternative fuel and is c No. 1 diesel.
- Over 4,000 electric vehicles are operating throughout the United States (witl number in California and the western United States).
- More than 20,000 flexible-fuel vehicles are in operation.
- Over 75,000 natural gas vehicles in U.S. and nearly 1 million worldwide.

## Energy Efficiency

- By taking appropriate energy-saving measures, by 2010 the United States c energy system that reduces costs by $530 per household per year and reduc

warming pollutant emissions to 10 percent below 1990 levels. *(Energy Innov*

- Just by using the "off the shelf" energy-efficient technologies available today the cost of heating, cooling, and lighting our homes and workplaces by up to *Department of Energy and Maryland Energy Administration)*

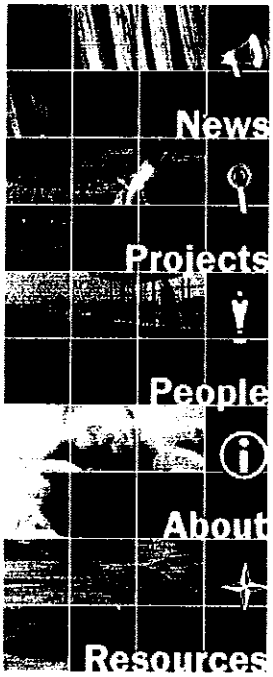
- Replacing one incandescent lightbulb with an energy-saving compact fluores means 1,000 pounds less carbon dioxide is emitted to the atmosphere and $ saved on energy costs over the bulb's lifetime. *(U.S. Environmental Protecti Alliance to Save Energy)*

- A decrease of only 1% in industrial energy use would save the equivalent of million barrels of oil per year, worth about $1 billion.

PO Box 715 • 76 S. 2nd St. • Carbondale, CO 81623 • 970-963-8855 • fax: 970-963-8866 • sek

**STUDENTS** FOR A **SUSTAINABLE STANFORD**

*"Don't blow it, good planets are hard to find."*
*—Quoted in Time*




## Stanford conserves water, keeps clean

// news / daily - february 26, 2006

http://daily.stanford.edu/tempo?page=content&id=19519&repository=0001_article
written by Andrew Burmon

If you've ever wondered where the water you bathe in comes from you might be surprised to discover that your warm shower comes all the way from the Hetch Hetchy reservoir in Yosemite. The reservoir was created by the construction of the O'Shaugnessy dam in 1923, despite John Muir's protests that damming the Hetch Hetchy Valley would be akin to damming "the people's cathedrals and churches, for no holier temple has ever been consecrated by the heart of man."

Stanford's water used to make the migration north from Yosemite to the University's campus — where it was fluoridated before flowing through the maze of pipes connecting all the dorms, halls and laboratories. The practice stopped recently, as the San Francisco Public Utilities Commission began fluoridating water for all of its 2.4 million Bay Area consumers.

"The water is receiving system-wide fluoridation now at optimal levels, so there is no need for each water agency to add fluoride," said Marty Laporte. Laporte co-authored Stanford's 2003 "Water Conservation, Reuse and Recycling Master Plan," which was devised to keep Stanford's daily consumption of water under three million gallons a day.

As of now, the University's daily water consumption is approximately 2.7 million gallons. Twenty-seven percent of the water is used in housing and dining settings, while 22 percent is used in staff housing. The rest goes to academic departments, the School of Medicine, campus projects and the Central Energy Facilities Cooling towers that generate about 63,000 gallons of waste water per day — enough to alarm those who wish to curb the University's water consumption.

With respect to the problem of growing consumption, Laporte said her office is exploring possible remedies.

"With appropriate treatment and if regulatory agencies would permit such non-potable water re-use, the water could be used for irrigation, toilet flushing or possibly other non-potable uses, such as decorative fountains," Laporte said.

In the meantime, the University's expansion is making the importance of water conservation more apparent. While the University constructs new graduate student housing, students are actively cultivating consciousness for this increasingly pressing issue.

Students for a Sustainable Stanford (SSS), formed in the spring of 2000 by a group of environmentally conscious students, are currently co-sponsoring — along with Student Housing — their second "Great Annual Stanford Energy Bowl and Water Derby," an idea inspired by similar

competitions at other schools such as Oberlin College in Ohio.

The competition, in which houses and dorms compete to curb their water consumption, has been a real success.

"Last year [dorms] definitely improved during the water derby competition," said SSS Coordinator Emma Yuen, a junior.

But the problem remains grave. While Yuen said she was confident that "most students appreciate the environment and recognize that we face serious environmental problems," she is still concerned that students "don't realize that they are constantly affecting the environment by their actions."

"Saving water is one of the easiest and most direct ways to help the environment – and can be done by taking shorter showers or by making sure they only do full laundry loads," Yuen said.

Meanwhile, the University's water consumption will be high this week as the facilities department "flushes" the water pipes by allowing fire hydrants and other outlets to run in order to loosen accumulated sentiment.

As this water runs down the streets and into gutters, Yuen and the SSS will be announcing the preliminary statistics for how each house is doing in the Water Derby.

With students continuing their efforts to conserve water, Laporte pointed out that there are always ways to help.

"We can still do more to prevent water waste in daily activities, to improve inefficient irrigation systems and to prevent water wasting pranks," she said.

Until the University comes up with means of recycling its waste water or appoints a sustainability coordinator as SSS has recommended, the burden of conservation will continue to fall on students – and the jury is still out as to whether or not they will prove to be up to the task.


Last updated: June 11, 2006 by Hammad Ahmed

Duke UNIVERSITY

# Water Conservation @ Duke

Water Conservation
What Duke is Doing
What You Can Do
Report a Leak
Submit a Tip
Resources
FAQ
Sustainability Home

Search GO

Environmental Sustainability @ Duke
All Duke Sites



## What is Duke doing to conserve water?

### Dukes Gives Low Water Flow Showerheads to Employees, Students

The remaining low flow showerheads from an initial batch of 5,000 were distributed Dec. 12, and no more fixtures remain at this time. Duke has ordered more showerheads. Please check back for more details on when they will be distributed. Read more...

### Update: Nov. 21, 2007

In the two days that followed President Richard H. Brodhead's community e-mail Nov. 12, 2007, nearly 200 tips and comments were received through Duke's water conservation Web site. All tips have been sent to Duke's Water Conservation Management Group, chaired by Kemel Dawkins, vice president for Campus Services. The group is analyzing the ideas, as well as other operational measures to reduce water consumption at Duke. Read more...

### Facilities/Operations

- Operational adjustment at Duke's chilled water plant saves 9,000 gallons daily.
- Facilities Management Department is responding promptly to report of leaks in campus buildings.
- Facilities Management Department stopped washing its fleet of 180 vehicles — except for windows, which need to remain clean for safety.
- Duke's heating needs are supplied by a central steam plant. During the 1990's, the plant underwent a series of upgrades and retrofits that improved the plant's efficiency and reduced its environmental impact.

### Dining

- Using disposable plates and cups in the Great Hall and Marketplace will reduce the amount of water for dish washing by

### Fast Facts

- Duke is the largest consumer of water in Durham County.
- Last fiscal year (ending June 30, 2007), Duke's total water consumption was 566.4 million gallons, which represents a reduction of 30 million gallons from the previous year.
- Nearly half of Duke's water is used in its medical facilities. Conservation efforts in medical facilities take into consideration Duke's commitment to sanitation and patient safety, which take precedence.
- Residential housing accounts for 11 percent of Duke's annual water use.
- Irrigation accounts for 8 percent of Duke's annual water use.
- Duke's goal is to reduce its total water consumption in accordance with the city of Durham's restrictions.

approximately 60 percent every day in each of the eateries. A total of 800 gallons of water daily will be saved with fewer dish washing cycles at both locations
- Using disposable products will save about 200 gallons per day at The Refectory
- Instead of running water over frozen food, chefs and kitchen assistants in Duke Dining Services are thawing food inside refrigerators.

**Irrigation/Landscaping**

- All ornamental water features such as statues and fountains in Sarah P. Duke Gardens have been shut off
- Water from the Asiatic Arboretum pond in Sarah P. Duke Gardens will be used to water seasonal plants in the terrace beds of the Gardens.
- The waterfall below the terraces that feeds the fish pool has been turned off. If necessary, water will be added to the fish pool from the Asiatic pond.
- Mulch has been added to reduce evaporative water loss from planting areas.
- Drought-tolerant landscaping has also been installed in many areas on campus.
- Power washing has been discontinued and most irrigation systems have been turned off.
- From June 1 through Sept. 7, 2007, Duke used 18 million gallons less than during the same period last year for irrigation. This summer's water usage for irrigation was down by about 18 million gallons from last summer.
- In September, water at the Washington Duke Inn golf course was reduced to only the greens instead of the entire 120-acre course.
- Watering of Williams Field on East Campus was reduced from 36 minutes to only half the field for 3 minutes. The artificial turf field, used for field hockey, is watered before practice and games to reduce the potential for injury.

**Stormwater Management**

- Over the last ten years, Dr. Miguel Medina, a professor in the Department of Civil and Environmental Engineering, and his students have painstakingly modeled the flow of stormwater on campus. It is thanks to their efforts that Duke can boast one of the most comprehensive Stormwater Management Plans of any university.

**Hospital**

- Bed linens are being changed less frequently.

- Use of waterless hand sanitizer is being encouraged.
- Testing hot water systems for hand washing to provide hot water to faucet within 60 seconds maximum. (Most are working within 30 seconds or less).
- A maintenance hotline number to report leaks is being posted in all bathrooms.
- Toilets and urinals are being converted to low flush.

**Prior sustainability efforts that conserve water**

Along with ongoing efforts to reduce water use, Duke has implemented broader initiatives in recent months designed to leave a lighter footprint on the environment and lower water consumption.

- The French Family Science Center has 50 waterless urinals and low-flow lavatories that save an estimated 2 million gallons of water annually.
- Many existing buildings have been hooked up to the central chilled water plant, which is more efficient than using the cooling towers on top of individual buildings.
- The Fitzpatrick Center for Interdisciplinary Engineering, Medicine and Applied Sciences (FCIEMAS), which opened in 2004, has a 70,000-gallon cistern underground to collect rainwater that is used to irrigate the nearly two-acre complex.
- Flow restrictor shower heads and sink faucets have been installed in some residence halls, and all new buildings are being constructed to meet national standards for energy efficiency and eco-friendly design.

*Last modified: 12/12/2007 13:51:44*

---

## POTENTIAL WATER DEMAND

| Project | Use | Units | Factor | Gallons/day |
|---|---|---|---|---|
| **Curry Creek** | Residential | 16200 | 608/ unit | 9,849,000 |
| | Retail | 46.6 acres | 3219/ac | 149,683 |
| | Office | 48.76 acres | 3219/ac | 156,958 |
| | Schools | 100 acres | 3379/ac | 337,900 |
| | Parks | 217 acres | | 185,580 |
| | Unaccounted | | | 172,900 |
| | **subtotal** | | | **10,852,021** |
| | | | | **12,205.60 afa** |
| **Regional University** | | | | |
| | Residential | 4223 | 608/unit | 2,567,584 |
| | Retail | 5.33 acres | 3219/ac | 17,160 |
| | Schools | 20 acres | 3379/ac | 67,580 |
| | Parks | 50 acres | | 46,395 |
| | Unaccounted | | | 43,225 |
| | University | | | 1000 afa |
| | **Subtotal** | | | **2,741,944** |
| | | | | **4083.94 afa** |
| **Placer Ranch** | | | | |
| | Residential | 6793 | 608/unit | 4,130,144 |
| | Biz Park | 527 acres | 3219/ac | 1,696,413 |
| | office | 150 acres | 3219/ac | 482,850 |
| | schools | 50 acres | 3379/ac | 168,950 |
| | parks | 100 acres | | 92,790 |
| | Unaccounted | | | 86,450 |
| | University | | | 2000 afa |
| | **Subtotal** | | | **6,657,597** |
| | | | | **9488 afa** |
| **Lincoln Crossing** | | | | |
| | residential | 2958 | 608/unit | 1,798,464 |
| | Biz Park | 48 acres | 3219/ac | 154,512 |
| | Commercial | 58 acres | 3219/ac | 186,702 |
| | Lt. industrial | 38 acres | 3219/ac | 122,322 |
| | Med. campus | 32 acres | 3219/ac | 103,008 |
| | Schools | 20 acres | 3379/ac | 67,580 |
| | Parks | 50 acres | | 46,395 |
| | Unaccounted | | | 43,225 |
| | **Subtotal** | | | **2,522,208** |
| | | | | **2836.80 afa** |
| **Total** | | | | **28,614.34 afa** |

## LETTER 19: WILLIAM KOPPER

### Response to Comment 19-1

The comment refers to documents attached to the comment letter. Those attachments that are comments on the Draft EIR are bracketed and include responses. CEQA includes specific requirements for incorporation by reference, and incorporation by reference is not intended to apply to comments on a Draft EIR. Nonetheless, those comments on the physical effects of the proposed project to which the comment refers are addressed in this Final EIR.

### Response to Comment 19-2

The commenter requests that Placer County plan regionally for habitat preservation and Placer Parkway. The commenter's concerns are noted. The County believes that its planning for the RUSP does reflect and embody a regional perspective. The Draft EIR acknowledges the "Framework Agreement regarding the Planning, Development and Implementation of the Placer Legacy Program" (Draft EIR page 6.4-27), which establishes the framework for cooperation and collaboration among State and federal agencies and local governments in the development and implementation of the Placer Legacy Program. The proposed Specific Plan is subject to the interim project review guidelines included in the Agreement which have been summarized in the Draft EIR (page 6.4-25).

The Draft EIR also presents a comprehensive biological resources mitigation and management strategy for the Specific Plan (refer to Mitigation Measure 4.4-1). The mitigation strategy proposes to mitigate impacts through off-site in-County land purchases where at least 1,025 acres of habitat will be mitigated at a 1:1 replacement ratio.

Mitigation Measure 6.4-1 is intended to dovetail with the possible requirements of the draft PCCP. The Draft EIR acknowledges that the PCCP has not been officially adopted. This mitigation measure allows the proposed project to move forward without the PCCP program in place, but requires the project's biological resource mitigation measures to be implemented in a manner consistent with the PCCP, if the PCCP is approved before the RUSP EIR is certified.

The Draft EIR includes the traffic analysis under existing and cumulative (2025) conditions, and also includes an evaluation of a circulation scenario with Placer Parkway (see Draft EIR section 6.12, Transportation and Circulation). The Placer Parkway is considered a regional facility that would help mitigate traffic impacts of not only the proposed project, but also traffic impacts from other proposed developments in western Placer County. Thus, this was considered a key improvement in the Mitigated Transportation Network. The County, in conjunction with the Placer County Transportation Planning Agency, and the cities of Roseville, Rocklin, and Lincoln, is currently reviewing alternative alignments and an environmental document is being prepared comparing the alternatives. The agencies are also considering various funding scenarios for construction of the facility.

The commenter is reminded that the project site is within an area designated as a Future Study Area in the General Plan. (See *Placer County General Plan* Figure III-1.) The 1994 General Plan "recognizes that as the [C]ounty continues to grow, additional areas may be identified as being suitable for development at urban or suburban densities and intensities. The most appropriate location for such additional growth, and the area that will be considered first by the County, is the 'Future Study Area,' shown in Figure III-1, in southwest Placer County. Future growth in this area may occur in the unincorporated area or as a result of annexation to an adjacent city." (*Placer County General Plan*, p. 146.)

It is the County's position that the area has, and is, being planned regionally, as evidenced by the PCCP, work in progress on Placer Parkway, and the Regional University Specific Plan's recognition of and incorporation of these regional initiatives in its planning and in the Draft EIR. Further, the proposed project is being planned (as required by the Placer County General Plan) through the use of specific plan mechanisms enacted by State law to allow comprehensive planning of substantial land areas.

**Response to Comment 19-3**

The comment provides information on the health effects of air pollutants and states that more citizens will suffer these health effects. The health effects of pollutants are also discussed on page 6.3-2 of the Draft EIR. The federal and State standards for these pollutants are introduced on Draft EIR page 6.3-3 and discussed through the section in relation to project emissions. The federal and State standards are devised to minimize unhealthy exposure of persons to these pollutants. Although the commenter makes several claims with regard to air pollution, including the assertion that the project will "increase the suffering from respiratory diseases" in western Placer County and Roseville, he provides no data, anecdotal or otherwise, to support the claim that the project, by itself, will cause people to suffer more asthma or other respiratory ailments in the future. The project's air quality impacts identified, analyzed and mitigated in accordance with CEQA in Section 6.3 of the Draft EIR, including a discussion of ozone and particulates. Project-specific impacts are disclosed under Impact 6.3-1 through 6.3-8 on pages 6.3-17 through 6.3-28, while cumulative impacts are disclosed under Impacts 6.3-9 through 6.3-13 on pages 6.3-28 through 6.3-31.

**Response to Comment 19-4**

The comment states that an "EIR must discuss any inconsistencies between the proposed project and applicable general plans and regional plans." The Draft EIR has met this requirement. (See DEIR, pp. 4-21 to 4-27.) Moreover, the County disagrees that the project would be inconsistent with the General Plan in the respect suggested by the commenter. The County does not agree that only low-density development on the project site can be approved under the General Plan, or that the proposed project, with its relatively high densities in some areas, would create "natural or human-caused hazards [that] are likely to pose a significant threat to health, safety, or property." Although the project will cause certain significant unavoidable environmental effects, this fact, by itself, does not translate into a "significant threat to health, safety, or property." Rather, the significant impacts of the project are typical of what can be expected from any development of similar scale anywhere within the greater Sacramento region. Under the commenter's logic, the County would be forced to reject any development proposals that included any land uses other than those with low-densities. Such a reading of Policy 1.A.2 is at odds with any reasonable construction of the General Plan *considered as a whole*. The commenter has read the policy in isolation, and has interpreted its terms in a subjective fashion that is not persuasive to the County. As discussed on page 4-22 of the Draft EIR, courts strive to "reconcile" or "harmonize" seemingly disparate General Plan policies. (*No Oil, Inc. v. City of Los Angeles* (1987) 196 Cal.App.3d 223, 244 (*No Oil*).) Thus, for example, where a General Plan land use map or diagram permits certain land uses, it is unlikely that generic textual policies favoring open space preservation would be seen as trumping the map or diagram designation. Courts have also recognized that, because General Plans often contain numerous policies emphasizing differing legislative goals, a development project may be "consistent" with a General Plan, taken as a whole, even though the project appears to be inconsistent or arguably inconsistent with some such policies. (*Sequoyah Hills Homeowners Ass'n. v. City of Oakland* (1993) 23 Cal.App.4th 704, 719.) Case law interpreting the Planning and Zoning Law (Gov. Code, §65000 et seq.) thus makes it clear (i) that the meaning of such policies is to be determined by the Board of Supervisors, as opposed to County Staff, EIR consultants, or members of the public, and (ii) that the Board of Supervisors' interpretations of such policies will prevail if they are "reasonable," even

though other reasonable interpretations are also possible. (See *No Oil*, *supra*, 196 Cal.App.3d at pp. 245-246.) Furthermore, In light of these considerations, the discussions in this EIR on the subject of General Plan consistency represent the best attempt of County Staff and the County's EIR consultant to advise the Board of Supervisors of their opinions as to whether the proposed project is consistent with identified goals and policies of the County's General Plan. Based on the evaluations contained in the Draft EIR, the proposed project is generally consistent with the Placer County General Plan. Please see Draft EIR section 6.4 for a discussion of the biological resources on the project site.

It is also worth mentioning the environmental *benefits* of higher density development in a planning environment in which population growth is foreseeable, if not inevitable, and thus must be managed as opposed to being wished away. In such a planning context, higher density development in areas in which urban uses are deemed appropriate can have the beneficial effect of reducing the long-term losses of habitat lands, open space, and agricultural lands. Further, higher density development creates an environment that uses space in an efficient manner, and encourages more walking, biking, and public transit use, and shorter auto trips. Higher density development in the RUSP area would help the region reduce overall air emissions given the same regional population growth because higher density development is designed to decrease the length of vehicle trips and increase use of public transit.

### Response to Comment 19-5

The comment contends that Watt Avenue will be "extended into farmland in order to provide access to the project site." However, as shown on Figure 4-1 on page 4-3 of the Draft EIR, other development is planned in the vicinity of the proposed Regional University Specific Plan. Thus, the proposed extension of Watt Avenue would travel through and serve the proposed Sierra Vista Specific Plan project (the Notice of Preparation for an EIR for this project was released on March 28, 2008), as well as the proposed project. Notably, the Sierra Vista project is located in an area long anticipated for urbanization; the RUSP area was designated for future urban development as part of the City of Roseville/Placer County Memorandum of Understanding (MOU) Area in 1997, and the vast majority of the project area has been within the City of Roseville's sphere of influence since 2004. As explained in the response to comment 19-2, moreover, the RUSP itself is proposed for an area identified in the 1994 County General Plan as a Future Study Area in which development is presumptively appropriate at some point.

As set forth in Draft EIR Mitigation Measure 6.12-1, the Project shall pay its fair share of all feasible physical improvements necessary and available to reduce the severity of the Project's significant transportation-related impacts, as identified Section 6.12.

The RUSP is designed to accommodate future public transit service. The project's design features include a transit center, two dedicated transit stops, and potential transit routes, as well as a land use plan that contains development densities that place more people in close proximity to the transit stops. The *South Placer County Conceptual Bus Rapid Transit (BRT) Plan*, Placer County, April 2005, contains specific land use criteria and design guidelines intended to assist developers in creating land use plans supportive of potential future transit investments. To support a frequent, high-quality enhanced bus or BRT service, the BRT Plan recommends the following land use density and intensity thresholds:

- Residential density of 9.0 dwelling units per acre within ¼ to ½ mile radius of the transit centers
- Non-residential intensity floor-area-ratio (FAR) of 1.0

The RUSP proposes a residential density of 10.0 dwelling units per acre and a FAR of 0.40 within ¼ mile of the transit center on 16th Street adjacent to the university.

The development intensity in the plan area is supportive of enhanced bus service and possibly BRT but as noted in the RUSP, the project provides only physical right-of-way for potential future transit and does not identify the details associated with future transit operations, funding, and service. Placer County and the City of Roseville would continue to provide public transit service in the study area but would not extend services to the project area unless they received additional funding for capital and operating costs. (See DEIR, p. 6.12-44.)

While the proposed project could create new demand for transit service, given the residential uses of the project, a university-based community is likely to internalize many of its trips, as a significant percentage of students and faculty will be living on-site.

**Response to Comment 19-6**

The comment states that the proposed project would be inconsistent with General Plan Goal 3.A because the project would result in unacceptable levels of service. However, Policy 3.A.7, which generally targets LOS C or D, allows "exceptions to these level of service standards where it finds that the improvements or other measures required to achieve the LOS standards are unacceptable based on established criteria" and continues with factors that should be considered in allowing an exception. Based on those factors, staff recommends that the Board of Supervisors find that the project is consistent with this goal. The comment also contends that the Draft EIR does not describe adding the RUSP, Placer Vineyards Specific Plan, and West Roseville Specific Plan to the road system. The reader is referred to pages 6.12-45 through 6.12-80 and 6.12-107 through 6.12-117 in the Draft EIR for a discussion of the cumulative effects on traffic in the area, which includes the Placer Vineyards Specific Plan and the West Roseville Specific Plan.

Table 6.12-15 in the Draft EIR lists the major planned roadway improvements by year 2025 in the traffic study area. (DEIR, p. 6.12-48.) The roadway network capacity expansion projects in Table 6.12-15 are limited to only those that have full funding identified and are therefore reasonably foreseeable. The sources for these improvements are the list of Tier 1 improvement projects contained in the *Metropolitan Transportation Plan* (MTP) *for 2025* (Sacramento Area Council of Governments, 2002) and input from Placer County and City of Roseville staff on transportation improvements that are conditioned to be built by approved development projects. (Draft EIR, p. 6.12-46.)

**Response to Comment 19-7**

The comment states that the Draft EIR does not discuss inconsistencies with General Plan Goal 3.B, which is related to mass transit. Mitigation Measure 6.12-24 on page 6.12-118 of the Draft EIR requires the project applicant to contribute its fair share of the cost to provide public transit service to the study area, including "[f]ixed-route bus service connecting the plan area to the City of Roseville and Placer County Transit." Therefore, contrary to the comment, mass transit to the project site is required. However, while the proposed project would be required to pay its fair share for this service, the County has not identified the remaining share of mitigation funding. Therefore, this impact was found to be significant and unavoidable. See also Response to Comment 19-5.

**Response to Comment 19-8**

The comment states that the Draft EIR must be recirculated because there was a discrepancy in the Notice of Availability and the Draft EIR about the end date of the Draft EIR review period. While the

NOA included an end date of January 23, 2008, comments were accepted through January 24, 2008, as written in the Draft EIR. Comments were accepted for the full 45-day review period disclosed in the Draft EIR. Interested persons' and agency staffs' ability to comment on the Draft EIR was not hindered by this discrepancy and recirculation is not required. Notably, the commenter was able to prepare very detailed comments in the time available, so there the commenter apparently suffered no prejudice from the minor discrepancy between the due date posted on the website and the due date in the Notice of Availability. Even if there was a legitimate concern stated here, however, the cure for the alleged problem would have been an inquiry to the County to seek clarification or, possibly, a request for an additional day to prepare final comments. Requiring an additional 45-day period because of a minor discrepancy over a single day would be a "cure" grossly excessive in light of the problem being addressed. Public Resources Code section 21092 addresses certain notice requirements under CEQA, including the notice of availability of an EIR. Subdivision (b)(2) of that statute provides that section 21092 "shall not be construed in any manner that results in the invalidation of the action because of the alleged inadequacy of the notice content, provided that there has been substantial compliance with the notice content requirements of this section." Here, the County believes it has fully complied with the notice requirements for public review of the Draft EIR. The County certainly believes that, at worst, it has achieved "substantial compliance" with the requirements of section 21092.

### Response to Comment 19-9

The comment states that the Draft EIR must be recirculated because the Specific Plan was not available on the County's web site. CEQA Guidelines section 15087g states:

> (g) To make copies of EIRs available to the public, Lead Agencies should furnish copies of draft EIRs to public library systems serving the area involved. Copies should also be available in offices of the Lead Agency.

Thus, posting of the Specific Plan on the County's web site was not required and posting the Draft EIR on the site exceeded the requirements of the law. The commenter is arguing, in effect, that the County should be penalized for going beyond the legally mandated minimum notice requirements by posting some, but not all, documents related to the proposed project on the County's website. Moreover, the Specific Plan was available at the County offices for review during the review period (December 10, 2007 through January 24, 2008). Therefore, the oversight in posting the Specific Plan on the web site did not interfere with public participation.

### Response to Comment 19-10

The comment states that the project documents were incomplete because the financing plan for the project was not available during the Draft EIR review period. The RUSP financing plan, however, *was* available for review at the County offices during the Draft EIR review period (December 10, 2007 through January 24, 2008). The County's decision to release the RUSP draft financing plan in conjunction with the Draft EIR should not be perceived as the County's concurrence with the commenter, who suggests that a financing plan is required by CEQA, should the project be approved, or that CEQA requires public review of whatever documents comprise the "financing measures" required for specific plans (see Gov. Code, § 65451, subd. (a)(4)). The Board of Supervisors will consider a final financing plan in association with the project separate and apart from any action on the EIR. The County's decision to make the draft financing plan available for public review rendered moot the commenter's assertion that Government Code section 65451, subdivision (a)(4) requires an EIR to include a financing plan.

The commenter also states that it is impossible to tell from the information available whether the traffic impact fees will be sufficient to mitigate the impacts of the RUSP. In *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal.App.4th 99 (*Save Our Peninsula*), the appellate court recognized that "fee-based infrastructure mitigation programs have been found to be adequate mitigation measures under CEQA." There, the court stated that the payment of fees and phased improvements was an appropriate mitigation measure, with respect to traffic impacts and which have not yet reached the threshold trigger. (*Save Our Peninsula* at page 140.)

The CEQA Guidelines also recognize that when an impact is not unique to a single project, but is instead the result of cumulative conditions, the only feasible mitigation may involve adoption of ordinances or other regulations designed to address the cumulative impacts. (*Save Our Peninsula* at page 140; CEQA Guidelines, § 15130, subd. (a)(3).) Section 15130 of the CEQA Guidelines now specifically provides that an EIR may determine that a project's contribution to a cumulative impact may be mitigated by requiring the project "to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact." (CEQA Guidelines, § 15130, subd. (a)(3).)

As stated by the appellate court in *Save Our Peninsula* at page 141, "[w]e do not believe, however, that CEQA requires that the EIR set forth a time-specific schedule for the County to complete specified road improvements. All that is required by CEQA is that there be a reasonable plan for mitigation."

The problems plaguing the financing measures at issue in *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342, 363-365 (*Napa Citizens*) do not exist here. The *Napa Citizens* court noted at page 163 that "[f]ee-based infrastructure can be an adequate mitigation measure under CEQA, and can be particularly useful where, as here, traffic congestion results from cumulative conditions, and not solely from the development of a single project."

The *Napa Citizens* court at page 364 held the fee-based infrastructure mitigation inadequate "because the Project will cause only a small percentage of the projected traffic congestion, the County cannot insist that developers within the Project area shoulder the bulk of the expense for the needed highway improvements as a means of alleviating that congestion." (See CEQA Guidelines, § 15126.4, subd. (a)(4)(B) (mitigation measures must be roughly proportional to the impacts of a project).) The appellate court also noted that "[a]lthough the existing mitigation fee appears to be a reasonable attempt to have developers pay their proportionate share of the cost of needed highway improvements, and the continued use of such funds undoubtedly would be useful, it cannot reasonably be argued that the funds that the County already has or that it reasonably can expect to raise in the future, will be enough to mitigate the effect on traffic that will result from cumulative conditions."

Here, it is reasonable to conclude that through the establishment of a single agreement or multiple agreements with the City of Roseville, Sacramento County, Sutter County, and Caltrans, Placer County would be able to achieve, within a reasonable time period after approval of the Specific Plan, commitments for the provision of adequate fair share mitigation payments from the Specific Plan for its out-of-jurisdiction traffic impacts and its impacts on federal and State freeways and highways (see Draft EIR Mitigation Measure 6.12-1). See also Response to Comment 10-7.

**Response to Comment 19-11**

The comment contends that the Draft EIR does not quantify the number of air pollution offsets that would be required of the proposed project; therefore, there is no assurance that the offsets would actually be purchased. The Draft EIR's discussion and analysis of air pollution impact mitigation measures is adequate under CEQA. As stated in Mitigation Measure 6.3-4(d), on page 6.3-24 of the Draft EIR, the Offsite Mitigation Program, coordinated by PCAPCD, is designed to offset the project's long-term ozone precursor emissions. The actual amount of emission reductions needed through the Offsite Mitigation Program, and, thus, the project's air quality mitigation fees, would be calculated when the project's average daily emissions have been determined. The PCAPCD will determine air quality mitigation fees using calculation methodology established in practice and routinely applied to other, similar, contemporaneous land use development projects. To ensure that the fees would match the impact of development, the fees would be based upon the actual number of residential units and square footage of commercial development that are proposed. The fees would be paid at the time of final map recording for each individual development project within the Plan Area. This process would assure the payment of fees prior to approval of subsequent projects within the Specific Plan area.

**Response to Comment 19-12**

The comment states the Draft EIR does not include a diagram showing where the drainage facilities would be located. The reader is referred to Figures 2-10 and 2-11 on pages 2-31 and 2-32 of the Draft EIR, which show drainage improvements for the University portion of the site and the Community portion of the site, respectively. Exhibits 8-15 and 8-16 of the Specific Plan also illustrate proposed drainage improvements in the project area.

**Response to Comment 19-13**

The comment states that the Draft EIR does not include the location of water treatment facilities, water well sites, and major water lines. As stated on page 2-28 of the Draft EIR, it is assumed that the three wells would be placed on Parcels 6, 29, and 30. A tank and pump station would be located on parcel 29 in the northern portion of the Plan Area. These parcels are depicted in Figure 2-2 on page 2-3 of the Draft EIR. The project proposes that the project would be supplied by PCWA water delivered from a connection point at Fiddyment and Baseline roads and would follow an alignment along Baseline Road to the proposed extension of Watt Avenue, which is shown as alignment C in Figure 2-9 on page 2-30 of the Draft EIR. The major water transmission lines within the project site would be within the roads in the plan area. See Specific Plan Exhibits 8-3, 8-6, 8-7, and 8-8.

**Response to Comment 19-14**

The comment states that the proposed project does not identify the location of energy facilities. As stated on page 2-35 of the Draft EIR, PG&E would initially serve the project by extending its existing distribution lines into the Plan Area in conjunction with Plan Area roadway improvements. Ultimately, new electric distribution lines would also be extended from a proposed PG&E substation in the Placer Vineyards development south of the Plan Area, along the Watt Avenue extension and Brewer Road. See Specific Plan Exhibits 8-18 and 8-19.

**Response to Comment 19-15**

The Regional University Specific Plan EIR is a project EIR, pursuant to section 15161 of the CEQA Guidelines, for all project components (except the proposed athletic stadium, which is analyzed at a programmatic level), including off-site infrastructure. (See Draft EIR, pp. 1-5 to 1-6.) The comment

implies that because the Draft EIR describes project phasing, that the EIR would more appropriately be a program EIR. However, the phases are not intended to be independent projects; the conceptual phasing is included in the Draft EIR to explain the provision of infrastructure to serve the project. The infrastructure generally on the eastern portion of the site would be needed to serve the development on the western portion of the site. The Draft EIR analysis assumes a phased approach for the provision of infrastructure, based upon information provided by the project applicant. Irrespective of any conceptual phasing assumptions used in the Draft EIR, all infrastructure required for full buildout of the project was analyzed in the Draft EIR at a project-specific level.

The conceptual phasing included in the Draft EIR was also used for assumptions for timing of the construction for air quality modeling. The conceptual phasing shown in the Draft EIR provides a conservative estimate of how the Plan Area would develop, given that the project is shown to be completed in two phases over a relatively short period of time. The actual construction schedule could vary.

Also note, at the request of a comment appended to this comment letter, the project air emissions were remodeled using the latest URBEMIS 2007 model, using the assumptions contained in the Draft EIR. The modeling assumptions can be found in Appendix C of this Final EIR, which replaces Draft EIR Appendix C. Please also refer to Response to Comment 19-75.

### Response to Comment 19-16

The comment states that the Project Description in the Draft EIR is "unclear and uncertain." However, this comment is based upon the premise that the University portion of the project is infeasible. The comment provides no evidence to support this assumption. It should also be noted that the Draft EIR analyzes construction and operation of the entire project. Therefore, until such time that the entire site is constructed and all components are operational, the physical impacts would be less than that disclosed in the Draft EIR. The Regional University Specific Plan does not plan to replace the University use with housing; therefore, this was not analyzed in the Draft EIR. If, as stated in the comment, a developer in the future requests a land use change to allow housing on the University portion of the site instead of the University use, a General Plan amendment, rezoning, and other approvals would be required, which would require new environmental documentation.

### Response to Comment 19-17

The comment points to the proposed changes to the General Plan policy (1.H.6) that would allow exceptions to buffer requirements as part of a specific plan and states that the impact of changing the policy was not addressed in the Draft EIR and that the policy should include standards. The physical effects of changing the policy are addressed in Impact 6.2-2 on pages 6.2-15 through 6.2-17 of the Draft EIR. It was determined that other development within the County that is adjacent to a proposed specific plan could experience some loss of productivity on adjacent lands if buffers are not included within the subject specific plan. However, the extent of the loss of production would depend upon several factors, including the proposed use within the specific plan (residential versus non-residential), the existing agricultural use adjacent to the specific plan, and the type of replacement agricultural use. These factors prevent a quantified determination of loss of agricultural productivity that could result from the revised General Plan policy. Notably, any reduced buffer requirements for future specific plans would be addressed in the EIRs for those specific plans, thus ensuring a full discussion of any site-specific or project-specific issues that might arise in a particular context. The comment also states that the proposed project does not include any "standards" in the amended policy. However, while the changes to the policy would allow different buffers for areas subject to a specific plan, General Plan Goal 1.H, which is the goal that is supported by Policy 1.H.5, would remain unchanged. The intent of Goal 1.H is "[t]o designate adequate agricultural land and

promote development of agricultural uses to support the continued viability of Placer County's agricultural economy." Thus, in considering any future specific plans, the Board of Supervisors would still consider the intent of Goal 1.H in determining the whether changes to buffers related to those specific plans would be necessary or appropriate.

### Response to Comment 19-18

Please see Response to Comment 17-8.

On July 16, 2007, the Placer County Board of Supervisors approved the Placer Vineyards Specific Plan (PVSP) and EIR. In approving the PVSP, the County approved many of the same amendments to the Placer County General Plan and the Dry Creek/West Placer Community Plan as proposed by the RUSP. (See PVSP Revised Draft EIR, pp. 3-3 to 3-6.) Due to the fact that the PVSP EIR is currently in litigation, the same amendments are being considered again in connection with the RUSP.

### Response to Comment 19-19

The comment refers to Draft EIR Table 6.11-2 (see Draft EIR page 6.1-6) and states that the analysis in the Draft EIR is not consistent with the West Roseville Specific Plan EIR. As is clear from the table, the source for this information was not the West Roseville Specific Plan EIR, circulated in 2003, but the technical memorandum prepared for the City of Roseville (RMC, *Unit Flow Factor Sets and Sewer Design Criteria* - TM No. #a (FINAL), October 3, 2006), which analyzes current and future demands on the Pleasant Grove Wastewater Treatment Plant. The generation factors in this memorandum reflect the actual generation rates of uses contributing flows to the treatment plant and are more accurate than those assumed in the 2003 West Roseville Specific Plan EIR.

### Response to Comment 19-20

As discussed above, the analysis in the Draft EIR is based upon more recent data than was included in the West Roseville Specific Plan EIR. As discussed in Response to Comment 13-10, the City of Roseville analyzed flows from areas outside the SPWA boundary in several technical memoranda,[14] which projected total flows 23.4 mgd for buildout of the Pleasant Grove Service Area and the eight UGAs specified in the analysis, including RUSP. Therefore, based upon current data, the proposed project, in addition to other development assumed to use the Pleasant Grove Wastewater Treatment Plant, could be accommodated by the 29.5 mgd treatment capacity analyzed in the Roseville Regional Wastewater Treatment Service Area Master Plan Draft EIR (1996 Master Plan EIR) and the West Roseville Specific Plan EIR.

### Response to Comment 19-21

The comment states that, instead of a mitigation measure that requires the proposed project to pay its fair share of any CEQA analysis, the RSUP EIR should analyze the environmental impacts of expansion of the treatment plant to accommodate project flows "and the other proposed projects that are outside the service area." As stated in the comment, there would be other projects that would contribute to the demand that could necessitate an expansion of the treatment plant. This other development would occur concurrently with that of the proposed project, all of which would cumulatively create demand for capacity at the PGWWTP. It would be the cumulative development, and not the proposed project alone, that would result in the need for expansion at the PGWWTP.

14 RMC, *Wastewater Treatment Projected Loadings and Buildout-TM4a*, February 8, 2006, Table 2.

Therefore, it would not be appropriate to require the RUSP to independently analyze the treatment plant expansion.

In *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, the court found that an EIR's project description for a 154-acre development was inadequate because it failed to identify a wastewater treatment plant as a necessary element of the project. In concluding that the facility expansion should have been treated as part of the residential project, the court relied upon the fact that the project was the driving force behind the expansion. Here, by contrast, the need for the expansion of the PGWWTP would be caused by cumulative development, and the RUSP would not be "driving force" behind the expansion. Therefore, CEQA does not require the RUSP EIR to independently analyze the treatment plant expansion.

### Response to Comment 19-22

The comment states that Mitigation Measure 6.11-2 (see Draft EIR page 6.11-8) is not sufficient and that the measure should require adequate treatment capacity. Mitigation Measure 6.1-2(a) states:

> Commitments from the wastewater treatment provider to receive anticipated flows from the Specific Plan area at the PGWWTP shall be secured by Placer County prior to County approval of improvement plans for wastewater collection and transmission infrastructure. The County shall comply with General Plan Policy 4.D.2, which requires written certification from the service provider that either existing services are available or needed improvements will be made prior to occupancy to meet wastewater demands of the Specific Plan area.

With the written certification from the City of Roseville (the wastewater treatment provider), the County can be sufficiently assured that there is existing capacity or there will be capacity to meet wastewater demands of the proposed project. Please also refer to pages 1-4 and 2-49 in the Draft EIR regarding the necessary permits for expansion of the treatment plant or service area boundaries.

CEQA requires agencies to adopt feasible mitigation measures in order to substantially lessen or avoid otherwise significant adverse environmental impacts. (Pub. Resources Code, § 21002; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566.) Since the mitigation measure suggested by the commenter does not substantially reduce the severity of, or avoid, any impact previously disclosed as significant in the Draft EIR, the County is not required to adopt the mitigation.

### Response to Comment 19-23

The comment refers to the analysis in the 2003 West Roseville Specific Plan EIR. As stated in Response to Comment 19-20, the analysis in the Draft EIR is based upon more recent data than was included in the West Roseville Specific Plan EIR. Please see Response to Comment 19-20.

### Response to Comment 19-24

The process for development in the County's Future Study Area is not a CEQA issue. The Draft EIR analyzes the physical effects of development within the Future Study Area. The issues raised in the comment would not result in additional physical effects not already addressed in the EIR.

### Response to Comment 19-25

The comment refers to a policy that guides development away from "prime agricultural lands." As shown in Table 6.2-1 on page 6.2-2 of the Draft EIR, the project sites contains no Prime Farmland. The impacts of the proposed project on agricultural land are addressed in section 6.2 of the Draft EIR. (See also DEIR, pp. 4-19 to 4-21.)

### Response to Comment 19-26

The comment refers to Placer Legacy Program policies, not Placer County General Plan policies, as stated in the comment. The Draft EIR acknowledges that the proposed project could be inconsistent with the Placer Legacy Program policies. (See Draft EIR, pp. 6.2-15 to 6.2-17.) In addition, the Draft EIR discloses the physical effects of development of the project on agricultural resources in Impacts 6.2-1 through 6.2-6 on pages 6.2-12 through 6.2-20 of the Draft EIR.

### Response to Comment 19-27

The comment refers to the 183.5 acres described on Draft EIR page 6.2-13 as mitigation for the loss of agricultural land. This land is classified by the CDC Farmland Mapping and Monitoring Program (FMMP) as Farmland of Local Importance. This category is made up of farmlands not covered by the categories of Prime, Statewide, or Unique and includes lands zoned for agriculture by County Ordinance and the California Land Conservation Act as well as dry farmed lands, irrigated pasture lands, and other agricultural lands of significant economic importance to the County and include lands that have a potential for irrigation from Placer County water supplies (see Table 6.2-1, Draft EIR page 6.2-2).

Although this land is classified under the broad category of Farmland of Local Importance, the acreage has not been used for farming. The 183.5 acres currently do not support agricultural uses because of the dense matrix of naturally occurring and created wetlands that predominate the acreage. As discussed on page 6.2-13 of the Draft EIR, the land is important to maintain the existing biological resources and the natural drainage needed to support the wetlands. As a result, the land does not lend itself to agricultural practices and, therefore, is not considered impacted for purposes of the Draft EIR analysis. Therefore, the County did not include this land in the calculations for agricultural mitigation.

### Response to Comment 19-28

The comment states that the Draft EIR does not disclose how much agricultural land would be converted as a result of revisions to the General Plan policies (the referenced text refers to policy 7.B.1 regarding buffers). While the Draft EIR acknowledges that the proposed amendments to this General Plan policy could result in a loss of production on agricultural land adjacent to future specific plan areas, the amendments would not allow conversion of that land to urban uses. In addition, there are no active applications for specific plans that are requesting a reduction in buffers. Thus, it would be speculative to quantify any potential loss of productivity for other specific plans. Please also see Response to Comment 19-17.

The proposed amendment to 7.B.1 was adopted as part of the PVSP by the Placer County Board of Supervisors in July 2007. See Response to Comment 19-18.

**Response to Comment 19-29**

The comment states that there is a feasible mitigation measure or alternative that could reduce the effect on adjacent farmland. The commenter is referred to pages 7-31 through 7-39 of Chapter 7, Alternatives, in the Draft EIR, which discusses two alternatives that assume a 400-foot buffer within the project boundaries to reduce the effect on adjacent farmland. The Board of Supervisors can, at its discretion, choose to adopt any of the project alternatives, including either of the alternatives with buffers.

**Response to Comment 19-30**

The comment states that the EIR must discuss whether the project is in the State Implementation Plan (SIP) and how project emissions would be mitigated. While future land use developments have been included in the regional SIP for western Placer County, the vehicle miles traveled (VMT) data used in the SIP is from Sacramento Area Council of Government's (SACOG) Metropolitan Transportation Plan (MTP), which is a regional plan to address the transportation situation in the future. However, the SACOG's MTP is coordinated with their Blueprint project, which is a concept to direct the region how to enhance the urban planning issues and then improve the regional air quality. Thus, the Regional University Specific Plan is not specifically included in the SIP. The proposed project includes measures to reduce the emissions for the proposed project in section 4.3 Air Quality. In spite of these measures, however, the impact due to project-related emissions was found to be significant and unavoidable in the Draft EIR.

**Response to Comment 19-31**

The Draft EIR does not state that the PCAPCD intends to adopt the Sacramento Metropolitan Air Quality Management District (SMAQMD) *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways.* The comment also states that "CARB and almost all other agencies" suggest a 10 in one million threshold, but this is actually the threshold for *stationary* sources of pollutants and does not apply to mobile sources. However, as stated on page 6.3-15 of the Draft EIR, because the PCAPCD has not adopted a methodology for evaluating diesel particulate matter from mobile sources, the SMAQMD protocol was applied to assess potential cancer risk of sensitive receptors exposed to diesel particulate matter from Placer Parkway.

**Response to Comment 19-32**

The comment includes a portion of one of the standards of significance used in the Air Quality assessment for the proposed project. The complete standard of significance on page 6.3-16 of the Draft EIR is whether the proposed project would "[r]esult in a cumulatively considerable increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard that would conflict with or obstruct implementation of the applicable air quality attainment plan." The discussion of the proposed project's contribution to cumulative emissions is discussed on pages 6.3-28 through 6.3-31 of the Draft EIR. With the exception of carbon monoxide, the contribution of construction and operational emissions from the proposed project were found to be cumulatively considerable.

**Response to Comment 19-33**

The commenter questions the source of the reductions stated for $PM_{10}$ emissions. The reductions noted in the Draft EIR are based upon URBEMIS 2002 model outputs, which shows reductions between 15 to 50 percent with mitigation measures included. As discussed in Response to Comment 19-75, the project has been remodeled using the current version of URBEMIS (2007).

Certain measures can be quantified in the URBEMIS 2007 program. Based upon URBEMIS 2007 results, watering exposed surfaces can result in an approximately 55 percent reduction in emissions; the application of soil stabilizers reduces emissions by approximately 84 percent; replacing ground cover helps reduce emissions by approximately 5 percent; and dust control methods used during equipment loading and unloading can reduce $PM_{10}$ emissions by approximately 69 percent. Please see Appendix C in this Final EIR for the updated model results.

**Response to Comment 19-34**

The commenter questions the methodology used to model the air emissions of the project. As noted in another comment, the Draft EIR used the URBEMIS 2002 version 8.7 model for the air analysis; since the original modeling was performed, a newer version of the model (URBEMIS 2007) has been developed. The construction and operational emissions of the project were remodeled for this Final EIR using the newer model; the assumptions for the model and results are discussed in Response to Comment 19-75.

**Response to Comment 19-35**

The comment states that Mitigation Measure 6.3-4(b) should define the term high efficiency. To clarify the text of Mitigation Measure 6.3-4(b) is changed, as shown below, to include reference to Energy Star. Energy Star is a joint program of the U.S. Environmental Protection Agency (USEPA) and the U.S. Department of Energy with a goal to protect the environment through energy efficient products and practices and save money for consumers. According to USEPA, with the help of Energy Star, Americans saved enough energy in 2006 to avoid greenhouse gas emissions equivalent to those from 25 million cars.[15]

b) *In order to incorporate passive solar building design and landscaping conducive to passive solar energy use, the Regional University Specific Plan Design Guidelines shall include the following measures:*

- *Encourage the orientation of buildings to be in a south to southwest direction where feasible.*
- *Encourage the planting of deciduous trees on western and southern sides of structures.*
- *In all residences, include high-efficiency heating and other appliances <u>that conform to Energy Star standards</u>, such as water heaters, cooking equipment, refrigerators, furnaces, and boiler units.*
- *In all residential units, include energy-efficient window glazings, wall insulation, and efficient ventilation.*
- *Landscaping plans shall prohibit the use of liquidambar and eucalyptus trees that produce smog-forming compounds (high emission factors for isoprenes).*

**Response to Comment 19-36**

The comment states that Mitigation Measure 6.3-4(d) is vague because it does not specify the quantity of emissions that must be offset. The PCAPCD Offsite Mitigation Program (see Appendix D of this Final EIR), adopted by the PCAPCD Board of Directors April 12, 2001, considers permanent

15 U.S. Environmental Protection Agency, *Energy Star and Other Climate Protection Partnerships, 2006 Annual Report*, September 2007, page 2.

on-site air quality mitigation the preferred method of reducing a project's emissions; however, if sufficient measures cannot be implemented on-site to adequately reduce a project's emissions, payment into the District's Offsite Air Quality Mitigation Fund is allowed. Thus, Mitigation Measure 6.3-4(d) allows the RUSP to implement its own mitigation program, which could include on-site reductions of emissions in combination with off-site measures. Alternatively, the project applicant can contribute toward the PCAPCD Offsite Mitigation Program, which clearly defines the method of calculating the amount that must be paid in order to reduce emissions. The fee is calculated using the project's aggregate emissions of pollutants of concern (e.g. ozone precursors over the ozone season) multiplied by $14,300 per ton. PCAPCD targets emission reduction projects that reduce the same type of emissions as those for which the mitigation fee was paid.

### Response to Comment 19-37

The comment refers to the comments attached to the author's letter regarding the "details" that could result in drainage problems. Please refer to Responses to Comment 19-94 through 19-97 for responses to Dr. Grismer's comments. Contrary to the comment, the location of the stormwater drainage and storage facilities are included in the Draft EIR, in Figures 2-10 and 2-11, on pages 2-32 and 2-32, respectively.

### Response to Comment 19-38

The comment states that the Draft EIR should include information on the water quality in Curry Creek as part of the baseline. While the project would discharge urban run-off into Curry Creek, discharges would be regulated under the County of Placer Stormwater Management Plan (SWMP) and the State general NPDES permit for small municipal separate stormwater sewer systems (see Draft EIR page 6.8-10). The State general permit requires the County to implement structural and non-structural BMPs that would mimic pre-development quantity and quality, which is also supported by County General Plan policy 4.E.14 (see Draft EIR page 6.8-11). Stormwater BMPs designed to meet the requirements of above regulations will be completed under the authority of a registered professional engineer who has discretion to perform calculations based on proposed land uses. A baseline water analysis maybe beneficial in some instances, but it is not required. MM 6.8-1 (see Draft EIR page 6.8-22) mitigates impacts to less than significant by supporting the requirements of the State Stormwater NPDES permit and County General Plan by requiring detailed drainage plans triggered by the tentative map or new development applications.

### Response to Comment 19-39

The comment states that the EIR cannot be certified as a Project EIR due to insufficient detail for water quality BMPs. As is stated in the referenced text (see page 6.8-17 of the Draft EIR), the specific BMPs that would be implemented as part of the project are not detailed in the Specific Plan because the precise type of development and amount of impervious surface cannot be known until small lot maps are submitted for approval; therefore, specific BMPs are not assumed in the analysis. However, Mitigation Measure 6.8-6 (Draft EIR page 6.8-29) requires preparation of an erosion control plan consistent with the County's Grading Ordinance to control discharges during construction. Operational discharges would be mitigated through implementation of Mitigation Measure 6.8-7 (Draft EIR pages 6.8-30 and 6.8-32) which requires compliance with the County's NPDES permit with specific BMPs. Compliance with the above measures would be verified during the Subsequent Conformity Review process (see Draft EIR pages 2-51 through 2-53).

**Response to Comment 19-40**

The comment states that without baseline data for Curry Creek, it cannot be determined whether the proposed project would degrade the water quality in Curry Creek. However, as discussed in Impact 6.8-6 of the Draft EIR (see page 6.8-29), the proposed project would be required to implement BMPs during project construction and would also be required to prepare an erosion control plan consistent with the County's Grading Ordinance to control discharges during construction (see Mitigation Measure 6.8-6 on Draft EIR page 6.8-29). Mitigation Measure 6.8-7 on pages 6.8-30 and 6.8-32 of the Draft EIR describe BMPs that would be required of the project to minimize discharges during project operation and ensure compliance with the County's NPDES permit. Therefore, in controlling the water quality in the discharges from the proposed project, the County can be assured that the proposed project would not substantially degrade the water quality in receiving waters, irrespective of the baseline water quality.

**Response to Comment 19-41**

The comment requests figures showing the location of drainage features. The drainage features for the University and Community portions of the site are shown in Figure 2-10 on Draft EIR page 2-31 and Figure 2-11 on Draft EIR page 2-32, respectively.

**Response to Comment 19-42**

The comment states that, without changes to the Federal Emergency Management Agency (FEMA) 100-year Floodplain Maps, residences could be placed in the 100-year floodplain. The proposed project would submit an application to FEMA for alterations in the floodplain and FEMA would then rule whether those alterations are satisfactory. If so, FEMA would issue a Conditional Letter of Map Revision (CLOMAR). Once construction is complete, FEMA would again review the alterations and issue a Letter of Map Revision (LOMAR). Compliance with the requirements for the LOMAR would ensure that residential development would not be located within a 100-year floodplain.

**Response to Comment 19-43**

The comment states that the water quality facilities for the proposed project are not described in the Draft EIR, which, the comment states, violates CEQA. The comment also states that the water quality facilities should be identified in the Final Drainage Master Plan. Contrary to the comment, the locations of the stormwater quality basins are shown in the Draft EIR (see Figure 6.8-5 on Draft EIR page 6.8-31). In addition, while the Mitigation Measure to which the comment refers does not describe the specific designs of the required facilities, it includes standards for design of those features, such as those contained in the *California Stormwater Quality Association Stormwater Best Management Practice Handbook for Construction and New Development/Redevelopment* and the *Placer County Guidance Document for Volume and Flow-Based Sizing of Permanent Post-Construction Best Management Practices for Stormwater Quality Protection.* Therefore, while the Draft EIR contains mitigation measures that would be implemented in the future, those measures are based upon standards that the County applies to all projects to ensure appropriate water quality features. As such, the inclusion of measures with these standards does not violate CEQA.

**Response to Comment 19-44**

The commenter questions why Impact 6.8-11 (see Draft EIR page 6.8-35) cannot be mitigated to a less-than-significant level. As discussed on Draft EIR page 6.8-35, although the proposed project drainage improvements would reduce or maintain the 100-year water surface elevations and would not increase on- or off-site flooding, the proposed project does not include an operation and