SPANISH FORK CITY

PLANNING COMMISSION AGENDA

WEDNESDAY, SEPTEMBER 7, 2005

Planning Commissioners

Paul Bradford
Chairman

Del Robins
Asst. Chairman

David Lewis

Ted Scott

Sherman Huff

Sharon Miya

6:00 P.M. Work Session

General Plan Discussion

1. **Review text changes**
2. **Review all maps**
3. **Any other changes**

Planning Commissioners if you are unable to attend a meeting please let us know ASAP. Thanks

The public is invited to participate in all Planning Commission Meetings. If you need special accommodations to participate in the meeting, please contact the City Manager's Office at (801) 798-5000.

Spanish Fork City General Plan

The Home of Pride and Progress

Table of Contents

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I. Introduction

The Spanish Fork General Plan is the major policy document that guides growth and development within and adjacent to Spanish Fork. This Plan will create a vision or guide for the City for the next 20 years.

The community actively participated in its first major development by identifying key issues facing the city through a community survey in 1995. The City's Planning Commission then conducted numerous workshops and public meetings in late 1995 and early 1996 in an effort to gain maximum public input. The Commission conducted a public hearing on July 16, 1996, and the City Council conducted a second public hearing on September 4, 1996. Both of these hearings were well attended by the community, with 80 to 100 citizens present at each hearing. As a result of these meetings and hearings, the 1996 final document closely reflects the values of the community toward growth and development.

In the year 2002, the City Council and Planning Commission reviewed the General Plan and made modifications because of the large amount of growth (15,000 to 23,000) that has occurred after the Plan was adopted in 1996.

In 2005, the City Council recommended that the General Plan be reviewed and updated especially the Leland and in the Riverbottoms areas of the community. Goals and Policies were reviewed and updated reflecting the changes in opinions and views of the residents.

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The City's position on development issues is best represented by a thorough review of the goals and policies in conjunction with the land use map. They are designed to complement each other and jointly guide decisions made by the City.

No plan can be so precise as to anticipate all future changes in a community. It is important that this plan is reviewed and updated to ensure that it is kept up to date with changing conditions and values in the community.

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II. Background/ Existing Conditions

A. History

The Franciscan Friars named Silvestre Valez de Escalante and Francisco Atanasio de Dominguez were some of the first explorers to pass through the Spanish Fork area. The priests were in quest of a direct route from Santa Fe, New Mexico, to Monterey, California. After traveling down Spanish Fork Canyon they camped somewhere near the present day city limits on September 23, 1776. Many years later the name "Spanish Fork" appeared on John C. Fremont's map of the area published in 1845. This was two years before the Mormons settled in Utah, and five years before there were any settlers in Palmyra. In all likelihood, the name "Spanish Fork" was derived from the fact that the route of the Taos trappers during the early part of the 1800's followed the canyon and the river.

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The indigenous population of Spanish Fork was composed of members of the Ute Indian tribe. They had no permanent villages due to their nomadic nature. Because these Indians ate so many fish, they were also known as the "water Indians".

Enoch Reece settled the first home in the Spanish Fork area in 1850; he laid claim to 400 acres of land approximately two miles west of Spanish Fork. Soon after, Charles Ferguson and George Sevey arrived in the area with 200 head of cattle belonging to Mr. Reece, and Spanish Fork had its first business venture.

In the winter of 1850-51 a few families settled along the Spanish Fork River. By the end of 1852 the population along the river had grown to over 100 families. In 1854 a fort was built in Spanish Fork to meet the needs of existing settlers.

In January of 1855 the area of Spanish fork was incorporated as a city. Soon after incorporation, the first Icelandic immigrants settled between 1855 and 1860. These Icelandic pioneers established the first permanent Icelandic settlement in the United States.

By 1860, the population had grown to 1,069. Spanish Fork inhabitants were of Irish, English, Scottish, Welsh, and Scandinavian descent. In ten years the population had reached 1,450. The first commercial industry was a sawmill that began operation in 1858. One year later the first flourmill opened its doors for business. The business group known as the Spanish Fork Mercantile was opened on February 11, 1883; the association was similar in function to the modern day Chamber of Commerce.

Spanish Fork City erected its first schoolhouse in 1862, a one-room structure complete with a shingle roof. In 1910 the Thurber School was built. The present day City government offices are housed in the renovated school.

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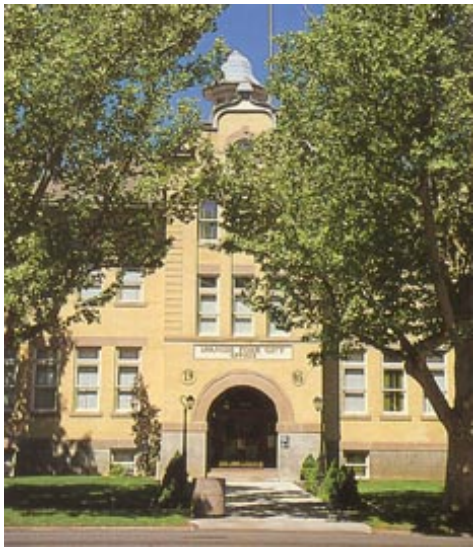
Spanish Fork built a light and power system in 1909, which was completed and connected with the government power plant in 1910. The development of the Strawberry Valley Reclamation Project in 1919 has had a significant impact on the City and surrounding area. It allowed for cultivation of thousands of acres, and also provided the City with a stable supply of water.

The first annual Utah County Livestock Show was held on the City Square in April of 1925. This show has since become the Utah Junior Livestock Show. Fans, buyers, and exhibitors come from all areas of the state.



Spanish Fork is a community that strives to maintain a high quality of life, and provides an outstanding environment for working, recreating, and enjoying life. City government is the Council-Manager form consisting of a part-time mayor and five part-time city council members, along with an appointed full-time city manager who administers the operation of the City and its employees.

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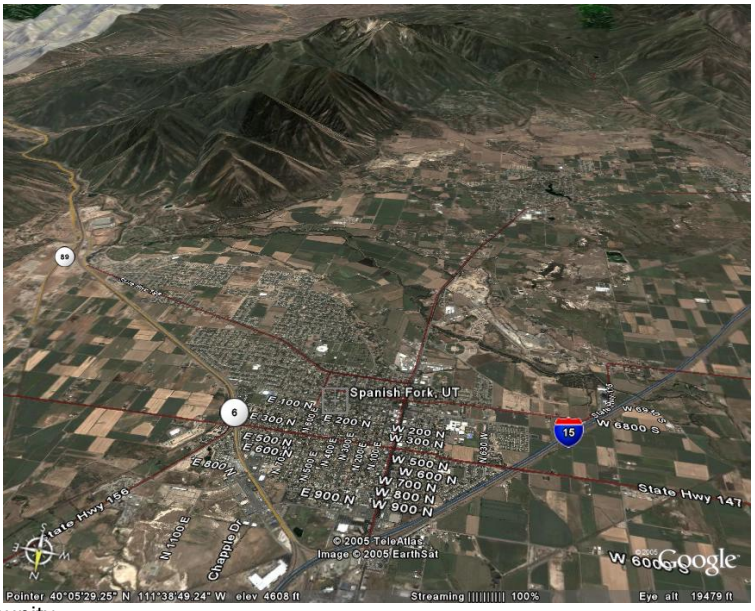
B. Physical Conditions

1. Physical Setting

Spanish Fork is situated in central Utah, and lies in the south central portion of Utah County. The land slopes gently upward from Utah Lake to the northwest to the southerly end of the Wasatch Mountains in the southeast. Elevations range from about 4500 feet in the northwest to 5200 feet in the far southeast foothills. A slightly steeper rise interrupts this topography in the southeast portion of the grid-patterned streets of the City. The rise then flattens out forming a gentle sloping bench area stretching to the foothills in the east. From the plateau of the east bench the topography drops rather steeply down approximately 60 feet to the Spanish Fork River floodplain below at the southerly edge of the community.



2. Climate

The climate of Spanish Fork is characterized by four distinct seasons. Summer is warm to hot with little moisture. Fall brings pleasant temperatures and increasing cloudiness and precipitation from Pacific storms. Winters are fairly cold and snowy, with occasional foggy periods caused by high-pressure inversions. Spring brings warmer temperatures, and is usually the wettest season. It is the season when flooding is most likely to occur, especially if the winter snowpack in the mountains is heavy and warm and/or wet conditions occur. Canyon breezes blow from the southeast on many nights and mornings throughout the year, helping to keep the air clear and pollution free.

The following table summarizes the average weather records at the Spanish Fork Power House adjacent to the Golf Course by Western Regional Climate Center for the 72-year period from 1928-2000 www.wrcc.dri.edu/summary/climsmut.html.

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Average Weather Records for Spanish Fork (Jan 1, 1928 to December 31, 2004)				
Month	Average Max. Temperature (F)	Average Min. Temperature (F)	Average Total Precipitation (in)	Average Total Snowfall (in)
January	37.5	19.8	1.72	14.4
February	43.7	23.9	1.82	10.0
March	53.5	30.1	2.09	7.2
April	63.9	37.1	2.11	2.6
May	74.1	44.9	1.78	0.2
June	84.9	52.0	1.10	0.0
July	93.1	59.5	.78	0.0
August	90.5	58.2	.99	0.0
September	81.1	49.6	1.19	0.0
October	67.3	40.2	1.79	0.5
November	50.1	29.6	1.89	6.2
December	39.6	22.2	1.80	10.2
Annual	65.0	38.9	19.05	51.1

3. Soils

Spanish Fork contains a wide range of soil types. These varied soils are suitable for cultivation, construction, pasture, and wildlife habitat. Most soils are suitable for development. Medium or high compressibility soils may require additional attention prior to construction.

4. Flood Hazard

The 100-year floodplain of Spanish Fork River is considered a major floodplain in Utah County. The 100-year floodplain is that area which would be inundated by water in the event of a combination of climatological factors that is likely to occur once every 100 years (one percent likelihood of occurrence in any given year) (see the Floodplain Map).

5. Earthquake Hazard

The Wasatch fault is an active fault that extends almost the entire length of the state. The center of Spanish Fork City is located approximately 3½ miles west of the fault line, which traverses the Utah Valley along the base of the Wasatch Mountains. A severe earthquake could cripple Spanish Fork because major power and water lines cross this fault line (see the Earthquake Map).

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C. Population

The population of Spanish Fork has historically increased at a fairly modest rate and has tended to lag beyond the growth rate for Utah County as a whole. Prior to the current building boom, the 1970's represented Spanish Fork's largest growth period, with an increase in population from 7,284 in 1970 to 9,825 in 1980, an increase of 25%. According to the 2000 U. S. Census there was an increase of 8,974 people or 44% from 1990 (see chart). The City's current population based on the number of utility connections is approximately 26,500. The City's Planning Department has projected that the population will increase to 32,512 by 2010 and will continue to increase to approximately 49,063 people by the year 2030.

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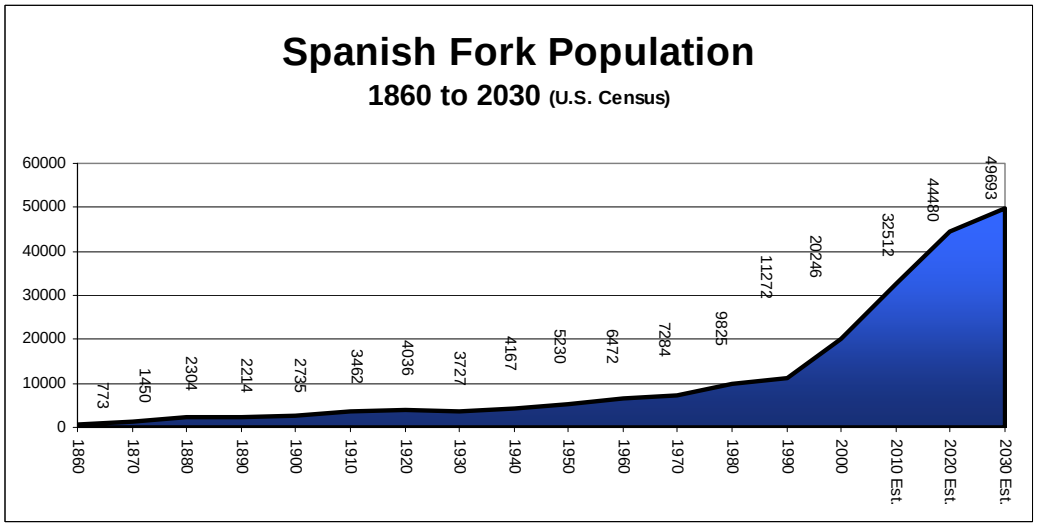

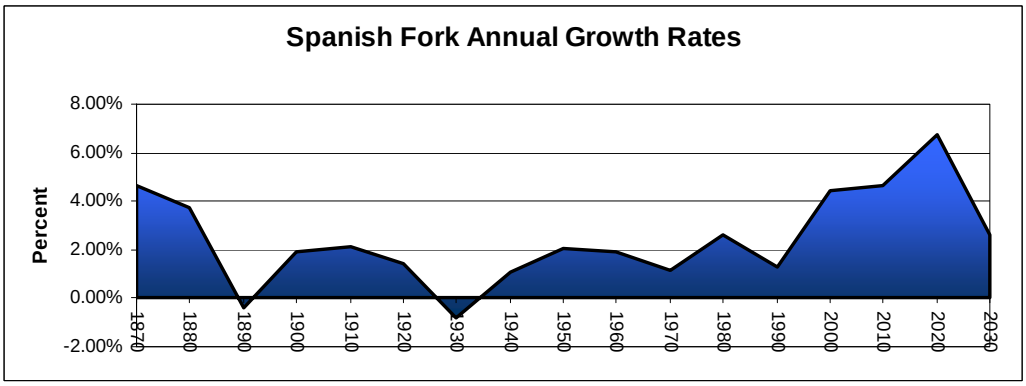

Spanish Fork, like most communities in Utah, has a relatively young population because of the large average family size. Average family size in 1990 was 3.89 persons, and average household size was 3.45, whereas in 2000 the family size was 3.91 and the household size of 3.59. The United States as a whole averages about 3.2 persons per family and 2.7 per household.

The median age in Spanish Fork in 1990 and 2000 was about 24, while the United States averaged is 32 years old. The 2000 U. S. Census indicated that Spanish Fork City is actually getting

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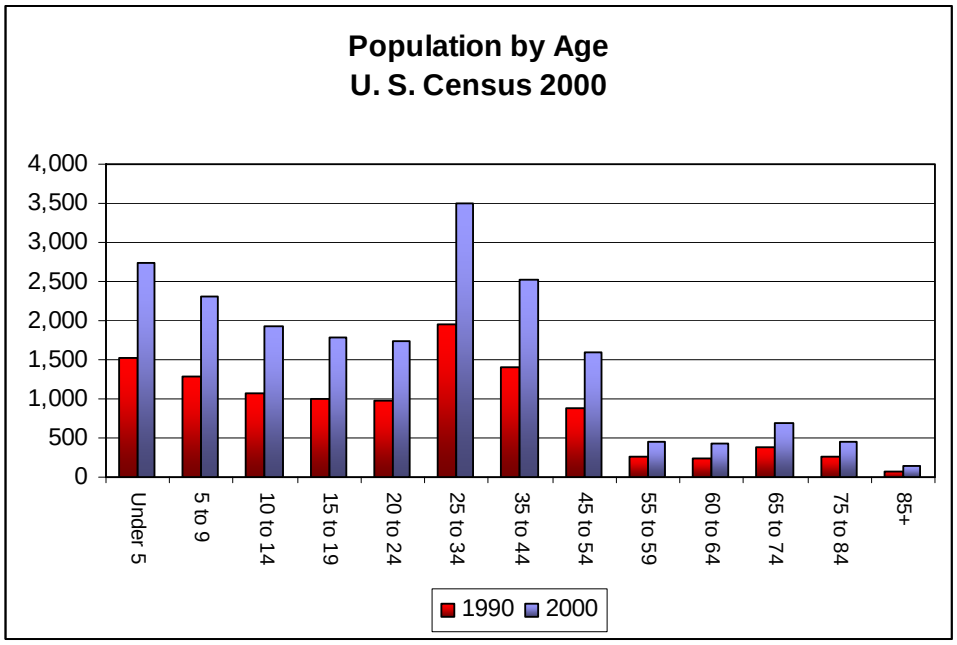
younger. There was 2% increase from the 1990 census in the 20-24, 25-34, and the under 5 age categories. In the 65-74-age category there was a 2% decrease and a 1% decrease in the 75-84 category (see chart).



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III. Community Facilities and Services Plan

The Capital Facilities and Services Plan is that portion of the General Plan that determines what public facility and utility infrastructure projects will need to be built and/or significant maintenance performed in the next several years in order to maintain an acceptable level of service. A background analysis of the public facilities, infrastructure and services are described, together with deficiencies in the systems and the recommended improvements.

The construction and installation of the improvements will be influenced and affected by the amount of available funds. The actual construction of these improvements will be determined on a year-to-year basis as part of the city budget process.

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A. Water System

1. History and Background:

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Spanish Fork City's water system was first developed near the turn of the century. Malcolm Springs, then called Evans Spring, was the first piped culinary source. The original pipelines were mostly wood. Most of these pipes have since been replaced with cast iron, ductile iron and plastic. The City's first well was installed in the 1930's. Cold Springs was developed around 1953 with a flow of 900 gallons per minute (g.p.m.). A new 30-inch transmission line from Cold Springs to the city was installed in 1985, which increased the flow to an average of 2420 g.p.m. and a pump station was constructed in 1992 to pump water to a new 3 million gallon tank in Sterling Hollow. Malcolm Springs was re-developed with a new collection system and transmission line with a booster pump station in 1992. These improvements increased the production of Malcolm Springs from 900 g.p.m. to 3400 g.p.m. The first water storage tank had a capacity of 750,000 gallons and was built in the 1930's. This tank has since been abandoned as a culinary tank because of inadequate elevation for providing sufficient pressure. A one million gallon tank was added in the 1960's, a two million gallon tank was built in the 1970's and a three million gallon tank was built in 1992. Seven different wells have been used over time. Presently two wells can be used to supplement the spring sources. The Memorial well is presently used for irrigation but can be re-connected to the culinary in a few hours. This source now produces 1800 g.p.m. In 1995 a new telemetry system was installed to computerize the water system and allow instantaneous observation and control of the system.

2. Present System

The Spanish Fork Municipal Water System serves the entire City plus some additional homes on the periphery of the City. In all, the City supplies water to approximately 7350 residences and 530 businesses. The Master Water Plan Map shows the general service area of Spanish Fork water by indicating the location of the peripheral water lines of the system.

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a) Transmission and Distribution System:

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In 1998 a transmission line from the Crab Creek Springs was installed to deliver water to the Cold Springs Reservoir. This line can deliver approximately 2100 gallons per minute from two springs in the Crab creek Drainage. The drought over the past few years has caused the production from the Crab Creek Springs to drop to about 1000 gpm. Cold Springs also produces water into this reservoir, which then delivers water to the city through a 30-inch line that runs along Highway 6. This line reduces to a 24-inch diameter pipe at approximately 2000 East and continues along Highway 6 to 400 North.

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The City has three pressure zones plus the Oaks system, which is generally a system on its own. The Upper East Bench Pressure Zone is shown on Map W-1, and includes the entire east bench east of approximately 2300 East. The Lower East Bench Pressure Zone includes the east bench from approximately 600 East to 2300 East. The Cold Springs, Crab Creek Springs and the Cold Springs Reservoir service these zones. The Lower Pressure Zone serves the area west of 600 East and the north industrial area. It is served by Malcolm Springs and the Malcolm Springs reservoirs. In 2005 a new pressure zone will be created north of I-15 in the industrial area. The distribution lines range from 3 inch to 18-inch diameter. The system includes cast iron pipe, ductile iron pipe, AC pipe, and PVC pipe. There are approximately 1000 fire hydrants and over 2500 valves on the system.

The original "block" area of town is generally served by 3-inch to 6-inch diameter cast iron pipe. It is old and undersized to meet present flow requirements especially fire flows. The soils in the northern section of the City are hot clays and have caused electrolysis deterioration of the cast iron, resulting in failure of the pipe in some instances. Most of this pipe was installed in the 1930's or 1940's. Some of these lines have been replaced and the remainder needs replacement as soon as possible. To date we have replaced 35 blocks with 239 blocks of 4" and 6" lines to be replaced and an additional 26 blocks of 8" and 12" lines to be replaced. It is estimated that $13.8 million is needed to replace the remaining old blocks.

The Oaks area, including Strawberry Water Users, some homes along Power House Road, Spanish Oaks Golf Course and Canyon View Park; are served by a pump station fed by a line from the Malcolm Springs Reservoir. The water is pumped into a 250,000-gallon tank above the gun club.

The new subdivisions developed since 1976 have installed a minimum size of 6-inch ductile iron or in more recent years, PVC pipe. The sizing used in these areas was based on a computer model developed at that time. The development of longer blocks thus making loops larger in recent years and the increase in home size and fire flow demands have caused a change in the required minimum pipe sizes from 6-inch to 8-inch.

In the early 1970's, a line was extended along south Main Street and Arrowhead Trail to what was then Fritzi of Utah Apparel Manufacturing. The need for fire protection was the motivation for this project. Intermountain Farmers and H. E. Davis and Sons later extended portions of this

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line along Arrowhead Trail. In 1993, this line was extended through several areas of the Leland area including Arrowhead Trail, Mill Road and 900 South Street, where residents were having problems with their wells. Presently this line is a dead end. It is planned that this line will loop going north in front of the old Sugar Factory to 100 South and then run east to connect to a 12-inch diameter pipe at 100 South at about 630 West. The development west of the Sports Park has provided a second water connection to the Leland area at Del Monte Road and 900 South.

Four lines presently serve the North Industrial area from the south: a 12-inch line in Main Street, an 8-inch line in 300 West, a 4-inch line in 200 East, and a 12-inch line in Williams Lane. The 4-inch line in 200 East is inadequate and will be replaced with a 12-inch pipe at some time in the future. In 2005 there will be pressure regulators installed on each of these lines to reduce the system pressure in the industrial area north of I-15.

b) Existing Water Sources:

Although the City owns rights from several sources, only a few of these are now used for culinary purposes. In addition to owning certificated rights from wells amounting to 8102 acre feet of usable water rights (see note 1, bottom of TABLE W-1), the City owns rights in the Spanish Fork River in the form of decreed rights in Malcolm Springs and the Mill Race Canal, stock in the West Field and East Bench Irrigation Companies and shares in the Strawberry Reservoir. Recently the city has been involved in the purchase of water through the South Utah Valley Municipal Water Association. The amounts of each of these rights is shown on the following table:

Table W-1 – Existing Property Rights

SOURCE	*AVG. YIELD (acre-feet)*	*DRY YIELD (acre-feet)*	*POPULATION*	*CUMULATIVE*
Mill Race *(1)*	706	475	2,397	2,397
Strawberry *(2)*	1,961	1,690	7,409	9,806
East Bench *(3)*	320	272	1,201	11,008
West Field *(3)*	211	153	739	11,746
Malcolm Springs *(1)*	1,906	1,591	7,097	18,843
Wells *(4)*	14,263	***(note 1)*** 11,386	28,948	47,791
SUVMWA (CUP)	445	445	1,806	49,597
SUVMWA (Jordan)	112	112	455	50,051
TOTAL	19,367	4,182	50,051	50,051

(1) Court decree
(2)Strawberry Valley Project water
(3) Irrigation Company rights in Spanish Fork River
(4) Underground water filings including Spring Creek.
NOTE 1: This usable quantity assumes 50% use during October, November, December, January, February, March and April; and 100% use during May, June, July, August, and September.

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In the 2070 Water Demand and Supply Analysis for South Utah County and East Juab County, Utah completed by Brown and Caldwell in September 1999 stated that there is approximately 500 acre feet of East Bench Irrigation water, 100 acre feet of West Field Irrigation water and 750 acre feet of Strawberry water within the Spanish Fork growth area that could be converted to municipal and industrial. This additional water would serve about another 4,650 people. The 442-acre feet of CUP water presently being contracted for through the Central Utah Water Conservancy District would amount to about 1540 people.

Table W-2 shows the principle sources of culinary water, their flow capacity and the use from that source in 2000 through 2004. As noted earlier, prior to 1990, Malcolm Springs could deliver only 900 g.p.m. The City contracted to re-develop Malcolm Springs and increased the flow to approximately 4500 g.p.m. A pump station was installed at Malcolm Springs to pump water to the 1 million and 2 million gallon water tanks located by the intersection of US 6 and Power House Road. During the same period of time the City built a new 3 million gallon water tank in Sterling Hollow and a pump station at Cold Springs to increase the water pressure and provide more storage for the upper pressure zone (the east bench) of the City. In 1998 the Crab Creek transmission line was installed and can deliver about 2100 gallons per minute to the city.

TABLE W-2
CULINARY WATER USE
EXISTING CULINARY WATER SOURCES

SOURCE	*CAP.(gpd)*	*CAP.(cfs)*	*2000 USE (mg)*	*2001 USE (mg)*	*2002 USE (mg)*	*2003 USE (mg)*	*2004 USE (mg)*
Cold Springs	3,554,496	5.5	1385.09	1340.78	1537.97	1051.0	663.7
Malcolm Springs	4,847,040	7.5	136.99	280.73	1941.41	1137.0	1368.9
Cem. Well #1	1,421,798	2.2	241.47	86.65	423.62	14.0	0.0
Ed Clark Well	180,000	0.3	21.47	15.28	12.78	0.0	0.0
Crab Creek Springs	1,411,200	2.2	732.54	644.80	1692.99	1475.0	1532.1
TOTAL	**11,414,534**	**17.7**	**1948.12**	**1969.49**	**6229.23**	**3677.0**	**3564.7**

The present system can deliver 17.7 cfs or 7930 g.p.m. maximum flow.

c) Current Water Use:

A nationally used text book The Practice of Local Government Planning, 2nd edition indicates that our total water need may be as much as 100 to 125 gallons per capita per day (gpcpd). Spanish Fork residents use within this range (about 115 gpcpd) during the winter months and indoor use during the summer months. However, because of the semi-arid climate and the need to water lawns and gardens, water use during the summer peaks at about 275 gpcpd, which is thereabout two and a half times more. The average annual use is 0.85 acre-feet per household per year or an annual average use of 223 gallons per person per day.

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Residential use accounts for approximately 83.11% of the total water delivered to the City. Commercial users consume 16.89%. The following Table W-3 shows culinary water usage by category during the last 5 years.

TABLE W-3
CULINARY WATER USED BY TYPE OF USER

YEAR	DOMESTIC USE	COMMERCIAL USE	INDUSTRIAL USE	MISC. USE	TOTAL
2000	1,271,988,000	279,595,680	78,860,320	149,315,000	1,779,759,000
2001	1,181,329,000	265,584,540	74,908,460	200,293,447	1,772,115,447
2002	1,274,256,000	123,204,724	75,373,405	263,359,701	1,736,193,831
2003	656,523,000	86,736,681	53,063,217	211,304,388	1,007,627,286
2004	539,613,000	75,293,000	46,085,000	173,986,712	829,674,009
AVG	984,741,800	166,082,925	65,658,080	199,651,850	1,425,073,915
PERCENT	69.10%	11.65%	4.61%	14.01%	
PERCENT BY CAT.(1)	83.11%	16.89%			

(1) Percent by Cat. considers residential and misc. use as one category. Assuming parks, cemetery, ballparks, schools, etc. are part of the overall residential use, and commercial and industrial use as one category.
NOTE: All assumptions for future water needs will be based on the 83.11% residential use and 16.89% for commercial use.

The Utah State Department of Drinking Water requires that the City have a developed source capacity of 800 gallons per day per connection for indoor use. As shown on Table W-5 the existing average use is considerably less than that amount. However, the State has required some cities to stop issuing building permits if they do not meet this standard. With 7350 residential connections in Spanish Fork this requirement amounts to 5,880,000 gallons per day for residential use. There is an additional requirement of 1,195,000 gallons per day for commercial and industrial use for a total water requirement of 7,075,000 gallons per day. Presently, Spanish Fork City culinary sources can produce 11,414,534 gallons per day as shown in Table W-2. With the current sources of culinary water Spanish Fork City can accommodate approximately 4500 additional residential connections or a population of about 42,500 and a proportionate amount of commercial and industrial development. The use of these sources is dependent on the city's ability to replace the spring water in the river. With the low flows in the river and the reduced amounts of water available from Irrigation Co. stock, the replacement of spring diversion to the river needs some re-evaluation. However, the well sources shown on Table W-2 will be considered as backup sources in case of a problem with the pipeline down the canyon. In the event of an earthquake or some other development that would prevent the pipeline from the springs from being used for a period of time, the wells would supply some backup for fire protection and minor culinary use. There would not be sufficient water for irrigation or other non-essential use. Considering the spring sources only and only for indoors use, a population of 42,500 could be served. This assumes that the ratio of residential to commercial-industrial is considered constant and that nearly all outdoor use is provided through the Pressure Irrigation system.

Another guideline used by the state is that the total developed source capacity shall equal or exceed the peak daily demand of the system. The peak day for the culinary water system in 2004 occurred on July 16, 2004, where 5,030,298 gallons or 3493 gallons per minute were used. This is 56 percent below (3493/7930 = .44) the maximum capacity of the principle culinary water sources presently connected to the City system. Ultimate growth demands will depend on

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whether new sources are being developed and how much secondary irrigation system is installed.

With the completion of the city wide pressurized irrigation system in 2002, the storage requirement for the culinary system dropped to 400 gallons per equivalent residential connection (ERC) plus fire suppression and emergency storage. There will still be some landscape irrigation water provided thru the culinary water system that will need to be added to the total storage requirement. The required storage with the pressurized irrigation system in use is: 400 gallons per ERC (7350 residential units and 2050 ERC's for the commercial and industrial units), or 3,760,000 gallons. The fire suppression requirement of 1500 g.p.m. for 3 hours equals 270,000 gallons and the emergency storage of 1,000,000 gallons and landscape irrigation storage of 625,000 gallons (250 acres @ 2500 gallons per acre). Therefore, the total storage required at the present time with the irrigation system operational equals 5,655,000 gallons. Assuming that new connections will require the 400 gallons of storage per ERC plus additional emergency and fire storage, the city can add approximately 1,000 ERC's with the existing storage facilities. A new 3 million gallon reservoir is planned for 2007. This will add storage for approximately 5000 ERC's.

TABLE W-4
WATER STORAGE CAPACITY

RESERVOIR	*TYPE*	*CAPACITY (gallons)*
Cold Springs	Concrete	3,000,000
Malcolm Springs #1	Concrete	2,000,000
Malcolm Springs #2	Concrete	1,000,000
Oaks	Concrete	250,000
TOTAL		6,250,000

Yet another state requirement is that the water distribution system must maintain a minimum working pressure under peak instantaneous flow conditions of 20 pounds per square inch (psi). The present level of service of the City tries to maintain is a minimum pressure of 40 psi during peak flow conditions but under normal conditions maintains a pressure of between 55 and 80 psi, with static pressures from 70 to 130 psi.

3. Projected Needs and Recommendations

At present the City culinary water supply serves approximately 26,000 people. The current system can provide culinary water for about 42,500 people. Soon a new water tank will have to be constructed, planned in 2007. The City should continue to acquire water rights and upgrade the system to provide for future needs. Some specific items or needs should include: acquire a generator to run some of the wells within the central town in case of a break in the lines out of the canyon from either natural disaster or other potential problems, additional sources for the pressurized irrigation system to allow the use of two new wells currently used for that system to be used for the culinary system. At present all of the City's main storage tanks are located away from the City on the far side of an earthquake fault line. If an earthquake occurred that damaged those lines the City would be immediately without water. It is the plan of the City that the wells that are presently in place would be used as back up in case of an interruption of service down the canyon and for secondary irrigation. The capacity of these wells will not be used to calculate future growth capacity of the drinking water system.

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a) Water Rights

The City presently has water rights to accommodate a population of 43,246 people with proportionate amounts of parks, schools, commercial and industrial use. However, 53% of these rights are from wells. Outdoor use amounts to about 39% of total use. The springs used by Spanish Fork City are considered part of the flow of the Spanish Fork River. Whatever water is diverted from the springs must be replaced in the river to not adversely effect downstream users.

If a population of 61,000 were the design standard, a total of 16,846 acre-feet of water rights would be required. The City would need an additional 929 acre-feet of water rights. There are 850 acre-feet of water in the East Bench Irrigation Company and Westfield Irrigation Company service areas that would probably become developed in Spanish Fork and the water rights turned over to the city. The City should take every effort to insure this happens.

The City is a member of the South Utah Valley Municipal Water Association. This group comprises the ten cities in south Utah County. This group has contracted for 1590 acre feet of CUP water and recently completed a study for the water demands for south Utah Valley to the year 2070. Based on this study the SUVMWA group will request an additional 11,200 acre feet of CUP water to meet the 2070 year demands. This assumes that Strawberry water can be converted to municipal and industrial use over the next 50 years.

The Crab Creek water line is now complete and in service. This water source and pipeline has made it possible to serve the winter needs of the entire city without pumping water. The flow from the Crab Creek springs has averaged about 2100 g.p.m during normal years, but have dropped to about 1000 gpm during the recent drought years. We will still have to pump water during the summer months, but this will help considerably.

b) Pressurized Irrigation System

Spanish Fork City adopted a policy in 1997 requiring all new developments to install pressurized irrigation lines. A large users project was completed that made pressurized irrigation available to several of the parks and schools in the city.

The Spanish Fork pressurized irrigation system was be constructed citywide during 2002 and became operational in the spring of 2003. This system utilizes four City owned wells, two wells owned by Ensign-Bickford Company, and 2 additional wells that were drilled during the summer of 2002. With this system in place, it has freed up culinary water during the high use times of the summer months. The peak day use for the culinary system has dropped to about 40% of the previous peak day use.

TABLE W-5
DRINKING WATER SOURCES
POPULATION/CAPACITY WITH EXISTING SPRING SOURCES

STANDARD	AVG. INDOOR WATER DEMAND (gpd)	POPULATION (1)
State Regulations	800	42,500
Actual Use (Indoor)	320	106,700

(1) Based on Table W-3 (83.11% residential use) and Table W-6 (9,812,736 gpd flow) and 3.48 people per connection.

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TABLE W-6
POPULATION/CAPACITY OF SPRING SOURCES
(Meeting State Standards)

SOURCE	FLOW(cfs)	FLOW (gpd)	NUMBER OF CONN.	POPULATION	CUMULATIVE
Cold Springs	5.50	3,554,496	3,745	13,033	13,033
Malcolm Springs	7.50	4,847,040	5,107	17,772	30,805
Upper Crab Creek	1.74	1,114,848	1175	4,089	34,894
Lower Crab Creek	.46	296,352	312	1,086	35,980
TOTAL	15.2	9,812,736	10,339	35,980	35,980

c) Block Replacement

Since 1996 there have been 73 blocks of water lines replaced with the block replacement program. This program needs to be continued over the next several years in an effort to replace the aging water system in the old part of town. We have had several water mains breaks that have mostly been related to failure of the old pipes. There are approximately 277 blocks of water line in the old part of the city that will need to be replaced over the next several years. This will take approximately 25 years to complete the replacement in the old part of town. It will take approximately $550,000 annually to replace 11 blocks per year. There will still be other capital project needs each year such as new wells, water storage tanks, pump stations, etc. The city will continue to look to the future and install larger water lines as needed throughout the city.

In addition, the replacement program will replace the old 4-inch fire hydrant lines with 6-inch hydrants to bring them up to the state standards.

d) Future Infrastructure Expansion

At present the City culinary water supply appears to be adequate. A new water tank will need to be constructed, this project will be dependent on the rate of growth in the next couple of years but is expected to be around 2007 or a population of 27,500.

B. Sanitary Sewer System

1. History:

The Spanish Fork City sewer system was initially installed in the 1930's and discharged directly into Dry Creek. Effluent was not treated until 1958, when the Waste Water Treatment Plant was constructed. The initial capacity of the plant was 2 MGD. There are a few homes along new lines that have yet to connect to the sewer system. These are mostly along Canyon Road area and are presently on septic tanks and drain fields. The Leland area does not have public sewer available at this time. There is approximately 500,000 feet of sewer main with 900 manholes in the collection system.

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2. Present Facilities

a) Waste Water Collection

The majority of the system within the old part of town that was installed in the 1930's is 6-inch vitrified clay. These old lines are of questionable condition and do not meet state standards that require a minimum of 8-inch diameter. There have been some structural failures and many allow ground water to enter the system, amounting to approximately 800,000 gallons per day at the present time. The infiltration amounted to almost 2,000,000 gallons per day in 1983. Since that time several of the worst infiltration problem lines have been replaced. The rest of the system is generally 8"-36" concrete and PVC sewer pipe. The Utah State Dept. of Environmental Quality requires a minimum of 8-inch diameter pipe.

The City presently has six basic service areas. These areas are highlighted on the Master Sewer Plan map and are serviced by a series of trunk lines also shown on the Master Sewer Plan map. There is presently no sewer service the southwest part of town west of approximately Del Monte Road and south of 900 South in the Leland area.

For design purposes the sewer system is considered at capacity when the pipe is two thirds full based on accepted engineering practices. This allows for peaking and any inflow that may occur during wet weather. Presently the 100 East trunk line has capacity for 450 to 500 new connections. This line will be adequate for the area projected to be serviced by this line. The Bottoms trunk line intersects the Canyon Road line at 1400 East and diverts all of the sewer flow from the east bench east of 1400 East into the Bottoms line. The area served by the 1400 East trunk line will have 4 main east-west lines:

1) 750 South will serve the area between 750 South and the Canyon Road.
2) Canyon Road will serve the area along the Canyon Road and existing developments above 2300 East.
3) 1240 South will serve the area from approximately 500' south of the Canyon Road to 1500 South.
4) 1650 South will serve the area from 1500 South to the brow of the hill.

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With the completion of the Bottoms trunk line and the 1400 East trunk line, the remaining area served by the 600 East line can now be developed. This area is east of 600 East between US-6 and the Canyon Road and north of 750 South. Presently, the 200 West trunk line is at capacity. If any future density changes take place increasing the flow in the 200 West line there will have to be some additional lines installed to divert some of the flow to the Bottoms trunk line. The 630 West trunk line is adequate for the area projected to use this line. Lines in the industrial area will be designed as the area develops and the uses can better be established. The Mapleton trunk line crosses the NE bench at approximately 1000 North and has capacity for about 3500 homes plus industrial and commercial capacity for the area north of Kmart.

There are presently three lift stations on the collection system. The lift stations are needed to get the wastewater high enough to gravity flow through the rest of the system. A new lift station will be required to serve the northwest part of the city (north of the jail complex) when that area is developed. The lift stations are shown on the Master Sewer Plan map and are located as follows:

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TABLE S-1
LIFT STATION LOCATIONS

NAME	LOCATION
Industrial	2500 North Main
North Industrial	3200 North 100 West
Spanish Fields	1150 West 590 South

b) Waste Water Treatment

The Spanish Fork City Waste Water Treatment Plant (WWTP), located at approximately 200 East 2100 North, was originally built in the late 1950's. It was remodeled and enlarged in 1983. The new enlarged plant has an average daily flow capacity of five million gallons per day (mgd). The peak flow capacity is 10 mgd. The present average daily flow to the plant is 3.2 mgd with a present flow of .35 MGD from Mapleton. We have contracted with Mapleton for ultimate flow of 0.59 mgd.

TABLE S-2
WWTP CAPACITY

TYPE OF USE	*PRESENT CAPACITY* (gpd)	*FUTURE CAPACITY* (gpd)
Residential	2,961,000	5,421,000
Commercial and Industrial	650,000	1,189,000
Mapleton*	590,000	590,000
Infiltration	800,000	800,000

*per existing agreement

It is anticipated that infiltration will reduce when the old clay lines are replaced, however for this report it is left in the flow calculations until the lines are replaced and actual flows are measured.

The standards required for discharge from the WWTP are determined by the State and USEPA and are outlined on the City's NPDES permit. Most of the effluent from the WWTP is discharged into Dry Creek that discharge into Utah Lake. Two downstream farmers have approved water rights to the use of the effluent if it is in Dry Creek; however, the city is not obligated to discharge the water into Dry Creek if the city has another use for the water. The present facility is irrigated by use of the effluent from the plant. The City has a Water Right Change Application approved by the State Engineer, which allow an exchange from discharge into Dry Creek to use the springs along the hill around Canyon View Park. This right can only be used when down stream users in the river have enough to fill their rights.

During 2001 the biological component of the treatment process including BOD and TSS removal has been above 90% of the capacity of the plant during two different months. Biological Filters are scheduled for July 2002 to extend the biological capacity of the plant. Based upon current growth rates this project will extend the capacity of the plant until about the year 2007 or a population of 30,400.

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Based on the NPDES Discharge Permit issued by the state the city is required to discharge water that must meet the following standards:

TABLE S-3
NPDES PERMIT DISCHARGE LIMITS

ELEMENT	*MAXIMUM CONTAMINANT LEVEL*
Ammonia	Oct-March 9.0 ppm, April-Sept 8.6 ppm
Residual Chlorine	0.42 ppm
TSS/BOD	30 day avg 25 ppm, 7 day avg 35 ppm
Coliform	7 day avg 250 col/100 ml, 30 day avg 200 col/100 ml
Total Coliform	7 day avg 2500 col/100 ml, 30 day avg 2000 col/100 ml
Dissolved Oxygen	5.0 ppm minimum

3. Projected Needs and Recommendations

a) Waste Water Collection:

Since 1996 about 38 blocks of sewer main have been replaced. There are still about 276 blocks of old 6-inch vitrified clay pipe in the old part of town needed to be replaced. The cost associated with this replacement is approximately $15,500,000. If 10 blocks are replaced each year the annual cost will be around $563,000 and it will take about 27 years to complete the replacement in the old part of town. If 15 blocks are replaced each year the annual cost will be about $844,500 and it will take about 18 years to complete.

A new outfall line from the WWTP to Dry Creek was put into service in the fall of 1998. The City should be careful and review the sewer needs of all proposed industrial customers requesting to build in the north industrial area. Flows as well as sewer strength and potential harmful discharges should be closely scrutinized to insure the lines and lift stations have capacity, and the plant is not threatened by harmful contaminants.

b) Waste Water Treatment:

The WWTP is adequate to serve a population of 33,000 people with the Mapleton's share of .30 MGD (4320 people) with an industrial use of equal proportion to today's use. This leaves a capacity for Spanish Fork of 24,000 people. This population should take us to the year 2003 based on the present population projections. This is based on an average daily use of 316 gpd per residential connection.

C. Stormwater Drainage System

1. Present System:

The storm drain facilities are primarily open irrigation gutters in old part of town, which can carry approximately a 5-year storm event. Many of the irrigation ditches flow into the pond at North Park, and eventually flow into Dry Creek. There are several areas where the irrigation or drainage

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gutters flow into the underground piping. Some portions of the northern part of the City have drainage problems during heavy rains, even with the piped storm drainage system.

The newer areas that have been developed over the past 25 years use sumps to collect and dispose of storm water. A sump is a 5-foot diameter perforated pipe buried 10-12 feet in the ground and surrounded by gravel. The sumps have proven to be an effective method in many areas of the City. This meets the City's requirements that all new developments maintain a 25-year (24 hour) storm event on-site. The standard of the 25-year storm was determined by the City Engineer as the appropriate event to use. This requirement places a reasonable standard on the developer, and allows the city to design for the remaining storm water, up to a 100-year storm, without placing a large burden on the taxpayers.

a) 300 West Ditch

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The area from Main Street to 300 West from Center Street to 900 North flows into the 300 West ditch, which is part of the Westfield Irrigation Company system. Storm water from the City streets flows into this ditch at various locations, but the ditch is maintained by Westfield. 100 South drains the area south of Center Street and West of Main Street.

b) Main Street (300 South to 1000 North)

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The area along Main Street (300 South to 1000 North) drains into a large storm drain in Main Street which is maintained by Utah Department of Transportation (UDOT). The City does have some areas that also flow into the UDOT drain. This drain opens to a ditch near I-15 and flows northeasterly along the old Orem Railroad right-of-way and into Dry Creek. The open portion of this drain is under City maintenance.

c) Main Street (1600 North to 3000 North)

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The industrial area north of Interstate 15 flows into a drain along North Main Street and northerly into Dry Creek.

d) Green Acres/Wolf Hollow Area

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The Green Acres/Wolf Hollow area uses a system of sumps, piping, and a retention basin. This area has a large storm drain in Scenic Drive from 1170 South to approximately 500 South that discharges into the Mill Race Canal. There is also a ground water/storm drain in 1000 South flowing westward into the Mill Race Canal. This drain helps to lower the water table in the Green Acres area as well as to provide some storm drainage for the area. The Knollcrest and Wolf Hollow Heights area drain into a retention basin at 1050 South 1100 East. The basin stores the peak runoff and allows it to infiltrate into the ground. The remaining area in this part of the City is drained into sumps located in low points throughout the area.

e) Mt. Loafer Area

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The Mt. Loafer area drains within the street gutters to a retention basin located at 1150 East 600 South. There are some areas that have underground piping leading to the basin.

f) Cambridge/Dover Estates Area

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The area in the Cambridge Estates and Dover Estates area drains into a storm drain in 150 South that flows to 1150 East then north to Center Street. There is a detention basin located in the Southgate Townhome area that collects water from this system.

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g) The Oaks

The Oaks (single family) area has a storm drain that carries runoff from the developed area to the Spanish Fork River. The condominium area has a small detention basin, which has an overflow to the irrigation canal along Powerhouse Road.

h) Canyon Ridge/Red Pine

These areas south of Canyon Road east of 2600 East have a series of sumps that are designed to drain a 25-year storm occurrence.

i) Southeast Bench

The storm drain system in the area south of Canyon Road and east of 1100 East is nearly complete. There are basins located in various areas across the southeast bench and piping that connects each of them with an outfall line to the Spanish Fork River.

j) Westfields Area

The outfall line to the Spanish Fork River along I-15 is complete to 200 North. There is also a line that extends along 100 South to 300 West that is complete. This area also has detention basins that reduce the peak flow of storm water into the river.

2. Projected Needs and Recommendations:

The City will need to provide storm drainage facilities for amount of runoff that is in excess of the 25-year storm event, and up to a 100-year event. The City proposes to accomplish this by the following two different methods, primarily because of differences in soils types and water tables:

a) Retention/Detention Basins:

The City will design retention/detention basins for the difference between a 25 year and 100 year event. The difference between a retention and detention basin is that the detention basin holds water to be release at a later time while a retention basin collects the water and uses evaporation and infiltration to remove the water. Each of the basins planned for a maximum surface water depth of 18". The remaining storage will be in a series of interconnected sumps. Each of the sumps will be connected to the others in the basin with 18" piping.

Some of the areas will require off-site piping to deliver the storm water to the retention basin without overloading the gutters. Locations of the retention basins are at the low point of their respective areas, but some location adjustments can be made, as final plans are prepared. The design for the retention basins will be finalized as the need arises and should include soils reports to determine the percolation rates available.

The retention basin cost per acre is estimated at $125,000 - 150,000 including land costs, sumps, piping, landscaping, and off-site piping. It is possible that some sites will be partially or completely donated to meet the retention needs of individual projects, thereby reducing the cost per acre figure. Most sites will also be included as part of a park and/or school site, which will likely prove to be more cost effective.

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b) Pipe Network:

The City will provide for a pipe network to drain storm water to the Spanish Fork River or Dry Creek in the areas determined by the City Engineer. These areas will primarily be the central, western, and northern parts of the City where soils types and high water tables generally do not allow the use of retention basins and sumps as a long term solution for the disposition of storm water. These areas are more fully described later in this section.

c) The Southeast Bench:

TABLE SD-1 – SOUTHEAST BENCH STORM DRAINAGE AREAS

AREA	SIZE OF AREA	LOCATION OF RETENTION BASIN	SIZE OF BASIN	COST
1	211 AC	Abbie Court	3.5 AC	constructed
2	336 AC	Canyon Elem.	5 AC	constructed
3	147 AC	Parkside park	1.75 AC	constructed
4	144 AC	600 South 1150 East	2.5 AC	350,000
5	93 AC	600 South 1150 East	1 AC	constructed
6	124 AC	2100 East 750 South	3 AC	1
7	191 AC	Discharge to Spanish Fork River		constructed
8	66 AC	Southgate Village		constructed

g) The Northeast Bench:

The northeast bench is the area north and east of US-6 extending to the policy declaration line. Some of this area is proposed to be outside the Urban Growth Management boundary. The five proposed basins would also be incorporated with parks. Soils are similar to those in the southeast Bench, so basins and sumps should function similarly.

TABLE SD-2 NORTHEAST BENCH STORM DRAINAGE AREAS

AREA	SIZE OF AREA	LOCATION OF RETENTION BASIN	SIZE OF BASIN	COST
1	177 Acres	2100 East Center St.	3.5 Acres	435,000
2	177 Acres	2100 East 400 North	3.5 Acres	435,000
3	207 Acres	400 North 1100 East	4.5 Acres	497,000
4	84 Acres	2800 East 400 North	0-1.5 Acres	186,000
5	449 Acres	1700 East Expressway Lane	10 Acres	1,243,000

i) The Central City:

The central city is the "old" part of town, the area around Larsen School, and the northern part of the Wolf Hollow area. This area currently has two retention basins.

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There will need to be a 400 North storm drain line that will carry storm water to the Spanish Fork River. This line will extend to 300 West. The construction of the 400 North line will allow the City to discharge much of the water currently flowing into the Westfield Irrigation Company ditch to the river. This will allow the City to reduce the amount of money paid to Westfield Irrigation for drainage.

The area between 400 East and 900 East will have a groundwater drain. This drain will also be used for excess storm water in the gutters along 400 North. All other areas in this section will continue to operate as they are at the present time.

j) The West Fields: **Formatted:** Bullets and Numbering

The west field's area is the area that is west of 300 West between I-15 and the Spanish Fork River. The 400 North outfall line and individual lines will serve this area from the developments. Each of these lines will flow directly to the river. The 400 North lateral will serve the area north of approximately 300 South including the new developments west of the High School. A drain line in 100 South will serve the area from 300 South to 100 South. The areas just north of the river and west of Main Street should be addressed with each development due to proximity to the river.

Due to soil types in this portion of the City, all storm water must be piped to the river, with detention basins included in new developments to reduce the quantity or water released and subsequently reduces the pipe sizes for the storm drain system.

k) The Northern Industrial Area: **Formatted:** Bullets and Numbering

This area is the area north of 1000 North between 900 West and 1100 East. This area currently drains to Dry Creek through piping and open ditches. This practice will not change in the future, however, there will be a need for more piping as the area further develops.

In an effort to limit the flow in Dry Creek, the City has restricted the outflow from new developments in this area to .2 cfs/acre. This flow rate is considered to be consistent with the pre-development discharge from the land and is the standard for the Industrial area. This restriction requires the developers to detain the storm water on site and release it at a slower rate, thereby reducing the possibility of flooding along Dry Creek. This policy will need to continue to avoid overloading Dry Creek.

D. Pressurized Irrigation System **Formatted:** Bullets and Numbering

1. Present System

Spanish Fork City adopted a policy in 1997 requiring all new development to install pressurized irrigation piping. In 1998 the city installed the first portion on the pressurized irrigation system known as the large users project. This project provide irrigation water to users such as the cemetery, most of the schools, and the ball park. This system was expanded to include new developments that were near the line for the large users. In 2002 the city installed a city-wide pressurized irrigation system. This system includes transmission and distribution lines, pumphouses, wells, regulating stations, and a storage reservoir. At the present time, all of the water used in the system is ground water. In the future, a combination of ground water and surface water will be used. The pressurized irrigation system is shown in the Master PI Plan map.

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2. Projected Needs and Recommendations

The present system has capacity for a population of approximately 35,000 people. The city will need to acquire water rights for the future needs of the community. The primary water source for the pressurized irrigation system in the future is the Central Utah Project pipeline from Strawberry Reservoir. When it is completed it will deliver water to the storage reservoir located near the Gun Club. New wells may also need to be drilled to accommodate future demand on the system. Any new wells that are drilled will be designed and constructed to meet state drinking water requirements and will be able to be used as back-up sources for the culinary water system.

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¶
The construction and installation of the improvements will be influenced and affected by the amount of available funds. The actual construction of these improvements will be determined on a year-to-year basis as part of the city budget process.¶
¶
A. Water System¶
1. History and Background¶

Spanish Fork City's water system was first developed near the turn of the century. Malcolm Springs, then called Evans Spring, was the first piped culinary source. The original pipelines were mostly wood. Most of these pipes have since been replaced with cast iron, ductile iron and plastic. The City's first well was installed in the 1930's. Cold Springs was developed around 1953 with a flow of 900 gallons per minute (g.p.m.). A new 30-inch transmission line from Cold Springs to the city was installed in 1985, which increased the flow to an average of 2420 g.p.m. and a pump station was constructed in 1992 to pump water to a new 3 million gallon tank in Sterling Hollow. Malcolm Springs was re-developed with a new collection system and transmission line with a booster pump station in 1992. These improvements increased the production of Malcolm Springs from 900 g.p.m. to 3400 g.p.m. The first water storage tank had a capacity of 750,000 gallons and was built in the 1930's. This tank has since been abandoned as a culinary tank because of inadequate elevation for providing sufficient pressure. A one million gallon tank was added in the 1960's, a two million gallon tank was built in the 1970's and a three million gallon tank was built in 1992. Seven different wells have been used over time. Presently two wells can be used to supplement the spring sources. The Memorial well is ... [132]

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E. Electric System

1. Present Facilities:

The Spanish Fork Municipal Electrical System serves the entire City plus some additional homes on the periphery of town. Approximately 7330 residences and 1030 businesses currently receive power from the system.

A. Power Resources:

The City presently purchases all of its capacity and energy through Utah Municipal Power Agency (UMPA). Spanish Fork City is a member of UMPA, along with 5 other area cities. The cities that belong to UMPA are: Levan, Manti, Nephi, Provo, Salem, and Spanish Fork. The agency was created to procure present and future electrical energy needs for its member cities. UMPA provides power to its member cities through a number of contracts and agreements with various entities for purchase of power, transmission line wheeling, and other services.

The firm power resources that UMPA currently has at its disposal are shown on the following table. Other agreements allow for the purchase of supplemental power when needed.

Table E-1 2003 UMPA Resource Acquisition Analysis

Source	Fuel	Total (Kw)
Bonanza – Unit No. 1	Coal	34,000
Hunter – Unit No. 1	Coal	31,000
Bonnett – Project Sold June 2003		
PacifiCorp	Contract	
Contract #1		8,000
Contract #2	Terminated in 1996	
Contract #3*		504,000
Deseret	Contract	37,000
Deer Creek- Summer Season	Contract	4,000
Provo Plant	Diesel/Natural Gas	
Diesels		10,910
Stream Turbine		20,110
Member Hydros	Hydro	
Levan		
Pigeon Creek		
Cobble Creek		320
Manti		
Upper		
Lower		2,200
Nephi		
Bradley		
Salt Creek		900
CRSP/CROD	Hydro/Purchase	
Summer		79,126
Winter		93,566

Notes: PacifiCorp Contract #3 represents the maximum annual firm Capacity Nomination in kW-Months.

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B. Power Usage:

The two most important components regarding electrical usage of a utility are demand, the maximum amount of power that flows through the system during a given time period, and energy, the volume of electricity that flows through the system. Demand is measured in kilowatts (kW) and energy is measured in kilowatt hours (kWh). One thousand watts (one kW) used for one-hour equals one kWh.

Spanish Fork's electrical demand over the past few years has peaked during the summer months. Both the city's energy and demand requirements have increased dramatically in recent years. This growth is shown in Table E-2 Peak Day Demand and Annual Energy Usage.

At this time, the city receives its capacity through two substations one located at the mouth of Spanish Fork Canyon, the other on the Spanish Fork North and Springville South border. The Substation at the mouth of the canyon is a Pacificorp Owned substation named Spanish Fork Sub. The 2nd power receiving point to the city is called Dry Creek Substation which is owned by Southern Utah Valley Power Systems or SUVPS. The city is responsible to procure transformation from the 138 kV buss located in the substation. At the present time, our available capacity (Approx. 61.5 MVA) is transformed from 138 kV to 46 kV through 3 - 67.5 MVA transformers at PacificCorp's Spanish Fork Substation and 1-75MVA transformer at Dry Creek Substation and is then transmitted to the city.

Table E-2 PEAK DAY DEMAND AND ANNUAL ENERGY USAGE

Fiscal Year	Peak Day Demand (kW)	%Increase from prior year	Annual Energy Usage (Mwh)	% Increase from prior year
1994	15,735		86,437	
1995	17,396	10.6%	100,127	15.8%
1996	20,165	15.9%	114,934	14.8%
1997	21,783	8.0%	127,551	11.0%
1998	24,168	10.9%	135,878	6.5%
1999	26,556	9.9%	144,853	6.6%
2000	27,962	5.3%	154,318	6.5%
2001	32,102	14.8%	163,187	5.7%
2002	33,600	4.7%	168,363	3.2%
2003	36,069	7.3%	179,214	6.4%
2004	41,190	14.2%	185,074	3.3%
Average over 10 years		10.2%		8.0%

C. Current Electrical System Status and Short Term Plans

During the past few years the electrical division has completed installation of conduit throughout the areas of town that were directly buried when they were installed approximately 30 years ago. Once these conduits were installed we were then able to move our transformers and other

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utility boxes out to the streets where they are more accessible. Also as part of this procedure we have upgraded the voltage from 2400/4,160 to 7200/12,470 volt in these areas. The higher voltage is much more efficient, and we are able to carry approximately 3 times the amount of power over the same size of wire. The upgrade to these areas will be completed by the end of 2004. The areas that are included in this rebuild project have been known as the Mount Loafer Subdivision, the Green Acres/Crosswinds Subdivisions and the Wolf Hollow Subdivision.

For the past 20 years, the city has been in the process of upgrading the electrical distribution system from the lower voltage system of 2,400/4,160 volts to a more efficient 7,200/12,470 volt system. We have now rebuilt and upgraded the majority, and the more difficult areas of town to the new voltage. We now have a very small portion of what we call the 50 East feeder left to be upgraded, as well as the entire 350 East North and South feeders left to be upgraded. During the next 3 years we should see the last two remaining 2400/4,160 volt substations decommissioned and removed from service. This process includes replacement of the distribution transformers that are located throughout the areas where the older system exists, and then the voltage being increased to the higher 7,200/12,470 volts.

We are also in a testing phase for the installation of an automated meter reading (AMR) program that would allow us to read water, electric and pressurized irrigation meters all through the electric meter either through the city's Broadband communications system, or through a power line carrier system, depending on which is the most cost effective. Each system would use the city's fiber optics network to transmit the information to the main office. If all goes well we should also be able to tie the information to our SCADA system allowing us to pinpoint borders where an outage occurs, and then also see with the system, verification when power is restored to all customers. Also with the AMR system, a load management system could be easily deployed that would allow us to manage our system peak through an interruptible electric rate that would allow us to turn on and off various electrical devices in a given home or business such as Air Conditioning, heating, electric water heating, etc.. Customer connects and disconnects for high turnover customers and buildings could be automated, relieving the electrical division the burden of doing these functions manually.

Finally, with the loads from these areas being transferred to the 7,200/12,470 volt system, an additional distribution substation will need to be constructed in the northwest industrial area of the city within the next few years. Along with the new industrial area substation, one of our existing substation transformers that is currently at our Whitehead Substation will be relocated to Argyle Substation at 150 West 50 South and that substation will be upgraded to the 7200/12,470 volt system.

D. Long Range Goals

During the coming years the city's electrical system will be configured to easily add future substation capacity in whatever area of the city that it is needed. Within the next 3-5 years the city should have both an industrial 46 kV loop with 820 amp capacity conductor, as well as our existing south 46 kV loop which is capable of approximately 560 amps carrying capacity. We will be starting to rebuild some areas of town that were built 30 years ago, but much of the system will be in good shape for an additional 10-20 years.

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IV. Public Safety

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A. Police Protection

1. Existing Facilities

With 24 officers and a 2002 population of approximately 26,500, the City has 0.92 police officers per thousand residents. Additionally, the city has hired part-time police officers that are used on an as needed basis. Since police officers primarily respond to events generated by people, the actual population is a prime factor in the workload a department can expect. The staffing question is calculated on the ratio of officers per/1,000 population. In addition, other factors for each individual community should be considered such as: crime rate, traffic flow, calls for service, community geography and similar variables.

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A recent nationwide trend is to become more pro-active rather than reactive. This is being accomplished through Community Oriented Policing Programs. These programs also contribute to the question of staffing.

The police department has two full-time and two part-time civilian employees that are assigned to a daytime dispatching and secretarial work. Twenty-four hour dispatching is contracted with the Utah County Sheriff's office.

Also assigned to the police department are a full-time animal control officer and a part-time animal control officer that is used on an as-needed basis.

2. Project Needs and Recommendations:

The current Police Department building at 775 N. Main Street has become inadequate because of size, security and functionality issues. The City is currently exploring options for a new facility that would house both the police department and the 4th District Court.

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B. Fire Protection

1. Existing Facilities:

The Spanish Fork City Fire Department has a volunteer force of 33 and an appointed fire chief and officers. The department also has a contract with Utah County to respond to fires in the area roughly between 8000 South to 4000 South and from 5600 West to Soldier Summit including Birds Eye to the County Line.

The fire department has instigated a rigorous training program. The department trains weekly for 1-2 hours each Thursday evening.

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With a fire rating of

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five (5), the lowest possible rating without full time personnel, the department is equipped with four (4) pumper trucks, two (2) with 1,000 gallon per minute capacity and one (1) with 1,500 and another with 1750 g.p.m. capacity. Other equipment includes a 2,000-gallon tanker with a 1500 g.p.m. pump, a 250-gallon 4-wheel drive brush truck, and Rescue/Extrication truck with 250 gallons of water. The Rescue/Extrication truck accompanies the city's ambulance on all vehicle and industrial accidents with injuries. In 1997 the City purchased a 75-foot heavy-duty ladder truck to handle the new commercial and industrial buildings in the City.
The fire department is located at 370 North Main Street. This station will house all existing equipment, and allow for expansion for many years.

2. Projected Needs and Recommendations:

Replacement of old fire trucks has been programmed into the Capital Improvements Plan, with first line pumpers replaced at least every seven (7) years. This provides a total "in service" time for the pumpers of 28 years each. A new modern rescue truck has been ordered and should be delivered in the fall or winter of 2005.

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C. Ambulance Services:

1. Existing Facilities:

The City's ambulance department is a volunteer department of 30-34 active members, with an appointed captain and other officers. The department serves essentially the same area as the fire department, including Birdseye and to the south Utah County line. The ambulance department responds to approximately 1,500 calls per year or a little over 4 calls per day.

The department has three (3) modular type ambulances with a 4-stretcher capacity. Ambulance department members are on call for two 12 hour shifts in a 5 day period, with 2 crews of 3 or more people on duty at all times. The state requires two (2) certified Emergency Medical Technicians (EMTs) to man each ambulance, however, Spanish Fork assigns 3 EMTs per shift. Training for the City's ambulance crews is paid by the city on condition of a one-year service commitment to the department. An active member of the ambulance department can expect to donate 1800 to 2000 hours per year to the department while on call and in training.

2. Projected Needs and Recommendations:

The City recently purchased an additional modular type-one ambulance to replace the City's first ambulance. The oldest unit will serve as a back-up unit to greatly increase the City's capacity to provide emergency medical services to the Spanish Fork area. The city should plan to replace at least one of its ambulances every five (5) years through an ongoing capital improvements program. The next new ambulance should be in 2004.

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V. Recreational and Parks Facilities

1. Present System:

Spanish Fork City has a number of different types of parks throughout the community from mini-neighborhood parks behind residences in the "Blocks" like Little Chicago to regional level parks such as Canyon Park and the Fairgrounds. The City provides recreational facilities like baseball and softball fields, indoor and outdoor tennis courts, basketball courts, a swimming pool and splash pad, a football field, soccer fields, a world class gun club, fishing ponds, and trail system.

In addition, the school system provides playgrounds, ball fields, basketball courts, and tennis courts which the residents can generally use for recreational. The following table summarizes the existing parks within the City:

Park or Facility	Location	Acreage	Facilities
Abbie Court	1400 South 2050 East	3.5	Playground, pavilion, picnic tables, playground, athletic fields, basketball court
Canyon View Park	2200 East Powerhouse Road	23.5	3 picnic pavilions, picnic tables, pond, 1 ball field, 3 volleyball courts, 2 playgrounds
Canyon Road Basin	650 South 1100 East	1.0	Open field
Centennial Park	400 South 600 East	11.5	Open fields, playground
City Library Park	Center & Main	3.1	Picnic tables, playground, swings
East Park	545 South 600 East	3.5	ball field
East Park Triangle	750 East Canyon Road	0.1	Picnic table, grass area
11th & 11th Basin	1100 South 1100 East	0.25	Open field
Fairgrounds	500 South Main Street	15.6	4 tennis courts, exhibition hall, indoor and outdoor arena
Golf Course	2000 Powerhouse Road	105	18-hole golf course with clubhouse
Icelandic Monument	800 East Canyon Road	0.1	Lighthouse monument to Icelandic hertitage
Jex Retention	1150 East 600 South	1.0	Grass
Little Chicago	300-400 E., 700-800 N.	0.5	Open field
Little Cleveland	400-500 E., 600-700 N.	0.5	Open field
Memorial Square	200 North Main Street	0.1	Memorial to Spanish Fork citizens, water fountain
North Park (Ed Clark Memorial Park)	555 East 1000 North	16	Picnic pavilion, picnic tables, 2 base fields, volleyball, playground, pond, walking trail
Parkside Estates Park	1170 East 1400 South	2.0	Picnic pavilion, picnic tables, basketball court, open field

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Russell Swenson Baseball Complex	165 West 300 South	17.0	5 baseball fields, 1 softball, walking trail, picnic tables, playground
RV Park	2200 East Powerhouse Road	2.5	Picnic tables, camp ground (RV, tents, trailers)
Skate Park	545 South 600 East	5.0	Skateboard park, open fields
Sports Park	295 West Volunteer Drive	71	Picnic pavilions, picnic tables, ball fields, football field, tennis courts, playground(s), walking trail, open space, river
Water Park	200 North 400 West	4.0	Pavilion, picnic tables, 3 sand volleyball courts, 1 basketball court, horse shoes, swimming pool, waterslide, splash pad
Wildflower Basin	300 South 630 West	0.75	Open field

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The following table shows school sites and the recreational facilities at each:

School	Location	Facilities
Brockbank Elem.	340 W. 500 N.	2 ball fields, 2 playgrounds, 5 basketball courts
Canyon Elem.	1560 E. 1300 S.	1 ball field, 2 soccer fields, 4 basketball courts, playground
East Meadows Elem.	1200 S. 2300 E.	Playgrounds, open fields
SF High School	300 W. Center	5 ball fields, 4 tennis courts, 1 track
SF Junior High	800 E. 600 S.	2 ball fields, 1 track, 2 tennis courts
Larsen Elem.	1175 E. 300 S.	3 ball fields, 2 playgrounds, 3 basketball courts
SF Middle School	900 E. Center	1 ball field, 3 soccer fields
Park Elem.	600 E. Center	2 ball fields, 1 playground, 6 basketball courts
Rees Elem.	500 N. Rees Avenue	2 playgrounds, 1 playfield
Spanish Oaks Elem.	2700 E. Canyon Crest Drive	1 playground, 2 ball fields, 2 soccer fields

2. *Projected Needs and Recommendations:*

The City's greatest need for new parks is for new soccer and ball fields. Many of the fields shown in the above tables are actually little more than practice fields, not suitable for regulation games. The fields at the Ball Park complex are completely full throughout the summer season.

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A 72-acre parcel owned by the Bradford family became available in January 1996 just south of the existing complex, and the City decided to buy that

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property. The 72-acre parcel is master planned for 8-12 ball fields, playground areas, picnic facilities, soccer fields, a football field and other recreational fields. A trail system along the Spanish Fork River is also planned.

The City recently purchased another 20 acres adjacent to the Sports Park property. This area is being planned for additional sports fields (soccer and recreational) and will connect to the Spanish Fork River trail.

There will be neighborhood parks scattered throughout new residential areas, with most occurring in conjunction with storm-water retention basins. These will generally be 2-5 acres in size and will have a playground and other recreational facilities.

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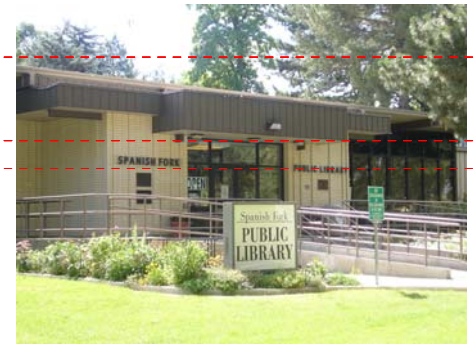
VI. Library

1. Present Facilities:

The Spanish Fork City Library, located at 49 South Main Street, was completed in 1965 and is located within the City Park that occupies the entire 3.7-acre block. The building contains 6,150 square feet on the main level, and an equal amount in the basement for a total of 12,300 square feet. The main floor houses the adult library section, while the rooms of the basement are used for children. Both sections offer activities suitable for their age groups including movies, story telling, activities, and study areas.

The library contains around 56,632 holdings, which include books, encyclopedias, resource materials, and periodicals. Circulation steadily increases and reached 323,028 items during 2004-05. With increased access to materials via home computers and the Internet, little growth is expected in the near future. In 2005 to total number of patron accounts is 6,404.



The library has the following equipment for public use: a copy machine, laminator, computer, typewriter, opaque projector, carousel projector, Internet access, and a microfilm projector/printer.

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2. Projected Needs and Recommendations:

Over the last 10 years the library has been remodeled including the installation of an elevator to fully comply with the Americans with Disabilities Act (ADA) in 1999. Additional parking has been added on the north side of the library as well as additional computers inside. With the fast pace of growth a new library should be discussed and considered because of a lack of shelving space as well as meeting rooms and additional locations for computers.

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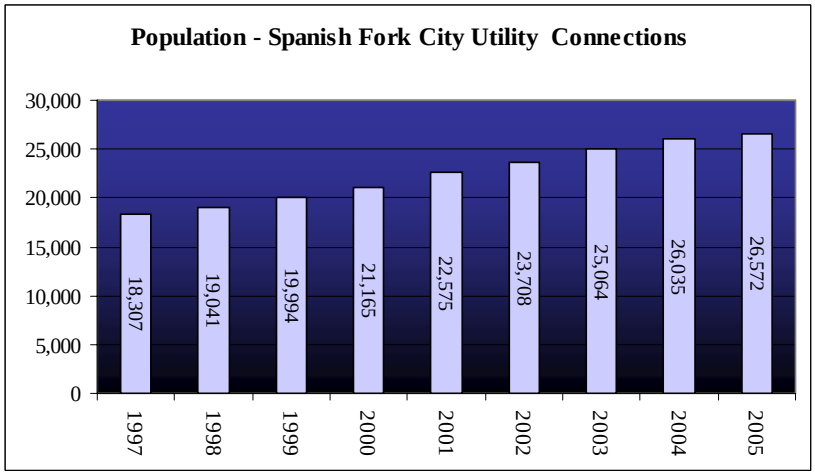
VII. Land Use Element

A. Issues

Spanish Fork has undergone a period of rapid growth in the early 1990's which is unprecedented in the City's history. The ten-year period from 1990-2000 has seen the City's population increase from 11,272 to 20,246 according to the 2000 Census. This trend has continued as seen on the adjacent chart.



This growth has caused increased pressures on many of the physical and social institutions in the area. Schools and churches must constantly be searching for new sites and funding to build new facilities.

The additional growth has affected the City in different ways. In the Public Works department, new culinary water, pressurized irrigation, sewer, storm drain, and electric lines are constantly being installed and inspected. The new growth has also put a strain on the existing streets and utilities that need upgrading and increased maintenance.

Departments throughout the City have needed additional staff members to combat the new growth. The Parks and Recreation Department has programs and facilities that are heavily used with increased numbers of participants with new facilities always needed.

A community survey conducted in July 1995 revealed the following from the nearly 1000 respondents:

1) "Small Town Lifestyle" was the best thing about Spanish Fork.
2) "Growth" was the biggest problem. The population of Spanish Fork should be 20,000-30,000 in 20 years.
3) The City should try to attract both High Tech and Manufacturing companies.
4) The respondents were split about whether the City should attract new shopping centers or malls.

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5) The City should have strict architectural standards for commercial projects, general guidelines for single family homes; with an even split between strict standards and general guidelines for multi-family projects.
6) The City has a responsibility to allow affordable housing such as apartments, twin homes, and manufactured homes.

In 2001, a workshop was held called the "Nebo Community Vision" out of this project individuals shared their views of the importance of preserving open space like wetlands, farmlands, and other important green spaces as well as where growth should occur in Spanish Fork City and surrounding communities. Over 80 residents attended the workshop; comments made from the residents included: (1) designing agricultural protection zones, (2) connecting the city by trails and open space areas and (3) enhancing the community image with a viable main street and street trees. The major topic of discussion was the importance of the Spanish Fork River and the surrounding farm ground and how can this valuable resource should be preserved. One resident pointed out the difference and feel you have from the homes above to the river bottoms.

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In August 2005, the City and the United States Department of Agriculture – Natural Resources Conservation Service (NRCS) started a master planning process for the Riverbottoms. At the first meeting there was over 120 people in attendance. Through a survey that was conducted and discussions, property owners and concerned residents have shared how important this natural resource is and how the City and County needs to develop and implement a plan to preserve the Riverbottoms from future residential development.

B. Existing Conditions and Recent Trends

1. Industrial and Commercial Developments

Existing land use conditions in Spanish Fork is a balanced mix of residential, commercial, and industrial development. The City has been successful in recent years in attracting such major employers as Longview Fibre, Banta, Rocky Mountain Composites, Nature Sunshine, PDM Steel, J.C. Penney's, Klune Industries, Provo Craft, and Alcoa Aluminum to name just a few.

Retail commercial developments have located in the City such as ShopKo, K-Mart, Macey's, Albertson's, and Cal-Ranch all located in the northern and northeastern parts of the community. Many smaller businesses are located along Main Street, with vacancy rates generally quite low. Many other smaller retail and office projects have developed throughout the City between 1996 and 2002 but the major focus continues to be on northern Main Street.

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2. *Residential Development*

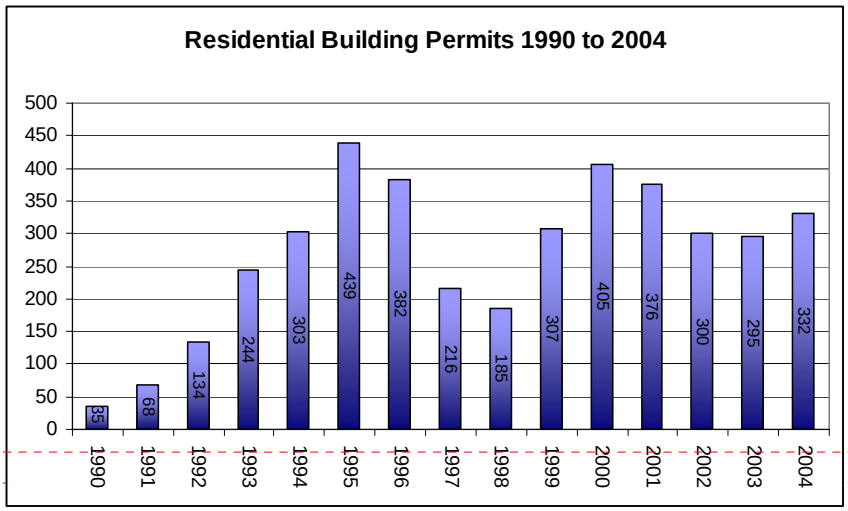
Residential development in 1980s and early 1990s happened mainly in the northwest section of the City and in the Mount Loafer area around 1100 East and 600 South. Starting in the mid 90s and continuing into the 2000s the residential growth occurred primarily in the southeastern (East Bench) part of the City, with several subdivisions north and south of Canyon Road going south towards the Riverbottoms (Aspen Meadows, Maple Meadows, Parkside, Wapiti). A few other subdivisions popped up in other sections of the community like in the West fields (Sunset Park). A majority of the multi-family projects developed in the northeast section of the community in the area of 400 North and Highway 51 (Davencourt, Diamond Fork, Blackhorse Run, and Whispering Willows) during this time frame. The City though continues to encourage mix-use projects like Aspen Meadows, Hunters Crossing, Wolf Hollow, Somerset, and Canyon Glen that mixes single family homes with other residential uses.

In 2004, several large residential projects started being developed in the west and southwest sections of the City (Quail Hollow and Spanish Fields) as well as continued developments on the East Bench.

Upgrades to the sewer treatment facility will open additional areas for residential development especially between Mapleton and Highway 6 (Mapleton Bench). A new high school is planned in this vicinity and should push growth in that direction.

Residential growth in the future should continue on the East Bench, Westfields, and on the southend of the city by IFA and new areas that will see an increase in homes is on the Mapleton Bench.

The following chart shows the growth in new residential units for the period from 1990 to 2004.



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C. General Land Use Goals and Policies

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This part of the General Plan will attempt to provide goals and policies that address these desires and help ensure that the City develops and grows in an orderly manner.

Goal One: To maintain the high quality physical and social environment in Spanish Fork.

Policies:

a. When reviewing and designing potential developments consider the impact it may have on the character of the surrounding area.

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b. Require that all implementing ordinances (i.e., zoning and subdivision regulations) be consistent with the General Plan.

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c. Allow development to occur only in areas where adequate streets, public facilities, and services exist or where the developer will provide them.

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D. Growth Management Policies

Goal One: To provide for an orderly and efficient expansion of Spanish Fork.

Policies:

a. Allow urban residential and industrial land uses only within the adopted Growth Management boundary.

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b. The Growth Boundary be evaluated on the amount of land within the boundary as well as on all available utilities (water, sewer, electric, etc.)

c. Review the boundary annually to determine if changes are warranted based upon recent growth trends.

d. Allow new annexations on properties within the Growth Management boundary where all urban services can readily be provided.

e. Discourage annexations on properties outside the Growth Management boundary except in cases where environmental, open space, or safety concerns can better be managed if the property is within the City limits.

f. Properties being annexed into Spanish Fork City must connect to at least two city services (electric, telecommunications, garbage, water, sewer, etc.) either upon annexation or when development occurs, at city discretion, and at the applicant(s)' expense.

E. Environmental Policies:

Goal One: To manage development which is compatible with certain environmental limitations in the area.

Policies:

a. Severely restrict development within the 100-year flood plain of the Spanish Fork River to minimize potential damage and loss should a flood occur. Allow development in accordance with the alternate densities shown on the General Plan Map west of Main Street if areas can be removed by FEMA from the official flood plain.

b. Require soils tests on all geologically unstable soils, and on heavy clay soils prior to construction.

c. Discourage development on slopes over 25%; encourage clustered developments that utilize the flatter portions of the property.

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F. Residential Policies:

Goal One: To provide high quality, stable residential neighborhoods.

Policies:

a. Encourage the creation of neighborhood or homeowners' associations to help maintain the quality of neighborhoods.

b. Enforce existing codes regarding property maintenance and inoperable vehicles.

c. Protect residential neighborhoods from commercial and most other non-residential uses through the uses of walls, landscaping, and setbacks appropriate to the use.

d. Design local streets in residential areas with discontinuous patterns to discourage through traffic.

Goal Two: To provide a range of housing types and price levels in all areas of the City.

Policies:

a. Allow a variety of lot sizes and housing types in all "Urban Residential" areas.

b. Develop an architectural theme that integrates different housing types in mixed-use projects.

c. Allow residential development projects that provide superior design features and amenities to be developed at the high end of the density ranges as shown on the General Plan Map.

d. Locate higher density units adjacent to parks or commercial areas mixed throughout the community.

e. Permit manufactured housing in all residential areas if it is structurally and architecturally compatible with the surrounding area.

Goal Three: To ensure that adequate open space, buffering, and landscaped areas are provided in new developments.

Policies:

a. Develop an overall landscape concept for all common areas of the project including, entries, street plantings, reverse frontage streets, and park and retention areas.

b. Select plant materials that are suited for their proposed use.

c. Install street landscaping in significant lengths to develop the desired character and maintain continuity in the project.

d. Provide for water conservation in landscape design; locate consumptive vegetation, such as lawns in visible and usable places.

e. Develop parks within ½ mile of all residences.

f. If retention areas are used as parks, design them to meet the technical requirements while still providing attractive, natural looking, and useable open spaces.

g. Provide high quality, durable walls or fences along arterial streets.

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G. Commercial Goals and Policies

Goal One: **To provide conveniently located commercial areas to serve the residents of Spanish Fork and surrounding areas.**

Policies:

a. Develop a hierarchy of commercial areas within the City to meet neighborhood, community and regional needs.

b. Develop new commercial areas as nodes or centers, and not as a series of unrelated, freestanding businesses.

c. Require shared driveways between adjacent business or connecting accesses between parking areas where practical to do so.

d. Develop secondary vehicular and pedestrian access from commercial to residential areas where practical to do so.

e. Require sidewalks at the time of new construction or expansion of existing commercial uses for the full frontage of the parcel.

f. Restrict the size of neighborhood commercial areas to minimize the impact on the residential character of the area.

g. Locate new community level commercial areas at the intersection of arterial streets or at arterial and major collector streets.

h. Require community level and regional level commercial centers to be developed as integrated projects with shared parking, common architectural styling, landscaping, and signage.

i. Actively promote and market the commercial area around K-Mart as a Regional Commercial site. Recognize that some of the area will not develop as integrated shopping centers, but instead as large, independent uses.

j. Allow a mixture of general commercial and light industrial uses to locate in the North Main St. area between Interstate 15 and 1600 North.

Goal 2: **To provide opportunities and locations for small commercial operations and offices which are compatible with residential uses.**

Policies:

a. Allow small office complexes to develop in similar locations as neighborhood commercial areas.

b. Allow West Center St. between 100 West and 600 West to develop with small office projects.

c. Allow limited office, bed and breakfasts, and similar uses along Center Street between 100 East and 500 East and 300 South between Main Street to 700 East, subject to strict design review standards to maintain a residential character consistent with the area.

d. Allow limited retail, service commercial, office, and other similar uses in those portions of Main Street, which are currently residential, subject to

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strict design review standards to maintain a residential character consistent with the area. Allow the same uses along the east side of 100 West and along the west side of 100 East between 100 North and 300 North.

e. Allow home occupations in all residential areas if they have no exterior evidence of their existence.

H. Industrial/ Employment Policies

Goal One: To provide a variety of employment opportunities for the residents of Spanish Fork and the surrounding area.

Policies:

a. Continue to develop the northern part of the community with Light Industrial uses. Prohibit residential development in these areas.

b. Allow "Surface Mining" uses such as sand and gravel mining to operate on an interim basis, with the land ultimately converted to uses that are compatible with the surrounding area.

c. Recognize the existence of the large, open industrial uses in the Leland area, but don't encourage the conversion of adjacent properties to similar types of uses.

d. Recruit industrial users that do not have large water use demands.

e. Recruit industrial users that do not discharge harmful contaminants into the sewer system.

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VIII. Design Review

A. Issues

The term "Design Review" conveys different meanings to different people. For the purposes of this General Plan, it is intended to describe a process, which provides a comprehensive review of new development projects. The total project package, including such things as: the site layout, landscaping, signage, lighting, building architecture and materials, and compatibility with adjacent areas will be evaluated by the City.

In recent years, Spanish Fork has initiated some aspects of this review process through its "Site Plan Review". This process has not been as comprehensive as what will be contemplated with Design Review, but it has been evolving in the last year or so to nearly that level.

The community survey conducted in July, 1995 overwhelmingly supported strict architectural standards for new commercial projects, with some support in multi-family projects, and limited support for single-family projects. The Planning Commission and City Council have indicated a strong desire to implement architectural review for multi-family projects, and to also have a certain amount of review for single-family developments, particularly in regards to providing some variation to building elevations on adjoining lots.

Some policies of this plan, and the ultimate zoning regulations, will provide very specific standards or criteria in certain parts of the city. The purpose of this is to ensure that a certain character of development is maintained, consistent with the community's desire for that area. A single project, which is significantly different from that character, can adversely affect the whole area.

Most areas of the city will have much more general design criteria, with a great amount of flexibility for individual projects. It is not the City's intent to stifle creativity or to dictate a particular architectural style or material through this process.

B. Existing Conditions

During the high growth years of the late 1990's, Spanish Fork has seen a variety of new residential, commercial, and industrial projects built. Some have been well designed using high quality materials, good site planning techniques, nice landscaping, and other similar features, which help ensure a long-term, quality development. Others have not been so thoroughly planned with little attention paid to materials, proper site planning, consideration for neighbors, and the long-term stability of the project.

Development prior to this period was generally at a much slower pace, with residential projects much smaller in scale. However, the character of all developments since the 1950's has tended to be more suburban in character and not consistent with the original townsite concept of the "Blocks".

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The original downtown has survived, but has not really flourished. A variety or reasons can be blamed for this, and are fairly typical nationwide. Some provisions in this plan will try to encourage a revitalization of this area, and Design Review will play an important role in that process.

C. General Design Review Goals and Policies

Goal One: To provide new developments which are safe and functional as well as aesthetically pleasing.

Policies:

a. Use high quality, durable materials.

1. Light to medium intensity colors with low reflectivity are preferred as the background building color. Brighter colors may be used for accents, trim or highlighting architectural features. The warm, subdued hues of natural, earth colors are encouraged.
2. Color can be used to impact the scale of a building by highlighting various architectural elements.
3. Materials such as pre-cast concrete, cast stone, brick, stone, and architectural metals can be combine to enrich the appearance of a building and highlight architectural features.

4. Signage and awnings, which are color coordinated, can be used to introduce brighter and more intense colors.
5. Large areas of white or cool grays, and reflective glass curtain wall systems are discouraged.
6. Bright colors should be limited in use to signage.

b. Provide complete use of materials, special features and trim throughout the project. Treat all sides of buildings which are visible to adjoining uses.

c. Create visual interest through articulation of wall planes, variation of roof forms, and other similar methods such as angling of buildings.

1. Variations in rooflines can include gables, dormers, and well-defined parapets. Offsets in the roofline break up the mass of the roof and are encouraged.
2. Roof overhangs at pedestrian entries provide protection for shoppers and are encouraged.
3. Roofing materials should be of a color and material consistent with the architectural character of the building and should convey a sense of permanence and quality.

4. Roof mounted equipment should be concealed from public view on all sides by screening in a manner consistent with the character of the building.

d. Finish building details, including trimming of all windows and doors, painting or anodizing of all exposed metal, and integration and screening of mechanical elements with the building architecture.

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e. Design screen walls of quality materials to blend with buildings. Provide relief to long walls through staggering, capping, inlays, columns, and variation in materials.
f. Use quality materials in signs to match buildings.
g. Where feasible, use architectural features to enhance energy conservation.
h. Design projects with entrances and landscaping to accommodate the prevailing Spanish Fork Canyon winds.
i. Street lights to be installed on intersections and approximately 250 feet apart on collector streets, residential neighborhoods street approximately 300 feet apart and in industrial areas approximately 450 feet apart.

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1. The style and placement of exterior accent lighting should enhance the building's architectural elements such as entry features, pilasters, columns, and landscaping.
2. Decorative and functional lighting should be compatible with the development's design and should enhance the design and safety of the site and pedestrians.

Goal Two: Encourage developments to be pedestrian friendly and have appropriate mass and scale through using creative architectural details.

Policies:

a. Variation in the building façade by vertical or horizontal articulation, window and entry variations, patios, plazas or other landscaped pedestrian areas is encouraged. Strong vertical elements such as windows, pilasters, columns, stairs, and towers should be used to identify individual commercial spaces.

b. Large volumes or planes should be broken up into smaller ones in order to reduce the visual scale of a building. The mass of a building should be varied inform or divided to emphasize the various interior building functions.
c. Where practical, gradual transitions in height from adjacent, less intensive land uses, especially residential development, to the maximum height of the new development are desirable.
d. The sidewalk in front of a building should be designed with elements that create a pedestrian friendly environment (i.e. trees, benches, eating areas, art work, etc.). Design elements should be used to visually reduce the mass of the building.
e. Variations in roofline and building height can effectively break up massing and provide visual interest. The upper stories of a building should be distinguished by using offsets or changes of materials.
f. The primary entrance of a building or store should have a clearly defined, visible entrance with distinguishing features such as a canopy, portico or other prominent element of the architectural design.

Buildings should have their primary orientation toward the street rather tan the parking area. Where possible, the building façade should be located close to a street and sidewalk area. Parking areas should be designed so as to like the buildings they serve to adjacent street sidewalk or other pedestrian systems, and to give the impression of buildings as an extension of the pedestrian

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environment. This can be accomplished by using design features such as walkways with enhanced paving, trellis structures, or landscaping treatment.

g. Each building should have a well-designed base, middle and top. Architectural detailing or a change of materials or color at the ground level may be used to create the base. The different parts of a building's façade should be emphasized by use of color, arrangement of façade elements, or a change of materials.

h. Where applicable, the design of parking lot should be integrate with the surrounding development in order to create a continuous, attractive streetscape.

i. Trash storage areas, mechanical equipment and similar areas should not be visible from the street and constructed with similar materials and colors of the development.

j. Loading docks should be screened so as not to be visible form the street, and should not be accessed directly from the street.

k. Buildings should be designed to be viewed from all sides and pleasing to the eye.

l. Large developments should be integrated with its surroundings by having a mix of sizes of structures, and the design of the site and buildings should create a safe and comfortable pedestrian scale environment. It is also important that the visual impact of large parking areas be reduced through proper design and landscaping.

m. Site designs with the placement of commercial and mixed-use buildings in clusters, parking areas distributed throughout the site and pedestrian pathways and amenities extended throughout the site are encouraged.

n. Trees, shrubs, and ground covers should be used in islands and parking lots to break up large expanses of paving and provide shade. Water-efficient landscaping is to be used.

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IX. Land Use Map Designations

A. Environmentally Sensitive Uses

1. **Flood Plain:** Those areas along the Spanish Fork River within the 100-year Flood Pain have limited development potential because of the hazards associated with flooding. This designation will be "overlaid" upon the base land use designation with development allowed only in accordance with State and Federal standards.

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2. **Hillsides/Geologic Hazards:** The steeper hillside areas in the extreme southeastern part of Spanish Fork have special limitation due to unstable soils, erosion and landslide potential, and proximity to an earthquake faultline. These areas will require careful site review, special construction standards, and should have reduced density of development because of the higher risk of natural disasters. This designation will be "overlaid" upon the base land use designation.

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B. Residential Land Uses

1. **Exclusive Agriculture: 40+ acre parcels.** These are areas in the Spanish Fork River bottoms where the dominant character is agricultural production, with high quality soils types. All of this land is also located within the 100 year Flood Plain for the River.

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2. **Rural Residential: 5-20 acre parcels.** These are areas where the predominant character is large lot ranchettes, hobby farms, or full-scale agricultural operations. Community water systems are sometimes available, but public sewer is not. Streets will be paved, but curb, gutter and sidewalk will usually not be required to maintain the rural character.

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3. **Small hobby farms: 0.25 to ½ acre parcels.** These are areas where the predominant character is small lot ranchettes or a hobby farm.

4. **Very Low Urban Residential: 1.5 to 2.5 dwelling units per acre.** These are areas in the community which are well suited for large suburban lots to accommodate upscale residential units. Developments will have full urban services, including public water and sewer, underground utilities, and paved streets with curb, gutter, and sidewalk.

5. **Low Urban Residential: 2.5 to 3.5 dwelling units per acre.** These are areas with predominately single family attached units, but with some attached dwelling units. Developments will have full urban services.

6. **Medium Urban Residential: 3.5 to 4.5 & 4.5 to 5.5 dwelling units per acre.** These are areas with mostly single family detached units, but with some attached dwelling units. These areas will usually have somewhat smaller single family lots, and/or a slightly higher percentage of attached units than are found in the Low Urban Residential areas. Developments will have full urban services.

7. **Medium High Urban Residential: 5.0 to 8.0 dwelling units per acre.** These are areas with a mix of single family units, duplexes, and twin homes, with some areas with multi-family units. Developments have full urban services.

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8. **High Urban Residential: 9.0-12 dwelling units per acre.** These areas are a mix of single family attached units and attached dwelling units. The mix of multi-family buildings will be higher in this area than in the Low and Medium areas. Developments will have full urban services.

C. Commercial Land Uses

1. **Residential Office:** These areas provide for low intensity professional office uses on a scale consistent with residential areas. They typically serve as a transition between more intense commercial areas and residential land uses. They can also be used in certain areas to allow residential conversions to office use subject to site and architectural review criteria.

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2. **Professional Office:** These areas provide for general office development. They may serve as a transition between residential and commercial uses, or may be designed as a concentration of similar uses intended as an employment center.

3. **Neighborhood Commercial:** These are small areas which serve the immediate residential area with retail, personal and business services, and offices. Individual businesses should not exceed 7500 square feet, and the district should be 1-4 acres.

4. **Downtown:** This is a small area along both sides of Main Street in the central portion of Spanish Fork. It is intended to promote and maintain the character of a pedestrian-oriented retail district. Building orientation should strongly encourage pedestrian use by having buildings close to the street. The architectural style of new or remodeled buildings shall be consistent with the area.

5. **Shopping Center:** These areas provide retail uses, service oriented businesses, offices and restaurants in an integrated center. Each center shares common architecture, access, parking, signage, and landscape design. Centers will typically be 5-15 acres in size.

6. **General Commercial:** These areas provide a wide range of commercial uses designed to serve neighborhood, community, and regional needs. Uses may be freestanding or integrated in a center.

D. Industrial/ Employment Uses

1. **Business Park:** These are employment areas in a large scale campus style development designed to be compatible with adjacent residential areas. Typical uses include administrative and research companies, offices, laboratories, and limited manufacturing and assembly industries. Limited commercial uses which are compatible with and support the Business Park are allowed

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2. **Light Industrial:** These areas accommodate employment related uses including light manufacturing, assembling, warehousing, and wholesale activities. Associated office and support commercial uses are allowed. Uses that emit significant amount of air, water, or noise pollution will not be allowed. Residential uses are not allowed.

3. **Medium Industrial:** These areas accommodate employment related uses including light manufacturing, assembling, warehousing, and wholesale activities. Associated office

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and support commercial uses are allowed. Uses that emit moderate amounts of air, water, or noise pollution may be considered as conditional uses. Residential uses are not allowed.

4. **Heavy Industrial:** This area is intended to accommodate the manufacture and assembly of explosives. Residential uses are not allowed.

E. Other Uses

1. **Public Facilities:** Public facilities are properties and structures that are owned, leased or operated by a governmental entity for the purpose of providing governmental services to the community. Some of these services are necessary for the efficient functioning of the local community, and others are desired services which contribute to the community's cultural or educational enrichment. In either case, public properties and buildings represent important components of the community's quality of life.

2. **Recreation:** Properties that are intended to accommodate open space and recreational activities such as the fairgrounds, the golf course, parks, and the gun club.

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X. Circulation Element

Introduction: The Circulation Element establishes guidelines for streets, bike paths, trails, and, to a lesser extent airport use. This element will describe existing conditions, recommended improvements, and proposed standards for the different street classifications.

A. Street Classification System:

The city has a hierarchy of street types as follows:

1. Major and Minor arterials: These streets are designed for limited access to allow the traffic to move through the area. They typically provide direct access to commercial and industrial uses, but include some restrictions on access to reduce conflict points between through traffic and turning vehicles. Residential uses are usually required to have access from another street, and may have reverse frontage against an arterial street. They can carry very large volumes of traffic depending upon the design of the street, the number of lanes, and the area served.

2. Major and Minor collectors: These streets have limited restrictions on access and collect and distribute traffic between the arterial streets and the local streets. These streets are usually spaced at approximately ½ mile intervals and will serve from 400 to 1000 dwellings depending on the design of the street.

3. Locals: These streets are those that provide access to the individual lots but do not carry traffic through the area. They should be planned to serve a maximum of 50 dwelling units.

The arterial and collector streets are shown on Map T-1. Standard cross-sections for each classification of street are available in the Engineering Development Standards.

B. Street Maintenance and Level of Service Standards:

The goal of the Public Works Department is to maintain the streets within the City with an adequate driving surface. Roughness, cracking, and skid resistance are to be within accepted standards in the Public Works industry. The recommended maintenance schedule for the streets should be as follows: Year 0, new pavement; Year 1, slurry seal; Year 7, chip seal; Year 14, slurry seal; Year 20, 2" overlay with petromat. Each year between scheduled maintenance should include chip sealing and patching as necessary.

The City also desires to maintain a good movement of traffic throughout, without any significant delays or impediments to flows. The present level of service is generally categorized as a Level "A", which is primarily free-flow operations at the average travel speed and unimpeded maneuvering in the traffic system. As the City continues to grow it is expected that this level of service will deteriorate somewhat, but the goal should be to maintain a Level of Service C. This represents stable operating conditions, however the ability to maneuver and change lanes at midblock will be restricted and longer queues will contribute to average travel speeds of about 50% of the average free-flow speeds.

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C. Future Maintenance and Reconstruction Projects:

The City has an annual reconstruction program in which streets are overlaid each year. This program currently receives approximately $550,000 annually from the state for B & C road funds. The number of miles of qualifying streets and the area served determines the amount given to each city and county. This program is failing to keep up with the construction needs due to increasing cost of materials, and the overall age of the city streets. The City needs to allocate a minimum of $1,000,000 annually, or an additional $450,000 annually to meet this standard. The funds should be adjusted regularly to allow for the 20-year life of asphalt streets.

There is one bridge that needs to be replaced in the city street system. This bridge is located on Powerhouse Road and is over the Spanish Fork River. The bridge is scheduled to be replaced in fall of 2002. The structure is old, narrow, and is hazardous to the traveling public.

The city currently allocates approximately $50,000 annually for sidewalk replacement. This allocation currently repairs approximately 1800 lineal feet of sidewalk each year. This practice needs to continue as sidewalks will continue to deteriorate.

Approximately 17.5 miles of collector streets will need to be improved and upgraded over the next 20 years. The City will have to participate in some of these improvements while the developers will construct many of these streets in conjunction with new developments. The City's policy has been to require developers to construct or upgrade the streets that relate to their developments, including collector streets. The rationale is that the construction of new streets and widening of existing streets should be paid for by those who generate the need and benefit from such improvements. In some cases where the existing street to be widened is not in satisfactory condition, the developer will be required to overlay or reconstruct the existing street.

In some cases a combination of developments may be beneficiaries and an impact fee assessed. The City will, however, only require a proportionate share cost of developers for new or widened arterial streets. The additional costs related to arterial streets will probably be funded through UDOT or other federal funds.

D. Signalization:

The traffic signals currently in Spanish Fork City are operated and maintained by UDOT. There are 10 signals currently in operation. UDOT is also considering 3 intersections as possible locations in the future, which include US-6 and 2550 East, and US-6 and Powerhouse Road. As the City continues to grow and traffic volumes increase, the city will need to consider City-owned signals. These need, however, are several years away and are not a present concern.

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E. Bicycle and Trail Facilities:

Utah County currently has a trail system master plan adopted for the entire county. This plan includes trails along the Spanish Fork River, the Mill Race Canal, and the High Line Canal. The High Line Canal trail is part of the regional Bonneville Shore Trail that will eventually link communities along the Wasatch Front from Brigham City to Nephi.

Spanish Fork City has developed a Trails Plan (Map TP-1) which includes the County designated trails, as well as various connecting trails and intracity routes. Multiple use trails will be developed along the Spanish Fork River for pedestrians, bicyclists, in-line skaters, and equestrian users. Other trails will connect segments of the City to these trails.

Bicycle routes or lanes will also be included in the overall plan. Most will be lanes within the wider streets in the older parts of town, and along collector and arterial streets in the newer areas. It is possible that some will be detached from the roadway surface where rights-of-way are sufficient to allow. The routes will be designed and developed to encourage the use of bicycles as an alternate transportation method, with schools, shopping, and employment centers as destinations.

F. Goals and Policies

Goal One: Provide a safe, convenient, and efficient system for transporting both people and goods.

Policies:

a. Implement a program of regular maintenance and reconstruction of City streets to guarantee a safe overall system.

b. Develop intersections to obtain Level of Service C or better during peak-hour traffic periods. Reduce the intensity of proposed projects or require traffic improvements to maintain or achieve Level of Service C or better.

c. Require new developments to have or to develop appropriate access for the intensity of the development.

d. Obtain needed street rights-of-way through property dedication when subdivisions, conditional use permits, rezonings, or design review plans are approved.

e. Base street system planning on traffic

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generated from planned uses. Changes in planned uses are to be accompanied by an analysis of traffic impacts created by those land use changes and what improvements are needed to deal with these impacts.

f. Design sidewalks along new streets to be set back from the traveled roadway, thereby providing a safer walking area.

g. Design local residential streets with discontinuous patterns to discourage through traffic. Discourage partial width streets (half streets) for new, local streets.

Goal Two: Provide pleasant, safe, and functional non-motorized transportation routes.

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Policies:

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a. Provide outside lanes on collector and arterial streets to be wide enough to safely accommodate bicycles.

b. Prepare a more extensive bikeway and trails plan that identifies which parts of the system should be paths, routes, or lanes, and what types of non-motorized transportation should occur in each area. Develop detailed design guidelines for each component of the system.

c. Require pedestrian walkways between sidewalks along public streets and developments adjacent to those streets. Pedestrians should not have to use driveways or parking lots as the only access points to buildings.

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XI. Moderate Income Housing Element

Introduction: The availability of moderate-income housing has become a statewide concern. In 1996, the Utah State Legislature adopted §10-9-307 of the Utah Code dealing with "Plans for Moderate Income Housing". This section of the code requires that every municipality adopt a plan for moderate income housing within the community. The plan must address the following five issues:

1. An estimate of the existing supply of moderate income housing located within the municipality;
2. An estimate of the need for moderate income housing in the municipality for the next five years as revised annually;
3. A survey of total residential zoning;
4. An evaluation of how existing zoning densities affect opportunities for moderate income housing;
5. A description of the municipality's program to encourage an adequate supply of moderate-income housing.

Moderate income housing as defined by the Utah State Code §10-9-307 (2) (a) is: " housing occupied or reserved for occupancy by households with a gross household income equal to or less than 80% of the median gross income of the metropolitan statistical area for households of the same size".

The Utah County moderate-income level is recommended by the State to be used by Spanish Fork in determining whether or not housing is affordable.

A. Estimate of Existing Supply

According to the Utah State Affordable Housing Model, Spanish Fork currently has a surplus of households making 80% of the Metropolitan Statistical Area Median Income (MSAMI). In 1990 Spanish Fork had a deficit of 139 units in this category meaning that the overall gain from 1990-98 was 618 units. Most of this increase was due to new construction, but some is also a result of increasing affordability of housing due to lower mortgage interest rates recently. According to the City calculations, from 1999 to 2004 an additional 369 affordable single family homes and 270 multi-family units have been added (based on valuations – not including land cost).

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But, according to study conducted by the Bureau of Economic and Business Research David Eccles School of Business University of Utah in June 2003 called Affordable Housing in Utah Cities: New Construction, Building Fees and Zoning they show the city actually approved less affordable housing from 1997-2002. According to their study most of the new affordable housing developed in the City from 1997 to 2002 was twin homes, townhomes, and apartments.

PROFILE OF SPANISH FORK CITY

Demographics, Tenure and Income 2000			Measures of Affordability			
Demographics	*Total*		Affordable Home Price (County) - 2002	$127,714		
Population	20,246		New Home Cost (City) – 2002 Median Price	$208,069		
Households	5,515					
Tenure	*Total*	*%*	New Residential Units Built 1997 to 2002	Total	# Afford.	% Afford.
Homeowners	4,344	79%	Single Family Homes	1,309	15	1%
Renters	1,171	21%	Twin Homes	182	91	50%
Total Occupied Units	5,515	100%	Condo/Town Homes	90	45	50%
Tenure by Income	*Total*	*%*	Manufactured	0	0	0%
At or below 80% AMI			Apartments	84	84	100%
Homeowners	1,077	25%	Total	1,665	235	14%
Renters	641	55%				
Household by Income	*Total*	*%*				
Total Households	5,515	100%				
At or below 80% AMI	1,718	31%				

Affordable Housing in Utah Cities: New Construction, Building Fees and Zoning, Bureau of Economic and Business Research David Eccles School of Business University of Utah, June 2003
AMI – area median income (county)

B. Estimate of 5-Year Need

According to the Model, population growth in Spanish Fork between 1999 and 2003 will create a demand for 147 units available to moderate-income families (approximately 30 per year) if this trend is continued into the next 5 year time the city will need to approve an additional 150 units from 2005 to 2010.

C. Survey of Residential Zoning

The City currently has fourteen (14) residential zoning districts that allows for a wide range of lot sizes from 40-acre parcels to 6,000 square foot lots. Through a Master Planned Development (PUD) a project that has more than 20 acres can vary the lot sizes and density ranges allow for opportunities to do affordable housing. Residential densities typically range from 2.5 to 12 units per acre.

District	Minimum Lot Area	District	Minimum Lot Area
A-E	40 acres	R-1-15	15,000 s.f.
R-R	5 acres	R-1-12	12,000 s.f.
R-1-80	80,000 s.f.	R-1-9	9,000 s.f.
R-1-60	60,000 s.f.	R-1-8	8,000 s.f
R-1-40	40,000 s.f.	R-1-6	6,000 s.f.
R-1-30	30,000 s.f.	R-3	6,000 s.f.
R-1-20	20,000 s.f.	R-O	6,000 s.f.

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D. Evaluation of Zoning's Affect on Moderate Income Housing:

It is very difficult to determine the effect zoning has on affordable housing. If you take into consideration zoning as well as land prices, political environment, socioeconomic conditions, size of a city, age of a city, economic growth, and demographic growth you find that there is a lot of variables to consider. These factors often interact with one another therefore quantifying the role of any one factor as a barrier to affordable housing would be difficult. But one would assume that zoning and land costs would be two major barriers to developing affordable housing.

E. Spanish Fork's Program to Encourage Moderate Income Housing

Based upon the results of the Utah State Affordable Housing Model Spanish Fork currently has a surplus of affordable housing for moderate-income families. Spanish Fork City will continue to provide and support many different types of housing for all of its future residents.

Goal One: Continue to encourage affordable housing in Spanish Fork City.

Policies:

a. Encourage the use of Master Planned Developments or the PUD concept to provide a mix of lot and home sizes and home types (townhomes, twin homes, accessory apartments and single family detached homes) in residential zoning districts.

b. Continue to provide HOME funds to the Housing Authority of Utah County to encourage 30-50% AMI housing and removing barriers that block affordable housing.

c. Continue to allow manufactured homes in all residential zones throughout the City.

d. Continue to allow accessory apartments (basement, mother-in-law) in the R-3 and R-1-6 zoning districts.

Goal Two: Encourage developments that target special groups like the elderly, disabled persons, and others people with special needs.

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The Capital Facilities and Services Plan is that portion of the General Plan that determines what public facility and utility infrastructure projects will need to be built and/or significant maintenance performed in the next several years in order to maintain an acceptable level of service. A background analysis of the public facilities, infrastructure and services are described, together with deficiencies in the systems and the recommended improvements.

The construction and installation of the improvements will be influenced and affected by the amount of available funds. The actual construction of these improvements will be determined on a year-to-year basis as part of the city budget process.

A. Water System

1. History and Background

Spanish Fork City's water system was first developed near the turn of the century. Malcolm Springs, then called Evans Spring, was the first piped culinary source. The original pipelines were mostly wood. Most of these pipes have since been replaced with cast iron, ductile iron and plastic. The City's first well was installed in the 1930's. Cold Springs was developed around 1953 with a flow of 900 gallons per minute (g.p.m.). A new 30-inch transmission line from Cold Springs to the city was installed in 1985, which increased the flow to an average of 2420 g.p.m. and a pump station was constructed in 1992 to pump water to a new 3 million gallon tank in Sterling Hollow. Malcolm Springs was re-developed with a new collection system and transmission line with a booster pump station in 1992. These improvements increased the production of Malcolm Springs from 900 g.p.m. to 3400 g.p.m. The first water storage tank had a capacity of 750,000 gallons and was built in the 1930's. This tank has since been abandoned as a culinary tank because of inadequate elevation for providing sufficient pressure. A one million gallon tank was added in the 1960's, a two million gallon tank was built in the 1970's and a three million gallon tank was built in 1992. Seven different wells have been used over time. Presently two wells can be used to supplement the spring sources. The Memorial well is presently used for irrigation but can be re-connected to the culinary in a few hours. This source now produces 1800 g.p.m. In 1995 a new telemetry system was installed to computerize the water system and allow instantaneous observation and control of the system.

2. Present System

The Spanish Fork Municipal Water System serves the entire City plus some additional homes on the periphery of the City. In all, the City supplies water to approximately 6400 residences and 465 businesses. The Map W-1 shows the general service area of Spanish Fork water by indicating the location of the peripheral water lines of the system.

a) Transmission and Distribution System:

In 1998 a transmission line from the Crab Creek Springs was installed to deliver water to the Cold Springs Reservoir. This line delivers approximately 2100 gallons per minute from two springs in the Crab creek Drainage. Cold Springs also produces water into this reservoir, which then delivers water to the city through a 30-inch line that runs along Highway 6. This line reduces to a 24-inch diameter pipe at approximately 2000 East and continues along Highway 6 to 400 North.

The City has two pressure zones plus the Oaks system, which is generally a system on its own. The Upper Pressure Zone is shown on Map W-1, and includes the entire east bench east of approximately 600 East. The Cold Springs, Crab Creek Springs and the Cold Springs Reservoir service this zone. The Lower Pressure Zone serves the area west of 600 East and the north industrial area. It is served by Malcolm Springs and the Malcolm Springs reservoirs. The distribution lines range from 3 inch to 18-inch diameter. The system includes cast iron pipe, ductile iron pipe, AC pipe, and PVC pipe. There are approximately 600 fire hydrants and over 1000 valves on the system.

The original “block” area of town is generally served by 3-inch to 6-inch diameter cast iron pipe. It is old and undersized to meet present flow requirements especially fire flows. The soils in the northern section of the City are hot clays and have caused electrolysis deterioration of the cast iron, resulting in failure of the pipe in some instances. Most of this pipe was installed in the 1930's or 1940's. Some of these lines have been replaced and the remainder needs replacement as soon as possible. A map is included showing the more recent water main breaks. To date we have replaced 28 blocks with 272 blocks to be replaced. It is estimated that $6.8 million is needed to replace the remaining old blocks.

The Oaks area, including Strawberry Water Users, some homes along Power House Road, Spanish Oaks Golf Course and Canyon View Park; are served by a pump station fed by a line from the Malcolm Springs Reservoir. The water is pumped into a 125,000-gallon tank above the gun club. Only one half of the originally designed tank has been built to date, and this portion of the tank is at capacity with the present development and demands. Any further development drawing water from this system will have to increase the storage capacity by adding the second half of the tank.

The new subdivisions developed since 1976 have installed a minimum size of 6-inch ductile iron or in more recent years, PVC pipe. The sizing used in these areas was based on a computer model developed at that time. The development of longer blocks thus making loops larger in recent years and the increase in home size and fire flow demands have caused a change in the required minimum pipe sizes from 6-inch to 8-inch.

In the early 1970's, a line was extended along south Main Street and Arrowhead Trail to what was then Fritzi of Utah Apparel Manufacturing. The need for fire protection was the motivation for this project. Intermountain Farmers and H. E. Davis and Sons later extended portions of this line along Arrowhead Trail. In 1993, this line was extended through several areas of the Leland area including Arrowhead Trail, Mill Road and 900 South Street, where residents were having problems with their wells. Presently this line is a dead end. It is planned that this line will loop going north in front of the old Sugar Factory to 100 South and then run east to connect to a 12-inch diameter pipe at 100 South at about 630 West.

Four lines presently serve the North Industrial area from the south: a 12-inch line in Main Street, an 8-inch line in 300 West, a 4-inch line in 200 East, and a 12-inch line in Williams Lane. The 4-inch line in 200 East is inadequate and will be replaced with a 12-inch pipe at some time in the future.

b) Existing Water Sources:

Although the City owns rights from several sources, only a few of these are now used for culinary purposes. In addition to owning certificated rights from wells amounting to 8102 acre feet of usable water rights (see note 1, bottom of TABLE W-1), the City owns rights in the Spanish Fork River in the form of decreed rights in Malcolm Springs and the Mill Race Canal, stock in the West Field and East Bench Irrigation Companies and shares in the Strawberry Reservoir. Recently the city has been involved in the purchase of water through the South Utah Valley Municipal Water Association. The amounts of each of these rights is shown on the following table:

TABLE W-1

EXISTING WATER RIGHTS

SOURCE	AVG. YIELD (acre-feet)	DRY YIELD (acre-feet)	POPULATION	CUMULATIVE
Mill Race (1)	706	475	2,397	2,397
Strawberry (2)	1,961	1,690	7,409	9,806
East Bench (3)	320	272	1,201	11,008
West Field (3)	211	153	739	11,746
Malcolm Springs (1)	1,906	1,591	7,097	18,843
Wells (4)	14,263	(note 1) 11,386	28,948	47,791
SUVMWA (CUP)	445	445	1,806	49,597
SUVMWA (Jordan)	112	112	455	50,051
TOTAL	19,367	4,182	50,051	50,051

(1) Court decree
(2)Strawberry Valley Project water
(3) Irrigation Company rights in Spanish Fork River
(4) Underground water filings including Spring Creek.
NOTE 1: This usable quantity assumes 50% use during October, November, December, January, February, March and April; and 100% use during May, June, July, August, and September.

In the 2070 Water Demand and Supply Analysis for South Utah County and East Juab County, Utah completed by Brown and Caldwell in September 1999 stated that there is approximately 500 acre feet of East Bench Irrigation water, 100 acre feet of West Field Irrigation water and 750 acre feet of Strawberry water within the Spanish Fork growth area that could be converted to municipal and industrial. This additional water would serve about another 4,650 people. The 442-acre feet of CUP water presently being contracted for through the Central Utah Water Conservancy District would amount to about 1540 people.

Table W-2 shows the principle sources of culinary water, their flow capacity and the use from that source in 1993 through 1997. As noted earlier, prior to 1990, Malcolm Springs could deliver only 900 g.p.m. The City contracted to re-develop Malcolm Springs and increased the flow to approximately 4500 g.p.m. A pump station was installed at Malcolm Springs to pump water to the 1 million and 2 million gallon water tanks located by the intersection of US 6 and Power House Road. During the same period of time the City built a new 3 million gallon water tank in Sterling Hollow and a pump station at Cold Springs to increase the water pressure and provide more storage for the upper pressure zone (the east bench) of the City. In 1998 the Crab Creek transmission line was installed and delivers about 2100 gallons per minute to the city.

TABLE W-2

SOURCE	CAP. (gpd)	CAP. (cfs)	1997 USE (mg)	1998 USE (mg)	1999 USE (mg)	2000 USE (mg)	2001 USE (mg)

Cold Springs	3,554,496	5.5	627.22	995.08	1345.67	1385.09	1340.78
Malcolm Springs	4,847,040	7.5	332.42	224.13	86.31	136.99	280.73
Cem. Well #1	1,421,798	2.2	230.30	114.53	255.48	241.47	86.65
Ed Clark Well	323,136	0.5	0.00	0.00	3.49	21.47	15.28
Crab Creek Springs	3,024,000	4.7	0.00	0.00	818.10	732.54	644.80
TOTAL	13,170,470	20.4	1189.94	1333.74	1764.73	1948.12	1969.49

EXISTING CULINARY WATER SOURCES

The present system can deliver 20.45 cfs or 9178 g.p.m. maximum flow.

c) Current Water Use:

A nationally used text book The Practice of Local Government Planning, 2nd edition indicates that our total water need may be as much as 100 to 125 gallons per capita per day (gpcpd). Spanish Fork residents use close to this amount (about 90 gpcpd) during the winter months and indoor use during the summer months. However, because of the semi-arid climate and the need to water lawns and gardens, water use during the summer peaks at about 281 gpcpd, which is over three times more. The average annual use is 0.85 acre-feet per household per year or an annual average use of 223 gallons per person per day.

Residential use accounts for approximately 79.48% of the total water delivered to the City. Commercial users consume 20.52%. The following Table W-3 shows water usage by category during the last 5 years.

TABLE W-3
CULINARY WATER USED BY TYPE OF USER

YEAR	DOMESTIC USE	COMMERCIAL USE	INDUSTRIAL USE	MISC. USE	TOTAL
1997	1,001,183,000	261,903,720	73,870,280	210,253,000	1,547,210,000
1998	1,000,294,000	256,260,420	72,278,580	217,169,000	1,546,002,000
1999	1,092,567,000	262,761,720	74,112,280	259,679,000	1,689,120,000
2000	1,271,988,000	279,595,680	78,860,320	149,315,000	1,779,759,000
2001	1,181,329,000	265,584,540	74,908,460	200,293,447	1,772,115,447
AVG	1,109,472,200	265,221,216	74,805,984	207,341,889	1,656,841,289
PERCENT	66.96%	16.01%	4.51%	12.51%	

PERCENT BY CAT.(1)	79.48%	20.52%			

(1) Percent by Cat. considers residential and misc. use as one category. Assuming parks, cemetery, ballparks, schools, etc. are part of the overall residential use, and commercial and industrial use as one category.
NOTE: All assumptions for future water needs will be based on the 84.29% residential use and 15.71% for commercial use.

The Utah State Department of Drinking Water requires that the City have a developed source capacity of 800 gallons per day per connection for indoor use. As shown on Table W-5 the existing average use is considerably less than that amount. However, the State has required some cities to stop issuing building permits if they do not meet this standard. With 6400 residential connections in Spanish Fork this requirement amounts to 5,120,000 gallons per day. Presently, Spanish Fork City culinary sources can produce 13,170,470 as shown in Table W-2. The use of these sources is dependent on the city's ability to replace the spring water in the river. With the low flows in the river and the reduced amounts of water available from Irrigation Co. stock, the replacement of spring diversion to the river needs some re-evaluation. However, the well sources shown on Table W-2 will be considered as backup sources in case of a problem with the pipeline down the canyon. In the event of an earthquake or some other development that would prevent the pipeline from the springs from being used for a period of time, the wells would supply some backup for fire protection and minor culinary use. There would not be sufficient water for irrigation or other non-essential use. Considering the spring sources only and only for indoors use, a population of 49,000 could be served. This assumes that the ratio of residential to commercial-industrial is considered constant and that all outdoor use is provided through the Pressure Irrigation system.

Another guideline used by the state is that the total developed source capacity shall equal or exceed the peak daily demand of the system. The peak day in 2001 occurred on August 10, 2001, where 12,938,662 gallons or 8985 gallons per minute were used. This is 24 percent below (8985/9,178 = .98) the maximum capacity of the principle culinary water sources presently connected to the City system. To accommodate future growth a pump station at Darger Springs will be installed in the summer of 2002. Ultimate growth demands will depend on whether new sources are being developed and how much secondary irrigation system is installed.

The state requires a storage volume capacity of 800 gallons per connection.
This translates into about 5,120,000 gallons for the residential users and 1,500,500 gallons for all other users, for a total of 6,620,500 gallons required. The present storage capacity will serve a population of 24,000 people based on the state requirements and allowing storage for commercial and industrial users, and landscape irrigation storage.

The completion of the city wide pressurized irrigation system is planned for in 2002. The storage requirement for the culinary system will drop to 400 gallons per equivalent residential connection (ERC) plus fire suppression and emergency storage. There will still be some landscape irrigation water provided thru the culinary water system that will need to be added to the total storage requirement. The required storage after the pressurized irrigation system is in use is: 400 gallons per ERC (6400 residential units and 1875 ERC's for the commercial and industrial units), or 3,310,000 gallons. The fire suppression requirement of 1500 g.p.m. for 3 hours equals 270,000 gallons and the emergency storage of 1,000,000 gallons and landscape irrigation storage of 625,000 gallons (250 acres @ 2500 gallons per

acre). Therefore, the total storage required at the present time with the irrigation system operational equals 5,205,000 gallons. Assuming that new connections will require the 400 gallons of storage per ERC plus additional emergency and fire storage, the city can add approximately 1,100 ERC's with the existing storage facilities.

TABLE W-4
WATER STORAGE CAPACITY

RESERVOIR	TYPE	CAPACITY (gallons)
Cold Springs	Concrete	3,000,000
Malcolm Springs #1	Concrete	2,000,000
Malcolm Springs #2	Concrete	1,000,000
Oaks	Concrete	125,000
TOTAL		6,125,000

Yet another state requirement is that the water distribution system must maintain a minimum working pressure under peak instantaneous flow conditions of 20 pounds per square inch (psi). The present level of service of the City tries to maintain is a minimum pressure of 40 psi during peak flow conditions but under normal conditions maintains a pressure of between 55 and 80 psi, with static pressures from 70 to 130 psi.

3. Projected Needs and Recommendations

At present the City culinary water supply supports approximately 24,000 people. As of May 1999 the subdivisions that have be approved and are in the planning stages take the City to this capacity. A plan to increase culinary water capacity is underway and being researched by the City staff. Two options are available in the short term. The two options include new well sources, such a equipping the Fritzi well that will be up and running in the summer of 2002 and drilling a new well. We will also be installing pressure irrigation City wide that will free up culinary water. Soon a new water tank will have to be constructed, planned in 2004. The City should continue to acquire water rights and upgrade the system to provide for future needs. Some specific items or needs should include: install a pump station at Darger Springs (Summer 2002), acquire a generator to run some of the wells within the central town in case of a break in the lines out of the canyon from either natural disaster or other potential problems. At present all of the City's main storage tanks are located away from the City on the far side of an earthquake fault line. If an earthquake occurred that damaged

those lines the City would be immediately without water. It is the plan of the City that the wells that are presently in place would be used as back up in case of an interruption of service down the canyon and for secondary irrigation. The capacity of these wells will not be used to calculate future growth capacity of the drinking water system.

Page Break

a) Water Rights

The City presently has water rights to accommodate a population of 43,246 people with proportionate amounts of parks, schools, commercial and industrial use. However, 53% of these rights are from wells. Outdoor use amounts to about 39% of total use. The springs used by Spanish Fork City are considered part of the flow of the Spanish Fork River. Whatever water is diverted from the springs must be replaced in the river to not adversely effect downstream users.

If a population of 61,000 were the design standard, a total of 16,846 acre-feet of water rights would be required. The City would need an additional 929 acre-feet of water rights. There are 850 acre-feet of water in the East Bench Irrigation Company and Westfield Irrigation Company service areas that would probably become developed in Spanish Fork and the water rights turned over to the city. The City should take every effort to insure this happens.

The City is a member of the South Utah Valley Municipal Water Association. This group comprises the ten cities in south Utah County. This group has contracted for 1590 acre feet of CUP water and recently completed a study for the water demands for south Utah Valley to the year 2070. Based on this study the SUVMWA group will request an additional 11,200 acre feet of CUP water to meet the 2070 year demands. This assumes that Strawberry water can be converted to municipal and industrial use over the next 50 years.

The Crab Creek water line is now complete and in service. This water source and pipeline has made it possible to serve the winter needs of the entire city without pumping water. The flow from the Crab Creek springs has averaged about 2100 g.p.m. We will still have to pump water during the summer months, but this will help considerably.

Pressurized Irrigation System
Spanish Fork City adopted a policy in 1997 requiring all new developments to install pressurized irrigation lines. A large users project was completed that made pressurized irrigation available to several of the parks and schools in the city. Since that time, homes and subdivisions along those lines were able to connect to the pressurized irrigation system and presently there are about 1100 homes connected to the system.

The Spanish Fork pressurized irrigation system will be constructed citywide during 2002 and will be operational by spring of 2003. This system will utilize four City owned wells, two wells owned by Ensign-Bickford Company, and 2 additional wells that will be drilled during the summer of 2002. With this system in place, it will free up culinary water during the high use times of the summer months. The peak day use for the culinary system will drop to about 40% of the current peak day use.

TABLE W-5
DRINKING WATER SOURCES
POPULATION/CAPACITY WITH EXISTING SPRING SOURCES

STANDARD	AVG. INDOOR WATER DEMAND (gpd)	POPULATION (1)
State Regulations	800	49,000
Actual Use (Indoor)	320	120,000

(1) Based on Table W-4 (84.29% residential use) and Table W-6 (12,117,600 gpd flow) and 3.48 people per connection.
NOTE: A pump house at Darger Springs would have to be installed to fully utilize all spring sources.

TABLE W-6
POPULATION/CAPACITY OF SPRING SOURCES
(Meeting State standards)

SOURCE	FLOW (cfs)	FLOW (gpd)	NUMBER OF CONN.	POPULATION	CUMULATIVE
Cold Springs	5.50	3,554,496	3,745	13,033	13,033
Malcolm Springs	7.50	4,847,040	5,107	17,772	30,805
Upper Crab Creek	3.75	2,423,520	2,553	8,886	39,691
Lower Crab Creek	1.00	646,272	681	2,370	42,061
Darger Springs	0.50	323,136	340	1,185	43,246
TOTAL	18.25	11,794,464	12,427	43,246	43,246

c) Block Replacement

In 1999 there was only 1000 feet of water main that was replaced with the block replacement program. This program needs to be continued over the next several years in an effort to replace the aging water system in the old part of town. We have had several water mains breaks that have mostly been related to failure of the old pipes. Just as with the sewer replacement, this will take approximately 20 years to complete the replacement in the old part of town. It will take approximately $250,000 annually to replace 10 blocks per year and $330,000 annually to replace 15 blocks per year. There will still be other capital project needs each year such as new wells, water storage tanks, pump stations, etc.

In addition, a program should be undertaken to replace the old 4-inch fire hydrant lines with 6-inch hydrants to bring them up to the state standards.

d) Future Infrastructure Expansion

At present the City culinary water supply appears to be adequate. A new water tank will need to be constructed, this project will be dependent on the rate of growth in the next couple of years but is expected to be around 2006 or a population of 27,500.

As noted earlier, the decision to use a secondary irrigation system has been made. The city needs to promote the use of this system in all developments. The main reason for the installation of a pressurized irrigation is to allow for the demands of growth.

Sanitary Sewer System

History:

The Spanish Fork City sewer system was initially installed in the 1930's and discharged directly into Dry Creek. Effluent was not treated until 1958, when the Waste Water Treatment Plant was constructed. The initial capacity of the plant was 2 MGD. There are a few homes along new lines that have yet to connect to the sewer system. These are mostly along Canyon Road area and are presently on septic tanks and drain fields. The Leland area does not have public sewer available at this time. There is approximately 500,000 feet of sewer main with 900 manholes in the collection system.

2. Present Facilities

a) Waste Water Collection

The majority of the system within the old part of town that was installed in the 1930's is 6-inch vitrified clay. These old lines are of questionable condition and do not meet state standards that require a minimum of 8-inch diameter. There have been some structural failures and many allow ground water to enter the system, amounting to approximately 800,000 gallons per day at the present time. The infiltration amounted to almost 2,000,000 gallons per day in 1983. Since that time several of the worst infiltration problem lines have been replaced. The rest of the system is generally 8"-36" concrete and PVC sewer pipe. The Utah State Dept. of Environmental Quality requires a minimum of 8-inch diameter pipe.

The City presently has six basic service areas. These areas are highlighted on Map S-1 and are serviced by a series of trunk lines also shown on Map S-1. There is presently no sewer service the southwest part of town west of Main Street and South of 900 South and the Leland area.

For design purposes the sewer system is considered at capacity when the pipe is two thirds full based on accepted engineering practices. This allows for peaking and any inflow that may occur during wet weather. Presently the 100 East trunk line has capacity for 450 to 500 new connections. This line will be adequate for the area projected to be serviced by this line. The Bottoms trunk line intersects the Canyon Road line at 1400 East and diverts all of the sewer flow from the east bench east of 1400 East into the Bottoms line. The area served by the 1400 East trunk line will have 4 main east-west lines:

750 South will serve the area between 750 South and the Canyon Road.
Canyon Road will serve the area along the Canyon Road and existing developments above 2300 East.
1240 South will serve the area from approximately 500' south of the Canyon Road to 1500 South.
1650 South will serve the area from 1500 South to the brow of the hill.

With the completion of the Bottoms trunk line and the 1400 East trunk line, the remaining area served by the 600 East line can now be developed. This area is east of 600 East between US-6 and the Canyon Road and north of 750 South. Presently, the 200 West trunk line is at capacity. If any future density changes take place increasing the flow in the 200 West line there will have to be some additional lines installed to divert some of the flow to

the Bottoms trunk line. The 630 West trunk line is adequate for the area projected to use this line. Lines in the industrial area will be designed as the area develops and the uses can better be established. The Mapleton trunk line crosses the NE bench at approximately 1000 North and has capacity for about 3500 homes plus industrial and commercial capacity for the area north of Kmart.

There are presently two lift stations on the collection system. The lift stations are needed to get the wastewater high enough to gravity flow through the rest of the system. A new lift station will be required to serve the northwest part of the city (north of the jail complex) when that area is developed. The lift stations are shown on drawing S-1 and are located as follows:

TABLE S-1
LIFT STATION LOCATIONS

NAME	LOCATION
Industrial	2500 North Main
North Industrial	3200 North 100 West

b) Waste Water Treatment

The Spanish Fork City Waste Water Treatment Plant (WWTP), located at approximately 200 East 2100 North, was originally built in the late 1950's. It was remodeled and enlarged in 1983. The new enlarged plant has an average daily flow capacity of five million gallons per day (mgd). The peak flow capacity is 10 mgd. The present average daily flow to the plant is 3.2 mgd with a present flow of .35 MGD from Mapleton. We have contracted with Mapleton for ultimate flow of 0.59 mgd.

TABLE S-2
WWTP CAPACITY

TYPE OF USE	PRESENT CAPACITY (gpd)	FUTURE CAPACITY (gpd)
Residential	2,961,000	5,421,000
Commercial and Industrial	650,000	1,189,000
Mapleton*	590,000	590,000
Infiltration	800,000	800,000

*per existing agreement

It is anticipated that infiltration will reduce when the old clay lines are replaced, however for this report it is left in the flow calculations until the lines are replaced and actual flows are measured.

The standards required for discharge from the WWTP are determined by the State and USEPA and are outlined on the City's NPDES permit. Most of the effluent from the WWTP is discharged into Dry Creek that discharge into Utah Lake. Two downstream farmers have

approved water rights to the use of the effluent if it is in Dry Creek; however, the city is not obligated to discharge the water into Dry Creek if the city has another use for the water. The present facility is irrigated by use of the effluent from the plant. The City has a Water Right Change Application approved by the State Engineer, which allow an exchange from discharge into Dry Creek to use the springs along the hill around Canyon View Park. This right can only be used when down stream users in the river have enough to fill their rights.

During 2001 the biological component of the treatment process including BOD and TSS removal has been above 90% of the capacity of the plant during two different months. Biological Filters are scheduled for July 2002 to extend the biological capacity of the plant. Based upon current growth rates this project will extend the capacity of the plant until about the year 2007 or a population of 30,400.

Based on the NPDES Discharge Permit issued by the state the city is required to discharge water that must meet the following standards:

TABLE S-3
NPDES PERMIT DISCHARGE LIMITS

ELEMENT	MAXIMUM CONTAMINANT LEVEL
Ammonia	Oct-March 9.0 ppm, April-Sept 8.6 ppm
Residual Chlorine	0.42 ppm
TSS/BOD	30 day avg 25 ppm, 7 day avg 35 ppm
Coliform	7 day avg 250 col/100 mll, 30 day avg 200 col/100 ml
Total Coliform	7 day avg 2500 col/100 ml, 30 day avg 2000 col/100 ml
Dissolved Oxygen	5.0 ppm minimum

3. Projected Needs and Recommendations

a) Waste Water Collection:

Originally 101,500 feet of old 6-inch vitrified clay pipe in the old part of town needed to be replaced. In 1996 a total of 4600 feet was replaced, 7800 feet was replaced in 1997. Approximately 4200 feet of sewer main was replaced in 1998, and 1000 feet in 1999. There are still about 84,000 feet of sewer-main to be replaced in the old part of town. The cost associated with this replacement is approximately $5,500,000. If 10 blocks or 4500 feet per year are replaced the annual cost will be around $225,000 and it will take 19 to 20 years to complete the replacement in the old part of town. If 15 blocks or 6750 feet per year are replaced the annual cost will be about $337,500 and it will take 13 years to complete.

A new outfall line from the WWTP to Dry Creek was put into service in the fall of 1998. The City should be careful and review the sewer needs of all proposed industrial customers requesting to build in the north industrial area. Flows as well as sewer strength and potential harmful discharges should be closely scrutinized to insure the lines and lift stations have capacity, and the plant is not threatened by harmful contaminants.

Waste Water Treatment:

The WWTP is adequate to serve a population of 33,000 people with the Mapleton's share of .30 MGD (4320 people) with an industrial use of equal proportion to today's use. This leaves a capacity for Spanish Fork of 24,000 people. This population should take us to the year 2003 based on the present population projections. This is based on an average daily use of 316 gpd per residential connection.

D. Stormwater Drainage System

1. Present System:

The storm drain facilities are primarily open irrigation gutters in old part of town, which can carry approximately a 5-year storm event. Many of the irrigation ditches flow into the pond at North Park, and eventually flow into Dry Creek. There are several areas where the irrigation or drainage gutters flow into the underground piping. Some portions of the northern part of the City have drainage problems during heavy rains, even with the piped storm drainage system.

The newer areas that have been developed over the past 25 years use sumps to collect and dispose of storm water. A sump is a 5-foot diameter perforated pipe buried 10-12 feet in the ground and surrounded by gravel. The sumps have proven to be an effective method in many areas of the City. This meets the City's requirements that all new developments maintain a 25-year (24 hour) storm event on-site. The standard of the 25-year storm was determined by the City Engineer as the appropriate event to use. This requirement places a reasonable standard on the developer, and allows the city to design for the remaining storm water, up to a 100-year storm, without placing a large burden on the taxpayers.

300 West Ditch

The area from Main Street to 300 West from Center Street to 900 North flows into the 300 West ditch, which is part of the Westfield Irrigation Company system. Storm water from the City streets flows into this ditch at various locations, but the ditch is maintained by Westfield. 100 South drains the area south of Center Street and West of Main Street.

Main Street (300 South to 1000 North)

The area along Main Street (300 South to 1000 North) drains into a large storm drain in Main Street which is maintained by Utah Department of Transportation (UDOT). The City does have some areas that also flow into the UDOT drain. This drain opens to a ditch near I-15 and flows northeasterly along the old Orem Railroad right-of-way and into Dry Creek. The open portion of this drain is under City maintenance.

Main Street (1600 North to 3000 North)

The industrial area north of Interstate 15 flows into a drain at 1600 North Main Street and northerly into Dry Creek.

Green Acres/Wolf Hollow Area

The Green Acres/Wolf Hollow area uses a system of sumps, piping, and a retention basin. This area has a large storm drain in Scenic Drive from 1170 South to approximately 500 South that discharges into the Mill Race Canal. There is also a ground water/storm drain in 1000 South flowing westward into the Mill Race Canal. This drain helps to lower the water

table in the Green Acres area as well as to provide some storm drainage for the area. The Knollcrest and Wolf Hollow Heights area drain into a retention basin at 1050 South 1100 East. The basin stores the peak runoff and allows it to infiltrate into the ground. The remaining area in this part of the City is drained into sumps located in low points throughout the area.

Mt. Loafer Area

The Mt. Loafer area drains within the street gutters to a retention basin located at 1150 East 600 South. There are some areas that have underground piping leading to the basin. During heavy rains there are problems getting the water into the basin at a fast enough rate.

Cambridge/Dover Estates Area

The area in the Cambridge Estates and Dover Estates area drains into a storm drain in 150 South that flows to 1150 East then north to Center Street.

The Oaks

The Oaks (single family) area has a storm drain that carries runoff from the developed area to the Spanish Fork River. The condominium area has a small detention basin, which has an overflow to the irrigation canal along Powerhouse Road.

Canyon Ridge/Red Pine

These areas south of Canyon Road east of 2600 East have a series of sumps that are designed to drain a 25-year storm occurrence. The City has designed a retention basin for the park in Abbie Court that will accommodate up to a 100-year storm occurrence.

Projected Needs and Recommendations:

The City will need to provide storm drainage facilities for amount of runoff that is in excess of the 25-year storm event, and up to a 100-year event. The City proposes to accomplish this by the following two different methods, primarily because of differences in soils types and water tables:

Retention/Detention Basins:

The City will design retention/detention basins for the difference between a 25 year and 100 year event. The difference between a retention and detention basin is that the detention basin holds water to be release at a later time while a retention basin collects the water and uses evaporation and infiltration to remove the water. Each of the basins planned for a maximum surface water depth of 18". The remaining storage will be in a series of interconnected sumps. Each of the sumps will be connected to the others in the basin with 18" piping.

Some of the areas will require off-site piping to deliver the storm water to the retention basin without overloading the gutters. Locations of the retention basins are at the low point of their respective areas, but some location adjustments can be made, as final plans are prepared. The design for the retention basins will be finalized as the need arises and should include soils reports to determine the percolation rates available.

The retention basin cost per acre is estimated at $100,000 - 125,000 including land costs, sumps, piping, landscaping, and off-site piping. It is possible that some sites will be partially or completely donated to meet the retention needs of individual projects, thereby reducing the cost per acre figure. Most sites will also be included as part of a park and/or school site, which will likely prove to be more cost effective.

Pipe Network:

The City will provide for a pipe network to drain storm water to the Spanish Fork River or Dry Creek in the areas determined by the City Engineer. These areas will primarily be the central, western, and northern parts of the City where soils types and high water tables generally do not allow the use of retention basins and sumps as a long term solution for the disposition of storm water. These areas are more fully described later in this section.

c) The Southeast Bench:

The Southeast Bench is the area south of 700 South and east of 1100 East on the east bench. This area will have 5 new storm water detention basins, which will be incorporated with parks. There will also be an expansion of the existing Jex retention basin at 600 South and 1150 East. This area of the city has a substantial gravel layer beneath the surface. It will, however, be necessary to replace the storm drainage sumps in this area as they become plugged and do not function properly. The sumps have an expected life of 25-30 years. The following table together with the Storm Water Drainage Master Plan Map describes the location of the retention basins and the area served by each.

TABLE SD-1

SOUTHEAST BENCH STORM DRAINAGE AREAS

AREA	SIZE OF AREA	LOCATION OF RETENTION BASIN	SIZE OF BASIN	COST
1	211 AC	Abbie Court	5 AC	
2	336 AC	Canyon Elem.	5 AC	
3	147 AC	Parkside park	1.5 AC	
4	67 AC	1200 East 1240 South	1.25 AC	100,000
5	144 AC	600 South 1150 East	2.5 AC	170,000
6	93 AC	600 South 1150 East	1 AC	construct
7	124 AC	2100 East 750 South	3 AC	190,000
8	191 AC	Discharge to Spanish Fork River		construct
9	66 AC	Southgate Village		

The Northeast Bench:

The northeast bench is the area north and east of US-6 extending to the policy declaration line. All of this area is proposed to be outside the Urban Growth Management boundary, so none of these basins will likely be constructed in the next five years. The five proposed basins would also be incorporated with parks. Soils are similar to those in the southeast Bench, so basins and sumps should function similarly.

TABLE SD-2

NORTHEAST BENCH STORM DRAINAGE AREAS

AREA	SIZE OF AREA	LOCATION OF RETENTION BASIN	SIZE OF BASIN	COST
1	177 Acres	2100 East Center St.	3.5 Acres	190,000
2	177 Acres	2100 East 400 North	3.5 Acres	190,000
3	207 Acres	400 North 1100 East	4.5 Acres	285,000
4	84 Acres	2800 East 400 North	0-1.5 Acres	0-75,000
5	449 Acres	1700 East Expressway Lane	10 Acres	580,000

The Central City:

The central city is the “old” part of town, the area around Larsen School, and the northern part of the Wolf Hollow area. This area currently has two retention basins.

There will need to be a 400 North storm drain line that will carry storm water to the Spanish Fork River. This line will extend to 300 West. The construction of the 400 North line will allow the City to discharge much of the water currently flowing into the Westfield Irrigation Company ditch to the river. This will allow the City to reduce the amount of money paid to Westfield Irrigation for drainage.

The area between 400 East and 900 East will have a groundwater drain. This drain will also be used for excess storm water in the gutters along 400 North. All other areas in this section will continue to operate as they are at the present time.

The West Fields:

The west field's area is the area that is west of 300 West between I-15 and the Spanish Fork River. The 400 North outfall line and individual lines will serve this area from the developments. Each of these lines will flow directly to the river. The 400 North lateral will serve the area north of approximately 300 South including the new developments west of the High School. A drain line in 100 South will serve the area from 300 South to 100 South. The areas just north of the river and west of Main Street should be addressed with each development due to proximity to the river.

Due to soil types in this portion of the City, all storm water must be piped to the river, with detention basins included in new developments to reduce the quantity or water released and subsequently reduces the pipe sizes for the storm drain system.

The Northern Industrial Area:

This area is the area north of 1000 North between 900 West and 1100 East. This area currently drains to Dry Creek through piping and open ditches. This practice will not change in the future, however, there will be a need for more piping as the area further develops.

In an effort to limit the flow in Dry Creek, the City has restricted the outflow from new developments in this area to .2 cfs/acre. This flow rate is considered to be consistent with the pre-development discharge from the land and is the standard for the Industrial area. This restriction requires the developers to detain the storm water on site and release it at a slower rate, thereby reducing the possibility of flooding along Dry Creek. This policy will need to continue to avoid overloading Dry Creek.

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Subtracting the 147 needed units from the current oversupply of 478 units still leaves a surplus of 331 units in the year 2003 even if no additional units are built in the years 1999-2003. This is probably an unrealistic assumption, and it is more likely that several hundred more units will be added to the surplus in that five-year period.

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However, in most of the newly urbanizing areas, r

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Page 1: [195] Formatted **Emil Pierson** **9/1/2005 3:51:00 PM**

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In the future Spanish Fork City will continue to encourage affordable housing and we plan to do this by facilitating the use of the Master Planned Development or the PUD concept. The City also plans to encourage 30-50% AMI housing by continuing to provide HOME funds to the Housing Authority of Utah County and removing barriers that block affordable housing. One of the obstacles the City removed and now encourages is the use of other types of housing. For example we have developments that mix manufactured homes with stick built homes. We have mixed use developments with townhomes, twin homes, accessory apartments and single family detached homes. These types of developments are allowed in all residential zones and are encouraged through the Master Planned Development concept.

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Spanish Fork recognizes the needs of special target groups like the elderly, disabled persons, and others with special needs.

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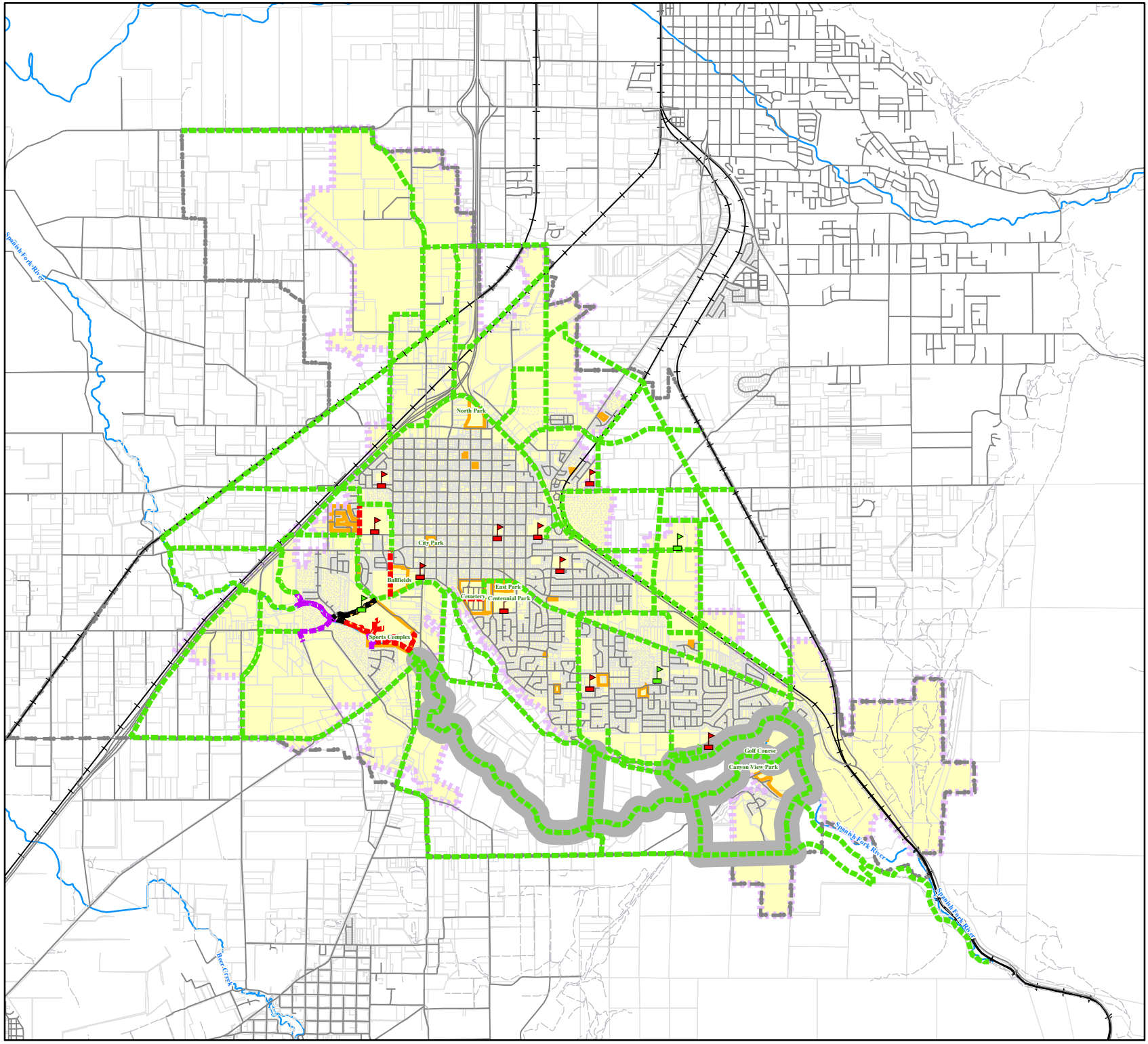
Spanish Fork City will continue to provide and support many different types of housing for all of its future residents.

10 Ft Paved Trail Plan

1 Inch equals 5,690 Feet



Legend

Roads
- Not Paved
- Paved
- Railroad
- Rivers
- Parks
- Spanish Fork Boundary
- Priority 10ft Trails Plan

School Points
- Existing
- Future

- Existing
- Planned
- Proposed
- Proposed Grant

7/14/2005

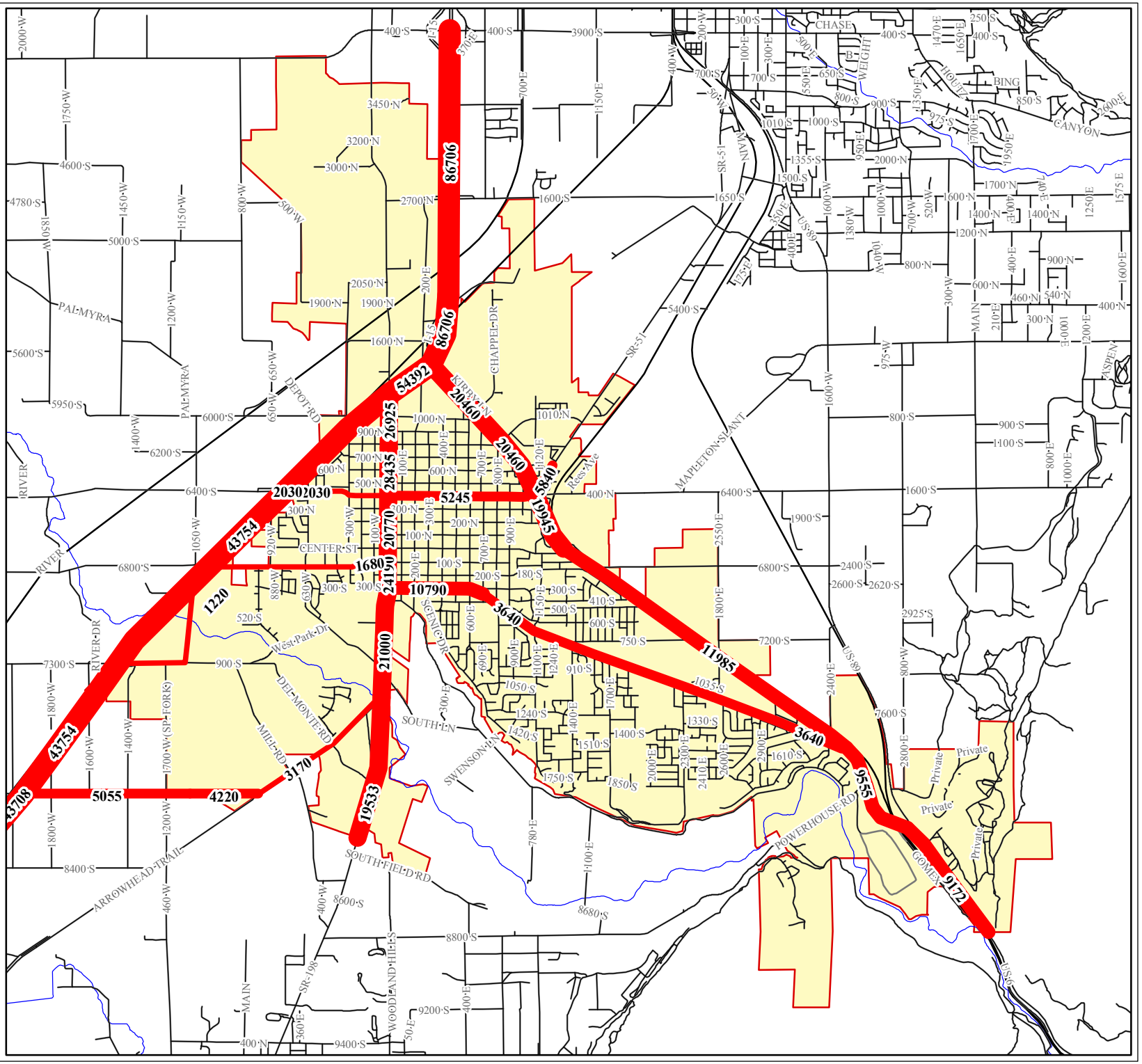
Spanish Fork
Geographic Information Systems

Spanish Fork City GIS
40 South Main Street
Spanish Fork, UT 84660
(801) 798-5000

Spanish Fork City

Traffic Counts 2003

1 Inch equals 4,838 Feet



Legend

Traffic Counts

- 1220 - 3170
- 3171 - 5840
- 5841 - 11985
- 11986 - 28435
- 28436 - 86706
- Roads - thick line
- Railroads
- Rivers
- Lakes
- Spanish Fork Boundary

11/15/2004

Geographic Information Systems

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Spanish Fork Area Terrain

1 Inch equals 8,829 Feet

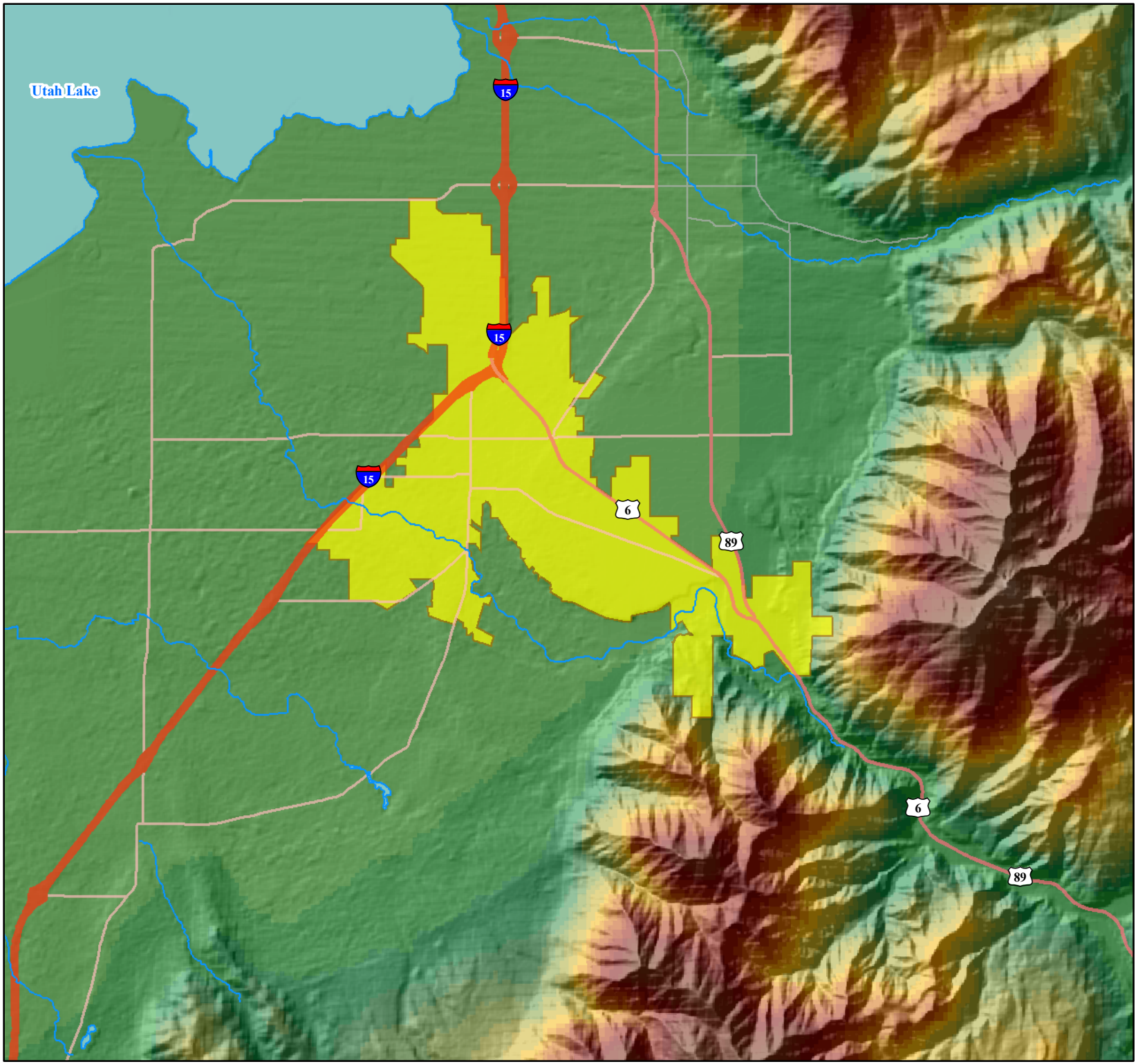
Legend

- Rivers
- Lakes
- Spanish Fork

Highways

- Interstate
- US Highway
- State Highway
- FAS Routes
- Highway Labels

7/14/2005



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Spanish Fork City
Master Water Plan

1 Inch equals 5,491 Feet

Legend

- Railroads
- Roads - thick line
- Rivers
- Existing 10"
- Existing 12"
- Existing 16"
- Existing 18"
- Existing 24"
- Existing 30"
- Future 12"
- Future 15"
- Future 18"
- Spanish Fork Boundary
- Lower Pressure Zone
- Oaks Pressure Zone
- Upper Pressure Zone
- Lakes

11/22/2004

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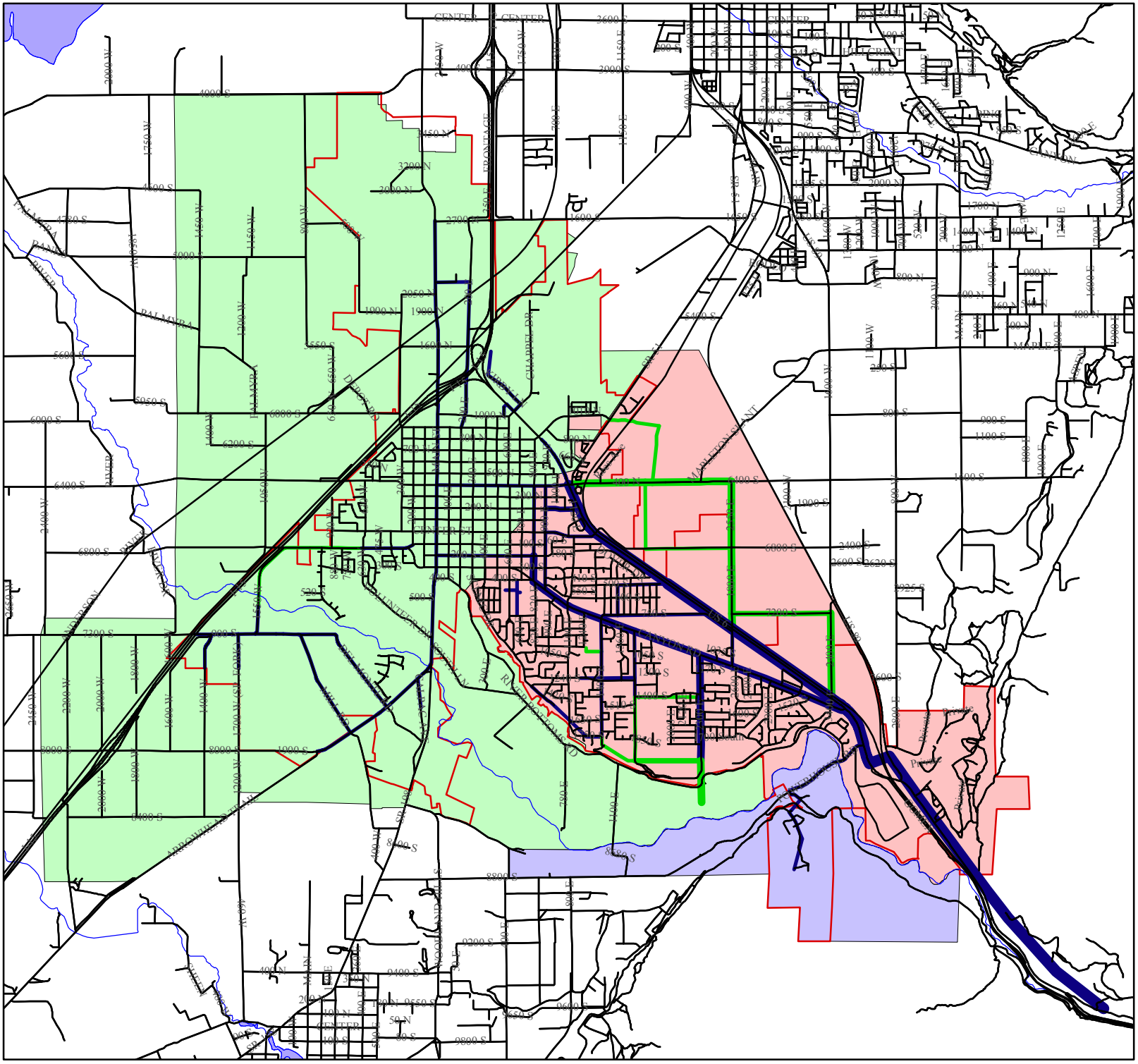
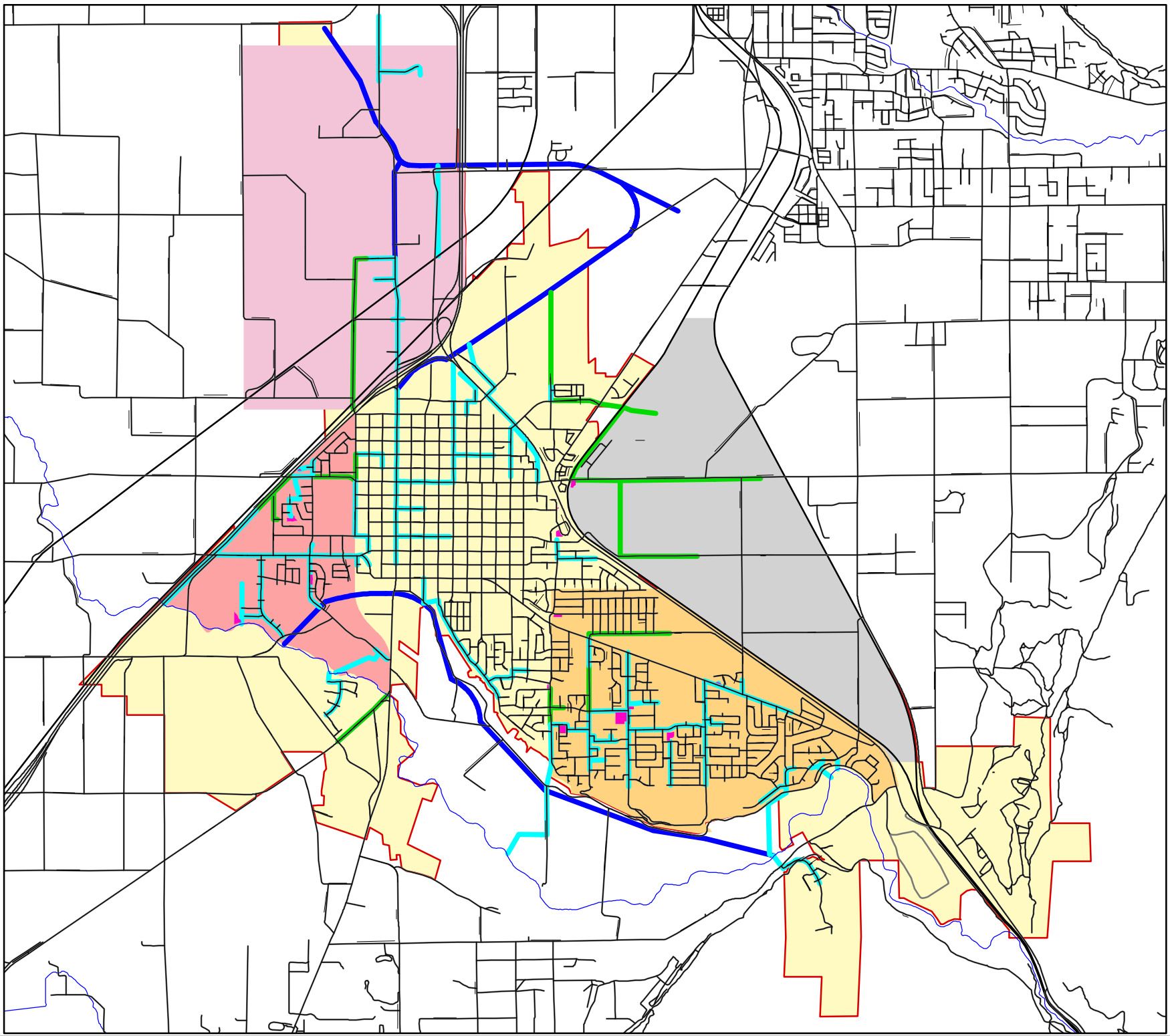


Spanish Fork City
Master Storm Plan

1 Inch equals 4,447 Feet

Legend

- Roads - thick line
- Railroads
- Rivers
- Existing Lines
- Future/Proposed Lines
- Existing Creek/Canal
- Industrial Area
- NE Bench
- SE Bench
- West Fields
- Drainage Basins
- Spanish Fork Boundary



8/2/2005

Geographic Information Systems

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Spanish Fork City

Master Sewer Plan

1 Inch equals 5,342 Feet

Legend

- Roads - thick line
- Railroads
- Rivers
- Existing 10in
- Existing 12in
- Existing 15in
- Existing 18in
- Existing 24in
- Existing 30in
- Future 10in
- Future 12in
- Future 15in
- Future 18in
- Future 24in
- Future 30in
- Spanish Fork Boundary
- Industrial #2
- Mapleton
- Industrial #1
- 200 East
- 300 West
- 200 West
- 600 East
- 100 East
- Bottoms Trunkline
- 630 West
- Lakes

11/22/2004

Spanish Fork
Geographic Information Systems

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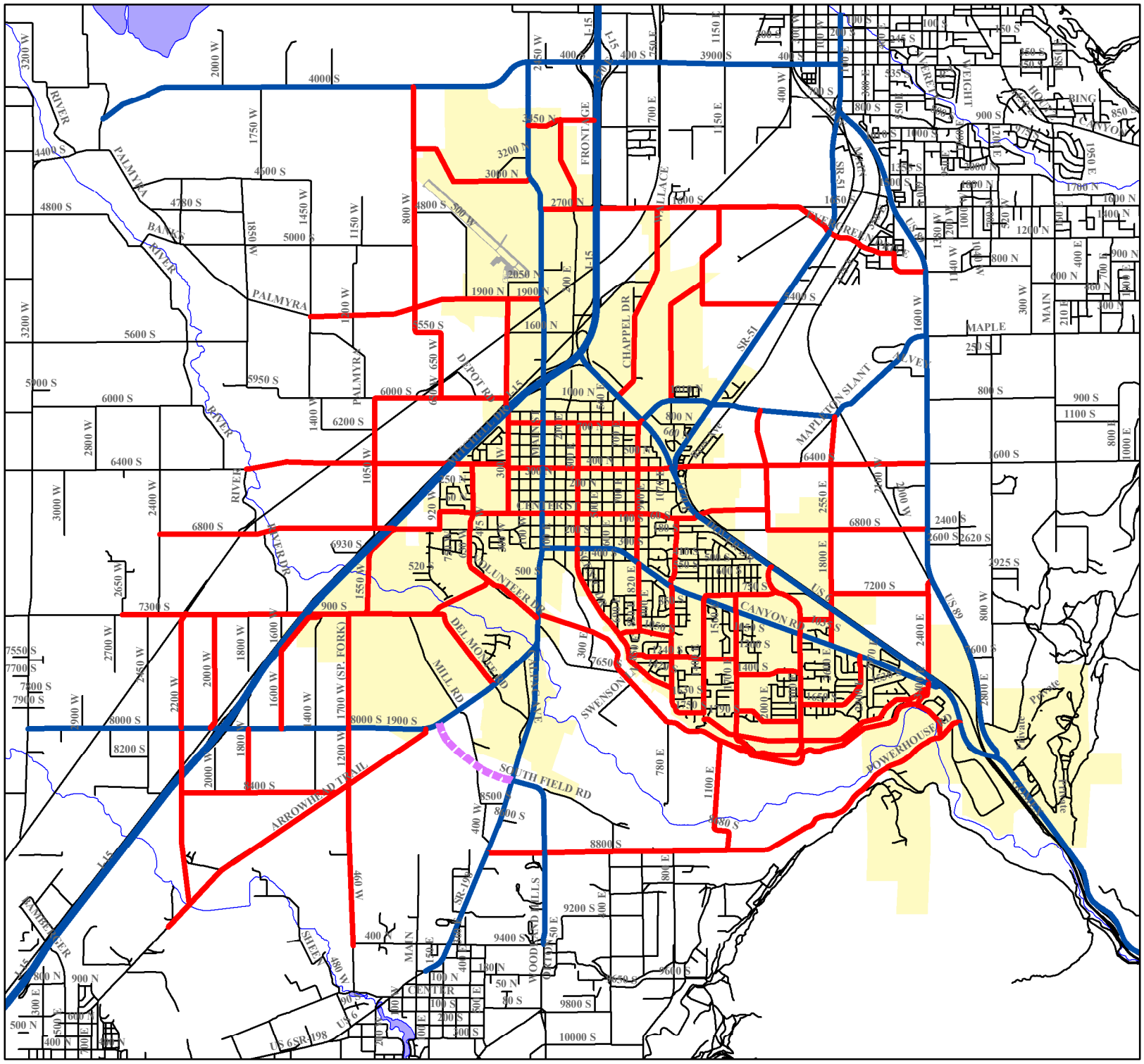
Spanish Fork City

Master Road Plan

1 Inch equals 5,615 Feet

Legend

- Arterials
- Collectors
- Proposed Arterial
- Airport Runway
- Roads - thick line
- Railroads
- Rivers
- Lakes
- Spanish Fork Boundary



11/22/2004

Spanish Fork
Geographic Information Systems

Spanish Fork City GIS
40 South Main Street
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(801) 798-5000

General Plan Map

1 Inch equals 4,958 Feet

Legend

- Roads
- Railroad
- Rivers
- Growth Boundary Outline
- Spanish Fork Airport
- Spanish Fork Boundary
- 1 U/40 Acres
- 1 U/5+ Acres
- 1 U/5+ Acres / 0.5-1.5 U/A
- 1 U/5+ Acres / 1.5-2.5 U/A
- 1 U/5+ Acres / 2.5-3.5 U/A
- 1 U/5+ Acres / 3.5-4.5 U/A
- 1 U/5+ Acres / 4.5-5.5 U/A
- 1 U/5+ Acres / 5.5-8 U/A
- 1 U/5+ Acres / Business Park
- 1 U/5+ Acres/General Commercial
- 1 U/5+ Acres/Light Industrial
- 1 U/5-12 Acres / Residential Office
- 1.5-2.5 U/A
- 2.5-3.5 U/A
- 3.5-4.5 U/A
- 3.5-4.5 U/A / Professional Office
- 3.5-4.5 U/A / General Commercial
- 4.5-5.5 U/A
- 4.5-5.5 U/A / General Commercial
- 5.5-8 U/A
- 5.5-8 U/A / Professional Office
- 5.5-8 U/A / Residential Office
- 5.5-8 U/A / General Commercial
- 9-12 U/A
- Downtown
- Professional Office
- Professional Office / Residential Office
- Shopping Center
- General Commercial
- General Commercial / Business Park
- Light Industrial
- Light Industrial / 3.5-4.5 U/A
- Light Industrial / Commercial
- Light Industrial / Business Park
- Medium Industrial
- Heavy Industrial
- Public Facilities
- Recreation

7/14/2005

Spanish Fork

Geographic Information Systems

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Spanish Fork City

Floodplain Map

1 Inch equals 4,619 Feet

Legend

- Road Names
- Roads
- Railroads
- Rivers
- Lakes
- Parks
- Schools
- Spanish Fork Boundary

FEMA Floodplain 2003

- 1986 FEMA
- 2003 FEMA

7/14/2005

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Geographic Information Systems

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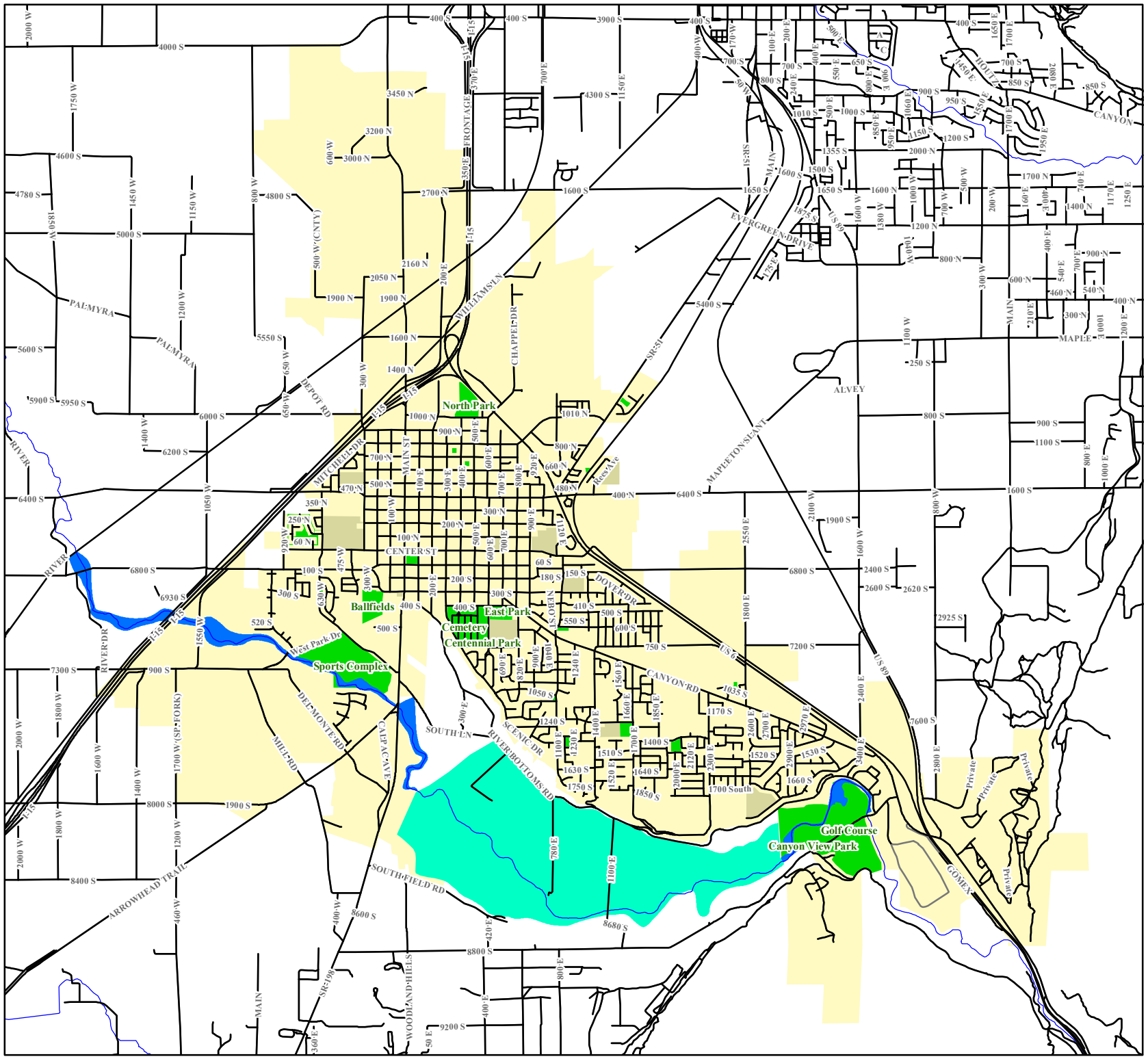
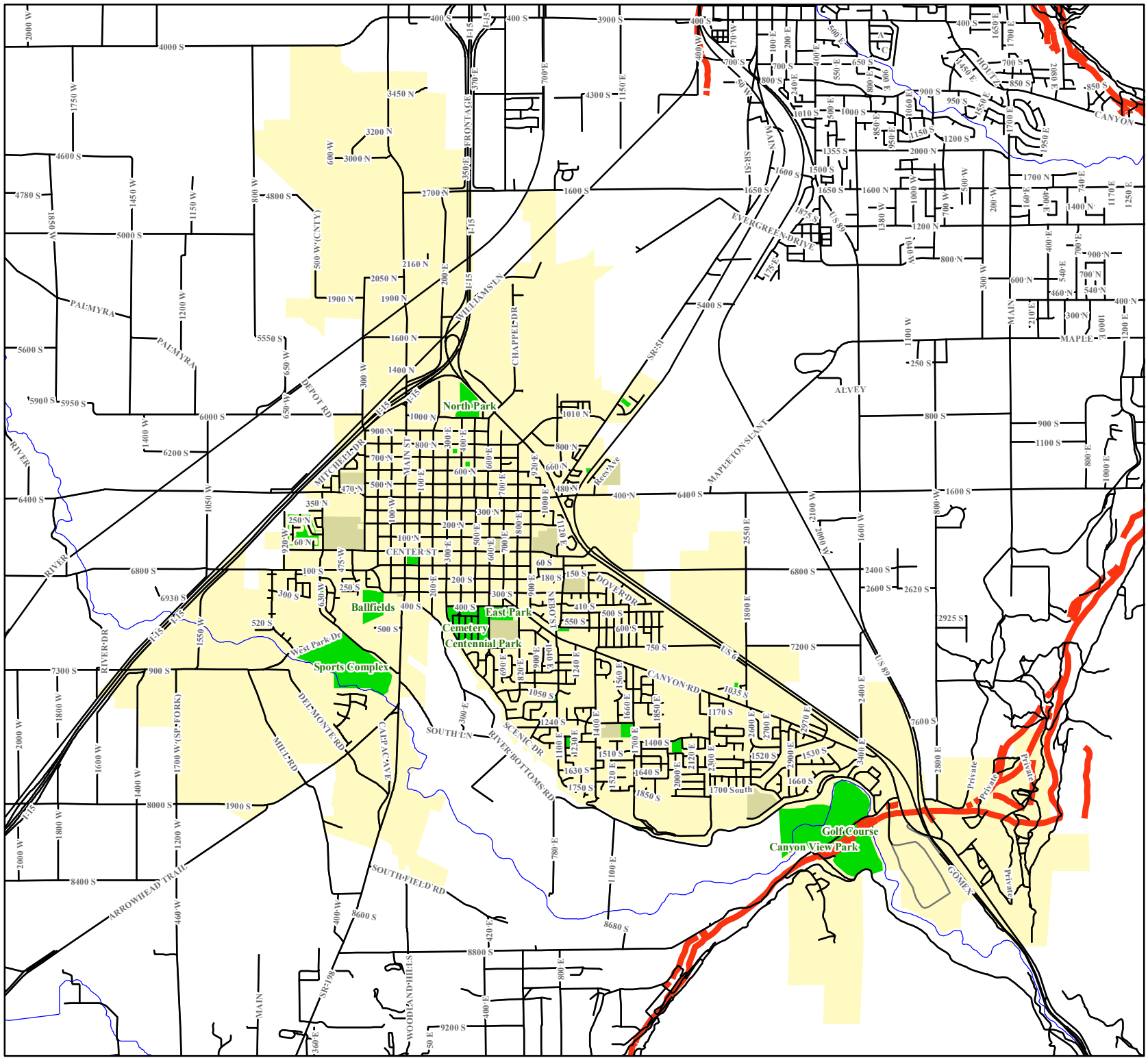


Spanish Fork City

Earthquake Map

1 Inch equals 4,619 Feet



Legend

- Road Names
- Roads
- Railroads
- Rivers
- Lakes
- Parks
- Schools
- Spanish Fork Boundary
- Fault Lines - (Utah AGRC)

7/14/2005

Spanish Fork

Geographic Information Systems

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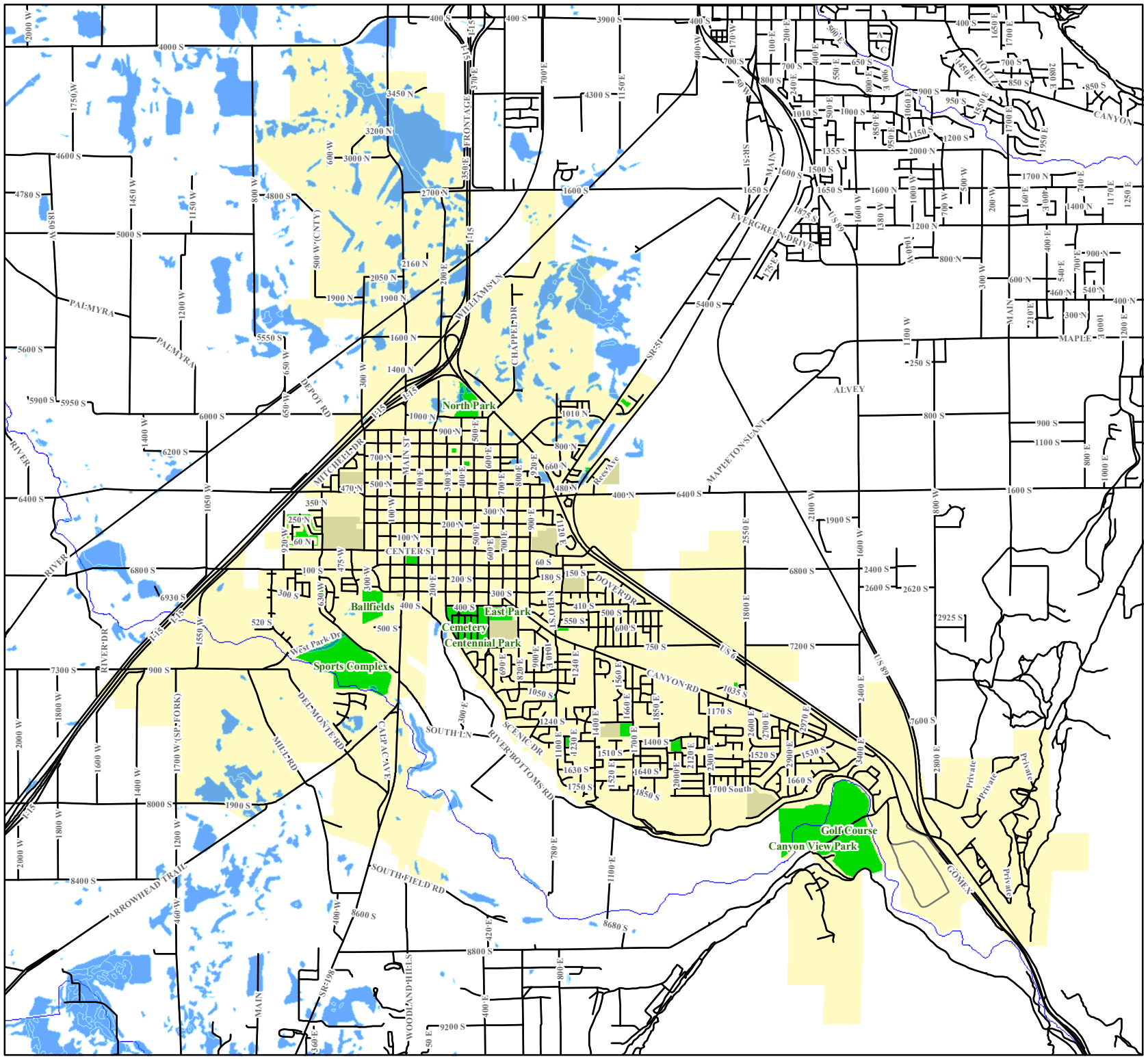
Spanish Fork City

Wetlands Map

1 Inch equals 4,619 Feet



Legend

- Road Names
- Roads
- Railroads
- Rivers
- Lakes
- Parks
- Schools
- Spanish Fork Boundary
- Wetlands - (Utah County)

7/14/2005

Spanish Fork

Geographic Information Systems

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