ENSIGN

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PROJECT:

CAPITAL FACILITIES PLAN, IMPACT FEE FACILITIES PLAN, AND IMPACT FEE ANALYSIS 2024 AMENDMENTS

PREPARED FOR:

Grantsville City
429 East Main Street
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DATE:

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ACKNOWLEDGMENTS

A special thanks to all who contributed to the development of this plan. Its completion was made possible by the effort, support, and collaboration from each person involved. The participation of the following individuals is greatly appreciated.

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CERTIFICATION AND DECLARATION OF IMPACT FEE ANALYSIS

In accordance with Utah Code Annotated, 11-36a-306(1) and (2), I, Robert Joseph Rousselle, on behalf of Ensign Engineering and Land Surveying, LLC, certify that I am a Registered Professional Engineer holding Certificate 7885569-2202 in the State of Utah.

I declare, to the best of my knowledge, information, and belief that the Impact Fee Facilities Plans and Impact Fee Analyses included herein include only the costs of public facilities that are:

- Allowed under the Impact Fees Act;
- Actually incurred; or
- Projected to be incurred or encumbered within six (6) years after the day on which each impact fee is paid;
- Does not include costs for operation and maintenance of public facilities;
- Does not include costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents;
- Offsets costs with grants or alternate sources of payment;
- Complies in each and every relevant respect with the Impact Fees Act.

I make this certification and declaration with the following conditions:

1. All of the recommendations for implementation of the Capital Facilities Plans (CFP) made in the CFP documents or in the Impact Fee Analysis documents are followed in their entirety by Grantsville City and its elected officials.
2. All information provided to Ensign Engineering and Land Surveying, LLC, its contractors or suppliers is assumed to be correct, complete, and accurate. This includes information provided by Grantsville City and outside sources.

Ensign Engineering and Land Surveying, LLC

Robert Joseph Rousselle
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GLOSSARY OF TECHNICAL TERMS

80th Percentile Rainfall Event

Storm event in which precipitation is greater than or equal to 80 percent of all storm events averaged over a given period of record.

Average Daily or Day Demand

The average yearly demand volume expressed as a flow rate. Demand is typically used in irrigation or drinking water terminology.

Average Daily or Day Flow

The average yearly flow volume expressed as a flow rate. Term typically used in wastewater terminology.

Average Yearly Demand

Amount of water delivered to consumers by a public water system during a typical year. Demand is typically used in irrigation or drinking water terminology.

Bonds

Fixed-income instrument representing a loan made by an investor to a borrower (typically corporate or governmental). Bonds are used by companies, municipalities, states, and sovereign governments to finance projects and operations.

Build-Out

The maximum number of ERCs or EDUs allowed by the planning jurisdiction in its service area.

Buy-in Costs

Depreciated costs for municipal or service district assets which have excess capacity and can be contributed to existing or future development.

Capital Facilities Plan

A plan to assist a jurisdiction to use its funding wisely and efficiently to maximize funding opportunities. A capital facilities plan will assist in determining needs, prioritizing projects, coordinating related projects, and applying for load, bonds, and grant opportunities.

Collection System

Wastewater system consisting of manholes, gravity pipes, force mains, interceptors, trunk lines, lift stations, and appurtenances.

Connection Fee

Fee paid to utility purveyor from a developer or customer for its cost of physically connecting the developer or customer to the utility purveyor's utility system.

Cost Estimate

Typically an Engineer's Estimate of Probably Costs for a project improvement based on recently bid projects and current construction climate. A cost estimate may include design fees, permitting, administrative costs, and contingency.

Curve Number

Empirical parameter used in hydrology for predicting storm water runoff potential for a given drainage area based on land use, soil group, and soil moisture derived by the National Resources Conservation Service (NRCS). Term typically used in storm water terminology.

Debt Service

Money required to cover the payment of interest and principal on a loan or other debt for a particular time period.

Debt Service Coverage Ratio

Debt service coverage ratio is measured by comparing the operating cash (revenues less operating expenses) to annual debt service obligations before capital costs.

Demand

The drinking water flow rate or volume consumed by water system users.

Demographics

Characteristics of human population and population segments.

Detention

Term typically used in storm water terminology to define a storm water storage site which stores and releases storm water at a controlled discharge rate.

Disinfection

A process which inactives pathogenic organisms in water by chemical oxidants or equivalent agents.

Distribution System

Drinking water system's network of pipes, valves, fitting, and appurtenances.

Drinking Water

Water suitable to be ingested by humans. Sometimes referred to as Culinary or Potable Water.

Dwelling Unit(s)

Dwelling Unit (DU) is a structure or the part of a structure used as a home, residence, or sleeping place by one person who maintains a household or by two or more persons who maintain a common household.

Equivalent Residential Connection(s), Dwelling Unit(s) or Residential Unit(s)

An ERC, EDU, or ERU is a unit of measurement used to compare water demand from non-residential connections to residential connections. Water use criteria from source (wells and springs) and metered data are established based on average demand or consumption by residential connections. This is compared with non-residential uses.

Excess Capacity

Excess capacity used for engineering purposes is when the demand is less than capacity. An example of excess capacity is when the water demand (consumption) of drinking water system users is less than the drinking water system supply.

Fee Stabilization Charge (Credit)

Payment amount of principal and interest on a revenue bond after the study or plans planning period, which should not be charged to new development in the planning period.

Fixture Unit

A unit of measure expressing the hydraulic loading imposed by any sanitary fixture on the system of pipe work to which it discharges. Fixture units are typically defined in the International Plumbing Code (IPC).

Fire Flow

Available flowrate of water supply for firefighting with a residual pressure of 20 psi. Typically measured as a rate of flow (gpm) for a specific period of time or duration (hours).

Flood Hazard Zone

Flood Hazard Zone is an area identified on a Flood Insurance Rate Map (FIRM) which specifies a Base Flood Elevation (BFE) or flood depth.

Head

Also referred to as Pressure Head is a measurement of water pressure in a hydraulic setting expressed as feet of water. One (1) lbs per square inch (psi) of head equals 2.31 feet.

Head Loss

Measurement of energy dissipated in a fluid system due to friction along the length of a pipe or hydraulic system, and those due to fittings, valves and other system structures.

HEC

Computer software for hydrologic engineering and planning analysis.

HEC-RAS

Computer program which models the hydraulics of water flow through natural rivers and channels.

Hydrology

Scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Hydrologic Soil Group

Natural Resource Conservative Service (NRCS) classification system in which soils are categorized into four (4) runoff potential groups. This groups consist of soil groups A, B, C, or D.

Indoor Use

Hydraulic loading imposed by any sanitary fixture on the system of pipe work to which it discharges inside a building.

Infiltration

Process by which water enters the soil and recharges streams, lakes, rivers, and underground aquifers. Term typically used in storm water terminology.

Infiltration Rate

Flow rate by which water enters the soil and recharges streams, lakes, rivers, and underground aquifers. Typically, specified in inches per hour. Term typically used in storm water terminology.

Inflation

Rate at which prices for goods and services increases.

Interceptor Lines

Major sanitary sewer line that receives flow from trunk sanitary sewer lines.

Interest

Amount paid to borrow money or the cost charged to lend money. Interest is most often reflected as an annual percentage of the amount of a loan.

Impact Fee

Payment of money imposed upon new development activity as a condition of development approval to mitigate the impact of the new development on public infrastructure.

Impact Fee Analysis

The written analysis of each impact fee required by Utah Code Section 11-36a-303.

Impact Fee Facilities Plan

Plan required by Utah Code Section 11-36a-301.

Impervious

Term typically used in storm water terminology to define an area which is impervious such as asphalt pavement or a concrete sidewalk.

Level of Service

Defined performance standard or unit of demand for each capital component of a public facility within a service area.

LID

Low Impact Development is a storm water management strategy which seeks to mitigate the impacts of increased runoff and storm water pollution by managing runoff as close to its source as possible.

Manning's n

Unitless coefficient which represents the roughness or friction applied to the flow of a conduit or a channel.

Master Plan

Dynamic long-term planning document providing a conceptual layout to guide future growth and development.

Major Head losses

Major head losses or friction losses is the loss of pressure or "head" in pipe flow due to the effect of the fluid's viscosity near the surface of the pipe or duct.

Minor Head losses

Minor head losses are local pressure losses or pressure drops of various hydraulic elements such as bends, fittings, valves, elbows, tees or heated channels.

Multi-Unit

Typically a dwelling unit with multiple units such as an apartment building or a duplex.

NOAA ATLAS 14 Precipitation Data

Point precipitation frequency estimates for a specific area in the United States available on NOAA's website.

Non-Residential

A non-residential use such as a warehouse, commercial building, or business.

Occurrence

Term used in storm water terminology to estimate the frequency of a storm water event.

Other Residential

Encompasses other residential not defined specifically in the plan or study.

Outdoor Use

Hydraulic loading imposed on the system typically by an irrigation system.

Peak Day Demand

Amount of water utilized by a water supplier on the day of highest consumption, generally expressed in gallons per day (gpd) or millions of gallons per day (MGD). Demand is typically used in irrigation or drinking water terminology.

Peak Day Flow

Amount of wastewater utilized by a wastewater supplier on the day of highest consumption, generally expressed in gallons per day (gpd) or millions of gallons per day (MGD).

Peak Discharge

Maximum rate of flow during a storm event. Term typically used in storm water terminology.

Peaking Factors

Ratio of a peak day or instantaneous flow/demand to the average day or daily flow/demand.

Peak Inflow

Highest inflow of wastewater into a wastewater treatment facility.

Peak Instantaneous Demand

Calculated or estimated highest demand which can be expected through any water main of the distribution network of a water system at any instant in time, generally expressed in gpm or cfs.

Peak Instantaneous Flow

Calculated or estimated highest flowrate which can be expected through any wastewater collection system at any instant in time, generally expressed in gpm or cfs.

Peak Rainfall Depth

The point at which the amount of rain received is at its highest depth.

Percolation Rate

Flow rate by which water enters the soil and recharges streams, lakes, rivers, and underground aquifers. Typically, specified in minutes per inch. Term typically used in storm water terminology.

Pervious

Term typically used in storm water terminology to define an area which is pervious or allows storm water to infiltrate into the soil such as a parking strip or lawn.

Planning Period

The period of time, typically in years, used in a plan. A planning period of 10-years is typically used in Impact Fee Facilities Plans. Master or General Plans may use planning periods from 20 to 50 years.

Pressure Reducing Valve

Valve provided to reduce pressure in a water distribution system. Typically, used to reduce pressure greater than 100 psi to 50 – 65 psi depending on specific distribution system requirements.

Pressure Zone

A pressure zone in a distribution system is established with a minimum and maximum pressure range which is maintained without the use of ancillary control equipment (e.g. booster pumps, pressure reducing valves, etc.). Maximum static pressures in a typical drinking water pressure zone are 100 to 120 psi with minimum static pressures from 50 to 65 psi.

Professional Expenses

Expenses of a professional consultant. An example is engineering design and construction administrative fees from an engineering company.

Proportionate Share

Cost of public facility improvements which are roughly proportionate and reasonably related to the service demands and needs of any development activity.

Retention

Term typically used in storm water terminology to define a storm water storage site which retains storm water without releasing at a controlled discharge rate and instead infiltrates stored storm water into the ground.

Runoff

Precipitation which does not soak or absorb into the soil surface.

Runoff Coefficients

Percentage of precipitation leaving a particular site as runoff.

Safety Factor

Engineering term utilized to describe how much stronger a system or structure is than it is required to be to fulfil its purpose under expected conditions.

SCS Method

Soil Conservation Service (SCS) Method is a hydrologic modeling method for computing the volume of surface runoff for a given rainfall event from small agricultural, forest, and urban watersheds.

Service Area

Geographic area designated by an entity which a facility, or a defined set of facilities, provides service within the area.

Single Family

Residence used by a single private family which serves no other purpose.

Source

Term used in irrigation or drinking water terminology to specify where the supply of water originates. Examples include groundwater wells or springs.

Static Pressure

The pressure exerted by a liquid or gas, especially water or air, on a body at rest.

Storm and Sanitary Analysis

Comprehensive hydrology and hydraulic analysis application which assists in planning and design of storm water and sanitary sewer systems.

Storm Event

Amount of precipitation which occurs during a specific duration and recurrence interval for the location of the storm event. An example is a 100-year storm event during a 24-hour duration.

Surplus Capacity

The amount of surplus or excess capacity a system has available to future development.

SWMM Method

Storm Water Management Model (SWMM) Method is used throughout the world for planning, analysis and design related to storm water runoff, combined and sanitary sewers, and other drainages. SWMM is a Windows-based, open source, desktop program.

Time of Concentration

Time required for water to flow from the most remote point in a watershed to the point of interest within the watershed. It is a function of topography, geology and land use within the watershed and is computed by summing all the travel times for consecutive components of the drainage conveyance system.

Total Dynamic Head

Total Dynamic Head is the total equivalent height that water needs to be pumped or lifted vertically while also factoring in the friction losses of the pipe and minor head losses in valves and fittings.

TR-55

Technical Release 55 (TR-55) presents simplified procedures to calculate storm runoff volume, peak rate of discharge, hydrographs, and storage volumes required for storm water detention or retention.

Transmission Pipeline

For drinking water or irrigation, a transmission pipeline is typically defined as the pipe from a storage reservoir to the distribution system. A transmission pipeline typically does not have any user water connections.

Trunk Line

Sewer line which receives wastewater flow from the collector sanitary sewer lines and conveys this wastewater either to an interceptor line or a wastewater treatment or reclamation facility.

Waterline

A line formed by the surface of the water on a structure.

Water Line

Pipe or conduit which contains and conveys water.

Water Right

The right to use water diverted at a specific location on a water source, and putting it to recognized beneficial uses at set locations.

Water Wise, Waterwise, or Water-Wise

Generally a functional, attractive, and easily maintained landscape in its natural surroundings. A water wise landscape helps conserve water. Note: Local jurisdiction may have specific definition of water wise landscaping.

ABBREVIATIONS AND UNITS

ac	acre [area unit of measurement]
ac-ft	acre-foot (1 acre-foot = 325,851 gallons) [volume unit of measurement]
AWWA	American Water Works Association
BFE	Base Flood Elevation
BMP	Best Management Practices
C	Runoff Coefficient
CN	Curve Number(s)
CFP	Capital Facilities Plan
cfs	cubic feet per second [flow rate unit of measurement]
cfs/acre	cubic feet per acre [flow rate per area unit of measurement]
CLOMR	Conditional Letter of Map Revision
CMP	Corrugated Metal Pipe
d/D	depth to diameter ratio
DIP	Ductile Iron Pipe
DEQ	Department of Environmental Quality
DSCR	Debt Service Coverage Ratio
DU	Dwelling Unit(s)
EDU	Equivalent Dwelling Unit(s)
Ensign	Ensign Engineering and Land Surveying
EPA	U.S. Environmental Protection Agency
ERC	Equivalent Residential Connection(s)
ERU	Equivalent Residential Units(s)
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map(s)
ft	foot [length unit of measurement]
ft/s or fps	feet per second [velocity unit of measurement]
FU	Fixture Unit
gal	gallons [volume unit of measurement]
gpd	gallons per day [flow rate unit of measurement]
gpm	gallons per minute [flow rate unit of measurement]
HDPE	High-density Polyethylene [material used for various building materials]
HDS	Hydrodynamic Separator

HEC	Hydrologic Engineering Center
HEC-RAS	Hydrologic Engineering Center – River Analysis System
hr	hour [time unit of measurement]
IBC	International Building Code
ID	Inside Diameter
IFC	International Fire Code
IFFP	Impact Fee Facilities Plan
IPC	International Plumbing Code
i	Average Rainfall Intensity (inches per hour)
I&I	Inflow and Infiltration
in.	inch [length unit of measurement]
L	Length (ft)
LID	Low Impact Development
LOMA	Letter of Map Amendment
LOMR-F	Letter of Map Revision-Based on Fill
LOS	Level of Service
MG	million gallons [volume unit of measurement]
MGD	millions of gallons per day [flow rate unit of measurement]
mi	mile [length unit of measurement]
min	minute [time unit of measurement]
MP	Master Plan
NOAA	National Oceanic Atmospheric Administration
NOI	Notice of Intent
NOT	Notice of Termination
NRCS	Natural Resources Conservation Service
OSLI	Office of State Lands and Investments
PF	Peaking Factor
PRV	Pressure Reducing Valve
psi	pounds per square inch [pressure unit of measurement]
PVC	Polyvinyl Chloride [type of plastic pipe]
Q	Flow Rate or Peak Rate of Runoff (cubic feet second)
RCP	Reinforced Concrete Pipe
s	second [time unit of measurement]
SCADA	Supervisory Control And Data Acquisition

SCS	Soil Conservation Service
SF	Safety Factor
SR	State Route
SSA	Storm and Sanitary Analysis
SWMP	Storm Water management Program
SWPPP	Storm Water Pollution Prevention Plan
Tc	Time of Concentration
UAC	Utah Administrative Code
UCEA	Utah City Engineers Association
V	Velocity (fs/s or fps)
WSFU	Water Supply Fixture Unit
WW	Wastewater
WWTF	Wastewater Treatment Facility
WWRF	Wastewater Reclamation Facility
yr	year [time unit of measurement]

EXECUTIVE SUMMARY

The City of Grantsville is amending its Capital Facilities Plan (CFP), Impact Fee Facilities Plan (IFFP), and Impact Fee Analysis (IFA) in order to ensure the current level of service (LOS) provided to citizens meets demands and can be maintained as the City continues to grow. The CFP, IFFP, and IFA contained in this plan update projects identified in the previous Capital Facility Plans (2013, 2016, and 2022 CFPs), propose new projects, and update impact fees associated with planned development.

First, a demographic analysis of Grantsville City's current population, land-use, development patterns, and development potential was completed. The results of the analysis have been used as a basis for projection of future growth over a 10-year planning period and its distribution throughout the planning area. These future growth projections were used as one of the factors to estimate future utility demands and infrastructure requirements for the community. The existing conditions resulting from this analysis are shown in Table 1-1 and the future growth projections are shown in Table 1-2.

Table 1-1: Existing Demographic Conditions

Service Connection Type	Service Connections	Units	ERC / Unit	ERCs
Single Family	4,267	4,274	1.00	4,274
Multi-Unit	47	291	0.55	160
Trailer	9	216	1.13	244
Commercial	107	146	7.92	1,156
Church	10	11	9.28	102
School	7	10	5.22	52
Construction Water	13	13	4.83	63
City Rate	5	34	8.60	292
Total	**4,465**	**4,995**		**6,343**

Table 1-2: Future Growth Projections

Year:		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033	
Projected Population:		**13,847**		**14,504**		**15,194**		**15,916**		**16,677**		**17,476**		**18,314**		**19,193**		**20,119**		**21,090**		**22,108**	
Growth Rate:		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**	
Service Connection Type	**ERC / Unit**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**
Single Family	1.00	4,274	4,274	4,488	4,488	4,712	4,712	4,948	4,948	5,195	5,195	5,455	5,455	5,728	5,728	6,014	6,014	6,315	6,315	6,631	6,631	6,963	6,963
Multi-Unit	0.55	291	160	306	168	321	177	337	185	354	195	372	205	391	215	411	226	432	238	454	250	477	262
Trailer [1]	1.13	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244
Commercial	7.92	146	1,156	153	1,212	161	1,275	169	1,338	177	1,402	186	1,473	195	1,544	205	1,624	215	1,703	226	1,790	237	1,877
Church [2]	9.28	11	102	11	102	12	111	12	111	13	121	13	121	14	130	15	139	15	139	16	148	17	158
School [3]	5.22	10	52	10	52	11	57	11	57	12	63	13	68	13	68	14	73	15	78	16	84	17	89
Construction Water	4.83	13	63	14	68	15	72	16	77	17	82	18	87	19	92	20	97	21	101	22	106	23	111
City Rate [4]	8.60	34	292	35	301	38	327	38	327	38	327	38	327	39	335	40	344	40	344	40	344	40	344
Total		**4,995**	**6,343**	**5,233**	**6,635**	**5,486**	**6,975**	**5,747**	**7,287**	**6,022**	**7,629**	**6,311**	**7,980**	**6,615**	**8,356**	**6,935**	**8,761**	**7,269**	**9,162**	**7,621**	**9,597**	**7,990**	**10,048**
Increase from 2023		*-*	*-*	*238*	*292*	*491*	*632*	*752*	*944*	*1,027*	*1,286*	*1,316*	*1,637*	*1,620*	*2,013*	*1,940*	*2,418*	*2,274*	*2,819*	*2,626*	*3,254*	*2,995*	*3,705*

[1] Trailer units are not expected to increase.

[2] Church growth rate is 1 church per 1,280 population.

[3] School growth rate is 1 school per 1,160 population.

[4] City Rate growth rate is based on anticipated City projects.

Next, an analysis of the existing facilities for each utility (drinking water, public safety, parks, wastewater, water rights acquisition, storm drainage, and transportation) was completed. A level of service was proposed for each utility which was used to determine the capacity of existing facilities and future projects required to meet the demands of future development. A cost estimate was completed for each proposed project, and proportionate shares were determined based on the proportion of future development expected to be served by the facility within the planning period. The amount of each project which is eligible for impact fees was calculated by multiplying the proportionate share by the estimated project cost (inflated to the proposed construction year). The proposed system improvements for each utility along with the results of these calculations are shown in the following five tables.

Table 1-3: Drinking Water System Improvements

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Hunsaker Well Rehabilitation	2024	$264,654.17	$264,654.17 [2]	100%	$264,654.17
Southwest Well No. 1	2025	$2,921,854.32	$3,129,963.39	0% [3]	$0.00
Southwest Well No. 2	2030	$2,862,765.23	$3,642,236.84	100%	$3,642,236.84
West Bank Well No. 1	2031	$2,887,128.41	$3,801,796.78	0% [3]	$0.00
Southwest Tank No. 1	2025	$3,839,078.10	$4,112,516.44	15.7%	$646,074.28
Southwest Tank No. 2	2026	$3,780,827.64	$4,191,871.19	0% [3]	$0.00
West Bank Tank No. 1	2029	$6,147,238.50	$7,556,525.67	0% [3]	$0.00
Wells and Booster Pumps Electrical Improvements	2024	$220,906.49	$220,906.49 [2]	36.9%	$81,454.87
SR-138 Water Line Extension	2024	$4,601,294.50	$4,762,339.81	0% [3]	$0.00
Southwest Tank No. 1 Transmission Line	2025	$2,403,557.50	$2,574,750.88	0% [3]	$0.00
Generator	2025	$269,200.00	$288,373.77	36.9%	$106,332.09
SR-112 Water Line Extension	2026	$512,627.50	$568,359.27	0% [3]	$0.00
Southeast Water Line Project	2026	$1,442,156.82	$1,598,945.04	0% [3]	$0.00
Burmester Water Pipeline Project	2028	$940,526.85	$1,117,050.86	36.9%	$411,890.27
Public Works Improvements	2026	$1,008,975.00 [1]	$1,118,668.62	36.9%	$412,486.79
Total		**$34,102,791.03**	**$38,948,959.22**		**$5,565,129.30**

[1] The cost shown for the Public Works Improvements project is half of the total cost estimate because this project cost will be split evenly between the wastewater and drinking water utilities.

[2] The cost for the project was not inflated because the cost shown is the actual project cost.

[3] The proportionate share is 0% because the project is expected be constructed by developers.

Table 1-4: Public Safety System Improvements

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Satellite Fire Station East	2025	$3,123,189.55	$3,345,638.73	62.3%	$2,083,929.44
2 Aerial Platform Trucks	2025	$2,570,940.00	$2,754,055.20	62.3%	$1,715,444.25
Pumper Truck	2025	$535,612.50	$573,761.50	62.3%	$357,384.22
Existing Fire Station Expansion	2025	$744,055.03	$797,050.35	37.4%	$297,830.33
Animal Control Shelter	2025	$2,932,511.50	$3,141,379.63	16.6%	$520,748.81
Total		**$9,906,308.58**	**$10,611,885.41**		**$4,975,337.05**

Table 1-5: Parks System Improvements

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Pickleball Courts at Cherry St Park	2024	$0.00 [1]	$0.00	37.4%	$0.00
Improvements to Eastmoor Park	2024	$349,628.10	$361,865.08	37.4%	$135,216.55
Soccer Fields at Hollywood Park	2024	$0.00 [1]	$0.00	37.4%	$0.00
Desert Edge Park	2026	$1,974,627.37	$2,189,304.66	0% [2]	$0.00
Highlands Park	2027	$3,169,643.06	$3,637,238.32	0% [2]	$0.00
President's Park	2028	$1,583,442.69	$1,880,633.20	100%	$1,880,633.20
Scenic Slopes Park	2029	$4,226,406.45	$5,195,332.64	100%	$5,195,332.64
Clark Farm Park	2030	$3,175,477.22	$4,040,093.82	4.81%	$194,193.84
Twenty Wells Park	2032	$8,628,500.00	$11,759,759.81	0% [2]	$0.00
Total		**$23,107,724.89**	**$29,064,227.53**		**$7,405,376.23**

[1] The cost shown does not include the amount to be paid with grant money.

[2] The proportionate share is 0% because the project is expected be constructed by developers.

Table 1-6: Wastewater System Improvements

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
West Street Collector	2024	$1,173,619.54 [1]	$1,173,619.54 [2]	12.8%	$150,522.25
Willow Street Sewer Improvements	2025	$1,161,165.20	$1,243,869.19	13.7%	$170,994.42
Northwest Interceptor Extension	2025	$1,747,153.80	$1,871,594.83	0% [4]	$0.00
SR112 Interceptor	2025	$2,574,853.35	$2,758,247.28	0% [4]	$0.00
West Bank Interceptor	2025	$4,231,202.40	$4,532,569.79	0% [4]	$0.00
Southeast Sewer Line	2026	$1,415,384.80	$1,569,262.43	0% [4]	$0.00
SR138 Interceptor	2028	$1,185,626.50	$1,408,152.36	0% [4]	$0.00
Northwest Interceptor Replacement	2031	$7,005,127.30	$9,224,414.93	11.2%	$1,033,712.75
Northwest Lift Station - Upsize Force Main	2027	$181,440.00	$208,206.57	99.9%	$208,025.93
Proposed Wastewater Treatment Facility	2025	$30,910,559.75	$32,905,575.54	18.5%	$6,095,757.87
Public Works Improvements	2026	$1,008,975.00 [3]	$1,118,668.62	36.9%	$412,486.79
Total		**$52,595,107.64**	**$58,014,181.09**		**$8,071,500.00**

[1] The cost shown for the West Street Collector project is the total cost less the amount to be paid with grant money.

[2] The cost for the West Street Collector project was not inflated because the cost shown is the actual project cost.

[3] The cost shown for the Public Works Improvements project is half of the total cost estimate because this project cost will be split evenly between the wastewater and drinking water utilities.

[4] The proportionate share is 0% because the project is expected be constructed by developers.

Table 1-7: Transportation System Improvements

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Sheep Lane	2024	$17,870,743.00	$18,496,219.01	27.5%	$5,082,930.41
Nygreen Street (Section 3)	2026	$1,832,173.80 [1]	$2,031,363.84	17.9%	$363,443.72
Mack Canyon Road	2026	$620,120.33 [1]	$687,538.50	33.6%	$230,917.02
Cherry Street	2027	$1,746,674.00	$2,004,348.59	7.49%	$150,157.43
Total		**$22,069,711.13**	**$23,219,469.93**		**$5,827,448.58**

[1] The cost shown is for the portion of the project funded by the City, not the entire project cost.

Impact fees were then calculated considering buy-in costs to be charged for existing facilities with excess capacity, the proposed system improvements, and any loans which are anticipated to fund proposed projects. There is no impact fee charged for storm drainage because the required projects are associated with correcting existing deficiencies, and it is the responsibility of the developers, not the City, to construct facilities required to meet the specified level of

service. The impact fee for water rights acquisition is calculated by multiplying the required quantity of water rights shown in Table 1-12 and Table 1-13 by the typical cost of water rights of $25,000 per acre-foot. The proposed impact fees for each utility are shown in Table 1-8 through Table 1-14.

Table 1-8: Proposed Drinking Water Impact Fees

Water Meter Size (inches)	Maximum Flow Rate (gpm)	ERCs	Impact Fee
3/4	25 [1]	1	$3,432.76
1	40 [1]	1.6	$5,492.42
1 1/2	50 [1]	2	$6,865.52
2	100 [1]	4	$13,731.05
3	200 [2]	8	$27,462.09
4	400 [2]	16	$54,924.19
6	800 [2]	32	$109,848.38
8	1,000 [2]	40	$137,310.47
Non-Residential Development Indoor			$35.00 per fixture unit
Non-Residential Development Outdoor			$21,694.03 per irrigated acre

[1] From AWWA M6 Table 5-3 Displacement Meters.

[2] From AWWA M6 Table 5-3 Electromagnetic and Ultrasonic Meter Type 1.

Table 1-9: Proposed Public Safety Impact Fees

Land Use	Impact Fee
Single Family	$996.12 per Dwelling Unit
Multi-Unit	$430.33 per Dwelling Unit
Non-Residential	$953.80 per 1,000 sq ft building area

Table 1-10: Proposed Parks Impact Fees

Land Use	Impact Fee
Single Family and Multi-Unit	$3,952.56 per Dwelling Unit

Table 1-11: Proposed Wastewater Impact Fees

Water Meter Size (inches)	Maximum Flow Rate (gpm)	ERCs	Impact Fee
3/4	25 [1]	1	$5,120.79
1	40 [1]	1.6	$8,193.26
1 1/2	50 [1]	2	$10,241.58
2	100 [1]	4	$20,483.15
3	200 [2]	8	$40,966.30
4	400 [2]	16	$81,932.61
6	800 [2]	32	$163,865.22
8	1,000 [2]	40	$204,831.52
Non-Residential Development			$213.37 per fixture unit

[1] From AWWA M6 Table 5-3 Displacement Meters.

[2] From AWWA M6 Table 5-3 Electromagnetic and Ultrasonic Meter Type 1.

Table 1-12: Indoor Use Water Rights Requirements

Land Use	Water Right Quantity (ac-ft)	Impact Fee	Unit
Single Family Residential	0.218	$5,450.00	per Dwelling Unit
Multi-Unit Residential	0.120	$3,000.00	per Dwelling Unit
Non-Residential	0.00908	$227.00	per fixture unit

Table 1-13: Outdoor Use Water Rights Requirements

Land Use	Water Right Quantity (ac-ft)
No Waterwise Landscaping	
Category 1	= (lot size[1], acres) * (0.64) * (3.33 ac-ft/irr. ac)
Category 2	= (irrigated area, acres) * (3.33 ac-ft/irr. ac)
Waterwise Landscape Front Yard Only	
Category 1	= (lot size[1], acres) * [(0.18) * (2.28 ac-ft/irr. ac) + (0.46) * (3.33 ac-ft/irr. ac)]
Category 2	= (front yard irrigated area, acres) * (2.28 ac-ft/irr. ac) + (remaining irrigated area, acres) * (3.33 ac-ft/irr. ac)
Waterwise Landscape Entire Lot	
Category 1	Reduction not allowed (use front yard only formula)
Category 2	= (irrigated area, acres) * (2.28 ac-ft/irr. ac)

Table 1-14: Proposed Transportation Impact Fees

Development Type	Peak Hour Trips Rate	Impact Fee	Units
Single Family	0.99	$2,754.42	per Dwelling Unit
Multi-Unit	0.56	$1,558.05	per Dwelling Unit
Trailer	0.46	$1,279.83	per Dwelling Unit
Industrial / Manufacturing	0.37	$1,029.43	per 1,000 sf Building Area
Warehousing	0.09	$250.40	per 1,000 sf Building Area
Retail	3.295	$9,167.48	per 1,000 sf Building Area
Church	0.049	$136.33	per 1,000 sf Building Area
School	0.0665	$185.07	per Student

SECTION 1: INTRODUCTION

1.1 PURPOSE AND SCOPE

Grantsville City is amending its Capital Facilities Plan (CFP), Impact Fee Facilities Plan (IFFP), and Impact Fee Analysis (IFA) to ensure the City's infrastructure will continue to meet the demands of its residents, to plan for improvements needed to meet new demands of future residents, and to collect funding for these projects necessitated by future growth. This plan builds upon information presented in the City's previous CFPs, IFFPs, and IFAs from 2013, 2016, and 2022.

1.2 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN OVERVIEW

Capital facilities plans provide a path forward for the City by identifying future capital improvement projects necessary to maintain the current LOS provided by the City to its current and future residents. This capital facilities plan addresses the following:

- Complete a 10-year population and demographic projection within existing City limits by reviewing U.S. Census Data, Utah Division of Drinking Water (UDDW) data, an analysis of recent impact fees paid to the City, Utah State demographic data, and other demographic data sources.
- Identify existing City infrastructure using City records, past and present master plans, and the previous CFP.
- Identify new, proposed, and previously undocumented improvements for each infrastructure and public safety element.
- Calculate existing levels of service (LOS) using specified standards.
- Identify system deficiencies and surpluses.
- Identify present and future demands on the system.
- Identify Capital Improvement Projects (CIP) necessary to remedy deficiencies and meet the demands of new and proposed development.
- Identify and quantify all revenue sources for potential improvements.
- Prioritize and schedule each CIP within the 10-year planning period.
- Solicit and document input from City officials, staff, stakeholders, and affected entities during the CFP process.

Per Impact Fees Act, 11-36a-301, before imposing an impact fee the City shall prepare an impact fee facilities plan to determine the public facilities required to serve development resulting from a new development activity. An impact fee facilities plan shall:

- Identify the existing level of service.
- Establish a proposed level of service.
- Identify any excess capacity to accommodate future growth at the proposed level of service.
- Identify demands placed upon existing public facilities by new development activity at the proposed level of service.
- Identify the means by which the political subdivision or private entity will meet those growth demands.

Impact fees may not be used to directly improve the existing level of service. Existing deficiencies must use funding other than impact fees to be corrected or improved (11-36a-302).

1.3 IMPACT FEE ANALYSIS OVERVIEW

Per Impact Fees Act, 11-36a-304, an impact fee analysis shall:

- Identify any existing capacity of a public facility.
- Identify system improvements required to maintain the level of service for the anticipated development activity.
- Demonstrate how the anticipated impacts are related to the development activity.
- Estimate the proportionate share of the costs of existing capacity that will be recouped and the cost of system improvements related to the development activity.
- Identify the manner of financing each public facility, and the extent to which development activity will contribute to the financing and cost of existing public facilities and future system improvements.
- Identify the extent to which development activity is entitled to a credit against impact fees, extraordinary costs in servicing the newly developed properties, and the time-price differential of amounts paid at different times.

In calculating an impact fee, a local political subdivision or private entity may include (Impact Fees Act, 11-36a-305):

- The construction contract price.
- The cost of acquiring land, improvements, materials, and fixtures.
- The cost for planning, surveying, and engineering fees for services provided for and directly related to the construction of the system improvements.
- For a political subdivision, debt service charges, if the political subdivision might use impact fees as a revenue stream to pay the principal and interest on bonds, notes, or other obligations issued to finance the costs of the system improvements.
- One or more expenses for overhead.

In addition to preparing an impact fee analysis, a summary of the impact fee analysis shall be prepared so that it can be understood by a layperson (Impact Fees Act, 11-36a-303).

1.4 IMPACT FEE REQUIREMENTS

The authority to implement impact fees in Utah was established with the Impact Fee Act, Utah Code – Title 11 – Chapter 36a. The Impact Fees Act grants the City the ability to impose fair impact fees on new development in accordance with requirements set forth in the act to maintain existing levels of service. Impact fees on new development help distribute the cost associated with providing expanded services to a greater population over a larger area to ensure that the existing LOS is not diminished with new and anticipated development. In order to establish an impact fee, the City must complete an Impact Fee Facilities Plan and Impact Fee Analysis which meet the provisions of the Impact Fees Act as discussed in Sections 1.2 and 1.3. Additionally, the City must comply with the Impact Fees Act requirements of enactment, notice, proceeds, and challenges discussed below. Refer to Appendix B for the City's current Impact Fee Ordinance. The details of the Impact Fees Act described in this plan are a summary of the code for reference purposes; the original and complete text of Utah Code 11-36a should be referred to in conjunction with this document.

1.4.1 Prohibitions

The City may not in accordance with Utah Code Section 11-36a-202:

- Impose an impact fee to:
    - Cure deficiencies in a public facility serving existing development.
    - Raise the established level of service of a public facility serving existing development.

- Recoup more than the local political subdivision's or private entity's costs actually incurred for excess capacity in an existing system improvement.

- Delay the construction of a school or charter school because of a dispute with the school or charter school over impact fees.
- Impose or charge any other fees as a condition of development approval unless those fees are a reasonable charge for the service provided.
- Impose an impact fee on:
  - Residential components of development to pay for a public safety facility that is a fire suppression vehicle.
  - A school district or charter school for a park, recreation facility, open space, or trail.

1.4.2 Enactment

In order to impose impact fees, an impact fee enactment shall be passed in accordance with Section 11-36a-402. The imposed impact fees may not exceed the highest fee justified by the impact fee analysis and may not take effect until 90 days after the impact fee enactment is approved. An impact fee enactment shall contain:

- A provision establishing one or more service areas within which the City calculates and imposes impact fees for various land use categories.
- A schedule of impact fees for each type of development activity that specifies the amount of the impact fee to be imposed for each type of system improvement or the formula that the City will use to calculate each impact fee.
- A provision authorizing the City to adjust the standard impact fee at the time the fee is charged to:
  - Respond to unusual circumstances; or
  - Respond to a request for a prompt and individualized impact fee review for the development activity of the State, a school district, or a charter school and an offset or credit for a public facility for which an impact fee has been or will be collected; and
  - Ensure that the impact fees are imposed fairly.
- A provision governing the calculation of the amount of the impact fee to be imposed on a particular development that permits adjustment of the amount of the impact fee based upon studies and data submitted by the developer.

- A provision that allows a developer, including a school district or a charter school, to receive a credit against or proportionate reimbursement of an impact fee if the developer:
    - Dedicates land for a system improvement;
    - Builds and dedicates some or all of a system improvement; or
    - Dedicates a public facility that the City and the developer agree will reduce the need for a system improvement.
- A provision that requires a credit against impact fees for any dedication of land for, improvement to, or new construction of, any system improvements provided by the developer if the facilities are system improvements or are dedicated to the public and offset the need for an identified system improvement.

1.4.3 Notice

Before preparing or amending an impact fee facilities plan, a local political subdivision or private entity shall provide written notice in accordance with Section 11-36a Part 5 of its intent to prepare or amend an impact fee facilities plan that shall:

- Indicate that the local political subdivision or private entity intends to prepare or amend an impact fee facilities plan.
- Describe or provide a map of the geographic area where the proposed impact fee facilities will be located.
- Be provided for the geographic area where the proposed impact fee facilities will be located, as a class A notice under Section 63G-30-102, for at least 10 days.

Before adopting or amending the impact fee facilities plan, the City shall:

- Give public notice of the plan or amendment at least 10 days before the day on which the public hearing is scheduled.
- Make a copy of the plan or amendment, together with a summary designed to be understood by a lay person, available to the public.
- Place a copy of the plan or amendment and summary in each public library within the local political subdivision.
- Hold a public hearing to hear public comment on the plan or amendment.

Before preparing or contracting to prepare an impact fee analysis, the City shall provide a public notice, as a class A notice under Section 63G-30-102, for at least 10 days. Before adopting an impact fee enactment, the City shall:

- Comply with the notice requirements of Section 10-9a-205 as if the impact fee enactment were a land use regulation.
- Hold a hearing in accordance with Section 10-9a-502 as if the impact fee enactment were a land use regulation.
- Receive the protections of Section 10-9a-801 as if the impact fee were a land use regulation.
- At least 10 days before the day on which a public hearing is scheduled:
    - Make a copy of the impact fee enactment available to the public.
    - Provide notice of the City's intent to enact or modify the impact fee, specifying the type of impact fee being enacted or modified, as a class A notice under Section 63G-30-102, for at least 10 days.
- Submit a copy of the impact fee analysis and a copy of the summary of the impact fee analysis on its website or to each public library within the local political subdivision.

1.4.4 Proceeds

To collect impact fees in accordance with Section 11-36a Part 6 the City shall:

- Establish a separate interest bearing ledger account for each type of public facility for which an impact fee is collected.
- Deposit a receipt for an impact fee in the appropriate ledger account.
- Retain the interest earned on each fund or ledger account in the fund or ledger account.
- At the end of each fiscal year, prepare a report that:
    - For each fund or ledger account, shows the source and amount of all money collected, earned, and received by the fund or ledger account during the fiscal year and each expenditure from the fund or ledger account.
    - Accounts for all impact fee funds that the local political subdivision has on hand at the end of the fiscal year.
    - Identifies the impact fee funds by:
        - The year in which the impact fee funds were received;
        - The project from which the impact fee funds were collected;
        - The project for which the impact fee funds are budgeted; and

        - The projected schedule for expenditure.
    - Is:
        - In a format developed by the state auditor;
        - Certified by the local political subdivision's chief financial officer; and
        - Transmitted to the state auditor within 180 days after the day on which the fiscal year ends.

The City may expend impact fees only for a system improvement identified in the impact fee facilities plan and for the specific public facility type for which the fee was collected. The City shall expend or encumber an impact fee collected with respect to a lot for a permissible use and within six years after the impact fee with respect to that lot is collected. The City may hold the fees for longer than six years if it identifies, in writing an extraordinary and compelling reason why the fees should be held longer than six years and an absolute date by which the fees will be expended.

The City shall refund any impact fee paid by a developer, plus interest earned, when the developer does not proceed with the development activity and has filed a written request for a refund, the fee has not been spent or encumbered, and no impact has resulted.

1.4.5 Challenges

In accordance with Utah Code Section 11-36a Part 7.

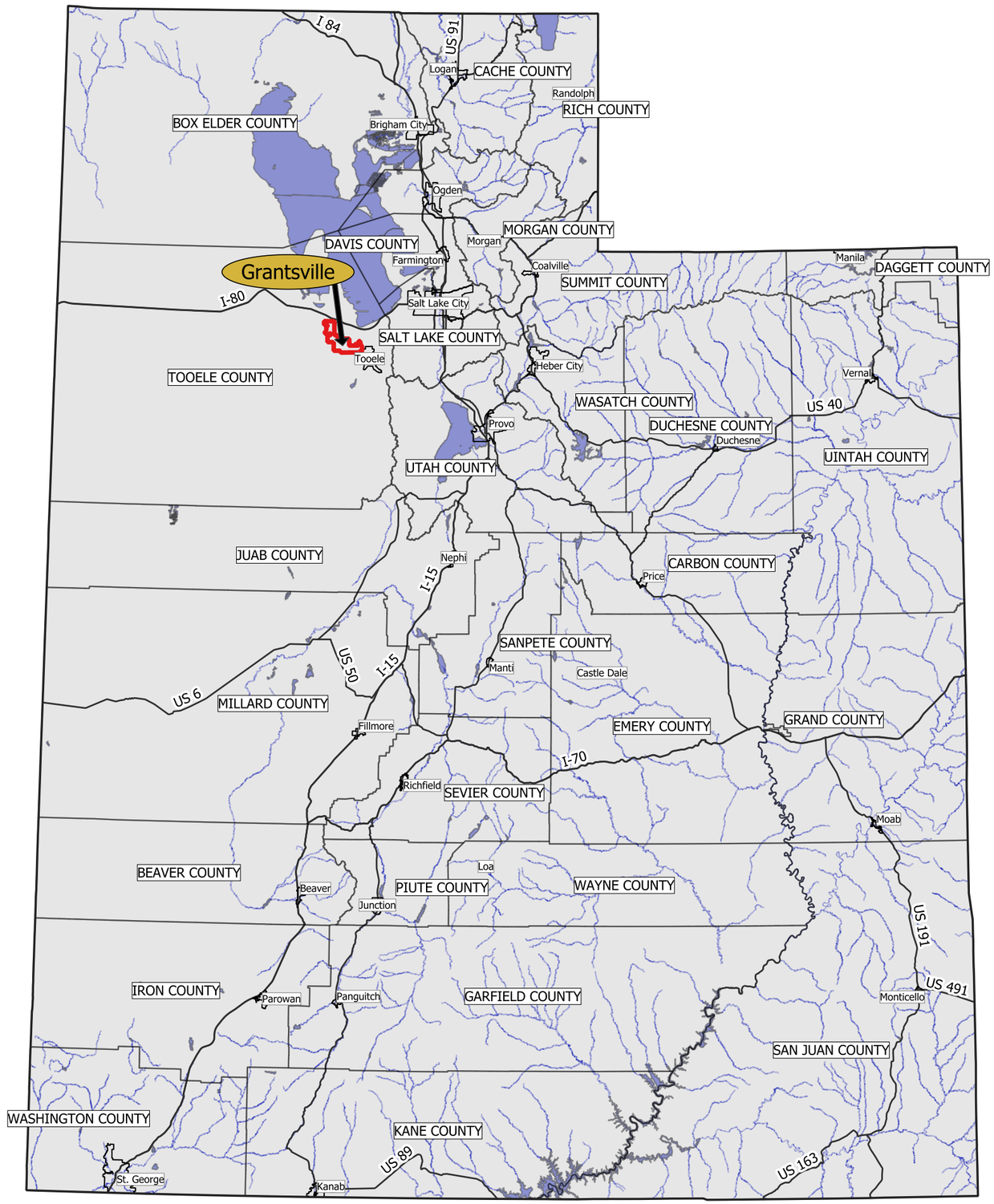
- A person or an entity residing in or owning property within a service area, or an organization, association, or a corporation representing the interests of persons or entities owning property within a service area, has standing to file a declaratory judgment action challenging the validity of an impact fee.
- A person or entity required to pay an impact fee who believes the impact fee does not meet the requirements of law may file a written request for information with the City.
- Within two weeks after the receipt of the request for information, the City shall provide the person or entity with the impact fee analysis, the impact fee facilities plan, and any other relevant information relating to the impact fee.
- A person or entity that has paid an impact fee that the City imposed may challenge whether the City complied with the notice and other procedural requirements of the Impact Fees Act with respect to the imposition of the impact fee.

- If a challenge is successful the remedy shall be a refund of the difference between what the person or entity paid as an impact fee and the amount the impact fee should have been if it had been correctly calculated.
- If an impact fee that is the subject of an advisory opinion is listed as a cause of action in litigation, the substantially prevailing party on that cause of action may collect reasonable attorney fees and court costs pertaining to the development of that cause of action and shall be refunded an impact fee held to be in violation of the Impact Fees Act, based on the difference between the impact fee paid and what the impact fee should have been if it had been correctly calculated.

1.5 BACKGROUND

Grantsville City is situated in Tooele County at the northwestern end of the Tooele Valley and at the south end of the Great Salt Lake. The City's location is shown in Figure 1-1 and Figure 1-2. Grantsville is located both in the floor of the valley with western portions of the City entering into the foothills of the Stansbury Mountains to the west. The Tooele Valley is on the eastern end of the basin and range topography of the Great Basin Desert.

Grantsville City, like much of Utah, has experienced rapid growth in the past decade and is projected to continue for the next decade and beyond. This growth is coinciding with a transition period for the City as it grows from a bedroom community supported largely by jobs in the greater Tooele Valley or Salt Lake City metropolitan area, to a City with a sizable commercial presence. From the Wal-Mart distribution center in the northwest corner of the city to the Purple Mattress warehouse and Lakeview Business Center in the Deseret Peak portion of the City, the City is poised for continued growth in these sectors. Recent residential growth in the southern and western portions of the City indicate a growing local population to service these new industries. As the cost of real-estate rises in the Salt Lake Valley and it nears build-out capacity, jobs that Grantsville City residents formerly commuted to could instead be re-located to Grantsville City itself. This growth and associated developments will bring needed improvements and extensions of the City's existing infrastructure to maintain existing levels of service.



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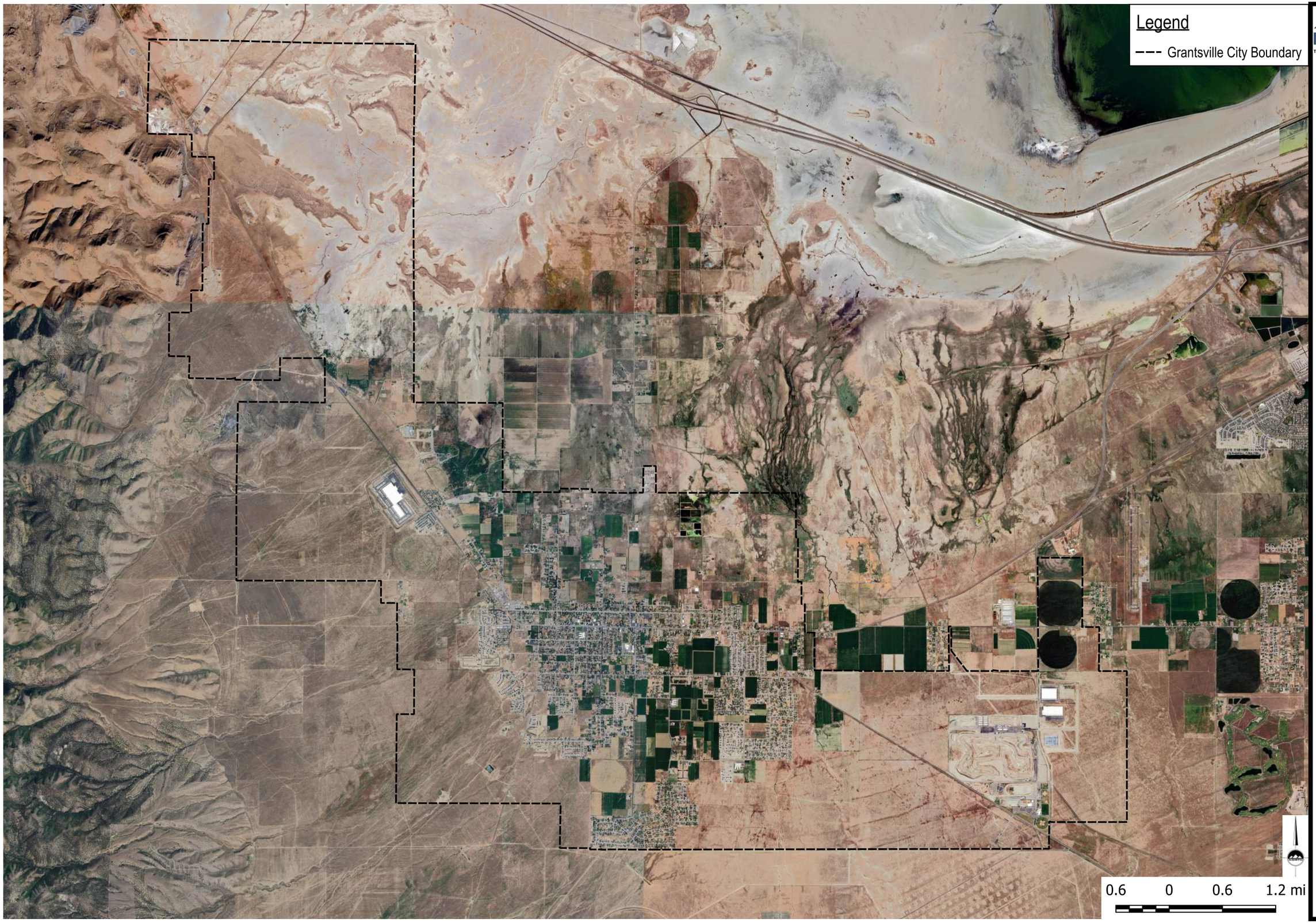
GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

LOCATION MAP

PROJECT NUMBER 10766D
PRINT DATE 2024-04-23
PROJECT MANAGER R. ROUSSELLE
DESIGNED BY M. SANFORD

FIG 1-1



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GRANTSVILLE, UTAH

CITY AERIAL OVERVIEW

PROJECT NUMBER	PRINT DATE
10766D	2024-04-23
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 1-2

1.6 INFLATION RATE

Inflation must be accounted for when calculating impact fees, so for the purposes of this CFP, IFFP, and IFA an annual inflation rate of 3.5% is used. It is recognized that the current economic climate is unpredictable and inflation rates vary significantly, but these rates are predicted to stabilize over time so 3.5% is believed to be a reasonably accurate rate. However, if this predicted rate is not consistent with actual inflation rates over time, then the City should revisit and update any cost-estimates contained in this plan to reflect an accurate inflation rate.

SECTION 2: DEMOGRAPHICS

2.1 INTRODUCTION

Grantsville City is transitioning from a small bedroom community supporting the regional economy to a small city experiencing rapid growth. Many residents commute to work in the Salt Lake Valley, while others increasingly work locally providing services for the County and the community. Local work is concentrated in mineral extraction and waste disposal companies located in the West Desert and around the south arm of the Great Salt Lake along with warehousing, distribution, and manufacturing located in the Tooele Valley. Warehousing and distribution jobs increased in recent years with the arrival of a Walmart Distribution Center in the northwest corner of the City and a Purple Mattress warehouse in the southeast. The construction of the Lakeview Business Park, adjacent to the Utah Motorsports Campus in the Deseret Peak area of the City, will result in a substantial increase in warehousing and distribution jobs in the future. It is anticipated that the Flux and West areas of the City will see a significant increase in residential and commercial development. The City is working on a plan called the West Bank & Northwest Area Master Development Plan & Capital Facilities Plan to address this area. Even with this considerable anticipated growth, the City recognizes the importance in preserving its character and rural community.

A demographic analysis of Grantsville City's current population, land-use, development patterns, and development potential has been completed. The results of the analysis have been used as a basis for projection of future growth and its distribution throughout the planning area. These future growth projections will be used as one of the factors to estimate future utility demands and infrastructure requirements for the community.

2.2 PLANNING PERIOD

This plan focuses on growth projected in the next 10 years to determine future capital facility needs. The planning period begins at the end of 2023 and finishes at the end of 2033. Anytime a year is stated throughout this plan it is referring to the end of the specified year.

2.3 PLANNING AREAS

In order to identify areas that are showing recent growth trends and more accurately determine needed improvements, the entire planning area has been divided into six distinct planning areas: Flux, North, Central, South, West, and Deseret Peak. Major roads, transitions in existing

development density, or changes in land use have been used as boundaries to the extent possible to define these planning areas. Reference Figure 2-1 for graphical representations of these areas.

2.4 LAND USE AND BUILD-OUT CAPACITY

Grantsville City limits encompass approximately 25,522 gross acres. Much of this land is currently undeveloped, particularly in the area northwest of the City along SR 138 (Flux and West areas) and the Deseret Peak area. Future land use areas per the City's current zoning designations are shown in Figure 2-2. The Grantsville City General Plan provides values for maximum allowable densities for each land use type (Table 2-1), and Ensign assumed an actual build-out density for each land use type in order to project future development. Table 2-2 shows the remaining developable acreage broken out by land use type and planning area. The total land available for development was reduced by 30% to account for future hardscapes (streets, sidewalks, curbs, and gutters), potentially undevelopable land, and other public uses.

Table 2-1: Land Use Densities

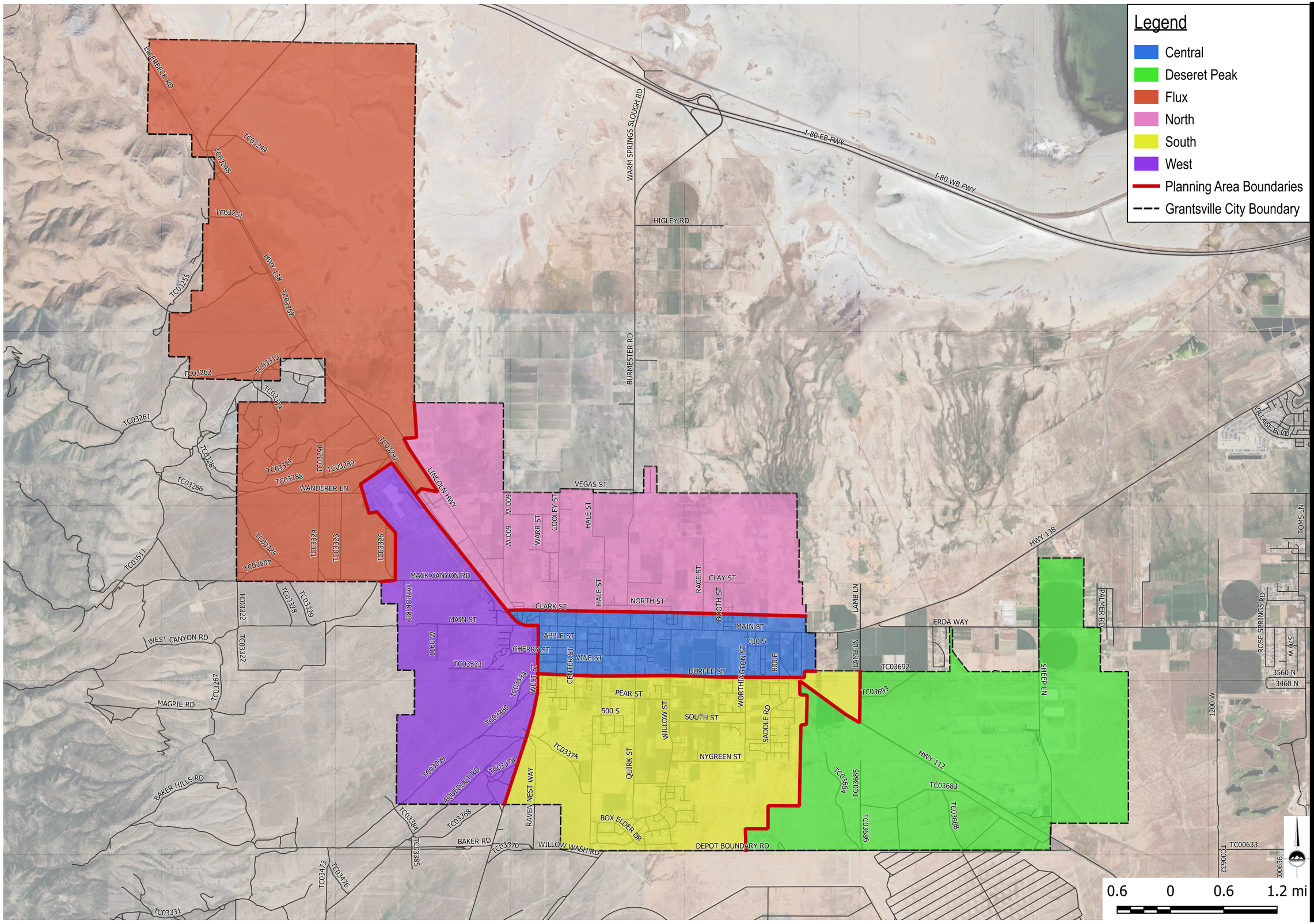
Land Use	Maximum Land Use Density (Units/Acre)	Assumed Density (Units/Acre)
Commercial	-	3
Mixed-Use Density	10 to 15	5
High Single Family Residential	6	3.5
Medium Density Residential	3	1.75
Low Density Residential	2	1
Rural Residential-1	0.1 to 1	0.5
Rural Residential-2	0.1 to 0.2	0.15
Industrial	-	0.25
Municipal / School	-	0.1
Park & Open Space	-	0.01
General Manufacturing	-	0.25

Note: Assumed density was assigned to Park and Open Space to be able to determine future infrastructure improvements.

Table 2-2: Build-Out Units and Remaining Developable Acreage

Area	Commercial		General Manufacturing		High Single Family Residential		Medium Density Residential		Low Density Residential		Rural Residential-1		Rural Residential-2		Industrial		Municipal / School		Mixed-Use Density		Park & Open Space		Total	
	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units
Central	-	-	-	-	76	268	45	78	-	-	-	-	-	-	-	-	34	3	147	736	16	0.16	319	1,085
Deseret Peak	618	1,854	1,009	252	-	-	-	-	-	-	-	-	-	-	334	84	-	-	-	-	1,404	14	3,365	2,204
Flux	1,131	3,393	-	-	-	-	-	-	-	-	472	236	281	42	3,738	934	-	-	42	210	-	-	5,664	4,815
North	90	269	-	-	57	200	-	-	-	-	1,563	782	-	-	102	26	116	12	43	213	0.43	0.004	1,972	1,501
South	-	-	-	-	-	-	81	142	1,396	1,396	210	105	-	-	-	-	16	2	29	144	9	0.09	1,741	1,788
West	-	-	-	-	236	824	24	41	1,182	1,182	122	61	-	-	9	2	52	5	41	203	-	-	1,664	2,319
Totals	**1,839**	**5,516**	**1,009**	**252**	**369**	**1,292**	**149**	**261**	**2,578**	**2,578**	**2,367**	**1,183**	**281**	**42**	**4,183**	**1,046**	**218**	**22**	**301**	**1,506**	**1,430**	**14**	**14,724**	**13,713**

Notes: Units per land use type are based on the assumed build-out densities outlined in Table #.
The remaining developable acreage is based on a GIS analysis completed in 2021.



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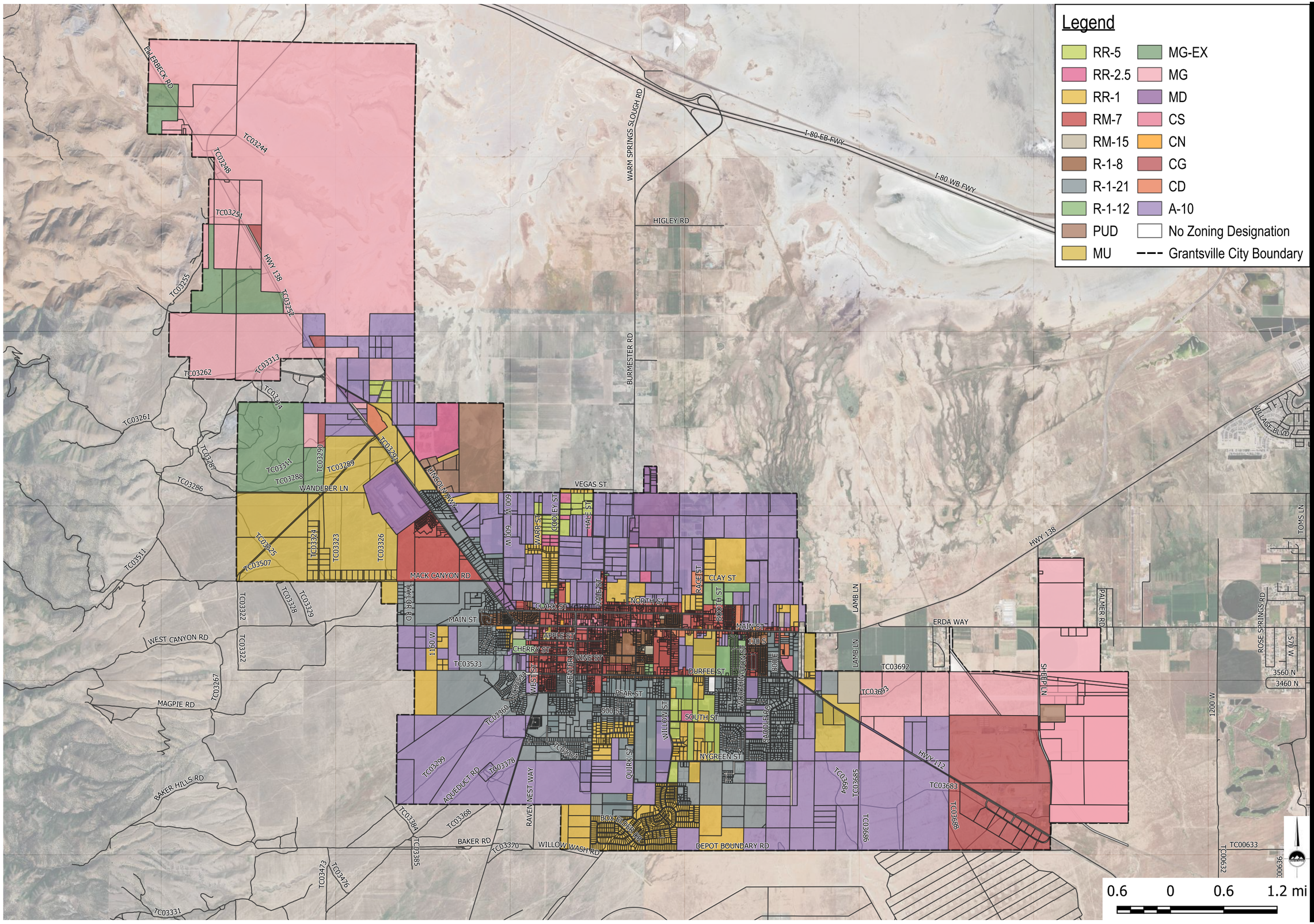
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GRANTSVILLE, UTAH

PLANNING AREAS

PROJECT NUMBER	PRINT DATE
10766D	2024-04-23
PROJECT MANAGER	DESIGNED BY
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FIG 2-1



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FUTURE LAND USE MAP

PROJECT NUMBER	PRINT DATE
10766D	2024-04-23
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 2-2

2.5 PLANNING CONVERSIONS

The Equivalent Residential Connection (ERC) is the recognized standard planning unit when planning for future utility infrastructure needs. One ERC represents a single family dwelling with known demand characteristics or requirements. Other types of uses are typically factored based upon comparison of their demand versus the residential single family unit. The types of uses for Grantsville City are categorized as shown in Table 2-3. The Construction Water connection type represents water drawn from a hydrant for construction use, and the City Rate connection is water usage from City buildings and parks.

In order to determine the total number of ERCs, it is necessary to convert the number of physical units and metered service connections on the system to ERCs. The existing numbers of units and service connections for Grantsville were determined from the City's monthly water meter reports. The conversion between service connections and ERCs has been calculated (Appendix C) using approved methods as outlined in the State of Utah Administrative Code R309-510, and the results are summarized in Table 2-3.

Table 2-3: Existing (2023) Service Connections and ERCs

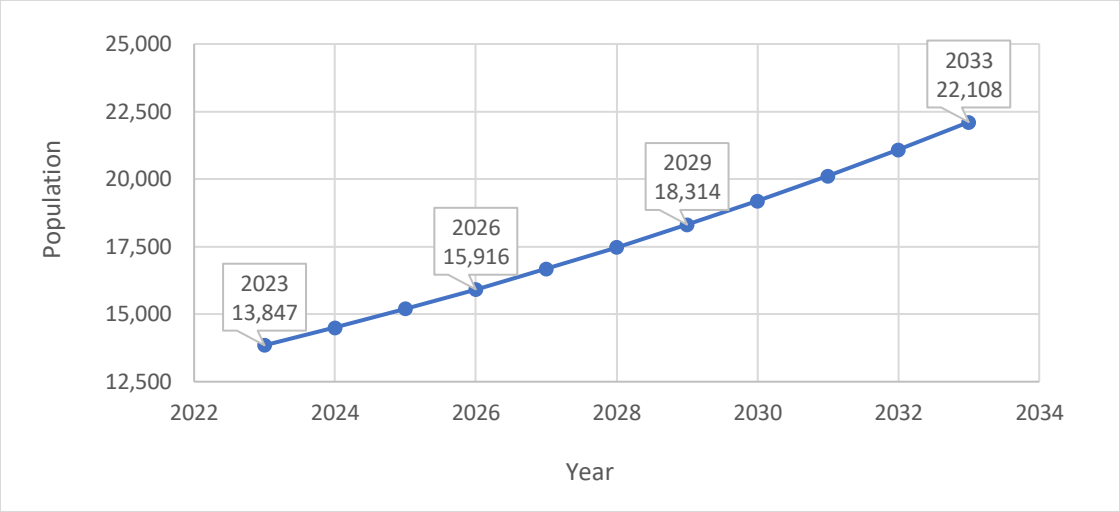
Service Connection Type	Service Connections	Units	ERC / Unit	ERCs
Single Family	4,267	4,274	1.00	4,274
Multi-Unit	47	291	0.55	160
Trailer	9	216	1.13	244
Commercial	107	146	7.92	1,156
Church	10	11	9.28	102
School	7	10	5.22	52
Construction Water	13	13	4.83	63
City Rate	5	34	8.60	292
Total	**4,465**	**4,995**		**6,343**

2.6 POPULATION

The Utah Division of Drinking Water (UDDW) estimated Grantsville's 2018 population to be 10,660. Based on an analysis of past impact fees and building permits, Ensign estimated Grantsville's 2021 end of year population to be 12,791. The number of residential ERCs in the City at the end of 2021 was 4,323 as determined from water meter reports. These residential ERCs include the Single Family, Multi-Unit, and Trailer service connection types. This equates to a ratio of 2.96 persons per ERC, which is used to estimate the population beyond 2021. Based on the number of residential ERCs shown in Table 2-3, the City's estimated current

(2023) population is 13,847. The following graph (Figure 2-3) illustrates the projected population growth over the planning period. The method of estimating the future growth is discussed in Section 2.7.

Figure 2-3: 10-Year Population Projection



2.7 GROWTH PROJECTIONS

Like much of Utah, Grantsville City experienced steady growth of approximately 1.5% to 2.5% between 2010 and 2014, with a growth rate that has accelerated exponentially since 2015. Looking back at recent history, an article from the Deseret News dated April 26, 1999 had projected that Grantsville's population at the time, 5,800, would increase 72% by the year 2020. The City ended up growing by 121% during this timeframe. Municipalities in Salt Lake Valley have seen this type of exponential growth in the 2000s to keep up with the booming economy. An example of this growth was Draper which grew from a population of 25,220 persons in 2000 to 42,275 persons in 2010 (67.6% growth) according to the U.S. Census Bureau. This high level of growth is expected to continue in Grantsville as a large majority of current development in Salt Lake Valley is higher density residential infill projects leaving people looking for affordable single family homes to venture farther from the Salt Lake Valley into Tooele Valley. Additionally, a significant amount of future development in Grantsville is currently in the planning process. As previously mentioned the City is preparing a study for the West Bank and Northwest areas. These areas along with the Lakeview Business Park in the Deseret Peak planning area are anticipated to be the largest contributors to the growth of the City in the next 10 years.

Recently, Grantsville has observed annual growth rates of about 4% from 2016-2019, increasing to 6.6% in 2020, and approximately 8.5% for 2021. However, growth rates this large are not expected to be sustained for multiple years. Applying an 8.5% annual growth rate over the planning period results in an overall growth rate of about 120% in 10 years, nearly double the historical growth rates in Grantsville and Draper. Reviewing growth rates for various size cities throughout America, 75 to 80% growth in 10 years is the highest rate observed for a city similar in size to Grantsville. The growth rate for Grantsville from 2021 to 2022 decreased to about 5% and from 2022 to 2023 was just over 3%. Considering the proposed developments, input from City staff, and the predicted growth in the Salt Lake and Tooele Valley and surrounding cities, it is anticipated a 5% rate of growth will continue for the entire planning period, resulting in an overall 60% growth in 10 years. Due to the significant change of growth rates seen in recent years along with an unstable economic climate and varying construction pricing and supplies available, the actual City growth may differ from these estimated projections. Therefore, the City should revisit the demographic projections of this plan on a yearly basis and compare with the actual growth rates occurring in the City. If the actual growth differs significantly from the projections, then the demographic projections need to be amended, and this CFP/IFFP/IFA in its entirety needs to be amended as the results contained throughout this plan are based on the assumption that the demographic projections accurately represent future conditions of the City.

The yearly unit and ERC projections over the planning period for each connection type are shown in Table 2-4. The 5% annual growth rate was applied to Single Family, Multi-Unit, Commercial, and Construction Water connection types to project the number of future units and thus ERCs. New trailer units are not expected to be constructed in Grantsville, so the future number of trailer units and ERCs are shown to remain unchanged. Future Church and School units were projected by maintaining a set unit density relative to the City's population, which were determined by the existing conditions in 2021. At this time, there was one church per 1,280 residents and one school per 1,160 residents. Lastly, the City Rate growth was estimated based on anticipated City projects and their predicted construction years.

2.8 DISTRIBUTION OF GROWTH

Uncertainties arise in predicting growth in a City due to different factors that can influence when and where it may occur. However, an analysis of past impact fee locations can provide an indication as to where growth is likely to continue. This, coupled with longer historic growth

patterns, proximity to existing infrastructure, and input from the City can allow for a reasonable projection of growth. Additionally, the distribution of growth among the six planning areas requires taking into consideration the existing land uses and available capacity of each area. To determine the available capacity, Ensign used Automated Geographic Reference Center (AGRC) parcel data for Tooele County and filtered it to find all parcels available for development in each area. Considering each of these factors, the percentages of growth expected to occur in each planning area were determined and used to project units and ERCs per area for the planning period, shown in Table 2-5.

Table 2-4: Projected Units and ERCs

Year:		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033	
Projected Population:		**13,847**		**14,504**		**15,194**		**15,916**		**16,677**		**17,476**		**18,314**		**19,193**		**20,119**		**21,090**		**22,108**	
Growth Rate:		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**	
Service Connection Type	**ERC / Unit**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**
Single Family	1.00	4,274	4,274	4,488	4,488	4,712	4,712	4,948	4,948	5,195	5,195	5,455	5,455	5,728	5,728	6,014	6,014	6,315	6,315	6,631	6,631	6,963	6,963
Multi-Unit	0.55	291	160	306	168	321	177	337	185	354	195	372	205	391	215	411	226	432	238	454	250	477	262
Trailer [1]	1.13	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244	216	244
Commercial	7.92	146	1,156	153	1,212	161	1,275	169	1,338	177	1,402	186	1,473	195	1,544	205	1,624	215	1,703	226	1,790	237	1,877
Church [2]	9.28	11	102	11	102	12	111	12	111	13	121	13	121	14	130	15	139	15	139	16	148	17	158
School [3]	5.22	10	52	10	52	11	57	11	57	12	63	13	68	13	68	14	73	15	78	16	84	17	89
Construction Water	4.83	13	63	14	68	15	72	16	77	17	82	18	87	19	92	20	97	21	101	22	106	23	111
City Rate [4]	8.60	34	292	35	301	38	327	38	327	38	327	38	327	39	335	40	344	40	344	40	344	40	344
Total		**4,995**	**6,343**	**5,233**	**6,635**	**5,486**	**6,975**	**5,747**	**7,287**	**6,022**	**7,629**	**6,311**	**7,980**	**6,615**	**8,356**	**6,935**	**8,761**	**7,269**	**9,162**	**7,621**	**9,597**	**7,990**	**10,048**
Increase from 2023		*-*	*-*	*238*	*292*	*491*	*632*	*752*	*944*	*1,027*	*1,286*	*1,316*	*1,637*	*1,620*	*2,013*	*1,940*	*2,418*	*2,274*	*2,819*	*2,626*	*3,254*	*2,995*	*3,705*

[1] Trailer units are not expected to increase.
[2] Church growth rate is 1 church per 1,280 population.
[3] School growth rate is 1 school per 1,160 population.
[4] City Rate growth rate is based on anticipated City projects.

Table 2-5: Distribution of Projected Units and ERCs

Year:		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033	
Projected Population:		**13,847**		**14,504**		**15,194**		**15,916**		**16,677**		**17,476**		**18,314**		**19,193**		**20,119**		**21,090**		**22,108**	
Growth Rate:		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**		**5.0%**	
Area	**Percentage of Growth**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**	**Units**	**ERCs**
Central	8.10%	2,216	2,774	2,235	2,797	2,256	2,825	2,277	2,850	2,299	2,878	2,323	2,906	2,347	2,937	2,373	2,970	2,400	3,002	2,429	3,037	2,459	3,074
Increase from 2023		*-*	*-*	*19*	*24*	*40*	*51*	*61*	*76*	*83*	*104*	*107*	*133*	*131*	*163*	*157*	*196*	*184*	*228*	*213*	*264*	*243*	*300*
Deseret Peak	16.02%	92	292	130	339	170	393	212	443	256	498	302	554	351	614	402	679	456	744	512	813	571	885
Increase from 2023		*-*	*-*	*38*	*47*	*79*	*101*	*120*	*151*	*165*	*206*	*211*	*262*	*260*	*322*	*311*	*387*	*364*	*452*	*421*	*521*	*480*	*594*
Flux	39.80%	174	252	269	369	369	504	473	628	583	764	698	904	819	1,054	946	1,215	1,079	1,374	1,219	1,548	1,366	1,727
Increase from 2023		*-*	*-*	*95*	*116*	*195*	*252*	*299*	*376*	*409*	*512*	*524*	*652*	*645*	*801*	*772*	*962*	*905*	*1,122*	*1,045*	*1,295*	*1,192*	*1,475*
North	2.38%	574	899	580	906	586	914	592	921	598	929	605	938	612	947	620	956	628	966	636	976	645	987
Increase from 2023		*-*	*-*	*6*	*7*	*12*	*15*	*18*	*22*	*24*	*31*	*31*	*39*	*39*	*48*	*46*	*58*	*54*	*67*	*62*	*77*	*71*	*88*
South	10.26%	1,623	1,797	1,648	1,827	1,674	1,862	1,700	1,894	1,729	1,929	1,758	1,965	1,789	2,003	1,822	2,045	1,856	2,086	1,893	2,131	1,930	2,177
Increase from 2023		*-*	*-*	*24*	*30*	*50*	*65*	*77*	*97*	*105*	*132*	*135*	*168*	*166*	*207*	*199*	*248*	*233*	*289*	*269*	*334*	*307*	*380*
West	23.44%	316	329	372	398	431	477	492	551	557	631	625	713	696	801	771	896	849	990	932	1,092	1,018	1,198
Increase from 2023		*-*	*-*	*56*	*68*	*115*	*148*	*176*	*221*	*241*	*301*	*308*	*384*	*380*	*472*	*455*	*567*	*533*	*661*	*616*	*763*	*702*	*868*
Total		**4,995**	**6,343**	**5,233**	**6,635**	**5,486**	**6,975**	**5,747**	**7,287**	**6,022**	**7,629**	**6,311**	**7,980**	**6,615**	**8,356**	**6,935**	**8,761**	**7,269**	**9,162**	**7,621**	**9,597**	**7,990**	**10,048**
Increase from 2023		*-*	*-*	*238*	*292*	*491*	*632*	*752*	*944*	*1,027*	*1,286*	*1,316*	*1,637*	*1,620*	*2,013*	*1,940*	*2,418*	*2,274*	*2,819*	*2,626*	*3,254*	*2,995*	*3,705*

SECTION 3: DRINKING WATER

3.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

3.1.1 Inventory of Existing Facilities

Grantsville City's drinking water system consists of six water sources (Table 3-1) with associated water rights, five water storage tanks, two booster pump stations, and a distribution system as outlined below (Figure 3-1).

Table 3-1: Existing Sources

Source	Type/ Equipment	Casing, (inches) / Depth (feet)	Pump Setting (feet)	Equipped Capacity (gpm)	Well Completion Date	Cost [2]
Cherry Street (Park) Well	Well / 150 Hp Sub. Pump and Motor	12 / 480	150	1,030	1975	$9,618.00 [3]
South Willow Well	Well / 100 Hp Sub. Pump and Motor	16 / 395	254	620	May 15, 1998	$2,600.00 [3]
Hunsaker Well	Well / 125 Hp Sub. Pump and Motor	16 / 650	470	275 [1]	October 20, 2004	N/A [4]
South Well	Well / 100 Hp Hollow Shaft Pump and Motor	16 / 520	420	750	December 22, 1995	$197,555.36 [3]
North Well	Well / 150 Hp Sub. Pump and Motor	16 / 550	510	1,200	February 20, 2019	$1,499,501.65
Marshall Well	Well / 450 Hp Vertical Turbine Pump and Motor	16 / 610	410	2,500	2024	N/A [5]
Total				**6,375**		**$1,709,275.01**

[1] The Hunsaker Well is equipped and able to pump at 500 gpm however, the drawdown in the well limits pumping to approximately 275 gpm. The City is rehabilitating the Hunsaker Well which may increase the equipped capacity.

[2] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[3] The City does not have records of the original construction costs, but recorded costs of improvements made to the wells are included.

[4] The Hunsaker Well cost was excluded because Tooele County constructed the well at its own cost.

[5] The Marshall Well cost was excluded because it was paid for by the Redevelopment Agency (RDA).

Grantsville City's existing five storage tanks provide drinking water, irrigation, and fire suppression for the City. The City's drinking water system supplies approximately 2/3 of the City

with irrigation and the Grantsville Irrigation Company supplies the remaining 1/3. Table 3-2 lists the City's five storage tanks along with historic construction costs.

Table 3-2: Existing Storage Tanks

Tank	Diameter / Dimensions (feet)	Depth (feet)	Primary Supply Source(s)	Equipped Capacity (Million Gallons)	Cost [1]
North Tank (Rect.)	49.5 x 50.5	12.5	North Well and Cherry Street Well	0.225	N/A
North Tank (Circ.)	80	14	North Well and Cherry Street Well	0.5	N/A
South Tank	94	21	South Well	1.0	N/A
South Willow Tank	83	25.5	South Willow Well, Hunsaker Well, and Marshall Well	1.0	$12,308.53 [2]
Lakeview Business Park Tank	92	26	South Willow Well and Marshall Well	1.2	$1,746,515.04
Total				**3.925**	**$1,758,823.57**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[2] The City does not have records of the original construction cost, but recorded costs of improvements made to the tank are included.

Grantsville's existing distribution system is shown in Figure 3-1. The City has two booster pump stations which are listed in Table 3-3. The total recorded historic cost for the distribution system is $16,226,356.31.

Table 3-3: Existing Booster Pump Stations

Booster Pump Station	Primary Supply	Equipped Capacity (gpm)	Completion Date	Cost
West Bank Booster Pump Station	South Tank	540 (1 pump), 995 (2 pumps), 1,350 (3 pumps) [1]	2015	N/A
North Well Booster Pump Station	North Well	300 (1pumps), 600 (2 pumps), 900 (3 pumps), 1,200 (4 pumps), 1,500 gpm (5 pumps)	2023	N/A

[1] Equipped capacities assume both the Hunsaker and South Willow Wells are pumping to the South Willow Tank at the same time the booster pump station is operating.

The existing Public Works Building serves both drinking water and wastewater facilities. The building was constructed in 2021 for a cost of $222,483.40 attributed to water facilities.

The City has long-term debt associated with a bond issued to finance the Main Street Water Replacement Project as shown in Table 3-4. The Water Revenue Bond was used to finance improvements to the distribution system.

Table 3-4: Existing Water Long-Term Debt

Bond	Date of Issue	Interest Rate	Final Maturity Date	Original Bond, Note Issue	Principal Outstanding at June 30, 2023	Total Interest Payments (2023-2033)
Water Revenue Bond, Series 2018	December, 2018	1.50%	August, 2039	$2,700,000.00	$3,039,000.00	$344,640.00

Pressure Zones
1
2
3
4
City Boundary

Legend
<4"
4"
6"
8"
10"
12"
14"
16"
20"
24"
Tank
Well
PRV
Booster Pump
Grantsville City Boundary
MG - Million Gallons
OF - Overflow Elevation
psi - Pounds per Square-Inch

Cherry Street (Park) Well

North Tanks (0.225 MG & 0.5 MG, Zone 1, OF=4,507') and Well

North Well Booster Pump Station

South Tank (1.0 MG, Zone 2, OF=4,610') and Well

West Bench Booster Pump Station

Lakeview Business Park Tank (1.2 MG, Zone 3, OF=4,712')

Hunsaker Well

South Willow Well

Marshall Well

South Willow Tank (1.0 MG, Zone 3, OF=4,712')

Zone 1:
Top - 55 psi
Bottom - 110 psi

Zone 2:
Top - 55 psi
Bottom - 85 psi

Zone 3:
Top - 55 psi
Bottom - 110 psi
Bottom ~148 (Deseret Peak Area)

0.4 0 0.4 0.8 mi

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CONTACT:
MAYOR NEIL A. CRITCHLOW
PHONE: 435-884-3411

GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

EXISTING DRINKING WATER SYSTEM

PROJECT NUMBER	PRINT DATE
10766D	2024-07-12
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 3-1

3.1.2 Level of Service

Level of Service (LOS) standards used for this plan listed below were previously established in the Grantsville City Capital Facilities Plan dated May 2022 by Ensign Engineering and Land Surveying.

- **Unit Average Day Demand = 807 gpd/ERC (0.618 ac-ft/year/ERC)**
  - Indoor Demand = 195 gpd/ERC (0.218 ac-ft/year/ERC)
  - Outdoor Demand = 612 gpd/ERC (0.400 ac-ft/year/ERC)
- **Unit Peak Day Demand = 1,416 gpd/ERC (0.983 gpm/ERC)**
  - Indoor Demand = 275 gpd/ERC (0.191 gpm/ERC)
  - Outdoor Demand = 1,141 gpd/ERC (0.792 gpm/ERC)
- **Peak Instantaneous Demand:**
  - Indoor Demand = $10.8*(ERCs)^{0.64}$ gpm/ERC
  - Outdoor Demand = 1.58 gpm/ERC
- **Fire Flow:**
  - Industrial/Commercial Buildings = 2,050 gpm for 4 hours (492,000 gallons)
  - Residential = 1,500 for 2 hours

- **Drinking Water System Capacity Requirements:**
  - **Sources:**
    - Supply Peak Day Demand
  - **Storage:**
    - Storage for Average Day Demand plus Fire Flow (Industrial/Commercial Buildings Fire Flow)
  - **Distribution**:
    - Per UAC R309-105-9, distribution systems should maintain a minimum pressure at all points in the system during**;**
      - Peak Day Demand plus Fire Flow - 20 psi
      - Peak Instantaneous Demand – 30 psi
      - Peak Day Demand – 40 psi
    - Max Velocity Requirements:
      - Peak Day and Peak Instantaneous Demand - 5 fps
      - Peak Day Demand plus Fire Flow – 10 fps

3.1.3 Capacity of Existing Facilities

As mentioned in Section 3.1.2, source capacity requirements are based on peak day demand. The current peak day demand was calculated based on demographic projections established in Section 2.7 and the source level of service shown in Section 3.1.2. This demand was compared with the equipped capacity to determine the source excess shown in the table below.

Table 3-5: Capacity of Existing Sources

Current (2023) ERCs	Peak Day LOS (gpm/ERC)	Peak Day Demand (gpm)	Equipped Capacity (gpm)	Excess / (Deficit) (gpm)
6,343	0.983	6,235	6,375	140

The City's current average day demand plus the fire flow storage requirement shown in Section 3.1.2 was compared with the equipped storage capacity to calculate the current storage deficit as shown in Table 3-6.

Table 3-6: Capacity of Existing Storage

Current (2023) ERCs	Average Day LOS (gpd/ERC)	Fire Storage (gal)	Average Day Demand (gpd)	Average Day Demand Plus Fire Storage (gal)	Equipped Capacity (gal)	Excess / (Deficit) (gal)
6,343	807	492,000	5,118,801	5,610,801	3,925,000	(1,685,801)

Drinking water distribution systems are pressurized and the City of Grantsville is capable of pumping drinking water from its lowest pressure zone, zone 1, to pressure zone 3. It is also capable of distributing from its pressure zone 3 tanks, South Willow and Lakeview Business Park, to all its pressure zones. Therefore, the distribution system serves the entire City equally and has excess capacity to accommodate any future development.

3.1.4 Demands of Future Development

The future requirements for the drinking water system (see Table 3-7) were determined by utilizing the projected growth in the planning period shown in Table 2-4 and the levels of service from Section 3.1.2.

Table 3-7: Future Drinking Water Requirements

Year	ERCs	Sources		Storage		
		Peak Day Demand (gpm)	Excess / (Deficit) (gpm)	Average Day Demand (gpd)	Average Day Demand Plus Fire Storage (gal)	Excess / (Deficit) (gal)
2023	6,343	6,235	140	5,118,801	5,610,801	(1,685,801)
2024	6,635	6,522	(147)	5,354,445	5,846,445	(1,921,445)
2025	6,975	6,856	(481)	5,628,825	6,120,825	(2,195,825)
2026	7,287	7,163	(788)	5,880,609	6,372,609	(2,447,609)
2027	7,629	7,499	(1,124)	6,156,603	6,648,603	(2,723,603)
2028	7,980	7,844	(1,469)	6,439,860	6,931,860	(3,006,860)
2029	8,356	8,214	(1,839)	6,743,292	7,235,292	(3,310,292)
2030	8,761	8,612	(2,237)	7,070,127	7,562,127	(3,637,127)
2031	9,162	9,006	(2,631)	7,393,734	7,885,734	(3,960,734)
2032	9,597	9,434	(3,059)	7,744,779	8,236,779	(4,311,779)
2033	10,048	9,877	(3,502)	8,108,736	8,600,736	(4,675,736)

Future requirements for the distribution system were determined based on the distribution of growth throughout the City shown in Table 2-5.

3.1.5 Proposed Projects

Proposed projects were determined to meet the demands of future development shown in the previous section and by utilizing the distribution of growth in the planning period to place future projects. The proposed projects are shown in Figure 3-2. The City is currently rehabilitating along with replacing the pump/motor of the Hunsaker Well anticipating the well's equipped capacity will increase from 275 gpm (Table 3-1) to 350 gpm. Additionally, three wells and three storage tanks are proposed as shown in Table 3-8 and Table 3-9, along with the planning year, construction year, and cost estimates (see Appendix D).

Table 3-8: Proposed Source Projects

Source	Type / Equipment	Casing (inches) / Depth (feet)	Pump Setting (feet)	Equipped Capacity (gpm)	Construction Priority		Current Year (2023) Cost Estimate
					Begin Planning	Begin Construction	
Hunsaker Well Rehabilitation	Well Rehab	16 / 650	470	350	2023	2024	$264,654.17 [1]
Southwest Well No. 1	Well / Line Shaft Pump	16 / 600	450	2,000	2024	2025	$2,921,854.32
Southwest Well No. 2	Well / Line Shaft Pump	16 / 600	450	1,000	2029	2030	$2,862,765.23
West Bank Well No. 1	Well / Line Shaft Pump	16 / 600	550	2,000	2030	2031	$2,887,128.41
Total				**5,350**			**$8,936,402.13**

[1] *The cost shown is the actual cost for engineering and construction of the project.*

Table 3-9: Proposed Storage Projects

Storage	Equipped Capacity (gal)	Construction Priority		Current Year (2023) Cost Estimate
		Begin Planning	Begin Construction	
Southwest Tank No. 1	2,000,000	2024	2025	$3,839,078.10
Southwest Tank No. 2	1,500,000	2025	2026	$3,780,827.64
West Bank Tank No. 1	1,500,000	2028	2029	$6,147,238.50
Total	**5,000,000**			**$13,767,144.24**

Proposed distribution system projects are shown in Table 3-10. The City purchased one 350 kW trailer mounted, diesel generator in 2023 and will be updating its existing well houses and booster pump stations in 2024 with manual transfer switches and generator plugs to be able to operate any of the existing wells and booster pumps during a power outage. They also will purchase an additional trailer mounted, diesel generator in order to power the Marshall Well and North Well and Booster Pump Station site. These sites have a higher power draw requiring two 350 kW generators to operate during a power outage. The water distribution and transmission projects shown in Table 3-10 are required to extend water service to future development while providing vital water distribution looping for the water system.

Table 3-10: Proposed Distribution System Projects

Distribution Project	Description	Construction Priority		Current Year (2023) Cost Estimate
		Begin Planning	Begin Construction	
Wells and Booster Pumps Electrical Improvements	Electrical Improvements to install manual transfer switches and generator plugs at City's existing sources and booster pump stations.	2023	2024	$220,906.49 [1]
SR-138 Water Line Extension	Extend approximately 14,650 linear feet of 12-inch diameter water line and 17,400 linear feet of 16-inch diameter water line along SR 138 and install a PRV Station.	2024	2024	$4,601,294.50
Southwest Tank No. 1 Transmission Line	Construct approximately 3,660 linear feet of 12-inch diameter and 10,750 linear feet of 16-inch diameter water line for the Southwest Tank No. 1 and install a PRV station.	2024	2025	$2,403,557.50
Generator	Purchase 350 kW Trailer Mounted Diesel Generator including cables, connectors, and appurtenances.	2024	2025	$269,200.00
SR-112 Water Line Extension	Extend approximately 3,950 linear feet of 12-inch diameter water line along SR 112.	2025	2026	$512,627.50
Southeast Water Line Project	Construct approximately 9,380 linear feet of 12-inch diameter water line in the southeast portion of the City and two PRV Stations.	2025	2026	$1,442,156.82
Burmester Water Pipeline Project	Extend approximately 7,757 linear feet of 12-inch diameter water line along Burmester Street.	2027	2028	$940,526.85
Total				**$10,390,269.66**

[1] *The cost shown is the actual cost for engineering and construction of the project.*

The City also plans to expand the Public Works site to add a shop area, expected to begin construction in 2026. The estimated cost is $2.02 million and will be split evenly between the drinking water and wastewater utility.

3.1.6 Methods of Financing

The intent is to fund the majority of the projects though impact fees. The portion of the projects not eligible for impact fees may be funded through grants, loans, developer dedications, or reserves in the Water Fund.

Pressure Zone Borders
Pressure Zones
1
2
3
4
City Boundary

Legend
<4"
4"
6"
8"
10"
12"
14"
16"
20"
24"

Tank
Well
PRV
Booster Pump
Grantsville City Boundary
MG - Million Gallons
OF - Overflow Elevation
psi - Pounds per Square-Inch

Zone 4:
Top - 65 psi
Bottom - 120 psi

SR-138 Water Line Extention

Burmester Water Pipeline

Public Works Improvements

West Bank Tank No. 1 (1.5 MG, Zone 3, OF=4,712') and Well

North Tanks (0.225 MG & 0.5 MG, Zone 1, OF=4,507') and Well

Cherry Street (Park) Well

SR-112 Water Line Extention

Zone 1:
Top - 55 psi
Bottom - 110 psi

Zone 3:
Top - 55 psi
Bottom - 110 psi
Bottom ~148 (Deseret Peak Area)

Southeast Water Line

Southwest Tank No. 2 (1.5 MG, Zone 4, OF=4,862') and Well

Southwest Tank No. 1 (2.0 MG, Zone 3, OF=4,712') and Well

North Well Booster Pump Station

South Tank (1.0 MG, Zone 2, OF=4,610') and Well

West Bench Booster Pump Station

Zone 2:
Top - 55 psi
Bottom - 85 psi

Lakeview Business Park Tank (1.2 MG, Zone 3, OF=4,712')

Hunsaker Well

Marshall Well

South Willow Well

South Willow Tank (1.0 MG, Zone 3, OF=4,712')

*Proposed project locations are approximate and are subject to change

0.5 0 0.5 1 mi

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MAYOR NEIL A. CRITCHLOW
PHONE: 435-884-3411

GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

PROPOSED DRINKING WATER SYSTEM

PROJECT NUMBER	PRINT DATE
10766D	2024-07-12
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 3-2

3.2 IMPACT FEE ANALYSIS

3.2.1 Existing Facilities

As shown in Section 3.1.3, the City's sources have excess capacity to serve future development. This excess capacity along with the proportionate share and historic construction costs are shown in Table 3-12. The proportionate share was calculated by dividing the excess capacity by the current equipped capacity. There is no excess storage capacity so no buy-in cost can be charged for storage facilities. As discussed in Section 3.1.3, the existing distribution system benefits all of the City proportionally as the City is able to pump or gravity flow water throughout the drinking water system. Therefore, the proportionate share for the existing distribution system was calculated based on the proportion of future ERCs expected to be served within the planning period as shown in Table 3-11. The existing Publics Works Building will utilize the same proportionate share as it is considered beneficial to both existing and future development. Another item eligible to charge a buy-in cost for is the interest payment amount due within the planning period for the Water Revenue Bond shown in Table 3-4. This loan was used to fund past improvements to the distribution system which benefited existing and future development, so the buy-in cost was calculated using the same proportionate share as the existing distribution system. The proportionate share for each existing facility was multiplied by the historic construction costs in order to calculate the impact fee eligible buy-in costs (Table 3-12).

Table 3-11: Existing Drinking Water Facilities Proportionate Share

Facility	Total ERCs (Year 2033)	Increase in ERCs (Year 2023-2033)	Proportionate Share
Existing Distribution System, Public Works Building, and Water Revenue Bond Interest Payments	10,048	3,705	36.9%

Table 3-12: Drinking Water Buy-In Costs

Facility	Cost [1]	Existing Capacity (gpm)	Excess Capacity (gpm)	Proportionate Share	Buy-In Cost
Sources	$1,709,275.01	6,375	140	2.19%	$37,491.71
Existing Distribution System	$16,226,356.31	N/A	N/A	36.9%	$5,983,145.91
Public Works Building	$222,483.40 [2]	N/A	N/A	36.9%	$82,036.33
Water Revenue Bond Interest Payments (2023-2033)	$344,640.00	N/A	N/A	36.9%	$127,079.14
Total					**$6,229,753.09**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[2] The cost shown for the Public Works Building is the cost associated with drinking water facilities.

3.2.2 System Improvements

The drinking water system improvements needed to accommodate future development within the planning period were determined in Section 3.1.5. The proportionate shares for sources and storage were calculated based on the increase in system capacity to meet the level of service, as shown in Table 3-13 and Table 3-14. It can be seen a portion of the Southwest Tank No. 1 project is associated with correcting the existing deficiency, which was excluded from the proportionate share calculation. The City does not charge impact fees for projects which are expected to be constructed by developers so they have a proportionate share of 0%. If it is determined the City will pay for any portion of these projects as the development agreements are finalized then this plan should be amended to include the project.

Table 3-13: Proposed Source Projects Proportionate Share

Project	Equipped Capacity (gpm)	Future (2033) Deficit (gpm)	Proportionate Share
Hunsaker Well Rehabilitation	75 [1]	3,502	100%
Southwest Well No. 1	2,000	3,427	0% [2]
Southwest Well No. 2	1,000	1,427	100%
West Bank Well No. 1	2,000	427	0% [2]

[1] The increase in equipped capacity resulting from the proposed project is shown as opposed to the total capacity of the facility.
[2] The proportionate share is 0% because the project is expected be constructed by developers.

Table 3-14: Proposed Storage Projects Proportionate Share

Project	Equipped Capacity (gal)	Existing (2023) Deficit (gal)	Future (2033) Deficit (gal)	Proportionate Share
Southwest Tank No. 1	2,000,000	1,685,801	4,675,736	15.7%
Southwest Tank No. 2	1,500,000	0	2,675,736	0% [1]
West Bank Tank No. 1	1,500,000	0	1,175,736	0% [1]

[1] The proportionate share is 0% because the project is expected be constructed by developers.

The proposed distribution system projects and the Public Works Improvements project were determined to be beneficial to both existing and future development, so the proportionate share was calculated based on the ERCs expected to be served within the planning period as shown in Table 3-15.

Table 3-15: Proposed Distribution System and Public Works Proportionate Share

Project	Total ERCs (Year 2033)	Increase in ERCs (Year 2023-2033)	Proportionate Share
Distribution Projects and Public Works Improvements	10,048	3,705	36.9%

The cost of each project which is attributed to new development in the planning period, and therefore eligible for impact fees, was calculated by multiplying the total project cost by the proportionate share as shown in Table 3-16. In order to account for the time-price differential inherent with future costs, the current year cost estimates were inflated at a rate of 3.5% to the anticipated construction year.

Table 3-16: Drinking Water Impact Fee Eligible Costs

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Hunsaker Well Rehabilitation	2024	$264,654.17	$264,654.17 [2]	100%	$264,654.17
Southwest Well No. 1	2025	$2,921,854.32	$3,129,963.39	0% [3]	$0.00
Southwest Well No. 2	2030	$2,862,765.23	$3,642,236.84	100%	$3,642,236.84
West Bank Well No. 1	2031	$2,887,128.41	$3,801,796.78	0% [3]	$0.00
Southwest Tank No. 1	2025	$3,839,078.10	$4,112,516.44	15.7%	$646,074.28
Southwest Tank No. 2	2026	$3,780,827.64	$4,191,871.19	0% [3]	$0.00
West Bank Tank No. 1	2029	$6,147,238.50	$7,556,525.67	0% [3]	$0.00
Wells and Booster Pumps Electrical Improvements	2024	$220,906.49	$220,906.49 [2]	36.9%	$81,454.87
SR-138 Water Line Extension	2024	$4,601,294.50	$4,762,339.81	0% [3]	$0.00
Southwest Tank No. 1 Transmission Line	2025	$2,403,557.50	$2,574,750.88	0% [3]	$0.00
Generator	2025	$269,200.00	$288,373.77	36.9%	$106,332.09
SR-112 Water Line Extension	2026	$512,627.50	$568,359.27	0% [3]	$0.00
Southeast Water Line Project	2026	$1,442,156.82	$1,598,945.04	0% [3]	$0.00
Burmester Water Pipeline Project	2028	$940,526.85	$1,117,050.86	36.9%	$411,890.27
Public Works Improvements	2026	$1,008,975.00 [1]	$1,118,668.62	36.9%	$412,486.79
Total		**$34,102,791.03**	**$38,948,959.22**		**$5,565,129.30**

[1] The cost shown for the Public Works Improvements project is half of the total cost estimate because this project cost will be split evenly between the wastewater and drinking water utilities.

[2] The cost for the project was not inflated because the cost shown is the actual project cost.

[3] The proportionate share is 0% because the project is expected be constructed by developers.

In addition to impact fee eligible project costs, planning costs can also be included in the calculation of impact fees. The cost for the current amendment to the drinking water section of this CFP, IFFP, and IFA was $7,980.05. Due to the uncertainty which comes with long-term development projections, this plan is expected to be amended annually going forward. The future professional expenses expected to occur within the planning period were inflated at a 3.5% rate as shown in Table 3-17.

Table 3-17: Drinking Water Professional Expenses

Year	Cost
2023	$0.00
2024	$7,980.05
2025	$8,259.36
2026	$8,548.43
2027	$8,847.63
2028	$9,157.30
2029	$9,477.80
2030	$9,809.52
2031	$10,152.86
2032	$10,508.21
2033	$10,875.99
Total	**$93,617.15**

3.2.3 Methods of Financing

The drinking water system improvements are expected to be funded through impact fees, loans, developer dedications, and Water Fund reserves as discussed in Section 3.1.6. The City expects to finance the proposed Southwest Tank No. 1 project with a loan, which is necessary to prevent the impact fee fund balance from going negative (see Section 3.2.5). This loan was assumed to be a 30-year bond with a 4.0% interest rate, 1.5% cost of insurance, 0.5% bond insurance, and a $20,000 surety policy. The interest cost for this bond attributed to development within the planning period can be included in the impact fee calculation.

Table 3-18: Drinking Water Future Debt Financing

Project	Proceeds	Par Amount [1]	Debt Service (Interest)	Debt Service (Principal + Interest)	Proportionate Share	Impact Fee Eligible Debt Service (Interest)
Southwest Tank No. 1	$4,112,516.44	$4,214,766.77	$3,097,444.63	$7,312,211.40	15.7%	$486,607.00

[1] *Includes cost of issuance, bond insurance, and surety policy.*

3.2.4 Impact Fee Calculation

Impact fees to be charged per ERC for each project were calculated by dividing the impact fee eligible costs by the number of ERCs expected to be served within the planning period, determined from Table 2-4. The City does not charge impact fees to the construction water and City rate connection types so they were excluded from the calculation. The increase in ERCs in the planning period for all other connection types totals 3,605 ERCs.

Table 3-19: Drinking Water Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) ERCs [1]	Cost per ERC
Buy-In Cost	$6,229,753.09	3,605	$1,728.09
Hunsaker Well Rehabilitation	$264,654.17	3,605	$73.41
Southwest Well No. 2	$3,642,236.84	3,605	$1,010.33
Southwest Tank No. 1	$646,074.28	3,605	$179.22
Southwest Tank No. 1 Debt Service (Interest)	$486,607.00	3,605	$134.98
Wells and Booster Pumps Electrical Improvements	$81,454.87	3,605	$22.59
Generator	$106,332.09	3,605	$29.50
Burmester Water Pipeline Project	$411,890.27	3,605	$114.26
Public Works Improvements	$412,486.79	3,605	$114.42
Professional Expenses	$93,617.15	3,605	$25.97
Total			**$3,432.76**

[1] *Does not include Construction Water or City Rate ERCs.*

The City charges impact fees to residential users based on their water meter size. A 3/4 inch water meter was determined to be equivalent to one ERC, and the remaining meter sizes were converted to ERCs based on the maximum flow rates from AWWA Manual M6, Table 5-3. Non-residential users are charged impact fees based on the number of fixture units in a development. A typical ERC was determined to have 24 fixture units as calculated in Appendix E. The results of these impact fee calculations are summarized in Table 3-20.

Table 3-20: Proposed Drinking Water Impact Fees

Water Meter Size (inches)	Maximum Flow Rate (gpm)	ERCs	Impact Fee
3/4	25 [1]	1	$3,432.76
1	40 [1]	1.6	$5,492.42
1 1/2	50 [1]	2	$6,865.52
2	100 [1]	4	$13,731.05
3	200 [2]	8	$27,462.09
4	400 [2]	16	$54,924.19
6	800 [2]	32	$109,848.38
8	1,000 [2]	40	$137,310.47
Non-Residential Development Indoor			$35.00 per fixture unit
Non-Residential Development Outdoor			$21,694.03 per irrigated acre

[1] *From AWWA M6 Table 5-3 Displacement Meters.*

[2] *From AWWA M6 Table 5-3 Electromagnetic and Ultrasonic Meter Type 1.*

3.2.5 Impact Fee Cashflow

The anticipated impact fee revenues and expenses over the 10-year planning period are shown in Table 3-21. The expenses represent only what is attributable to planning period development and include capital project costs, the expenditure of buy-in costs, and proposed bond payments. The impact fee cashflow (Table 3-22) estimates the end of year impact fee fund balance throughout the planning period by comparing the impact fee revenues, total expenses, and interest income calculated at 5.44% of the fund balance.

3.2.6 Impact Fee Credits

There are procedures in place for credits, appeals, and exemptions of impact fees for Grantsville City. Refer to Appendix B for the City's current impact fee ordinance.

Table 3-21: Drinking Water Impact Fee Revenues and Expenses

Year	ERCs [1]	Annual ERC Increase [1]	Impact Fee Revenues	Impact Fee Eligible Project Costs	Bond Payments	Bond Proceeds	Buy-In Cost Expenses	Professional Expenses	Total Expenses
2023	5,988	-	-	-	-	-	-	-	-
2024	6,266	278	$954,307.80	($346,109.04)	-	-	($480,408.14)	($7,980.05)	($834,497.24)
2025	6,576	310	$1,064,156.18	($752,406.36)	-	$646,074.28	($535,706.92)	($8,259.36)	($650,298.37)
2026	6,883	307	$1,053,857.89	($412,486.79)	($38,291.49)	-	($530,522.66)	($8,548.43)	($989,849.37)
2027	7,220	337	$1,156,840.75	-	($38,291.49)	-	($582,365.27)	($8,847.63)	($629,504.39)
2028	7,566	346	$1,187,735.61	($411,890.27)	($38,291.49)	-	($597,918.05)	($9,157.30)	($1,057,257.11)
2029	7,929	363	$1,246,092.56	-	($38,291.49)	-	($627,295.53)	($9,477.80)	($675,064.82)
2030	8,320	391	$1,342,209.89	($3,642,236.84)	($38,291.49)	-	($675,681.96)	($9,809.52)	($4,366,019.81)
2031	8,717	397	$1,362,806.46	-	($38,291.49)	-	($686,050.48)	($10,152.86)	($734,494.83)
2032	9,147	430	$1,476,087.60	-	($38,291.49)	-	($743,077.34)	($10,508.21)	($791,877.04)
2033	9,593	446	$1,531,011.79	-	($38,291.49)	-	($770,726.73)	($10,875.99)	($819,894.22)
Total		**3,605**	**$12,375,106.53**	**($5,565,129.30)**			**($6,229,753.09)**	**($93,617.15)**	**($11,548,757.19)**

[1] Does not include Construction Water or City Rate ERCs.

Table 3-22: Drinking Water Impact Fee Cashflow

Year	Impact Fee Revenues	Total Expenses	Interest Income	End of Year Balance
2023	-	-	-	$80,352.82
2024	$954,307.80	($834,497.24)	$4,371.19	$204,534.57
2025	$1,064,156.18	($650,298.37)	$11,126.68	$629,519.07
2026	$1,053,857.89	($989,849.37)	$34,245.84	$727,773.43
2027	$1,156,840.75	($629,504.39)	$39,590.87	$1,294,700.66
2028	$1,187,735.61	($1,057,257.11)	$70,431.72	$1,495,610.88
2029	$1,246,092.56	($675,064.82)	$81,361.23	$2,147,999.85
2030	$1,342,209.89	($4,366,019.81)	$116,851.19	($758,958.88)
2031	$1,362,806.46	($734,494.83)	-	($130,647.24)
2032	$1,476,087.60	($791,877.04)	-	$553,563.32
2033	$1,531,011.79	($819,894.22)	$30,113.84	$1,294,794.73

SECTION 4: PUBLIC SAFETY

4.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

4.1.1 Inventory of Existing Facilities

Grantsville City's public safety services consist of a Police Department, Animal Control, and Fire Department. There is also an Emergency Medical Technician (EMT)/ambulance service which the City has contracted with through Mountain West Hospital, but this will not be included in impact fee calculations because it is not a City run service.

The Utah Impact Fees Act defines a public safety facility as "a building constructed or leased to house police, fire, or other public safety entities; or a fire suppression vehicle costing in excess of $500,000." The City does not currently have any fire suppression vehicles which cost more than $500,000. The existing buildings associated with City's public safety services are listed in Table 4-1 along with the floor area and historical construction cost. The City Hall building is included in the public safety section of this plan, but it is not eligible for impact fees because it does not house any public safety services.

Table 4-1: Existing Public Safety Facilities

Facility	Construction Year	Floor Area (sq ft)	Cost [1]
Justice Center (Police Station)	2017	8,450 [2]	$3,905,831.64
Animal Shelter	1983	1,155	$10,006.00
Fire Station	2007	15,500	$2,376,472.15
City Hall	1996	7,000	$526,910.54
Total			**$6,819,220.33**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[2] The Justice Center is shared between the Police Department and the Justice Court. The total building floor area is 12,947 square feet, but the area of the portion occupied by the Police Department is 8,450 square feet.

The locations of these facilities are shown in Figure 4-1. The Police Department also operates a firearms range off Mormon Trail Road, but this is not included in this plan as it does not meet the definition of a public safety facility. See Appendix F for more detailed information about the Police Department staffing and Justice Center layout.

The City does have long-term debt associated with existing public safety facilities in the form of revenue bonds issued for the Fire Station and Justice Center. The details of these bonds are shown in the following table.

Table 4-2: Existing Public Safety Long-Term Debt

Bond	Date of Issue	Interest Rate	Final Maturity Date	Original Bond, Note Issue	Principal Outstanding at June 30, 2023	Total Interest Payments (2023-2033)
MBA Lease Revenue Bond, Series 2006 (Fire Station)	May 25, 2006	3.50%	January, 2037	$2,000,000.00	$1,185,000.00	$298,130.00
MBA Lease Revenue Bond, Series 2016 (Justice Center)	December, 2016	2.50%	October, 2047	$2,700,000.00	$2,377,000.00	$510,400.00
Total				**$4,700,000.00**	**$3,562,000.00**	**$808,530.00**

4.1.2 Level of Service

The previous Grantsville City Capital Facilities Plan dated May, 2022 established levels of service for each department as shown in Table 4-3. This plan will continue to utilize these levels of service.

Table 4-3: Public Safety Level of Service

Department	Staff Level of Service	Facility Level of Service
Police	1.49 officers per 1,000 population	118.6 sq ft building area per officer
Fire	3.52 firefighters per 1,000 population	0.0754 fire stations per 1,000 population
Animal Control	0.156 officers per 1,000 population	90.3 sq ft building area per 1,000 population

4.1.2.1 Police Department

At the time of the previous plan, the Police Department had 18 full-time officers excluding the Animal Control Officer, and Police Chief Enslen stated one additional officer was needed to provide the appropriate level of service. 19 officers at the City's 2021 population of 12,791 is equivalent to a rate of 1.49 officers per 1,000 population. This is in the range of typical levels of service provided by other police departments with a 2016 study by the FBI finding the average officer rate for cities with 10,000 to 24,999 population in the mountain west region was 1.7 officers per 1,000 population.

The required building area for the Police Department was determined from the rate of officers per building area for the former Grantsville Police Station when it reached its capacity. The police station used prior to the Justice Center was determined to be at capacity at the time of the Grantsville City Capital Facilities Plan prepared by AQUA Engineering dated April, 2013. The former station was 1,423 square feet, and there were 12 officers employed when it was at capacity, equivalent to a rate of 118.6 square feet per officer.

4.1.2.2 Fire Department

The Fire Department had 30 volunteer firefighters at the time of the previous CFP, and Fire Chief Daniels stated he needed 15 additional volunteers to provide adequate service to the City. 45 firefighters at the City's 2021 population of 12,791 is equivalent to a rate of 3.52 firefighters per 1,000 population.

At the time of the previous plan, Chief Daniels stated the existing fire station has 20% excess capacity in the training area and office spaces, and the rest of the station is at capacity. The floor area of the training area and offices is approximately 2,750 square feet, and therefore has an excess capacity of 550 square feet. It was determined 14,950 square feet (15,500 – 550) of station floor area was required to provide adequate service. This is 96.5% of the total station area which equates to 0.0754 stations per 1,000 population at the City's 2021 population.

4.1.2.3 Animal Control

There was one Animal Control Officer when the previous CFP was written, and Chief Enslen had stated an additional Animal Control Officer was required. Two officers at the 2021 population equals a rate of 0.156 officers per 1,000 population.

Based on input from Chief Enslen and a calculation (see Appendix F) following the methodology provided in the article Calculating Shelter Capacity by UC Davis Koret Shelter Medicine Program, it was determined the Animal Control Shelter was at capacity in 2021. The shelter is approximately 1,155 square feet which equals 90.3 square feet per 1,000 population at the City's 2021 population.

4.1.3 Capacity of Existing Facilities

The capacity of existing public safety facilities was calculated based on the current City population and the appropriate levels of service for each facility type, as shown in the following three tables.

Table 4-4: Capacity of Existing Police Facilities

Population (2023)	Police Officers per 1,000 Population	Police Officers Required	Building Area per Officer (sq ft)	Building Area Required (sq ft)	Existing Building Area (sq ft)	Excess / (Deficit) (sq ft)
13,847	1.49	21	118.6	2,490.6	8,450	5,959.4

Table 4-5: Capacity of Existing Fire Facilities

Population (2023)	Stations Per 1,000 Population	Number of Stations Required	Existing Number of Stations	Excess / (Deficit)
13,847	0.0754	1.04	1	(0.04)

Table 4-6: Capacity of Existing Animal Control Facilities

Population (2023)	Building Area per 1,000 Population (sq ft)	Building Area Required (sq ft)	Existing Building Area (sq ft)	Excess / (Deficit) (sq ft)
13,847	90.3	1,250.4	1,155	(95.4)

4.1.4 Demands of Future Development

Based on the demographic projections discussed in Section 2.7 and the levels of service established in Section 4.1.2, the requirements for public safety facilities to accommodate future development were calculated as shown in Table 4-7. It can be seen there are no additional facilities required for the Police Department, as the existing Justice Center has capacity to meet the demands of future development through the end of the planning period. However, both the Fire Department and Animal Control require additional facilities to be built within the planning period to accommodate future growth.

Table 4-7: Future Public Safety Requirements

Year	Population	Police			Fire		Animal Control	
		Police Officers Required	Building Area Required (sq ft)	Excess / (Deficit) (sq ft)	Number of Stations Required	Excess / (Deficit)	Building Area Required (sq ft)	Excess / (Deficit) (sq ft)
2023	13,847	21	2,491	5,959	1.04	(0.04)	1,250	(95.4)
2024	14,504	22	2,609	5,841	1.09	(0.09)	1,310	(155)
2025	15,194	23	2,728	5,722	1.15	(0.15)	1,372	(217)
2026	15,916	24	2,846	5,604	1.20	(0.20)	1,437	(282)
2027	16,677	25	2,965	5,485	1.26	(0.26)	1,506	(351)
2028	17,476	26	3,084	5,366	1.32	(0.32)	1,578	(423)
2029	18,314	27	3,202	5,248	1.38	(0.38)	1,654	(499)
2030	19,193	29	3,439	5,011	1.45	(0.45)	1,733	(578)
2031	20,119	30	3,558	4,892	1.52	(0.52)	1,817	(662)
2032	21,090	31	3,677	4,773	1.59	(0.59)	1,904	(749)
2033	22,108	33	3,914	4,536	1.67	(0.67)	1,996	(841)

4.1.5 Proposed Projects

4.1.5.1 Police Department

Grantsville City plans to upgrade the existing Justice Center around 2026 by adding additional office space, equipment storage, and vehicle bays.

4.1.5.2 Fire Department

The City plans to construct one fire station within the planning period to satisfy the level of service requirements for future development. The City also plans to construct two more fire stations, as shown in Figure 4-1, but these projects will likely occur beyond the 10-year planning period. Additionally, based on Fire Chief Daniels' recommendations, an expansion of the existing fire station to add sleeping quarters for 6 to 8 staff is required in order to support the staff needed to provide adequate service to the City.

The proposed fire station (Satellite Fire Station East), is expected to begin the planning process in 2024 with construction to begin in 2025. This station is currently proposed to be located on the east side of the City, as shown in Figure 4-1, but this location is subject to change as the planning process begins. Additional fire vehicles will also be required to support the proposed fire station. Chief Daniels recommends this station be equipped to serve 80% industrial/commercial buildings and 20% residential, and the

vehicles required for this are listed in Table 4-8. Also shown in the table are the current year cost estimates (see Appendix G) and the recommended planning and construction years for the proposed projects.

4.1.5.3 Animal Control

The City plans to construct a new Animal Control Shelter to meet the demands of future development. This shelter is proposed to be 4,500 square feet and located just north of the existing Justice Center as shown in Figure 4-1. Again, this location is subject to change as the planning process is underway. Recommended planning and construction years as well as the current year cost estimate for the proposed Animal Control Shelter are shown in Table 4-8.

4.1.5.4 City Hall

The City also plans to construct a new City Hall within the planning period. It is anticipated to be located north of the Justice Center and estimated to be 20,000 square feet.

Table 4-8: Proposed Public Safety Projects

Project	Construction Priority		Current Year (2023) Cost Estimate
	Begin Planning	Completion	
Satellite Fire Station East	2024	2025	$3,123,189.55
2 Aerial Platform Trucks	*2024*	*2025*	*$2,570,940.00*
Pumper Truck	*2024*	*2025*	*$535,612.50*
Mini Pumper Truck	*2024*	*2025*	*$267,806.25*
Heavy Duty Rescue Truck	*2024*	*2025*	*$482,051.25*
Tender Tank and Tractor	*2024*	*2025*	*$214,245.00*
2 Brush Trucks	*2024*	*2025*	*$214,245.00*
Existing Fire Station Expansion	2024	2025	$744,055.03
Animal Control Shelter	2024	2025	$2,932,511.50
Justice Center Upgrades	2025	2026	N/A
City Hall	2029	2030	$9,054,623.98
Total			**$20,139,280.06**

4.1.6 Methods of Financing

Funding for the City's public safety facilities typically comes from impact fees, grants, loans, taxes, and reserves in the Capital Project Fund. At this time, it is not expected that any of the proposed projects listed above will be funded through grants.

Legend

- Existing Facilities
- Proposed Facilities:
  - Within Planning Period
  - Outside Planning Period
- Grantsville City Boundary

	Existing Facilities
1	Fire Station
2	Animal Control Shelter
3	Justice Center
4	Ambulance / EMT Station

	Proposed Facilities
5	City Hall
6	Animal Control Shelter
7	Satellite Fire Station East
8	Satellite Fire Station Northwest
9	Satellite Fire Station South

*Proposed project locations are approximate and subject to change.

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GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

PUBLIC SAFETY FACILITIES

PROJECT NUMBER	PRINT DATE
10766D	2024-06-17
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 4-1

4.2 IMPACT FEE ANALYSIS

4.2.1 Existing Facilities

As determined in Section 4.1.3, the only existing public safety facility with excess capacity to serve future development is the Justice Center. A proportionate share for this project was calculated by dividing the increase in building area required in the planning period by the total building area. The proportionate share was multiplied by the historic project cost in order to calculate a buy-in cost, see Table 4-9. The interest payments due within the planning period for the existing loans associated with public safety facilities are also eligible for buy-in costs. However, since there is no excess capacity for the existing Fire Station, a buy-in cost cannot be charged for the revenue bond which funded this station. The interest payments on the revenue bond which funded the Justice Center can be charged as a buy-in cost based on the proportionate share calculated for the facility, as shown in the following table.

Table 4-9: Public Safety Buy-In Costs

Facility	Cost [1]	Existing Building Area (sq ft)	Planning Period (2023-2033) Building Area Required (sq ft)	Proportionate Share	Buy-In Cost
Justice Center	$3,905,831.64	8,450	1,423	16.8%	$657,843.74
Justice Center Revenue Bond Interest Payments (2023-2033)	$510,400.00	N/A	N/A	16.8%	$85,964.65
Total					**$743,808.39**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

4.2.2 System Improvements

The system improvements for public safety facilities proposed in the planning period were determined in Section 4.1.5. The upgrades to the Justice Center are not impact fee eligible because the Justice Center is currently adequate to meet the level of service through the end of the planning period, as discussed in Section 4.1.4. The proposed City Hall project is also not impact fee eligible as it does not directly serve any public safety facilities. Proportionate shares for the Satellite Fire Station East and the Animal Control Shelter were calculated in Table 4-10 based on the requirements to meet the level of service for future development at the end of the planning period, excluding the portion of each project associated with correcting the existing deficiencies. The fire vehicles associated with the proposed station were calculated at the same proportionate share as the station. However, the proposed vehicles which cost less than $500,000 are not eligible for impact fees per Utah Code Section 11-36a-102. The Existing Fire

Station Expansion project is beneficial to both existing and future development, so a proportionate share was calculated based on the increase in population in the planning period, as shown in Table 4-11.

Table 4-10: Proposed Public Safety Projects Proportionate Share

Project	Building Area (sq ft)	Existing (2023) Deficit	Future (2033) Deficit	Proportionate Share
Satellite Fire Station East and Vehicles	N/A	0.04 stations	0.67 stations	62.3%
Animal Control Shelter	4,500	95.4 sq ft	841 sq ft	16.6%

Table 4-11: Proposed Fire Station Expansion Proportionate Share

Project	Population (Year 2033)	Increase in Population (Year 2023-2033)	Proportionate Share
Existing Fire Station Expansion	22,108	8,261	37.4%

The cost of each project which is eligible for impact fees is based on the portion of the project associated with serving future development in the planning period, excluding any portion of the project attributed to correcting the existing deficiency. This was calculated in Table 4-12 by multiplying the total project cost by the proportionate share shown above. In order to account for the time-price differential inherent with future costs, the current year cost estimates were inflated at a rate of 3.5% to the anticipated construction year.

Table 4-12: Public Safety Impact Fee Eligible Costs

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Satellite Fire Station East	2025	$3,123,189.55	$3,345,638.73	62.3%	$2,083,929.44
2 Aerial Platform Trucks	2025	$2,570,940.00	$2,754,055.20	62.3%	$1,715,444.25
Pumper Truck	2025	$535,612.50	$573,761.50	62.3%	$357,384.22
Existing Fire Station Expansion	2025	$744,055.03	$797,050.35	37.4%	$297,830.33
Animal Control Shelter	2025	$2,932,511.50	$3,141,379.63	16.6%	$520,748.81
Total		**$9,906,308.58**	**$10,611,885.41**		**$4,975,337.05**

In addition to impact fee eligible project costs, planning costs can also be included in the calculation of impact fees. The cost for the current amendment to the public safety section of this CFP and IFA was $4,187.07. Due to the uncertainty that comes with long-term development projections, this plan is expected to be amended annually going forward. The future professional

expenses expected to occur within the planning period were inflated at a 3.5% rate as shown in the following table.

Table 4-13: Public Safety Professional Expenses

Year	Cost
2023	$0.00
2024	$4,187.07
2025	$4,333.61
2026	$4,485.29
2027	$4,642.27
2028	$4,804.75
2029	$4,972.92
2030	$5,146.97
2031	$5,327.12
2032	$5,513.57
2033	$5,706.54
Total	**$49,120.11**

4.2.3 Methods of Financing

As discussed in Section 4.1.6, public safety system improvements are expected to be financed through impact fees, loans, and reserves in the Capital Project Fund. The City expects to finance the Satellite Fire Station East and 2 Aerial Platform Trucks projects with loans, which are necessary to prevent the impact fee fund balance from going negative (see Section 4.2.5). These loans were assumed to be 30-year bonds with a 4.0% interest rate, 1.5% cost of issuance, 0.5% bond insurance, and a $20,000 surety policy. The interest costs for these bonds attributed to development within the planning period can be included in the impact fee calculation. Table 4-14 shows the details of these bonds along with the impact fee eligible interest costs.

Table 4-14: Public Safety Future Debt Financing

Project	Proceeds	Par Amount [1]	Debt Service (Interest)	Debt Service (Principal + Interest)	Proportionate Share	Impact Fee Eligible Debt Service (Interest)
Satellite Fire Station East	$3,345,638.73	$3,432,551.50	$2,522,592.31	$5,955,143.81	62.3%	$1,571,270.78
2 Aerial Platform Trucks	$2,754,055.20	$2,840,967.98	$2,087,835.81	$4,928,803.79	62.3%	$1,300,469.92

[1] *Includes cost of issuance, bond insurance, and surety policy.*

4.2.4 Impact Fee Calculation

Impact fees for public safety facilities are calculated based on the building area of proposed development in order to make the fees equitable for the varying demands of different development types. Future building areas were projected based on assumed average building areas per unit, for each development type, multiplied by the projected units shown in Table 2-4 (see Appendix F). These assumed averages were determined in the previous CFP/IFA based on an analysis of existing buildings in the City and data from the U.S. Census Bureau. The construction water and City rate development types were excluded from these calculations because there are no buildings associated with construction water and the City does not charge impact fees for their own buildings. Impact fees were calculated in Table 4-15 by dividing the impact fee eligible cost of each project by the projected increase in building area in the planning period. Per Utah Code Section 11-36a-202, impact fees for fire suppression vehicles can only be charged to non-residential development, so an additional fee to be charged to non-residential development was calculated in Table 4-16 based on the projected increase in building area for non-residential development only.

Table 4-15: Public Safety Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) Building Area (1,000 sq ft)	Cost per Building Area (1,000 sq ft)
Buy-In Cost	$743,808.39	12,948	$57.44
Satellite Fire Station East	$2,083,929.44	12,948	$160.94
Satellite Fire Station East Debt Service (Interest)	$1,571,270.78	12,948	$121.35
Existing Fire Station Expansion	$297,830.33	12,948	$23.00
Animal Control Shelter	$520,748.81	12,948	$40.22
Professional Expenses	$49,120.11	12,948	$3.79
Total			**$406.74**

Table 4-16: Public Safety Fire Vehicles Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) Building Area (1,000 sq ft) [1]	Cost per Building Area (1,000 sq ft)
2 Aerial Platform Trucks	$1,715,444.25	6,166	$278.20
2 Aerial Platform Trucks Debt Service (Interest)	$1,300,469.92	6,166	$210.90
Pumper Truck	$357,384.22	6,166	$57.96
Total			**$547.05**

[1] *Includes only non-residential development building area (commercial, church, school).*

In order to simplify the process of charging impact fees, the fees for residential development are charged based on dwelling units. The impact fee per 1,000 square feet of building area calculated in Table 4-15 was converted to an impact fee per dwelling unit based on the average building areas per unit shown in Appendix F. Since building areas for non-residential development vary more than residential buildings, the non-residential impact fee is charged per building area which was calculated as the sum of the fees shown in Table 4-15 and Table 4-16. The results of these calculations are shown in the table below.

Table 4-17: Proposed Public Safety Impact Fees

Land Use	Impact Fee
Single Family	$996.12 per Dwelling Unit
Multi-Unit	$430.33 per Dwelling Unit
Non-Residential	$953.80 per 1,000 sq ft building area

4.2.5 Impact Fee Cashflow

The anticipated impact fee revenues and expenses over the 10-year planning period are shown in Table 4-18. The expenses represent only what is attributable to planning period development and include capital project costs, the expenditure of buy-in costs, and proposed bond payments. The impact fee cashflow (Table 4-19) estimates the end of year impact fee fund balance throughout the planning period by comparing the impact fee revenues, total expenses, and interest income calculated at 5.44% of the fund balance.

4.2.6 Impact Fee Credits

The City currently has procedures in place for credits, appeals, and exemptions of impact fees, refer to Appendix B for the City's current impact fee ordinance.

Table 4-18: Public Safety Impact Fee Revenues and Expenses

Year	Residential Building Area Increase (sq ft)	Non-Residential Building Area Increase (sq ft)	Impact Fee Revenues	Impact Fee Eligible Project Costs	Bond Payments	Bond Proceeds	Buy-In Cost Expenses	Professional Expenses	Total Expenses
2023	-	-	-	-	-	-	-	-	-
2024	539,956	409,591	$610,290.19	-	-	-	($54,545.54)	($4,187.07)	($58,732.61)
2025	564,446	591,588	$793,839.43	($4,975,337.05)	-	$3,799,373.69	($66,406.93)	($4,333.61)	($1,246,703.90)
2026	594,892	468,104	$688,444.56	-	($225,979.56)	-	($61,062.48)	($4,485.29)	($291,527.33)
2027	622,889	591,588	$817,610.76	-	($225,979.56)	-	($69,764.12)	($4,642.27)	($300,385.95)
2028	655,784	627,345	$865,095.49	-	($225,979.56)	-	($73,707.75)	($4,804.75)	($304,492.06)
2029	688,679	549,373	$804,105.92	-	($225,979.56)	-	($71,118.36)	($4,972.92)	($302,070.83)
2030	721,574	708,614	$969,369.25	-	($225,979.56)	-	($82,155.37)	($5,146.97)	($313,281.90)
2031	759,367	685,858	$963,036.73	-	($225,979.56)	-	($83,019.15)	($5,327.12)	($314,325.82)
2032	797,160	767,127	$1,055,922.87	-	($225,979.56)	-	($89,858.52)	($5,513.57)	($321,351.64)
2033	837,402	767,127	$1,072,291.06	-	($225,979.56)	-	($92,170.17)	($5,706.54)	($323,856.27)
Total	**6,782,149**	**6,166,315**	**$8,640,006.25**	**($4,975,337.05)**			**($743,808.39)**	**($49,120.11)**	**($3,776,728.32)**

Table 4-19: Public Safety Impact Fee Cashflow

Year	Impact Fee Revenues	Total Expenses	Interest Income	End of Year Balance
2023	-	-	-	$181,509.53
2024	$610,290.19	($58,732.61)	$9,874.12	$742,941.23
2025	$793,839.43	($1,246,703.90)	$40,416.00	$330,492.76
2026	$688,444.56	($291,527.33)	$17,978.81	$745,388.79
2027	$817,610.76	($300,385.95)	$40,549.15	$1,303,162.74
2028	$865,095.49	($304,492.06)	$70,892.05	$1,934,658.23
2029	$804,105.92	($302,070.83)	$105,245.41	$2,541,938.72
2030	$969,369.25	($313,281.90)	$138,281.47	$3,336,307.54
2031	$963,036.73	($314,325.82)	$181,495.13	$4,166,513.57
2032	$1,055,922.87	($321,351.64)	$226,658.34	$5,127,743.14
2033	$1,072,291.06	($323,856.27)	$278,949.23	$6,155,127.16

SECTION 5: PARKS

5.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

5.1.1 Inventory of Existing Facilities

Grantsville City currently has six City parks as shown in Figure 5-1. These parks have a varying level of amenities ranging from Eastmoor Park with no amenities to Cherry Street Park with an array of amenities as listed in Table 5-1. Historic costs are not listed because the City does not have records of the costs for any existing parks. The City does not have any long-term debt associated with their park facilities.

Table 5-1: Existing Park Facilities

Facility	Area (ac)	Amenities
Old Lincoln Park	1.08	Restroom, dog park, pavilion, playground, and drinking fountains
Academy Square	0.65	Pavilion
Rodeo Grounds	6.26	Arena
Eastmoor Park	1.73	None
Cherry Street Park	19.58	Playground, picnic benches, soccer fields, tennis courts, baseball fields, softball fields, restrooms, skate park, four pavilions, T-ball field, water fountain, and the "tot park"
Hollywood Park	12.69	Shaded playground, restrooms, pavilion, basketball hoops, soccer field, ball field, splash pad
Total	**41.99**	

5.1.2 Level of Service

The existing level of service for park facilities is 4 acres of park area per 1,000 population, as established in the City's previous Capital Facilities Plans as well as the current Grantsville General Plan dated January 15, 2020. This CFP/IFFP will continue to use the established level of service of **4 acres per 1,000 population**.

5.1.3 Capacity of Existing Facilities

The City's six existing parks occupy 41.99 acres, but a total park area of 55.39 acres is required in order to meet the level of service, as shown in Table 5-2. Therefore, there is no remaining capacity for the existing park facilities to serve future development, and the City needs to construct 13.4 acres of parks financed independent of impact fees.

Table 5-2: Capacity of Existing Parks

Population (2023)	Park Area LOS (ac/1,000 Population)	Park Area Required (ac)	Existing Park Area (ac)	Excess / (Deficit) (ac)
13,847	4	55.39	41.99	(13.40)

5.1.4 Demands of Future Development

Utilizing the demographic projections from Section 2.7, the park area required to meet the level of service throughout the planning period was calculated as shown in the following table. An additional 46.44 acres of parks will need to be constructed by the end of the planning period (2033).

Table 5-3: Future Park Requirements

Year	Population	Park Area Required (ac)	Excess / (Deficit) (ac)
2023	13,847	55.39	(13.40)
2024	14,504	58.02	(16.03)
2025	15,194	60.78	(18.79)
2026	15,916	63.66	(21.67)
2027	16,677	66.71	(24.72)
2028	17,476	69.90	(27.91)
2029	18,314	73.26	(31.27)
2030	19,193	76.77	(34.78)
2031	20,119	80.48	(38.49)
2032	21,090	84.36	(42.37)
2033	22,108	88.43	(46.44)

5.1.5 Proposed Projects

Grantsville City plans to construct six new parks in the planning period to satisfy the future park area requirements. These parks are listed in Table 5-4 along with the proposed areas, recommended years to begin planning and complete the project by, and the current year cost estimates. See Appendix H for these cost estimates. Additionally, the City plans to complete three improvement projects to existing parks by 2033, also listed in the table below.

Table 5-4: Proposed Park Projects

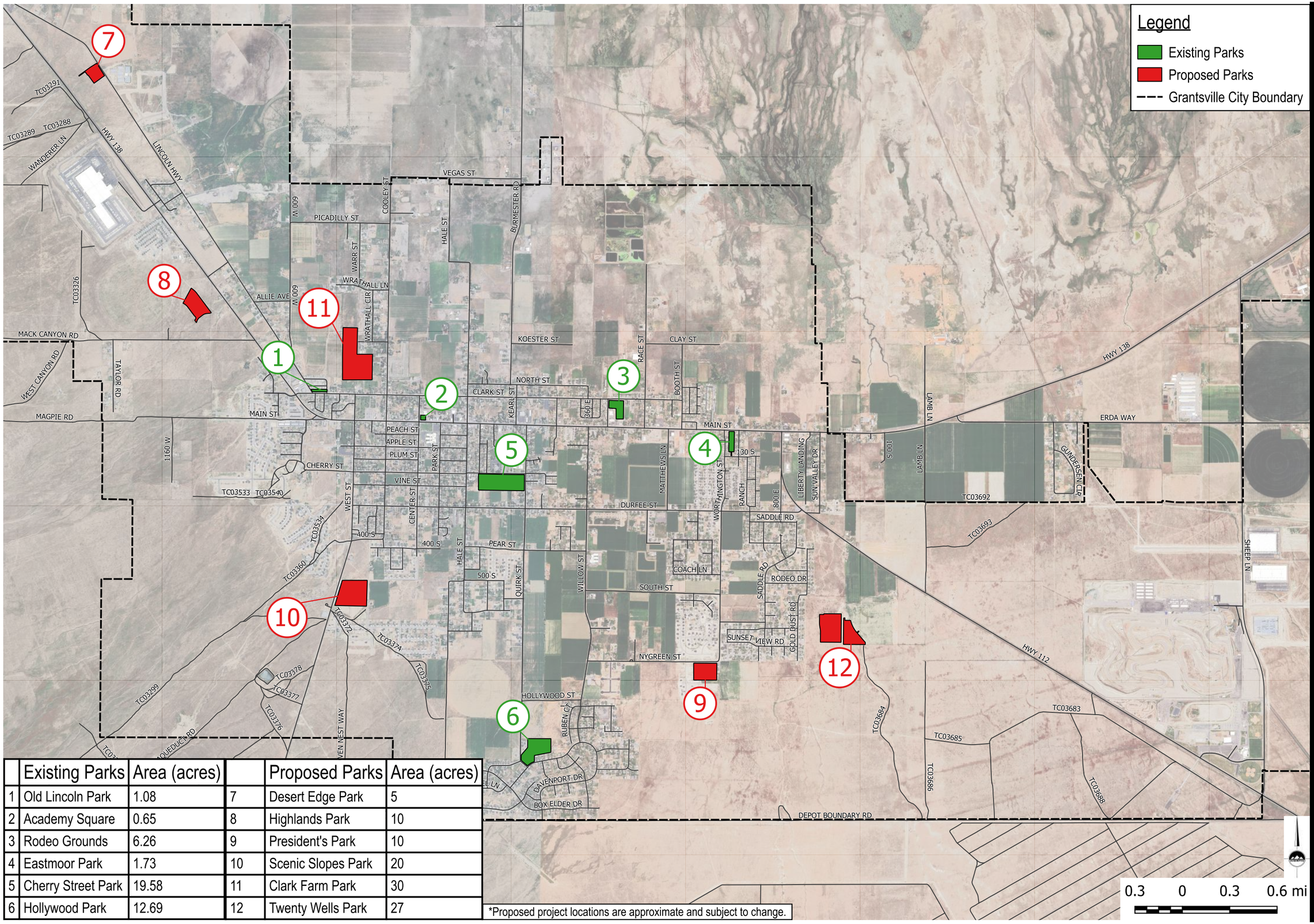
Project	Proposed Area (ac)	Construction Priority		Current Year (2023) Cost Estimate
		Begin Planning	Completion	
Pickleball Courts at Cherry St Park	N/A	N/A [1]	2024	$636,483.32
Improvements to Eastmoor Park	N/A	N/A [1]	2024	$349,628.10
Soccer Fields at Hollywood Park	N/A	2023	2024	$255,600.00
Desert Edge Park	5	2024	2026	$1,974,627.37
Highlands Park	10	2025	2027	$3,169,643.06
President's Park	10	2026	2028	$1,583,442.69
Scenic Slopes Park	20	2027	2029	$4,226,406.45
Clark Farm Park	30	2028	2030	$3,175,477.22
Twenty Wells Park	27	2030	2032	$8,628,500.00
Total	**102**			**$23,999,808.21**

[1] *The City has already begun the planning process.*

The proposed locations of these parks are shown in Figure 5-1, but these are approximate locations which are subject to change, and the exact locations will be determined during the planning phase of each project. It should be noted the City does not maintain parks less than 10 acres but will work with developers for impact fee credits associated with parks less than 10 acres which are HOA maintained. The City also has the option to utilize parks as retention/detention basins, although this is typically not permitted.

5.1.6 Methods of Financing

The City funds park projects as much as possible through grants and impact fees. Parks may also be funded through loans, developer dedications, taxes, and reserves in the Capital Project Fund. The Cherry St Park Pickleball Courts and Hollywood Park Soccer Fields are expected to be fully funded with ARPA grant money.



	Existing Parks	Area (acres)		Proposed Parks	Area (acres)
1	Old Lincoln Park	1.08	7	Desert Edge Park	5
2	Academy Square	0.65	8	Highlands Park	10
3	Rodeo Grounds	6.26	9	President's Park	10
4	Eastmoor Park	1.73	10	Scenic Slopes Park	20
5	Cherry Street Park	19.58	11	Clark Farm Park	30
6	Hollywood Park	12.69	12	Twenty Wells Park	27

*Proposed project locations are approximate and subject to change.

0.3 0 0.3 0.6 mi

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GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

PARK FACILITIES

PROJECT NUMBER 10766D
PRINT DATE 2024-07-12
PROJECT MANAGER R. ROUSSELLE
DESIGNED BY M. SANFORD

FIG 5-1

5.2 IMPACT FEE ANALYSIS

5.2.1 Existing Facilities

As discussed in Section 5.1.3, there is no excess capacity for existing parks to serve future development. Therefore, no buy-in cost can be charged for existing park facilities.

5.2.2 System Improvements

The system improvements for park facilities which are needed to meet the demands of future development in the planning period were determined in Section 5.1.5. A proportionate share for each new park project was calculated based on the added park acreage to meet the level of service, as shown in Table 5-5. It can be seen Desert Edge Park and a portion of Highlands Park are associated with correcting the existing deficiency, which was excluded from the proportionate share calculation. Additionally, Desert Edge, Highlands, and Twenty Wells Parks are expected to be constructed by developers so they have a proportionate share of 0%. If it is determined the City will pay for any portion of these projects as the development agreements are finalized then this plan should be amended to include the project. The improvement projects to existing parks are beneficial to both existing and future development, so a proportionate share was calculated based on the increase in population in the planning period, see Table 5-6.

Table 5-5: Proposed Parks Proportionate Share

Project	Park Area (ac)	Existing (2023) Deficit (ac)	Future (2033) Deficit (ac)	Proportionate Share
Desert Edge Park	5	13.40	46.44	0% [1]
Highlands Park	10	8.40	41.44	0% [1]
President's Park	10	0	31.44	100%
Scenic Slopes Park	20	0	21.44	100%
Clark Farm Park	30	0	1.44	4.81%
Twenty Wells Park	27	0	0	0% [1]

[1] *The proportionate share is 0% because the project is expected be constructed by developers.*

Table 5-6: Proposed Park Improvements Proportionate Share

Project	Population (Year 2033)	Increase in Population (Year 2023-2033)	Proportionate Share
Park Improvement Projects	22,108	8,261	37.4%

The cost of each project which is eligible for impact fees is based on the portion of the project associated with serving future development in the planning period, excluding any portion of the project attributed to correcting the existing deficiency. This was calculated in Table 5-7 by

multiplying the total project cost by the proportionate share shown above. In order to account for the time-price differential inherent with future costs, the current year cost estimates were inflated at a rate of 3.5% to the anticipated construction year.

Table 5-7: Parks Impact Fee Eligible Costs

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Pickleball Courts at Cherry St Park	2024	$0.00 [1]	$0.00	37.4%	$0.00
Improvements to Eastmoor Park	2024	$349,628.10	$361,865.08	37.4%	$135,216.55
Soccer Fields at Hollywood Park	2024	$0.00 [1]	$0.00	37.4%	$0.00
Desert Edge Park	2026	$1,974,627.37	$2,189,304.66	0% [2]	$0.00
Highlands Park	2027	$3,169,643.06	$3,637,238.32	0% [2]	$0.00
President's Park	2028	$1,583,442.69	$1,880,633.20	100%	$1,880,633.20
Scenic Slopes Park	2029	$4,226,406.45	$5,195,332.64	100%	$5,195,332.64
Clark Farm Park	2030	$3,175,477.22	$4,040,093.82	4.81%	$194,193.84
Twenty Wells Park	2032	$8,628,500.00	$11,759,759.81	0% [2]	$0.00
Total		**$23,107,724.89**	**$29,064,227.53**		**$7,405,376.23**

[1] The cost shown does not include the amount to be paid with grant money.
[2] The proportionate share is 0% because the project is expected be constructed by developers.

In addition to impact fee eligible project costs, planning costs can also be included in the calculation of impact fees. The cost for the current amendment to the parks section of this CFP and IFA was $4,187.07. Due to the uncertainty that comes with long-term development projections, this plan is expected to be amended annually going forward. The future professional expenses expected to occur within the planning period were inflated at a 3.5% rate as shown in the following table.

Table 5-8: Parks Professional Expenses

Year	Cost
2023	$0.00
2024	$4,187.07
2025	$4,333.61
2026	$4,485.29
2027	$4,642.27
2028	$4,804.75
2029	$4,972.92
2030	$5,146.97
2031	$5,327.12
2032	$5,513.57
2033	$5,706.54
Total	**$49,120.11**

5.2.3 Methods of Financing

As discussed in Section 5.1.6, the parks system improvements are expected to be funded through impact fees, loans, developer dedications, taxes, and Capital Project Fund reserves. The Cherry St Park Pickleball Courts and Hollywood Park Soccer Fields are expected to be fully funded with ARPA grant money, so they have been excluded from the impact fee calculation. The City expects to finance the Scenic Slopes Park project with a loan, which is necessary to prevent the impact fee fund balance from going negative (see Section 5.2.5). This loan was assumed to be a 30-year bond with a 4.0% interest rate, 1.5% cost of issuance, 0.5% bond insurance, and a $20,000 surety policy. The interest cost for this bond attributed to development within the planning period can be included in the impact fee calculation. Table 5-9 shows the details of this bond along with the impact fee eligible interest cost.

Table 5-9: Parks Future Debt Financing

Project	Proceeds	Par Amount [1]	Debt Service (Interest)	Debt Service (Principal + Interest)	Proportionate Share	Impact Fee Eligible Debt Service (Interest)
Scenic Slopes Park	$5,195,332.64	$5,319,239.29	$3,909,124.78	$9,228,364.07	100.0%	$3,909,124.78

[1] *Includes cost of issuance, bond insurance, and surety policy.*

5.2.4 Impact Fee Calculation

Impact fees for parks are charged based on the number of dwelling units. Per Utah Code Section 11-36a-202, it is prohibited to charge schools impact fees for park facilities. Additionally,

park facilities only benefit residential development in the City, so only single family, multi-unit, and trailer developments are charged impact fees for parks and were the only development types considered in the impact fee calculation shown in Table 5-10. The growth of these development types was projected in Table 2-4, which resulted in an increase of 2,875 residential dwelling units in the planning period.

Table 5-10: Parks Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) Dwelling Units [1]	Cost per Dwelling Unit
Improvements to Eastmoor Park	$135,216.55	2,875	$47.03
President's Park	$1,880,633.20	2,875	$654.13
Scenic Slopes Park	$5,195,332.64	2,875	$1,807.07
Scenic Slopes Park Debt Service (Interest)	$3,909,124.78	2,875	$1,359.70
Clark Farm Park	$194,193.84	2,875	$67.55
Professional Expenses	$49,120.11	2,875	$17.09
Total			**$3,952.56**

[1] *Includes only residential dwelling units (single family, multi-unit, trailer).*

Table 5-11: Proposed Parks Impact Fees

Land Use	Impact Fee
Single Family and Multi-Unit	$3,952.56 per Dwelling Unit

5.2.5 Impact Fee Cashflow

The anticipated impact fee revenues and expenses over the 10-year planning period are shown in Table 5-12. The expenses represent only what is attributable to planning period development and include capital project costs, the expenditure of buy-in costs, and proposed bond payments. The impact fee cashflow (Table 5-13) estimates the end of year impact fee fund balance throughout the planning period by comparing the impact fee revenues, total expenses, and interest income calculated at 5.44% of the fund balance.

5.2.6 Impact Fee Credits

The City currently has procedures in place for credits, appeals, and exemptions of impact fees, refer to Appendix B for the City's current impact fee ordinance.

Table 5-12: Parks Impact Fee Revenues and Expenses

Year	Dwelling Units [1]	Annual Dwelling Unit Increase [1]	Impact Fee Revenues	Impact Fee Eligible Project Costs	Bond Payments	Bond Proceeds	Professional Expenses	Total Expenses
2023	4,781	-	-	-	-	-	-	-
2024	5,010	229	$905,137.13	($135,216.55)	-	-	($4,187.07)	($139,403.61)
2025	5,249	239	$944,662.76	-	-	-	($4,333.61)	($4,333.61)
2026	5,501	252	$996,046.09	-	-	-	($4,485.29)	($4,485.29)
2027	5,765	264	$1,043,476.86	-	-	-	($4,642.27)	($4,642.27)
2028	6,043	278	$1,098,812.75	($1,880,633.20)	-	-	($4,804.75)	($1,885,437.95)
2029	6,335	292	$1,154,148.65	($5,195,332.64)	-	$5,195,332.64	($4,972.92)	($4,972.92)
2030	6,641	306	$1,209,484.54	($194,193.84)	($307,612.14)	-	($5,146.97)	($506,952.95)
2031	6,963	322	$1,272,725.56	-	($307,612.14)	-	($5,327.12)	($312,939.25)
2032	7,301	338	$1,335,966.59	-	($307,612.14)	-	($5,513.57)	($313,125.70)
2033	7,656	355	$1,403,160.17	-	($307,612.14)	-	($5,706.54)	($313,318.68)
Total		**2,875**	**$11,363,621.11**	**($7,405,376.23)**			**($49,120.11)**	**($3,489,612.24)**

[1] *Includes only residential dwelling units (single family, multi-unit, trailer)*

Table 5-13: Parks Impact Fee Cashflow

Year	Impact Fee Revenues	Total Expenses	Interest Income	End of Year Balance
2023	-	-	-	$1,077,104.27
2024	$905,137.13	($139,403.61)	$58,594.47	$1,901,432.25
2025	$944,662.76	($4,333.61)	$103,437.91	$2,945,199.32
2026	$996,046.09	($4,485.29)	$160,218.84	$4,096,978.97
2027	$1,043,476.86	($4,642.27)	$222,875.66	$5,358,689.21
2028	$1,098,812.75	($1,885,437.95)	$291,512.69	$4,863,576.71
2029	$1,154,148.65	($4,972.92)	$264,578.57	$6,277,331.01
2030	$1,209,484.54	($506,952.95)	$341,486.81	$7,321,349.41
2031	$1,272,725.56	($312,939.25)	$398,281.41	$8,679,417.13
2032	$1,335,966.59	($313,125.70)	$472,160.29	$10,174,418.30
2033	$1,403,160.17	($313,318.68)	$553,488.36	$11,817,748.16

SECTION 6: WASTEWATER

6.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

6.1.1 Inventory of Existing Facilities

Grantsville City's wastewater collection system consists of trunk lines, interceptor lines, collector lines, lift stations, force mains, and the Wastewater Treatment Facility (WWTF), as shown in Figure 6-1. The major gravity sewer lines and their historic construction costs are listed in Table 6-1. The minor gravity sewer lines owned by the City (all sewer lines not listed in Table 6-1) have historic construction costs totaling $10,053,823.31.

Table 6-1: Existing Major Gravity Sewer Lines

Pipeline	Diameter	Material	Length (ft)	Minimum Slope	Flow Capacity (gpm) [2]	Cost [3]
Main Trunk	18-inch	Concrete	2,340	0.113% [1]	1,252	N/A
Central Trunk	(2) parallel 12-inch	PVC	1,690	0.194% [1]	1,113	N/A
Central Interceptor	12-inch and 15-inch	PVC	2,480	0.194% [1]	556	N/A
Hale Street Collector	12-inch	PVC	3,990	0.37%	768	$1,060,736.07
Northwest Interceptor	12-inch, 15-inch, and 18-inch	PVC	17,770	0.12%	1,289 [4]	$749,254.71
Burmester Collector	12-inch	PVC	4,730	0.194% [1]	556	$226,236.98
West Interceptor	10-inch	PVC	6,440	0.25%	388	$1,712,065.24
Northeast Interceptor	18-inch and 24-inch	PVC	9,180	0.345%	2,186	$1,083,869.01
Matthew's Lane Collector	12-inch and 15-inch	PVC	7,670	0.20%	564	$2,039,059.07
Worthington Street Collector	12-inch	PVC	11,760	0.194% [1]	556	$193,636.00
Main Street Trunk	18-inch	PVC	2,460	0.20%	1,664	$653,987.65
Lakeview Business Park Offsite Gravity Line	18-inch and 21-inch	PVC	20,440	0.06%	912	$3,398,037.81
Deseret Peak Collector	8-inch, 10-inch, 12-inch, and 15-inch	PVC	7,630	1.60%	542	$190,270.90
Total			**98,580**			**$11,307,153.44**

[1] The regulatory minimum slope per UAC R317-3-2 is used when the actual minimum slope is unknown.

[2] The flow capacity was calculated based on d/D=0.67 and the minimum slope of the pipeline.

[3] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[4] The flow capacity is 944 gpm for the 15-inch portion of the pipeline and 1,289 gpm for the 18-inch portion, but the 18-inch is the controlling portion because it collects significantly more flow than the 15-inch.

The City's existing lift stations and associated force mains are detailed in Table 6-2. Additional existing lift stations include the Sheep Lane, Deseret Peak, Utah Motorsports Campus (UMC), and Tooele Valley Airport Lift Stations. However, the Sheep Lane Lift Station is no longer in use,

the Deseret Peak Lift Station is county owned, and the UMC and Tooele Valley Airport Lift Stations are privately owned so these are not included in the table.

Table 6-2: Existing Lift Stations

Lift Station	Associated Force Main(s)	Flow Capacity (gpm)	Cost [1]
Northwest	6-inch and 10-inch	1,200	$500,000.00
Northeast	8-inch	2,170	$400,000.00
Total			**$900,000.00**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

The capacity and historic cost of the City's Wastewater Treatment Facility is shown in Table 6-3. The WWTF was originally designed to treat an average day flow of 1.5 million gallons per day (MGD), but in 2019 permit requirements were updated to require greater nutrient removal which limits the average day capacity of the facility to 1 MGD (per the 2022 Wastewater Treatment Plant Study by AQUA Engineering).

Table 6-3: Existing Wastewater Treatment Facility

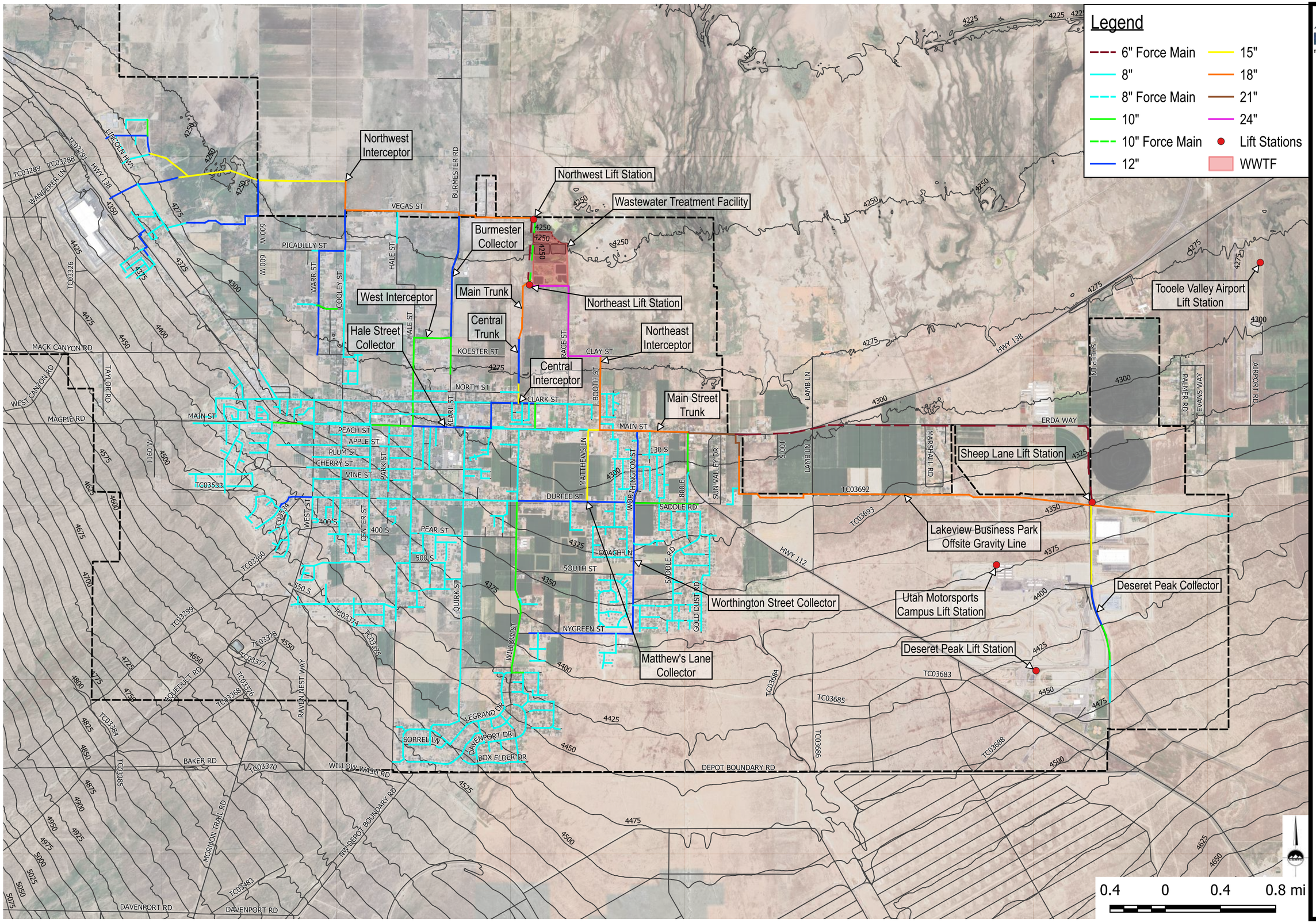
Facility	Capacity		Cost [2]
	Average Day Flow (MGD)	Peak Day Flow (MGD)	
Wastewater Treatment Facility	1.00 [1]	2.25	$5,559,563.47

[1] The WWTF was originally designed to treat an average day flow of 1.5 MGD, but currently can only treat 1 MGD due to updated nutrient removal requirements.

[2] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

As discussed in Section 3.1.1, the existing Public Works Building serves both drinking water and wastewater facilities. The building was constructed in 2021 for a cost of $222,483.40 attributed to wastewater utilities.

The City has long-term debt associated with existing wastewater facilities in the form of a revenue bond, as detailed in Table 6-4. This Sewer Revenue Bond was used to finance improvements to the collection system.



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GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

EXISTING WASTEWATER SYSTEM

PROJECT NUMBER	PRINT DATE
10766D	2024-03-08
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 6-1

Table 6-4: Existing Wastewater Long-Term Debt

Bond	Date of Issue	Interest Rate	Final Maturity Date	Original Bond, Note Issue	Principal Outstanding at June 30, 2023	Total Interest Payments (2023-2033)
Sewer Revenue Bond, Series 2018	December, 2018	1.75%	August, 2049	$4,880,000.00	$4,498,000.00	$678,405.00

6.1.2 Level of Service

The level of service standards to be used for this plan, shown in Table 6-5, were previously established in the Grantsville City Capital Facilities Plan dated May 2022. These standards were calculated based on measured flow data (see Appendix I), and peaking factors were determined from the Grantsville City – Sanitary Sewer Flow Monitoring 2018 – Flow and Model Summary by AQUA Engineering. The City should look at the wastewater flow and ERC data on a periodic basis to assess the accuracy of the level of service as growth occurs.

Table 6-5: Wastewater Level of Service

Component	Parameter	Level of Service	
Collection System	Average Day Flow	150 gpd/ERC	
	Peaking Factors	*Miles From WWTF*	*Factor*
		<1	1.85
		>1 and <1.6	2.25
		>1.6	4
Lift Stations	Peak Inflow	0.35 gpm/ERC	
Wastewater Treatment Facility	Average Day Flow	150 gpd/ERC	
	Peak Day Flow	175 gpd/ERC	
	Peak Instantaneous Flow	0.4 gpm/ERC	

6.1.3 Capacity of Existing Facilities

The capacity of the City's major gravity sewer lines was determined by modeling the existing conditions of the entire wastewater collection system and then analyzing the flow in each of the major sewer lines. The total capacity of each pipe is defined as the flow by which the depth to diameter ratio (d/D) is equal to 0.67, also stated as the pipe flowing 67% full by depth. The excess capacity for each pipeline was calculated by dividing the estimated current flow in the pipe by the total capacity flow of the pipe at the most critical point (largest d/D) along the whole pipeline. The resulting excess capacities for each major gravity sewer line are shown in the following table.

Table 6-6: Capacity of Existing Major Gravity Sewer Lines

Pipeline	Current (2023) Peak Day Flow (gpm)	Flow Capacity (gpm)	Excess / (Deficit) (gpm)
Main Trunk	548	1,252	704
Central Trunk	548	1,113	565
Central Interceptor	415	556	141
Hale Street Collector	362	768	406
Northwest Interceptor	818	1,289	471
Burmester Collector	643	556	(87)
West Interceptor	640	388	(252)
Northeast Interceptor	954	2,186	1,232
Matthew's Lane Collector	231	564	333
Worthington Street Collector	64	556	492
Main Street Trunk	551	1,664	1,113
Lakeview Business Park Offsite Gravity Line	263	912	649
Deseret Peak Collector	241	542	301

It can be seen the City's major sewer lines all have excess capacity to accommodate future growth except for the Burmester Collector and West Interceptor. However, the construction of the West Street Collector (discussed in Section 6.1.5) will divert a portion of the flow away from the Burmester Collector and West Interceptor bringing them back within their capacities.

It was not feasible to complete a pipe by pipe analysis of every single sewer line in the collection system beyond the major sewer lines, and any inaccuracies in the modeled conditions would be emphasized in these smaller diameter sewer lines which are upstream of the major sewer lines. The sewer lines other than the major pipelines are typically constructed to serve a single subdivision and designed to have sufficient capacity to serve the build-out conditions of the subdivision. Therefore, all of these existing minor sewer lines should have excess capacity to serve any future development in their service area and are considered beneficial to both future and existing development. Additionally, the majority of existing and future development connect or will connect to a minor sewer line, as opposed to connecting directly to a major pipeline, so the system of minor sewer lines as a whole can be considered to be beneficial to the entire City, even though each line individually serves only a limited portion of the City. For the purposes of this plan, the minor sewer lines (all pipes not listed in Table 6-6) are considered to be a whole system which serves the entire City and has excess capacity to accommodate any future development.

The capacities of the City's lift stations were calculated by comparing the current (year 2023) modeled inflow with the total capacity of each lift station. The total capacities were determined by the design flows of the equipped pumps excluding any redundant or standby pumps. These results are shown the following table.

Table 6-7: Capacity of Existing Lift Stations

Lift Station	Current (2023) Peak Day Flow (gpm)	Flow Capacity (gpm)	Excess / (Deficit) (gpm)
Northwest	818	1,200	382
Northeast	954	2,170	1,216

The Wastewater Treatment Facility's capacity was determined by comparing the flow capacity for both average day and peak day conditions with the current inflow at the facility, which was calculated based on existing ERCs and the level of service. As shown in Table 6-8, the WWTF currently has excess capacity, but not much as it is at 95% of the average day capacity.

Table 6-8: Capacity of Existing Wastewater Treatment Facility

Current (2023) ERCs	Average Day			Peak Day		
	Current Flow (MGD)	Flow Capacity (MGD)	Excess / (Deficit) (MGD)	Current Flow (MGD)	Flow Capacity (MGD)	Excess / (Deficit) (MGD)
6,343	0.951	1.00	0.049	1.11	2.25	1.14

6.1.4 Demands of Future Development

The future requirements for sewer lines and lift stations were determined by adding the demands of future development to the sewer model and analyzing when and where any deficiencies appear in the system. These estimated demands were based on the demographic projections per planning area shown in Table 2-5 and the level of service from Section 6.1.2. The future requirements for the WWTF were determined from the level of service and the projected ERCs for the whole City, as shown in the following table.

Table 6-9: Future Wastewater Treatment Facility Requirements

Year	ERCs	Average Day Flow (MGD)	Excess / (Deficit) (MGD)	Peak Day Flow (MGD)	Excess / (Deficit) (MGD)
2023	6,343	0.951	0.049	1.11	1.14
2024	6,635	0.995	0.005	1.16	1.09
2025	6,975	1.05	(0.046)	1.22	1.03
2026	7,287	1.09	(0.093)	1.28	0.975
2027	7,629	1.14	(0.144)	1.34	0.915
2028	7,980	1.20	(0.197)	1.40	0.854
2029	8,356	1.25	(0.253)	1.46	0.788
2030	8,761	1.31	(0.314)	1.53	0.717
2031	9,162	1.37	(0.374)	1.60	0.647
2032	9,597	1.44	(0.440)	1.68	0.571
2033	10,048	1.51	(0.507)	1.76	0.492

6.1.5 Proposed Projects

The wastewater projects required to meet the demands of development within the planning period were determined based on future deficiencies identified in the sewer model analysis as well as development anticipated to occur in areas of the City not currently served by sewer infrastructure. The locations of the proposed projects can be seen in Figure 6-2. The proposed gravity sewer lines (Table 6-10) were sized to have sufficient capacity to serve projected development for 30 years beyond the expected construction date. The minimum slope for each pipeline was chosen as the larger of the minimum existing ground slope along the expected alignment or the minimum regulatory slope per UAC R317-3-2. Since these existing ground slopes will likely change as roads are built and development will probably occur at a rate and in locations somewhat different than projected in this plan, the City should reevaluate and amend this plan periodically and consider the proposed diameters and alignments may change when the project is designed. The West Street Collector has already been designed at the time of writing this plan, and it is expected to begin and complete construction in 2024. The cost estimate shown for this project is the actual cost bid for the project in December, 2023 plus the cost of engineering and construction management. The cost estimates for the remaining gravity sewer projects were calculated based on the costs per linear foot for each diameter are shown in Appendix J.

Table 6-10: Proposed Gravity Sewer Lines

Pipeline	Diameter (in)	Length (ft)	Minimum Slope	Flow Capacity (gpm)	Construction Priority		Current Year (2023) Cost Estimate
					Begin Planning	Begin Construction	
West Street Collector	12	6,600	1.06%	1,300	N/A	2024	$2,173,619.54
Willow Street Sewer Improvements	10	3,380	0.25%	386	2024	2025	$1,161,165.20
Northwest Interceptor Extension	18	4,410	0.28%	1,969	2024	2025	$1,747,153.80
SR112 Interceptor	15 and 18	6,570	0.13%	825 and 1,342	2024	2025	$2,574,853.35
West Bank Interceptor	18	10,680	1.08%	3,867	2024	2025	$4,231,202.40
Southeast Sewer Line	10	4,120	1.27%	875	2025	2026	$1,415,384.80
SR138 Interceptor	15	3,050	0.14%	856	2027	2028	$1,185,626.50
Northwest Interceptor Replacement	18, 24, and 42	16,580	2.07%, 0.08%, and 0.04%	5,354, 2,267, and 7,129	2030	2031	$7,005,127.30
Total							**$21,494,132.89**

The Northeast Lift Station was determined to have sufficient capacity to accommodate development through the end of the planning period, and the undeveloped area north of the WWTF, which would require lift stations to be constructed upon development, is not expected to develop within the planning period. However, results from the sewer model analysis show the Northwest Lift Station is predicted to reach its capacity within the planning period. As shown in Table 6-11, it is proposed to replace the existing 6-inch diameter force main of the Northwest Lift Station with a 16-inch diameter force main. This would increase the flow capacity of the lift station from 1,200 gpm to 1,600 gpm which is enough to serve future development for the entire planning period. Additionally, when the Northwest Lift Station eventually reaches its capacity and needs to be replaced, the proposed 16-inch force main can be utilized as a part of the replacement project which significantly extends the design life of this project.

Table 6-11: Proposed Lift Station Projects

Project	Description	Length (ft)	Flow Capacity (gpm)	Construction Priority		Current Year (2023) Cost Estimate
				Begin Planning	Begin Construction	
Northwest Lift Station - Upsize Force Main	Upsize 6" diameter force main to 16"	2,380	1,600	2026	2027	$181,440.00

As shown in Table 6-9, the existing WWTF is predicted to exceed its capacity in 2025. The City plans to correct this with the construction of a new WWTF as detailed in the 2022 Wastewater Treatment Plant Study by AQUA Engineering. The new WWTF is proposed to have the capacities shown in Table 6-12 and is expected to begin construction in 2025. The cost estimate was derived from the estimate given in the 2022 Wastewater Treatment Plant Study and increased in order to account for inflation and funding requirements.

Table 6-12: Proposed Wastewater Treatment Facility

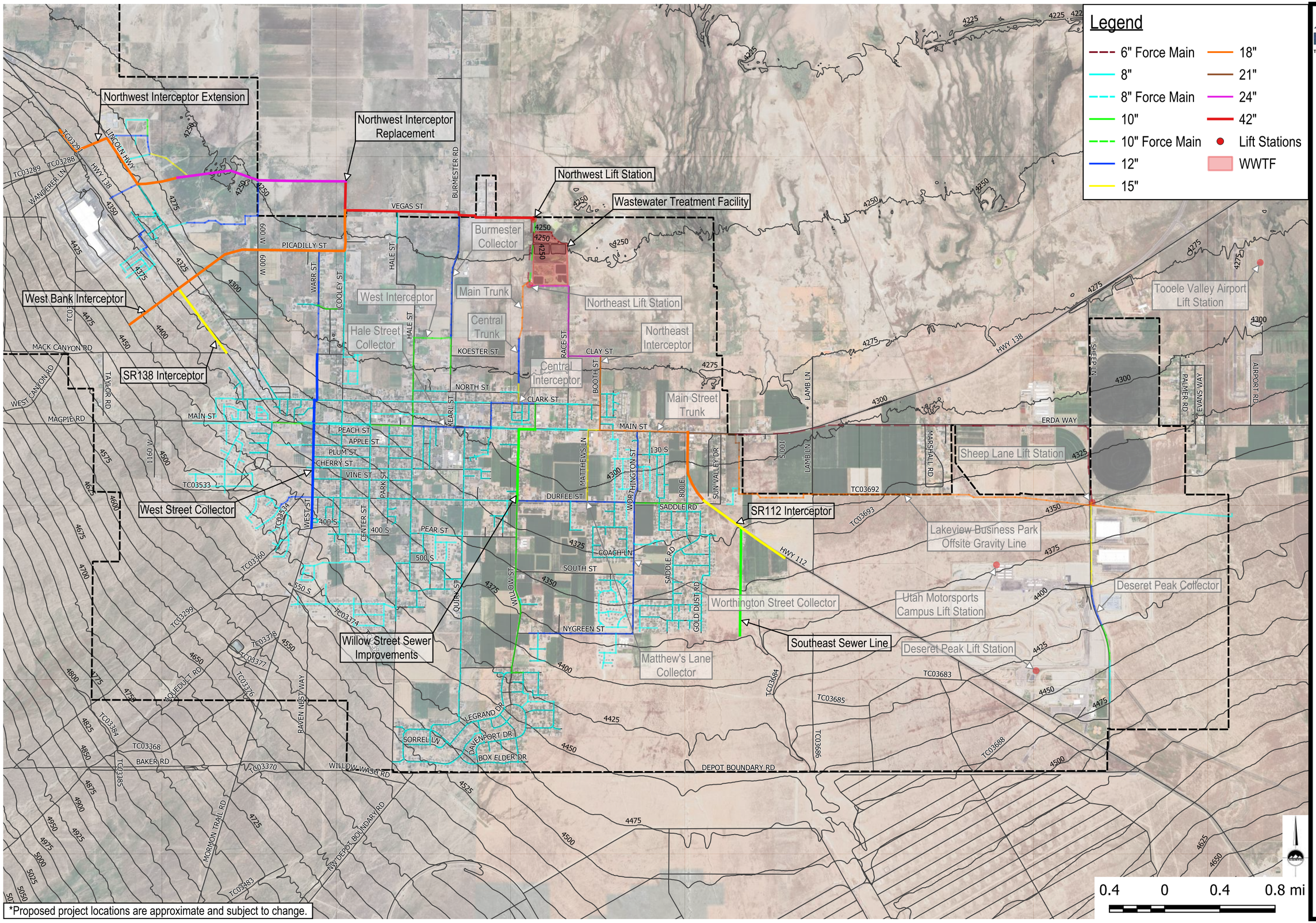
Project	Capacity		Construction Priority		Current Year (2023) Cost Estimate
	Average Day Flow (MGD)	Peak Hour Flow (MGD)	Begin Planning	Begin Construction	
Proposed Wastewater Treatment Facility	3.0	7.0	N/A [1]	2025	$30,910,559.75

[1] *The City has already begun the planning process.*

As mentioned in Section 3.1.5, the City also plans to expand the Public Works site to add a shop area, expected to begin construction in 2026. This project is estimated to cost $2.02 million and will be split evenly between the drinking water and wastewater utility.

6.1.6 Methods of Financing

Each project will be funded to the extent possible through impact fees. The portion of each project not eligible for impact fees may be funded through grants, loans, developer dedications, or reserves in the Sewer Fund. The West Street Collector project will be partially funded with grant money in the amount of $1.0 million. All the other proposed gravity sewer projects listed in Table 6-10 are expected to be funded through impact fees, loans, and developer dedications.



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GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

PROPOSED WASTEWATER SYSTEM

PROJECT NUMBER	PRINT DATE
10766D	2024-04-22
PROJECT MANAGER	DESIGNED BY
R. ROUSSELLE	M. SANFORD

FIG 6-2

6.2 IMPACT FEE ANALYSIS

6.2.1 Existing Facilities

Grantsville City's existing wastewater facilities which have excess capacity to serve future development are listed in Table 6-14. Also shown are the historic construction costs for each project as well as the total and excess capacities which were discussed in Section 6.1.3. Proportionate shares were calculated by dividing the anticipated flow due to growth in the planning period by the total capacity. As discussed in Section 6.1.3, the City's existing minor gravity sewer lines also have excess capacity to accommodate future growth and are considered to be a whole system which benefits both existing and future development. Therefore, the proportionate share for minor sewer lines was calculated based on the proportion of future ERCs expected to be served within the planning period, as shown in Table 6-13. The existing Public Works Building will utilize this same proportionate share as it is also considered beneficial to both existing and future development. Another item eligible to charge a buy-in cost for is the interest payments amount due within the planning period for the Sewer Revenue Bond (Section 6.1.1). This loan was used to fund past improvements to the collection system which benefit existing and future development, so the buy-in cost was calculated utilizing the same proportionate share as the minor sewer lines. The proportionate share for each existing facility was multiplied by the historic construction cost in order to calculate the impact fee eligible buy-in costs (Table 6-14). The City has elected to not charge a buy-in cost for the Northwest Interceptor and the WWTF, even though they have excess capacity, because they are both expected to be replaced within the planning period.

Table 6-13: Existing Wastewater Facilities Proportionate Share

Facility	Total ERCs (Year 2033)	Increase in ERCs (Year 2023-2033)	Proportionate Share
Minor Sewer Lines, Public Works Building, and Sewer Revenue Bond Interest Payments	10,048	3,705	36.9%

Table 6-14: Wastewater Buy-In Costs

Facility	Cost [1]	Flow Capacity (gpm)	Planning Period (2023-2033) Flow (gpm)	Proportionate Share	Buy-In Cost
Main Trunk	N/A	1,252	77	6.15%	$0.00
Central Trunk	N/A	1,113	77	6.92%	$0.00
Central Interceptor	N/A	556	53	9.52%	$0.00
Hale Street Collector	$1,060,736.07	768	54	7.03%	$74,606.02
Northwest Interceptor	$749,254.71	1,289	471	36.5%	$0.00 [2]
Northeast Interceptor	$1,083,869.01	2,186	423	19.4%	$209,751.26
Matthew's Lane Collector	$2,039,059.07	564	53	9.39%	$191,453.95
Worthington Street Collector	$193,636.00	556	53	9.52%	$18,441.99
Main Street Trunk	$653,987.65	1,664	293	17.6%	$115,138.12
Lakeview Business Park Offsite Gravity Line	$3,398,037.81	912	250	27.4%	$931,943.42
Deseret Peak Collector	$190,270.90	542	126	23.3%	$44,272.42
Northwest Lift Station	$500,000.00	1,200	382	31.8%	$159,166.67
Northeast Lift Station	$400,000.00	2,170	423	19.5%	$77,972.35
Wastewater Treatment Facility	$5,559,563.47	1.00 (MGD)	0.049 (MGD)	4.86%	$0.00 [2]
Minor Gravity Sewer Lines	$10,053,823.31	N/A	N/A	36.9%	$3,707,147.23
Public Works Building	$222,483.40 [3]	N/A	N/A	36.9%	$82,036.33
Sewer Revenue Bond Interest Payments (2023-2033)	$678,405.00	N/A	N/A	36.9%	$250,148.34
Total					**$5,862,078.09**

[1] The costs shown are historical costs which may include initial construction, acquiring land, improvements, planning, and engineering.

[2] The City is not charging a buy-in cost for the Northwest Interceptor and WWTF because they are expected to be replaced.

[3] The cost shown for the Public Works Building is the cost associated with wastewater facilities.

6.2.2 System Improvements

The wastewater system improvements needed to accommodate future development within the planning period were determined in Section 6.1.5. A proportionate share for each of these projects was calculated by estimating the flow to each facility contributed by the anticipated planning period development, which was divided by the total flow capacity of the facility (see Table 6-15). The City does not charge impact fees for projects which are expected to be constructed by developers so they have a proportionate share of 0%. If it is determined the City will pay for any portion of these projects as the development agreements are finalized then this plan should be amended to include the project. The Public Works Improvements project was determined to be beneficial to both existing and future development, so the proportionate share was calculated based on the ERCs expected to be served within the planning period as shown in Table 6-16.

Table 6-15: Proposed Wastewater Projects Proportionate Share

Project	Flow Capacity (gpm)	Planning Period (2023-2033) Flow (gpm)	Proportionate Share
West Street Collector	1,300	167	12.8%
Willow Street Sewer Improvements	386	53	13.7%
Northwest Interceptor Extension	1,969	255	0% [4]
SR112 Interceptor	825 and 1,342	149	0% [4]
West Bank Interceptor	3,867	335	0% [4]
Southeast Sewer Line	875	46.1	0% [4]
SR138 Interceptor	856	50.5	0% [4]
Northwest Interceptor Replacement	5,354, 2,267, and 7,129	273, 294, and 782	11.2% [1]
Northwest Lift Station - Upsize Force Main	400 [2]	399.7 [3]	99.9%
Proposed Wastewater Treatment Facility	3.0 (MGD)	0.56 (MGD)	18.5%

[1] A proportionate share was calculated for each diameter of the project, which was scaled based on the length of each stretch then added together.

[2] The increase in flow capacity resulting from the proposed project upgrades is shown as opposed to the total capacity of the facility.

[3] The flow shown is the planning period flow exceeding the existing capacity of the facility before the proposed project upgrades.

[4] The proportionate share is 0% because the project is expected be constructed by developers.

Table 6-16: Proposed Public Works Improvements Proportionate Share

Project	Total ERCs (Year 2033)	Increase in ERCs (Year 2023-2033)	Proportionate Share
Public Works Improvements	10,048	3,705	36.9%

The cost of each project which is attributed to new development in the planning period, and therefore eligible for impact fees, was calculated by multiplying the total project cost by the proportionate share as shown in Table 6-17. In order to account for the time-price differential inherent with future costs, the current year cost estimates were inflated at a rate of 3.5% to the anticipated construction year.

Table 6-17: Wastewater Impact Fee Eligible Costs

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
West Street Collector	2024	$1,173,619.54 [1]	$1,173,619.54 [2]	12.8%	$150,522.25
Willow Street Sewer Improvements	2025	$1,161,165.20	$1,243,869.19	13.7%	$170,994.42
Northwest Interceptor Extension	2025	$1,747,153.80	$1,871,594.83	0% [4]	$0.00
SR112 Interceptor	2025	$2,574,853.35	$2,758,247.28	0% [4]	$0.00
West Bank Interceptor	2025	$4,231,202.40	$4,532,569.79	0% [4]	$0.00
Southeast Sewer Line	2026	$1,415,384.80	$1,569,262.43	0% [4]	$0.00
SR138 Interceptor	2028	$1,185,626.50	$1,408,152.36	0% [4]	$0.00
Northwest Interceptor Replacement	2031	$7,005,127.30	$9,224,414.93	11.2%	$1,033,712.75
Northwest Lift Station - Upsize Force Main	2027	$181,440.00	$208,206.57	99.9%	$208,025.93
Proposed Wastewater Treatment Facility	2025	$30,910,559.75	$32,905,575.54	18.5%	$6,095,757.87
Public Works Improvements	2026	$1,008,975.00 [3]	$1,118,668.62	36.9%	$412,486.79
Total		**$52,595,107.64**	**$58,014,181.09**		**$8,071,500.00**

[1] The cost shown for the West Street Collector project is the total cost less the amount to be paid with grant money.

[2] The cost for the West Street Collector project was not inflated because the cost shown is the actual project cost.

[3] The cost shown for the Public Works Improvements project is half of the total cost estimate because this project cost will be split evenly between the wastewater and drinking water utilities.

[4] The proportionate share is 0% because the project is expected be constructed by developers.

In addition to impact fee eligible project costs, planning costs can also be included in the calculation of impact fees. The cost for the current amendment to the wastewater section of this CFP and IFA was $7,980.05. Due to the uncertainty that comes with long-term development projections, this plan is expected to be amended annually going forward. The future professional expenses expected to occur within the planning period were inflated at a 3.5% rate as shown in the following table.

Table 6-18: Wastewater Professional Expenses

Year	Cost
2023	$0.00
2024	$7,980.05
2025	$8,259.36
2026	$8,548.43
2027	$8,847.63
2028	$9,157.30
2029	$9,477.80
2030	$9,809.52
2031	$10,152.86
2032	$10,508.21
2033	$10,875.99
Total	**$93,617.15**

6.2.3 Methods of Financing

As discussed in Section 6.1.6, the wastewater system improvements are expected to be funded through impact fees, loans, developer dedications, and Sewer Fund reserves. The West Street Collector project will be partially funded through a grant worth $1.0 million, so only the project costs exceeding this grant amount are impact fee eligible. The City expects to finance the Proposed Wastewater Treatment Facility project with a loan, which is necessary to prevent the impact fee fund balance from going negative (see Section 6.2.5). This loan was assumed to be a 30-year bond with a 4.0% interest rate, 1.5% cost of issuance, 0.5% bond insurance, and a $20,000 surety policy. The interest cost for this bond attributed to development within the planning period can be included in the impact fee calculation. Additionally, a portion of the engineering cost of the Wastewater Treatment Facility project will be funded through a $1 million bond with a 0% interest rate. This will be a 20-year bond and is also assumed to have 1.5% cost of issuance, 0.5% bond insurance, and a $20,000 surety policy. Table 6-19 shows the details of these bonds along with the impact fee eligible interest cost.

Table 6-19: Wastewater Future Debt Financing

Project	Proceeds	Par Amount [1]	Debt Service (Interest)	Debt Service (Principal + Interest)	Proportionate Share	Impact Fee Eligible Debt Service (Interest)
Proposed Wastewater Treatment Facility	$31,905,575.54	$32,563,687.05	$23,931,150.46	$56,494,837.52	18.5%	$4,433,245.62
Proposed Wastewater Treatment Facility Engineering Loan	$1,000,000.00	$1,040,000.00	$0.00	$1,040,000.00	18.5%	$0.00

[1] *Includes cost of issuance, bond insurance, and surety policy.*

6.2.4 Impact Fee Calculation

Impact fees to be charged per ERC for each project were calculated by dividing the impact fee eligible costs by the number of ERCs expected to be served within the planning period, determined from Table 2-4. The construction water and City rate connection types were excluded from this calculation because construction water is not served by wastewater facilities and the City does not charge themselves impact fees. The increase in ERCs in the planning period for all other connection types totals 3,605 ERCs.

Table 6-20: Wastewater Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) ERCs [1]	Cost per ERC
Buy-In Cost	$5,862,078.09	3,605	$1,626.10
West Street Collector	$150,522.25	3,605	$41.75
Willow Street Sewer Improvements	$170,994.42	3,605	$47.43
Northwest Interceptor Replacement	$1,033,712.75	3,605	$286.74
Northwest Lift Station - Upsize Force Main	$208,025.93	3,605	$57.70
Proposed Wastewater Treatment Facility	$6,095,757.87	3,605	$1,690.92
Proposed Wastewater Treatment Facility Debt Service (Interest)	$4,433,245.62	3,605	$1,229.75
Public Works Improvements	$412,486.79	3,605	$114.42
Professional Expenses	$93,617.15	3,605	$25.97
Total			**$5,120.79**

[1] *Does not include Construction Water or City Rate ERCs.*

The City charges impact fees to residential users based on their water meter size. A 3/4 inch water meter was determined to be equivalent to one ERC, and the remaining meter sizes were converted to ERCs based on the maximum flow rates from AWWA Manual M6, Table 5-3. Non-residential users are charged impact fees based on the number of fixture units in a development. A typical ERC was determined to have 24 fixture units as calculated in Appendix I. The results of these impact fee calculations are summarized in the following table.

Table 6-21: Proposed Wastewater Impact Fees

Water Meter Size (inches)	Maximum Flow Rate (gpm)	ERCs	Impact Fee
3/4	25 [1]	1	$5,120.79
1	40 [1]	1.6	$8,193.26
1 1/2	50 [1]	2	$10,241.58
2	100 [1]	4	$20,483.15
3	200 [2]	8	$40,966.30
4	400 [2]	16	$81,932.61
6	800 [2]	32	$163,865.22
8	1,000 [2]	40	$204,831.52
Non-Residential Development			$213.37 per fixture unit

[1] From AWWA M6 Table 5-3 Displacement Meters.

[2] From AWWA M6 Table 5-3 Electromagnetic and Ultrasonic Meter Type 1.

6.2.5 Impact Fee Cashflow

The anticipated impact fee revenues and expenses over the 10-year planning period are shown in Table 6-22. The expenses represent only what is attributable to planning period development and include capital project costs, the expenditure of buy-in costs, and proposed bond payments. The impact fee cashflow (Table 6-23) estimates the end of year impact fee fund balance throughout the planning period by comparing the impact fee revenues, total expenses, and interest income calculated at 5.44% of the fund balance.

6.2.6 Impact Fee Credits

The City currently has procedures in place for credits, appeals, and exemptions of impact fees, refer to Appendix B for the City's current impact fee ordinance.

Table 6-22: Wastewater Impact Fee Revenues and Expenses

Year	ERCs [1]	Annual ERC Increase [1]	Impact Fee Revenues	Impact Fee Eligible Project Costs	Bond Payments	Bond Proceeds	Buy-In Cost Expenses	Professional Expenses	Total Expenses
2023	5,988	-	-	-	-	-	-	-	-
2024	6,266	278	$1,423,579.07	($150,522.25)	-	$185,250.00	($452,054.84)	($7,980.05)	($425,307.15)
2025	6,576	310	$1,587,444.29	($6,266,752.29)	($9,633.00)	$5,910,507.87	($504,089.93)	($8,259.36)	($878,226.70)
2026	6,883	307	$1,572,081.93	($412,486.79)	($358,488.62)	-	($499,211.64)	($8,548.43)	($1,278,735.48)
2027	7,220	337	$1,725,705.57	($208,025.93)	($358,488.62)	-	($547,994.54)	($8,847.63)	($1,123,356.72)
2028	7,566	346	$1,771,792.66	-	($358,488.62)	-	($562,629.41)	($9,157.30)	($930,275.33)
2029	7,929	363	$1,858,846.06	-	($358,488.62)	-	($590,273.05)	($9,477.80)	($958,239.47)
2030	8,320	391	$2,002,228.12	-	($358,488.62)	-	($635,803.75)	($9,809.52)	($1,004,101.90)
2031	8,717	397	$2,032,952.85	($1,033,712.75)	($358,488.62)	-	($645,560.33)	($10,152.86)	($2,047,914.56)
2032	9,147	430	$2,201,938.85	-	($358,488.62)	-	($699,221.52)	($10,508.21)	($1,068,218.35)
2033	9,593	446	$2,283,871.46	-	($358,488.62)	-	($725,239.06)	($10,875.99)	($1,094,603.68)
Total		**3,605**	**$18,460,440.86**	**($8,071,500.00)**			**($5,862,078.09)**	**($93,617.15)**	**($10,808,979.35)**

[1] Does not include Construction Water or City Rate ERCs.

Table 6-23: Wastewater Impact Fee Cashflow

Year	Impact Fee Revenues	Total Expenses	Interest Income	End of Year Balance
2023	-	-	-	$80,352.82
2024	$1,423,579.07	($425,307.15)	$4,371.19	$1,082,995.94
2025	$1,587,444.29	($878,226.70)	$58,914.98	$1,851,128.50
2026	$1,572,081.93	($1,278,735.48)	$100,701.39	$2,245,176.34
2027	$1,725,705.57	($1,123,356.72)	$122,137.59	$2,969,662.78
2028	$1,771,792.66	($930,275.33)	$161,549.66	$3,972,729.77
2029	$1,858,846.06	($958,239.47)	$216,116.50	$5,089,452.85
2030	$2,002,228.12	($1,004,101.90)	$276,866.23	$6,364,445.31
2031	$2,032,952.85	($2,047,914.56)	$346,225.82	$6,695,709.42
2032	$2,201,938.85	($1,068,218.35)	$364,246.59	$8,193,676.52
2033	$2,283,871.46	($1,094,603.68)	$445,736.00	$9,828,680.30

SECTION 7: WATER RIGHTS ACQUISITION

7.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

7.1.1 Inventory of Existing Facilities

Grantsville City currently holds an estimated 10,082.61 acre-feet of municipal use water rights per the Utah Division of Water Rights website as of March, 2024. A list of these water rights numbers can be found in Appendix K. The historic cost to purchase these water rights totals $37,110,137.98, which represents all available records of water rights purchases but does not account for the full quantity of water rights held by the City. There is no existing long-term debt associated with water rights acquisition.

It should be noted some of the City's largest water rights are not quantified in acre-feet but instead specify an allowed diversion in cubic feet per second. This can be converted to acre-feet per year, but due to fluctuations in use at different times of day and different times of year, it is quite unlikely the City could actually divert the full flow all day, every day. This is why the listed water rights quantity is an estimated value, while the actual quantity of water rights the City can divert is likely much less than what is estimated.

Tooele Valley is closed to water rights appropriations except for small amounts of shallow ground water that would otherwise flow to the Great Salt Lake. Therefore, the City can only acquire additional water rights through developer contributions or by purchasing existing water rights and, if needed, filing change applications to convert them to municipal use.

7.1.2 Level of Service

The level of service standards for water rights acquisition were previously established in the Grantsville City Capital Facilities Plan dated May, 2022. The indoor water use level of service was determined from the drinking water indoor average day demand (Section 3.1.2), which was calculated from the City's water use data. The outdoor use level of service was determined based on state standards and assuming an irrigation efficiency of 60%. These levels of service are shown in Table 7-1. For the purposes of estimating city-wide water rights demands, it is assumed there is an average of 0.12 irrigated acres per ERC based on an analysis of residential lots in Grantsville and estimates made by nearby cities.

Table 7-1: Water Rights Level of Service

Parameter	Level of Service
Indoor Use	0.218 acre-feet/year/ERC
Outdoor Use	3.33 acre-feet/year/irrigated acre

7.1.3 Capacity of Existing Facilities

The capacity of the City's held water rights to serve future development is difficult to accurately estimate. Based on the estimated quantity of the City's water rights and the level of service, an excess capacity of unused water rights can be estimated as shown in the following table.

Table 7-2: Estimated Capacity of Water Rights

Current (2023) ERCs	Water Demand			Existing Water Rights (ac-ft)	Excess / (Deficit) (ac-ft)
	Indoor Use (ac-ft)	Outdoor Use (ac-ft)	Total (ac-ft)		
6,343	1,385.49	2,537.20	3,922.69	10,082.61	6,159.92

However, the actual quantity of water rights the City has available for future development is likely much less than what is shown in Table 7-2. One reason for this, as discussed in Section 7.1.1, is the total quantity of water rights is expected to be significantly less than what is estimated to be held. Additionally, some of the water rights held by the City have been allocated to developments yet to be built or have been banked for future development, which further reduces the excess capacity of existing water rights. Lastly, in order to calculate the city-wide water demand the broad assumption of 0.12 irrigated acres per ERC was made, which most likely does not reflect the true outdoor water demand. Therefore, the estimated excess capacity shown in Table 7-2 should be considered a high-level estimate which significantly overestimates the actual excess quantity of water rights the City currently holds. Furthermore, whatever excess of water rights does exist needs to be maintained in order to cover existing platted subdivisions and other such commitments while accounting for the uncertainty in quantity, possible reductions and cuts due to ongoing droughts, and being able to vary diversion through the year rather than a presumed constant pumping. For the purposes of this plan there is considered to be no excess capacity of water rights available to accommodate future growth.

7.1.4 Demands of Future Development

The future water rights demand of development anticipated in the planning period was estimated based on the demographics calculated in Section 2.7 and the level of service from

Section 7.1.2. Due to the reasons discussed in Section 7.1.3, these results should be considered high-level estimates, serving as a general guideline for the City's planning purposes.

Table 7-3: Future Water Rights Requirements

Year	ERCs	Water Demand		
		Indoor Use (ac-ft)	Outdoor Use (ac-ft)	Total (ac-ft)
2023	6,343	1,385.49	2,537.20	3,922.69
2024	6,635	1,449.27	2,654.00	4,103.27
2025	6,975	1,523.54	2,790.00	4,313.54
2026	7,287	1,591.69	2,914.80	4,506.49
2027	7,629	1,666.39	3,051.60	4,717.99
2028	7,980	1,743.06	3,192.00	4,935.06
2029	8,356	1,825.18	3,342.40	5,167.58
2030	8,761	1,913.65	3,504.40	5,418.05
2031	9,162	2,001.24	3,664.80	5,666.04
2032	9,597	2,096.25	3,838.80	5,935.05
2033	10,048	2,194.77	4,019.20	6,213.97

7.1.5 Proposed Projects

The City does not need to acquire the full quantity of water rights anticipated to be required by future development because it is expected many of these developments will acquire the water rights themselves and then transfer them to the City. The City requires large developments to contribute the water rights themselves, but smaller developments have the option to pay an impact fee in lieu of contributing water rights. Therefore, the City only needs to acquire the quantity of water rights anticipated to be paid for by impact fees, but this quantity is not able to be accurately predicted. Additionally, since it is desired to maintain an excess of water rights, as discussed in Section 7.1.3, and due to the increasingly limited availability of water rights for sale in the Tooele Valley, the City should plan to purchase any water rights listed for a reasonable price as soon as they become available. So, there are no specifically proposed water rights acquisition projects, but instead there is the ongoing consideration that the City should continue to seek out available water rights to purchase. It is expected water rights will typically cost around $25,000 per acre-foot, based on recent listings for water rights in the Tooele Valley and recent purchases made by the City.

7.1.6 Methods of Financing

The City expects to finance water rights acquisitions solely through developer contributions and impact fees.

7.2 IMPACT FEE ANALYSIS

7.2.1 Existing Facilities

As discussed in Section 7.1.3, for the purposes of this plan there is considered to be no excess capacity of water rights and therefore no buy-in costs to be charged.

7.2.2 System Improvements

There are no specific system improvements proposed for water rights acquisition, as mentioned in Section 7.1.5. The City will purchase additional water rights as they become available.

7.2.3 Methods of Financing

The City will finance water rights purchases with impact fees, and other demands for water rights will be met through developer contributions.

7.2.4 Impact Fee Calculation

As discussed in Section 7.1.5, the City requires large developments to contribute the required quantity of water rights themselves, but smaller developments have the option to pay an impact fee in lieu of water rights. The impact fee is calculated as the required quantity of water rights multiplied by $25,000 per acre-foot (the current average cost of water rights in the Tooele Valley). The required quantity of water rights is determined based on various conditions of the development, and are calculated separately for indoor and outdoor water usage.

7.2.4.1 Indoor Use

The indoor use water right quantity for single family residential and multi-unit residential connections was determined by multiplying the indoor level of service (0.218 ac-ft/yr/ERC) times the equivalent ERCs per unit. As determined in Section 2.5, single family residential equals 1.00 ERC per unit and multi-unit residential equals 0.55 ERCs per unit. The indoor quantity for non-residential development is based on fixture units and was calculated using 24 fixture units per ERC. The required water rights quantity and the equivalent impact fees for each development type are summarized in Table 7-4.

Table 7-4: Indoor Use Water Rights Requirements

Land Use	Water Right Quantity (ac-ft)	Impact Fee	Unit
Single Family Residential	0.218	$5,450.00	per Dwelling Unit
Multi-Unit Residential	0.120	$3,000.00	per Dwelling Unit
Non-Residential	0.00908	$227.00	per fixture unit

7.2.4.2 Outdoor Use

Additional land use classifications were established for the calculation of required outdoor water rights. Category 1 includes single family homes only, while Category 2 covers all other types of development not included in Category 1. Water rights for Category 1 are calculated based on total lot size assuming that on average 64% of the lot area will be irrigated (see Appendix K). Additionally, it was found that as lot sizes increase above an acre the irrigated area does not increase proportionally. Therefore, the lot size for Category 1 is capped at 1 acre, so any lots larger than this would still use 1 acre in the calculation. The calculation for Category 2 is based directly on irrigated area. The formulas for the required water rights quantity (in ac-ft) are as follows:

- Category 1 = (lot size, acres) * (0.64) * (3.33 ac-ft/irr. ac)
- Category 2 = (irrigated area, acres) * (3.33 ac-ft/irr. ac)

The outdoor water rights requirements for typical residential lot sizes, without waterwise landscaping, are listed in the following table.

Table 7-5: Outdoor Use Requirements (No Waterwise Landscaping)

Category 1 Lot Size	Water Right Quantity (ac-ft)	Impact Fee
7,000 sq ft	0.34	$8,561.98
8,000 sq ft	0.39	$9,785.12
10,000 sq ft	0.49	$12,231.40
14,000 sq ft	0.68	$17,123.97
1/2 acre	1.07	$26,640.00
2/3 acre	1.42	$35,520.00
3/4 acre	1.60	$39,960.00
1.0 acre	2.13	$53,280.00
> 1.0 acre	2.13	$53,280.00

The outdoor water rights impact fee for Category 2 developments with no waterwise landscaping is calculated as follows:

- **<u>Category 2</u> = (irrigated area, acres) * (3.33 ac-ft/irr. ac) * $25,000**

7.2.4.3 Waterwise Landscaping

In order to promote water conservation efforts for future development, the City allows a reduction in the required outdoor use water rights for developments which implement waterwise landscaping. The definition of waterwise landscaping is intended as "landscaping for water conservation with (1) no more than 35% of the total landscaped area planted in lawn, (2) planting beds and landscape plants watered with a drip-irrigation system, (3) watering zones separate for lawn and landscape plants, (4) back flow preventer required (5) and landscape plants should be waterwise, adapted to our local climate, able to thrive on less water." Refer to the Grantsville City Municipal Code and Land Use Code for the most current version of the waterwise landscaping definition. To qualify for the waterwise landscaping reduction, the waterwise landscaping and irrigation must be installed entirely during initial construction. Due to the challenges associated with monitoring and enforcing the requirements in residential backyards, the City only allows Category 1 development to receive a reduction for waterwise landscaping in the front yard. For purposes of calculating water rights requirements, the definition of front yard is intended to be "a yard extending across the full width of a parcel measured perpendicularly from the front boundary of the parcel to the front wall(s) of the main building situated on the parcel. For corner lots the front yard would include the side yard to the privacy fence, assumed to be located 5 feet forward from the back of the house." See Appendix K for a sketch depicting this definition, and refer to the Grantsville City Municipal Code and Land Use Code for the most current definition. Category 2 development can choose to receive a waterwise landscaping reduction for landscaping in the front yard only or the entire irrigated area. The outdoor use level of service is reduced from 3.33 to 2.28 acre-feet/year/irrigated acre for waterwise landscaping (see Appendix K for calculations). It was estimated the average residential front yard irrigated area in Grantsville is 18% of the total lot size. The lot size for Category 1 is again capped at 1 acre as done for the no waterwise calculation. The formulas to calculate outdoor use water rights for waterwise landscaping in the front yard only are:

- Category 1 = (lot size, acres) * [(0.18) * (2.28 ac-ft/irr. ac) + (0.46) * (3.33 ac-ft/irr. ac)]
- Category 2 = (front yard irrigated area, acres) * (2.28 ac-ft/irr. ac) + (remaining irrigated area, acres) * (3.33 ac-ft/irr. ac)

The outdoor water rights requirements for typical residential lot sizes, for waterwise landscaping in the front yard only, are given in Table 7-6.

Table 7-6: Outdoor Use Requirements (Waterwise Landscaping Front Yard Only)

Category 1 Lot Size	Water Right Quantity (ac-ft)	Impact Fee
7,000 sq ft	0.31	$7,802.69
8,000 sq ft	0.36	$8,917.36
10,000 sq ft	0.45	$11,146.69
14,000 sq ft	0.62	$15,605.37
1/2 acre	0.97	$24,277.50
2/3 acre	1.29	$32,370.00
3/4 acre	1.46	$36,416.25
1.0 acre	1.94	$48,555.00
> 1.0 acre	1.94	$48,555.00

The outdoor water rights impact fee for Category 2 developments with waterwise landscaping in the front yard only is calculated as follows:

- **Category 2 = (front yard irrigated area, acres) * (2.28 ac-ft/irr. ac) + (remaining irrigated area, acres) * (3.33 ac-ft/irr. ac) * $25,000**

Category 1 developments utilizing waterwise landscaping for the entire lot would still use the front yard only formula above. Category 2 developments which are waterwise landscaping the entire lot calculate outdoor use water rights quantity with the following formula:

- Category 2 = (irrigated area, acres) * (2.28 ac-ft/irr. ac)

The outdoor water rights impact fee for Category 2 developments with waterwise landscaping on the entire lot is calculated as follows:

- **Category 2 = (irrigated area, acres) * (2.28 ac-ft/irr. ac) * $25,000**

A summary of all the water rights quantity formulas for each land use and landscaping condition discussed above is shown in Table 7-7 below.

Table 7-7: Summary of Outdoor Use Water Rights Requirements

Land Use	Water Right Quantity (ac-ft)
No Waterwise Landscaping	
Category 1	= (lot size[1], acres) * (0.64) * (3.33 ac-ft/irr. ac)
Category 2	= (irrigated area, acres) * (3.33 ac-ft/irr. ac)
Waterwise Landscape Front Yard Only	
Category 1	= (lot size[1], acres) * [(0.18) * (2.28 ac-ft/irr. ac) + (0.46) * (3.33 ac-ft/irr. ac)]
Category 2	= (front yard irrigated area, acres) * (2.28 ac-ft/irr. ac) + (remaining irrigated area, acres) * (3.33 ac-ft/irr. ac)
Waterwise Landscape Entire Lot	
Category 1	Reduction not allowed (use front yard only formula)
Category 2	= (irrigated area, acres) * (2.28 ac-ft/irr. ac)

[1] *Lot size capped at 1 acre.*

7.2.4.4 Example Calculations

For example, the impact fee for a single family development on a 2 acre lot with waterwise landscaping would be calculated as follows:

- Indoor use quantity = 0.218 ac-ft
- Outdoor use quantity = (1 ac) * [(0.18) * (2.28 ac-ft/irr. ac) + (0.46) * (3.33 ac-ft/irr. ac)] = 1.9422 ac-ft
- Total quantity = (0.218 ac-ft) + (1.9422 ac-ft) = 2.16 ac-ft
- Total impact fee = (2.16 ac-ft) * $25,000 = $54,000

For an apartment building with 15 units, 1/8 acre irrigated area, and waterwise landscaping for the entire lot, the impact fee is calculated as:

- Indoor use quantity = (15 units) * (0.120 ac-ft/unit) = 1.8 ac-ft
- Outdoor use quantity = (1/8 ac) * (2.28 ac-ft/irr. ac) = 0.285 ac-ft
- Total quantity = (1.8 ac-ft) + (0.285 ac-ft) = 2.09 ac-ft
- Total impact fee = (2.09 ac-ft) * $25,000 = $52,250

The impact fee for a commercial development with 50 fixture units that will be irrigating 2,000 square feet and will not utilize waterwise landscaping would be calculated as follows:

- Indoor use quantity = (50 fixture units) * (0.00908 ac-ft/fixture unit) = 0.454 ac-ft
- Outdoor use quantity = (2,000 sq ft) / (43,560 sq ft/ac) * (3.33 ac-ft/irr. ac) = 0.153 ac-ft
- Total quantity = (0.454 ac-ft) + (0.153 ac-ft) = 0.61 ac-ft
- Total impact fee = (0.61 ac-ft) * $25,000 = $15,250

7.2.5 Impact Fee Credits

Water rights can be transferred to the City in lieu of paying the impact fees. The quantity to be transferred is calculated as discussed in Section 7.2.4. The water rights required must be transferred to City as 100% owner. If the quantity of water rights required is only a portion of the total right pledged, the City must be identified as the owner of the required portion, or the required portion must be segregated from the base right and transferred to City as 100% owner. Additionally, the water rights transferred to cover the indoor use requirement must be municipal use rights or change applications prepared to convert water rights to municipal rights. For the outdoor use requirement, municipal use water rights, change applications prepared to convert water rights to municipal rights, or Grantsville Irrigation Co. shares are accepted by the City. Refer to the Grantsville City Municipal Code and Land Use Code for the requirements to transfer Grantsville Irrigation Co. shares. The City currently has procedures in place for credits, appeals, and exemptions of impact fees, see Appendix B for the City's current impact fee ordinance.

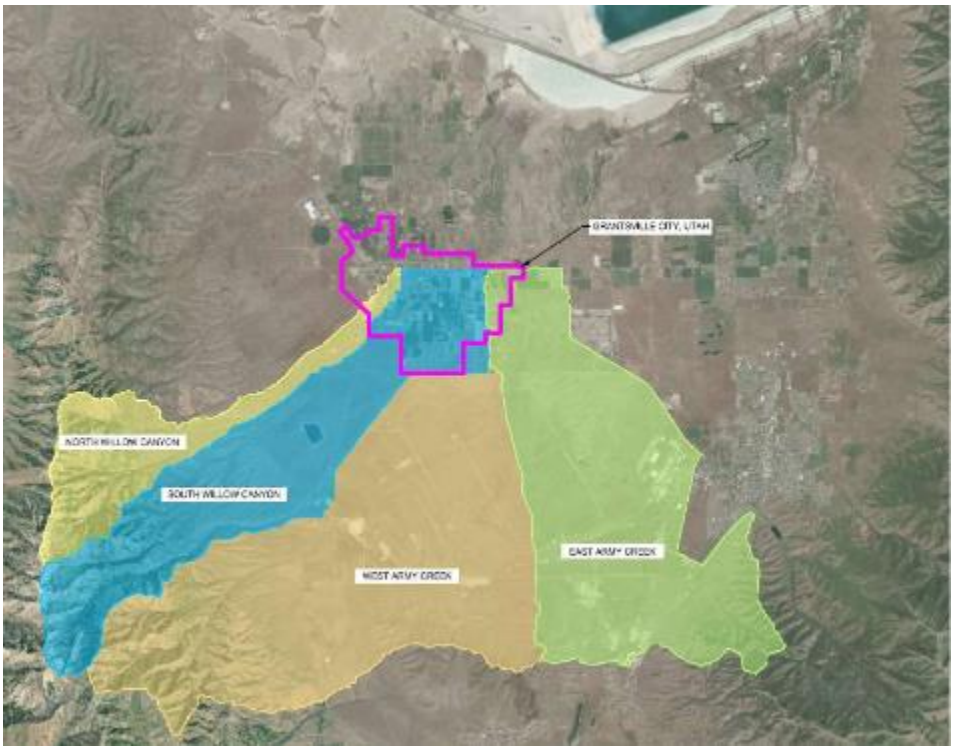
SECTION 8: STORM DRAINAGE

8.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

8.1.1 Inventory of Existing Facilities

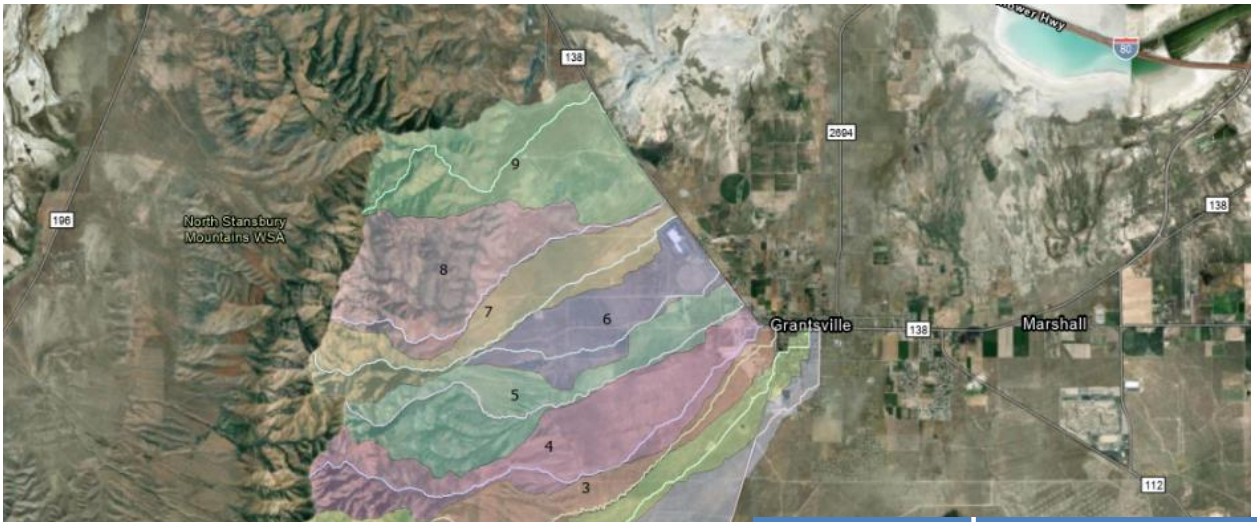
Grantsville City is situated at the base of the Stansbury Mountains and about six (6) miles south of the Great Salt Lake. The terrain of the City slopes gently northeasterly closer to the Stansbury Mountains and then northerly for the remainder of the City. The watersheds surrounding the City are shown in Figure 8-1 and Figure 8-2.

Figure 8-1: Existing Grantsville City Watersheds (Four Major)



Source: Figure 2-1 from Grantsville City FEMA BRIC Flood Protection Scoping Study dated February 6, 2024 by Jones & DeMille Engineering

Figure 8-2: Existing Grantsville City Watersheds (West Bank Area)

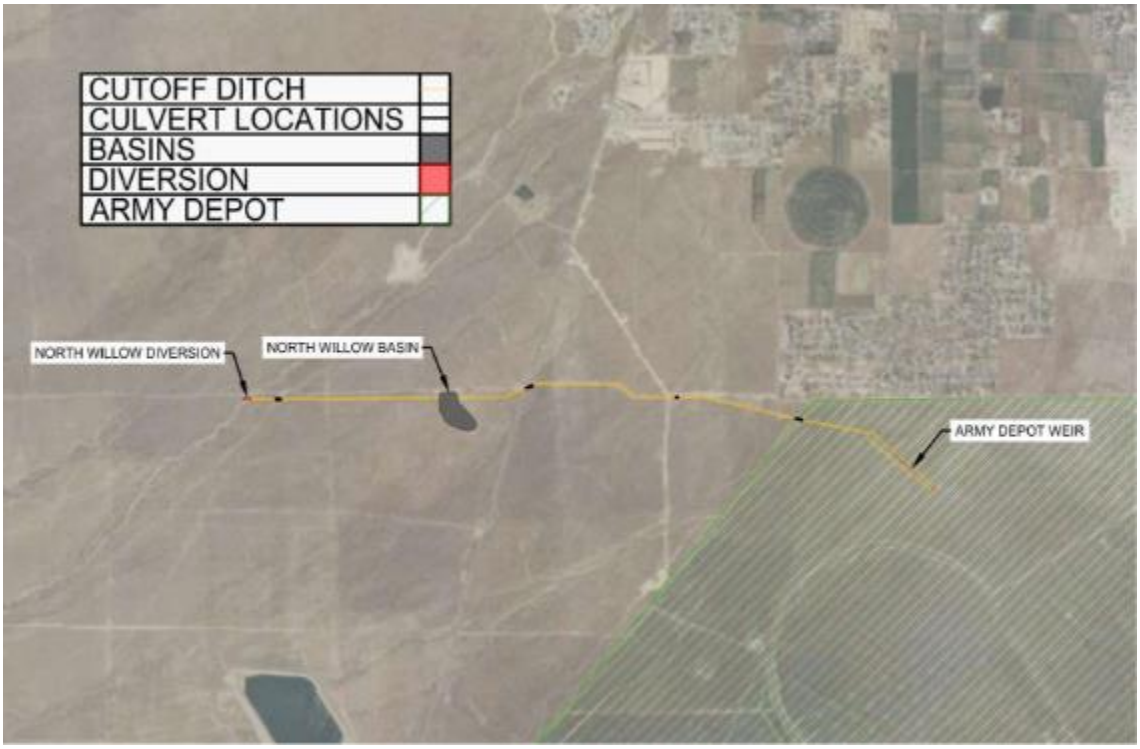


Subbasin	Subbasin Name
1	South Willow and Coal Pit Canyon
2	North Willow Canyon
3	White Rocks
4	Baker Canyon
5	Pope Canyon
6	West Canyon 1
7	West Canyon 2
8	Dry Canyon
9	Unnamed

Source: Figures 1 and 2 of 2024 Final Draft Grantsville West Bank Development Stormwater Master Plan Report by Jones & DeMille Engineering.

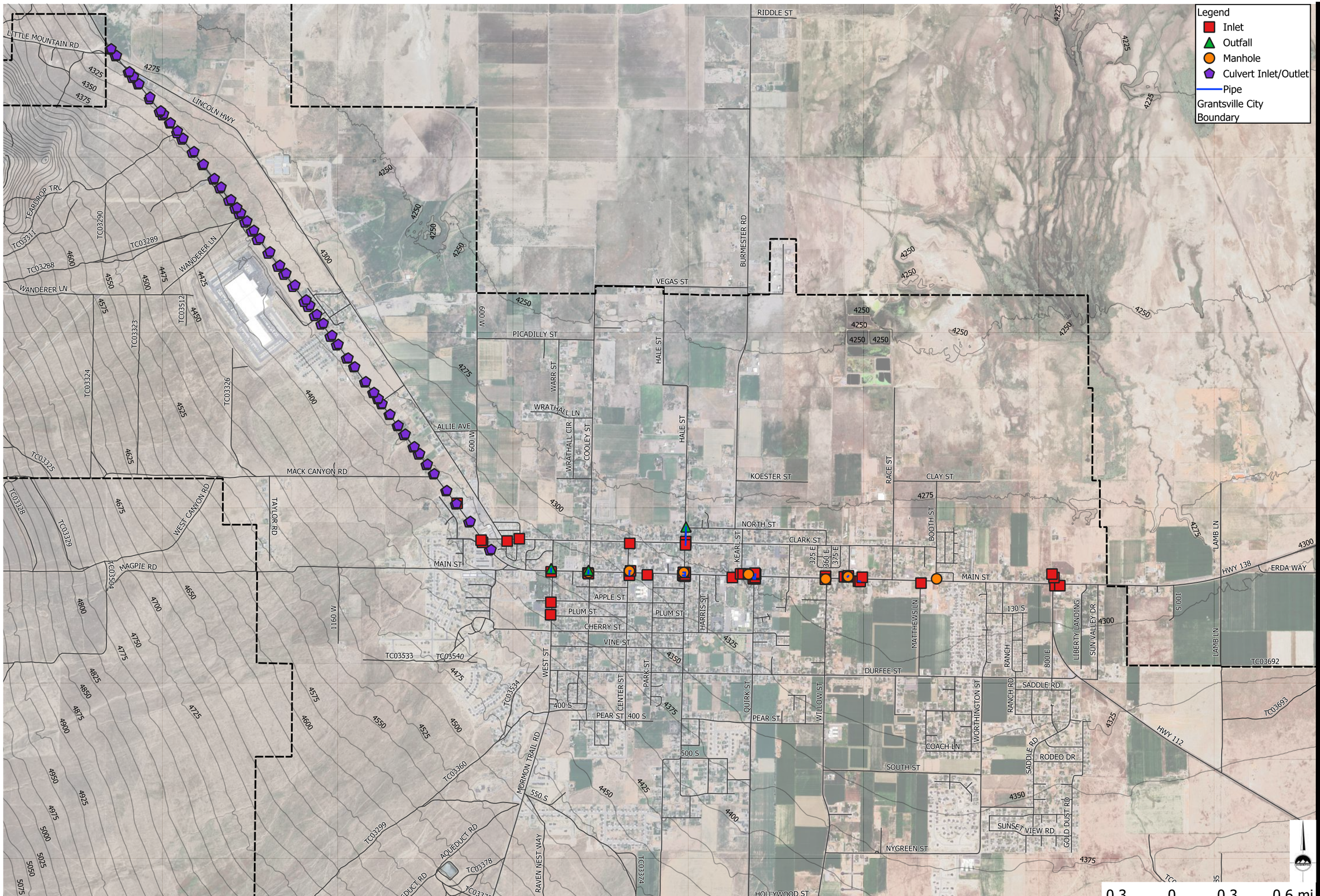
Tooele County has constructed flood control facilities, consisting of debris/detention basins and a cut-off ditch, which are located just south of the City (Figure 8-3).

Figure 8-3: Existing Flood Protection Infrastructures



Source: Figure 4-1 from Grantsville City FEMA BRIC Flood Protection Scoping Study dated February 6, 2024 by Jones & DeMille Engineering

These facilities intercept runoff from the North Willow, South Willow Canyon, and West Army Creek and discharge east of Grantsville into an existing natural drainage. Also south of the City is the existing Grantsville Irrigation Company Reservoir, which collects the majority of flows from the South Willow Canyon and discharges any overflow into the County's flood control facilities. Grantsville City's storm drainage system consists of gutters, grates, detention/retention ponds, storm inlets, pipes, and culverts. There are upwards of 50 culverts crossing SR-138 ranging from corrugated metal pipe to an 8-foot wide by 4-foot tall concrete box culvert. The main drainage system within the City is located mostly along Main Street and Clark Street as shown in Figure 8-4. The City does not currently have costs of past storm drain projects, therefore historical construction costs have not been listed.



This figure was created using information gathered from construction drawings for the capital water and sewer project and Google Earth imagery. Due to this limited information, this figure is likely not a complete representation of the City's storm drainage system and may contain minor inaccuracies. However, a more in-depth analysis of the existing system is outside the scope of this plan, and the figure is sufficient for the purposes of this plan.

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MAYOR NEIL A.
CRITCHLOW
PHONE: 435-884-3411

GRANTSVILLE CFP, IFFP, AND IFA

GRANTSVILLE, UTAH

NO.	DATE	REVISION	BY
1			
2			
3			
4			
5			
6			
7			

EXISTING STORM DRAINAGE SYSTEM

PROJECT NUMBER: 10766
PRINT DATE: 04-10-2024
DRAWN BY: M. SANFORD
CHECKED BY: R. ROUSSELLE
PROJ. MANAGER: R. ROUSSELLE

FIG 8-4

8.1.2 Level of Service

The level of service standards to be used for this plan are shown in Appendix L which were previously established in the Grantsville City Capital Facilities Plan dated May 2022 and since updated by the Grantsville City Storm Drainage Design Guidelines adopted by City Council on April 3, 2024.

8.1.3 Capacity of Existing Facilities

Existing Grantsville City storm drainage studies, Storm Water Management Study for Baker and Pope Watersheds Grantsville City and Tooele County dated April 2015 by AQUA Engineering, Grantsville City FEMA BRIC Study Flood Protection Scoping Study dated February 6, 2024 by Jones & DeMille Engineering, and Grantsville West Bank Development Stormwater Master Plan Report dated July, 2024 by Jones & DeMille Engineering all identify the need for upstream diversion, detention, and retention to protect the existing developed areas of Grantsville City. Therefore, the existing storm drainage system is not sufficient to meet the level of service, and there is no surplus capacity.

8.1.4 Demands of Future Development

The requirements for future development are based on the level of service requirements stated in Section 8.1.2. It is anticipated developers will construct future storm drainage improvements.

8.1.5 Proposed Projects

The future requirements for the storm drainage system outside of development constructed improvements were determined in the FEMA BRIC Study and West Bank Development Stormwater Master Plan. The FEMA BRIC Study analyzed the North Willow Canyon, South Willow Canyon, West Army Creek, and East Army Creek. These watersheds and storm drainage improvements were also incorporated into the West Bank Development Stormwater Master Plan.

The City is in the process of constructing the Clark Street Storm Drain Improvements project with an estimated construction cost of $1,762,257.79. The City has received funding through Utah State via a Water Infrastructure Grant to construct this project. This project is shown in Figure 8-5.



1 DRAINAGE SETTLING BASIN
Scale: None

HORIZONTAL GRAPHIC SCALE
80 0 40 80 160
(IN FEET)
HORZ: 1 inch = 80 ft.

NORTH

NOTES AND ASSUMPTIONS:

PIPE CAPACITY (CFS) AT SLOPE	0.5%	0.6%	1.0%	1.42%	1.87%
36-INCH	51.2	56.1	72.5	86.3	99.1

BAKER BASIN 1:
EXISTING Q100 AFTER IMPROVEMENTS IN UPPER BASINS = 43.26 CFS

POPE BASIN 6:
EXISTING Q100 AFTER IMPROVEMENTS UPPER BASINS = 10.63 CFS

COMBINED OFFSITE:
EXISTING Q100 AFTER IMPROVEMENTS UPPER BASINS = 53.89 CFS

SR-138 TO WEST STREET AND MAIN STREET TO CLARK STREET (31.5 ACRES):
RATIONAL (C=0.41, Tc=59 MIN) Q100 = 24.8 CFS

COMBINED OFFSITE AND ONSITE:
EXISTING Q100 AFTER IMPROVEMENTS UPPER BASINS = 79.5 CFS

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BAKER DRAINAGE BASIN 1
DRAINAGE INFRASTRUCTURE PLANNING
GRANTSVILLE, UTAH

2024-04-19

CLARK STREET STORM DRAIN IMPROVEMENTS PROJECT EXHIBIT

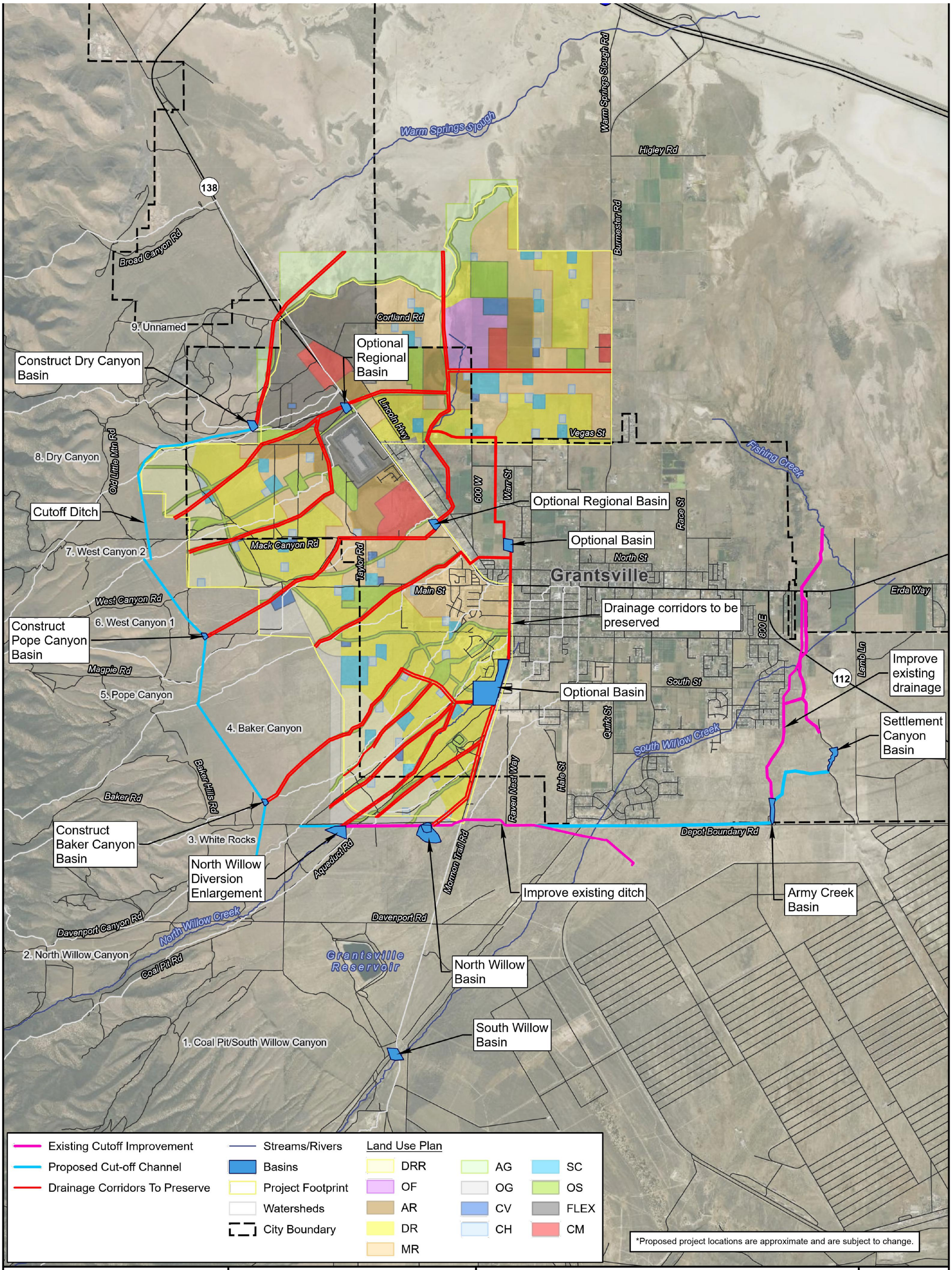
PROJECT NUMBER 11637
PRINT DATE 2024-04-19
PROJECT MANAGER R. ROUSSELLE
DESIGNED BY M. SANFORD

FIG 8-5

Four alternatives of proposed projects were established for the West Bank Development Stormwater Master Plan. Alternative 4 was the selected alternative in the study. Alternative 4 constructed five debris/detention basins across the watersheds with smaller cutoff ditches to convey flows to these basins as depicted in Figure 8-6 at a cost of $143,215,000 (Appendix M).

8.1.6 Methods of Financing

The projects listed are not attributable to new growth, so impact fees cannot be charged. Storm drainage projects may be funded through grants, loans, developer dedications, taxes, or the Capital Project Fund.



Jones & DeMille Engineering

Grantsville City

West Bank & North West Master Development & Capital Facilities Plans
Stormwater - Alternative 4 Overview

Map Name: H:\JD\Proj\2205-048\Design\GIS\Projects\2205-048_Model\2205-048_Model.aprx - Exh Grantsville - West Bank - Stormwater - Alternative 4 Overview 11x17P

Project Number: 2205-048 | Drawn by: JEM 04-24 | Last Edit: 04/04/2024

Tooele County, Utah

Scale: 1" = 1 mile

Figure 12

PROJECT NUMBER | PRINT DATE 2024-04-19

PROJECT MANAGER | DESIGNED BY

FIG 8-6

WEST BANK DEVELOPMENT STORMWATER
MASTER PLAN ALTERNATIVE 4 PROJECT

SOURCE: GRANTSVILLE WEST BANK DEVELOPMENT, STORMWATER MASTER PLAN REPORT, JONES & DEMILLE ENGINEERING, APRIL 5, 2024

GRANTSVILLE, UTAH

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8.2 IMPACT FEE ANALYSIS

As discussed in Section 8.1, there are no storm drainage projects eligible for impact fees. The required projects are associated with correcting existing deficiencies in the system so there is no surplus capacity. Therefore, no buy-in costs can be charged to future development. Additionally, it is the responsibility of the developers, not the City, to construct facilities required to meet the specified level of service. Thus, the City will not require additional storm drainage projects for new development and have no facilities for which to charge impact fees.

SECTION 9: TRANSPORTATION

9.1 CAPITAL FACILITIES PLAN AND IMPACT FEE FACILITIES PLAN

9.1.1 Inventory of Existing Facilities

Grantsville City constructs and maintains transportation facilities to provide mobility for residents and visitors to the community. The City transportation network includes three basic types of roadways: arterials, collectors, and local streets, as shown in Figure 9-1.

Arterials - These high-capacity facilities include highways emphasizing through movement of traffic. Land access is subordinate to this primary function. Generally, these roadways operate at high speeds and serve regional trips. Currently Main Street (SR-138) and SR-112 are the only arterials located within the City limits, both are State routes owned and maintained by Utah Department of Transportation (UDOT). Capital costs associated with these roadways have not been included this analysis.

Collectors - These roadways accumulate traffic from local streets and distribute to higher capacity arterial facilities. Collectors provide both mobility and land access. Generally, trip lengths, speeds, and volumes are moderate. Travel demand impacts from future developments were evaluated on collector roadways. Erda Way, Durfee Street, Mormon Trail Road, Burmester Road, Quirk Street, Willow Street, and Sheep Lane are the existing primary collectors located within the City limits. Additionally, in 2023 the City completed a project paving a 24-feet wide section of Nygreen Street from Willow Street to Adams Avenue which was previously unpaved. The total cost of this project was $451,359.70. The City does not have records of construction costs for any other existing roadways.

Local Streets - Their primary function is to provide land access. Travel speeds and volumes are generally low, trips are shorter, and through traffic is usually discouraged. Capital improvements to local streets are generally assumed to be included in the construction of future developments and are not included in this analysis.

Figure 9-1: Existing Roadway Functional Classification



Source: Grantsville City Transportation Master Plan, 2022

9.1.2 Level of Service

The Grantsville City Transportation Master Plan, August 2022 (TMP) includes an evaluation of existing roadways by using Highway Capacity Manual (HCM) methodologies. This Federally funded manual includes the industry standard for analyzing and classifying the performance of transportation facilities. The manual includes performance measures for roadways by assigning a Level of Service (LOS) based on the degree of mobility provided. The LOS performance measures range from the following classifications of A to F:

LOS A: Represents primarily free-flow operation. Motorists are almost completely unimpeded in their ability to maneuver within the traffic stream.

LOS B: Characterized by reasonably unimpeded operation. The ability of motorists to maneuver with the traffic stream is slightly restricted.

LOS C: Represents stable operation. The ability to maneuver within the traffic stream is restricted but not congested. Travel speed is reduced.

LOS D: Represents a less stable condition in traffic operations. Small increases in flow may cause substantial increases in delay and reduction in travel speed.

LOS E: Characterized by unstable operation. High traffic volumes contribute to significant congestion and delay.

LOS F: Characterized by traffic flow at extremely low speed, high congestion, and extensive queueing. The traffic volume exceeds the capacity of the roadway.

Ideally, all transportation facilities would perform at LOS A, providing maximum mobility and minimal delay; however, limited financial resources, impacts to private right-of-way, and preservation of environmental resources makes this impractical. The Grantsville TMP was developed with the assumption that LOS D would be the minimum acceptable LOS for roadways within the City limit during peak hours. This threshold is used for capacity analysis of existing roadways and future transportation projects in this CFP and IFA.

For planning level analysis of the Grantsville transportation network, peak hour service flow rates were developed to estimate the LOS performance, capacity, and utilization of collector and arterial roadways. Table 9-1 shows the LOS D peak hour flow rates for various lane configurations and roadway types. These values are based on data provided in the Grantsville TMP. Figure 9-2 shows the existing LOS of current collector and arterial roadways within the City during peak hours.

Table 9-1: Collector Peak Hour Service Flow Rates

Road Classification	Lanes	LOS D Peak Hour Flow Rate (Veh/Hr)
Collector	2	1,216
	3	1,347
Arterial	2-3	1,518
	4-5	3,297

Figure 9-2: Existing Arterial and Collector LOS



Source: Grantsville City Transportation Master Plan, 2022

9.1.3 Capacity of Existing Facilities

The Grantsville TMP includes an analysis of existing collector and arterial roadways in the City. The map in Figure 9-2 shows the LOS of each facility and average daily traffic volumes. The only roadway with an existing deficiency is Main Street (SR-138), which has been excluded from this analysis because it falls under UDOT jurisdiction. All other collector and arterial roadways within City limits currently operate at a LOS of C or better, and therefore have excess capacity to serve future development. Table 9-2 includes a summary of peak hour volumes (PHV), flow rates, and capacity for collectors in Grantsville. This data is based on traffic volumes included in the TMP. The amount of excess capacity was calculated for each roadway by subtracting the existing peak hour volumes from the LOS D service flow rates included in Table 9-1.

Table 9-2: Capacity of Existing Roadways

Roadway	Segment Limits	Current (2023) Peak Hour Volume (Veh/Hr) [1]	LOS D Flow Rate (Veh/Hr)	Excess / (Deficit) (Veh/Hr)
Erda Way	Main Street to Sheep Lane	408	1,216	808
Erda Way	Sheep Lane to City Limits	551	1,216	665
Durfee Street	West Street to Quirk Street	332	1,216	884
Durfee Street	Quirk Street to SR-112	681	1,216	535
Mormon Trail Road	City Limits to Pear Street	84	1,216	1,132
West Street	Pear Street to Main Street	287	1,216	929
Burmester Road	North Street to Vegas Street	131	1,216	1,085
Burmester Road	Vegas Street to City Limits	133	1,216	1,083
Quirk Street	Legend Drive to Durfee Street	657	1,216	559
Quirk Street	Durfee Street to Main Street	643	1,216	573
Willow Street	Legend Drive to Main Street	360	1,216	856
Sheep Lane	SR-112 to Erda Way	430	1,216	786
Sheep Lane	Erda Way to SR-138	372	1,216	844
Nygreen Street	Willow Street to Adams Avenue	20	1,216	1,196

[1] *Based on data collected for the Grantsville TMP, 2022*

9.1.4 Demands of Future Development

Travel resulting from new development in Grantsville City was estimated by comparing trips currently generated with anticipated trips generated at the end of the planning period. The demographics data provided in Section 2.7 of this plan provides estimated growth projections for the major categories of existing development and new development through the next 10 years. A trip generation value was calculated for each development type by using rates available in the ITE Trip Generation Manual (11th Edition), multiplied by the quantity of each development type. Table 9-3 includes the rates and units of measure for estimating the trips generated by developments. The various categories of developments shown were used to estimate existing and future travel demand in the City.

Table 9-3: ITE Trip Generation Factors

No.	Description	Average Peak Hour Rate	Unit
140	Manufacturing	0.74	Trips per 1,000 SF
150	Warehousing	0.18	Trips per 1,000 SF
210	Single-Family Detached Housing	0.99	Trips per House
220	Multifamily Housing (Low-Rise)	0.56	Trips per Unit
240	Mobile Home Park	0.46	Trips per Home
520	Elementary School	0.74	Trips per Student
522	Middle/Jr High School	0.67	Trips per Student
525	High School	0.52	Trips per Student
560	Church	0.49	Trips per 1,000 SF
822	Strip Retail Plaza (<40k)	6.59	Trips per 1,000 SF

Source: ITE Trip Generation Manual, 11th Edition

To estimate travel demand generated by schools, the number of students for each school was multiplied by the associated ITE factor to determine estimated trips. The total number of trips was divided by the total number of students to develop a weighted average of trips per student for the City (see Table 9-4).

Table 9-4: Grantsville School Attendance

School	Students [1]	ITE Rate	Trips
Grantsville Elementary	800	0.74	592
Willow Elementary	750	0.74	555
Twenty Wells Elementary	500	0.74	370
Grantsville Junior High	550	0.67	369
Grantsville High	1075	0.52	559
Total	**3,675**		**2,445**
	Average Trips per Student:		**0.665**

[1] *Values provided by Tooele School District*

Trips associated with future development only include trips that begin and/or end inside the City limits. Based on the geography and roadway network of Grantsville, pass-through traffic was assumed to be isolated to SR-138 (Main Street), SR-112, Mormon Trail Road, and Burmester Road. Trips on all other roadways were assumed to include an origin and/or destination within the City limits. To estimate trips within the City, all trips generated by residential units were counted. Trips generated by commercial developments were assumed to include 50% originating inside City limits and 50% outside City limits. Commercial development trips were reduced by 50% to avoid double-counting trips within the City. Trips for schools were reduced by 90% based on an assumption that the majority of students live within the City and many

teachers and other staff live outside the City. Calculations assumed that 90% of church attendees live within the City. Table 9-5 includes an estimate of existing and future peak hour trips that will be generated in the City. Single family, multi-unit, and trailer quantities are based on values provided in Section 2.7. Industrial/manufacturing, warehousing, retail, and church quantities were based on results from a Google Mapping and Street View survey conducted by Lochner. Growth rates for all types of development are based on data provided in Section 2.7.

Table 9-5: Future Transportation Demands

Development Type	Peak Hour Trips Rate	Current (2023)			Future (2033)		
		Units		Trips	Units		Trips
Single Family	0.99	4,274	Dwelling Units	4,231	6,963	Dwelling Units	6,893
Multi-Unit	0.56	291	Dwelling Units	163	477	Dwelling Units	267
Trailer	0.46	216	Dwelling Units	99	216	Dwelling Units	99
Industrial / Manufacturing	0.37 [1]	607	1,000 SF Building	224	988	1,000 SF Building	366
Warehousing	0.09 [1]	1,706	1,000 SF Building	154	2,779	1,000 SF Building	250
Retail	3.295 [1]	221	1,000 SF Building	729	360	1,000 SF Building	1,187
Church	0.049 [2]	297	1,000 SF Building	15	484	1,000 SF Building	24
School	0.0665 [2]	3,675	Students	244	5,986	Students	398
Total				**5,859**			**9,484**
						Increase:	**3,625**

[1] Rates reduced by 50% to estimate external City origin/destination trips.
[2] Rates reduced by 90% to estimate external City origin/destination trips.

9.1.5 Proposed Projects

The Grantsville TMP includes an analysis of future road conditions and a recommendation for future roadway projects to accommodate future travel demand at LOS D through the year 2031. Table 9-6 includes a list of these projects. This CFP/IFA document assumes no additional roadway improvements are needed from 2031 to 2033. Many of the projects will be funded by the Federal Government, the State of Utah, Grantsville, and private funding sources. Only projects or portions of projects funded by Grantsville City are eligible for funding through impact fees. Of the projects listed in Table 9-6, the City anticipates the following will be funded by the City and constructed by 2033:

- Nygreen Street (Section 2, Willow Street to Worthington Street)
- Nygreen Street (Section 3, Worthington Street to East of Gold Dust Road)
- Mathews Lane
- Worthington Street (Durfee Street to Nygreen Street)

- Sheep Lane
- Mack Canyon Road
- Cherry Street
- Durfee Street

Table 9-6: Transportation Master Plan 2031 Capital Improvement Projects

Project No.	Project Name	Length (ft)	Collector/ Arterial	ROW Width	Project Cost	Funding Source
1	Northern Arterial (as collector)	26,420	Collector	108	$40,248,603	Developers
2	Vegas Street	4,350	Collector	90	$6,130,736	City
3	Race Street E/W	9,110	Collector	90	$12,839,312	TBD
4	**Mack Canyon Road**	**1,320**	**Collector**	**90**	**$1,860,361**	**1/3 City, 2/3 Developers**
5	Main Street (SR-138)	12,500	Arterial	106	$18,551,803	UDOT
6	Nygreen Street (Section 1)	9,080	Arterial	108	$13,445,667	Developers
7	**Nygreen Street (Section 2)**	**4,390**	**Arterial**	**108**	**$6,500,713**	**City**
8	**Nygreen Street (Section 3)**	**2,870**	**Collector**	**90**	**$4,044,876**	**City/Developers [1]**
9	Cooley Street	8,170	Collector	90	$11,514,509	TBD
10	Kearl Street	1,550	Collector	90	$2,184,515	TBD
11	Race Street (N/S)	5,490	Collector	90	$7,737,412	TBD
12	**Matthews Lane**	**2,730**	**Collector**	**73**	**$1,755,955**	**1/2 City, 1/2 Developers**
13	Southern Collector	5,150	Collector	90	$7,258,228	Developers
14	**Worthington Street**	**4,990**	**Collector**	**90**	**$7,032,730 [2]**	**City**
15	SR-112 Extension	13,490	Collector	108	$20,550,857	Developers
16	Lamb Lane	5,360	Collector	90	$7,554,194	Developers
17	**Sheep Lane**	**12,680**	**Collector**	**90**	**$17,870,743**	**City**
18	**Cherry Street**	**2,440**	**Collector**	**66**	**$1,746,674**	**City**
19	**Durfee Street**	**1,360**	**Collector**	**90**	**$537,801**	**City**
Total					**$189,365,689**	

[1] It is anticipated the City will pay for the portion of the Nygreen Street (Section 3) project from Worthington Street to Saddle Road, and developers will pay for the remaining portion of the project.

[2] The City anticipates there will not be improvements on the portion of Worthington Street from Main Street to Durfee Street even though the TMP proposes improvements from Main Street to Nygreen Street, so the cost estimate was reduced from the $10,964,857 shown in the TMP.

9.1.6 Methods of Financing

The City uses a variety of funding sources to construct transportation infrastructure to meet the mobility needs of residents and businesses and to accommodate for future growth. SR-138

(Main Street) and SR-112 are State routes that provide regional mobility for motorists traveling to destinations in Grantsville and other locations in Tooele County and Utah. The State provides funding for these routes. The remainder of the public roadways in Grantsville are funded by the City using the following sources of revenue:

Federal Funding: The Federal-Aid Highway Program provides assistance to local public agencies for constructing specific transportation projects. These projects are administered by UDOT and included in the Surface Transportation Program (STP). They are generally prioritized for roadways with a functional class of “collector” or higher and include improvements in mobility, air quality, or safety.

State Funding: The Class B & C road funding program was established by the Utah Legislature in 1937 as a means of providing assistance to counties and incorporated municipalities for the improvement of local roads and streets throughout the state. These funds are subject to administrative direction by UDOT. During the State fiscal year 2023, Grantsville received $411,175.90 from this program. Similar to Federal programs, Utah also has funding sources for transportation projects that are prioritized throughout the State. These sources include the following: Joint Highway Committee, Safe Sidewalk Program, Transportation Alternatives Program, and Safe Routes to School Program.

City Funding: Grantsville could use a variety of revenue sources for transportation improvements including the following: private funding, general fund, general obligation bonds, special improvement districts, special assessment areas. The City has considered the available funding sources and will use the most applicable funds for each use.

Impact Fees: Impact fees are a common revenue stream used to assist in construction of infrastructure to accommodate growth within a city. Infrastructure constructed with impact fees would not be needed if there was no additional development within the City.

9.2 IMPACT FEE ANALYSIS

9.2.1 Existing Facilities

As discussed in Section 9.1.3, the existing roadways in the City have excess capacity to serve future development. However, since there are no available records of the construction costs of these roadways, a buy-in cost can only be charged for the recent Nygreen Street paving project, as shown in Table 9-7. The proportionate share for this was calculated by dividing the increase in peak hour volume projected in the planning period by the total capacity of the road (LOS D flow rate).

Table 9-7: Transportation Buy-In Cost

Project	Project Cost	Current (2023) PHV (Veh/Hr) [1]	Future (2033) PHV (Veh/Hr) [1]	PHV Increase (2023-2033) (Veh/Hr)	LOS D Flow Rate (Veh/Hr)	Proportionate Share	Buy-In Cost
Nygreen Street Paving	$451,359.70	20	1,017	997	1,216	81.99%	$370,070.41

[1] *Based on data collected for the Grantsville TMP, 2022*

9.2.2 System Improvements

The transportation system improvement projects which will be funded by the City and are expected to be constructed by the end of the planning period were determined in Section 9.1.5. The proportionate share for each proposed project was calculated based on TMP analysis results estimating the current and future traffic volumes for each road. The estimated future (2033) peak hourly trips in excess of the existing road capacity was divided by the increase in road capacity due to the proposed project, as shown in Table 9-8.

Table 9-8: Proposed Transportation Projects Proportionate Share

Project Name	Current (2023) Capacity (Veh/Hr)	Future (2033)		Future (2033) PHV in Excess of Current (2023) Capacity (Veh/Hr)	Capacity Increase from Project (Veh/Hr)	Proportionate Share
		PHV (Veh/Hr)	Capacity (Veh/Hr)			
Mack Canyon Road	28	471	1,347	443	1,319	33.6%
Nygreen Street (Section 2)	1,216	1,017	1,347	-199	131	0.0%
Nygreen Street (Section 3)	0	241	1,347	241	1,347	17.9%
Matthews Lane	1,216	708	1,347	-508	131	0.0%
Worthington Street	1,216	778	1,347	-438	131	0.0%
Sheep Lane	1,216	1,252	1,347	36	131	27.5%
Cherry Street	28	117	1,216	89	1,188	7.49%
Durfee Street	1,216	1,158	1,347	-58	131	0.0%

There are four proposed projects (Nygreen Street Section 2, Matthews Lane, Worthington Street, and Durfee Street) with a proportionate share of 0% and are not eligible for impact fees because the estimated peak hourly volume at the end of the planning period does not exceed the current capacity of the road. For the remaining projects, the cost of each project which is attributed to new development in the planning period, and therefore eligible for impact fees, was calculated by multiplying the project cost by the proportionate share as shown in Table 9-9. The project costs included in this calculation are the costs anticipated to be funded by the City and do not include costs expected to be paid by developers (see Table 9-6 for this breakdown). In order to account for the time-price differential inherent with future costs, the current year cost estimates were inflated at a rate of 3.5% to the anticipated construction year.

Table 9-9: Transportation Impact Fee Eligible Costs

Project	Construction Year	Current Year (2023) Cost Estimate	Construction Year Cost Estimate	Proportionate Share	Impact Fee Eligible Cost
Sheep Lane	2024	$17,870,743.00	$18,496,219.01	27.5%	$5,082,930.41
Nygreen Street (Section 3)	2026	$1,832,173.80 [1]	$2,031,363.84	17.9%	$363,443.72
Mack Canyon Road	2026	$620,120.33 [1]	$687,538.50	33.6%	$230,917.02
Cherry Street	2027	$1,746,674.00	$2,004,348.59	7.49%	$150,157.43
Total		**$22,069,711.13**	**$23,219,469.93**		**$5,827,448.58**

[1] *The cost shown is for the portion of the project funded by the City, not the entire project cost.*

In addition to impact fee eligible project costs, planning costs can also be included in the calculation of impact fees. The cost for the current amendment to the transportation section of this CFP and IFA was $11,297. Due to the uncertainty that comes with long-term development projections, this plan is expected to be amended annually going forward. The cost for next year's amendment to the transportation section is anticipated to be $6,000. The future professional expenses expected to occur within the planning period were inflated at a 3.5% rate as shown in the following table.

Table 9-10: Transportation Professional Expenses

Year	Cost
2023	$0.00
2024	$11,927.00
2025	$6,000.00
2026	$6,210.00
2027	$6,427.35
2028	$6,652.31
2029	$6,885.14
2030	$7,126.12
2031	$7,375.53
2032	$7,633.68
2033	$7,900.85
Total	**$74,137.97**

9.2.3 Methods of Financing

The four transportation system improvements which are eligible for impact fees (Sheep Lane, Nygreen Street Section 3, Mack Canyon Road, and Cherry Street) are expected to be funded through a combination of impact fees and developer dedications. The City expects to finance the Sheep Lane project with a loan, which is necessary to prevent the impact fee fund balance from going negative (see Section 9.2.5). This loan was assumed to be a 30-year bond with a 4.0% interest rate, 1.5% cost of issuance, 0.5% bond insurance, and a $20,000 surety policy. The interest cost for this bond attributed to development within the planning period can be included in the impact fee calculation. Table 9-11 shows the details of this bond along with the impact fee eligible interest cost.

Table 9-11: Transportation Future Debt Financing

Project	Proceeds	Par Amount [1]	Debt Service (Interest)	Debt Service (Principal + Interest)	Proportionate Share	Impact Fee Eligible Debt Service (Interest)
Sheep Lane	$18,496,219.01	$18,886,143.39	$13,879,482.94	$32,765,626.33	27.5%	$3,814,209.05

[1] *Includes cost of issuance, bond insurance, and surety policy.*

9.2.4 Impact Fee Calculation

Transportation impact fees were determined based on the increase in peak hour trips within the City over the planning period (see Table 9-5). Impact fees were calculated by dividing the impact fee eligible costs by this increase in peak hour trips as shown in the following table.

Table 9-12: Transportation Impact Fee Calculation

Project	Impact Fee Eligible Cost	Planning Period (2023-2033) Peak Hour Trips	Cost per Peak Hour Trip
Buy-In Cost	$370,070.41	3,625	$102.09
Sheep Lane	$5,082,930.41	3,625	$1,402.15
Sheep Lane Debt Service (Interest)	$3,814,209.05	3,625	$1,052.17
Nygreen Street (Section 3)	$363,443.72	3,625	$100.26
Mack Canyon Road	$230,917.02	3,625	$63.70
Cherry Street	$150,157.43	3,625	$41.42
Professional Expenses	$74,137.97	3,625	$20.45
Total			**$2,782.24**

The City charges impact fees for transportation based on development type. This was calculated by multiplying the cost per peak hour trip shown above by the peak hour trips rates discussed in Section 9.1.4.

Table 9-13: Proposed Transportation Impact Fees

Development Type	Peak Hour Trips Rate	Impact Fee	Units
Single Family	0.99	$2,754.42	per Dwelling Unit
Multi-Unit	0.56	$1,558.05	per Dwelling Unit
Trailer	0.46	$1,279.83	per Dwelling Unit
Industrial / Manufacturing	0.37	$1,029.43	per 1,000 sf Building Area
Warehousing	0.09	$250.40	per 1,000 sf Building Area
Retail	3.295	$9,167.48	per 1,000 sf Building Area
Church	0.049	$136.33	per 1,000 sf Building Area
School	0.0665	$185.07	per Student

9.2.5 Impact Fee Cashflow

The anticipated impact fee revenues and expenses over the 10-year planning period are shown in Table 9-14. The expenses represent only what is attributable to planning period development and include capital project costs, the expenditure of buy-in costs, and proposed bond payments. The impact fee cashflow (Table 9-15) estimates the end of year impact fee fund balance throughout the planning period by comparing the impact fee revenues, total expenses, and interest income calculated at 5.44% of the fund balance.

9.2.6 Impact Fee Credits

The City currently has procedures in place for credits, appeals, and exemptions of impact fees, refer to Appendix B for the City's current impact fee ordinance.

Table 9-14: Transportation Impact Fee Revenues and Expenses

Year	Peak Hour Trips	Annual Peak Hour Trips Increase	Impact Fee Revenues	Impact Fee Eligible Project Costs	Bond Payments	Bond Proceeds	Buy-In Cost Expenses	Professional Expenses	Total Expenses
2023	5,859	-	-	-	-	-	-	-	-
2024	6,148	289	$802,787.51	($5,082,930.41)	-	$5,082,930.41	($29,455.86)	($11,927.00)	($41,382.86)
2025	6,450	302	$839,830.26	-	($300,143.14)	-	($30,815.04)	($6,000.00)	($336,958.18)
2026	6,767	318	$884,414.82	($594,360.74)	($300,143.14)	-	($32,450.93)	($6,210.00)	($933,164.81)
2027	7,101	333	$926,743.63	($150,157.43)	($300,143.14)	-	($34,004.06)	($6,427.35)	($490,731.98)
2028	7,451	350	$975,104.89	-	($300,143.14)	-	($35,778.53)	($6,652.31)	($342,573.98)
2029	7,819	368	$1,024,015.94	-	($300,143.14)	-	($37,573.17)	($6,885.14)	($344,601.45)
2030	8,205	386	$1,073,504.27	-	($300,143.14)	-	($39,389.00)	($7,126.12)	($346,658.26)
2031	8,611	406	$1,129,107.58	-	($300,143.14)	-	($41,429.19)	($7,375.53)	($348,947.87)
2032	9,037	426	$1,185,347.33	-	($300,143.14)	-	($43,492.74)	($7,633.68)	($351,269.56)
2033	9,484	447	$1,245,009.78	-	($300,143.14)	-	($45,681.88)	($7,900.85)	($353,725.87)
Total		**3,625**	**$10,085,866.02**	**($5,827,448.58)**			**($370,070.41)**	**($74,137.97)**	**($3,890,014.83)**

Table 9-15: Transportation Impact Fee Cashflow

Year	Impact Fee Revenues	Total Expenses	Interest Income	End of Year Balance
2023	-	-	-	$0.00
2024	$802,787.51	($41,382.86)	-	$761,404.65
2025	$839,830.26	($336,958.18)	$41,420.41	$1,305,697.14
2026	$884,414.82	($933,164.81)	$71,029.92	$1,327,977.06
2027	$926,743.63	($490,731.98)	$72,241.95	$1,836,230.67
2028	$975,104.89	($342,573.98)	$99,890.95	$2,568,652.53
2029	$1,024,015.94	($344,601.45)	$139,734.70	$3,387,801.72
2030	$1,073,504.27	($346,658.26)	$184,296.41	$4,298,944.15
2031	$1,129,107.58	($348,947.87)	$233,862.56	$5,312,966.42
2032	$1,185,347.33	($351,269.56)	$289,025.37	$6,436,069.57
2033	$1,245,009.78	($353,725.87)	$350,122.18	$7,677,475.66

Appendix A: References

1. Impact Fees Act. Title 11, Chapter 36a, Utah State Code
2. Growth Consuming Grantsville 72% Population Increase in City Expected by 2020. Don Baker, Deseret News, dated April 26, 1999. https://www.deseret.com
3. U.S. Census Bureau. https://www.census.gov
4. Utah Division of Drinking Water. https://deq.utah.gov/division-drinking-water
5. Grantsville General Plan. Grantsville City, Utah, dated January 15, 2020.
6. Utah Administrative Code Title R309. https://adminrules.utah.gov/public/search//Current%20Rules
7. Grantsville City, Utah - Culinary Water and Wastewater Systems Master Plan. AQUA Engineering, dated June 2005.
8. Capital Facilities Plan and Impact Fee Analysis Grantsville City Revision. AQUA Engineering, dated August 2016.
9. Capital Facilities Plan, Impact Fee Facilities Plan, and Impact Fee Analysis Updates. Ensign Engineering and Land Surveying, dated May 2022.
10. Grantsville City Culinary and Secondary Water Rights Forty-Year Master Plan. AQUA Engineering, dated October 2009.
11. AWWA Manual M6. American Water Works Association, dated November 2018.
12. Grantsville City Capital Facilities Plan. Hansen, Allen, and Luce, Inc. dated October 1996.
13. Capital Facilities Plan and Impact Fee Analysis Grantsville City. AQUA Engineering, dated April 3, 2013.
14. 2016 Crime in the United States, Table 24. FBI, dated fall 2017. https://ucr.fbi.gov
15. Calculating Shelter Capacity. UC Davis Koret Shelter Medicine Program, dated June 19, 2015. https://www.sheltermedicine.com
16. Fire Suppression Rating Schedule. Insurance Services Office, Inc.
17. As-Built Drawings for the Grantsville Wastewater Treatment Facility Improvement Project. AQUA Engineering, dated September 24, 2009.
18. Lakeview Business Park Culinary Water and Wastewater Master Plan. AQUA Engineering, dated August 6, 2020.
19. Grantsville City – Sanitary Sewer Flow Monitoring 2018 – Flow and Model Summary. AQUA Engineering, dated August 9, 2018.
20. Storm Water Management Study for Baker and Pope Watersheds Grantsville City and Tooele County. AQUA Engineering, dated April 2015.

21. Grantsville City Storm Drainage Master Plan. Hansen, Allen, and Luce, Inc. dated August 1998.
22. Grantsville City Wastewater Treatment Plant Study. AQUA Engineering dated November 2022.
23. Grantsville City Transportation Master Plan. Horrocks dated 2022.
24. Highway Capacity Manual (HCM). Transportation Research Board, Current Edition.
25. Trip Generation Manual, 11th Edition. Institute of Transportation Engineers dated September 2021.
26. Grantsville City FEMA BRIC Flood Protection Scoping Study. Jones & DeMille Engineering dated February 6, 2024.
27. West Bank & Northwest Area Master Development Plan & Capital Facilities Plan. PSOMAS, Wall Consultant Group, and Jones & DeMille Engineering dated July 2024.

Appendix B: Grantsville City Current Impact Fee Ordinance

Title 13 Impact Fees
Chapter 13-1 General Provisions

Chapter 13-1 General Provisions
13-1-1 Definitions
13-1-2 Collection Procedures Exemptions
13-1-3 Accounting
13-1-4 Refunds – Credits – Challenges – Appeals
13-1-5 Parks and Recreation Facilities Impact Fee
13-1-6 Public Safety (Fire and Police) Capital Facilities Impact Fees
13-1-7 Culinary Water Capital Facilities Impact Fee
13-1-8 Water Rights Acquisition Impact Fee
13-1-9 Wastewater Capital Facilities Impact Fee
(Adopted by ordinance 2017-10, effective July 11, 2017)

13-1-1 Definitions

A. The definitions referred to in Utah Code Annotated § 11-36a-102, 2014 as amended, shall apply to the terms used in this chapter. (Adopted 07-16-1997 by Ord. No. 97-28; amended 10-15-1997 by Ord. No. 97-33, included unrevised in Ord. No. 2006-01 on 02-1-06.)
B. The term "Service Area" as used in this chapter and the area of Grantsville City, which will be served by the impact fees imposed by this chapter, shall constitute the entire corporate boundaries of Grantsville City, Tooele County, Utah unless otherwise indicated. (Adopted 07-16-1997 by Ord. No. 97-28; amended 10-15-1997 by Ord. No. 97-33.)
C. Equivalent Residential Connection (ERC) for the purposes of Section 30-1-7 (Culinary Water Capital Facilities Impact Fee) of this Chapter is defined as the storage and distribution requirement that will allow a peak usage of 900 gallons of water per day with an average flow of 475 gallons of water per day per connection for each single family dwelling unit. The Culinary Water Capital Facilities impact fee for nonresidential development shall be calculated by estimating the water service demands of the use and then converting it to an ERC, which shall then be multiplied by the impact fee specified in Section 30-1-7 herein for each ERC. Equivalent Residential Connection may also be specified as an equivalent residential user/unit or ERU. (Adopted 10-15-1997 by Ord. No. 97-33, amended on 02-1-06 by Ord. No. 2006-01)
D. Equivalent Residential Connection (ERC) for the purposes of Section 30-1-8 (Water Source Impact Fee) shall be calculated as follows: The water right required for indoor use is based upon two criteria; a) that the water right will allow the extraction of 800 gallons per day per connection, and b) that the yearly extraction be sufficient to provide 0.45 acre-feet per connection. The indoor water source (rights) acquisition impact fee for nonresidential development shall be calculated by estimating the indoor water service demands of the use and then converting it to an ERC, which shall then be multiplied by the impact fee specified in Section 30-1-8 herein for each ERC. No development, however, shall pay a water source impact fee of less than required for one ERC. The ERC for outdoor water use is based on .12 irrigated acres per ERC, 3.96 gallons per irrigated acre (.0099 cfs/acre) and 3.0 acre feet of water rights for each irrigated acre. Equivalent Residential Connection may also be specified as an equivalent residential user/unit or ERU. (Subsection (D) adopted 02-1-06 by Ord. No. 2006-01)
E. Equivalent Residential Connection (ERC) for the purposes of Section 30-1-9 (Wastewater Capital facilities Impact Fee) of this Chapter is defined as 280 gallons of wastewater per day. The wastewater impact fee for a nonresidential development shall be calculated by estimating the wastewater flow per day and then converting it to an ERC, which shall then be multiplied by the impact fee specified in Section 30-1-9 herein for each ERC. Equivalent Residential Connection may also be specified as an equivalent residential user/unit or ERU. (Subsection (E) adopted 02-1-06 by Ord. No. 2006-01)

13-1-2 Collection Procedures-Exemptions
After the effective date of this Ordinance, no application for a building permit as set forth herein, shall be approved by Grantsville City unless the applicable impact fee has been paid or is adjusted or waived by the City Council.

The impact fees imposed by this Ordinance shall not apply to the following development activities:

A. Residential development activities that do not increase the number of residential dwelling units.
B. Nonresidential development activities that do not increase the total square footage in an existing nonresidential development.
C. Proposed development for which a building permit has been issued prior to the effective date of the enactment of an impact fee.
D. Any new subdivision or planned unit development(except minor subdivisions or small planned unit developments of six or less lots), shall be required to provide, prior to final approval, sufficient water rights to the City or dedicated private water resources to provide for all of the indoor and outdoor water uses required for the development.
E. Low income housing and other development activities with broad public purposes may be exempted from the payment of impact fees by the City Council. Low income housing shall be defined by the regulations adopted or used by the Tooele County Housing Authority.

(Originally adopted 07-16-1997 by Ord. No. 97-28; Subsection (D) was added by Ord. No. 99-13 on 04-21-1999; Subsection (E) was added by Ord. No. 2002-1 on 01-09-2002.)

13-1-3 Accounting

The City Treasurer shall establish separate interest-bearing ledger accounts for each type of public facility for which an impact fee is collected. The City shall also deposit impact fee receipts in the appropriate ledger account and retain the interest earned on each fund or account in the fund. The City Treasurer shall, at the end of each fiscal year prepare and submit a report to the City Council on each fund or account showing the source and amount of all monies collected, earned or received by the fund or account and each expenditure from the fund or account including other expenditures to support this impact fee process.

(Adopted on 07-16-1997 by Ord. No.97-28, included unrevised in Ord. No.99-13, adopted 4-21-1999.)

13-1-4 Refunds - Credits - Challenges - Appeals

A. Refunds. The City shall refund any impact fee paid by a developer, plus interest earned when:
    1. The developer does not proceed with the development activity and has filed a written request for a refund; or
    2. The fees have not been timely spent or encumbered as required by law; or
    3. No impact has resulted.
B. Credits. Credits against the amount of an impact fee due from a proposed development may be provided for by the dedication of land or the provision of City resources or facilities by an applicant when such land, facilities or resources are determined to provide additional City facilities or resource capacity to meet the demand generated by the development and when either:
    1. Costs. The costs of such land, facilities or resources have been included in the City impact fee calculation methodology or the land dedicated or facilities provided is determined by the City Council to be a reasonable substitute for the cost of facilities or resources which are included in the City's impact fee calculation methodology. Applications for a credit will be made to the City and will be submitted at or before the time when the impact fee is due. The application for a credit will be accompanied by relevant documentary evidence indicating the eligibility of the applicant for the credit. The City Recorder will present an application for any credit to the City Council, accompanied by a recommendation by the Mayor. Any credit determined appropriate by the City Council shall be applied against the impact fee calculated to be due; provided, however, that in no event shall a credit be granted in an amount exceeding the impact fee due.
    2. Unusual Circumstances. The City Council may adjust the impact fee at the time the fee is charged, to respond to unusual circumstances in specific cases and ensure that the impact fees are imposed fairly. The City Council may also adjust an impact fee based upon studies and data submitted by a developer.
C. Challenges. Any person claiming that the impact fee required by this ordinance has no reasonable relationship to the needs created by or benefits conferred upon the proposed development and does not demonstrably benefit the new development or is otherwise constitutionally invalid or unlawful pursuant to the standards of applicable case law or statutes then in effect, must file a written challenge with the City Recorder in order to obtain a final determination regarding the application of the impact fee to the development by the City

Council, which may include a request for a credit against the impact fees paid. Such a determination shall be a necessary prerequisite before filing any legal challenge to the basis of or the amount of the impact fee in question. Any challenge to an impact fee must be filed within 30 days after paying an impact fee. The City Council shall make its decision no later than 30 days after the date the challenge to the impact fee is filed.

D. Arbitration. In addition to the procedure under the foregoing paragraph to challenge an impact fee, a person or entity may submit an impact fee challenge to arbitration, if the person or entity resides in or owns property within the impact fee service area or is an organization, association, or corporation representing the interests of a person or entity owning property within the impact fee service area and files a written request for arbitration with the Grantsville City Council within 30 days after the day the impact fee is paid. If a person or entity files a written request for arbitration an arbitrator or arbitration panel shall be selected as follows:
    1. the City Council and the person or entity filing the request may agree on a single arbitrator within ten days after the day the request for arbitration is filed; or
    2. if a single arbitrator is not agreed to, an arbitration panel shall be created with the following members:
        a. each party shall select an arbitrator within 20 days after the date the request is filed; and
        b. the arbitrators selected by each party shall select a third arbitrator.
    3. The arbitration panel shall hold a hearing on the challenge within 30 days after the date the single arbitrator is agreed upon or within 30 days after the two arbitrators are selected. The arbitrator or arbitration panel shall issue a decision in writing within ten days from the date the hearing is completed. Except as provided in this section, each arbitration shall be governed by Utah Code Ann. Title 78B, Chapter 11, Utah Uniform Arbitration Act. The parties may agree to binding arbitration, formal, nonbinding arbitration or informal, nonbinding arbitration. If the parties agree in writing to binding arbitration, the arbitration shall be binding, the decision of the arbitration panel shall be final, neither party may appeal the decision of the arbitration panel and notwithstanding Subsection (C) above, the person or entity challenging the impact fee may not file an action under Subsection (C) or Utah Code Ann. §11-36a-701, et al. If the parties agree to formal, nonbinding arbitration, the arbitration shall be governed by the provisions of Utah Code Ann. Title 63G, Chapter 4, Administrative Procedures Act. For purposes of applying Utah Code Ann. Title 63G, Chapter 4, Administrative Procedures Act, to a formal, nonbinding arbitration under this section, notwithstanding Utah Code Ann. §63G-4-502, "agency" means a local political subdivision. An appeal from a decision in an informal, nonbinding arbitration may be filed with the district court in which Grantsville City is located. Each authorized appeal to the district court shall be filed within 30 days after the date the arbitration panel issues a decision. The district court shall consider de novo each appeal filed from an informal, nonbinding arbitration filed under this subsection. A person or entity that files an appeal to the district court after an informal nonbinding arbitration decision under this subsection may not file an action under Subsection (C) of this provision or Utah Code Ann. §11-36a-701, et al. The filing of a valid written request for arbitration within 30 days after the date the impact fee is paid tolls all time limitations under Utah Code Ann. §11-36a-701, et al. until the date the arbitration panel issues a decision. The person or entity filing a request for arbitration and Grantsville City shall equally share all costs of an arbitration proceeding under this section. Except as provided for herein, this subsection shall not be construed to prohibit a person or entity from challenging an impact fee as provided in Subsection (C) or Utah Code Ann. §11-36a-701, et al.

E. Oversized Water Services - No Appeal Allowed. If the developer or owner of property knowingly requests or installs a water service, at its option, that is larger than is required by this Chapter or any other part of this Code, the impact fees associated with the requested service size, shall be charged and collected by the City. No credit, challenge, appeal or arbitration related to the impact or other fees knowingly paid for an oversized service, shall be allowed under this Chapter, after the impact fee has been paid to the City. If an oversized water service has been installed and the impact fee for the same has not been paid, the developer or owner may replace the oversized service, with a properly sized service, provided the City is paid for its costs to inspect the new installation. (Adopted 02-04-2009 by Ord. 2009-03).

(Section 30-1-4 originally adopted on 02-05-1997, amended and renumbered on 07-16-1997 by Ord. No.97-28, amended 04-21-99 by Ord. No. 99-13.)

13-1-5 Parks And Recreation Facilities Impact Fee

As a condition for the issuance of a building permit for the new construction or placement of any structure for a single or multi-family dwelling within Grantsville City's Boundaries, the developer, owner or builder shall pay an impact fee of $936.00 for each single family dwelling unit and $936.00 for each individual dwelling unit in a multi-family dwelling. The City council may adjust the standard impact fee at the time of the fee is charged to respond to unusual circumstances in specific cases and ensure that the impact fees are imposed fairly.

(Originally adopted on 02-05-1997 by Ord. No. 97-5, included unrevised and renumbered in Ord. No. 99-13 adopted 04-21-99)

13-1-6 Public Safety (Fire And Police) Capital Facilities Impact Fees

As a condition for the issuance of a building permit for the new construction or placement of any structure for a single or multi-family dwelling within Grantsville City's Boundaries, the developer, owner or builder shall pay a public safety (fire and police) capital facilities impact fee of $1235.00 for each single-family dwelling unit and $417.00 per unit for each individual dwelling unit in a multi-family dwelling. Prior to the issuance of a building permit for any nonresidential development activity within the District's boundaries, the developer, owner or builder thereof, shall pay a public safety facilities impact fee of $0.52 per square feet for each square foot of said nonresidential development. The City Council may adjust the standard impact fee at the time the fee is charged to respond to unusual circumstances in specific cases and ensure that the impact fees are imposed fairly. The City Treasurer shall deposit 67% of all Public Safety Impact Fees collected pursuant to this Section into a separate interest-bearing ledger account for fire department capital facilities and 33% of said fees into a separate interest-bearing ledger account for police department capital facilities.

(Adopted 07-16-1997 by Ord.No.97-28, amended 07-08-1998 by Ord. No. 98-17, included unrevised in Ord. No. 99-13 adopted 04-21-99).

13-1-7 Culinary Water Capital Facilities Impact Fee

As a condition for the issuance of a building permit or as a condition of obtaining culinary water service for any new residential construction or development within Grantsville City's boundaries that requires a new or expanded culinary water service, the developer, owner or builder shall pay a culinary water (source development, storage and distribution) capital facilities impact fee based upon the size of the culinary water service meter connection necessary for the development as follows:

Meter Size in Inches	Max Flow Rate (GPM)	ERC's	Impact Fee per Meter Size
3/4"	25	1.00	$2,545.00
1"	40	1.60	$4,072.00
1 1/2"	50	2.00	$5,090.00
2"	100	4.00	$10,180.00
3"	150	6.00	$15,270.00
4"	200	8.00	$20,360.00
6"	500	20.00	$50,900.00

As a condition for the issuance of a building permit or as a condition of obtaining culinary water service for any new residential construction or development or any other activity within Grantsville City's boundaries that requires a new or expanded culinary water service, the developer, owner or builder shall pay a culinary water (source development,

storage and distribution) capital facilities impact fee based upon the number of fixture units for indoor water use or the number of fixture units per acre for outdoor water use as follows:

Non-Residential(Indoor Use) $127.00 per fixture unit
Non-Residential (Outdoor Use) $73.00 per fixture unit per acre

The City council may adjust the standard water capital facilities impact fee at the time of the fee is charged, to respond to unusual circumstances in specific cases and ensure that the impact fees are imposed fairly. (Originally adopted 07-16-1997 by Ord. No. 97-28, amended 04-21-1999 by Ord. No. 99-13; amended 02-1-06 by Ord. No. 2006-01)

13-1-8 Water Rights Acquisition Impact Fee

A. As a condition for the issuance of a building permit or as a condition of obtaining culinary water service for any new residential or commercial construction or development or any other activity within Grantsville City's boundaries that requires culinary water for indoor or outdoor use or a new or expanded culinary water service, the developer, owner or builder, when required by this ordinance, shall pay an indoor and outdoor culinary water right acquisition impact fee for the development as follows:
    1. Indoor Use Impact Fee: $1,260.00 per Equivalent Residential Connection (ERC). (.45 acre-feet x $2,800.00 per acre foot of water)
    2. Outdoor Use Impact Fee: The typical outdoor use impact fee for developed property including residential lots shall be calculated by multiplying the irrigated acreage of each lot by 3.0 (which is the required acre feet of water rights per irrigated acre) and then multiplying the resulting acre feet of required water for the lot by $2,800.00.

       Irrigated acreage for residential lots of up to and including one acre in size shall be determined by multiplying the total acreage of the lot by 64%. No additional outdoor use impact fee shall be charged for residential lots over one acre in size and therefore the outdoor use impact fee is capped at $6,118.56 for residential lots of one acre in size or larger.

       Example One: A residential lot of 7000 total square feet = .16 acres x .64 irrigated area of .1028 acre x 3.0 = .3085 acre feet of water x $2,800 = $863.91 as the outdoor use impact fee.

       Example Two: A lot of 21,780 total square feet = .5 acres x .64 = irrigated area of .32 acre x 3.0 = .96 acre

       feet of water x $2,800 = $2,688.00 as the outdoor use impact fee.

       (Adopted 04-21-1999 by Ord. No. 99-13; amended 12-19-2001 by Ord. No. 2001-19).

B. The City Council may adjust the standard culinary water acquisition impact fee at the time the fee is charged to respond to unusual circumstances for specific cases and to ensure that the impact fees are imposed fairly. Developments that provide a permanent secondary water source (non-culinary waterworks sources) for outdoor use on the property may petition the City Council for a waiver of the Outdoor Use Impact Fee, which may be granted, provided that said water right can be verified as supplying adequate water for outdoor purposes on the property and adequate assurance is given that no Grantsville City culinary water will be used for outdoor purposes on the property in perpetuity. Adequate assurance for purposes of the waiver shall be by transfer to the City of water rights or shares to be held by the City for future use on the property or within the City. Assessments or similar usage charges paid by the City to the provider of secondary water may be collected by the City from the owner or tenant of the property in connection with the City's billing for culinary water. (Adopted 04-21-1999 by Ord. No. 99-03; amended 12-03-2003 by Ord. 2003-29).

   All charges provided for hereunder shall be charged with the sewer and culinary water fees and shall constitute one charge. If any part of the account for either the secondary water assessment or the City sewer or culinary water charges becomes delinquent, as in this Code provided, the City shall discontinue the water service until all delinquencies have been paid in full, including the reconnection fee. (Included 03-02-

2005 by Ord. No.2005-04)

C. (Subsection (C) was repealed on October 17, 2007 by Ord. No. 2007-36)
D. Any new subdivision or planned unit development (except minor subdivisions and small planned unit developments), shall be required to provide, prior to final approval, sufficient water rights to the City or dedicated private water resources to provide for all of the indoor and outdoor water uses required for the development. Unless otherwise provided for, the impact fees specified in this Section shall apply to all development in subdivisions and planned unit developments initiated prior to April 23, 1999 and shall be collected as provided in subsection (A) above. (Adopted 04-21-1999 by Ord. No. 99-13; amended 12-19-2001 by Ord. No.2001-19).
E. The Outdoor Use Impact fee is based upon a typical irrigated residential lot or development as defined above. The Outdoor use Impact fee for residential lots up to one acre in size shall be strictly applied without regard to claims of restricted irrigation areas, since these claims can rarely be verified or enforced. The water rights acquisition fee for industrial or commercial purposes shall be based upon an estimate of the indoor and outdoor water usage specified for the project, but shall in no event be less than the minimum impact fee specified above. (Adopted 04-21-1999 by Ord. No. 99-13; amended 12-19-2001 by Ord. No. 2001-19)
F. No owner or possessor of real property within Grantsville City has the right to use City culinary water for outdoor use (irrigation) on more than the irrigated acreage as defined in subsection (A) above or in the development plan as otherwise approved by the City. Owners or possessors of such real property, who do not have access to non-city secondary water, may at their option irrigate more than the specified irrigated acreage of their property or lot with City culinary water until such time as the City determines by a formally adopted Resolution that its culinary water supply is insufficient to continue to allow such irrigation. Any such Resolution may temporarily terminate the use of culinary water on more than the allowed irrigated acreage until the water shortage abates or the Resolution may permanently terminate such use. Any person who irrigates more of their property than the allowed irrigated acreage as defined herein, after a Resolution prohibiting said use is adopted, shall be guilty of guilty of a Class “C” Misdemeanor. Nothing contained in this Section shall prohibit the City from otherwise limiting the outside use of culinary water in times of emergency or shortage. (Adopted 12-19-2001 by Ord. No.2001-19)

13-1-9 Wastewater Capital Facilities Impact Fee

As a condition for the issuance of a building permit or as a condition of obtaining wastewater (sewer) service for any new residential construction or development within Grantsville City’s boundaries that requires a new or expanded wastewater service, the developer, owner or builder shall pay a wastewater capital facilities impact fee based upon the size of the wastewater service meter connection necessary for the development as follows:

Meter Size In	(GPM)	(ERC's)	Impact Fee Meter Size
3/4"	20	1.00	$3,257.00
1"	38	1.90	$6,188.30
1 1/2"	48	2.38	$7,751.66
2"	95	4.75	$14,884.49
3"	143	7.13	$23,222.41
4"	190	9.50	$30,941.50

6"	475	23.75	$77,353.75

As a condition for the issuance of a building permit or as a condition of obtaining wastewater (sewer) service for any new commercial construction or development or any other activity within Grantsville City's boundaries that requires a new or expanded wastewater service, the developer, owner or builder shall pay a wastewater capital facilities impact fee based upon the number of fixture units necessary for the development as follows:

Non-Residential Wastewater $162.00 per fixture unit

(Originally adopted 7-16-1997 by Ord. No. 97-28, amended and renumbered on 04-21-1999 by Ord. No. 99-13; amended 02-01-2006 by Ord. No. 2006-01).

Appendix C: Demographic Calculations

ERC per Unit Calculation

Service Connection Type	Average Units	Monthly Average Water Use (gal)	Water Use (gal) per Unit	Water Use (gal) per ERC	ERC per Unit
Residential	3,647	34,435,000	9,443	9,443	**1.00**
Multi-Unit	264	1,372,579	5,194		**0.55**
Other Residential	226	2,411,368	10,690		**1.13**
Commercial	136	10,156,947	74,741		**7.92**
Church	11	959,053	87,606		**9.28**
School	11	539,632	49,293		**5.22**
Construction Water	21	947,474	45,575		**4.83**
City Rate	32	2,558,083	81,209		**8.60**

Note: ERC per unit calculation was compelted for 2022 CFP, IFFP, and IFA Updates. The ERC per unit has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Appendix D: Drinking Water Cost Estimates

ENGINEERS ESTIMATE OF PROBABLE COSTS

These costs are opinions only and should not be considered as a formal construction estimate. These quantites and costs are based on information derived from the master plan and are therefore subject to change. Ensign has no control over costs of labor, materials, bidding procedures, unidentified field conditions, or other factors. Ensign cannot and does not make any warranty, promise, or guarantee as to the accuracy of this estimate.

ENSIGN
THE STANDARD IN ENGINEERING

Project: Grantsville City CFP, IFFP, and IFA
By: Matthew Sanford
Date: 7/12/2024

Project No.: 10766D
Checked By: Robert Rousselle

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST [1]	COST
Southwest Well No. 1					
1	Well Flush Line	LS	1	$50,000.00	$50,000.00
2	Exploratory and Municipal Production Well Drilling and Completion	LF	600	$2,300.00	$1,380,000.00
3	Municipal Well Equipment, Connection to Existing Infrastructure, and Modification to Electrical/Controls	LS	1	$860,000.00	$860,000.00
4	Mobilization	LS	1	$17,000.00	$17,000.00
5	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	3,110	$80.00	$248,800.00
6	Furnish and Install 12-inch Isolation Valve	EA	2	$2,200.00	$4,400.00
7	Furnish and Install 12-inch Tee and (3) 12-inch Butterfly Valves, Including Fittings and Appurtenances	EA	1	$12,000.00	$12,000.00
8	Furnish and Install 2-inch Combination Air Vac Valve	EA	1	$12,000.00	$12,000.00
9	Disinfection and Testing Water Line	LF	3,110	$0.50	$1,555.00
10	Revegetation	SF	124,400	$0.05	$6,220.00
11	Easement Acquisition	AC	1.43	$45,000.00	$64,256.20
				Subtotal	**$2,656,231.20**
	Engineering, Surveying, and Construction Management and Inspection Costs (10%)				$265,623.12
				Total Southwest Well No. 1 Cost	**$2,921,854.32**
Southwest Well No. 2					
1	Well Flush Line	LS	1	$50,000.00	$50,000.00
2	Exploratory and Municipal Production Well Drilling and Completion	LF	600	$2,300.00	$1,380,000.00
3	Municipal Well Equipment, Connection to Existing Infrastructure, and Modification to Electrical/Controls	LS	1	$860,000.00	$860,000.00
4	Mobilization	LS	1	$15,000.00	$15,000.00
5	Furnish and Install 10-inch Water Main Including Fittings and Appurtenances	LF	220	$70.00	$15,400.00
6	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	2,410	$80.00	$192,800.00
7	Furnish and Install 12-inch Isolation Valve	EA	2	$2,200.00	$4,400.00
8	Furnish and Install 12-inch x 10-inch Tee, (2) 12-inch Butterfly Valves, and (1) 10-inch Butterfly Valve, Including Fittings and Appurtenances	EA	1	$12,000.00	$12,000.00
9	Furnish and Install 2-inch Combination Air Vac Valve	EA	1	$12,000.00	$12,000.00
10	Disinfection and Testing Water Line	LF	2,630	$0.50	$1,315.00
11	Revegetation	SF	105,200	$0.05	$5,260.00
12	Easement Acquisition	AC	1.21	$45,000.00	$54,338.84
				Subtotal	**$2,602,513.84**
	Engineering, Surveying, and Construction Management and Inspection Costs (10%)				$260,251.38
				Total Southwest Well No. 2 Cost	**$2,862,765.23**
West Bank Well No. 1					
1	Well Flush Line	LS	1	$50,000.00	$50,000.00
2	Exploratory and Municipal Production Well Drilling and Completion	LF	600	$2,300.00	$1,380,000.00
3	Municipal Well Equipment, Connection to Existing Infrastructure, and Modification to Electrical/Controls	LS	1	$860,000.00	$860,000.00
4	Mobilization	LS	1	$16,000.00	$16,000.00
5	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	2,930	$80.00	$234,400.00
6	Furnish and Install 12-inch Isolation Valve	EA	2	$2,200.00	$4,400.00
7	Furnish and Install 2-inch Combination Air Vac Valve	EA	1	$12,000.00	$12,000.00
8	Disinfection and Testing Water Line	LF	2,930	$0.50	$1,465.00
9	Revegetation	SF	117,200	$0.05	$5,860.00
10	Easement Acquisition	AC	1.35	$45,000.00	$60,537.19
				Subtotal	**$2,624,662.19**
	Engineering, Surveying, and Construction Management and Inspection Costs (10%)				$262,466.22
				Total West Bank Well No. 1 Cost	**$2,887,128.41**
Southwest Tank No. 1					
1	Mobilization	LS	1	$171,000.00	$171,000.00
2	Site Clearing and Grubbing	LS	1	$21,000.00	$21,000.00
3	Earthwork / Fine Grading	CY	10,000	$11.00	$110,000.00
4	Construct 2.0 M.G. Buried Tank	LS	1	$3,000,000.00	$3,000,000.00
5	Furnish and Install Tank Valve Vault	LS	1	$125,000.00	$125,000.00
6	Electrical and Telemetry	LS	1	$120,000.00	$120,000.00
7	Disinfection and Testing Tank	LS	1	$20,000.00	$20,000.00
8	Revegetation	LS	1	$30,000.00	$30,000.00
				Subtotal	**$3,597,000.00**
	Engineering, Surveying, and Construction Management and Inspection Costs (6.73%)				$242,078.10
				Total Southwest Tank No. 1 Cost	**$3,839,078.10**
Southwest Tank No. 2					
1	Mobilization	LS	1	$169,000.00	$169,000.00
2	Site Clearing and Grubbing	LS	1	$16,000.00	$16,000.00
3	Earthwork / Fine Grading	CY	7,500	$11.00	$82,500.00
4	Construct 1.5 M.G. Buried Tank	LS	1	$2,250,000.00	$2,250,000.00
5	Furnish and Install Tank Valve Vault	LS	1	$125,000.00	$125,000.00
6	Electrical and Telemetry	LS	1	$120,000.00	$120,000.00
7	Disinfection and Testing Tank	LS	1	$20,000.00	$20,000.00
8	Revegetation	LS	1	$30,000.00	$30,000.00
9	Furnish and Install 16-inch Water Main Including Fittings and Appurtenances	LF	3,580	$110.00	$393,800.00
10	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	1,090	$80.00	$87,200.00
11	Furnish and Install 16-inch Isolation Valve	EA	3	$4,300.00	$12,900.00
12	Furnish and Install 12-inch Isolation Valve	EA	1	$2,200.00	$2,200.00
13	Furnish and Install 16-inch x 12-inch Tee, (2) 16-inch Butterfly Valves, and (1) 12-inch Butterfly Valve, Including Fittings and Appurtenances	EA	1	$19,000.00	$19,000.00
14	Furnish and Install 4-inch Combination Air Vac Valve	EA	1	$16,000.00	$16,000.00
15	Furnish and Install 10-inch PRV Station	EA	1	$100,000.00	$100,000.00
16	Disinfection and Testing Water Line	LF	4,670	$0.50	$2,335.00
17	Easement Acquisition	AC	2.14	$45,000.00	$96,487.60
				Subtotal	**$3,542,422.60**
	Engineering, Surveying, and Construction Management and Inspection Costs (6.73%)				$238,405.04
				Total Southwest Tank No. 2 Cost	**$3,780,827.64**
West Bank Tank No. 1					
1	Mobilization	LS	1	$274,000.00	$274,000.00
2	Site Clearing and Grubbing	LS	1	$16,000.00	$16,000.00
3	Earthwork / Fine Grading	CY	7,500	$11.00	$82,500.00

4	Construct 1.5 M.G. Buried Tank	LS	1	$2,250,000.00	$2,250,000.00
5	Furnish and Install Tank Valve Vault	LS	1	$125,000.00	$125,000.00
6	Electrical and Telemetry	LS	1	$120,000.00	$120,000.00
7	Disinfection and Testing Tank	LS	1	$20,000.00	$20,000.00
8	Revegetation	LS	1	$30,000.00	$30,000.00
9	Furnish and Install 20-inch Water Main Including Fittings and Appurtenances	LF	10,650	$195.00	$2,076,750.00
11	Furnish and Install 20-inch Isolation Valve	EA	8	$7,500.00	$60,000.00
14	Furnish and Install 4-inch Combination Air Vac Valve	EA	4	$16,000.00	$64,000.00
15	Furnish and Install 16-inch PRV Station	EA	2	$190,000.00	$380,000.00
16	Connect to Water Main	EA	2	$18,000.00	$36,000.00
17	Disinfection and Testing Water Line	LF	10,650	$0.50	$5,325.00
18	Easement Acquisition	AC	4.89	$45,000.00	$220,041.32
				Subtotal	**$5,759,616.32**
				Engineering, Surveying, and Construction Management and Inspection Costs (6.73%)	$387,622.18
				Total West Bank Tank No. 1 Cost	**$6,147,238.50**

SR-138 Water Line Extension					
1	Mobilization	LS	1	$199,000.00	$199,000.00
2	Saw Cut Asphalt	LF	32,530	$4.50	$146,385.00
3	Furnish and Install 16-inch Water Main Including Fittings and Appurtenances	LF	17,400	$110.00	$1,914,000.00
4	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	14,650	$80.00	$1,172,000.00
5	Furnish and Install 8-inch Water Main Including Fittings and Appurtenances	LF	480	$60.00	$28,800.00
6	Furnish and Install 16-inch Isolation Valve	EA	13	$4,300.00	$55,900.00
7	Furnish and Install 12-inch Isolation Valve	EA	11	$2,200.00	$24,200.00
8	Furnish and Install 12-inch x 8-inch Tee, (2) 12-inch Butterfly Valves, and (1) 8-inch Butterfly Valve, Including Fittings and Appurtenances	EA	2	$12,000.00	$24,000.00
9	Furnish and Install 4-inch Combination Air Vac Valve	EA	7	$16,000.00	$112,000.00
10	Furnish and Install 2-inch Combination Air Vac Valve	EA	6	$12,000.00	$72,000.00
11	Furnish and Install 10-inch PRV Station	EA	1	$100,000.00	$100,000.00
12	Connect to Water Main	EA	4	$18,000.00	$72,000.00
13	Disinfection and Testing Water Line	LF	32,530	$0.50	$16,265.00
14	Pavement Restoration	LF	32,530	$6.50	$211,445.00
15	Traffic Control	LS	1	$35,000.00	$35,000.00
				Subtotal	**$4,182,995.00**
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$418,299.50
				Total SR-138 Water Line Extension Cost	**$4,601,294.50**

Southwest Tank No. 1 Transmission Line					
1	Mobilization	LS	1	$104,000.00	$104,000.00
2	Furnish and Install 16-inch Water Main Including Fittings and Appurtenances	LF	10,750	$110.00	$1,182,500.00
3	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	3,660	$80.00	$292,800.00
4	Furnish and Install 16-inch Isolation Valve	EA	8	$4,300.00	$34,400.00
5	Furnish and Install 12-inch Isolation Valve	EA	3	$2,200.00	$6,600.00
6	Furnish and Install 16-inch Tee and (3) 16-inch Butterfly Valves, Including Fittings and Appurtenances	EA	1	$19,000.00	$19,000.00
7	Furnish and Install 4-inch Combination Air Vac Valve	EA	4	$16,000.00	$64,000.00
8	Furnish and Install 2-inch Combination Air Vac Valve	EA	1	$12,000.00	$12,000.00
9	Furnish and Install 10-inch PRV Station	EA	1	$100,000.00	$100,000.00
10	Connect to Water Main	EA	2	$18,000.00	$36,000.00
11	Disinfection and Testing Water Line	LF	14,410	$0.50	$7,205.00
12	Revegetation	SF	576,400	$0.05	$28,820.00
13	Easement Acquisition	AC	6.62	$45,000.00	$297,727.27
				Subtotal	**$2,185,052.27**
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$218,505.23
				Total Southwest Tank No. 1 Transmission Line Cost	**$2,403,557.50**

SR-112 Water Line Extension					
1	Mobilization	LS	1	$21,000.00	$21,000.00
2	Saw Cut Asphalt	LF	3,950	$4.50	$17,775.00
3	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	3,950	$80.00	$316,000.00
4	Furnish and Install 12-inch Isolation Valve	EA	3	$2,200.00	$6,600.00
5	Furnish and Install 12-inch Tee and (3) 12-inch Butterfly Valves, Including Fittings and Appurtenances	EA	1	$12,000.00	$12,000.00
6	Furnish and Install 2-inch Combination Air Vac Valve	EA	1	$12,000.00	$12,000.00
7	Connect to Water Main	EA	1	$18,000.00	$18,000.00
8	Disinfection and Testing Water Line	LF	3,950	$0.50	$1,975.00
9	Pavement Restoration	LF	3,950	$6.50	$25,675.00
10	Traffic Control	LS	1	$35,000.00	$35,000.00
				Subtotal	**$466,025.00**
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$46,602.50
				Total SR-112 Water Line Extension Cost	**$512,627.50**

Southeast Water Line Project					
	Mobilization	LS	1	$62,000.00	$62,000.00
	Furnish and Install 12-inch Water Main Including Fittings and Appurtenances	LF	9,380	$80.00	$750,400.00
	Furnish and Install 12-inch Isolation Valve	EA	7	$2,200.00	$15,400.00
	Furnish and Install 2-inch Combination Air Vac Valve	EA	4	$12,000.00	$48,000.00
	Furnish and Install 10-inch PRV Station	EA	2	$100,000.00	$200,000.00
	Connect to Water Main	EA	1	$18,000.00	$18,000.00
	Disinfection and Testing Water Line	LF	9,380	$0.50	$4,690.00
	Revegetation	SF	375,200	$0.05	$18,760.00
	Easement Acquisition	AC	4.306703398	$45,000.00	$193,801.65
				Subtotal	**$1,311,051.65**
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$131,105.17
				Total Southeast Water Line Project Cost	**$1,442,156.82**

[1] Unit costs are from the 2022 Grantsville CFP/IFA and inflated to current year (2023).

Appendix E: Drinking Water Calculations

Monthly Well Production Data

Month, Year	Total Water Use (gal)	Average Day Water Use (gpd)
January, 2016	24,429,000	788,032
February, 2016	40,080,000	1,382,069
March, 2016	25,100,000	809,677
November, 2016	25,025,000	834,167
December, 2016	24,937,000	804,419
5-month avg:	**27,914,200**	**923,673**
January, 2017	27,183,000	876,871
February, 2017	24,723,000	882,964
March, 2017	27,304,000	880,774
November, 2017	26,452,000	881,733
December, 2017	25,406,000	819,548
5-month avg:	**26,213,600**	**868,378**
January, 2018	29,591,000	954,548
February, 2018	24,087,000	860,250
March, 2018	25,668,000	828,000
November, 2018	27,631,000	921,033
December, 2018	28,098,000	906,387
5-month avg:	**27,015,000**	**894,044**
January, 2019	29,771,000	960,355
February, 2019	26,596,000	949,857
March, 2019	27,769,000	895,774
November, 2019	23,413,000	780,433
December, 2019	30,688,783	989,961
5-month avg:	**27,647,557**	**915,276**
January, 2020	31,354,190	1,011,425
February, 2020	25,775,376	888,806
March, 2020	34,882,618	1,125,246
November, 2020	33,982,520	1,132,751
December, 2020	28,534,024	920,452
5-month avg:	**30,905,746**	**1,015,736**
January, 2021	27,393,864	883,673
February, 2021	25,298,272	903,510
March, 2021	32,604,168	1,051,747
November, 2021	30,671,000	1,022,367
December, 2021	29,917,904	965,094
5-month avg:	**29,177,042**	**965,278**

Note: Water data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Indoor Use Average Day Demand Calculation

Year	ERCs	November-March Average Day Indoor Use (gpd)	Calculated Average Day Indoor Demand (gpd/ERC)	Variability Factor	L.O.S. Average Day Indoor Demand (gpd/ERC)
2016	**5,028**	**923,673**	**183.7**	**6%**	**195**
2017	5,340	868,378	162.6	6%	172
2018	5,345	894,044	167.3	6%	177
2019	5,206	915,276	175.8	6%	186
2020	5,559	1,015,736	182.7	6%	194
2021	5,975	965,278	161.6	6%	171

Outdoor Use Average Day Demand Calculation

Net Irrigation Demand (ac-ft/irr. ac/yr)	Irrigation Efficiency	Gross Irrigation Demand (ac-ft/irr. ac/yr)	Average Irrigated Area (ac/ERC)	Irrigated Days per Year	L.O.S. Average Day Outdoor Demand (gpd/ERC)
2.0	60%	3.33	0.12	213	**612**

Note: Water data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Daily Well Production Data

Month, Year	Peak Day Total Use (kgal)
January, 2020	N/A
February, 2020	N/A
March, 2020	1,023.9
November, 2020	1,212.3
December, 2020	1,125.4
Max, 2020:	**1,212.3**
January, 2021	1,147.7
February, 2021	1,065.1
March, 2021	1,394.6
November, 2021	1,171.7
December, 2021	1,530.2
Max, 2021:	**1,530.2**

Note: Water data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Indoor Use Peak Day Demand Calculation

Year	ERCs	November-March Peak Day Indoor Use (gpd)	Calculated Peak Day Indoor Demand (gpd/ERC)	Variability Factor	L.O.S. Peak Day Indoor Demand (gpd/ERC)
2020	5,559	1,212,300	218.1	5%	229
2021	**5,975**	**1,530,200**	**256.1**	**5%**	**269**

(Round up to 275)

Outdoor Use Peak Day Demand Calculation

Net Irrigation Demand (gpm/irr. ac)	Irrigation Efficiency	Gross Irrigation Demand (gpm/irr. ac)	Average Irrigated Area (ac/ERC)	L.O.S. Peak Day Outdoor Demand (gpd/ERC)
3.96	60%	6.60	0.12	**1,141**

Note: Water data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Outdoor Use Peak Instantaneous Demand Calculation

Net Irrigation Demand (gpm/irr. ac)	Irrigation Efficiency	Gross Irrigation Demand (gpm/irr. ac)	Average Irrigated Area (ac/ERC)	L.O.S. Peak Instantaneous Outdoor Demand (gpm/ERC)
7.92	60%	13.2	0.12	**1.58**

Note: Water data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Fixture Units per ERC

Single Family 5 Bed, 3 Bath = 1 ERC			
Fixture	**Fixture Count**	**Water Supply Fixture Units**	**Total wsfu**
Kitchen sink, Private, Faucet	1	1.40	1.4
Dishwashing machine, Private, Automatic	1	1.40	1.4
Washing machine (8 lb), Private, Automatic	1	1.40	1.4
Exterior hose bib	3	2.20	6.6
Shower head, Private, Mixing valve	3	1.40	4.2
Lavatory, Private, Faucet	3	0.70	2.1
Water closet, Private, Flushtank	3	2.20	6.6
-	0	0.00	0
Totals	**15**	**10.7**	**24**

State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF DRINKING WATER
Tim Davis
Director

April 4, 2022

James P. Waltz
Grantsville City
429 East Main Street
Grantsville, Utah 84029

Subject: **Revised System-Specific Minimum Sizing Standards**
Grantsville City, System #23002, File #12921

Dear James Waltz:

Based on the water use data submitted to the Division of Water Rights (DWRi), the following system-specific minimum sizing standards have been set for Grantsville City:

Peak Day Source Demand (gal/day/ERC) – 1,416 gal/day/ERC
Average Annual Demand (gal/yr/ERC) – 201,531 gal/yr/ERC
Equalization Storage (gal/day/ERC) – 807 gal/day/ERC
Fire Storage (gal) – 492,000 gallons

These standards are effective as of the date of this letter. A summary of the water use data and calculations used to set the minimum sizing standards is attached for your reference. The actual sizing standard is based on the information presented in the submitted engineering report. The Division plans to evaluate these standards every 3 years, or upon request.

Water System Background

The Grantsville City water system is a community water system serving approximately 12,791 people. The existing system has the following active facilities: three gas chlorination treatment plants, five storage tanks, two pump stations, and five well sources. An additional pump station and well source are in the construction phase.

A minimum sizing standard was set on June 1, 2020. Grantsville City is currently having a consultant prepare the Grantsville City Capital Facility Plan (CFP) and Impact Fee Analysis (IFA) updates. During the preparation of the CFP and IFA updates, it was discovered that the number of service connections might be artificially high due to how the connections have been counted. In addition, the current method for supplying outdoor water will be transitioned from the Grantsville Irrigation

Company to the existing distribution system. Therefore, appropriate system-specific sizing is necessary to account for this increase in outdoor water use.

The number of equivalent residential connections was originally calculated using yearly water use reports rather than monthly water use reports. The yearly reports count every time an existing unit is transferred to a new owner which overestimates the number of service connections. The residential usage is incomplete for 2019. Therefore, the residential usage for 2020 and 2021 was used.

The average and peak day demands were estimated by calculating the indoor and outdoor demands separately. The indoor average day demand is based on Grantsville's monthly water source data from 2016 to 2021 while the indoor peak day demand is based on Grantsville's source production data from 2020 to 2021. Only data for the months of November to March were considered in the indoor demand analysis. A variability factor of 5% was applied to the indoor demand. This variability factor is based on the original system-specific minimum sizing standard.

The outdoor demand analysis was completed for April to October which is approximately 213 days. Outdoor water use was estimated using the Division of Water Rights irrigation duty and system-specific assumptions. The estimated irrigation demand is a little more conservative than the demands specified in R309-510, Minimum Sizing Requirements.

Minimum Sizing Standard Background

Per Utah Code 19-4-114, the information needed for the Division of Drinking Water (the Division) to set system-specific minimum sizing standards may be based on water use data submitted to the DWRi, or alternatively, a community water system can submit an engineering study to the Division if the water system's water use data is not representative of future use or the water system does not yet have actual water use data.

Actual water use data was available through DWRi but it currently doesn't reflect the current water system conditions. Therefore, an engineering study was submitted to the Division for review. The Division reviewed the engineering study and find that it is consistent with the Division's Detailed Guidance for Water Use Data Reporting and Setting System-Specific Minimum Sizing Requirements. Therefore, the Division is revising the system-specific minimum sizing standard for the Grantsville City water system.

Water Use Data Definitions

Peak Day Source Demand is the total flow into a public water system to meet the demand of the water system on the day of highest water consumption in a calendar year.

Average Annual Demand is the total quantity of drinking water flowing into a public water system within a calendar year.

Total Equivalent Residential Connections (ERCs) term represents the number of residential service connections and the number of equivalent residential connections for non-residential connections (commercial, industrial, institutional connections).

Minimum Equalization Storage requirement is a volume that is equivalent to the amount of water needed to meet the average day culinary demand for public water systems. Equalized storage per ERC is calculated by dividing the Average Annual Demand per ERC data by the number of operational days in a year.

Fire Storage was set based on information from Travis Daniels with Grantsville City Fire Department on April 24, 2020. The fire demand agreed upon is 2,050 gpm for 4 hours (492,000 gallons).

Storage Capacity

Based on your systems storage facilities and the storage minimum sizing requirement established in this letter, your system is *deficient* with the minimum storage capacity requirements. It is our understanding that the system has plans for a future storage tank within the next year to meet the anticipated demands. If the growth slows then Grantsville City will plan accordingly to resolve any storage deficiencies associated with the change in the system-specific sizing standard.

Source Capacity

The Division has documentation of established safe yields for all your system sources. Using total system wide safe yields and the source minimum sizing requirement established in this letter indicates your water system is *deficient* with minimum source capacity requirements. The Division has record of a proposed well source called the Marshall Well (WS008) which is in the final steps of construction. The well is anticipated to produce 2,000 gpm which will resolve this deficiency.

If you have any questions regarding this letter, please contact Chris Martin, of this office, at (385) 271-7040, or Michael Newberry, Engineering Manager, at (385) 515-1464.

Sincerely,

Michael Newberry, P.E.
Engineering Manager

CM/mrn/mdb

Enclosures
1. Utah Department of Environmental Quality Division of Drinking Water Minimum Sizing Standards Summary Report

cc: Wade Tolbert, Tooele Health Department, wtolbert@tooelehealth.org
Robert Rouselle, Ensign, rrousselle@ensignutah.com
James Waltz, Grantsville City, jwaltz@grantsvilleut.gov
Chris Martin, Division of Drinking Water, cmartin@utah.gov
Hunter Payne, Division of Drinking Water, hnpayne@utah.gov
Travis Daniels, firechief@grantsvilleut.gov
Ted Black, Office of the State Fire Marshal, tblack@utah.gov

DDW-2022-005675

Utah Department of Environmental Quality
Division of Drinking Water
Minimum Sizing Standards

Grantsville City	PWS ID: UTAH23002

James P. Waltz
429 E Main St
Grantsville, UT 84029
Phone: 435-884-0621
Emergency Phone:
EMAIL: jwaltz@grantsvilleut.gov

System Type: Community
Population: 12,791

MINIMUM SIZING STANDARD

Date Standard effective	3/30/2022
Peak Day Source Demand per ERC (gal/day)	**1,416**
Average Annual Demand per ERC (gal/year)	**201,531**
Equalization Storage per ERC (gal/day)	**807**

MINIMUM SIZING STANDARD CALCULATIONS

			Variability Factor		
Data from these reporting years	2019	to	2021		
Max Peak Day Source Demand per ERC (gal/day)	870	x	21%	=	1,050
Max Average Annual Demand per ERC (gal/day)	124,749	x	6%	=	124,749
Max Equalization Storage per ERC (gal/day)	341	x	6%	=	341

DWRi WATER USE DATA REPORTED

Data Year	Peak Day Source Demand (gal/day)	Average Annual Demand (gallons)	ERCs	Peak Demand per ERC (gal/day)	Avg Annual Demand per ERC (gal/year)	Equalization Storage per ERC (gal/day)	Op Days
2021	4,506,519	647,785,271	5,975	754	108,416	297	365
2020	3,369,299	622,851,152	5,559	625	115,415	316	365
2019	3,695,150	569,682,045	5,206	696	109,386	300	365
Variability			15%	21%	6%	6%	

Data Year	Peak Month Average (gal/day)	Peak Month Average per ERC (gal/day)	Ratio of PD/ERC to PM Avg/ERC
2021	3,309,805	554	1.4
2020	3,066,041	568	1.1
2019	3,294,038	632	1.1

CAPACITY CALCULATIONS FOR STORAGE			
STORAGE CALCULATION			
Equalization per ERC (gal):	807		
Existing Storage (gal):	3,925,000		
ERCs:	5,975		
Required Storage w/o Fire Flow (gal)	4,821,825		
Required Fire Storage (gal):	492,000		
Required Storage w/ Fire (gal):	5,313,825		
Storage Deficiency:	1,388,825	26.1%	
Storage Deficienct			

CAPACITY CALCULATIONS FOR SOURCES			
SOURCE CALCULATION			
Peak Day Source Demand per ERC (gpm)	0.98		
Existing Source Capacity (gpm):	6,753		
ERCs:	5,975		
Required Source Capacity (gpm)	5,875		
Source Deficiency (gpm):	1,122	19.1%	
Source Deficient			

SYSTEM STORAGE AND SOURCE INVENTORY					
SYSTEM STORAGE DETAILS			SYSTEM SOURCE DETAILS		
ST001	Square North Tank	225,000 Gal	WS003	Well 3 Park	1,000 GPM
ST002	Round North Tank	500,000 Gal	WS004	Well 4 South	547 GPM
ST003	South Tank	1,000,000 Gal	WS005	South Willow Well	1,640 GPM
ST004	South Willow Well Tank	1,000,000 Gal	WS006	Hunsaker Well	433 GPM
ST005	Lakeview Business Park Tank	1,200,000 Gal	WS007	North Well Replacement	1,133 GPM
			WS008	Marshall Well (Proposed)	2,000 GPM
Storage Totals:		**3,925,000 GAL**	**Source Totals:**		**6,753 GPM**

Appendix F: Public Safety Calculations

Police Department Staff

20 full time officers/ 1 K-9

Chief, Investigation Lieutenant, Patrol Lieutenant, Investigation Sergeant, (2) Patrol Sergeants, 3 Detectives, 1 School Resource Officer (also considered a Detective), 10 Patrol Officers and K-9 Ludo.

Civilian Staff full time

1 Administrative Assistant that also serves as the evidence technician, secretary, and records manager.

1 secretary/ records manager

1 victim advocate.

Part time

1 secretary record clerk

1 Animal Control/ordinance compliance officer

9 crossing guards

Volunteer

4 victim advocate volunteers/internship

1 Reserve Officer

Justice Center

The Police Department operates from the Grantsville City Justice Center located at 50 North Bowery Street. The building is shared with the Grantsville City Justice Court (constructed in 2017) and consists of 12,947 square feet. The Police Department portion of the building occupies approximately 8,450 square feet and includes a one-vehicle sally port, two holding cell/interview rooms, a patrol operations room, two patrol supervisor offices, an evidence room, an evidence packaging room, a kitchen, a briefing room, locker room with two bathrooms/showers, an exercise room, an investigations area with three cubicles, two interview rooms, and two supervisor offices, a front desk reception area with four cubicles and a Chief's office, a records area, a lobby with an interview room and a multi-purpose room used for training. There is also a detached two-bay garage for vehicle and equipment storage and maintenance. The Police Department also operates a firearms range off the Mormon Trail,

which consists of a pistol range, rifle range, competition shooting range, pavilion with picnic tables, and a storage compartment. Several law enforcement agencies use the range.

Animal Shelter Required Physical Holding Capacity Calculation

Year 2021	Intake	Outake	Monthly Intake Avg	Daily Intake Avg
Dogs	146	136	12.17	0.400
Cats	79	76	6.58	0.216

	Avg Holding Period	RPHC
Dogs	16.8	6.7
Cats	21.2	4.6

Sept. 2021	Intake	Outake	Avg Holding Period	Daily Intake Avg
Dogs	15	15	21.60	0.500
Cats	10	10	15.11	0.333

Oct. 2021	Intake	Outake	Avg Holding Period	Daily Intake Avg
Dogs	9	9	25.56	0.290
Cats	9	9	22.33	0.290

Nov. 2021	Intake	Outake	Avg Holding Period	Daily Intake Avg
Dogs	7	7	1.14	0.233
Cats	12	12	26.17	0.400

Dec. 2021	Intake	Outake	Avg Holding Period	Daily Intake Avg
Dogs	8	8	19.00	0.258
Cats	1	0	N/A	0.032

Development Type	Average Building Area per Unit (sq ft)
Single Family	2,449
Multi-Unit	1,058
Commercial	58,513
Church	22,756
School	100,728

Source: 2022 Grantsville CFP/IFA

Year	Single Family			Multi-Unit			Commercial			Church			School			Residential Building Area Increase (sq ft)	Non-Residential Building Area Increase (sq ft)	Total Building Area Increase (sq ft)
	Units	Annual Unit Increase	Building Area Increase (sq ft)	Units	Annual Unit Increase	Building Area Increase (sq ft)	Units	Annual Unit Increase	Building Area Increase (sq ft)	Units	Annual Unit Increase	Building Area Increase (sq ft)	Units	Annual Unit Increase	Building Area Increase (sq ft)			
2023	4,274	-	-	291	-	-	146	-	-	11	-	-	10	-	-	-	-	-
2024	4,488	214	524,086	306	15	15,870	153	7	409,591	11	-	-	10	-	-	539,956	409,591	949,547
2025	4,712	224	548,576	321	15	15,870	161	8	468,104	12	1	22,756	11	1	100,728	564,446	591,588	1,156,034
2026	4,948	236	577,964	337	16	16,928	169	8	468,104	12	-	-	11	-	-	594,892	468,104	1,062,996
2027	5,195	247	604,903	354	17	17,986	177	8	468,104	13	1	22,756	12	1	100,728	622,889	591,588	1,214,477
2028	5,455	260	636,740	372	18	19,044	186	9	526,617	13	-	-	13	1	100,728	655,784	627,345	1,283,129
2029	5,728	273	668,577	391	19	20,102	195	9	526,617	14	1	22,756	13	-	-	688,679	549,373	1,238,052
2030	6,014	286	700,414	411	20	21,160	205	10	585,130	15	1	22,756	14	1	100,728	721,574	708,614	1,430,188
2031	6,315	301	737,149	432	21	22,218	215	10	585,130	15	-	-	15	1	100,728	759,367	685,858	1,445,225
2032	6,631	316	773,884	454	22	23,276	226	11	643,643	16	1	22,756	16	1	100,728	797,160	767,127	1,564,287
2033	6,963	332	813,068	477	23	24,334	237	11	643,643	17	1	22,756	17	1	100,728	837,402	767,127	1,604,529
Total																**6,782,149**	**6,166,315**	**12,948,464**

Appendix G: Public Safety Cost Estimates

ENGINEERS ESTIMATE OF PROBABLE COSTS

These costs are opinions only and should not be considered as a formal construction estimate. These quantites and costs are based on information derived from the master plan and are therefore subject to change. Ensign has no control over costs of labor, materials, bidding procedures, unidentified field conditions, or other factors. Ensign cannot and does not make any warranty, promise, or guarantee as to the accuracy of this estimate.

ENSIGN
THE STANDARD IN ENGINEERING

Project: Grantsville City CFP, IFFP, and IFA
By: Matthew Sanford
Date: 4/24/2024

Project No.: 10766D
Checked By: Robert Rousselle

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST [1]	COST
Satellite Fire Station East					
1	Mobilization	LS	1	$112,000.00	$112,000.00
2	Station Cost	SF	6,000	$374.93	$2,249,580.00
				Subtotal	**$2,361,580.00**
				Contingency (15%)	$354,237.00
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$271,581.70
				Administrative and Legal Costs (5%)	$135,790.85
				Total Satellite Fire Station East Cost	**$3,123,189.55**
Fire Vehicles					
1	Aerial Platform Truck	EA	2	$1,285,470.00	$2,570,940.00
2	Pumper Truck	EA	1	$535,612.50	$535,612.50
3	Mini Pumper Truck	EA	1	$267,806.25	$267,806.25
4	Heavy Duty Rescue Truck	EA	1	$482,051.25	$482,051.25
5	Tender Tank and Tractor	EA	1	$214,245.00	$214,245.00
6	Brush Truck	EA	2	$107,122.50	$214,245.00
				Total Fire Vehicles Cost	**$4,284,900.00**
Existing Fire Station Expansion					
1	Mobilization	LS	1	$27,000.00	$27,000.00
2	Expansion Cost	LS	1	$535,612.50	$535,612.50
				Subtotal	**$562,612.50**
				Contingency (15%)	$84,391.88
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$64,700.44
				Administrative and Legal Costs (5%)	$32,350.22
				Total Existing Fire Station Expansion Cost	**$744,055.03**
Animal Control Shelter					
1	Mobilization	LS	1	$106,000.00	$106,000.00
2	Shelter Cost	SF	4,500	$469.20	$2,111,400.00
				Subtotal	**$2,217,400.00**
				Contingency (15%)	$332,610.00
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$255,001.00
				Administrative and Legal Costs (5%)	$127,500.50
				Total Animal Control Shelter Cost	**$2,932,511.50**
City Hall					
1	Mobilization	LS	1	$326,000.00	$326,000.00
2	Building Cost	SF	20,000	$321.37	$6,427,400.00
3	Land Acquistion	AC	1	$93,196.58	$93,196.58
				Subtotal	**$6,846,596.58**
				Contingency (15%)	$1,026,989.49
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$787,358.61
				Administrative and Legal Costs (5%)	$393,679.30
				Total City Hall Cost	**$9,054,623.98**

[1] Unit costs are from the 2022 Grantsville CFP/IFA and inflated to current year (2023).

Appendix H: Parks Cost Estimates

ENGINEERS ESTIMATE OF PROBABLE COSTS

These costs are opinions only and should not be considered as a formal construction estimate. These quantites and costs are based on information derived from the master plan and are therefore subject to change. Ensign has no control over costs of labor, materials, bidding procedures, unidentified field conditions, or other factors. Ensign cannot and does not make any warranty, promise, or guarantee as to the accuracy of this estimate.

ENSIGN
THE STANDARD IN ENGINEERING

Project: Grantsville City CFP, IFFP, and IFA
By: Matthew Sanford
Date: 7/12/2024

Project No.: 10766D
Checked By: Robert Rousselle

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST [1]	COST
Desert Edge Park					
1	Mobilization	LS	1	$71,000.00	$71,000.00
2	Earthwork	CY	12,100	$8.03	$97,163.00
3	Erosion Control and Revegetation	LS	1	$35,000.00	$35,000.00
4	Fine Grading	SY	24,200	$1.61	$38,962.00
5	Hydroseed	SF	152,000	$0.11	$16,720.00
6	Irrigation System	SF	152,000	$0.21	$31,920.00
7	Restroom	LS	1	$221,743.58	$221,743.58
8	Paved Parking Lot	SF	11,800	$4.82	$56,876.00
9	Trees	EA	25	$803.42	$20,085.50
10	Lights	EA	15	$6,320.23	$94,803.45
11	Amenities [2]	LS	1	$273,215.95	$273,215.95
12	Land Acquistion	AC	5	$107,122.50	$535,612.50
				Subtotal	**$1,493,101.98**
				Contingency (15%)	$223,965.30
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$171,706.73
				Administrative and Legal Costs (5%)	$85,853.36
				Total Desert Edge Park Cost	**$1,974,627.37**
Highlands Park					
1	Mobilization	LS	1	$114,000.00	$114,000.00
2	Earthwork	CY	24,200	$8.03	$194,326.00
3	Erosion Control and Revegetation	LS	1	$56,000.00	$56,000.00
4	Fine Grading	SY	48,400	$1.61	$77,924.00
5	Hydroseed	SF	305,000	$0.11	$33,550.00
6	Irrigation System	SF	305,000	$0.21	$64,050.00
7	Restroom	LS	1	$221,743.58	$221,743.58
8	Paved Parking Lot	SF	11,800	$4.82	$56,876.00
9	Trees	EA	50	$803.42	$40,171.00
10	Lights	EA	30	$6,320.23	$189,606.90
11	Amenities [2]	LS	1	$277,233.05	$277,233.05
12	Land Acquistion	AC	10	$107,122.50	$1,071,225.00
				Subtotal	**$2,396,705.53**
				Contingency (15%)	$359,505.83
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$275,621.14
				Administrative and Legal Costs (5%)	$137,810.57
				Total Highlands Park Cost	**$3,169,643.06**
Twenty Wells Park [3]					
1	Land Acquisition	LS	1	$1,050,000.00	$1,050,000.00
2	Landscaping / Scrapping / Haul Off-On	LS	1	$1,700,000.00	$1,700,000.00
3	Irrigation Lines	LS	1	$600,000.00	$600,000.00
4	Water Lines	LF	1,850	$70.00	$129,500.00
5	Sewer	LF	500	$110.00	$55,000.00
6	Storm Drain	LS	1	$175,000.00	$175,000.00
7	Buildings	LS	1	$1,250,000.00	$1,250,000.00
8	Pickle Ball Courts	LS	1	$350,000.00	$350,000.00
9	Baseball / Softball Fields	LS	1	$750,000.00	$750,000.00
10	Dugouts	LS	1	$240,000.00	$240,000.00
11	Fire Hydrants	LS	1	$24,000.00	$24,000.00
12	Fencing	LS	1	$210,000.00	$210,000.00
13	Concrete (Sidewalk)	LF	3,100	$9.68	$30,000.00
14	Concrete (C&G)	LF	4,350	$25.29	$110,000.00
15	Lights	LS	1	$275,000.00	$275,000.00
16	Stands	LS	1	$75,000.00	$75,000.00
17	Additional Sports Fields	LS	1	$110,000.00	$110,000.00
18	Goal Posts for Football	LS	1	$200,000.00	$200,000.00
19	Soccer Goals	LS	1	$75,000.00	$75,000.00
20	Score Board	LS	1	$125,000.00	$125,000.00
21	Parking Lot	SF	110,530	$2.94	$325,000.00
22	Parking Lot Lights	LS	1	$45,000.00	$45,000.00
23	Power	LS	1	$125,000.00	$125,000.00
24	Gas	LS	1	$75,000.00	$75,000.00
25	Materials	LS	1	$525,000.00	$525,000.00
				Total Twenty Wells Park Cost	**$8,628,500.00**
President's Park					
1	Mobilization	LS	1	$57,000.00	$57,000.00
2	Earthwork	CY	24,200	$8.03	$194,326.00
3	Erosion Control and Revegetation	LS	1	$28,000.00	$28,000.00
4	Fine Grading	SY	48,400	$1.61	$77,924.00
5	Hydroseed	SF	305,000	$0.11	$33,550.00
6	Irrigation System	SF	305,000	$0.21	$64,050.00
7	Restroom	LS	1	$221,743.58	$221,743.58
8	Paved Parking Lot	SF	11,800	$4.82	$56,876.00
9	Trees	EA	50	$803.42	$40,171.00
10	Lights	EA	30	$6,320.23	$189,606.90
11	Amenities [2]	LS	1	$234,062.68	$234,062.68
12	Land Acquistion [4]	AC	0	$107,122.50	$0.00
				Subtotal	**$1,197,310.16**
				Contingency (15%)	$179,596.52
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$137,690.67
				Administrative and Legal Costs (5%)	$68,845.33
				Total President's Park Cost	**$1,583,442.69**
Scenic Slopes Park					
1	Mobilization	LS	1	$152,000.00	$152,000.00

2	Earthwork	CY	48,400	$8.03	$388,652.00
3	Erosion Control and Revegetation	LS	1	$74,000.00	$74,000.00
4	Fine Grading	SY	96,800	$1.61	$155,848.00
5	Hydroseed	SF	610,000	$0.11	$67,100.00
6	Irrigation System	SF	610,000	$0.21	$128,100.00
7	Restroom	LS	1	$221,743.58	$221,743.58
8	Paved Parking Lot	SF	11,800	$4.82	$56,876.00
9	Trees	EA	100	$803.42	$80,342.00
10	Lights	EA	60	$6,320.23	$379,213.80
11	Amenities [2]	LS	1	$1,491,895.09	$1,491,895.09
12	Land Acquistion [4]	AC	0	$107,122.50	$0.00
				Subtotal	**$3,195,770.47**
				Contingency (15%)	$479,365.57
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$367,513.60
				Administrative and Legal Costs (5%)	$183,756.80
				Total Scenic Slopes Park Cost	**$4,226,406.45**

Clark Farm Park

1	Mobilization	LS	1	$114,000.00	$114,000.00
2	Earthwork	CY	72,600	$8.03	$582,978.00
3	Erosion Control and Revegetation	LS	1	$56,000.00	$56,000.00
4	Fine Grading	SY	145,200	$1.61	$233,772.00
5	Hydroseed	SF	915,000	$0.11	$100,650.00
6	Irrigation System	SF	915,000	$0.21	$192,150.00
7	Restroom	LS	1	$221,743.58	$221,743.58
8	Paved Parking Lot	SF	11,800	$4.82	$56,876.00
9	Trees	EA	150	$803.42	$120,513.00
10	Lights	EA	90	$6,320.23	$568,820.70
11	Amenities [2]	LS	1	$153,613.71	$153,613.71
12	Land Acquistion [4]	AC	0	$107,122.50	$0.00
				Subtotal	**$2,401,116.99**
				Contingency (15%)	$360,167.55
				Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$276,128.45
				Administrative and Legal Costs (5%)	$138,064.23
				Total Clark Farm Park Cost	**$3,175,477.22**

[1] Unit costs are from the 2022 Grantsville CFP/IFA and inflated to current year (2023).

[2] Amenities vary by park but generally include benches, playground equipment, sports fields, pavillions, etc.

[3] Cost estimate provided by developer.

[4] Land acquisition is not included because the City already owns the land or the land will be dedicated to the City.

Appendix I: Wastewater Calculations

WWTF Flow Data 2020

Month	Average Daily Flow (MGD)		Peak Instantaneous Flow (gpm)	Peak Daily Flow (MGD)
January	0.715		1,265	0.782
February	0.719		1,358	0.795
March	0.794		1,338	0.902
April	0.768		1,369	0.832
May	0.750		1,370	0.812
June	0.753		1,385	0.845
July	0.749		1,375	0.785
August	0.745		1,385	0.813
September	0.828		1,385	1.387
October	0.747		1,385	0.814
November	0.760		1,385	0.846
December	0.748		1,385	0.796
Average:	**0.756**	**Max:**	**1,385**	**0.902**

**Note: August and September were excluded from the Peak Daily Flow calculation because the flow meter was destroyed from a storm, and these are inaccurate readings. Flow meter maxed out at 1,385 gpm, so Peak Instantaneous Flow may be inaccurate.*

WWTF Flow Data 2021

Month	Average Daily Flow (MGD)		Peak Instantaneous Flow (gpm)	Peak Daily Flow (MGD)
January	0.749		1,385	0.814
February	0.745		1,385	0.831
March	0.760		1,385	0.850
April	0.777		1,385	0.832
May	0.759		1,385	0.823
June	0.764		2,375	0.939
July	0.857		1,672	0.931
August	0.878		1,848	0.964
September	0.873		1,640	0.971
October	0.864		2,375	0.970
November	0.855		1,648	0.919
December	0.846		1,943	0.922
Average:	**0.811**	**Max:**	**2,375**	**0.971**

**Note: Flow meter maxed out at 1,385 gpm until June when the max was increased to 2,375, so Peak Instantaneous Flow may be inaccurate.*

Note: WWTF flow data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Average Day Flow Calculation

Year	ERCs	Average Day Flow (MGD)	Average Day Flow (gpd/ERC)
2020	5,559	0.756	136
2021	5,975	0.811	136

(Round up to 150)

Peak Day Flow Calculation

Year	ERCs	Peak Day Flow (MGD)	Peak Day Flow (gpd/ERC)
2020	5,559	0.902	162
2021	5,975	0.971	163

(Round up to 175)

Peak Instantaneous Flow Calculation

Year	ERCs	Peak Instantaneous Flow (gpm)	Peak Instantaneous Flow (gpm/ERC)	Peaking Factor
2020	5,559	1,385	0.249	2.4
2021	5,975	2,375	0.397	**3.8**

Note: Wastewater flow data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Sheep Lane Lift Station

Year 2020

Month	Peak Inflow (gpm)
January	563
February	532
March	531
April	540
May	548
June	566
July	568
August	561
September	576
October	547
November	540
December	624
Max:	**624**
ERCs:	**5,559**
gpm/ERC:	**0.112**

Northwest (North) Lift Station

Year 2020

Month	Peak Inflow (gpm)
January	1,473
February	1,881
March	1,881
April	1,694
May	2,016
June	1,728
July	1,933
August	1,670
September	1,849
October	1,713
November	1,881
December	1,749
Max:	**2,016**
ERCs:	**5,559**
gpm/ERC:	**0.363**

Note: Data assumes that all four pumps were running simultaneously, which is not likely, so calculated demand may be an overestimation.

Northeast (South) Lift Station

Year 2020

Month	Peak Inflow (gpm)
January	1,641
February	1,603
March	1,546
April	1,513
May	1,449
June	1,392
July	1,268
August	1,229
September	1,390
October	1,277
November	1,090
December	842
Max:	**1,641**
ERCs:	**5,559**
gpm/ERC:	**0.295**

Note: Lift Station flow data shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

Single Family 5 Bed, 3 Bath = 1 ERC			
Fixture	**Fixture Count**	**Water Supply Fixture Units**	**Total Fixture Units**
Kitchen sink, Private, Faucet	1	1.4	1.4
Dishwashing machine, Private, Automatic	1	1.4	1.4
Washing machine (8 lb), Private, Automatic	1	1.4	1.4
Exterior hose bib	3	2.2	6.6
Shower head, Private, Mixing valve	3	1.4	4.2
Lavatory, Private, Faucet	3	0.7	2.1
Water closet, Private, Flushtank	3	2.2	6.6
Total			**24**

Appendix J: Wastewater Cost Estimates

ENGINEERS ESTIMATE OF PROBABLE COSTS

These costs are opinions only and should not be considered as a formal construction estimate. These quantites and costs are based on information derived from the master plan and are therefore subject to change. Ensign has no control over costs of labor, materials, bidding procedures, unidentified field conditions, or other factors. Ensign cannot and does not make any warranty, promise, or guarantee as to the accuracy of this estimate.

ENSIGN
THE STANDARD IN ENGINEERING

Project: Grantsville City CFP, IFFP, and IFA
By: Matthew Sanford
Date: 4/24/2024

Project No.: 10766D
Checked By: Robert Rousselle

ITEM	DESCRIPTION	UNIT	QUANTITY	COST PER LF
8-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	8-inch diameter sewer	LF	1	$38.20
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$244.14**
			Contingency (20%)	$48.83
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$29.30
			Administrative and Legal Costs (5%)	$14.65
			Total 8-inch Diameter Sewer Cost per LF	**$336.91**
10-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	10-inch diameter sewer	LF	1	$43.00
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$248.94**
			Contingency (20%)	$49.79
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$29.87
			Administrative and Legal Costs (5%)	$14.94
			Total 10-inch Diameter Sewer Cost per LF	**$343.54**
12-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	12-inch diameter sewer	LF	1	$47.82
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$253.76**
			Contingency (20%)	$50.75
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$30.45
			Administrative and Legal Costs (5%)	$15.23
			Total 12-inch Diameter Sewer Cost per LF	**$350.19**
15-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	15-inch diameter sewer	LF	1	$75.75
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$281.69**
			Contingency (20%)	$56.34
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$33.80
			Administrative and Legal Costs (5%)	$16.90
			Total 15-inch Diameter Sewer Cost per LF	**$388.73**
18-inch Diameter Sewer				

1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	18-inch diameter sewer	LF	1	$81.15
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$287.09**
			Contingency (20%)	$57.42
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$34.45
			Administrative and Legal Costs (5%)	$17.23
			Total 18-inch Diameter Sewer Cost per LF	**$396.18**

24-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	24-inch diameter sewer	LF	1	$92.00
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$297.94**
			Contingency (20%)	$59.59
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$35.75
			Administrative and Legal Costs (5%)	$17.88
			Total 24-inch Diameter Sewer Cost per LF	**$411.16**

42-inch Diameter Sewer				
1	Mobilization and permits	LS/LF	1	$13.25
2	Traffic control and flagging	LS/LF	1	$6.75
3	De-watering	LS/LF	1	$3.50
4	Saw cut, remove, and dispose of existing asphalt	LF	1	$2.55
5	Remove and dispose of excavated material	CY/LF	3.14	$42.70
6	Trench box 10'Hx16'L	LF	1	$0.62
7	42-inch diameter sewer	LF	1	$110.00
8	Bedding sand	CY/LF	0.1	$1.50
9	Granular borrow	CY/LF	2.32	$63.10
10	5-foot diameter concrete manhole on 6-foot x 6-foot concrete base (manhole spacing every 400-feet)	LF	0.0025	$25.00
11	Untreated base course	CY/LF	0.51	$20.40
12	Asphalt road (3-inch)	SY/LF	1.76	$26.57
			Subtotal	**$315.94**
			Contingency (20%)	$63.19
			Engineering, Surveying, and Construction Management and Inspection Costs (10%)	$37.91
			Administrative and Legal Costs (5%)	$18.96
			Total 42-inch Diameter Sewer Cost per LF	**$436.00**

APPENDIX K: WATER RIGHTS CALCULATIONS

WR #	Use	Quantity (ac-ft)	Grouped With
15-91	Mun	590.5523	
15-293	Mun	142	
15-305	-	-	15-91
15-376	Mun	868.76	-
15-381	Mun	312.16	
15-388	-	-	15-91
15-399	Mun	161.68	
15-477	-	-	15-91
15-481	Mun	294.56	
15-505	Mun	202	
15-506	-	-	15-91
15-516	Mun	3619.84	-
15-635	Mun	112.88	
15-636	-	-	15-635
15-638	-	-	15-381
15-639	-	-	15-381
15-775	-	-	15-293
15-776	-	-	15-293
15-787	Mun	240.964	
15-814	Mun	177.66	
15-815	-	-	15-814
15-829	Mun	1.4	
15-916	Mun	4.82	
15-938	Mun	6.77	
15-940	-	-	15-938
15-965	Mun	4.25	
15-1033	Mun	3.84	
15-1053	-	-	15-787
15-1060	Mun	97	
15-1139	-	-	15-293
15-1153	-	-	15-787
15-1154	-	-	15-787
15-1155	-	-	15-787
15-1156	-	-	15-787
15-1199	-	-	15-814
15-1201	-	-	15-814
15-1228	-	-	15-965
15-1292	Mun	139.556	
15-1308	-	-	15-787
15-1309	-	-	15-787
15-1382	-	-	15-1060
15-1383	-	-	15-1060
15-1384	-	-	15-1060
15-1385	-	-	15-1060
15-1388	Mun	93.34	
15-1389	Mun	12.4275	
15-1390	-	-	15-814
15-1391	-	-	15-814
15-1392	-	-	15-814
15-1393	-	-	15-814
15-1699	Mun	10.86	-
15-1938	Mun	320	
15-1989	Rec	-	-
15-2625	Mun	0.45	
15-2761	-	-	15-91
15-2770	-	-	15-1292
15-2791	-	-	15-916
15-4170	-	-	15-1388
15-4201	-	-	15-1388
15-4254	Mun	15	
15-4431	Mun	32	
15-4454	Mun	20	
15-4511	Mun	513.5	
15-4524	Mun	21.92	
15-4525	Mun	18.98	
15-4526	Mun	55.788	
15-4528	Mun	20	
15-4628	Mun	2	
15-4634	-	-	15-91
15-4654	Mun	10	
15-4656	-	-	15-1292
15-4668	Mun	600	
15-4890	Mun	102.75	
15-4918	-	-	15-1033
15-4927	-	-	15-1292
15-5072	Mun	50	
15-5099	Mun	48.64	
15-5101	Mun	24.6	
15-5148	-	-	15-1060
15-5149	-	-	15-1060
15-5173	Mun	10	
15-5228	Mun	150	
15-5232	Mun	100	
15-5246	Mun	42.2	
15-5345	Mun	16.35	
15-5393	Mun	27.162	
15-5402	Mun	65	
15-5436	Mun	134	
15-5517	Mun	49.64	
15-5535	-	-	15-965
15-5548	Mun	42.65	
15-5571	Mun	260	
15-5573	Mun	87.12	
15-5668	Mun	80.54	
15-5689	-	-	15-1389
15-5690	-	-	15-1388
15-5691	-	-	15-4526
15-5697	Mun	40	
15-5701	Mun	25	
		10,082.6098	

GRANTSVILLE CITY

XERISCAPE IRRIGATION DEMANDS (60% EFF)

AVERAGE GROWING SEASON: (@ Elevation 4800 +/- feet average)						213	Days (Conservative)
UTAH IRRIGATION ZONE:						4	UDDW (moderately high)
UTAH WATER RIGHTS DUTY ZONE (AF/ACRE)						4	
* PEAK DAY CONSUMPTIVE USE (C.U./ET) (NWS station at Tooele using data from Grantsville)	Turf		peak month		July	5.08	in/month
(115% * ave day of peak month)	Turf grass =	0.16	$\frac{in}{day}$ *	1.15	=	0.19	in/day
* SEASONAL CONSUMPTIVE USE (C.U.)/ET	Turf grass =	24.3	$\frac{in}{yr}$ *	1.00	=	24.28	in/yr

SEASONAL GROSS REQUIREMENTS

SEASONAL CONSUMPTIVE USE (C.U.) =						24.28	in/yr
				Less soil moisture	-	0.75	in/yr
				(fine sands 0.75 in/ft*1ft effective root zone)			
				Less rainfall average (during Irrigation season) 80% of rain during irrig season	-	8.472	in/yr
NET SEASONAL CONSUMPTIVE USE (C.U.)/ET					=	15.06	in/yr

GROSS IRRIGATION REQUIREMENTS

Assumed Efficiency = 60.0% Seasonal:							
Net C.U./Efficiency		15.06	$\frac{in}{yr}$ ÷	60.0%	=	25.10	in/yr
IF NO RAIN OCCURS AND NO SOIL MOISTURE (SEASONAL CONSUMPTIVE USE (C.U.))		24.3	$\frac{in}{yr}$ ÷	60.0%	=	40.47	in/yr
AC-FT/ACRE Conversion	40.47	$\frac{in}{yr} * 43{,}560 \frac{ft^2}{acre} * 7.48 \frac{gal}{ft^3} \Big/ 12 \frac{in}{ft} * 325{,}851 \frac{gal}{acre \cdot ft}$			=	**3.37**	**ac-ft/acre**
If conservation is practiced			Turf	35%		3.37	ac-ft/acre
			Xeriscape	65%		1.69	ac-ft/acre (assumed 35% of turf)
			Weighted Average	**100%**		**2.28**	**ac-ft/acre**
						0.683512	
						0.316488	
Peak Day Peak C.U. / Efficiency		0.188	$\frac{in}{day}$ ÷	60.0%	=	0.314	in/day
gpm/ac Conversion	0.314	$\frac{in}{day} * 43{,}560 \frac{ft^2}{acre} * 7.48 \frac{gal}{ft^3} \Big/ 12 \frac{in}{ft} * 1{,}440 \frac{min}{day}$			=	**5.92**	gpm/ac
If conservation is practiced			Turf	35%		5.92	gpm/acre
			Xeriscape	65%		2.96	gpm/acre (assumed 35% of turf)
			Weighted Average	**100%**		**4.00**	**gpm/acre**
gpd/ac Conversion with no conservation		5.92	$\frac{gpm}{acre} * 1{,}440 \frac{min}{day}$		=	**8,530**	**gpd/ac** (Peak Day Demand)
gpd/acre conversion if conservation practiced		4.00	$\frac{gpm}{acre} * 1{,}440 \frac{min}{day}$		=	**5,760**	**gpd/ac** (Peak Day Demand)

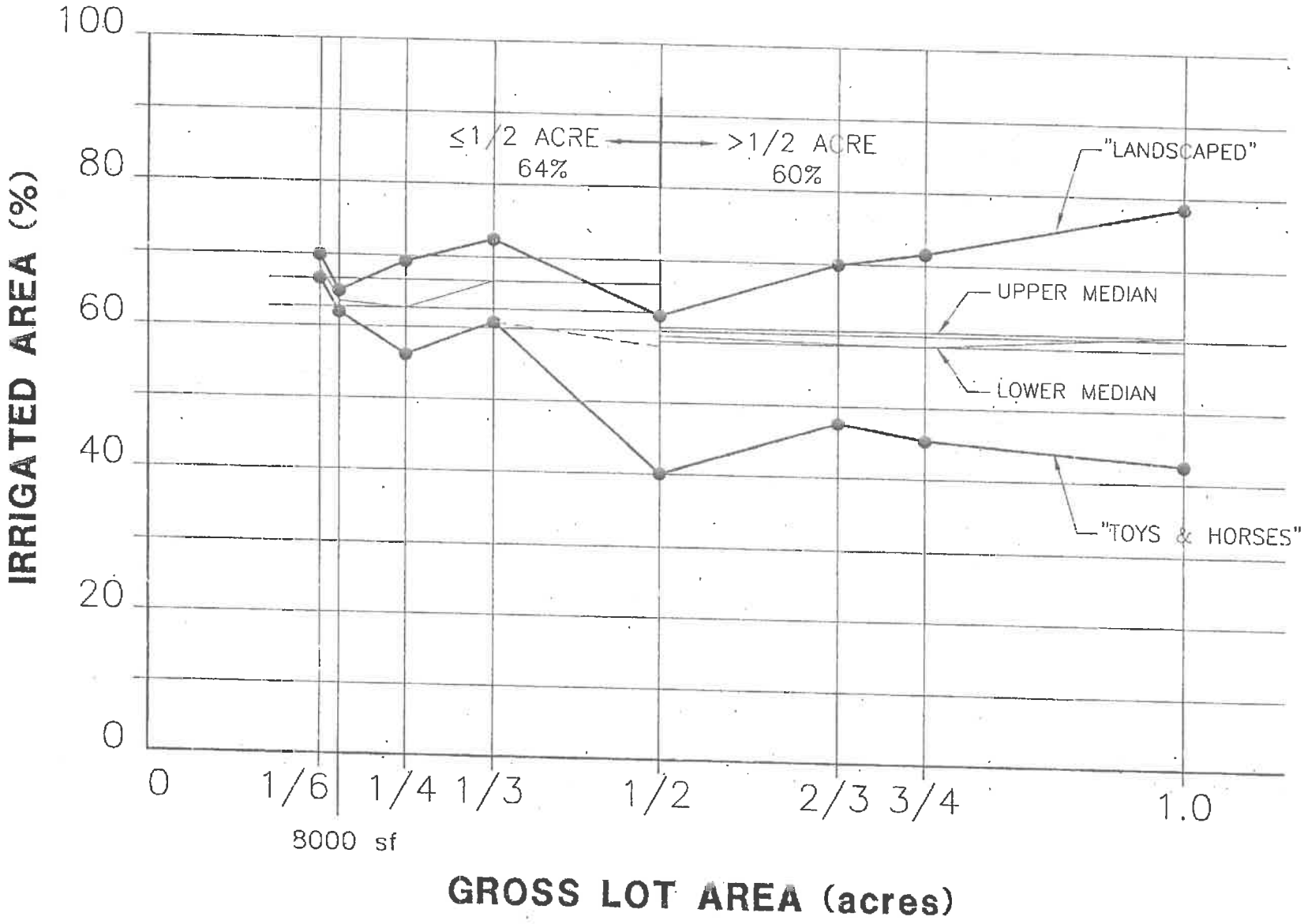
* Data taken from the Utah Division of Water Rights Consumptive Use Tables (http://nrwrt1.nr.state.ut.us/techinfo/consumpt/default.htm).

Ref: Ames Irrigation Handbook Third Edition 1967

Note: Xeriscape or Waterwise Irrigation Demand calculations shown is from the 2022 CFP, IFFP, and IFA Updates and was analyzed for the plan. This data and level of service (LOS) has not been updated for the 2024 CFP, IFFP, and IFA Amendments.

10-04 12 P CAD\Irr Graph

PERCENTAGE OF LOT IRRIGATED



IRRIGATED ACREAGE WORKSHEET - 1/6 ACRE LAWN

LOT AREA (square feet)	7,200	80'x90' average lot size for very high density development
HOME FOOTPRINT	(1,200)	Assumes garage (25' x 25'), split level home (30' x 40')
DRIVEWAY	(600)	20' x 30'
PATIO	(225)	15' x 15'
SIDEWALK	(120)	4' by 30'
RV PAD	0	none
PLAY ITEMS	(100)	10' x 10' sand box
OUTBUILDINGS	(80)	8' x 10' tuff shed
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	240	4' x (80' - 20')
TOTAL IRRIGATED AREA (square feet)	**5,043**	**70.0%**

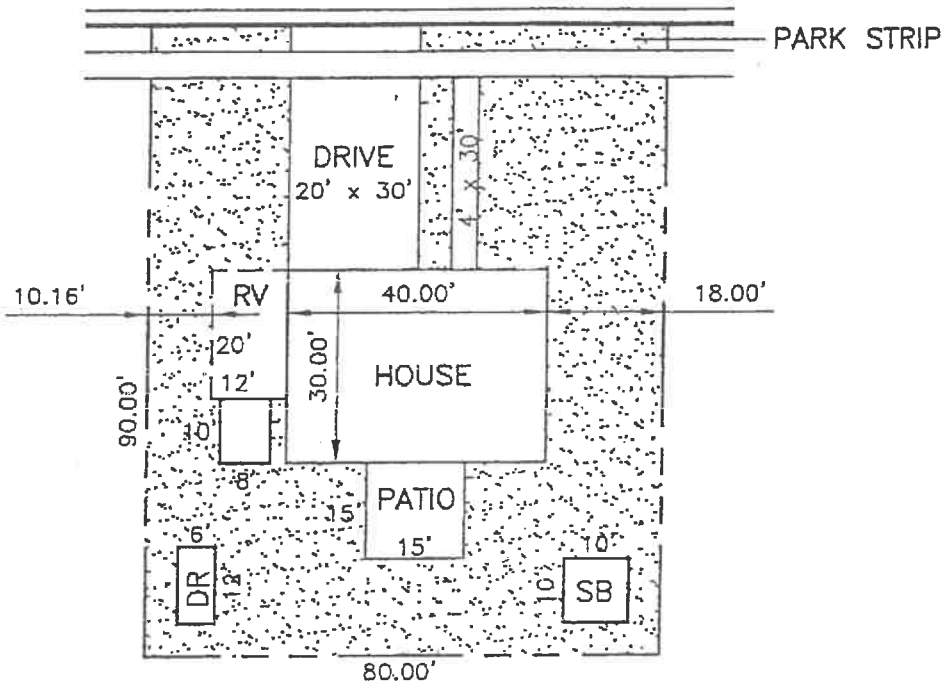
NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

IRRIGATED ACREAGE WORKSHEET - 1/6 ACRE RV

LOT AREA (square feet)	7,200	80'x90' average lot size for very high density development
HOME FOOTPRINT	(1,200)	Assumes garage (25' x 25'), split level home (30' x 40')
DRIVEWAY	(600)	20' x 30'
PATIO	(225)	15' x 15'
SIDEWALK	(120)	4' by 30'
RV PAD	(240)	12' x 20'
PLAY ITEMS	(100)	10' x 10' sand box
OUTBUILDINGS	(80)	8' x 10' tuff shed
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	240	4' x (80' - 20')
TOTAL IRRIGATED AREA (square feet)	**4,803**	**66.7%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

1/6 ACRE - RV


PARK STRIP
DRIVE
20' x 30'
4' X 30'
10.16'
RV
40.00'
18.00'
20'
12'
30.00'
HOUSE
90.00'
10'
8'
PATIO
15'
15'
6'
DR
12'
10'
SB
10'
80.00'

IRRIGATED ACREAGE WORKSHEET - 8,000 SF LAWN

LOT AREA (square feet)	8,000	80' x 100' lot size for high density development
HOME FOOTPRINT	(1,600)	Assumes garage (25' x 25'), split level home (35' x 45.7')
DRIVEWAY	(750)	25' x30'
PATIO	(300)	15' x 20'
SIDEWALK	(120)	4' by 30'
RV PAD	0	none
PLAY ITEMS	(100)	10' x 10' sandbox
OUTBUILDINGS	(80)	8' x 10' tuff shed
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	220	4' x (80' - 25')
TOTAL IRRIGATED AREA (square feet)	**5,198**	**65.0%**

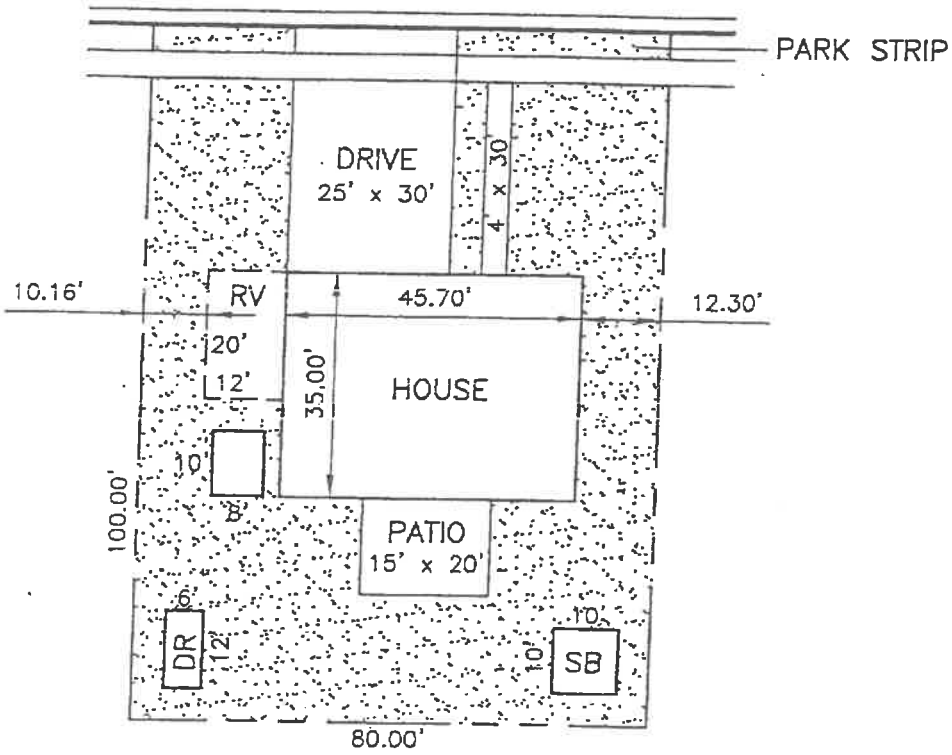
NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

IRRIGATED ACREAGE WORKSHEET - 8,000 SF RV

LOT AREA (square feet)	8,000	80' x 100' lot size for high density development
HOME FOOTPRINT	(1,600)	Assumes garage (25' x 25'), split level home (35' x 45.7')
DRIVEWAY	(750)	25' x30'
PATIO	(300)	15' x 20'
SIDEWALK	(120)	4' by 30'
RV PAD	(240)	12' x 20'
PLAY ITEMS	(100)	10' x 10' sandbox
OUTBUILDINGS	(80)	8' x 10' tuff shed
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	220	4' x (80' - 25')
TOTAL IRRIGATED AREA (square feet)	**4,958**	**62.0%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

8,000 SF - RV

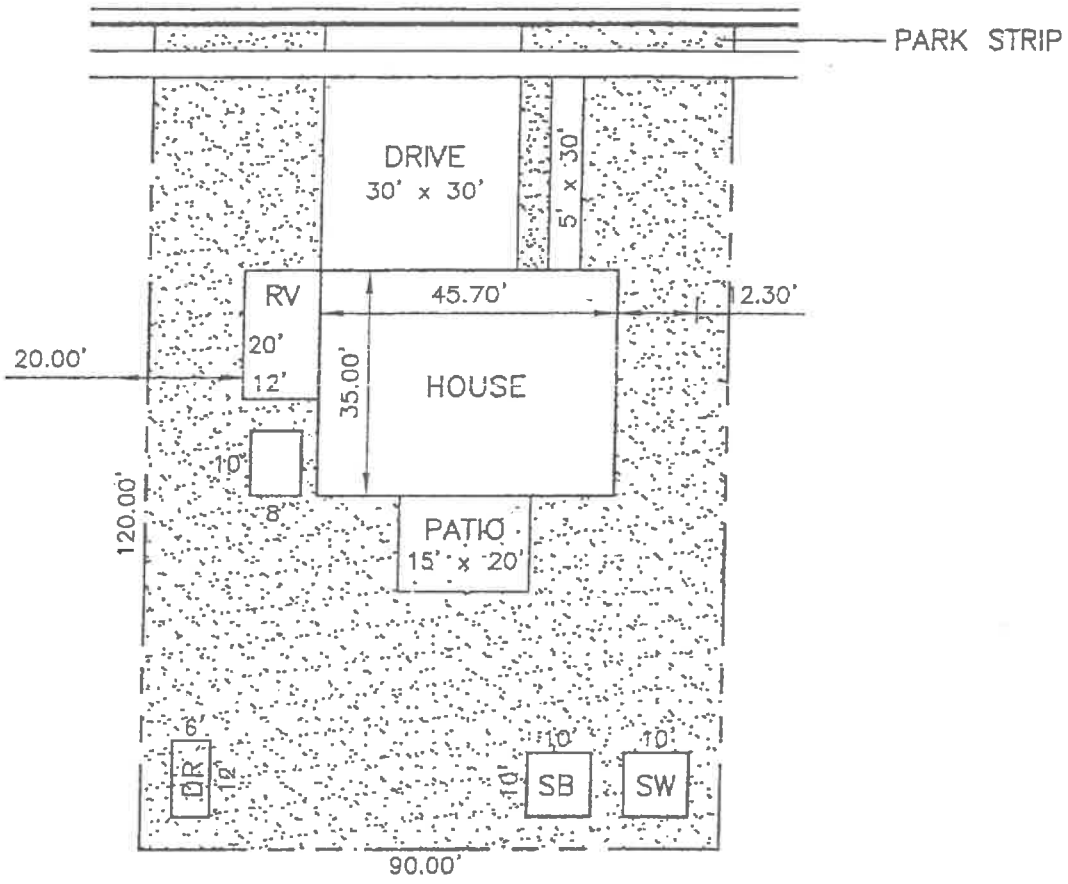

PARK STRIP
DRIVE
25' x 30'
4' x 30'
10.16'
RV
45.70'
12.30'
20'
12'
35.00'
HOUSE
10'
8'
100.00'
PATIO
15' x 20'
6'
DR
12'
10'
SB
10'
80.00'

IRRIGATED ACREAGE WORKSHEET - 1/4 ACRE LAWN

LOT AREA (square feet)	10,800	90' x 120' average lot size for high density development
HOME FOOTPRINT	(1,600)	Assumes garage (25' x 35'), split level home (35' x 45.7')
DRIVEWAY	(900)	30' x30'
PATIO	(300)	15' x 20'
SIDEWALK	(150)	5' by 30'
RV PAD	(240)	12' x 20'
PLAY ITEMS	(200)	10' x 10' sandbox, 10' x 10' swing set
OUTBUILDINGS	(80)	8' x 10' tuff shed
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	240	4' x (90' - 30')
TOTAL IRRIGATED AREA (square feet)	**7,498**	**69.4%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

1/4 ACRE LOT - LAWN

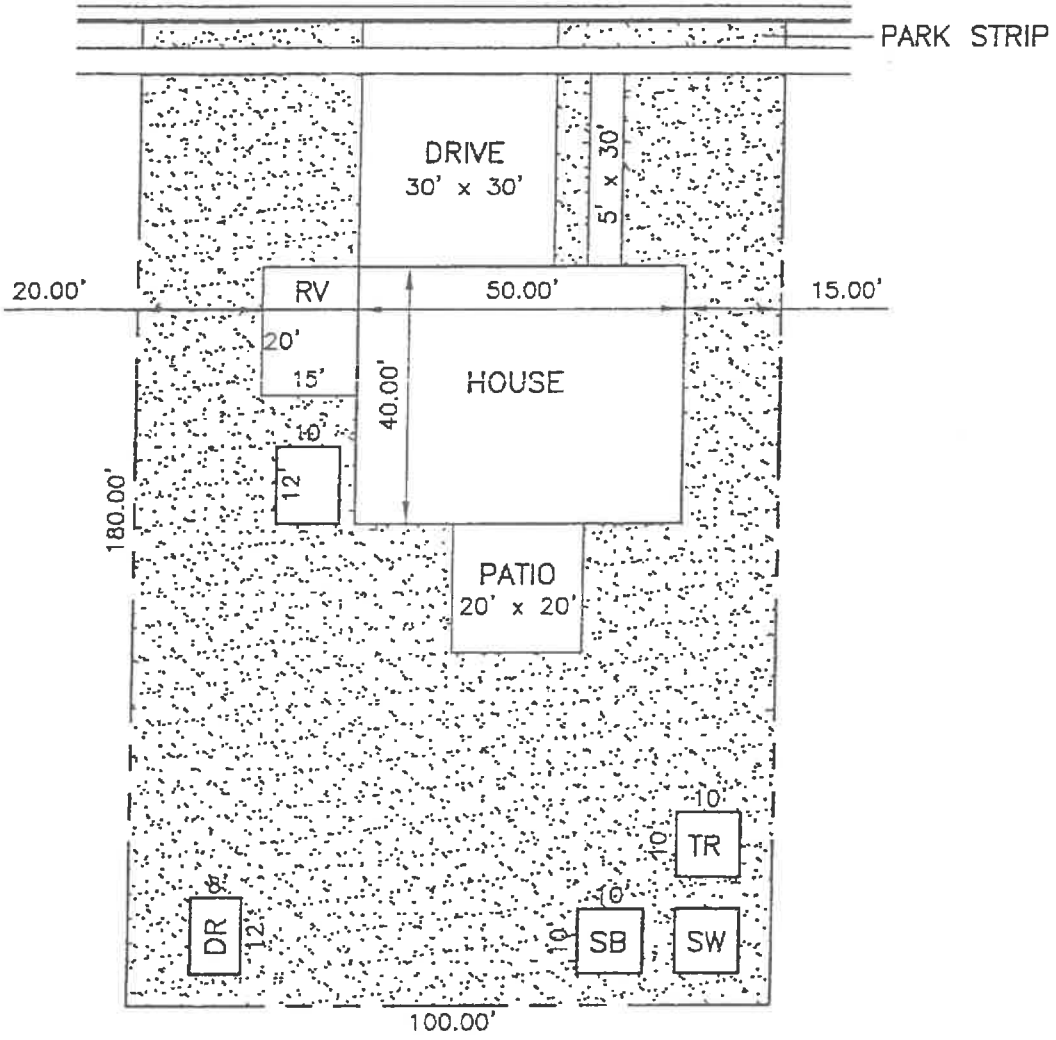


IRRIGATED ACREAGE WORKSHEET - 1/4 ACRE SHOP

LOT AREA (square feet)	10,800	90' x 120' average lot size for high density development
HOME FOOTPRINT	(1,600)	Assumes garage (25' x 35'), split level home (35' x 45.7')
DRIVEWAY	(900)	30' x30'
PATIO	(300)	15' x 20'
SIDEWALK	(150)	5' by 30'
RV PAD	(240)	12' x 20'
PLAY ITEMS	(200)	10' x 10' sandbox, 10' x 10' swing set
OUTBUILDINGS	(1,500)	20' x 30' shop, 90' x 10' gravel access drive
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	240	4' x (90' - 30')
TOTAL IRRIGATED AREA (square feet)	**6,078**	**56.3%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

1/3 ACRE LOT - LAWN

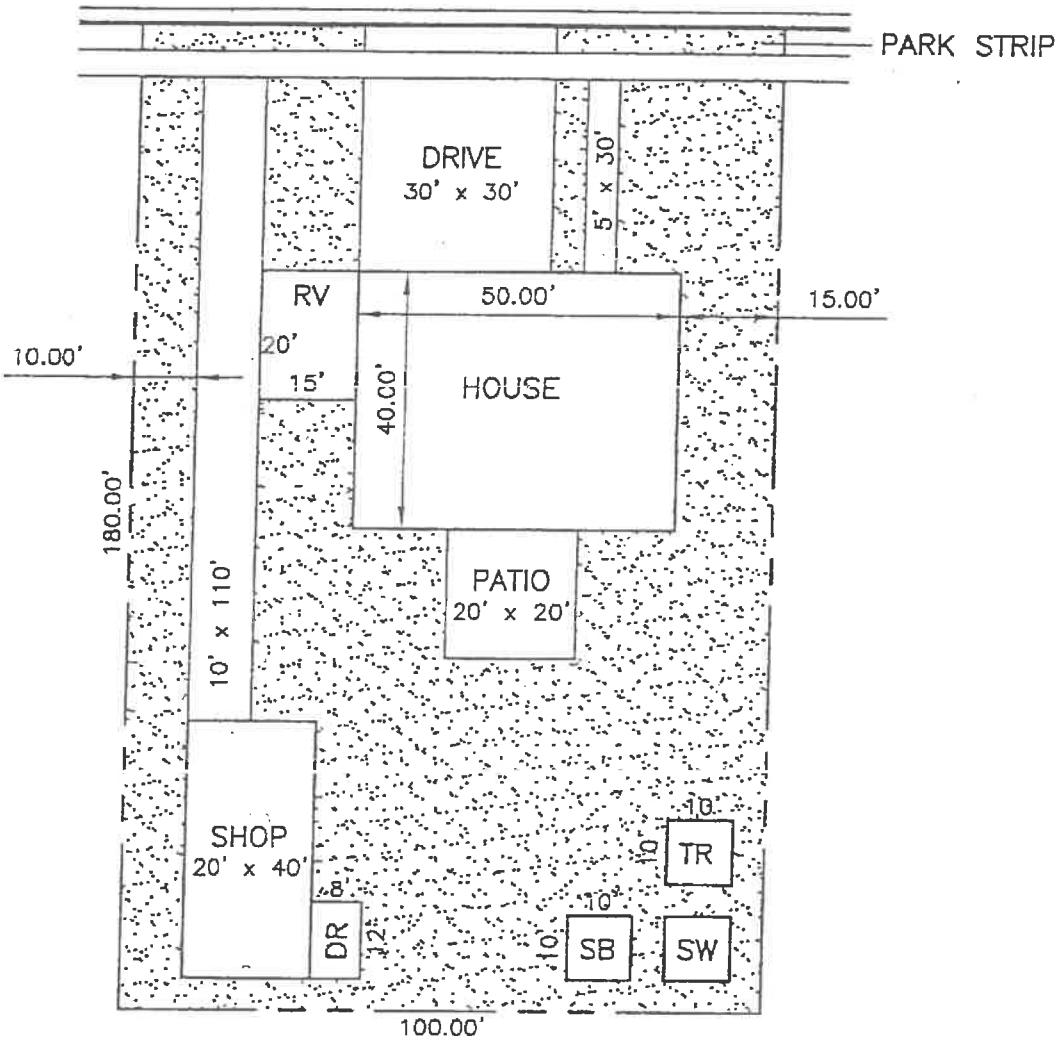


IRRIGATED ACREAGE WORKSHEET - 1/3 ACRE SHOP

LOT AREA (square feet)	14,500	100' x 145' average lot size for medium density development
HOME FOOTPRINT	(2,000)	Assumes garage (25' x 35'), split level home (40' x 50')
DRIVEWAY	(900)	30' x30'
PATIO	(400)	20' x 20'
SIDEWALK	(150)	5' x 30'
RV PAD	(300)	15' x 20'
PLAY ITEMS	(300)	10' x 10' sandbox, 10' x 10' swing set, 10' x 10' trampoline
OUTBUILDINGS	(1,800)	20' x 40' shop 100' x 10' gravel access drive
ANIMAL CONTAINMENT	(96)	8' x 12' dog run
PARK STRIP (length of frontage - drive width)	280	4' x (100' - 30')
TOTAL IRRIGATED AREA (square feet)	**8,834**	**60.9%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

1/3 ACRE LOT - SHOP



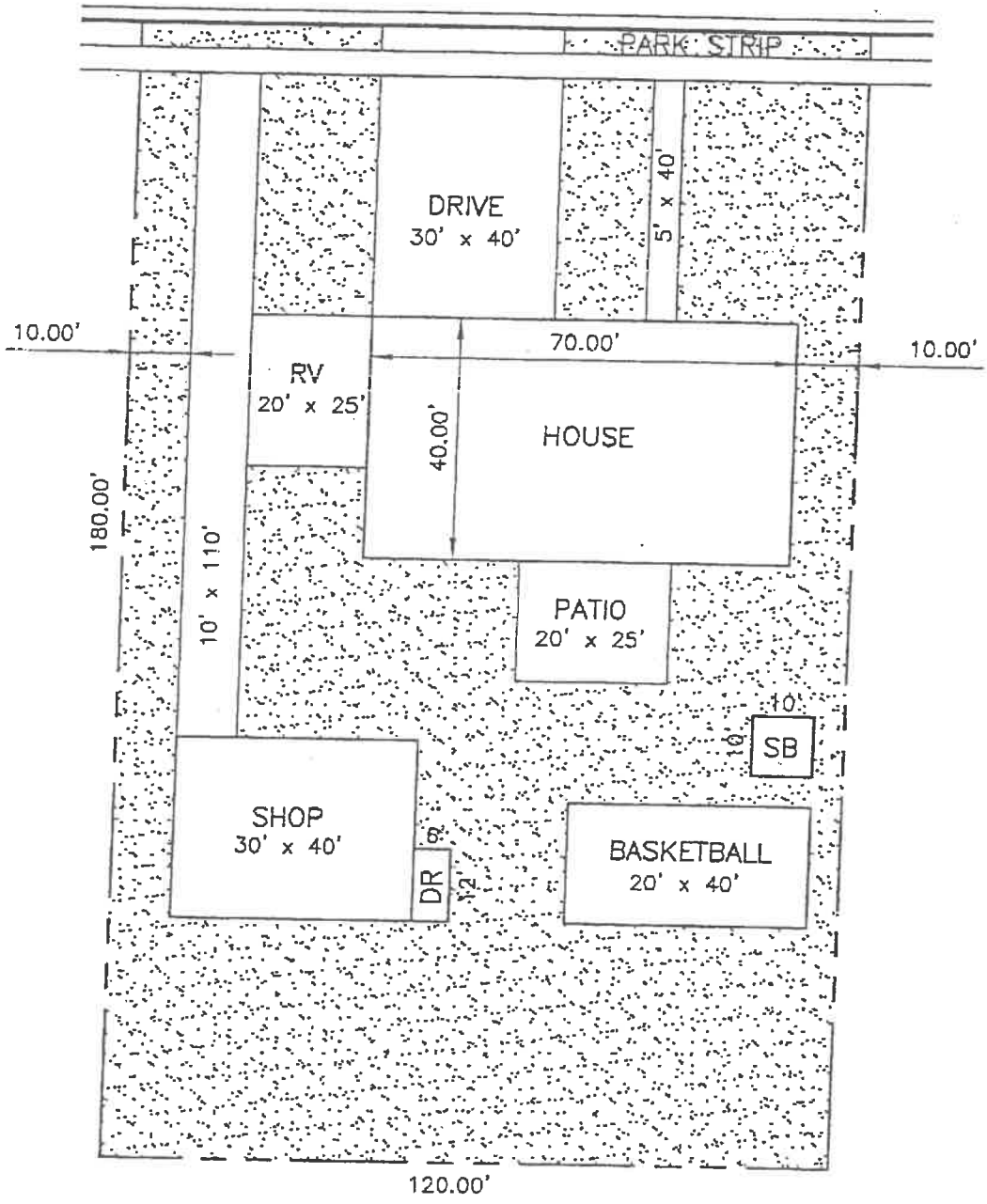
IRRIGATED ACREAGE WORKSHEET - 1/2 ACRE LAWN

LOT AREA (square feet)	21,600	120' x 180' average lot size for medium density development
HOME FOOTPRINT	(2,800)	Assumes garage (25' x 35'), split level home (40' x 70')
DRIVEWAY	(1,200)	30' x 40'
PATIO	(500)	25' x 20'
SIDEWALK	(200)	5' x 40'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,300)	30' x 40' shop, 110' x 10' gravel access drive
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	360	4' x (120' - 30')
TOTAL IRRIGATED AREA (square feet)	**13,488**	**62.4%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

Assumes that large animals are kept on property, along with feed storage for the animal.

1/2 ACRE LOT - LAWN



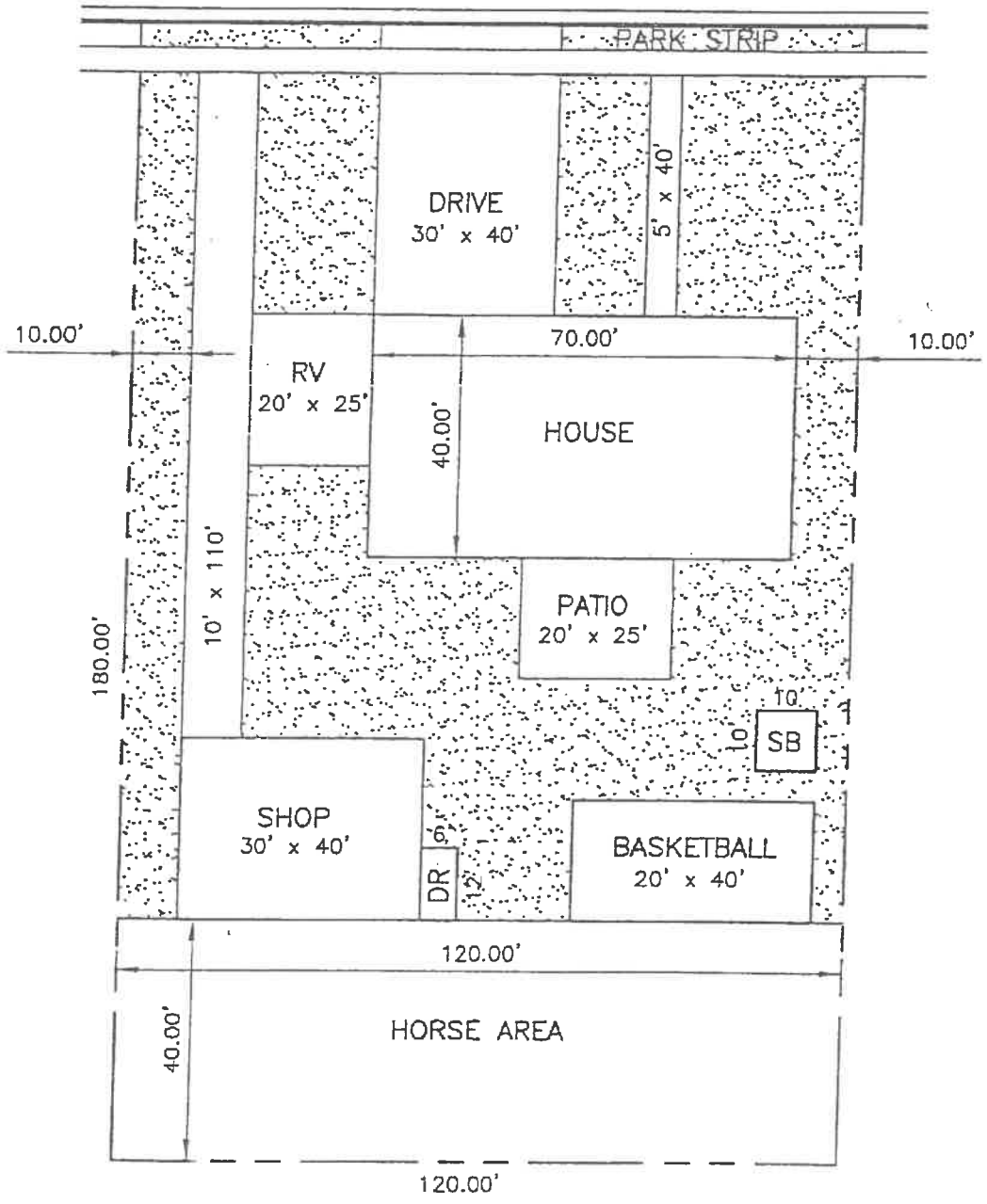
IRRIGATED ACREAGE WORKSHEET - 1/2 ACRE HORSE

LOT AREA (square feet)	21,600	120' x 180' average lot size for medium density development
HOME FOOTPRINT	(2,800)	Assumes garage (25' x 35'), split level home (40' x 70')
DRIVEWAY	(1,200)	30' x 40'
PATIO	(500)	25' x 20'
SIDEWALK	(200)	5' by 40'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,300)	30' x 40' shop, 110' x 10' gravel access drive
ANIMAL CONTAINMENT	(4,872)	6' x 12' dog run, 40' x 120' large animal corral & support area
PARK STRIP (length of frontage - drive width)	360	4' x (120' - 30')
TOTAL IRRIGATED AREA (square feet)	**8,688**	**40.2%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

Assumes that large animals are kept on property, along with feed storage for the animal, and no animal containment area (pasture) is irrigated.

1/2 ACRE LOT - HORSE

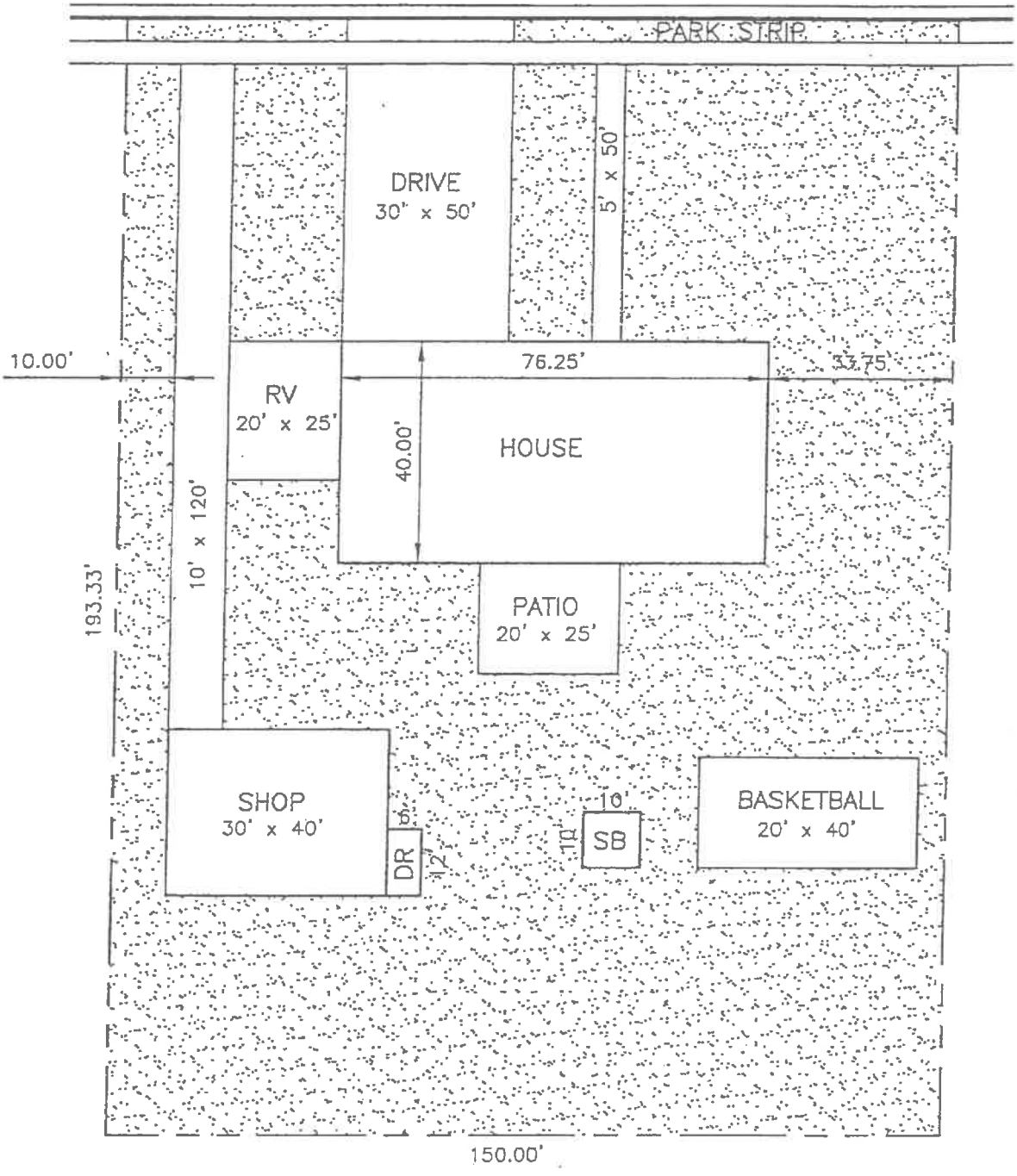


IRRIGATED ACREAGE WORKSHEET - 2/3 ACRE LAWN

LOT AREA (square feet)	29,000	150' x 193.33' average lot size for medium density developme
HOME FOOTPRINT	(3,050)	Assumes garage (25' x 35'), split level home (40' x 76.25')
DRIVEWAY	(1,500)	30' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	480	4' x (150' - 30')
TOTAL IRRIGATED AREA (square feet)	**20,308**	**70.0%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

2/3 ACRE LOT - LAWN



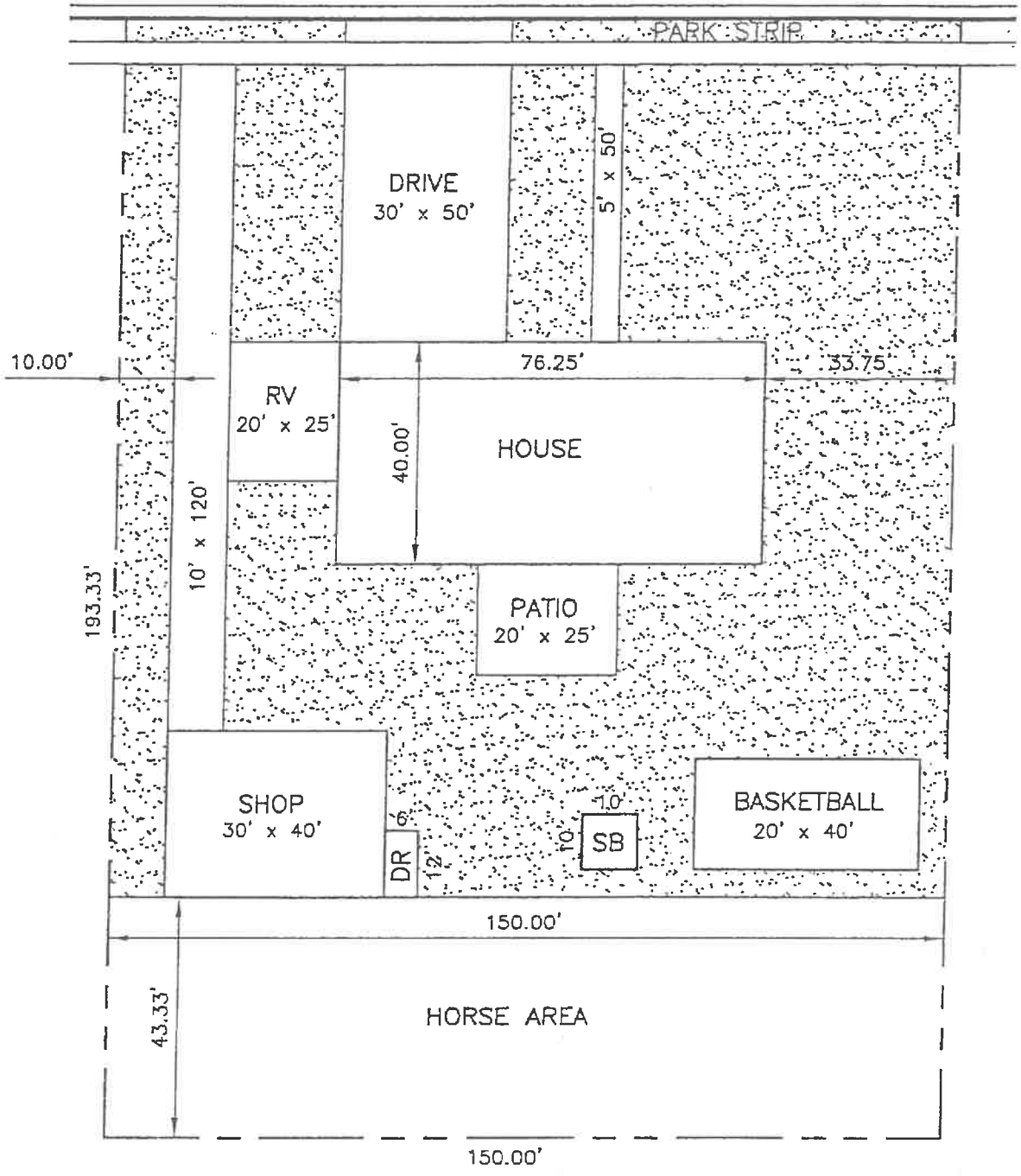
IRRIGATED ACREAGE WORKSHEET - 2/3 ACRE HORSE

LOT AREA (square feet)	29,000	150' x 193.33' average lot size for medium density developme
HOME FOOTPRINT	(3,050)	Assumes garage (25' x 35'), split level home (40' x 76.25')
DRIVEWAY	(1,500)	30' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(6,572)	6' x 12' dog run, 40' x 120' large animal corral & support area
PARK STRIP (length of frontage - drive width)	480	4' x (150' - 30')
TOTAL IRRIGATED AREA (square feet)	**13,809**	**47.6%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

Assumes that large animals are kept on property, along with feed storage for the animal, and no animal containment area (pasture) is irrigated.

2/3 ACRE LOT - HORSE

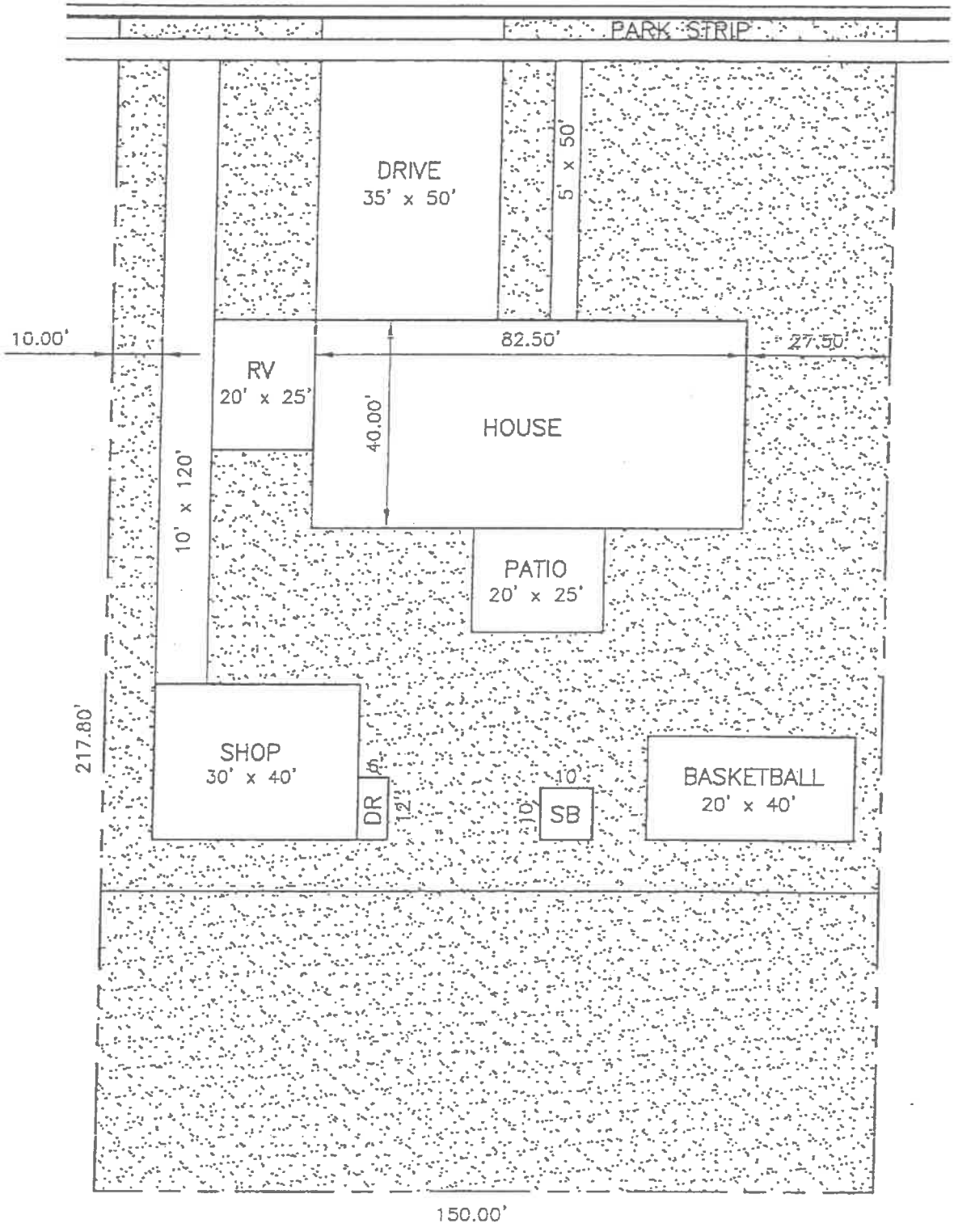


IRRIGATED ACREAGE WORKSHEET - 3/4 ACRE LAWN

LOT AREA (square feet)	32,670	150' x 217.8' average lot size for medium density development
HOME FOOTPRINT	(3,300)	Assumes garage (25' x 35'), split level home (40' x 82.5')
DRIVEWAY	(1,750)	35' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	460	4' x (150' - 35')
TOTAL IRRIGATED AREA (square feet)	**23,458**	**71.8%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

3/4 ACRE LOT - LAWN



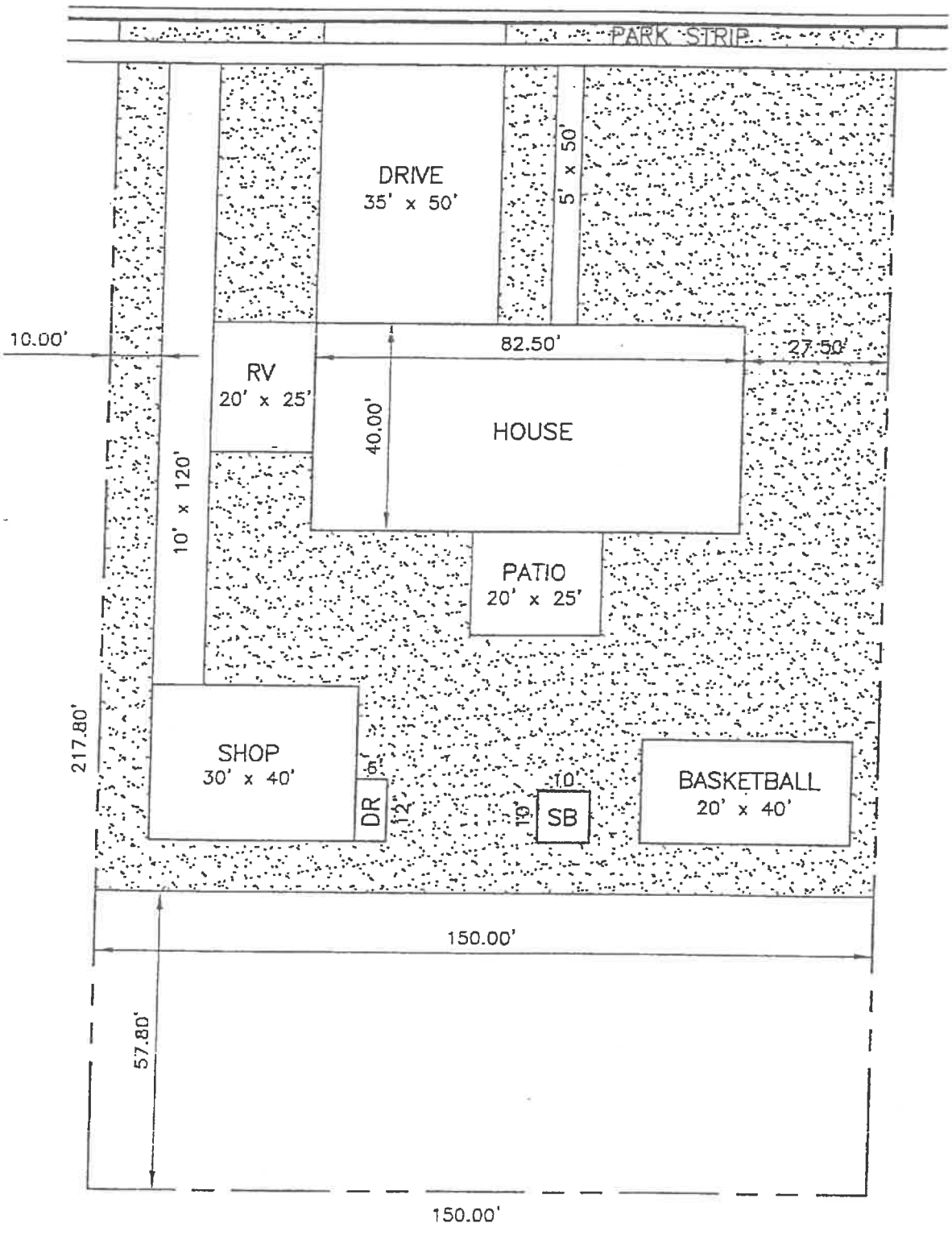
IRRIGATED ACREAGE WORKSHEET - 3/4 ACRE HORSE

LOT AREA (square feet)	32,670	150' x 217.8' average lot size for medium density development
HOME FOOTPRINT	(3,300)	Assumes garage (25' x 35'), split level home (40' x 82.5')
DRIVEWAY	(1,750)	35' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(8,742)	6' x 12' dog run, 57.5' x 150' large animal corral/support area
PARK STRIP (length of frontage - drive width)	460	4' x (150' - 35')
TOTAL IRRIGATED AREA (square feet)	**14,788**	**45.3%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

Assumes that large animals are kept on property, along with feed storage for the animal, and no animal containment area (pasture) is irrigated.

3/4 ACRE LOT - HORSE

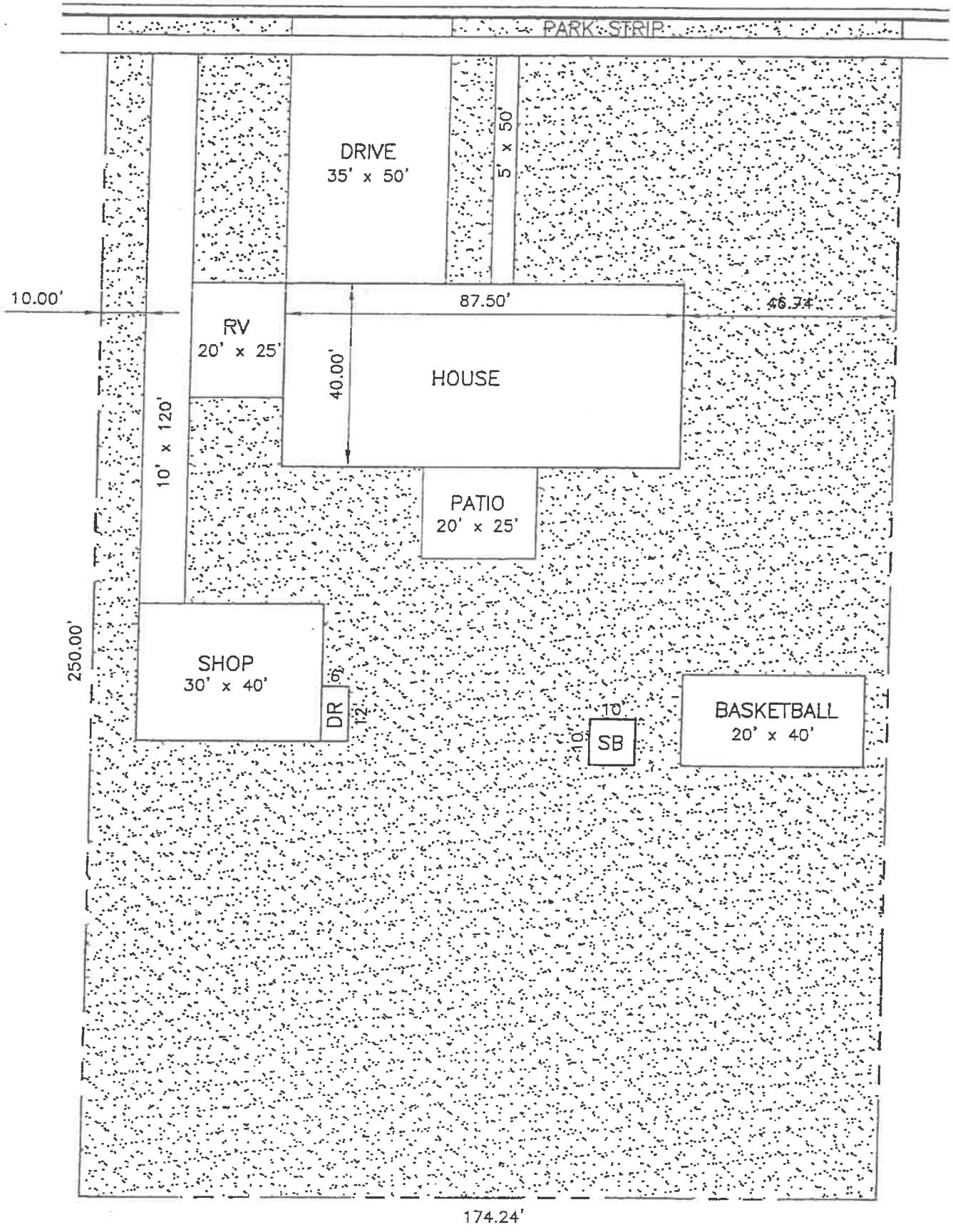


IRRIGATED ACREAGE WORKSHEET - 1 ACRE LAWN

LOT AREA (square feet)	43,560	174.24' x 250' average lot size for low density development
HOME FOOTPRINT	(3,500)	Assumes garage (25' x 35'), split level home (40' x 87.5')
DRIVEWAY	(1,750)	35' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(72)	6' x 12' dog run
PARK STRIP (length of frontage - drive width)	557	4' x (174.24' - 35')
TOTAL IRRIGATED AREA (square feet)	**34,245**	**78.6%**

NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

1 ACRE LOT - LAWN



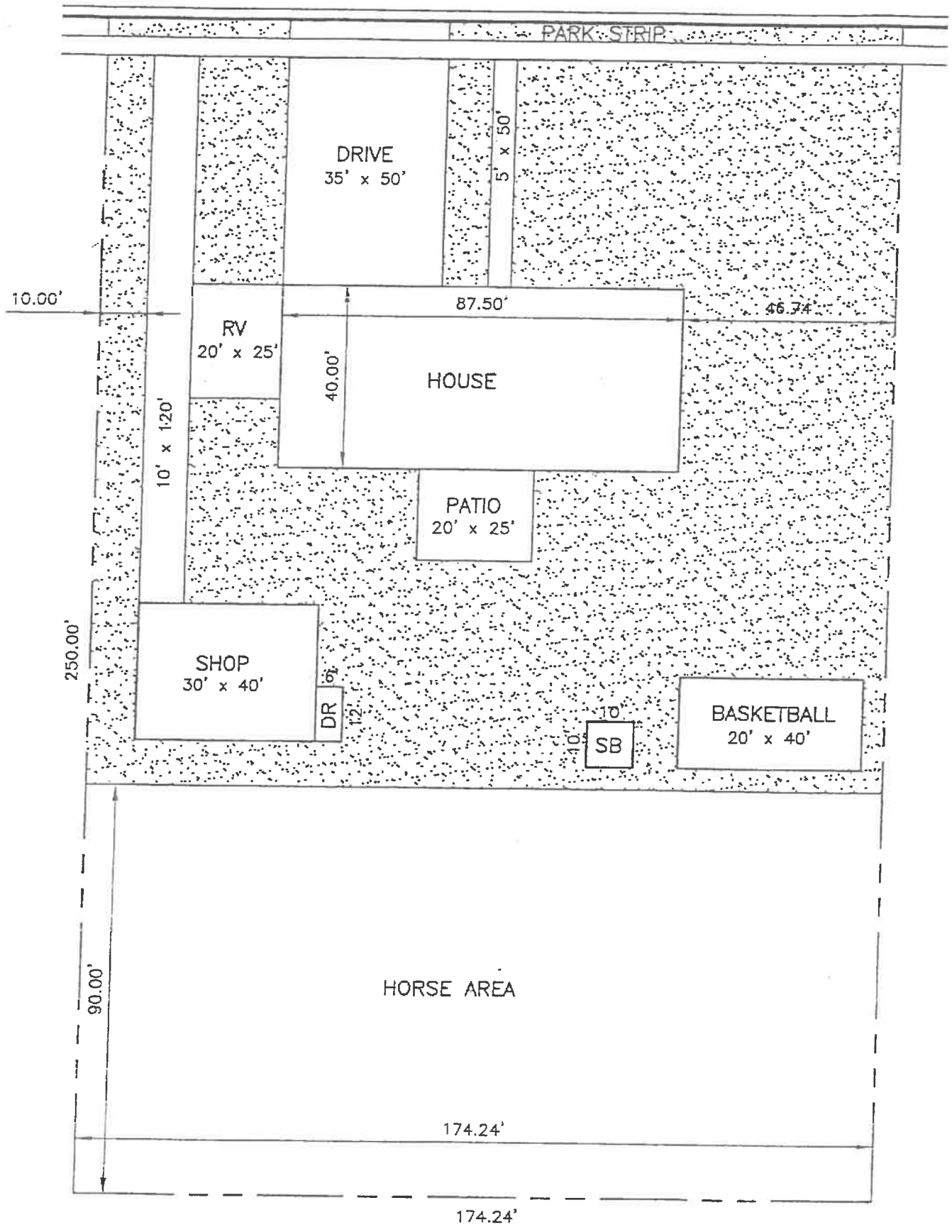
IRRIGATED ACREAGE WORKSHEET - 1 ACRE HORSE

LOT AREA (square feet)	43,560	174.24' x 250' average lot size for low density development
HOME FOOTPRINT	(3,500)	Assumes garage (25' x 35'), split level home (40' x 87.5')
DRIVEWAY	(1,750)	35' x 50'
PATIO	(500)	20' x 25'
SIDEWALK	(250)	5' by 50'
RV PAD	(500)	20' x 25'
PLAY ITEMS	(900)	10' x 10' sandbox, 20' x 40' basketball court
OUTBUILDINGS	(2,400)	30' x 40' shop, 120' x 10' gravel access drive
ANIMAL CONTAINMENT	(15,754)	6' x 12' dog run, 90' x 174.24' large animal corral/support area
PARK STRIP (length of frontage - drive width)	557	4' x (174.24' - 35')
TOTAL IRRIGATED AREA (square feet)	**18,563**	**42.6%**

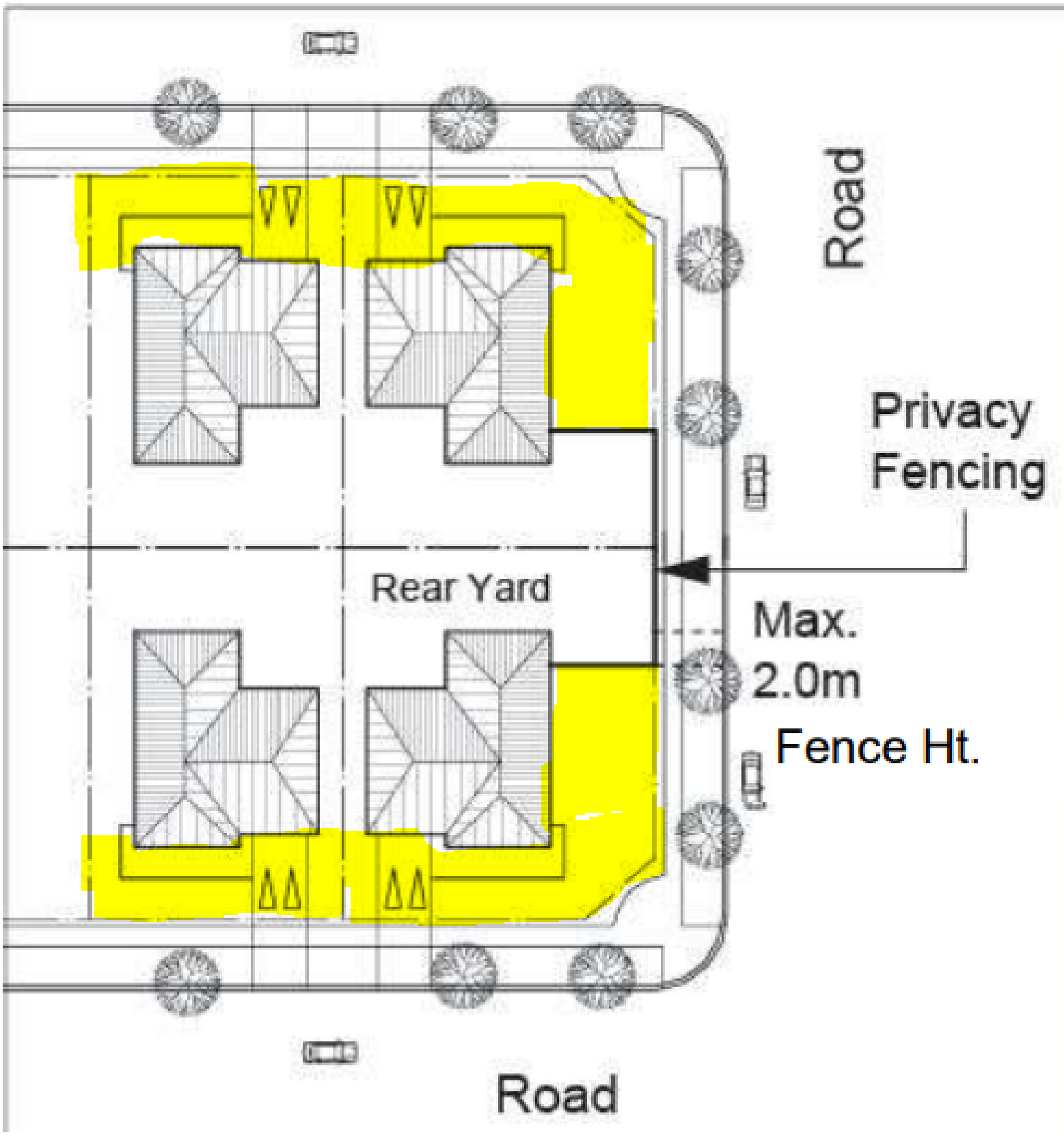
NOTE: Actual irrigated acreage will vary from lot to lot. This worksheet is intended to be an average only. Where actual data exists, it should be used.

Assumes that large animals are kept on property, along with feed storage for the animal, and no animal containment area (pasture) is irrigated.

1 ACRE LOT - HORSE



Front Yard Definition for Waterwise Landscaping



Appendix L: Grantsville City Storm Drainage Design Guidelines

GRANTSVILLE CITY
STORM DRAINAGE DESIGN GUIDELINES

1. Storm Water Collection System Requirements

a) Design Storms

i. The storm water pipe collection system shall be designed to convey the 24-hour duration – 10-year storm water event if continuous pathway to the Great Salt Lake. Collection systems for basin and street shall be sized for the 24-hour duration – 100-year storm water event when discharging to a detention /retention basin.

b) Storm Water Runoff into Street Encroachment Requirements

i. Flow from the 10-year storm shall not extend more that halfway into the travel lane adjacent to the curb and a minimum 12-foot wide travel lane shall be maintained for emergency vehicles. If there is a curb then no more than 8-feet from the curb face.

c) Easement and Access Requirements

i. Easement widths and access for drainage channels, detention basins, lots line swales, and public storm drainage lines shall be reviewed and approved by the City Engineer.

d) Acceptable Pipe Materials

i. Acceptable pipe materials include corrugated HDPE with smooth interior, corrugated PVC with smooth interior, and reinforced concrete pipe (RCP). Corrugated metal pipe (CMP0 is not acceptable for public improvements.

e) Minimum Pipe Diameter

i. The minimum pipe diameter for any public storm water collection system pipe is 15-inches.

f) Manhole Spacing

i. Minimum manhole spacing is 400-feet from pipes 21-inch diameter, unless otherwise approved by the City Engineer.

g) Manhole Drops

i. A minimum drop of 0.10feet is required at all storm drainage structures between the inlet and outlet pipe. Where changes in pipe sized occur in a manhole the inlet pipe crown must match the larger outlet pipe crown.

h) Cover

i. Minimum cover is 18-inches or 6 inches below the pavement section which ever is greater. Unless approved by City Engineer

i) Catch Basin Requirements

i. Catch basins will not be allowed on the radius of curves at intersections.

ii. Flow through catch basins shall not be allowed unless designed as a combination box with manhole lid access.

iii. A snout or similar oil/debris/water separator is required prior to a detention basin, retention basin, or any other discharges from a development into a public drainage.

j) Detention/Retention Basin Requirements

i. Maximum water level depths greater than 3-feet are required to have a 4-foot minimum fence around the basin to prevent animals and children from being harmed in the basin.

ii. Project needs to address the frontage storm water as part of the project.

iii. Retention basins shall completely infiltrate and drain within 72-hours from the beginning of a storm event for vector control. Percolation tests shall be completed for all infiltration basins and submitted with drainage calculations to the City for review.

k) Manning's n Values

i. n value for linings shall be determined per an approved Engineers Manual based on size and placement of materials. Calculations shall include the reference used for the n value for review by the City Engineer.

l) Rip-rap Sizing

i. Channel Riprap sizing calculations shall utilize the *Truckee Meadows Regional Drainage Manual* dated April 30, 2009 (see https://www.washoecounty.gov/csd/engineering_capitalprojects/files-engineering-capital-projects/tmrdm_final_043009.pdf)

m) Erosion Control

i. The developer would need to provide a copy of their Erosion Control Plans, SWPPP, Notice of Intent (NOI), and Notice of Termination (NOT) with the State if their construction project is greater than 1 acre.

2. Hydrology Requirements

a) Rainfall Data

i. NOAA Atlas 14 shall be used for rainfall in the City of Grantsville (see https://hdsc.nws.noaa.gov/hdsc/pfds_map_cont.html)

b) Design Storms

i. Detain 100-year 24-hour storm for project site

ii. For the West Bank drainage areas draining into your project you may discharge at the following rates until the 100-year storm volume that shall perc in 3 days:

Table 1: Recommended Unit Discharge Requirement for the Baker and Pope Watersheds

24-hour Duration Storm Event	Baker and Pope Watershed Peak Unit Discharge (cfs/acre)	All Other Watersheds Peak Unit Discharge (cfs/acre)
10 year	0.003	0.05
100 year	0.01	0.15

Source: Table 17 in Section 5 from the Storm Water Management Study for Bake and Pope Watersheds dated April 2015 by AQUA Engineering

iii. Refer to Figure 1 for a map of Baker and Pope Watersheds.

3. Drainage Report Requirements

a) If discharge will be above the allowed discharge per area rates shown on Table 1 then a pre and post development hydrologic analysis will be required showing flows will not cause a negative affect downstream. The Rational Method (Q=CiA) may be used in computations for the rate of runoff for urban and small watershed 100 acres or less.

i. Q = peak rate of runoff, cubic feet per second

ii. C = runoff coefficient

iii. i = average rainfall intensity, inches per hour

b) The SCS method, SCS TR-55 "Urban Hydrology for Small Watershed", HEC-1/HEC-HMS, or other methods shall be used for larger watersheds.

c) Table 2 shall be used for runoff coefficients.

Table 2: Runoff Coefficients

Land Use Type	Runoff Coefficients "C"
Rural	0.25-0.35
Single Family Residential	0.45-0.60
Multi-Residential	0.60-0.70
Neighborhood Commercial	0.85
Community Commercial	0.85
Tourist Commercial	0.85
Office	0.85
Manufacturing	0.85-0.90
Distribution and Warehousing	0.85-0.90
Public Facility	0.50-0.85
Pavement and Concrete Surfaces	0.90-0.95
Park	0.25
Open Space (0-5% grade – vegetated)	0.20-.030
Open Space (0-5% grade – no vegetation)	0.30-0.40
Open Space (5-15% grade – vegetated or unvegetated)	0.40-0.50
Open Space (Over 15% grade – sparsely vegetated, rock or clay soils	0.40-0.60

i. Weighted values of the runoff coefficient "C" may be required where land use is most accurately described as a mixture of the land uses listed above or where it is a mixture of pervious and impervious areas and not represented by a single entry in **Table 2**

d) Intensity-Duration-Frequency curves for NOAA Atlas 14 shall be used for determining the applicable intensity. (see https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ut)

e) Definition for Tome of Concentration

i. $t_c = 10$ or $\frac{L}{V \times 60}$ whichever is greater

t_c = initial time of concentration at inlet, minutes
L = length from uppermost point of watershed inlet, feet
V = channel or overland velocity, feet per second

ii. Given the time of concentration at a design point, the time of concentration at the next design point is determined by adding travel time, expressed as:

iii. $t = \frac{L}{V \times 60}$.

t = travel time, minutes
L = length of channel or conduit between design points, feet
V = channel or conduit, feet per second

4. Submittal Requirements for Drainage Drawings and Report

a) Project Drawings

i. Hydraulic grade line (HGL) profiles, (see sample sheet).

ii. Location and size of all existing and proposed structures.

iii. Proposed materials.

iv. Pertinent elevations and slopes.

v. Pipe capacity and 10-year and 100-year flows and velocities.

b) Drainage Report – The following standards apply to the Drainage Report (public and private).

1. Title Page:
   a. Project name.
   b. Preparer's name, firm, date.
   c. Professional engineer's seal of preparer and signature.
2. Introduction:
   a. Site location:
      i. Street location, parcel number(s), and section reference.
      ii. Adjacent developments.
   b. Site description:
      i. Topography, ground cover, etc.
      ii. Existing drainage facilities, major drainage facilities, flood hazard areas, irrigation ditches, other site conditions that must be considered.
   c. Proposed project description.
   d. Other previous studies relevant to site.
3. Historic drainage system (discuss the following):
   a. Major basins and offsite contributions:
      i. Relationship to major drainage facilities.
      ii. Major basin drainage characteristics (topography, runoff, cover, use, erosion, etc.).
   b. Sub-basin and site drainage (1 and 2 may be tabulated on map):
      i. Minor (10-year) and major (100-year) storm flows for each sub-basin affecting the site.
      ii. Existing drainage patterns: channelized or overland flow, point of discharge, etc.
      iii. Effect of historic flows on adjacent properties.
4. Proposed (developed) drainage system (discuss each of the following):
   a. Criteria:
      i. Size of major basins, tributary sub-basins, and other offsite contributions.
      ii. Hydrologic method to be used for analysis (Rational, SCS, etc.).
      iii. Design storm intensities (minor 10-year, major 100-year) or as required by the City Engineer.
   b. Runoff and other contributions:
      i. Historic storm flow rates and paths.

ii. Developed storm flow rates and paths for minor and major storms.
iii. Contributions added form open joined system.
iv. Demonstrate that flows are routed to a public system with adequate capacity.

c. Piping:
i. Demonstrate the capacity of the storm drain system, including all downstream improvements.
ii. Verify storm flows from inlets to ultimate outlets of the drainage system.

d. Retention system including:
i. Volume required to hold 100-year storm with 1-foot freeboard minimum.
ii. Show the overflow location for volumes over the 100-year storm.
iii. Passage of storms exceeding the 5-year up to the 100-year.
iv. Engineer to provide detailed description of downstream constraints (or none) and design calculations on how to mitigate the problem.
v. Need for detention shall be clearly identified in the preliminary or schematic report and the necessary detention area shall be identified on preliminary plans.

e. Streets (This information may be shown on the plans.):
i. Depth and velocity of flow for major and minor storms. Demonstrate that a 12-foot clear lane exists for emergency vehicles at all times.
ii. Drainage system.

f. Open channel flow (This information may be shown on the plans.):
i. Type.
ii. Depth and velocity.
iii. Freeboard.
iv. HEC-RAS analysis when required by the City Engineer.

g. Storm drains and culverts (Show all data on plans.)

5. Areas within flood hazard zone when applicable

a) Impacts.

b) Protection.

c) Compliance with Federal Emergency Management Administration (FEMA) requirements, RMC 18.12 "Flood Hazard Areas", and critical flood zones. Show existing and proposed CLOMR and LOMR information, and show status of submittal and review process.

6. Conclusions

a) Benefits

b) Adverse effects with solutions for mitigation of impacts

7. Appendices

a) <u>Hydrologic and hydraulic computations:</u>
i. List and explain basin assumptions and input factors used
1) Tabularized and/or discussed as necessary.
2) Indicate any sensitivity analysis performed.
3) Include source tables and references for parameters, such as soil groups, SCS curve numbers, C values, n values, etc.

ii. Historic runoff:
1) Off-site.
2) On-site.

iii. Developed runoff:
   1) Off-site – Flows that have been concentrated into one area from the project shall not flow higher than the project flow in that area.
   2) On-site.

iv. Detention for up to the 100-year storm.

v. Hydraulic computations:
   1) Hydraulic grade line (HGL) minor storm.
   2) Hydraulic grade line (HGL) major storm.
   3) Inlet/outlet calculations.

vi. Rip-rap sizing.

b) Drainage plan:
   i. Site drainage plan:
      1) Show the existing and proposed contours for the property.
      2) The site drainage plan may be at the same scale as the grading plan but must meet legibility requirements for scanned documents. Show all sub-drainage areas per catch basin or channel and tabulate existing and proposed drainage showing length, assumed velocity and time of concentration on various runs of grass, gutters, etc., cumulative time of concentration, average rainfall intensity, area, runoff coefficient (weighted if necessary), and peak flows for 10-year and 100-year storms.
      3) All inlets and manholes shall be labeled to correspond to tabular numbering system used in drainage report. Pipe sizes, grades, velocities, peak flows and hydraulic grade lines shall be shown for all parts of the system in a tabular form on the plans.
      4) Both location plan (overall drainage) and sub-drainage plan shall be signed and sealed by a Utah Registered Civil Engineer and shall be included in the construction plans for the subdivision/development.
      5) On grading plans show peak flows for 10-year and 100-year storms at inlets and other sub-basin points of concentration, at discharge points and in channels. Show peak flows entering and leaving the site; trace path leaving site to nearest major drainage facility without adverse impact to downstream owners.
      6) On plan and profile sheets, show peak flows for 10-year and 100-year storms at all inlets and in pipes as per above, and in pipes show slope, velocity, and capacity, and hydraulic grade line if surcharged.
      7) If the lot cannot drain the yard to the street, then a basin shall be located in the rear yard to prevent storm runoff from draining to the neighbors from the back of the property.

   ii. Benchmarks – To be shown on plans with benchmarks to match the existing state approved benchmarks.

   iii. Existing and proposed property lines.

   iv. Existing and proposed drainage easements.

   v. Street names, grades, widths and rights-of-way or easements.

   vi. Routing and accumulative flows at the upstream and downstream ends of the site and at various critical points on-site for both minor and major runoff. Inflow and outflow for both storms for all sub basins.

vii. Street cross sections showing 100-year flood levels, no more than ½ way into the outside travel lane for emergency vehicle clear lane.

viii. Existing and proposed major drainage facilities.

ix. Open channel flow in major channels shall be provided with the following information on plans:
   1) Channel and hydraulic grade line (HGL) profiles.
   2) Cross sections and required rights-of-way at 100-foot intervals.
   3) Location and size of all existing and proposed structures.
   4) Channel section and lining details.
   5) Freeboard for 100-year flows.
   6) Channel capacity and storm flows, 10-year and 100-year flows and velocities.

APPENDIX M: STORM DRAINAGE COST ESTIMATES

Owner: Granstville City
Project: West Bank Stormwater Master Plan
Project #: 2205-048
PM: Matt Laurendeau
Date: 1/4/2024

Jones & DeMille Engineering
1-800-748-5275
www.jonesanddemille.com

Alternative 4

ENGINEER'S OPINION OF PROBABLE COST					
Item No.	**Item Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Price**
Construction					
1	Mobilization and Survey	LS	1	$ 7,500,000	$ 7,500,000
2	Channel Excavation	CY	530,000	$ 10	$ 5,300,000
3	Channel Riprap (9" D50 1.5' thick)	CY	225,000	$ 90	$ 20,250,000
4	Road Crossings	LS	1	$ 2,000,000	$ 2,000,000
5	Settlement Canyon Debris Basin	LS	1	$ 18,517,000	$ 18,517,000
6	Army Creek Debris Basin	LS	1	$ 21,415,000	$ 21,415,000
7	South Willow Debris Basin	LS	1	$ 4,616,000	$ 4,616,000
8	North Willow Debris Basin	LS	1	$ 4,445,000	$ 4,445,000
9	North Willow Div Debris Basin	LS	1	$ 1,357,000	$ 1,357,000
10	Baker Canyon Debris Basin	LS	1	$ 1,428,000	$ 1,428,000
11	Pope Canyon Debris Basin	LS	1	$ 1,428,000	$ 1,428,000
12	Dry Canyon Debris Basin	LS	1	$ 2,856,000	$ 2,856,000
13	Acquire Additional Channel ROW	Acre	340	$ 10,000	$ 3,400,000
14	General Site Improvements	LS	1	$ 1,000,000	$ 1,000,000
				Construction Subtotal =	**$ 94,512,000**
Professional Services and Permitting					
1	Engineering Design	LS	1	$ 4,726,000	$ 4,726,000
2	Construction Management	LS	1	$ 5,671,000	$ 5,671,000
3	Environmental Permitting	LS	1	$ 500,000	$ 500,000
				Professional Services and Permitting Subtotal =	**$ 10,897,000**
Contingency					
1	Construction Contingency (30%)	LS	1	$ 28,354,000	$ 28,354,000
2	Uncosted Items (10)%)	LS	1	$ 9,452,000	$ 9,452,000
				Contingencies Subtotal =	**$ 37,806,000**
				Total Probable Construction Cost	**$ 143,215,000**

Figure 16. Stormwater Alternative 4 Cost Estimate