Apple Valley
Sustainability Master Plan

South Central Planning Area -
Fischer Sand and Aggregate Study Area

May 2010
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**Vision**

The Fischer Sand and Aggregate site (FSAS) will become one of the leading examples of a successful and sustainable mixed-use business park in the Twin Cities Metropolitan Region. The area will be defined by a commitment to all facets of the sustainability prism - economy, environment, and equity. A commitment to provide living wage jobs matched with diverse housing options will foster new opportunities for Apple Valley. Green energy and low-impact development throughout the site will define a commitment to the environment. The site’s sustainable features will be carefully considered to ensure they enhance the site’s economic viability in the marketplace.

The purpose of this plan is to be used as a reference and educational tool for the development of the Fisher Sand and Aggregate Study Area within the South Central Planning Area (SCPA). The plan can be implemented as a whole or various elements can be adopted individually.
SECTION ONE: Current Conditions

Location

Apple Valley is located in Dakota County in the southern portion of the seven-county, Twin Cities Metropolitan Area. Apple Valley is located 13 miles south of Minneapolis-St. Paul (MSP) International Airport and 20 miles from downtown Saint Paul and downtown Minneapolis, respectively. Two major regional highways (Minnesota 77/Cedar Avenue and Interstate 35E) connect Apple Valley with employment centers and amenities in the Twin Cities.
Transportation Network
Twin Cities
2010 Apple Valley Capstone Group
Hubert H. Humphrey Institute

Transit Center Type
157th Street Station
Apple Valley Transit Station
Study Area

Roads
Interstate
US Highway
State Highway
County Road
Major Road
Trails Regional
Water

City Name
Apple Valley

Source: MetroGIS Data Finder;
MN DataDeli, Dakota County GIS
History

During the past forty years, Apple Valley has transformed from a small town previously known as Lebanon Township into a traditional suburban community of roughly 50,000 people. Over that time, Apple Valley developed into a bedroom community, connected to jobs throughout the Twin Cities Metropolitan region. The study area of this planning process is the FSAS located on the southern edge of Apple Valley. It is the largest developable contiguous piece of land (265 acres) within Apple Valley and is adjacent to Downtown Apple Valley.

Prior to 1993 the site had been used for agricultural purposes. Fischer Sand and Aggregate, owner of the study area, is currently mining for aggregate materials: stone, sand, and gravel, used by contractors and landscapers for regional projects. For now, the FSAS acts as an important source of aggregate and concrete for construction projects throughout the Twin Cities area. According to the company, the rate of material extraction has slowed due to the state of the national economy, resulting in decreased demand for sand and aggregate materials. Mining in the area will be completed in stages over the next ten to twenty years. Land will be transitioned in phases from a mining operation to developed land. Fischer Sand and Aggregate is working cooperatively with the City of Apple Valley to develop plans for the site’s future, in the form of this sustainability master plan.
Previous Planning Efforts on the Site

Planning, research, and analysis previously done by the City of Apple Valley and Fisher Sand and Aggregate consults has greatly contributed to the design of this plan for sustainability and the future of the FSAS.

Apple Valley 2030 Comprehensive Plan (2009)

The Apple Valley 2030 Comprehensive Plan was adopted in January 2010 and serves as the City’s official centralized guide to community planning in Apple Valley, as required under the 1976 Land Planning Act. The 2030 Comprehensive Plan was framed using eleven “keys.” Sustainability was highlighted as one of those “keys.” The Apple Valley 2030 Comprehensive Plan defines what it means to be “sustainable”:

Apple Valley is a place with outstanding quality of life. We wisely use the natural, economic, and human resources needed to continue this quality of life. We seek to provide the resources required to maintain and enhance the quality of life for future generations. We plan our community in ways that sustain the clean water and air that are essential elements of the quality of life in Apple Valley. In doing so, Apple Valley aspires to be sustainable.

-Apple Valley 2030 Comprehensive Plan

This definition of “sustainable” and past planning done by the City of Apple Valley was used to inform what sustainability should look like on the FSAS.

The Apple Valley 2030 Comprehensive Plan included a basic framework for the redevelopment of the current FSAS. The plan divides the FSAS into several different sub-districts by extending existing roads through the area – Johnny Cake Ridge Road, 153rd Street, 157th Street, and Embry Path. Future parks and/or stormwater facilities were designated to be located at the center of these sub-areas.
The 2030 Apple Valley Comprehensive Plan designates the portion of the FSAS south of County Road 42 and west of Pilot Knob Road as “mixed-business campus.” The plan suggests the area is “a high quality setting for general office, corporate office, research and development, light manufacturing and biomedical manufacturing, and office showroom.” The mixed-business land use is intended to accommodate a mix of 55 to 65 percent office, one third of which would be targeted to health and medical related facilities. Another 10 to 20 percent of the mixed business campus would accommodate light industry and manufacturing, and an additional 10 percent would be office showroom or office warehouse. The plan notes that high-density housing (20 to 35 unit/acre) would be appropriate for the area along 153rd Street to 155th Street, which would place the housing adjacent to an existing transit center.

**Fischer Sand and Aggregate AUAR (2007)**

The Fischer Sand and Aggregate Alternative Urban Area wide Review (AUAR) fulfills the requirements of state environmental review for the redevelopment of the sand and aggregate mining site.

The Fischer Sand and Aggregate AUAR presented two alternative development scenarios and was based on the Apple Valley 2020 Comprehensive Plan. Current conditions suggest the AUAR recommends an over abundance of housing and retail. The two development scenarios are similar in size but differ in their use of space. (Table 1) Scenario one put less focus on commercial/institutional, and created proportionally fewer attached housing units than scenario two’s land use.

**Table 1. Scenarios for Redevelopment: Fischer Sand and Aggregate AUAR**

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Acres</strong></td>
<td>559</td>
<td>559</td>
</tr>
<tr>
<td><strong>Total Residential Units</strong></td>
<td>2,259</td>
<td>2,448</td>
</tr>
<tr>
<td><strong>Detached Housing</strong></td>
<td>746</td>
<td>617</td>
</tr>
<tr>
<td><strong>Attached Housing</strong></td>
<td>1,513</td>
<td>1,831</td>
</tr>
<tr>
<td><strong>Commercial/Institutional Square Feet</strong></td>
<td>3,004,000</td>
<td>3,047,200</td>
</tr>
</tbody>
</table>

Source: Fischer Sand and Aggregate AUAR
**Apple Valley Office/Industrial Market Potential Study (2006)**

A report prepared by market researchers McComb Group, investigated the potential for expansion of office and industrial space in Apple Valley. The report identified historic challenges for the City of Apple Valley as a host for office and industrial properties. These challenges included: the distance between Apple Valley and the Minneapolis and Saint Paul downtowns, access to public transportation networks, and a lack of developable sites with freeway visibility.

The report identified newer trends related to mitigating these historic challenges. First, new attractive land in the FSAS will be available for development in the near future. This includes possible expansion of transportation access to Downtown Minneapolis and Downtown Saint Paul via a bus rapid transit along the Cedar Avenue corridor. Second, the report identified a demand for approximately four million square feet of new office space in Apple Valley. It identified six sites for office and industrial redevelopment, predominantly centered on the FSAS. The FSAS contains 265 of the 384 acres, roughly 69 percent of the land, identified in the study as available for development citywide.

The study suggests the demand for commercial space will be predominantly in the office sector, along with some demand for warehouse space, and potential medical office tenants (Table 2).

**Table 2. 2025 Demand for Commercial Space**

<table>
<thead>
<tr>
<th>Use</th>
<th>Floor Size of Demand</th>
<th>Acreage of Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Tenant Office</td>
<td>1.050 million sq ft</td>
<td>82 acres</td>
</tr>
<tr>
<td>Multi Tenant Office</td>
<td>1.475 million sq ft</td>
<td>82 acres</td>
</tr>
<tr>
<td>Single Tenant Warehouse</td>
<td>540,000 sq ft</td>
<td>20 acres</td>
</tr>
<tr>
<td>Multi Tenant Warehouse</td>
<td>492,000 sq ft</td>
<td>20 acres</td>
</tr>
<tr>
<td>Office Showroom</td>
<td>346,000 sq ft</td>
<td>11 acres</td>
</tr>
<tr>
<td>Medical Office</td>
<td>400,000 sq ft</td>
<td>18 acres</td>
</tr>
</tbody>
</table>
The Astra Genstar Partnership AUAR, completed prior to the 2007 Fischer Sand and Aggregate AUAR fulfills the requirements of state environmental review for the proposed redevelopment of the site.

The review examined the environmental impacts of four different development scenarios on the FSAS whose boundaries extend south to 153rd Street, west to Flagstaff Avenue, north to County Road 42, and about one half mile east of the proposed extension of Johnny Cake Ridge Road. Scenario “A” was the required base scenario proposed in the 2020 Comprehensive Plan at the time of the review. Scenarios B, C, and D implemented varying levels of development intensity with segments of low/medium density and medium/high density residential units, commercial/retail, and light industrial/business park uses in each scenario.

The Apple Valley 2020 Comprehensive Plan did not have a “mixed-use” designation, and therefore would be required to implement separate zoning categories for each individual use. Presently, the 2030 Apple Valley Comprehensive Plan has designated all land as mixed-use, so all land use not designated as “light industrial” would be allowed under the current zoning map.

**Table 3. Apple Valley Land Use**

<table>
<thead>
<tr>
<th></th>
<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
<th>Scenario D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Acres</strong></td>
<td>237</td>
<td>237</td>
<td>237</td>
<td>237</td>
</tr>
<tr>
<td><strong>Total Residential Units</strong></td>
<td>1,100</td>
<td>950</td>
<td>1,300</td>
<td>2,400</td>
</tr>
<tr>
<td><strong>Low/Medium Density</strong></td>
<td>1,100</td>
<td>350</td>
<td>450</td>
<td>550</td>
</tr>
<tr>
<td><strong>High/Medium Density</strong></td>
<td>0</td>
<td>600</td>
<td>850</td>
<td>1,850</td>
</tr>
<tr>
<td><strong>Light Industrial (sq. ft)</strong></td>
<td>2,600,000</td>
<td>110,000</td>
<td>150,000</td>
<td>250,000</td>
</tr>
<tr>
<td><strong>Commercial/Retail (sq. ft)</strong></td>
<td>0</td>
<td>240,000</td>
<td>375,000</td>
<td>500,000</td>
</tr>
</tbody>
</table>
**Economic Development**

The character and economic growth in Apple Valley is similar to most Twin Cities suburban communities. Apple Valley has a booming retail economy; the majority of land dedicated to businesses in Apple Valley is used for retail. The development of the FSAS is an opportunity to cultivate a greater jobs-to-housing mix in Apple Valley.

**Number of Businesses**

Apple Valley added 179 business establishments, a 21 percent increase, from 2000 through the 3rd quarter of 2007. Business development was well distributed across industry sectors. Financial activities experienced the most growth with 56 additional businesses. Trade/Transportation/Utilities, Education/Health Services, Leisure/Hospitality and Retail sectors each added 29-33 new businesses. Only the Professional/Business Services and Information sectors lost business during this period.

**Labor Force**

The share of Apple Valley’s population in the labor force fell from 80.6 percent in 1990 to 78.4 percent 2000 primarily due to the aging baby boomer population. Apple Valley has a large educated and skilled workforce population; over 40 percent of the working population is employed in managerial and professional occupations.

**Place of Employment**

The U.S. Census tracks workplace locations. Sixteen percent of workers living in Apple Valley reported a place of employment in Apple Valley. Thirty percent of Apple Valley workers are employed in another Dakota County city and 39 percent travel to Hennepin County for employment. Nearly 85 percent of the Apple Valley workforce is employed in Dakota or Hennepin County.
Employment in Apple Valley

Apple Valley is a net exporter of workers. In the 2000 Census, 26,221 Apple Valley residents were employed in the civilian labor force, representing 57.6 percent of the total population. Apple Valley was the place of employment for 10,720 people and only 4,215 of the workers lived and worked in the City (9.2 percent of the population, or 16.1 percent of the work force). Apple Valley businesses reported 13,619 jobs in the third quarter of 2007. This total represents growth of 1,963 jobs (17 percent) from 2000. The largest employment sectors are Trade/Transportation/Utilities (28 percent), Retail (28 percent), Education/Health Services (21 percent) and Leisure/Hospitality (17 percent). These employment sectors account for 92 percent of all jobs in Apple Valley.

Wages

The average weekly wage for Apple Valley all businesses in the third quarter of 2007 was $585. This wage represents a three percent increase over 2000. The reported 2006 average weekly wage was $636, a 12 percent increase over 2000. The highest average wages were reported in Manufacturing ($1,057) and Financial Activities ($933). The lowest wages were found in the Leisure/Hospitality ($318) and Retail ($425) areas.

Energy

The majority of all energy demand in Apple Valley is met by coal and natural gas. The Black Dog power plant, a coal and gas-fired generating station, is owned and operated by Xcel Energy and provides the power needs of Twin Cities communities south of the Minnesota River, through Dakota Electric and CenterPoint Energy. In 2002, with the addition of a new combined cycle unit that uses natural gas, Black Dog regained its status as the second largest fossil fueled plant in Xcel Energy’s North region. The natural gas combined cycle unit is designed to provide intermediate generation during peak demand periods.
Transportation Network
Apple Valley
2010 Apple Valley Capstone Group
Hubert H. Humphrey Institute

Transit Center Type
- 157th Street Station
- Apple Valley Transit Station
- MVTA - Express - Apple Valley -
- Study Area

Bus Route
- Express
- Local

Roads
- Interstate
- US Highway
- State Highway
- County Road
- Major Road
- Minor Road
- Trails Regional
- Water
- Apple Valley

Source: MetroGis Data Finder; Mn DataDeli; Dakota County GIS
Current Conditions

Mobility & Accessibility

Apple Valley’s current transportation system is quickly evolving. Recognizing that the automobile is the dominant transportation choice in Apple Valley, city staff acknowledges the advantages of developing other modes of travel such as bus, bus rapid transit (BRT), bicycling, and walking.

Automobile travel beyond Apple Valley is dependent on access to Interstate 35E, the major east-west connections of County Roads 42 and 46, as well as the north-south connections of Cedar Avenue and Pilot Knob Road. Arterial and local roads largely mirror traditional suburban cul-de-sac development. Rapid population growth has contributed to the increasing demand on roads, especially the east-west arterial connections through Apple Valley.

Travel to work data shows a strong dependence on automobiles. The percentage of Apple Valley workers driving alone to work remained static from 1990 (84.1 percent) to 2000 (84.2 percent). The labor force in Apple Valley makes limited use of public transportation (2.0 percent in 1990 and 3.1 percent in 2000).

Public transportation consists of circulator routes and the first BRT system in Minnesota. This BRT services Downtown Saint Paul and Downtown Minneapolis; provided by the Minnesota Valley Transit Authority (MVTA). The MVTA bus service is heavily focused on commuting trips and transporting people from Apple Valley to Downtown Minneapolis and Saint Paul, the MSP airport, and the Mall of America. The City of Apple Valley is home to the Apple Valley Transit Center, located on Cedar Avenue just north of 155th Street, offering: 750 parking spaces, climate controlled waiting area, restrooms, bicycle lockers and bicycle racks. An additional park and ride facility is available at Pilot Knob Road and 157th Street, providing 250 parking spaces, climate controlled waiting area, and bicycle lockers.

Pedestrian routes and bicycling in Apple Valley are beginning to take shape as a more comprehensive system. Preliminary connections have been made between bicycle facilities, but there is an opportunity to create more bicycle trails and roads as east-west connections. Pedestrian access is improving, and the City of Apple Valley now requires that sidewalks be built along new roadways.
Housing

Housing comprises most of the land area in Apple Valley, accounting for more than 46 percent of existing land use. Apple Valley added almost five thousand new homes from 1990 to 2000. The 2000 Census reported 4,998 new housing units in Apple Valley over this decade, a 43.3 percent increase in the total number of units. Single-family detached housing is the most common type of housing in Apple Valley. As of 2000, 61 percent of all housing units were single-family detached housing (one-unit detached), down from 68 percent in 1990. This decrease comes from growth in single-family attached housing (townhomes) and multiple family structures.

Multi-family housing is increasing; however, it is a small portion of overall supply. Although structures containing ten or more units added 585 dwellings from 1990 to 2000, this housing type represented only nine percent of all housing units in 2000. By contrast, 17 percent of all 2000 housing in Dakota County fell into this category.

Most housing in Apple Valley is owner-occupied. The 2000 Census reported that 87 percent of all housing units were owner-occupied. Rental housing is provided primarily by multiple family structures and 63 percent of rental housing was in structures with ten or more units. Only nine percent of townhomes (one-unit attached) were rental in 2000. Very few single-family detached homes were rented (one percent). According to Dakota County property tax data, one half of all housing units (through 2006) were built prior to 1985.
Current Conditions

Apple Valley Land Uses and Fischer Sand and Aggregate Proposed Development Site

2010 Apple Valley Capstone Group
Hubert H. Humphrey Institute

Legend:
- Study Area
- Interstate
- County Road
- Highway
- Major Roads
- Minor Roads

Land Use:
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Industrial
- Mixed Business Campus
- Mixed Use
- Institutional
- Parks and Open Space
- Private Recreation
- Water/Fond

Source: MetroGis Data Finder; Mn DataDel; Dakota County GIS

Scale: 0 0.3 0.6 0.9 Miles
Land Use

The City of Apple Valley consists of low-density segregated land uses. (See map at right). There is minimal integration between residential and commercial land uses in the City of Apple Valley. As of 2000, 40.5 percent of the land in Apple Valley was low-density residential, comprised largely of single-family homes with some duplexes and townhomes (See Table 4). According to the 2030 Apple Valley Comprehensive Plan, housing density ranges from one-half to six units per acre.

The most notable transition taking place between current and future land uses revolve around the FSAS study area. (See table 4) The FSAS will be converted into what would be the City’s first business campus (265 acres, 2.3 percent of the City) and mixed-use designations (68 acres, less than 1 percent of the City).

Table 4. Apple Valley Current and 2030 Planned Land Uses

<table>
<thead>
<tr>
<th></th>
<th>2000 Actual Acres</th>
<th>% Total</th>
<th>2030 Planned Acres</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Density Residential</td>
<td>4,531</td>
<td>40.5%</td>
<td>4,674</td>
<td>41.8%</td>
</tr>
<tr>
<td>Medium Density Residential</td>
<td>442</td>
<td>4.0%</td>
<td>573</td>
<td>5.1%</td>
</tr>
<tr>
<td>High Density Residential</td>
<td>181</td>
<td>1.6%</td>
<td>235</td>
<td>2.1%</td>
</tr>
<tr>
<td>Commercial</td>
<td>524</td>
<td>4.7%</td>
<td>544</td>
<td>4.9%</td>
</tr>
<tr>
<td>Business Campus (26 acres are residential)</td>
<td>0</td>
<td>0%</td>
<td>257</td>
<td>2.3%</td>
</tr>
<tr>
<td>Mixed Use (41 acres are residential)</td>
<td>1</td>
<td>0%</td>
<td>68</td>
<td>0.6%</td>
</tr>
<tr>
<td>Industrial</td>
<td>209</td>
<td>1.9%</td>
<td>273</td>
<td>2.4%</td>
</tr>
<tr>
<td>Institutional</td>
<td>493</td>
<td>4.4%</td>
<td>475</td>
<td>4.2%</td>
</tr>
<tr>
<td>Parks &amp; Open Space</td>
<td>1,553</td>
<td>13.9%</td>
<td>1,571</td>
<td>14.1%</td>
</tr>
<tr>
<td>Private Recreation</td>
<td>0</td>
<td>0%</td>
<td>29</td>
<td>0.3%</td>
</tr>
<tr>
<td>Sand and Gravel</td>
<td>569</td>
<td>5.1%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Water</td>
<td>508</td>
<td>4.5%</td>
<td>508</td>
<td>4.5%</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>1,974</td>
<td>17.7%</td>
<td>1,974</td>
<td>17.7%</td>
</tr>
<tr>
<td>Total</td>
<td>11,181</td>
<td>100%</td>
<td>11,181</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Apple Valley 2030 Comprehensive Plan
Land use adjacent to the FSAS is diverse and includes: Downtown Apple Valley, mixed-use residential, retail space, and open space. Downtown Apple Valley is located to the west of the FSAS. Cobblestone Lake, a “neo-traditional” neighborhood development, is located immediately to the east/southeast of the project site, on the eastern side of Pilot Knob Road.

### Natural Landscape

The FSAS has been an active aggregate mining operation for more than 30 years. According to the AUAR, mining operations have extirpated wildlife and suitable habitat from the project area.

The FSAS is located within the Vermillion River Watershed. The North Creek runs through the southwestern portion of the project area and deposits into the Vermillion River. The site is not located within a 100-year floodplain or within a federally designated wild or scenic river area. The Vermillion River is a Minnesota Department of Natural Resources (DNR) designated trout stream. Due to the Vermillion River’s designation, the DNR requires design approaches to control runoff volumes from the project site. According to the AUAR, any development on the project site will “impact a DNR regulated waterway,” and thus the project site should anticipate a need for stormwater management techniques to treat stormwater runoff prior to discharge from the site. The North Creek is monitored for water temperature; water quality and quantity; groundwater and flow just below the project site prior to entering the Vermillion River.

The bedrock beneath the site is Saint Peter Sandstone. There are no known sinkholes or karst conditions on the project site. Bedrock is on average 100 feet in depth. Groundwater is on average 40 feet below the surface.

### Local & Regional Parks

There are several regional parks surrounding Apple Valley and the FSAS study area. These regional parks include: Lebanon Hills Park (1,795 acres); Murphy-Hanrehan Park Reserve (2,905 acres); Spring Lake Park Reserve (1,287 acres); Cleary Lake Park (1,049 acres); Fort Snelling State Park (1,580 acres) and Minnesota National Wildlife Refuge and Recreation Area. (See map on following page)
In addition to the regional parks, several city parks are in close proximity to the FSAS. Two parks are part of the Cobblestone Lake development just to the east of the FSAS: Cobblestone Lake Park provides a ribbon of passive green space and trails around Cobblestone Lake stormwater pond, and Apple Valley East Park is a 12 acre park that provides many sport and active recreation opportunities. Approximately one half-mile to the north, the Johnny Cake Ridge East and West Parks (167 acres total) provide a wide variety of active recreation – ball diamonds, playfields, tennis, basketball, hockey, volleyball, and picnic shelters. Legacy and Kelley Parks are connected parks approximately one half mile west of the FSAS; Legacy provides picnic shelters while Kelley provides play areas for young children. Finally, at the very southwest edge of the FSAS, Regatta Park is a relatively new ten acre park providing a variety of youth and adult recreation, including ball diamonds, playfields, basketball courts, and playground equipment.
Previous planning initiatives and existing conditions in Apple Valley informed sustainability recommendations, including guiding principles, for future development of the FSAS. Sustainable development may be implemented through a wide variety of strategies tailored to the specific development or community in which they are being used. No two communities are identical; therefore sustainability strategies must be tailored to the community for which they are created. The goal of this sustainability master plan is to make recommendations for future sustainable development on the FSAS based on the current and projected needs of Apple Valley.
The Fischer Sand & Aggregate Sustainability Master Plan is intended to guide the implementation of sustainable planning techniques and best practices as this Apple Valley site is redeveloped. The guiding principles behind achieving sustainable development for the FSAS are:

- **Embrace Economic Viability.**
  Encouraged development that practices efficient site design, responsible waste management, energy capture and reuse, and enhanced interaction with the natural landscape.

- **Strengthen Healthy Connections.**
  The FSAS development should strive to create a neighborhood where people both live and work, where use of transit, walking and bicycling is encouraged and accessible, where there is a range of housing choices, diverse businesses, a lively and inviting street life, and amenities to serve and attract residents, employees and visitors.

- **Create Complementary Places.**
  The City of Apple Valley should seek opportunities on the FSAS to include a mix of land uses that create sustainable neighborhoods with connections to goods, services and jobs. The FSAS will encourage land uses that support a multi-modal, comprehensive, balanced transportation system.

- **Enhance Natural Resources.**
  The new FSAS development will protect and enhance the surrounding natural systems.

Each of these four guiding principles is accompanied by a series of actions. The actions are followed by strategies and benefits afforded through the adoption and implementation of the suggested strategies. Finally, resources are provided as reference tools from successful sustainability planning techniques implemented elsewhere. These tools should be considered by Apple Valley to achieve sustainable planning and redevelopment of the FSAS.
Embracing Economic Viability

Encourage development that practices efficient site design, responsible waste management, energy capture and reuse, and enhanced interaction with the natural landscape. Foster a positive and supportive business environment for those businesses willing to implement and incorporate the ideals of sustainability. The Apple Valley 2030 Comprehensive Plan suggests locating a mixed-business campus on the FSAS site. A new business park will attract a variety of living-wage career opportunities and grow the economy of Apple Valley. The City’s land use and employment mix currently relies heavily on the retail and service sectors. By developing the site as a commercial and light industrial campus, the site will diversify the mix of business types and employment available in Apple Valley. Residents will be able to find new, stable, long-term careers opportunities.

The City of Apple Valley is a leader in “sustainonomics,” incorporating smart and cost-effective energy practices within the FSAS would further that reputation. As energy costs rise, the need for cheaper and more efficient sources of energy will intensify.
A renewable, low-carbon district energy source will provide a sustainable, cost-competitive source of energy that brands and differentiates the site from many of its peers in the marketplace. District energy systems are closed-loop systems that heat and cool public spaces such as commercial buildings, university campuses, and government buildings. The site is heavily excavated due to the current gravel mining operation and thus provides a future opportunity for planned sustainable development. The City of Apple Valley has committed to constructing Johnny Cake Ridge road to County Road 46 and extending 153rd and 157th streets laterally through the site. Infrastructure for the site, such as district energy pipes and stormwater management, should be installed simultaneously with construction of future roads.

Business sites in the Twin Cities – such as Energy Park in Saint Paul – currently employ a district energy system to serve the energy needs of employers. In addition local suburban municipalities such as Bloomington have secured federal grants for a study on district energy for new commercial districts. The site will be able to provide competitive advantages to employers looking to reduce their energy costs by consolidating heating and cooling operations into an efficient central facility. A district energy approach will lower the site’s future carbon footprint by providing energy in a more sustainable format – whether through biomass, geothermal, or a mix of other approaches. The versatility and diversity of a district energy system will allow for development to occur in gradual, well-timed phases.

Companies may be attracted to the site’s cost-effective energy practices and positive environmental image. Providers like Energy Park in Saint Paul and District Energy of Downtown Saint Paul have proven that with careful coordination, the combined benefits of more affordable and renewable energy can be jointly realized as a unique competitive advantage.
Establish a mixed business campus founded upon the three pillars of sustainability: economic, environmental, and equity.

**Strategy 1.1:** Increase the industrial economic sector by attracting one or more anchor businesses in the green-technology or renewable energy field.

- Diversifies the Apple Valley business environment.
- Increases local living wage jobs.
- Contributes to and encourages location of related businesses to mixed business campus.

**Resource: Green Tech**

Technology companies offer a particular opportunity for sustainable development. Much of the business sector has roots in sustainable business structures, as evidenced by the recent Newsweek rankings of eco-friendly US companies in which half of the top twenty firms identified are within the technology sector. As leaders in business sustainability planning, companies such as ProQuest, an information-technology firm, JJ Keller, a Wisconsin-based printing and publishing firm, and Verne Global, a data server manufacturer, all incorporate energy-saving techniques to reduce their carbon footprint. Such activities include:

- “Free Cooling” – taking advantage of northern winter climates to reduce cooling costs by exclusively using outside air rather than electric or liquid cooling processes
- Locating in LEED-certified buildings
- Promoting carbon-footprint reduction in industry’s supply chain

**Resource: Light Manufacturing/Research & Development**

The manufacturing or research and development (R&D) business sectors offer a multitude of desirable traits for Apple Valley. Their abundance and range of high-paying jobs, opportunities for innovation, and focus on efficiency and low pollution processes make such facilities a potential cornerstone of sustainable economic vitality within a community. Fortunately, Apple Valley already has several examples of such innovative business models, including Uponor, a radiant heating system manufacturer that incorporates many on-site examples of their energy efficient processes, and employs over 300 people on their site. Increasingly, R&D businesses are finding that choosing the best site for their operations is the primary key to their success.
Strategy 1.2: Encourage development of a local medical service hub, with clinic, same day surgery, and medical education facilities.

- Diversifies the Apple Valley business environment.
- Serves the increasing aging population of Apple Valley.
- Serves as a traffic generator to supply customers/visitors to surrounding businesses and retail.

Resource: Establishing a Medical Service Hub

A local medical hub can provide an array of health and medical services to Apple Valley and surrounding communities – these could consist of a combination of:

- Same-day surgery facilities
- Family practice clinics
- Express clinics, and
- Offices for private medical practice

If located near workplaces and medium to high-density residential sites with sufficient transit access, the facility could serve the majority of the health care needs of the population without relying upon auto-oriented transportation. In addition, the market for express clinics is anticipated to increase as consumer awareness and acceptance rises, and can absorb a growing portion of nurse practitioners and physician’s assistants who could be educated within the study area as well.
**Strategy 1.3:** Alter existing TIF mechanisms to capture the long-term value of sustainable design through capital investment in infrastructure related to energy, access for service vehicles, and non-motorized transportation routes.

- Incentivizes capital investment by developers and businesses by providing an infrastructure “subsidy,” lowers typical private construction costs. Attracts developers interested in creating “green” buildings or developments.
- Promotes continual commitment to sustainability principles through TIF guidelines.

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**Resource: Creating a New TIF Category**

Tax Increment Financing (TIF) districts are traditionally implemented on a site to provide for early capital necessary to develop infrastructure for new development. TIF districts typically have singular focus that encourages desired growth in housing, economic development, and redevelopment in established neighborhoods. Each type of district has strict requirements on the types of development that can occur in a TIF district. Currently, Apple Valley does not have a TIF category available that can take advantage of a mixed business campus with multiple uses, higher-intensity housing, high floor-to-area ratio development and increased transit service, despite the potential for increased overall property value.

If a Sustainability/TOD TIF district was established that promoted the guidelines expressed in this report, similar to transit-oriented development TIF districts established elsewhere, increased funds could be made available to the city to implement sustainable infrastructure that have higher up-front costs.

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Tennessee’s TIF Statute Expansion to include Sustainability Initiatives:
In June of 2009, significant flexibility was added for the use and scope of TIF funds by housing and development authorities throughout the state of Tennessee. The legislation particularly allows, for the first time, for TIF funds to be utilized for the cost of incorporating green design features similar to those proposed in this document into projects such as those anticipated for the FSAS Study Area.

Additional Funding Information (Council of Development Finance Agencies):
This series of presentations illustrates how TIF funds are most efficiently used in different environments, including urban, suburban and rural development. The slide emphasizes using the tool to develop more livable business districts, multiple-use destinations, and those destinations connected by transit.
**Strategy 1.4:** Introduce an innovative and inclusive business association in new development.

- Enhances emphasis on connection to the local business community.
- Uses collaboration to achieve sustainability goals more efficiently.
- Enhances accountability for each business to uphold sustainable ideals.

**Resource:** Green Business Associations

Establishing a business association on the site will further strengthen the idea of communication, collaboration, and economic empowerment within the district. Through this business association, the goals of achieving a sustainable region can be advanced, supported, and exhibited throughout the study area.

_Minnesota Organic Consumers Association:_
A local example of how business associations can be an innovative resource both for its members, as well as a knowledge base for local residents, clients and consumers with similar interests.\(^5\)

_Sustainable Business Network of Portland:_
A business network that provides both financial as well as marketing tools for members, creating greater community awareness of the group.\(^6\)

**Strategy 1.5:** Employ a marketing strategy that unifies the aesthetic and functional ideals of the area.

- Brings recognizable visual component to development.
- Increases awareness to the site amenities both locally and regionally.
- Supports unique development.

**Resource:** Employ a Marketing Strategy

A marketing strategy that involves all businesses, residents, and community groups will promote awareness of the unique features of the site. This important tool will provide a series of unifying visual components that could be used by any group located within the site. Examples of green marketing strategies:

_Sustainable Business Network of Portland_
http://www.sbnportland.org/resources
Implement an energy plan that reflects the site’s responsibility to reduce energy consumption and reliance on non-renewable and outside energy sources.

**Strategy 2.1:** Establish criteria for sustainable design, construction materials (e.g. locally mined aggregate), and renewable energy implementation.

- Serves as a foundation for private sector to build upon when proposing new construction.
- Stabilizes assumptions for market and budgetary feasibility.
- Connects existing Apple Valley business community with new development.
- Increases potential property values, enhances longevity of new construction and reduces annual maintenance costs.
- Reduces environmental impacts and energy costs both in construction and throughout the life of development on the site.
- Emphasizes and promote local business by mandating all building materials used come from within a 500-mile radius to support regional business, reduce environmental impact and energy costs related to trucking/shipping.
- Promotes green building and site design to reduce energy consumption (i.e. maximizes southern exposure to utilize sunlight, green roofs, recycled materials, on site rain water collection, smart meters, etc.).

**Strategy 2.2:** Introduce a sustainable waste management plan that consolidates waste receptacles and provides recycling of most materials.

- Reduces cost associated with collecting/handling recyclables.
- Reduces land needed for landfills.
- Generates potential for creation of waste-to-energy power source to implement district energy Plan.
- Provides opportunities for inter-business collaboration, and coordination, facilitated through an on-site sustainable business association.
Strategy 2.3: Install an innovative, adaptable and flexible district energy infrastructure in conjunction with proposed road network prior to development to supply the future energy needs for all businesses on site.

- Increases attractiveness of site for businesses that have high and unique energy needs for their facilities, and are interested in energy independence.
- Minimizes cost of new energy transmission infrastructure, helps manage demand for electricity and further increases rental/usable space for businesses and residential units.
- Assists winter snow removal through radiant heat from underground infrastructure by reducing need for de-icing salts.
- Provides unique feature of site that increases potential for sustainability education.
- Combats climate change by increasing energy efficiency and fuel flexibility.
- Reduces air pollution and decreases emissions of ozone-depleting refrigerants.
- Facilitates the use of renewable energy.

Resource: District Energy Systems

District energy systems do more than save the environment, they provide economic advantages as well. A system can be established anywhere desired, but the energy source is the most critical component and will vary from region to region. In addition, improving energy efficiency can further environmental benefits and competitive advantages.

http://www.districtenergy.com/

Another local example of how district energy can be realized in the south metro suburbs with help though federal resources: Bloomington secured $200,000 for research into a district energy system in their South Loop District Plan.
http://www.ci.bloomington.mn.us/cityhall/dept/commdev/planning/longrang/southloop/distrenergy.htm

Merging city systems to be holistically integrated is another approach to encourage district energy and ultimately improve overall efficiency, an approach called Symbiocity. Symbiocity combines urban systems and derives benefits from the synergies within. Strategy 2.2, which consolidates waste receptacles and recycling of most materials, is one way a Symbiocity system can start.

http://www.symbiocity.org/en/

Ever-Green Energy is a local leader in the development and operation of efficient renewable energy. A model for connecting the energy source with type of district energy can be found through Ever-Green, the first step in initiating Strategy 2.3. Different types of district energy systems such as co-generation and landfills gas to fuel have been successfully implemented internationally and throughout the United States.

http://www.ever-greenenergy.com/
http://www.cogeneurope.eu/category/about-cogen/what-is-cogeneration/
http://www.slcatlanta.org/Publications/publications.htm#energy1

Energy Efficiency Conservation Block Grants
http://www1.eere.energy.gov/wip/eecbg.html
Strategy 2.4: Utilize a variety of energy sources as the site develops in phased progression - solar, small-scale wind, geothermal, wastewater heat, and organic waste material to supply clean and renewable energy to the site.

- Lessens impact of rising energy prices on site by reducing energy costs to better predict annual budgetary expenses.
- Reduces groundwater use on site by recycling “grey-water” for non-potable needs such as irrigation and other domestic applications.
- Increases adaptability to variable fuel costs by utilizing independent energy sources.
- Capitalizes upon ability of site reduce infrastructure costs by implementing district energy while the site is still in a transitional phase (not having to dig new trenches to implement district energy).

Strategy 2.5: Facilitate educational opportunities for local residents and property managers in Apple Valley to introduce opportunities for energy conservation.

- Maximizes residential energy efficiency and reduces long-term costs for occupants.
- Increases property values on existing buildings to increase tax base.
- Reduces overall environmental impact of development.
- Incentivizes livable rental rates.
- Creates opportunities for grassroots neighborhood innovation in sustainability in Apple Valley.

Increasingly, projects are incorporating a variety of renewable energy sources into their buildings, lowering long-term costs. Here, the roof of Great River Energy’s headquarters in Maple Grove is outfitted with a 72 kW array of solar panels, and a wind turbine stands nearby. Combined, Great River Energy reports a savings of $90,000 in annual energy costs, with a payback in seven years.
Embracing Economic Viability

District Energy Implementation. A district energy system allows the development to take advantage of the flexibility and adaptability of multiple fuel sources, phased implementation, and innovative infrastructure design.
Enhance opportunities for greater training and education facilities related to the businesses operating in the area.

**Strategy 3.1: Promote educational opportunities onsite.**

- Increases human capital and earning potential of Apple Valley.
- Creates greater connection and ownership from the surrounding neighborhoods.

**Resource: Medical Training**

Incorporating training facilities within the study area can serve many purposes towards a sustainable area. Apple Valley already has a well-documented educational success story in the award-winning School of Environmental Studies located adjacent to the Minnesota Zoo in north Apple Valley, with its surrounding school district 196 being designated as a “Gold Medal” School District by Expansion Management magazine. To continue this excellence in educational service to the community, a medical education and training facility could be implemented on the site. To serve potential future express clinics or physical therapy centers, the facility could focus on the training of nurse practitioners, physical therapists and physician’s assistants. This facility could capitalize on the location’s advantages:

- Offers an educated population better access to educational opportunities between the Twin Cities and Mayo Clinic
- Provides for a more affordable post high school educational experience than traditional four-year colleges which leads to in-demand positions
- Implement the idea of sustainability and health restoring properties of natural landscapes
- Develops an adjacent pedestrian-oriented residential area may attract a diverse and aging population whose care could serve as an educational opportunity
- Capitalizes on close proximity to the MSP Airport, which can attract national educators and speakers

**Estimated growth of retail medical clinics**

Source: Deloitte Development LLC
Strategy 3.2: Integrate entrepreneurship workshops into industrial/tech business.

- Allows anchor light industrial business to promote its community value.
- Increases human capital and earning potential of Apple Valley.
- Creates an entrepreneurial community to attract and foster new businesses.

Strategy 3.3: Initiate onsite workforce education/training sessions prior to development.

- Primes local workforce for immediate integration into new job opportunities.
- Creates association with new site and economic opportunity.
- Offers opportunity to promote Apple Valley businesses and services to new employees.

Resource: Onsite Training/Tech Entrepreneurship

An educational component that will ensure community investment in the new study area is to partner with local education providers, on-site technology industries, and manufacturing companies to create a training facility for local residents. Such a facility could further Apple Valley’s trend of increased college-educated population, empower local residents to have greater technical and business skills, and encourage greater technology entrepreneurship by providing contracted work space and technical assistance.

Examples include the following:

Uponor Training Facility, Apple Valley:

Making it green – Minneapolis/St Paul: Green Manufacturing Market Opportunities:
Information on the advantages of manufacturing and training, and the specific “green markets” that communities can capitalize upon.

UAW-Ford-MnSCU Training Center – St Paul – collaborating with local colleges and labor unions:
A local example of a unique industrial/educational/labor partnership that gives lasting value to a St Paul neighborhood.
**Strategy 3.4:** Take advantage of the “outdoor classroom” educational opportunities available through planned resource conservation, energy, and recycling programs.

- Allows opportunity for on-site business to promote services and increase awareness.
- Provides potential revenue stream for incidental retail businesses during community education events.
- Promotes sustainability ideals and encourages implementation in surrounding communities.

**Resource:** Outdoor Education

Interactive Environmental Education Services:
There are many opportunities for environmental education on the site, including tours of the sustainability features such as a district energy site, education on healthy living or historical landmarks of the site. One opportunity for the site could be to install an eco classroom facility.

An example of such a facility is found in Seattle: an eco classroom at the Cascade People’s Center ([http://cascadepeoplescenter.org/archive/htm/ecocascade.htm](http://cascadepeoplescenter.org/archive/htm/ecocascade.htm)).

**Strategy 3.5:** Promote the value of sustainability theory within the medical education campus.

- Ties sustainability to personal health issues (e.g. diabetes, obesity, heart disease, air quality concerns).
- Provides a unique characteristic that may attract potential educational institutions (e.g. St. Thomas University, Mayo Clinic).
Strengthen Healthy Connections

The FSAS development should strive to create a neighborhood where people both live and work, where use of transit, walking and bicycling is encouraged and accessible, where there is a range of housing choices, diverse businesses, a lively and inviting street life, and amenities to serve and attract residents, employees and visitors. These kinds of connections can be achieved by creating transportation options for transit dependent populations in Apple Valley, decreasing dependence on the single occupancy vehicle, and increasing non-motorized transportation on the site by focusing on pedestrian and bicycle friendly infrastructure.

Strong, healthy connections between people within the community can be fostered in this kind of built environment that includes employment, residences, and desired amenities. Connected communities are communities that create opportunities for interaction among residents, employees, and visitors as well as creating infrastructure that incentivizes healthy living and a transportation network that serves all members of the community.
Provide infrastructure to promote multi-modal transportation for all ages and abilities.

**Strategy 4.1:** Provide bike lanes and/or paths.

- Encourages non-motorized and multi-modal transportation.
- Encourages active and healthy lifestyles.

**Strategy 4.2:** Provide bicycle parking.

- Encourages utility bicycling, or bicycling for transportation. Connects the development to existing bicycle paths.
- Encourages recreational and leisure bicycle trips.
- Increases bike-friendliness of popular local destinations thereby increasing potential use between destinations.

**Strategy 4.3:** Limit vehicle speeds.

- Provides a safer environment for pedestrians and cyclists.
- Provides a safer and friendlier motorist environment (Slower speeds allow for more reaction time in crash prevention).
**Strategy 4.4:** Create sidewalks on both sides of the street that are connected within the development and are linked to external sidewalk and trail systems.

+ Allows for greater accessibility and a safer pedestrian environment.

**Strategy 4.5:** Comply with Americans with Disabilities Act (ADA) standards.

+ Provides greater access to people of all abilities.
+ Increases safety onsite.

**Strategy 4.6:** Create boulevards and green medians on the main roads.

+ Buffers pedestrians from vehicle traffic.
+ Creates pedestrian comfort when crossing wide roads, especially pedestrian refuge island medians.
+ Allows maximum vehicle capacity, as well as increase pedestrian access.
+ Creates opportunities to incorporate native plantings.
+ Mitigates crashes caused by vehicles making turning movements.

**Resource:** Complete Streets

National Complete Streets Coalition

“Complete Streets” guidelines touch on each aspect of the sustainability prism, economic, environmental, and social. Planning for “Complete Streets” “ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind - including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.” Using complete street ideas can help create connections throughout the development that will aid in healthy living and great access for all residents of Apple Valley.

Complete streets may consist of many different designs and a complete street design could be created to specifically address promotion of a multi-modal system in Apple Valley. This link to a host of Complete Streets facts analyzes the benefits for many aspects of a community from economics, to health and safety, as well as the benefits for children, the elderly, and those affected by disabilities.

[http://www.completestreets.org/complete-streets-fundamentals/factsheets/](http://www.completestreets.org/complete-streets-fundamentals/factsheets/)

[http://www.completestreets.org](http://www.completestreets.org)
Strategy 4.7: Plant a diverse array of shade trees along sidewalks.

- Provides a pleasurable pedestrian experience by decreasing pedestrian exposure to the elements.
- Helps to absorb pollutants to mitigate their effects on the environment and the water table.
- Creates a physical buffer between vehicle travel lanes and sidewalks for pedestrians.

Strategy 4.8: Provide benches through the sidewalk and trail network.

- Creates an inviting atmosphere for pedestrians.
- Creates opportunities for creative design.
- Encourages socialization and connections among residents.
- Provides a resting place for pedestrians of all abilities.
- Encourages more people to make active and healthy choices.

Strategy 4.9: Incorporate walk signals and signage at intersections.

- Creates a safe environment for pedestrians and drivers.
- Provides a visual cue that the development is pedestrian friendly.
Create connectivity throughout the development

**Strategy 5.1** Create a grid network of roads in the development.

- Creates an easily navigable and visitor-friendly environment, preventing dead-end streets.
- Ensures pedestrian and bicycle connectivity.
- Increases accessibility and connectivity for public safety vehicles.
- Reduces the amount of paved surfaces resulting in cost savings from less maintenance, less road salt, and less water runoff.
- Encourages the use of travel options that produce lower carbon emissions.

**Strategy 5.2:** Incorporate “Complete Streets” guidelines into the development site

- Bolsters economic growth and stability by providing accessible and efficient connections between residences, schools, parks, public transportation, offices, and retail destinations.
- Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project spares the expense of retrofits later.

**Resource: Community & Education**

Gardening Matters

Gardening Matters, “provides training and resources to support community gardeners in achieving community gardens that are successful and sustainable.” This is a useful resource to answer questions related to community gardening in Minnesota. Community gardening helps build communities and high use of the site from the residents of Apple Valley. Community gardening is also a way to provide educational opportunities for adults and youth, among numerous other benefits.

http://www.gardeningmatters.org/resources/multiple_benefits.pdf

“Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street.”

- National Complete Streets Coalition via http://www.completestreets.org
Access to transit: Develop a highly accessible transit system within the development.

**Strategy 6.1**: Incorporate flex-route buses into the transit programming.
- Allows access to transit for all ages and abilities.
- Reduces the need to make permanent routes until the demand has been established.
- Enhances transportation options.

**Strategy 6.2**: Incorporate secure and protected bicycle parking and storage near transit stations.
- Encourages healthy and active living.
- Reduces barriers to bicycling as a form of transportation.
- Gives a sense of security to bicyclist.
- Allows for increased multi-modal transportation.
**Strategy 6.3:** Develop high frequency transit to the development.

- Encourages people to use transit when accessing the development.
- Removes the necessity for additional vehicle traffic in the development.
- Reduces the need for parking, allowing for more permeable surface and resulting in less run off.
- Increases the square footage available to other uses (open space, retail, office).
- Creates a destination that people can access easily.

**Resource:** **Access to Transit**

Transit for Livable Communities:

“Transit for Livable Communities is a nonprofit organization working to reform Minnesota’s transportation system. Through advocacy, organizing, and research, we promote a balanced transportation system that encourages transit, walking, bicycling, and thoughtful development.” The website includes educational resources and design ideas to create desirable spaces. They would be a good resource for integrating bicycling into the development, which would help promote healthy living and access to multi modal transportation.

Specifically, TLC has researched the positive economic impact that access to transit may have on household budgets. Better access to transit could save Apple Valley residents money on transportation, leaving it to be spent elsewhere in the community.

http://www.tlcminnesota.org/pdf/DriventoSpend05.pdf
http://www.tlcminnesota.org/
Create a unique and identifiable development.

**Strategy 7.1:** Provide a space and educational opportunities for community gardening.

- Fosters innovation.
- Creates opportunities to learn about the value of local produce.
- Create intergenerational relationships within the community.
- Sense of community pride and ownership.
- Promotes healthy and active living.

**Strategy 7.2:** Create community-gathering spaces.

- Allows opportunities for community events like farmers markets, venue for local art, and other community building events.
- Increases social capital.

**Strategy 7.3:** Provide linear parks that connect the development to the existing parks and trail systems.

- Encourages pedestrian and bicycle transportation to the development.
- Encourages recreational walking and bicycling.

**Resource: Project for Public Spaces**

Project for Public Spaces “is a nonprofit planning; design and educational organization dedicated to helping people create and sustain public spaces that build stronger communities.” The website includes several approaches to create public spaces that “are local assets, spur rejuvenation and serve common needs.” The website includes photographs and design ideas of successful public spaces. Creating a destination and public amenity was a priority from the mini-charrette and this resource can help identify opportunities on the site to create public space. This site addresses creating a destination out of campuses, which is inclusive of medical campuses, and is flexible enough to be applied to a large mixed-business campuses as a destination as well.

Educate the public about the advantages of this sustainable development.

**Strategy 8.1:** Provide tours of natural landscapes.

+ Provides learning opportunities to members of the community.
+ Encourages residents to apply principles of sustainable landscapes to their own properties.
+ Makes the development a regional destination and promotes regional sustainability.

**Strategy 8.2:** Promote walking and bicycling throughout the site through guided tours.

+ Promotes healthy and active living opportunities.
+ Works to brand the community as a regional destination/attraction.

**Strategy 8.3:** Provide signage to highlight site history and sustainability practices.

+ Increases awareness of the sustainability efforts made at the development.
+ Raises the profile of the development in the region.
+ Highlights the history of gravel mining in Apple Valley.

**Resource:** **American Planning Association:**
**Great Public Spaces in America**

The APA has researched successful public/community spaces, these are featured on the website. The data includes specific examples and design guidelines for creating useable public spaces. These resources provide an opportunity to use the best of the best when creating public space in the development. Great places can be created in any environment: rural, urban, or suburban, and used for many different functions from recreation to education. These resources provide a sampling of great places, but also criteria and guidelines to help create great places in Apple Valley.


[http://www.planning.org/greatplaces/spaces/characteristics.htm](http://www.planning.org/greatplaces/spaces/characteristics.htm)
Create Complementary Places

The City of Apple Valley should seek opportunities on the FSAS to include a mix of land uses that create sustainable neighborhoods with connections to goods, services and jobs. The FSAS will encourage land uses that support a multi-modal, comprehensive, balanced transportation system. The built structures and community design will strive to maximize efficiency in every facet of the site’s development and operation. From the ground up, the site will be designed to consciously evaluate design decisions to create a new development that utilizes land and the built environment sustainability. We envision at least one building of some significance will be built to LEED standards as a way of helping to solidify the area’s commitment to sustainability and set an example for further development.

The site will accommodate a range of housing options and basic services, allowing many of the people who work at or near the site to live on the site. A portion of the site will be developed as housing with a mix of designs and price-points. The mixed-use development of the site will be desirable because it allows people to live near their job. In turn, this will diminish the need for the expansion of transportation infrastructure. Some basic retail and service businesses such as a dry-cleaner or coffee shop will address some of the day-to-day needs generated by residents and employees on the site.
Develop a diverse housing mix within the site.

**Strategy 9.1:** Encourage a mix of housing that satisfies the needs of households with varying income levels.

- Meets the housing needs of the workforce employed in Apple Valley’s retail sector.
- Provides housing options for the workforce anticipated to earn a living wage or greater through employment at the mixed-business campus.

**Resource: Mixed-Income Housing Resources**

Housing Policy has several discussions, resources, and financial tools to aid local municipalities on how to incorporating mixed-income housing into new developments. Mixed-income housing provides a housing model that caters to a spectrum of residents and potential residents of varying ages, family structure, or income. This kind of development may aid in housing a workforce with broad skill sets spanning retail, entry-level, and management level employment. As Apple Valley workforces is aging it is important to incorporate affordable homes and accessible neighborhoods for the aging population. The following link includes a tool kit for: providing safe affordable homes, incorporating access to transportation models, and support housing all geared to help older adults age in place.

http://www.housingpolicy.org/toolbox/older_adults.html

**Resource: Financing Mixed-Income Housing**

This resource offers opportunities to finance mixed-income housing on the site. By building mixed income housing you give the opportunity for people in entry-level jobs to live where they work. These tools and strategies may help attract developers by providing a guide to securing funding or incentives for developing mixed-income housing, which in turn may provide the benefits as described previously under “mixed-income housing resources.”

http://www.housingpolicy.org/toolbox/strategy/capitalize_on_market_activity
**Strategy 9.2:** Construct of a mix of housing types and densities to accommodate people of all ages and family structure (e.g. children, empty nesters, retirees, elderly).

- Allows development of single-family homes, townhomes, apartments, and senior housing to house the age-diverse residents of Apple Valley.
- Creates a diverse offering of housing allowing the development to attract a wider spectrum of potential residents with varying needs and preferences.

**Resource: Healthy Living**

Blue Cross Blue Shield, Prevention Minnesota
Website: There are several resources on this site that show how the built environment has a major impact on the health of citizens. By using these tools the development may be able to help address healthy living possibilities with the residents of Apple Valley. The encouragement of strategies that promote a walkable and bicycle friendly environment prompt people to get out and get moving whether for leisure or transportation. A built environment that encourages healthy choices by creating accessible destinations can lead to a healthier population of all ages and abilities. The site lists upcoming and past lectures from MN experts on community healthy living- this can be used as a resource to see up and coming events and news on planning for healthy communities.


**Resource: Partners for Livable Communities**

“Partners for Livable Communities is a national, nonprofit leadership organization working to improve the livability of communities by promoting quality of life, economic development, and social equity.” The organization defines livability as, “the sum of the factors that add up to a community’s quality of life—including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation possibilities.” The website has resources and best practices for creating and sustaining livable communities. One of the main objectives of the organization is to allow people to age in place, as Apple Valley has an aging population. Click on link below and see article The Maturing of America; Getting Communities on Track for an Aging Population- Getting Communities on Track for an Aging Population.

Create Complimentary Places

Strategy 10.1: Increase floor to area ratios to concentrate more intense development.

- Allows for increased contiguous open spaces and natural landscapes onsite.
- Allows for more on-site stormwater infiltration opportunities.
- Provides opportunities for increased transportation alternatives.

Strategy 10.2: Promote high density and mixed-use land uses to increase multi-modal transportation options, healthy living, and access to employment.

- Creates transportation choices and encourages use of transit and non-motorized modes.
- Increases accessibility to employment on the project site as well as surrounding areas.
- Encourages further on-site development that supports a multi-modal transportation system.

Resource: Housing, Transportation and Energy

This resource discusses the links between housing, transportation and energy and how when you plan for one of them it affects all three. This is very critical thinking on this site about how to incorporate transportation and energy use with housing to make the most sustainable site possible. Attention to the balance and connection between these three elements directly benefits the future employees and residents of this development. Energy dependence and consumption may be reduced through thoughtfully planning adjacent land uses to complement one another, through the strategic placement of land uses for residents to live, work, and play. As energy costs continue to rise all families will experience a burden of high costs of energy use in homes and daily travel costs. Click on the link below and see PDF, “A Heavy Load: The Combined Housing and Transportation Burdens of Working Families,” to address these issues.

http://www.nhc.org/index/chp-social-objectives#transit
Strategy 10.3: Intersperse parks and natural open space among other land uses to serve those who work, live, and play in the area.

- Complements the Apple Valley 2030 Comprehensive Plan goal to have all residential units no more than 1/2 mile from a park.
- Creates amenities for people of all ages and abilities.
- Encourages physical activity in turn creating a healthier population.

Resource: International Making Cities Livable

The website for organization, International Making Cities Livable connects planners, developers, and policy makers with publications about how to create, “compact, walkable, safe, mixed-use, neighborhoods, towns, and cities.” An increased quality of life may be fostered through creating places that accommodate residents and a workforce of all ages and abilities. This increase may also be realized through creating places that provide natural destinations and points of interest such as parks and open spaces that encourage healthy leisure activities. To read a specific article related to health and the built environment is click on the link below, then see, “Improving Equity and Health through The Built Environment.”


Resource: Workforce Housing

This discusses the link from housing to jobs and the critical connection they have with one another. On the FSAS it is crucial that we look at this connection and plan accordingly. Workforce housing developed to serve the needs of those who may find employment at the FSAS will allow for more residents and employees to age in place if they so choose. It also provides an opportunity for fostering a sense of pride in a community where residents are able to live, work, and play. Apple Valley has a jobs/housing spatial mismatch. For a great report on this topic click on after clicking on the link below, “How Transportation Reform Could Increase the Availability of Housing Affordable to Families with a Mix of Incomes Near Public Transit, Job Centers, and Other Essential Destinations.”

http://www.nhc.org/pdf/Surdna_Transportation_Reform.pdf
Enhance the Natural Landscape

The new FSAS development will protect and enhance the surrounding natural systems. The project will utilize low-impact stormwater design mechanisms. Implement park areas around stormwater features and create linear parks connected to the regional park and trail system. The site will incorporate new surface water features, utilize porous surfaces to reduce runoff and increase infiltration, and integrate native plants to filter stormwater. Design the open space, trails, and park system in a way that visually connects residents, workers, students, and visitors to the scenic resources of the region. Manage stormwater on-site to improve infiltration and decrease runoff to stormwater ponds, North Creek, Vermillion River, and local aquifers.

These strategies to enhance the natural landscapes on the FSAS can help to increase property values through aesthetic appeal, create community and local amenities where there were none, and assist with economically and environmentally sustainable stormwater management practices. Enhancing the natural landscapes on the site will enhance the site potential as a regional destination that attracts residents, visitors, and employers alike to the area.
Apple Valley Parks
2010 Apple Valley Capstone Group
Hubert H. Humphrey Institute

Enhance the Natural Landscape

![Map of Apple Valley Parks]

Source: MetroGIS Data Finder
Hms DataDek, Dakota County GIS

0 0.3 0.6 Miles

Study Area
Land Use
- Parks and Open Space
- Water/Pond

Chaparral Park
Palamino Park
Heritage Park
Briar Oaks Park

Findlay Park
Hagemeister Park

Cedar Knolls Park

Nordic Park
Greenleaf Park

Findlay Park
Hagemeister Park

Cedar Knolls Park

Galaxie Park

Eastview Athletic Complex

Cedar Lake Park

Eastview Highschool Complex

Allamagno Lake

Wildwood Park

Delaney Park

Evelyn Park

Keller Park

Lac Lavon

Long Lake Park

Dakota County Lebanon Hills

Huntington Park

Farquar Lake

Cobblestone Lake

Apple Valley East Park

Quarry Point Park
Use and reuse natural resources efficiently.

**Strategy 11.1: Recycle water onsite.**

- Minimizes water consumption onsite.
- Reduces cost of potable water bills.
- Minimizes cost of using potable water for garden and lawn watering.
- Reduces infrastructure costs.

**Resource: Water Recycling and Reuse**

Water recycling is the process of reusing treated wastewater for purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing and recharging groundwater resources for later use. Water reuse benefits include offsetting potable water and water conservation in addition to environmental benefits by providing additional water to the local watershed. Water reuse can also help decrease diversion of freshwater from sensitive ecosystems as well as decreasing discharge of wastewater into local water bodies.

The U.S. Environmental Protection Agency publishes guidelines for Water Reuse packet. The packet details best practices and gives examples of ways in which water can be reused. The resource can be found here: [http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf](http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf)


Enhance the Natural Landscape

**Strategy 11.2:** Create a stormwater management system on site utilizing low-impact development best practices.

+ Utilizes wastewater reuse technologies and infrastructure to serve non-potable commercial and residential water needs and outdoor water irrigation systems.
+ Reduces unwanted runoff and thus detrimental effects of contaminated runoff and warm water runoff into the Vermillion River, a federally managed trout stream.
+ Enhances groundwater and aquifer recharge rates by increasing infiltration rates and offsets potable water usage through stormwater applications such as irrigation.
+ Increases cost savings from managing stormwater onsite.

**Resource: Stormwater Management**

**Permeable Pavers & Porous Asphalt:** Mostly used for parking lots, sidewalks, and low-volume areas allow water to drain and infiltrate into the soils below the surface to reduce runoff and increase water recharge rates. Porous Asphalt has been used since the 1970s, for best practices see the Pennsylvania Stormwater Management Manual Porous pavement specifications:

[http://www.dep.state.pa.us/dep/subject/advcoun/stormwater/Manual_DraftJan05/Section06-StructuralBMPs-part1.pdf](http://www.dep.state.pa.us/dep/subject/advcoun/stormwater/Manual_DraftJan05/Section06-StructuralBMPs-part1.pdf)

**Green Roofs:** These vegetated roof covers are multi-beneficial structural components of a building that help mitigate runoff and filter to increase water quality during rainfall events as well as act as an insulator for the building roof. Green roofs are not only aesthetically pleasing, but they also have practical purposes. For more information, visit:


**Resource: Low Impact Development (LID)**

**Bioretention:** Bioretention is a technique to increase filtration onsite by utilizing soil and plants to remove pollutants including heavy metals, phosphorus, nitrogen, ammonia, and nitrates. The primary objective to bioretention techniques is to minimize, detain and retain runoff so as to mimic the site’s predevelopment hydrologic functions.

Permeable pavers and porous asphalt are increasingly being used to help protect key water supplies. Above, an alley in Chicago is paved using permeable pavers.
Incorporate natural amenities

**Strategy 12.1:** Integrate native plant habitat.

- Creates soil stabilization on-site by utilizing erosion controls vegetation stabilization.
- Reduces water usage for irrigation by utilizing native species.
- Increases infiltration rates by creating habitats devoid of compacted soil.
- Maximizes management of stormwater onsite thus decreasing stormwater runoff during a rain event.
- Reduces lawn care costs (i.e. pesticides, herbicides, mowing, etc.).
- Planting trees can reduce energy costs by creating shade in the summer.

**Resource:** Native Plants and Landscaping

The Minnesota Department of Natural Resources has an excellent guide and supplier list for native plants for landscaping and restoration in Minnesota.

[http://www.dnr.state.mn.us/gardens/nativeplants/index.html](http://www.dnr.state.mn.us/gardens/nativeplants/index.html)
Enhance the Natural Landscape

Strategy 12.2: Highlight scenic resources within the site.

- Connects community with Apple Valley and creates a sense of place.
- Increases land values.
- Creates amenities and destinations within the site.

Strategy 12.3: Develop linear and traditional parks and open spaces within the development to connect the site to regional amenities.

- Enhances access to parks.
- Creates parks that are part of the transportation network.
- Increases land values.
- Minimizes impervious surfaces while also decreasing runoff.
- Creates alternative transportation corridors and connects the site to the region.

Resource: Stormwater management

Linear parks are parks that are longer than they are wide, they include vegetative buffers that surround the trail, create corridors for animal movement, and usually connect to other regional parks, neighborhoods, workplaces, schools, shopping centers and other green space resources. Linear Parks / Greenways can help protect or enhance natural, historic and cultural resources.


Greenway District Model Ordinance: http://www.co.jackson.or.us/Files/Chapter_255.pdf


The Greenway Collaborative: http://www.greenwaycollab.com/

To better conceptualize how ideas of sustainability can be realized upon the FSAS, a conceptual land use plan is shown on the following pages that illustrates potential configurations of land uses, amenities, infrastructure and built environment. Such a scenario capitalizes upon the existing features and context surrounding the development area.

An important component in the realization of a fully developed sustainable site is the proper implementation of phases of development. It would be unrealistic to see such an area be fully developed over a short period of time. Development that is carefully planned, strategically arranged, and well timed is the foundation of a successful and sustainable development.
Typically, long-term costs of development can be greatly reduced by early and strategic placement of adequate infrastructure throughout the entire development area. The timely investment in complete streets, district energy conveyance systems and greenways – prior to most development projects in the area - can attract businesses through the assurance of adequate services to their operations, and allow for better management of the type of growth desired for the site.

Construction of the built environment can proceed in segmented phases that respond appropriately to market conditions, employment and housing needs, and variable energy costs. This flexible approach to development will lessen the strain and pressure for the development to gain property values at artificially accelerated rates, and will enjoy longer and more stable growth.
A renewable, low-carbon district energy source will provide a sustainable, cost-competitive source of energy that brands and differentiates the site from many of its peers in the marketplace.

Provide a space and educational opportunities for community gardening.

Planning for Complete Streets, “ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind—including bicyclists, public transportation vehicles, and pedestrians of all ages and abilities.”

The open space, trails, and park system will be designed in a way that visually connects residents, workers, students, and visitors to the scenic resources of the region. We envision four gateway’s to the site located on the linear trails that introduce visitors to the site.

Medium to high density residential facilities increase multi-modal transportation options, healthy living, and access to employment within the site.
Appendix

Apple Valley Capstone Group Mini-Charrette

On April 21, 2010, the Apple Valley Capstone Group organized and led a mini-charrette on the FSAS sustainability master plan. This mini-charrette took place at Apple Valley City Hall. The Apple Valley Capstone Group designed the mini-charrette to solicit feedback from residents, planners, and the planning commission as to what opportunities for sustainable development they envisioned for the FSAS.

The Apple Valley Capstone Group gave a short presentation about sustainability, generally, and some specific ideas for the FSAS. Once these ideas were presented, the discussion was opened up to the participants about what opportunities they saw on the site to incorporate sustainability. The large group, approximately 15 people, came up with over 25 ideas. These ideas ranged from planting rain gardens to help with water filtration to looking into alternative energy use on the site for powering the homes and business located there.
Once these ideas had been identified, the participants were asked to prioritize which ideas they felt were most important on the site as opportunities for sustainability. The participants prioritized two main sustainability concepts, one relating to jobs and diversity of employment and the other related to the natural amenities the site would offer.

Based on the mini-charrette responses, head of household jobs and more variety in employment opportunities is critically important on this site. Currently, there are a high number of retail jobs in the area and the sense from the meeting was that it was important to increase diversity of job opportunities. This is critical in the framework of sustainability because if the job opportunities are more diverse it allows for more mobility within Apple Valley of residents to employment close to home. There are many advantages to living near one’s workplace and this site would be an ideal opportunity to create these workplaces for the residents of Apple Valley.

The second most critical opportunity on this site for sustainability, identified at the mini-charrette, was the opportunity to incorporate green space, water features, water remediation, and creating a destination. These ideas allow for sustainability throughout the implementation. Many of these concepts fit directly with the “actions” presented in the Enhance Natural Landscapes section.

The following is an example of some of the other sustainability opportunities identified by the mini-charrette participants.

Rain gardens, using a diversity of materials to limit impervious surface in the development, developing a market for clean technology or biomedical facilities, improved transportation access to the site, smaller roadway widths, using alternative energy sources, and creating trail connectivity with other parts of the city.

The mini-charrette was a great success and provided an opportunity to collect ideas that residents and employees of Apple Valley had for sustainability on the site.
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