Agilent – Palo Alto
CO-1

Site Location:

395 Page Mill Road
Palo Alto, CA

Features:

- Detention basin with native vegetation along banks
- Parking lot vegetated swales
- Roof downspouts draining to landscaping
- Promotes alternative transportation by providing bike racks and lockers, an onsite bus stop, and carpool/vanpool parking
- Structured parking lot (2 levels with top level draining to rock filter bed).

The detention basin, known as "The Swale" by Agilent employees, provides stormwater collection and treatment for the parking areas, visual amenities for employees, and a visual buffer for the neighboring residential community.

Stormwater Benefits:

- Reduced impervious surface area
- Natural treatment of runoff
- Reduced volume and velocity of runoff
- Reduced transportation related pollutants
- Reduced directly-connected impervious area (DCIA)

The parking lot is graded to drain into vegetated swales, shown here, and the detention basin.

Storm drains from the parking lot enter the detention basin through drains like this one.

The detention basin has two outlets to protect against localized flooding and to ensure that the basin drains within 72 hours for vector control.

Bike racks and showers encourage employees to bike to work. Additional bike lockers and a bus stop are located at the Page Mill Road entrance.

Agilent encourages employees to carpool by providing designated car/van pool areas. Reducing vehicle trips traveled reduces the amount of pollutants such as hydrocarbons and brake pad dust released to the environment.

Runoff from this parking structure drains to the filter bed, described below. The two-story parking structure allows for roughly twice the number of vehicles for the same area of a typical surface parking lot, while allowing enough room on-site for the detention basin.

The runoff drains from the top of the parking structure to this rock filter bed for treatment and then to the storm drain system via the detention basin.

This rocky swale is used to slow and treat rooftop runoff before draining to the storm drain. A minimum two percent (2%) slope away from the building protects the building foundation from water damage.

Storm drains are clearly labeled with an educational "no dumping" message.

The detention basin collects water from the parking lot. The concrete edging protects the asphalt from water damage while the bumper stops help prevent cars from traveling over the vegetated swales.

Agilent – Palo Alto
CO-1 (cont.)

Lessons Learned:

- The irrigation heads originally installed for the retention basin caused some ponding for greater than 72 hours until they were modified to target areas requiring water. The local vector control agency brought mosquito fish for mosquito control while the irrigation challenge was being diagnosed and addressed.
- During the rainy cloudy days, the water in the parking lot catch basins may take longer than 72 hours to drain. Maintenance staff must periodically clean debris from catch basins.
- The detention basin has also served as a useful indicator for irrigation leaks for sprinklers within the parking lot biofilter landscaping. When maintenance staff sees ponded water in the detention basin during a dry spell, they investigate for potential leaks.
- The landscape service provider must carefully control the scheduling of irrigation system to prevent overwatering and water build up in the detention basin.
- Shredded bark was installed initially along the detention basin banks to hold the soils without clogging the system until vegetation became established.
- The site designer highly recommends checking after the first rain to make sure the entire system is working correctly. For the roof downspouts, the rainwater initially started pooling behind the header boards at the bottom of the roof downspouts. Notches cut in the header board ensure proper drainage away from building with a minimum 2% slope.
- Maintenance costs and effort are comparable to that for typical landscaping according to Agilent maintenance staff.

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Pacific Shores Center
CO-2

Site Location:
1500 Seaport Boulevard
Redwood City, CA

Features:

- Multi-purpose detention basin and playing fields
- Second detention basin with cobble bottom
- Parking lot vegetated swales
- 3 miles of paved trails that are an extension of the Bay Trail

Stormwater Benefits:

- Reduced amount of impervious surface area
- Natural treatment of runoff
- Reduced volume and velocity of runoff
- Reduced directly-connected impervious area (DCIA)

This athletic field also serves as a detention basin. The basin is designed to fill up to a four-foot depth and drain within eight (8) hours.

Pacific Shores Center
CO-2 (cont.)

Photograph taken from: http://www.pacificshores.com/

This photograph offers an aerial view of baseball fields and detention basin.

Photograph taken from: http://www.pacificshores.com/

The multi-story buildings allow for vast landscaping that helps reduce the amount of runoff from the site.

Photograph taken from: http://www.pacificshores.com/

Aerial view of Pacific Shores Center shows an ideal area to enjoy the Bay Trail.

Parking lot dividers are used as infiltration areas with vegetated swales and trees. Boulders are used to prevent automobile encroachment across the swale.

The parking lot is graded to drain to these vegetated swales, planted with vegetation and trees. The swales were excavated and backfilled with imported sandy loam soil to increase porosity, and constructed with perforated sub-drains. The concrete strip protects the asphalt from water damage. This image was taken prior to grass establishment.

Pacific Shores Center
CO-2 (cont.)

Photograph courtesy of Bill Southard (DES, Architects and Engineers)

Cobbles along this detention basin run for several hundred feet to prevent channeling during high runoff.

Photograph courtesy of Bill Southard (DES, Architects and Engineers)

This photo shows the vegetated swale after the native vegetation has grown in.

Lessons Learned:

- Trees planted with only two (2) stakes for support in sandy loam soil within the vegetated swales blew over during a windstorm prior to root establishment. Using three (3) stakes per tree are now recommended.

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Agilent – Santa Clara
CO-3

Site Location:

5301 Stevens Creek Boulevard
Santa Clara, CA

Features:

- Roof garden
- Disconnected downspouts

Stormwater Benefits:

- Reduced impervious surface area
- Reduced volume and velocity of runoff

Large areas of vegetation are located on top of the second floor of the office building.

Photograph above courtesy of Scott Sidlow (Agilent).

The roof garden is located on the second floor of the Agilent building.

Trees are planted as part of the roof gardens.

Agilent – Santa Clara
CO-3 (cont.)

Rooftop runoff is directed to drain through the vegetation.

Exhaust vents for HVAC* systems are integrated into roof garden areas.

*HVAC = heating, venting, and air conditioning

Photograph above courtesy of Scott Sidlow (Agilent)

Another view of the roof garden shows a large shady tree that can reduce rainfall velocity and runoff.

Agilent – Santa Clara
CO-3 (cont.)

Lessons Learned:

- Leakage occurred due to roots penetrating the roof membranes, however after patching the barriers underneath the garden, leakage was prevented.
- The membrane integrity was also compromised by heavy vehicle traffic (for deliveries to the café on the roof garden level). The amount of deliveries was minimized to prevent more leaks.

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SGI/Google
CO-4

Site Location:

1600 Amphitheater Parkway
Mountain View, CA

Features:

- Green roof – entire ground level of complex including landscaped area is built above an underground parking lot
- Permeable pavement
- Native vegetation
- Multi-story buildings reduce building footprint
- Bike racks promote bicycle commuting

Stormwater Features:

- Reduced building footprint
- Natural treatment of runoff
- Transportation-related pollutant reduction
- Reduced velocity of runoff
- Reduced impervious surface area

The parking lot can be seen below the turf on the level above.

This tree in the parking lot grows up through an opening in the roof garden area. Trees and other vegetation help reduce the volume and velocity of rainwater.

This grassy rooftop area planted with trees reduces and provides some natural treatment of runoff.

SGI/Google
CO-4 (cont.)

Permeable pavement is used in this courtyard.

Permeable pavement and landscaped areas fill the courtyard on top of the parking structure.

Bike racks promote alternative transportation, perhaps providing easy access to other buildings on the campus.

Turf and gravel surrounds this pathway, providing an area for infiltration to occur.

SGI/Google
CO-4 (cont.)

Permeable pavement and native vegetation surround this multi-story complex.

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Gap Corporate Headquarters
CO-6

Photograph courtesy of Paul Kephart (Rana Creek Habitat Restoration)

Aerial view of the building's roof garden shows the vegetative areas planted on top of the building made to appear like rolling hills.

Location:

901 Cherry Avenue
San Bruno, CA
Completed 1997
195,000 sq. ft.

Costs:

- Roof garden: approx. $24/sq.ft. ($1.6 million)[2]
- Total cost for building ~ $60 million

Stormwater Benefits:

- Reduced impervious surface area
- Natural treatment of runoff
- Reduced volume and velocity of runoff

Features:

- 69,000 sq. ft. green roof blends in with surrounding hillside grasslands
- Native grasses and wildflowers
- Natural day lighting
- Raised floor for individually-controlled air delivery
- Preserved grove of native oaks
- 2nd most energy-efficient building in California (exceeds requirements by 30%)
- Received a Green Roofs Award of Excellence in 2003.

[2] Paul Kephart estimates that the costs for green roofs have dropped to roughly $8-11 per square foot in the United States (pers. comm., November 12, 2003).

Gap Corporate Headquarters
CO-6 (cont.)

Project Details:

- It is estimated that the roof garden captures and stores about 70% of the rainfall. Other benefits include better insulation of the building, reducing the costs of heating and cooling, and mitigating the "heat island effect."
- The roof irrigation system and annual mowing help mitigate fire risks. The roof is irrigated once per year and mowed by 10 gardeners armed with "weed eaters" in early July. The clippings are left on the roof to provide nutrients for the vegetation.
- The roof membrane has a 40-year warranty against leakage.
- GIS is used to map and manage the roof garden, allowing the building owner to index plants and locate utilities, such as water and electrical lines for maintenance purposes.
- The roof was planted using live plugs of six (6) different types of grasses (as opposed to hydroseeding or hand broadcasting) in six (6) inches of soil. The vegetation has grown to form a 5-inch mat of fibrous roots.

Lessons Learned:

- Gap estimates that the cost of the roof, HVAC, lighting, and other environmental features will be repaid in cost savings from reduced energy and maintenance bills within eight (8) years.
- The roof provides an effective acoustic barrier from the nearby San Francisco Airport.
- Cost-benefit study shows annual maintenance costs are about 70% of the costs for a conventional roof.

For more information, go to: http://www.bayareacouncil.org/bp/bestpractices/bp185.html

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Landscape Architect:
Hargreaves Associates

Yahoo! Inc.
CO-7

Site Location:

701 First Avenue
Sunnyvale, CA

Features:

- Rocky swales
- Multi-story buildings reduce building footprint
- Access to the Bay Trail open space area including parking available for visitors
- Permeable walkways

Stormwater Benefits:

- Natural treatment of runoff
- Reduced impervious surface area
- Reduced directly-connected impervious area (DCIA)

This rocky swale has a storm drain for excess flows.

Rocky swale with curb cuts allows for infiltration to occur.

Rectangular stones are used to create a rocky swale.

Yahoo! Inc.
CO-7 (cont.)

Pervious walkways used to minimize impervious surfaces.

On-site parking is provided for visitors to the Bay Trail (located behind the Yahoo! Campus).

This walkway slopes toward landscaped vegetation; with multi-story buildings in background.

Pervious walkways used between concrete sidewalks.

Yahoo! Inc.
CO-7 (cont.)

Curb cuts (see arrow) allow runoff to drain off parking lot into the vegetation.

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Juniper Networks
CO-8

Site Location:
1194 N. Mathilda Avenue
Sunnyvale, CA

Features:
- Multi-story buildings reduce building footprint
- Rocky swales and trees in parking lot
- Rooftop runoff drains to landscaping
- Promotes alternative transportation
- Permeable pavement
- Located buildings to protect existing heritage tree

Stormwater Benefits:
- Reduced impervious surface area
- Reduced transportation-related pollutants
- Natural treatment of runoff
- Reduced volume and velocity of runoff
- Reduced directly-connected impervious area (DCIA)

This pathway made of pervious pavers allows infiltration through the sand filled crevices. Also, these benches are provided on pervious surfaces.

Runoff from rooftop drains into landscaping reducing the directly-connected impervious area (DCIA).

Parking lot runoff drains through curb cuts and then filters through the rocky swale. Trees provide visual amenities as well as reduce the volume and velocity of runoff.

Juniper Networks
CO-8 (cont.)

The convenience of the Light Rail Station across the street encourages employees to take public transportation to work.

Charging stations allow employees with electric vehicles, like the Sparrow pictured here, to charge-up while at work.

Plenty of carpool parking encourages employees to share rides to work.

Covered bike racks are provided for employees who prefer to ride their bicycles to work.

Juniper Networks
CO-8 (cont.)

An existing oak tree was preserved in the development of this project.

Lessons Learned:

- During storms, ponding does occur in parking lots. This can be prevented through better design and construction of the rocky swales to ensure that the infiltration rate of the swale is fast enough to prevent ponding, or by adding a perforated drainage pipe for runoff overflow. It is also important that the site is graded properly to direct water toward the swale.

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Santa Clara University
CO-13

Site Location:
500 El Camino Real
Santa Clara, CA

Features:
- Turf block fire lanes are used throughout the campus for fire access.
- A few streets have been diverted and replaced with landscaping. To maintain proper fire access, turf block fire lanes have been installed.
- Multi-story buildings reduce building footprint.

Stormwater Benefits:
- Reduced impervious surface area
- Reduced volume and velocity of runoff

Design Specifications:
- Turf block must withstand 76,000 pounds of gross weight and 20 feet in width for fire trucks (with risers)
- Maintenance performed by Santa Clara University (SCU)

Here the sidewalk and turf block with grass is used for fire access. The arrows point to concrete blocks that mark the extent of the turf block areas.

Concrete blocks mark the fire lanes throughout campus (also see photograph to left).

Santa Clara University
CO-13 (cont.)

This street used to extend directly through campus. Now the sidewalk and turf block is used for fire access while providing more areas for infiltration and aesthetic value.

Concrete blocks mark the turf block fire lane so that fire trucks can drive along the proper area without sinking. "No Parking" signs and red curbs help denote the fire lanes. Note that the nearest tree will need to be relocated to maintain the necessary width.

The fire lane here uses both the sidewalk and turf block for access. Bollards can be removed for emergency access.

Multi-story dormitories reduce the building footprint size and thereby decrease impervious surface area. Turf block allows emergency access to these dormitories.

Santa Clara University
CO-13 (cont.)

This street, which extended through the university, was redirected and replaced with turf block and sidewalks for fire access.

This sidewalk also provides emergency vehicle access. The fire lane continues on through the shrubs onto the turf block.

Lessons Learned:

- Periodic inspection of fire lanes and training is important to remind SCU staff not to place obstacles in fire lanes (e.g., trees, garbage bins, oversized shrubs).

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Residence Inn
CO-15

Site Location:
4460 El Camino Real
Los Altos, CA

Features:

- Turf block fire lane provides access for fire crews to the rear of the hotel.

Stormwater Benefits:

- Reduced impervious surface area.

Grass covers the turf block lane used for fire access, while reducing the overall impervious surface area for site.

Landscaping provides an aesthetically pleasing area for people to enjoy while also functioning as a fire lane.

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Intel
CO-16

Site Locations:

2200 Mission College Boulevard
Santa Clara, CA

Features:

- Reserved landscaped parking
- Gravel reserved parking areas allow for infiltration to occur.
- Multi-story buildings and parking garages reduce building footprint

Stormwater Benefits:

- Reduced impervious surface area

A section of a 1996 Site Map shows area in which landscaping was used in a parking area being reserved for future potential growth.

The area indicated in the map (shown at left) has since been converted into these parking spaces that were developed when parking area renovations were required for terrorism safety precautions.

Intel
CO-16 (cont.)

This off-site gravel lot is designated for overflow parking and allows infiltration to occur during the rainy season.

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Lessons Learned:

- Reserved landscaped areas can be used as a mitigating tool to help assuage fiscal lender fears when proposing site designs with reduced parking ratios. Although this reserved area was ultimately converted to pavement, temporary benefits occurred while the area was landscaped, and might still be occurring if not for extenuating circumstances.

Opportunities Missed:

- When the parking area was renovated, permeable pavement could have been used for the outlying parking stalls.

Communications Hill/Helzer Ranch
MF-1

Site Location:

3000 Narvaez Avenue
San Jose, CA

Features:

- Landscaped areas provide detention for floods and stormwater
- Downspouts disconnected
- Higher density housing

Stormwater Benefit:

- Reduced impervious surface area
- Reduced directly-connected impervious area (DCIA)
- Natural treatment of runoff
- Reduced velocity runoff

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Rooftop runoff drains through downspouts to landscaping for treatment and infiltration.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

This large grassy swale provides area for runoff to percolate into the soil, reduce downstream peak flows, and to receive treatment via settling and filtration.

Communications Hill/Helzer Ranch
MF-1 (cont.)

Photograph courtesy of Jenny Nusbaum (City of San Jose)

This outdoor space for the community to enjoy also acts as a detention basin for stormwater.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Infiltration is allowed to occur in this detention basin before entering the drainage system.

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Site Contact:
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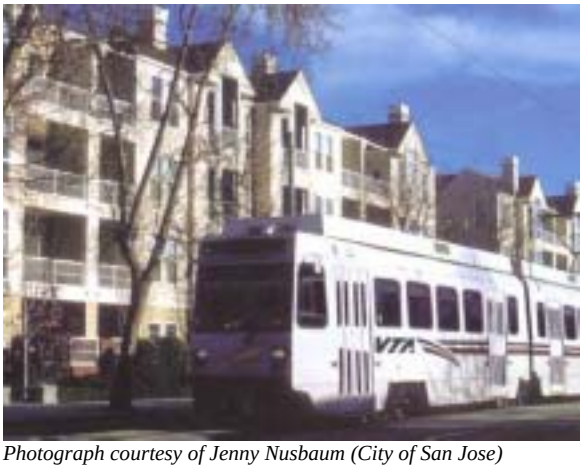
Ryland Mews
Transit-Oriented Development Corridor
MF-4

Site Location:
4115 North 2nd Street
San Jose, CA

Features:
- High density housing near First Street Light Rail Line
- Located near downtown
- Disconnected downspouts drain to landscaping
- Multi-story buildings reduce the building footprint



Photograph courtesy of Jenny Nusbaum (City of San Jose)

Light Rail runs nearby, promoting the use of alternative transportation. Motor vehicles can be the sources of metals, oil, and grease which can be harmful to aquatic organisms and, in high enough quantities, can contaminate drinking water supplies. (BASMAA, 1999) Using alternate transportation can reduce the amount of these pollutants from entering waterways.

Stormwater Benefits:
- Reduced impervious surface area
- Reduced directly-connected impervious area (DCIA)
- Transportation-related pollution reduction

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Open space surrounding high density housing allows residents to enjoy the outdoors (e.g., grass and trees) and also provides good drainage areas.

Ryland Mews
Transit-Oriented Development Corridor
MF-4 (cont.)

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Rooftop runoff drains through downspouts to landscaping where it has the opportunity to be filtered by plant material and infiltrate into the soil. Disconnecting impervious surface area reduces the speed and amount of water which can result in benefits such as lower peak flows downstream and reduced flood and erosion potential.

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Blossom River Apartments
MF-5

Site Location:
1000 Blossom River Way
San Jose, CA

Features:
- High density residential area
- Rocky swale

Stormwater Benefits:
- Reduced impervious surface
- Natural treatment of runoff
- Reduced velocity of runoff
- Reduced directly-connected impervious area (DCIA)

Photograph courtesy of Mike Campbell (RBF Consulting)

Runoff enters the rocky swale from the parking lot and is filtered before entering the storm drain.

Photograph courtesy of Mike Campbell (RBF Consulting)

Turf landscaping around the rocky swale provides an area for infiltration Multi-story buildings reduce the building footprint.

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Le Mirador Senior Housing
MF-6

Site Location:
1191 Coleman Road
San Jose, CA

Features:
- High density multi-story senior housing area
- Vegetative swale

Stormwater Benefits:
- Reduced impervious surface area
- Natural treatment of runoff
- Reduced velocity of runoff
- Reduced directly-connected impervious area (DCIA)

Before

Photograph courtesy of Mike Campbell (RBF Consulting)

This photo illustrates the swale when plant growth was hindered by the native clay soil. The parking lot is graded to drain to the swale.

After

Photograph courtesy of Mike Campbell (RBF Consulting)

The densely landscaped vegetative swale was made possible by replacing the native clay soil with sandy loam soil.

Lessons Learned:
- Over 2 feet of the native clay soil was replaced with sandy loam, which improved growth and infiltration.

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The Crossings
MU-1

Site Location:

2255 Showers Drive
Mountain View, CA

Features:

- High density (multi-story) housing with reduced building footprints integrated with commercial areas
- Located near mass transit including bus lines and CalTrain station
- Disconnected downspouts drain into landscaping
- Turf block fire lanes
- Landscaped center of driving circle

Stormwater Benefits:

- Transportation-related pollutant reduction
- Reduced impervious surface area
- Reduced velocity of runoff
- Reduced directly-connected impervious area (DCIA)
- Natural treatment of runoff

"The Crossings" is conveniently located across the street from the San Antonio CalTrain Rail Station.

Turf block fire lane provides access during emergencies. The bollards can be removed for emergency access.

The Crossings
MU-1 (cont.)

Multi-story housing reduces the building footprint and, thus, impervious surface area. Rooftop runoff drains into landscaping rather than directly to the storm drain system.

This rain gutter drains into landscaping reducing the amount of directly-connected impervious area (DCIA).

Drive around circle has a landscaped island, providing an area for infiltration.

The Crossings is located within walking distance to major commercial areas for groceries and other shopping needs, thereby reducing the need for auto use.

The Crossings
MU-1 (cont.)

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Mixed use commercial businesses located within the Crossings encourage residents to walk to shops thereby reducing the reliance on motor vehicles.

Other Opportunities:

- To improve the site design from a stormwater quality perspective, the island could have been designed to accept runoff from the street through such features as concave landscaping with pavement protection, curb cuts, and grading the street to drain to the island.

Santana Row
MU-2

Site Location:

360 South Winchester Blvd.
San Jose, CA

Features:

- Mixed-use high-density housing and regional commercial
- Encourages pedestrian activity and public use of outdoor space
- Preserved mature trees in redevelopment areas
- Use of multi-story buildings reduces building footprints
- Street trees

Stormwater Benefits:

- Transportation-related pollutant reduction
- Reduce impervious surface area
- Reduce volume and velocity of runoff

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Mixed-use, high-density multi-story housing combined with commercial areas, provide access to conveniences without the need to drive. Street trees have many benefits, including stormwater management.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Shops conveniently located below housing units promote pedestrian activity.

Santana Row
MU-2 (cont.)

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Trees in place before redevelopment were maintained for the new residents to enjoy. Trees reduce the volume and velocity of rainwater.

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North Park
MU-3

Site Location:

155 & 175 River Oaks Parkway & 3491 Zanker Road
San Jose, CA

Features:

- High density housing near North First Street Light Rail Line
- Encourages pedestrian activity and public use of outdoor space
- Multi-story building reduces the building footprints

Stormwater Benefits:

- Reduced impervious surface area
- Transportation-related pollutant reduction

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Commercial areas conveniently located below housing units promote pedestrian activity.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Open space surrounding high density housing for residents to enjoy also provides good drainage areas.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Multi-story buildings reduce the amount of impervious surface.

North Park
MU-3 (cont.)

Photograph courtesy of Jenny Nusbaum (City of San Jose)

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Light rail runs within walking distance, conveniently located behind the park and adjacent to housing.

Other Opportunities:

- Disconnected downspouts could have been drained to landscaping to break up directly connected impervious area.

Santa Clara Valley Water District Headquarters
PA-1

Site Location:
5700 Almaden Expressway
San Jose, CA

Features:
- Parking lot swales
- Rooftop downspouts drain to landscaping
- Multi-story building allows reduced building footprint

Stormwater Benefits:
- Reduced impervious surface area
- Reduced directly-connected impervious area (DCIA)
- Natural treatment of runoff

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Rooftop runoff drains to landscaping, breaking up directly-connected impervious area (DCIA).

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Photograph courtesy of Jenny Nusbaum (City of San Jose)

Multi-story building allows room for ample landscaping onsite for rooftop drainage and aesthetics.

Photograph courtesy of Jenny Nusbaum (City of San Jose)

Vegetative swales within the parking lot collect drainage through curbside gaps. Concrete curb protects asphalt.

Site Contact:
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Swale Vegetation Contact:
Rick Austin
Vegetation Specialist
Santa Clara Valley Water District
(408) 265-2607 x3861

Silver Creek Valley Road
PA-5

Site Location:

Silver Creek Valley Road between
Hwy. 101 and Hellyer Avenue
San Jose, CA

Features:

- Vegetative swales
- Street trees

Stormwater Benefits:

- Natural treatment of runoff
- Reduced volume and velocity of runoff
- Reduced directly-connected impervious area (DCIA)

Photograph courtesy of Mike Campbell (RBF Consulting)

This parking lot has curb cuts in order for the water to drain from the parking lot into the vegetative swale.

Photograph courtesy of Mike Campbell (RBF Consulting)

The street serving this industrial campus area is graded to drain to the swale, providing adequate slope for proper drainage. The flush concrete curb protects the asphalt from water damage.

Photograph courtesy of Mike Campbell (RBF Consulting)

When swales are designed to include trees, locating the trees on the banks of the swale, as shown in this photograph, is recommended. Otherwise, the trees may become over-saturated, or their roots may create high areas at the bottom of the swale that could impact the swale's performance.

Silver Creek Valley Road
PA-5 (cont.)

Photograph courtesy of Mike Campbell (RBF Consulting)

This is another grassy swale with street trees. Trees that maintain their canopies during the wet months provide greater stormwater benefit than deciduous trees.

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Willow Glen Reflections
MF-9

Site Location:

1528 Willowbrae Avenue
San Jose, CA

Features:

- Dry Exfiltration Basin
- Landscaped Infiltration Areas
- Disconnected Downspouts
- Multi-Story Building
- Shared Driveway

Stormwater Benefits:

- Natural treatment of runoff
- Reduced volume and velocity of runoff
- Reduced directly-connected impervious area (DCIA)
- Reduced impervious area

Top view of dry exfiltration basin

Dry exfiltration basin is hydraulically sized to detain and treat all site runoff.

Shared driveways and multi-story buildings reduced overall site impervious area.

Roof leaders flow to landscaped areas to reduced directly-connected impervious areas and naturally treat runoff.

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